VOWEL NASALIZATION IN THE NORTHEASTERN DIALECT AND ITS EFFECT ON CENTRAL THAI AND ENGLISH

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ABSTRACT

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Vowel nasalization, without being influenced by nasal consonants (VN), is distinctively perceptible in a pronunciation of speakers originally from northeastern Thailand. And when these speakers engage in a conversation using Central Thai or English, this language-specific phenomenon is undoubtedly, though with a lesser intensity, being carried over. The present study shows that Vowel Height Parameter (VHP) and Vowel Length Parameter (VLP) are two driving factors contributing to the speakers' nasalized vowels. Tongue height and tongue advancement are very crucial for vowels to be nasalized. The study also suggests that obstruent consonants partake in vowel nasalization more than sonorant consonants. With an exposure to the sound system or phonetics of the new language, the study implies that the degree of intensity of the speakers' nasalized vowel is weakened.

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Chapter I

INTRODUCTION

1.1 Introduction

Thai regional dialects have always been sources of interest for linguists, learners, as well as observers. Different dialects from different parts of Thailand possess their own distinctive features and characteristics. Each carries its own set of words, phrases and—most importantly—uniquely original pronunciation utterly different from those of others. As a native speaker of Thai, it is linguistically identifiable whether your interlocutor is from the South or the North or the Northeast of Thailand, simply by attending to his/her pronunciation.

Like other regional dialects of Thailand, Northeastern dialect or so-called 'Esaan' dialect also carries its own uniqueness. One striking feature of Esaan dialect is vowel nasalization. Different vowel sounds spoken by speakers from this region, though not influenced by nasal consonants ($CV(C)$) ($ is a syllable boundary), are nasalized. For example:

Northeastern Dialect	Central Thai	Gloss
/hũ:a/	/hu:a/	Head
/pæ̃:t/	/pæ:t/	Eight

This very phenomenon also influences English pronunciation of speakers from this region. For example:

English Pronunciation by Northeastern Thais	Correct English Pronunciation	Gloss
/pɛ̃t/	/pɛt/	Pet
/hɪ̃l/	/hɪl/	Hill

It is my utmost intention, therefore, to find out what lies beneath this language-specific phenomenon, and to help teachers of both Thai and English

understand the very nature of speakers or students from this region towards their pronunciation of Central Thai and English.

1.2 Scope and Method of Investigation

The present study aims to describe one distinctive phonological phenomenon in the Northeastern dialect—vowel nasalization—and to seek understanding and explanation of Northeastern speakers' pronunciation of Central Thai and English. Specifically, this study examines the following:

(1) Phonological distinctions concerning vowel nasalization in the Northeastern dialect.

(2) The effect of vowel nasalization on the Northeastern speakers' pronunciation of Central Thai and English.

(3) Ways to improve pronunciation of Northeastern speakers concerning vowel nasalization.

The subjects for this study were 20 students, both male and female, from the Faculty of Liberal Arts, Ubon Ratchathani University. They were from different provinces in the Northeastern Thailand, mostly the southern part.

1.3 Outline of the Research

The following is a brief description of all chapters in this research:

Chapter 2 reviews literature concerning vowel nasalization in general and vowel nasalization in the Northeastern Dialect.

Chapter 3 provides background knowledge of Esaan, Central Thai and English phonology, since it is central to this study. It includes a discussion of consonants, vowels and tones.

Chapter 4 describes the methods, subjects, and the procedure of data collection of this study, and how the data are analyzed.

Chapter 5 provides and discusses the results of the subjects' pronunciation. Teaching application section in this chapter also provides ways to improve the subjects' pronunciation of Central Thai and English.

Chapter 6 summarizes the results discussed in Chapter 5, states limitations of the study, and suggests further research.

Chapter 2

LITERATURE REVIEW

Esaan is a dialect spoken in several provinces in the northeastern part of Thailand, such as Ubon Ratchathani, Khon Kaen, Surin, Buriram, Mahasarakham, Udonthani, etc. It possesses its own set of sounds and words that are uniquely different from those of other regions. One distinctive feature of Esaan dialect lies in its nasalized vowels. Without being influenced by nasal consonants (VN), vowels in Esaan are somehow nasalized.

Ordinarily, all of the vowels are pronounced with the velum in the raised position, blocking off the nasal cavities. However, if the velum is lowered during vowel production, then vocal resonance can occur in the nasal cavity as well as in the oral and pharyngeal cavities. This gives a particular timbre to the vowel, which is identified as a nasal quality or nasalization (MacKay, 1987).

As with consonants, it is possible to keep the nasal passage open in the production of vowels. Many languages, including French, Portuguese, Polish, and Gujarati, have distinctive nasalized vowel phonemes, indicated by / ˜/ above the vowel. Generally, a phonetically nasalized vowel is the result of being adjacent to nasal consonants /m, n, ŋ/ or VN. It is the following consonant that causes the vowel to become nasalized. In all varieties of English, vowel preceding nasal consonants tend to be nasalized and therefore entirely predictable (e.g. /grĩn/ 'green,' /tæ̃n/ 'tan') (Wolfram & Johnson, 1982).

There are quite a few claims regarding the universal tendencies of VN sequences, including (1) nasalization affects low vowels first, before spreading to mid and high vowels, (2) front vowels are nasalized before back vowels of similar height, (3) stressed vowels are nasalized before unstressed vowels (Connell & Hajek, 1991).

Universalists like Schourup (1973), Lightner (1973), Chen (1974), Foley (1977) are in general agreement that Vowel Height Parameter (VHP) has the same ordered effect on the phonologization of vowel nasalization.

- *Vowel Height Parameter* (VHP)

Low ——— Mid ——— High →

Also, as suggested by Hajek and Watson (1998), cross-linguistic studies of the development of distinctive nasalization show evidence of significant suprasegmental conditioning. Amongst conditioning factors uncovered are vowel length and stress. Across languages, it is reported that in the related contexts /V:N/ and /VN/, identical except for the vowel length, phonologization of nasalization and N-deletion always occur preferentially in the context of long vowels (Hajek & Watson, 1998). The so-called Vowel Length Parameter (VLP) is therefore a very essential factor contributing to vowel nasalization.

- *Vowel Length Parameter* (VLP)

V:N ——— VN →

In some languages, like French, vowel nasalization occurs without being adjacent to nasal consonants. These nasalized vowels may contrast with the oral vowels to distinguish the meaning of words, as in the following examples (taken from Jannedy, Poletto & Weldon, 1994):

Beau	/bo/	'beautiful'	vs.	bon	/bõ/	'good'
Laid	/lɛ/	'ugly'	vs.	lin	/lɛ̃/	'flax'
là	/la/	'there'	vs.	lent	/lã/	'slow'

Esaan dialect also falls into this category. Several vowels in Esaan are nasalized without being adjacent to the nasal consonants.

In this study, Vowel Height Parameter (VHP) and Vowel Length Parameter (VLP) are two main theoretical frameworks employed to see what lies beneath vowel nasalization in Esaan dialect, without being influenced by nasal consonants (VN), and whether or not it agrees with these two parameters and the universal hypothesis.

Since there is very little research done on vowel nasalization in Esaan, the researcher hopes that the results gained from this study would help us understand this very language-specific phenomenon more.

Chapter 3

CENTRAL THAI, "ESAAN," AND ENGLISH PHONOLOGY

The fundamental concept of Central Thai, Esaan and English phonology will be presented in this chapter, beginning with consonants, followed by vowels, and then—for Central Thai and Esaan—tones. Seven main sources are used as references: Khanitthananda's (1990) Language and Linguistics; Beebe's (1977) The Influence of the Listerner on Code-Switching; Hoshino's and Marcus's (1997) Lao for Beginners: An Introduction to the Spoken and Written Language of Laos; Kingkum's (2001)Thai Dialects; Celce-Murcia's, M. Brinton's and M. Goodwin's (1996) Teaching Pronunciation: A Reference for Teachers of English to Speakers of Other Languages; Giegerich's (1992) English Phonology; Kingkum's (2001) Thai Dialects.

3.1 Central Thai Phonology

Here are the rudiments of Central Thai phonology. There are 21 consonant phonemes and 9 vowels plus length. Thai is a tonal language, with the meaning and sound of each syllable being influenced by the pitch at which it is pronounced. There are five tones: low, mid, high, falling and rising. For example, /pa:/ with mid, high, low, rising and falling tones, respectively, means 'throw', 'daddy', 'forest', 'sugar daddy', and 'aunt.' Thai is a non-inflecting language and much of the lexicon is monosyllabic. Polysyllabic words do exist, although the majority of these are foreign borrowings, particularly from classical Indian languages: Sanskrit and Pali (Smyth, 1987).

3.1.1. Thai Consonants

There are significant differences between the segmental phonologies of Thai and English. The following chart describes the manner and place of articulation of Thai consonant phonemes.

