Chapter I

Rationale and Statement of the Problem

The pronunciation of complex codas resulting from **–ed** and **–s** inflections in English is vital to oral communication for several reasons. Their production may be crucial to intelligibility. Their written forms are acknowledged to be important and have always been taught in beginning and intermediate classes. They occur almost once in ten English words in common use. But current and traditional teaching methods have not emphasized English learners' oral production of complex codas, as they have focused on other goals, such as vocabulary acquisition in reading or pragmatic facility with functions. There are some drawbacks with these disparate approaches because they overlook the importance of pronunciation for beginning and intermediate learners.

Read (2000: 40) summarized some aspects of vocabulary acquisition.

1. In order to retrieve L2 words from memory, rather than merely recognize them, learners need to say the words to themselves as they learn them (Ellis and Beaton, 1993).
2. Words which are hard to pronounce are learned more slowly than ones which are not (Ellis and Beaton, 1993).

3. Lower level learners store vocabulary according to the sound of the words, while more advanced learners store them according to their meaning (Henning, 1973).

Hence, in order for learners to acquire even the written production of new lexis, they should have the opportunity to practice it orally; they may need assistance in pronouncing difficult words; and beginning learners rely on the sound of new words when acquiring them. None of the teaching approaches which are current in Thai TESOL classes stresses the acquisition or allows much opportunity for the practice of, the many different types of English complex codas. While this chapter will investigate the reasons for this neglect, the study as a whole will attempt to comparatively evaluate the pronunciation of the most common form of complex codas—those arising through **–ed** and **–s** grammatical inflections.

1.1 Thai Learners' Problems with the Grammatical Inflections

In the morphology of English past tense and present participle regular verbs may assume **-ed** forms with complex codas ending in /d/ or /t/; and plural nouns, third person singular verbs, or possessives may assume **–s** forms with complex codas ending in /s/ or /z/. The **–ed** and **–s** affixes are commonly called inflectional affixes.

David Smyth, writing in Swan & Smith (1987) notes that,

> Verb inflections present a formidable obstacle to Thai learners, and many prefer to use the unmarked base form of the English verb rather than attempt a more difficult form which they feel will more than likely be incorrect…a Thai who appears to be using the base form of a verb in speech may actually be having problems with pronunciation rather than grammar. He or she may be trying to say, for instance, *cooked* or *arranged*, but failing to pronounce the –ed at the end of the cluster. This is obviously a major area in which Thai speakers are at a disadvantage compared with European learners of English.

When discussing English plurals, he similarly notes that,

> Thai learners make frequent errors in using the singular form of a noun (the unmarked form) when plurals should be used…it must be borne in mind that the Thai sound system has no final –s, nor final consonant clusters; some learners may have problems in oral production yet reproduce correct written forms.

Those who have difficulty with oral production may have difficulty remembering to use plural forms in writing, as the studies already cited have shown that such learners rely on the sound of words to remember them.

1.1.1 Thai Pedagogical Approaches to English Pronunciation

A drawback of English, when compared to many other languages, is that orthography is a poor guide to pronunciation[1]. This may partly explain why Thai learners have been reluctant to use the English alphabet when notating English sounds, as have their Thai teachers. The thinking seems to be: better a weaker, less accurate compromise that can easily be implemented by the students than a more robust system which would involve using a new and very irregular, non-native representation (alphabet). As Thai is a phonetic script it is possible to approximate the sounds of English in transliterations, and bilingual English-Thai dictionaries almost always provide the phonetic spelling in Thai script. Many English loanwords have recently entered the Thai lexicon this way. However, the phonetic representations of the Thai script itself may be a limiting factor in how many or which English words become assimilated into the Thai language as loanwords, and how well they are assimilated. Kenstowicz M. & Suchato A. (2005), in a study of 800 Thai loanwords from English, found that while English stops in codas are neutralized (devoiced), postvocalic /r/ is silent, /l/ maps to [n] in older loanwords and [w] in newer loanwords. As an example of the latter, there are the loanwords บิล /bin/ (bill) /bɪl/,

and เจล [tɕew] (gel) /dʒel/. Both transliterations are orthographically literal, but phonetically distant from the source because postvocalic /l/ is always realized as [n] in Thai. The first loanword dates from several decades ago and is pronounced as written [bin]. The second loanword is not pronounced as written, but as [tɕew], which is acoustically more similar to the source, and would also be more intelligible to the international or native English speaker (NS). There is considerable variability in the way popular transliterations of loanwords and their pronunciation differ from those found in dictionaries.