Chart 1: Thai Consonant Inventory (Khanitthananda, 1990)

	Bilabial	Labidental	Alveolar	Palatal	Velar	Glottal
Vl. stop	p		t	c	k	?
Vl. asp. stop	ph		th	ch	kh	
Vd. stop	b		d			
Vl. fricative		f	s			h
Nasal	m		n		ŋ	
Semi-vowel	w			y		
Trill			r			
Lateral			l			

In the Central Thai consonant system, aspiration and non-aspiration play a big role. The aspirated voiceless stops /p^h, t^h, k^h, c^h/ are distinct phonemes and aspiration is not allophonic as it is in English, as in /pay/ 'go' versus /p^hay/ 'danger', or /ti:/ 'hit' versus /t^hi:/ 'time', /ka:/ 'crow' versus /k^ha:/ 'stuck', /com/ 'drown' versus /c^hom/ 'compliment', etc.

3.1.1.1 Thai Stop Phonemes. There are nine voiceless stop phonemes in Thai, which include four aspirated phonemes / p^h, t^h, k^h, c^h/, four unaspirated phonemes /p, t, k, c/ and the glottal stop /ʔ/. All of these phonemes occur in initial positions. In the final position, only the phonemes /p, t, k/ are permitted, which are always unreleased, as in /kap/ 'with', /cet/ 'seven', /p^hak/ 'to rest.'

In addition to the above voiceless phonemes, Thai has two voiced stop phonemes /b, d/. These phonemes occur only in initial positions, as in /ba:p/ 'sinful', /dæ:ŋ/ 'red.'

3.1.1.2. Thai Fricative Phonemes. Thai has only three fricative phonemes /f, s, h/, all of which are voiceless. While all three phonemes can occur initially, they are not permitted finally.

3.1.1.3. Thai Nasal Phonemes. There are also three nasal phonemes in Thai /m, n, ŋ/, which occur in initial positions and final positions.

3.1.1.4. Thai Liquid Phonemes. There are two liquid phonemes in Thai, a trill /r/ and a lateral /l/. Both occur only in initial positions; they never occur finally.

3.1.1.5. Thai Semivowel Phonemes. The semivowel phonemes /w, y/ occur initially and finally.

3.1.2 Thai Final Consonants

All twenty-one consonant phonemes in Thai can occur initially. Only nine of them, however, can occur finally: /p, t, k, ʔ, m, n, ŋ, w, y/.

3.1.3 Consonant Clusters

3.1.3.1. Word-Initial Consonant Clusters. Consonant clusters in Thai are very few and occur only in word initial and medial positions. The first position is confined to the voiceless stops /p, t, k, ph, th, kh/; and the second position is limited to /r, l, w, y/. The possible clusters in Thai can be summarized as in the following chart:

Chart II: Thai Consonant Clusters

	P	P^h	T	T^h	K	K^h
L	Pl	P^hl	--	--	Kl	K^hl
R	Pr	P^hr	Tr	T^hr	Kr	K^hr
W	--	--	--	--	Kw	K^hw

Notice that phonemes /p/ and /ph/ cannot occur in combination with /w/, and /t/ and /t^h/ can occur with the phonemes /r/ and /y/. Therefore, clusters with the combinations /pw, p^hw, tl, t^hl, tw, t^hw/ are not allowed.

3.1.3.2. Word-Final Consonant Clusters. Possible syllable structure in Thai is C(C)V(V)C, where (V) represents the possibility of long vowels. According to this syllable structure formula, the acceptable codas are single phonemes only, which, as mentioned earlier, are /p, t, k, ʔ, m, n, ŋ, w, y/. Thai does not permit consonant clusters of any type in final positions.

3.1.3.3. Word-Medial Consonant Clusters. Intervocalic clusters are the combination of syllable-final single consonants and syllable-initial consonants. In Thai, only two- and three-consonant clusters occur in medial position. A two-consonant cluster consists of one of the permitted final consonants /p, t, k, ʔ, m, n, ŋ, w, y/ as its first member and any of the permitted initial consonants as its second member.

An intervocalic three-consonant cluster in Thai consists of one of the permitted final consonants as its first member and any of the twelve permitted initial clusters as the second and third members.

The intervocalic three-consonant clusters in which the first segments are /p, t, k/ occur most frequently, followed by three-consonant clusters in which the first segments are nasals. The occurrence of intervocalic consonant clusters in which the first segments are semi-vowels is very rare.

In an informal setting, however, the use of consonant clusters with /l/ and /r/ might very from person to person. The phoneme /r/ may be pronounced as /l/, or even be dropped sometimes.

3.1.4. Thai Vowels

Although Thai orthography has twenty-six vowel letters, they represent only eighteen vowel phonemes as follows:

Chart III: Central Thai Vowel Inventory (Beebe, 1977)

	Front	Central	Back
High	ɪ ɪ	ɨ ɨ:	u u:
Mid	e e:	ɔ ɔ:	o o:
Low	æ æ:	a a:	ɔ ɔ:

There are six diphthongs: /ɪa, ɪ:a, ɨa, ɨ:a, ua, u:a/. Diphthongs in Thai are considered as one syllable.

3.1.5. Thai Tones

As I mentioned earlier, tones are an important factor in words in Thai. There are five tones in Thai as indicated below.

Mid(-)	Low(ˋ)	Falling(ˆ)	High(ˊ)	Rising(ˇ)
/pa:/	/pà:/	/pâ:/	/pá:/	/pǎ:/
'throw'	'forest'	'aunt'	'dad'	'sugar daddy'

Assigning Thai tones to a syllable or word depends primarily on the vowel and final consonant contained in such words or syllables (Lerdtadsin, 1981: 87). Occurrence of the five tones is partly dependent on rhymes of syllables. Words ending in vowels, nasals or glides can contain any of the five tones. The number of possible tonal contrasts in closed syllables ending in stops /p, t, k, ʔ/ is only three (Gedney, 1989: 192). In these syllable tones, mid and rising tones never occur. Furthermore, if the vowel is short, tonal possibilities are low, (rare)falling and high. If a syllable

closed /p, t, k, ʔ/ has a long vowel or diphthong, tonal possibilities are low, falling and (rare) high.

This is summarized as:

a. V(V)(m, n, ŋ, w, y) → M, L, F, H, R

b. V (p, t, k, ʔ) → L, H, (F)

c. VV (p, t, k, ʔ) → L, F, (H)

3.2 Northeastern Thai Phonology

This section provides the fundamental features of Esaan Dialect in three main areas: consonants, vowels and tones. The data are taken mainly from Hoshino's and Marcus's (1997) Lao for Beginners: An Introduction to the Spoken and Written Language of Laos; and Kingkum's (2001)Thai Dialects.

3.2.1 Esaan Consonants

Esaan has altogether twenty consonant phonemes. The following chart describes the manner and place of articulation of Esaan consonant phonemes.

Chart IV: Esaan Consonant Inventory (Kingkum, 2001; Hoshino & Marcus, 1997)

	Bilabial	Labidental	Alveolar	Palatal	Velar	Glottal
Vl. stop	p		t	c	k	ʔ
Vl. asp. stop	ph		th		kh	
Vd. stop	b		d			
Vl. fricative		f	s			h
Nasal	m		n	ñ	ŋ	
Semi-vowel	w			y		
Lateral			l			

There is a slight difference between Central Thai and Esaan concerning consonant phonemes. /ch/ and /r/ which are present in Central Thai are absent in Esaan. In Esaan, the former is usually replaced with /s/ and the latter /l/. Esaan also has /ñ/, a locally distinctive sound, which is absent in Central Thai.

3.2.2 Esaan Consonant Clusters

Unlike Central Thai, Esaan does not allow any consonant clusters. All clusters present in Central Thai are reduced to single consonants in Esaan. The canonical form of its syllable structure, therefore, is CV(V)C, where (V) represents vowel length.

3.2.3 Esaan Vowels

Esaan has twenty-one vowel phonemes, consisting of nine short vowel phonemes, nine long vowel phonemes and three diphthongs, as charted in the following.

Chart V: Esaan Vowel Inventory (Kingkum, 2001; Hoshino & Marcus, 1977)

	Front	**Central**	**Back**
High	ɪ ɪː	ɨ ɨː	u uː
Mid	e eː	ə əː	o oː
Low	æ æː	a aː	ɔ ɔ̮ː

There are three diphthongs: /ɪːa, ɨːa, uːa/. The short counterparts of these diphthongs present in Central Thai are also absent in Esaan.

3.2.4 Esaan Tones

Another unique aspect of Esaan dialect lies in its tones. Esaan, unlike Central Thai, features six tones: mid (-) as in /dɪn/ 'ground', mid-high ( ) as in /muan/ 'fun', low (ˋ) as in /khàw/ 'knees', falling (ˆ) as in /ʔâːy/ 'elder brother', high (ˊ) as in /hák/ 'love' and rising (ˇ) as in /khǎː/ 'legs'. Mid-high is the one absent in Central Thai.

3.3 English Phonology

This section provides the fundamental features of standard American English in three main areas: consonants, vowels and stress. The data are taken mainly from Giegerich's (1992) English Phonology and Celce-Murcia's, M. Brinton's and M. Goodwin's (1996) Teaching Pronunciation: A Reference for Teachers of English to Speakers of Other Languages.

3.3.1 English Consonants

English has twenty-four consonant phonemes. The consonants of English can be classified according to the accompanying chart on the basis of the types of phones and the points of articulations:

Chart VI : English Consonant Inventory (Giegerich, 1992)

	Bilabial	Labiodental	Interdental	Alveolar	Alveo-palatal	Velar	Glottal
Vl. Stop	p			t		k	ʔ
Vd. Stop	b			d		g	
Vl. Fricative		f	θ	s	ʃ		h
Vd. Fricative		v	ð	z	ʒ		
Vl. Affricate						ʧ	
Vd. Affricate						ʤ	
Nasal	m			n		ŋ	
Lateral				l			
Retroflex				r			
Semi-vowel	w					y	

3.3.1.1. English Stop Phonemes. English has three pairs of voiceless-voiced stop phonemes /p, b/, /t, d/, /k, g/. the voiceless stops /p, t, k/ are aspirated in initial or medial position preceding stressed vowels, as in *paek, toy, king, apart, atone, bikini*, except after syllable-initial /s/, as in *spy, steep, ski*. In final position these voiceless

stops can be either released or unreleased, as in *tip, but, kick*; if released, they may be slightly aspirated.

In short, each of the English voiceless stops /p, t, k/ has three allophones, i.e., aspirated released [p^h, t^h, k^h], unaspirated released [p, t, k], and unaspirated unreleased [p, t, k], which are in complementary distribution.

The three voiced stops /b, d, g/ in English are fully voiced, and occur in initial and final positions, as in *bet, do, go, rub, kid, nag*.

The glottal stop is rare, but occurs in uh-oh, and as an allophone of /t/ in words like *hatrack, Batman*.

3.3.1.2. English Fricative Phonemes. The English fricatives are four voiceless phonemes /f, θ, s, ʃ/ with voiced counterparts /v, ð, z, ʒ/, and one voiceless fricative /h/ which has no voiced counterpart. The phonemes /f, v, θ, ð, s, z, ʃ/ occur in initial position, as in *fan, van, thin, thee, sue, zoo, shoe*; and in final position, as in *off, cave, bath, with, kiss, fuzz, hush*. The phoneme /h/ occurs only in initial position, as in *hillocal*. On the other hand, /ʒ/ does not occur in initially, although it occurs frequently in medial position, as in *measure, pleasure*; and occurs in a few words in final position, as in *garage, mirage*, which alternatively have final /dʒ/.

3.3.1.3. English Affricate Phonemes. The English affricates are voiceless /tʃ/ and voiced /dʒ/. Both phonemes occur in initial and final positions in English, as in *church* and *judge*.

3.3.1.4. English Nasal Phonemes. English has three nasal phonemes /m, n, ŋ/. While the phonemes /m, n/ occur in initial and final positions, the phoneme /ŋ/ never occurs in initial position but does occur in medial and final positions. The phoneme /ŋ/ also occurs before final /k/ as in *link, sink, thank*. In medial position /ŋ/ occurs

between vowels, as in *singing, singer*; and before the voiceless and voiced velar stops /k, g/ as in *linkage, anchor, linger, anger*.

3.3.1.5. English Liquid Phonemes. The two English liquids are a retroflex /r/ and a lateral /l/. These phonemes occur in both initial position as in rug, lot; and final position as in car, ball.

3.3.1.6. English Semivowel Phonemes. English has two semivowel phonemes /w, y/. These two occur in initial position, as in *will, yet*; and also as parts of diphthongs—phones consisting of two articulations and the two corresponding sounds—as in /ay/ 'bite', /oy/ 'boy', /aw/ 'now.'

3.3.2. Consonant Clusters in English

With the canonical form of its syllable structures CCCV(V)CCCC, English is a language that is prosperous with consonant clusters initially, medially, and finally, as in *spray, square, stray, bursts, tempts, texts* (Fries, 1946: 19).

3.3.2.1. English Prevocalic Consonant Clusters. There are two types of prevocalic consonant clusters in English: two-consonant clusters and three-consonant clusters. A typical two-consonant cluster in English has the liquids /r, l/ or the semivowels /w, y/ as its second members, and obstruents (stops and fricatives) as its first members. Other two-consonant clusters in English that occur prevocalically have the phoneme /s/ as their first member and the phonemes /p, t, k, f, l, m, n, w/ as their second members. In a few names of German origin there are prevocalic two-consonant clusters which have the phoneme /ʃ/ in the first position and the phonemes /p, t, k, m, n, r, l/ in the second position, including *Spiegel, Schmitt, Schneider, Schlitz*. /ð, tʃ, dʒ, ʒ, ŋ/ do not participate as members of prevocalic consonant clusters. English prevocalic three-consonant clusters have /s/ in the first position, voiceless stops /p, t, k/ in the second position, and /r, l, w/ in the third position. These possible

clusters are: /spl, spr, skl, skr, skw/, occurring in words like split, spray, strong, sclerosis, scream, square.

3.3.2.2. English Postvocalic Consonant Clusters. Within a syllable English has clusters as many as four consonants in postvocalic position.

There are "altogether 151 postvocalic consonant clusters which occur in present-day English. Of these, 65 occur at the end of single morpheme words, and 86 are formed by the adding of /z/ or /s/ or /d/ or /t/ as inflections" (Fries 1945: 18; the full list can be seen on pp. 18-20).

3.3.2.3. English Intervocalic Consonant Clusters. Intervocalic clusters in English are combinations of final and initial clusters. A two-consonant cluster consists of a final consonant of a preceding syllable and an initial consonant of a following syllable. A three-consonant cluster is either on final consonant and two initial consonants—(C-CC)—as in gangster; or two final consonants and one initial consonant—(CC-C)—as in trustworthy. In a four-consonant cluster, there can be one final consonant and three initial consonants—(C-CCC)—as in pipsqueak; or two final consonants and two initial consonants—(CC-CC)—as in grandstand; or three final consonants and one initial consonant—(CCC-C)—as in firsthand. Most of these combinations are not found in initial or final position.

3.3.3. English Vowels

The chart below shows the vowel system of English.

(See next page)

Chart VII: English Vowel Inventory (Giegerich, 1992: 75)

	Front	Central	Back
High	ɪ		u
	I		ʊ
Mid	e	ə	o
	ɛ		ɔ
Low	æ		a

Plus three diphthongs: /ay, aw, ɔy/

3.3.3.1. English Vowel Phonemes. The English vowels /ɪ, e, u, o/ are up-gliding vowels when stressed. Some examples of words in which these vowels occur are: *beat, bait, boot, boat*. The mid vowels /e, o/ glide to the higher position, then becoming diphthongized to [e^{ɪ}] and [o^{ʊ}] in their pronunciation, as in *bait* and *boat*.

The lower and more central counterparts of these vowels are non-gliding vowels /ɪ, ɛ, ʊ, ɔ/, occurring in words like *bit, bet, put, thought*. The low front vowel /æ/ and the low back vowel /a/ are also simple and non-gliding vowels, as in *bat* and *pot*. In general, front, central and low back vowels in English are unrounded and non-low back vowels are rounded.

The central vowel /ə/ in English has the allophones /ə/ and /ʌ/, the former occurs in unstressed syllables while the latter occurs in stressed syllables, as in sofa [sofə] and cup [kʌp].

A sequence of two syllabic vowels can occur in English, as in *poem* /póɛm/, *radio* /rédio/, *chaos* /kéas/. There are three diphthongs in English: /ay, aw, ɔy/, as in *buy, cow* and *boy*, in which the second vowel is not syllabic.

3.3.4 English Stress

Stress in English is the relative degree of loudness. Its occurrence is prominent with vowels. Stress is a property of syllables, not individual segments. A stressed syllable is more prominent than an unstressed one. This prominence is due to a number of factors, including the fact that stressed syllables usually contain tense vowels, which are produced with more extreme positions of the tongue (Jannedy, Poletto, Weldon, 1994). English contains primary /ˈ/, secondary /ˌ/, and tertiary /ˈ/ stress levels. All monosyllabic words in English when pronounced in isolation have stress: óne nów sée. Polysyllabic words and phrases can have more than one stress, but only one primary stress. For example, the word photography contains primary, secondary and tertiary stress levels: in this word, the second syllable is most prominent (primary stress), the final syllable is next most prominent (secondary stress), and the other syllables are unstressed.

Chapter 4

METHODOLOGY

It is the purpose of this study to account for and describe one distinctive phonological phenomenon in the Northeastern dialect—vowel nasalization—and to seek understanding and explanation of Northeastern speakers' pronunciation on Central Thai and English.

4.1. Method

Subjects were asked to pronounce words containing targeted sounds both in Thai and English from the list (See Appendix I & II) in order to investigate phonological distinctions concerning vowel nasalization and its effect on the subjects' pronunciation of Central Thai and English. For Esaan and Central Thai words, some were made up yet phonologically possible in the language.

4.2 Subjects

The subjects for this study were 20 third- and fourth-year English major students, both male and female, from the Faculty of Liberal Arts, Ubon Ratchathani University. They were all native speakers of Esaan and mainly from the southern part of Northeastern Thailand, i.e., Ubon Ratchathani, Sisaket, Surin, Burirum, Amnatcharoen, Yasothorn, etc.

4.3 Procedures

Data were collected three times from each subject—one for Esaan, one for Central Thai and one for English. Each was asked to pronounce Esaan, Central Thai and English words from the lists. The subjects' pronunciation was tape-recorded for subsequent transcription, with the help of native speakers of English for English words.

Chapter 5

RESULTS AND DISCUSSION

Following are the results and discussion of this study. They are provided in accordance with the research questions set forth at the outset.

5.1 Results

5.1.1 Phonological Distinctions of Esaan's Vowel Nasalization

In all varieties of English, vowel preceding nasal consonants tend to be nasalized and therefore entirely predictable (e.g. /gr̃in/ 'green' /tæ̃n/ 'tan') (Wolfram & Johnson, 1982). The speakers usually nasalize without being aware of doing so. The syllable structure of nasalized vowels in English is therefore CVN. This however is not applicable to Esaan dialect. In Esaan dialect, several vowel sounds are simply nasalized without being influenced by any nasal consonants:

Esaan	Gloss
/p̃ik/	'wings'
/pæ̃t/	'eight'
/t^{h}æ̃w/	'row'
/s̃i:a/	'unusable'
/hɔ̃y/	'shell'

Regarding vowel nasalization, the above examples show that nasal consonants do not play vital a role in Esaan dialect. Several vowel sounds are made nasalized by other influences, not nasal consonants--(CVC).

What are those 'other influences'? The following Tables are used here to illustrate cases where each vowel sound is nasalized in Esaan dialect. The target syllable structures for each Table are CV(V), CV(V)C, where the second (V) represents the length of the vowel. All consonants are used both as consonant onsets

and codas, in combination with all the vowel sounds (See chapter 3, section 3.2, for possible onsets and codas in Esaan dialect). Words featuring /m, n, ŋ/, be they in initial or final positions, are not investigated here, for their nasal qualities are clearly evident. The list of words investigated can be found in the Appendix.

Table I: Stop Onsets + Stop & Other Codas

Onsets

	p	t	c	k	p^h	t^h	k^h	b	d	ʔ
+i iː(+C)	~~	~~	~	~~	~~	~	~~	~~	~~	x
+e eː(+C)	~~	~~	~	~~	~~	~~	~~	~~	~~	x
+æ æː(+C)	~~	~~	~~	~~	~~	~~	~~	~~	~~	x
+ɨ ɨː(+C)	x	x	x	x	x	x	x	x	x	x
+ə əː(+C)	x	x	x	x	x	x	x	x	x	x
+a aː(+C)	x	x	x	x	x	x	x	x	x	x
+u uː(+C)	x	~	~	x	x	x	x	x	x	x
+o oː(+C)	x	x	x	~	~	~	~	~	~	x
+ɔ ɔː(+C)	~	x	~	x	~	~	x	x	x	x
+iːa(+C)	~~	~	~	~~	~~	~	~~	~	x	x
+ɨːa(+C)	x	x	x	x	x	x	x	x	x	x
+uːa(+C)	x	x	x	x	x	x	x	x	x	x

*Frequency of vowel nasalization
~~ = Most frequent, more than 70% of the subjects
~ = Least frequent, less than 30 % of the subjects
x = None
**The top row of each Table is consonant onsets

It can be observed that when stop consonants behave as consonant onsets, followed by other stops or other consonants as consonant codas, vowel nasalization will be apparent only with front vowels /i, iː, e, eː, æ, æː/, plus one diphthong /iːa/, which in part also features a front vowel /iː/. In this Table vowel nasalization never occurs with this group of vowels /ɨ, ɨː, ə, əː, a, aː, ɨːa, uːa/, occurs in moderation with /o, oː/, and rarely with /u, uː, ɔ, ɔː/. /æ/ and /æː/ are the two most nasalized vowels in

this group, whether they are with or without the codas; and if with codas, no matter what they are. /ʔ/ is the only consonant in this group that is not affected by vowel nasalization.

Table II: Fricative Onsets + Other Codas

Onsets

	f	s	h
+i iː(+C)	~	~	~
+e eː(+C)	~~	~	~
+æ æː(+C)	~~~	~~~	~~~
+ɪ ɪː(+C)	x	x	~
+ə əː(+C)	x	x	~
+a aː(+C)	x	x	x
+u uː(+C)	~	~	~~
+o oː(+C)	~	~	~~
+ɔ ɔː(+C)	~~	~~	~~
+iːa(+C)	~~	~~	~~
+ɪːa(+C)	x	x	~
+uːa(+C)	x	x	~

Like Table I, this Table yields a similar result. Front vowels /i, iː, e, eː, æ, æː/—/æ/ and /æː/ in particular—and diphthong /iːa/ are still the ones most affected by vowel nasalization. Back vowels /u, uː, o, oː, ɔ, ɔː/ are also affected in this group, though not as strongly as the front ones. Diphthongs /ɪːa/ and /uːa/ are not nasalized, except in words featuring /h/. The most interesting sound in this group is probably /h/. All the vowel sounds, except /a/ and /aː/, in words starting with /h/, no matter what the codas are, are nasalized. A basic assumption that can be made at this point is that /h/

is one influential consonantal phoneme causing vowel nasalization in Esaan dialect, as shown in the above Table.

Table III: Glide Onsets + Glide & Other Codas

Onsets

	w	y
+i i:(+C)	~	x
+e e:(+C)	x	~~~
+æ æ:(+C)	~~	~~~
+ɪ ɪ:(+C)	x	x
+ə ə:(+C)	x	x
+a a:(+C)	x	x
+u u:(+C)	x	~
+o o:(+C)	~	~
+ɔ ɔ:(+C)	~	~
+i:a(+C)	~~	~
+ɪ:a(+C)	x	x
+u:a(+C)	x	x

This Table renders a similar result as the previous ones, especially in Table II. Front vowels /i, i:, e, e:, æ, æ:/, diphthong /i:a/, and two back vowels /ɔ/ and /ɔ:/ are chiefly affected by vowel nasalization. Diphthongs /ɪ:a/ and /u:a/ are not affected by vowel nasalization. Notice that /y/ influences vowel nasalization more than /w/. What is obvious about this Table is that central vowels, as in other Tables, do not participate in this phenomenon. None of them are nasalized when preceded by /w/ and /y/.

Table IV: Lateral Onsets + Other Codas

Onset

	l
+i iː(+C)	x
+e eː(+C)	x
+æ æː(+C)	x
+ɨ ɨː(+C)	x
+ə əː(+C)	x
+a aː(+C)	x
+u uː(+C)	x
+o oː(+C)	x
+ɔ ɔː(+C)	x
+iːa(+C)	x
+ɨːa(+C)	x
+uːa(+C)	x

The only liquid present in Esaan dialect is lateral liquid /l/. The trill /r/ present in Central Thai is absent here. Surprisingly, no nasalized vowels can be observed in words featuring this sound.

5.1.2 The Effect of Vowel Nasalization on the Pronunciation of Central Thai and English

The results from Esaan dialect clearly show certain environments vowels can be nasalized. In this sub-section the researcher would like to find out if the same phenomena will be carried over to the subjects' pronunciation of Central Thai and English.

5.1.2.1 The Effect of Vowel Nasalization on the Pronunciation of Central Thai

The result of the subjects' pronunciation of Central Thai words featuring different consonantal and vowel phonemes is quite similar to that of Esaan dialect.

The Tables below are illustrating subjects' pronunciation of Central Thai. Although Central Thai has more consonantal and vowel phonemes and it also allows consonant clusters, in order to make it similar to the syllable structures investigated in Esaan dialect and due to time and other limitations of the study the target syllable structures investigated in each Table are therefore limited to just CV(V), CV(V)C, where (V) represents the length of the vowel. All consonants are used both as consonant onsets and codas, in combination with all the vowel sounds (See chapter 3, section 3.1, for possible onsets and codas and clusters in Central Thai). Words featuring /m, n, ŋ/, be they in initial or final positions, are not investigated here, for their nasal qualities are clearly evident. The list of words investigated can be found in the Appendix.

(See the table on the next page)

Table V: Stop Onsets + Stop & Other Codas

Onsets

	p	t	c	k	p^h	t^h	k^h	b	d	ʔ
+i i:(+C)	~	~	~	~	~	~	~	~	~	x
+e e:(+C)	~	~	~	~	~	~	~	~	~	x
+æ æ:(+C)	~	~	~	~	~	~	~	~	~	x
+ɨ ɨ:(+C)	x	x	x	x	x	x	x	x	x	x
+ə ə:(+C)	x	x	x	x	x	x	x	x	x	x
+a a:(+C)	x	x	x	x	x	x	x	x	x	x
+u u:(+C)	x	~	~	x	x	x	x	x	x	x
+o o:(+C)	x	x	x	~	~	~	~	x	x	x
+ɔ ɔ:(+C)	~	x	x	x	~	~	x	x	x	x
+ia(+C)	~	~	~	~	~	~	~	~	x	x
+i:a(+C)	~	~	~	~	~	~	~	~	x	x
+ɨa(+C)	x	x	x	x	x	x	x	x	x	x
+ɨ:a(+C)	x	x	x	x	x	x	x	x	x	x
+ua(+C)	x	x	x	x	x	x	x	x	x	x
+u:a(+C)	x	x	x	x	x	x	x	x	x	x

Like Esaan dialect, when stops act as consonant onsets, followed by other stops or other consonants as consonant codas, front vowels /i, i:, e, e:, æ, æ:/ and two diphthongs /ia/ and /i:a/, which also feature front vowels /i, i:/, are still the one participating most in vowel nasalization in Central Thai. The Table above also shows that vowel nasalization never occurs with this group of vowels /ɨ, ɨ:, ə, ɔ:, a, a:, ɨa, ɨ:a, ua, u:a/, and rarely with /u, u:, o, o:, ɔ, ɔ:/. /æ/ and /æ:/ in Central Thai, though not as strong as those of Esaan, are the two most nasalized vowels in this group, whether they are with or without codas; and if with codas, no matter what they are. /ʔ/ is still the only consonant in this group that is not affected by vowel nasalization.

Compared to that of Esaan, it is noticeable that the degree of intensity of vowel nasalization in Central Thai is slightly weaker.

Table VI: Fricative Onsets + Other Codas

Onsets

	f	s	h
+i i:(+C)	~	~	~
+e e:(+C)	~~	~~	~
+æ æ:(+C)	~~	~~	~~
+ɯ ɯ:(+C)	x	x	~
+ə ə:(+C)	x	x	~
+a a:(+C)	x	x	x
+u u:(+C)	~	~	~
+o o:(+C)	~	~	~
+ɔ ɔ:(+C)	~	~	~
+ia(+C)	~~	~~	~~
+i:a(+C)	~~	~~	~~
+ɯa(+C)	x	x	~
+ɯ:a(+C)	x	x	~
+ua(+C)	x	x	~
+u:a(+C)	x	x	~

The outcome of this Table is very much similar to that of Table I of Central Thai pronunciation. Front vowels /i, i:, e, e:, æ, æ:/—/æ/ and /æ:/ in particular—and diphthongs /ia, i:a/ are still the ones most affected by vowel nasalization. Back vowels /u, u:, o, o:, ɔ, ɔ:/ are also affected in this group, though not as strongly as the front ones. Diphthongs /ɯ:a, ɯa, ua, u:a/ are not nasalized, except in words featuring /h/. Exactly like Esaan, the most interesting sound in this group is /h/. All the vowel sounds, except /a/ and /a:/, in words starting with /h/, no matter what the codas are, are

nasalized. A basic assumption that can be made at this point is that /h/ is one influential consonantal phoneme causing vowel nasalization in Esaan dialect.

Once again, one can notice a lesser intensity of degree of vowel nasalization in Central Thai.

Table VII: Glide Onsets + Glide & Other Codas

	w	y
+i iː(+C)	~	x
+e eː(+C)	x	~~
+æ æː(+C)	~~	~~
+ɨ ɨː(+C)	x	x
+ə əː(+C)	x	x
+a aː(+C)	x	x
+u uː(+C)	x	x
+o oː(+C)	~	~
+ɔ ɔː(+C)	~	~
+ia(+C)	~	~
+iːa(+C)	~	~
+ɨa(+C)	x	x
+ɨːa(+C)	x	x
+ua(+C)	x	x
+uːa(+C)	x	x

The result furnished by this Table is once again similar to that of Esaan dialect. Front vowels /i, iː, e, eː, æ, æː/, diphthongs /ia, iːa/, and four back vowels /o, oː, ɔ, ɔː/ are chiefly affected by vowel nasalization. Diphthongs /ɨa, ɨːa, ua, uːa/ are not affected by vowel nasalization. Notice that /y/ influences vowel nasalization more than /w/. What is obvious about this Table is that central vowels, as in other Tables,

do not participate in this phenomenon. None of them are nasalized when preceded by /w/ and /y/.

Table VIII: Lateral & Trill Onsets + Other Codas

Onset

	l	r
+i iː(+C)	x	x
+e eː(+C)	x	x
+æ æː(+C)	x	x
+ɨ ɨː(+C)	x	x
+ɔ ɔː(+C)	x	x
+a aː(+C)	x	x
+u uː(+C)	x	x
+o oː(+C)	x	x
+ɔ ɔː(+C)	x	x
+ia(+C)	x	x
+iːa(+C)	x	x
+ɨa(+C)	x	x
+ɨːa(+C)	x	x
+ua(+C)	x	x
+uːa(+C)	x	x

Central Thai possesses both lateral and trill liquids /l, r/. No nasalized vowels however can be observed in words featuring these sounds, just like Esaan dialect.

5.1.2.2 The Effect of Vowel Nasalization on the Pronunciation of English

Below are the results of the subjects' pronunciation of English. As shown in the following Tables, vowel nasalization is also being carried over to English. Yet it is not as apparent as that of Esaan dialect and Central Thai.

It should be noted here—compared to Central Thai and Esaan dialect—English syllable structure is much more complicated, particularly in terms of consonant clusters. English is quite rich with clusters initially and finally, as can be observed from its syllable structure CCCVCCCC. To be able to draw any comparison, however, the syllables structures investigated should be the same with those of Esaan and Central Thai, which are CV and CVC.

Again words featuring /m, n, ŋ/, be they in initial or final positions, are not investigated here, for their nasal qualities are clearly evident. The list of words investigated can be found in the Appendix.

Table IX: Stop Onsets + Stop & Other Codas

Onsets

	p	b	t	d	k	g
+i ɪ (+C)	~	~	~	~	~	~
+e ɛ(+C)	~	~	~	~	~	~
+æ(+C)	~~	~	~~	~	~~	~
+ə(+C)	x	x	x	x	x	x
+u ʊ(+C)	x	x	x	x	x	x
+o(+C)	~	x	~	x	~	x
+ɔ(+C)	~	x	x	x	~	x
+a(+C)	x	x	x	x	x	x
+ay(+C)	x	x	x	x	x	x
+aw(+C)	x	x	x	x	x	x
+ɔy(+C)	x	x	x	x	x	x

Compared to Esaan dialect and Central Thai, the only explicit similarity concerning vowel nasalization that can be observed from the above Table—though weaker—is in the front vowels /i, ɪ, e, ɛ, æ/. They seem to be the only group of

vowels clearly affected by vowel nasalization. English /æ/, though not as strong as that of Esaan and Central Thai, is the most nasalized vowel in this group, no matter what the codas are. All the diphthongs, /ay, aw, ɔy/, do not partake in such, probably because they do not embody front vowels, which so far have been major influences of vowel nasalization. /o/ and /ɔ/ are the only back vowels—though slightly—affected by vowel nasalization. Central vowel /ə/ and the rest of back vowels /u, ʊ, a/ do not take part in this phenomenon.

Compared to that of Esaan and Central Thai, it is noticeable that the degree of intensity of vowel nasalization in English is weakest.

Table X: Fricative Onsets + Fricative and Other Codas

Onsets

	f	v	θ ð	s	z	ʃ	ʒ	h
+i ɪ (+C)	~	x	x	~	~	~	x	~
+e ɛ(+C)	x	x	x	~	~	~	x	~
+æ(+C)	~	~	~	~	~	~	x	~
+ɔ(+C)	x	x	x	x	x	x	x	~
+u ʊ(+C)	x	x	x	x	x	x	x	~
+o(+C)	x	x	x	x	x	x	x	~
+ɔ(+C)	x	x	x	x	x	x	x	~
+a(+C)	x	x	x	x	x	x	x	x
+ay(+C)	x	x	x	x	x	x	x	~
+aw(+C)	x	x	x	x	x	x	x	~
+ɔy(+C)	x	x	x	x	x	x	x	~

Owing to a limitation in sound combinations, a sound like /ʒ/ cannot be tested at all because it never occurs initially in English, and since only these two syllable

structures CV and CVC were investigated, some sounds like /θ, ð, v/ have very limited number of possible words.

The result, however, is quite predictable. Front vowels /i, ɪ, e, ɛ, æ/ are still the ones most affected by vowel nasalization. It is quite striking though that its effect here is weakest. Other sounds, central and back vowels and diphthongs excluding words featuring /h/, are not audibly affected by vowel nasalization.

Like Esaan and Central Thai, the most outstanding sound in this group is /h/. All the vowel sounds, except /a/, in words starting with /h/, no matter what the codas are, are nasalized.

Once again, one can notice a least intensity of degree of vowel nasalization in English.

Table XI: Africate Onsets + Africate + Other Codas

Onsets

	tʃ	dʒ
+i ɪ (+C)	~	~
+e ɛ(+C)	x	x
+æ(+C)	~	~
+ə(+C)	x	x
+u ʊ(+C)	x	x
+o(+C)	x	x
+ɔ(+C)	x	x
+a(+C)	x	x
+ay(+C)	x	x
+aw(+C)	x	x
+ɔy(+C)	x	x

Like the previous Table, some vowels in this Table cannot be investigated, either because sound combinations are very limited or simply non-existent.

The result available, however, shows that front vowels /i, ɪ, æ/ are most affected by vowel nasalization. Other vowels, including the front vowels /e, ɛ/ and diphthongs, are not audibly affected.

Table XII: Liquid and Glide Onsets + Liquid and Glide Codas

Onsets

	w	y	l	r
+i ɪ (+C)	~	x	x	x
+e ɛ(+C)	x	~	x	x
+æ(+C)	~	~	x	x
+ə(+C)	x	x	x	x
+u ʊ(+C)	x	x	x	x
+o(+C)	x	~	x	x
+ɔ(+C)	x	x	x	x
+a(+C)	x	x	x	x
+ay(+C)	x	x	x	x
+aw(+C)	x	x	x	x
+ɔy(+C)	x	x	x	x

This Table shows that front vowels /i, ɪ, e, ɛ, æ/ are mostly affected by vowel nasalization. Again, /y/ seems to influence vowel nasalization more than /w/. /o/ is slightly nasalized after /y/.

English /r/ is retroflex, not trill like Central Thai. No nasalized vowels however can be observed in words featuring these liquid sounds, just like the results provided by Esaan dialect and Central Thai.

5.2 Discussion

From all the Tables above, what are some of the assumptions that can be made concerning vowel nasalization in Esaan dialect and its effect on Central Thai and English, as provided by all the subjects' pronunciation?

5.2.1 Front vowels /i, i:, e, e:, æ, æ:/ and the diphthong /i:a/ are the ones most affected by vowel nasalization, no matter what the consonant onsets and codas are. It is noticeable that, for Esaan speakers, tongue advancement plays such a vital role concerning vowel nasalization. When the tongue is advanced or pushed forward, as in the case of all front vowels, the velum somehow is lowered, allowing the air to escape through the nasal passage, causing the vowels to be nasalized. This also happens to diphthongs featuring front vowels. The three English diphthongs, /ay, aw, ɔy/, are not affected, however, because they do not feature front vowels. When the tongue is retracted or pulled back, the velum, for these speakers, seems to be, though not completely, closed off, making vowel nasalization almost impossible.

Another possible explanation for this is that all vowels, like nasals, liquids and glides, are sonorants, which are produced with a relatively open passage for the airflow. That basically means when vowels are produced, the air could escape through the nasal cavity, similar to the production of nasal consonants, making nasalized vowels highly possible.

5.2.2 /æ/ and /æ:/ are the two most nasalized front vowels, principally with obstruent consonants, either as consonant onsets or codas. And when /p, t, k/, or voiceless stops, are used as consonant codas, as in words like /pæ̃k/ 'strange,' /dæ̃t/ 'sunshine,' /sæ̃p/ 'to feel pain,' the intensity of vowel nasalization is even more distinct.

The result suggests that, other than tongue advancement, tongue height is also a critical factor contributing to vowel nasalization. When the tongue is lowered, which means more room for air to escape through the nasal cavity, the vowel, /æ/ in particular, is nasalized more. As suggested by the universalist hypothesis, though not empirically supported, low vowels are inherently more nasal than mid and high vowels—(low >> mid >> high)—because of a purportedly universal inverse correlation between the degree of velic opening and vowel height (Hajek, 1997).

/p, t, k/ are the three major nasalized obstruent codas (see all possible codas in Thai in Chapter 3). The reason codas are paid more special attention to, as suggested in the literature review section, is because they, unlike consonant onsets, cause vowel nasalization.

5.2.3 Although the Tables above do not include the distinction between short and long vowels, the difference is clearly evident. Long vowels /V:C/ tend to be nasalized more than short vowels /VC/. This confirms the role of the vowel length parameter (VLP) in the perception and the prominence of vowel nasalization.

5.2.4 Central vowels and the diphthongs /ɨ:a/ and /u:a/ usually do not participate or take part in vowel nasalization, no matter what the consonant onsets or codas are. The universalist hypothesis of a low >> mid >> high vowel height parameter (VHP) should be an explanation justifying the lack of vowel nasalization in central vowels and diphthongs.

5.2.5 When words feature the /h/ sound, all the vowels—except low central vowels /a/ and /a:/—will be nasalized. One therefore can certainly state that /h/ causes vowel nasalization in Esaan dialect. The /h/ sound is quite distinctive in Esaan dialect. Although its place of articulation is at the glottis, its pronunciation by Esaan speakers is very close to velar sounds. It sounds as if it were made with the tongue near the

velum, like /k/, /g/, and, in particular, /ŋ/, which perhaps explains an obvious nasalized quality.

5.2.6 Another striking result is the weakening of nasalized quality in the subjects' pronunciation of Central Thai and English, respectively. Compared to their pronunciation of Esaan, the subjects' vowel nasalization in Central Thai is weaker, and weakest in English. One possible explanation for this weakening is that the subjects perhaps view Central Thai and English as two separate units that new approaches are needed in order to speak the languages. Also, all the subjects for this study are third- and fourth-year English majors, who have already taken a course in English phonetics. Their knowledge and understanding of the sound system of the English language, therefore, might have helped them make less mistakes concerning vowel nasalization.

5.3 Teaching Application

As seen from the subjects' pronunciation of Central Thai and English, the latter in particular, the knowledge of the sound system of a new language, or phonetics, plays such a crucial role in the occurrence of vowel nasalization. It is obvious that vowel nasalization is weakest in the subjects' pronunciation of English words. This indicates that their exposure to the sound system of a new language is really helpful. The interference of a native language is less when such a system is introduced. Therefore, introducing a learner to a sound system, or phonetics, is very vital when it comes to learning a new language. For it will lessen the interference of a native language.

Chapter 6

CONCLUSION

From the results provided in Chapter 5, it is evident that vowel nasalization in Esaan dialect, as seen from the subjects' pronunciation, supports the universalist hypothesis of a low >> mid >> high vowel-height parameter (VHP), that is, the development of some or all parts of the distinctive nasalization process occurs preferentially in the context of low vowels before spreading gradually to mid and then finally to high vowels (Hajek, 1997), and the so-called vowel length parameter (VLP), which states that over time distinctive nasalization will occur preferentially in the context of long vowels before spreading to short vowels (Hajek & Watson, 1998). Tongue advancement, as suggested by the results, is another factor contributing to vowel nasalization in Esaan dialect. It can be observed that front vowels are more nasalized than central or back ones. The results also show that vowel nasalization is weakened in the subjects' pronunciation of Central Thai and English. This, as explained in the previous Chapter, is due to the fact that the subjects might view Central Thai and English as two new systems needing different approaches. And their knowledge of the English sound system might have helped them see as well how the language works, phonetically.

However, there are some other areas of vowel nasalization in Esaan dialect not investigated—or less thoroughly investigated—in this study that might be of use for future research. They are:

1. Suprasegmental features: Tones and vowel length are two pivotal factors in Thai language. And since very little attention has been paid to these suprasegmental phenomena, a thorough study of them therefore merits full research if it is to be worked out systematically.

2. Syllable structures: This study investigates only simple syllable structures—CV, CVC. A study of polysyllabic words or words of various syllable structures might provide more evidence for distinctive vowel nasalization.
3. CVC vs. CVN: This study does not explore words featuring nasal consonants. A comparison between the two might shed new light on the intensity of distinctive vowel nasalization.

The lack of spectrograph or computer program(s) that can be used to analyzed the data, unfortunate, results in a more difficulty of the study. Many a time, sounds produced by the subjects are very hard to judge by human perception. And at times unintentional biases are inevitable. Had the computer analysis been made available, the result might have been more accurate.

APPENDICES

APPENDIX I: ESAAN AND CENTRAL THAI WORDS*

/p/	/t/	/c/	/k/
ปด/ปก/ปบ	ตก/ตบ/ลด	จบ/จด/จก	กบ/กด
ปี/ป่/ปิด/ปึก/ปึก	ติ/ตี/ตีบ/ติบ/ติ๊ก/ติ๊ด	จิ/จี/จิบ/จิด/จีบ/จิด/จิกจิ๊ก/จิ๊ด/	กิ/กี/กิจ/กิ๊บ/กิ๊ด/กีด
เปิด/เปิะ/เปด/เปก/เป	เตะ/เต็ก/เต	จิ๊บ	เก/เกิะ/เกด/ เกก/เกีก
แป/แปก/แปด/แปะ/แป๊ะ/แป๊ก	แต่/แตก/แตะ/แต็ก	เจ/เจ๊ะ/เจด/เจก/เจ็ก	แก/แก็ก/แกส/แก็บ/แกบ
ปึก/ปึ๊ก/ปือ/ปิด	ตึก/ตือ	แจ/แจก/แจส	กือ/กึก
เปิด/เปิก/เปอะ/เปอ/เปอย	เตอ/เตอะ	จี๊ก/จือ/จีด	เกอ/เกิด/เกย/เกอว
ป่า/ปาก/ปาด/ปาย/ปาว/ปะ/	ตา/ตาก/ตาล/ตะ/ตัก/ลัด/ไต	เจอะ/เจอ/เจิด	กา/กาก/กาส/กะ/กัก/กัด
ปัก/ปัด/ไป	ตู/ตุ๊ก/ตุ๊ด/ตู/ตูด	จา/จาก/จาด/จะ/จักจัด/ใจ	กู/กุด/กูก/กู/กูด
ปุ/ปุ๊/ปุก/ปุด/ปู/ปูก/ปูด/ปูย	ได๊ะ/ได/ไตก/ไตด	จู/จุก/ขุด/ขู/ขูก/ขูด	ไก/ไกก/ไกด
ไปะ/ไป/ไปก/ไปด/ไปย	ตอ/ต่อย/ตอก/ตอด/เต๊าะ	ไจ/ไจก/ไจทย์	กอ/กอย/กอก/กอด/เกาะ/เกีย/
ปอ/ปอย/ปอก/ปอด/เปาะ	เตี่ย/เตียก/เตียด	จอ/จอก/จอด/เจาะ/จ่อย	เกี่ยว/เกียด/เกียก
เปีย/เปียก/เปียด	เตือ/เตือก/เตือด	เจีย/เจียก/เจียด/เจียว	เกือ/เกือก/เกือบ
เปีย/เปียก/เปียด	ตัว/ตวก	เจือ/เจือก/เจือด	กัว/กวก/กวด
ปิว/ปวด/ปวก/ปวย		จัว/จวก	

* Some words here are made up, yet phonologically plausible in Thai.

/ph/	/th/	/kh/
พก/พจ/ผด	ถก/ถด/ทด/ทบ	ขบ/ขด/ถบ/ถด/คก
พี/ผี/ผิด/พิษ/พิก/ผิว	ทิฐิ/ที/ถึ/ทิศ	คี/ขี/คิด/ขิด/ขิก
เพ/เผ/เพก/เพด/เผก	เท/เถ/เถก/เทส/เทพ	เค/เข/เขก/เขด/เค็ก/ขีบ
แผ/แพ/แพะ/แผะ/แผก/แผดแพก/แพทย์/	แถ/แท/แทก/แถก/แถวแทบ/แถบ	แค/แข/แขก/แคท/แคว/แคบ
แผ่ว	ถึก/ทือ/ทึด/ทึบ	คึก/ขือ/คึด
ผึก/พือ/พิช	เธอ/เถิด/เถิก	เคอย/เขย/
เพิก/เพอด	ทา/ถา/ทาย/ถาก/ถาด/ถ่าย/พาย/ผาย/ภาพ	คา/ขา/คาย/คาว/คาก/คาด/ขาก/ขาด/ขาว/
พา/ผา/ผาก/ผาด/พาก/พาด	ทู/ทู/ถูก/ถู/ถูป	ขวย/คาบ/ขาบ
ผู/พู/ผูก/พูด/พู	ไท/ไถ/ไทย/	ถู/ขุด/ขูด/ถูก/ถูด/ขุก/ขุด
ไผ/ไพ/ไพก/ไพด/ไผด/ไพย/ไผย	ทอ/ถอก/ถอด/ทอด/ทอย/ถอย	ไค/ไข/ไคก/ไคด/ไขก
พอ/ผอ/เพาะ/เผาะ/พอก/พอด	เทีย/เถียก	คอ/ขอ/ขอย/ขอบ
เพีย/เพียบ/เพียก/เผียด	ถั่ว/ทั่ว	เคียด/เขียด
ผัว/พัว/พวก		ทั่ว/ขวด

/b/	/d/
บด/บก/	ดก/ดบ
บิ/บี/บิด/บีบ	ดี/ดีด/ดิด/ดิก/ดิบ
เบะ/เบ/เบส	เด/เดก/เดช/เดพ/เดี๊ะ
แบะ/แบ/แบก/แบบ/แบด	แดก/แดด
บึก/บือ/บืบ	ดึก/ดือ/ดื้บ
เบอร์/เบ๊อะ/เบ็ก/เบิด	เด๊อ/เด๋อ
บาร์/บาก/บาด/บาป/บาย/บ่าว	ดะ/ดา/ดาก/ดาม/ดาบ/ดาย/ดาว
บุ/บุบ/บุก/บุคร/บุย/บู/บูด	ดุ/ดู/ดุก/ดูด/ดุย/ดุบ
โบ/โบก/โบสถ์/บก/บด/บบ	โด/โดก/โดด/ดก/ดบ
บ่อ/เบาะ/บอด/บอก/บอบ/บ๊อย/บ่อย	ดอก/ดอล/เดาะ/ดอย
เบียร์/เบียก/เบียด/เบียบ	เดีย/เดียก/เดียด/เดี๊ยะ
เบื่อ/เบือก/เบือด	เดือ/เดือด/เดือก
บ้ว/บวช/บวย/บวบ/บวก	ดวล/ดวก/ดวบ

/f/	/s/	/h/
ฟก/ฟด/ฟบ	สด/สก/สบ	หก/หด/อบ/อก/อด
ฟิด/ฝี	สิก/สิด/สีบ/สิว/สี/ซิด	หืบ/อึก/อิด
เฟะ	เสุ/เสบ/เสก/เสม	เห/เอก/เอด/เหื่บ/เหื่ด
แฟร์/แฝด/แฟบ	แซะ/แส/แสก/แสด/แสบ/แซบ/แซว	แอะ/แห/แหก/แหด/แหบ/แอบ/แอด
ฝึก/ฝืด	สึก/สืบ/สื่อ	อือ/อึก/อืด/อืบ/หื่อ
เฟอะ/เฝ่อ	เซอะ/เซอ	เออก/เอิด
ฝ่า/ฝ่าก/ฝ่าด/ฝ่า	ซา/ซะ/สระ/สาป/สาก/สาด	อา/หา/หาม/หาก/หาด/อาบ/อาด
ฟูก/ฟู่	สุ/สู/สูบ/สูด/ซูบ	อุ/อู/อูฐ/หุบ/หูด/หูก
โฟ/ไฝ/ฟก	โส/โสก/โสด/สก/สด/ซพ	อบ/อก/อด/โอ/โห/โหด/หก/หด
ฝอย/ฟอร์ด	เสาะ/สอย/สอบ/สอก/สอด/เซาะ	เอาะ/เหาะ/หอ/หอย/หอบ/หอก/ออก/
ฟือ/เฟือย	เสีย/เสียบ/เสียด	ออล/
	เสื่อ/เสือก/เสื่อ	เสียด/เหียด
	สวย/ซวย/สวด	เอือ/เหือด/
		อ้ว/อวบ/อวด/หวด

/w/	/y/	/l, r/
วก/วด/วบ	ยก/ยศ/ยพ	ลบ/ลด/รบ/รถ/รก
วิ/วี/วิด/วีก/วี้ด/วิว	ยี/หยี/ยิว/หยิว	ลี/ลีบ/รีด/รีบ/ริว
เวก/เวช	เย/เยก/เย็บ	เล/เลข/เล็ด/เล็ก/เล็บ/เร็ด/เร็ว/เร
แวะ/แว/แวก/แวด/แว็บ	แยะ/แย/แยม/แยก/แยด	และ/แล/แลก/แลบ/แร็บ/แรด
วีด/หวีย/หวิด	ยืด/ยืด/ยืก	ลึก/ลือ/รือ
เหวอ/เหวอะ	เยอะ	เลอะ/เลอ/เรอ
วว/วะ/วาก/วาด/วาบ/วาย/วาว	ยา/ยะ/ยาว/ยาก/ยาด/ยาย/ยับ/ยัก/ยั้ก/หยัก/หยัด	ละ/ลา/ลาบ/ลาก/ลาว/ลาด/ฉัก/ลัด/ลับ/รัด/ราบ/ราว/รา
หวูด/หวุด	ยู/ยูก/ยุบ/หยูก	ลู/ลูก/ลูบ/ลุย/รูป/รูด
โวย	โย/โยก/โยด	โล/โลก/โลด/โรย/โรงน์
วอ/หวอ/วอก/วอด	ยอ/ยอด/หยอก/หยอก	เลาะ/ลอก/ลอด/หลอด/หลอก/รอด/รอก/รอย/รอ
ว้ว	เยือด/เยือก/หยือบ/หยือด	เลีย/เลียด/เลียบ/เรียบ/เรียด/เรียว/รี
	เหยือก/เยือก	เลือก/เลือด/เรื่อย
	หยวก	ลวก/ลวด/รวด/รวบ/รวย

APPENDIX II: ENGLISH WORDS

1. Pip
2. Pit
3. Pig
4. Pick
5. Piss
6. Peeve
7. Peach
8. Peas
9. Pep
10. Pet
11. Peg
12. Page
13. Pave
14. Paste
15. Pale
16. Pack
17. Patch
18. Path
19. Pass
20. Pair
21. Put
22. Puck
23. Pull
24. Paw
25. Poll
26. Pose
27. Pause
28. Pot
29. Pop
30. Poke
31. Point
32. Push
33. Pipe
34. Bit
35. Bid
36. Big
37. Bees
38. Beef
39. Beach
40. Beer
41. Bait
42. Base
43. Beige
44. Bathe
45. Babe
46. Bet
47. Beck
48. Bed
49. Bail
50. Back
51. Bad
52. Batch
53. Bath
54. Bash
55. Bare
56. Bay
57. Bush
58. Bull
59. Boot
60. Booth
61. Boob
62. Book
63. Bop
64. Boy
65. Bought
66. Tip
67. Tick
68. Tease
69. Teas
70. Tiff
71. Tape
72. Ted
73. Test
74. Tail
75. Tap
76. Tack
77. Tat
78. Tear
79. Tub
80. Tush
81. Toad
82. Toss
83. Top
84. Torch
85. Toy
86. Tow
87. Dip
88. Did
89. Dig
90. Div
91. Dish
92. Dis
93. Ditch
94. Dill
95. Dead
96. Debt
97. Deck
98. Dave
99. Depth
100. Des
101. Dab
102. Dad
103. Duff
104. Dash
105. Dutch
106. Dope
107. Dote
108. Dock
109. Dole
110. Door
111. Dot
112. Kick
113. Keep
114. Kid
115. Kit
116. Kiss
117. Kitsch
118. Kill
119. Key
120. Kept
121. Cake
122. Kate
123. Cave
124. Case
125. Ketch
126. Kay
127. Kale
128. Cat
129. Cap
130. Catch
131. Care
132. Cup
133. Cut
134. Cope
135. Caught
136. Coy
137. Cot
138. Cod
139. Coil
140. Coach
141. Coast
142. Coup
143. Couch
144. Gig
145. Geek
146. Geese
147. Give
148. Gill
149. Get
150. Gave
151. Gaze
152. Gail
153. Gay
154. Gut
155. Goal
156. Goat
157. Gob
158. Got
159. Gosh
160. Gawk
161. Fib
162. Fit
163. Fig
164. Fees
165. Fish
166. Fill
167. Fed
168. Feb
169. Fetch
170. Fail
171. Fay
172. Fudge
173. Foe
174. Fop
175. Foil
176. Foul
177. Fog
178. Foot
179. Fuse
180. Vick
181. Vive
182. View
183. Vis
184. Vow
185. Void
186. Vote
187. Veil
188. That
189. This
190. Thick
191. They
192. Though
193. Thatch
194. Thud
195. Thaw
196. Thought
197. There
198. Thee
199. Thief
200. Those
201. Sit
202. Sip
203. Sick
204. Sid
205. Sees
206. Seethe
207. Sill
208. Sep
209. Set
210. Save
211. Safe
212. Seth
213. Sale
214. Say
215. Soap
216. Sock
217. Sod
218. Soup
219. Soothe
220. Sue
221. Sieve
222. Soy
223. Sight
224. Zap
225. Zeal
226. Zig
227. Zag
228. Zip
229. Zit
230. Zoo
231. Ship
232. Shit
233. Shill
234. Shell
235. Shop
236. Shoot
237. Shot
238. Shout
239. Shock
240. Shave
241. Shake
242. Shade
243. Shack
244. Shag
245. Shah
246. Share
247. Shape
248. Shed
249. Sheep
250. Sheer
251. Sheet
252. Shire
253. Shoo
254. Shore
255. Shove
256. Show
257. Hack
258. Had
259. Hap
260. Hat
261. Hag
262. Hare
263. Hail
264. Hay
265. Haw
266. Hall
267. Has
268. Hash
269. Hatch
270. Hate
271. Have
272. Head
273. Heap
274. Heat
275. Heal
276. Hear
277. Heath
278. Heave
279. Heck
280. Hedge
281. Height
282. Hell
283. Hush
284. Hope
285. Hose
286. Hide
287. Hype
288. Hiss

289. Hitch
290. Hive
291. Hop
292. Hog
293. Hock
294. Hole
295. Hoof
296. Hooch
297. Hoop
298. Hood
299. Hook
300. Hoot
301. House
302. Hawk
303. Lab
304. Lace
305. Lack
306. Lad
307. Lag
308. Lair
309. Lap
310. Lash
311. Lass
312. Latch
313. Late
314. Lathe
315. Laud
316. Laugh
317. Law
318. Lay
319. Lead
320. Leap
321. Leak
322. Leash
323. Leaf
324. Leave
325. Leg
326. Less
327. Let
328. Lip
329. Lice
330. Lick
331. Lit
332. Live
333. Life
334. Light
335. Like
336. Lob
337. Lope
338. Lock
339. Lodge
340. Log
341. Look
342. Loop
343. Loot
344. Lose
345. Loose
346. Lore
347. Loss
348. Louche
349. Loud
350. Love
351. Loaf
352. Louse
353. Race
354. Rack
355. Raid
356. Rag
357. Rage
358. Rail
359. Raise
360. Rake
361. Rap
362. Rape
363. Rare
364. Rash
365. Rat
366. Rave
367. Raw
368. Raze
369. Read
370. Real
371. Reef
372. Reap
373. Reek
374. Ref
375. Rip
376. Rid
377. Rick
378. Ridge
379. Rise
380. Rife
381. Rope
382. Rock
383. Rot
384. Ross
385. Roar
386. Rogue
387. Roll
388. Roof
389. Rose
390. Rove
391. Row
392. Rub
393. Ruck
394. Rude
395. Root
396. Wad
397. Wag
398. Wage
399. Waif
400. Wail
401. Wait
402. Wake
403. Waive
404. Wall
405. War
406. Wash
407. Watch
408. Wave
409. Way
410. Weak
411. Weep
412. Weed
413. Weave
414. Wed
415. Whack
416. Which
417. Wish
418. Wheeze
419. While
420. Whip
421. Wipe
422. With
423. Wife
424. Wig
425. Will
426. Wise
427. Wood
428. Woof
429. Wool
430. Yak
431. Yacht
432. Yap
433. Yaw
434. Year
435. Yes
436. Yell
437. Yep
438. Yet
439. Yob
440. Yoke
441. Yore
442. You
443. Your
444. Youth
445. Yule
446. Chafe
447. Chaff
448. Chair
449. Chaise
450. Chap
451. Char
452. Chat
453. Chase
454. Cheap
455. Cheat
456. Cheek
457. Cheer
458. Check
459. Chess
460. Chew
461. Chill
462. Chide
463. Chief
464. Chip
465. Chit
466. Choice
467. Chop
468. Chore
469. Chow
470. Chuck
471. Chute
472. Jab
473. Jack
474. Jade
475. Jail
476. Jape
477. Jar
478. Jaw
479. Jay
480. Jazz
481. Jeep
482. Jeer
483. Jet
484. Jew
485. Jibe
486. Jib
487. Jig
488. Jive
489. Job
490. Jock
491. Jog
492. Joke
493. Joule
494. Joy
495. Jot
496. Judge
497. Juice
498. Jug
499. Jut
500. Jute

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