Thai contains some beginning consonant clusters (complex onsets) and ending single consonants (simple codas), but no complex codas. English not only contains complex codas, it allows for 14 postvocalic phonemes which Thai does not allow (Appendix A). This, combined with the fact that Thai pedagogy and most bilingual dictionaries continue to use Thai orthography to approximate English sounds, implies that this area of pronunciation is not given the serious treatment it deserves. Such dictionaries may legitimate the supposed equivalence of the sounds for some students, but this reliance cannot be a substitute for the acquisition of those English sounds which are not native to Thai. There are many ill-conceived ad hoc phonetic representations of them which differ substantially from dictionary to dictionary[2]. As the classroom pronunciation of complex codas usually falls short of that prescribed by the dictionaries, popular loanword transliterations commonly introduce the silent marker, as for example, in the loanword "lift", which is usually transliterated as either ลิฟต์ or ลิฟท์. Here a complex coda is avoided by the indicated deletion of final /t/. As many Thai words contain the silent marker (์) popular loanword transliterations may

be an act of true loanword adoption. Certainly they are more attainable in speech than dictionary transliterations for most learners. The alternative of teaching, or at least introducing, English phonetic symbols to learners would seem to be an attractive alternative, as it would simultaneously include all phonemes while remaining—unlike the irregular English spelling—completely uniform and consistent.

To some extent loanwords containing commonly used, but alien, English phonemes are slowly becoming assimilated, particularly postvocalic /s/. Kenstowicz & Suchato (2005) report:

> The constraint against coda fricatives is being relaxed to allow for /s/ in the speech of Thais familiar with English. A similar finding is reported in Panlay's (1997) study. Two of her six subjects also allowed /f/ in the adaptation of *lift* as [lif] rather than [lip].

Prevailing traditional TESOL classes in Thailand which loosely follow a Grammar-Translation teaching method may yield inadequate results in oral skills. Of all methods Celce-Murcia, et al., (1996) surveyed, it paid the least attention to pronunciation issues. The lack of concurrent oral skills development in such classes would imply that the written skills are not internalized. This seems to be true of some aspects of English grammar, such as the **–ed** and **–s** inflections and the use of the articles, "a", "an", and "the". Students now start learning English from the first grade (P1), study mainly the written grammatical forms, and yet show very little confidence as graduates in their productive use. The grammar is not internalized because there is little opportunity or reason for it to be used productively and accurately, except on exams. Such learners seldom get the opportunity to speak the forms individually in class for teacher feedback. The vast majority of Thai pupils sit in classes of 40 or more students with a Thai teacher who teaches objective written lexis and grammar that can be easily graded. This is the typical background of most local university

students; their exposure to oral communication has been cursory at best, and their opportunity to practice the oral skills extremely limited.

Most standard grammar books may have at most a note or a short exercise on the phonological rules for pronouncing **–ed** and **–s** inflections. Some may even refer to the progressive voicing assimilation of the /s/, /z/, /t/ and /d/ allomorphs, without elsewhere explaining to the teacher what voicing is, let alone helping the teacher explain it to learners. Everyone is more or less left in the dark, and the exercise or note is often skipped. A survey of monolingual English and bilingual English-Thai dictionaries, including talking dictionaries, showed that few list the inflectional affixes orthographically after stem words, and none give the phonemic spelling of the **–ed** and **–s** inflections except in rare instances.

1.1.2 Pronunciation in Communicative Language Teaching

Functional approaches to language teaching, concerned as they are with lexical meaning, have not stressed the pronunciation of the **–ed** and **–s** inflections. Underhill (1994) for example, devotes several chapters to stress and intonation, but does not contain a single section on the pronunciation of complex codas. Thornbury (1999) displays both deductive and inductive approaches to learning grammatical rules but does not specifically address the **–ed** and **-s** inflections, even in their written form. According to Moy (1986), "The communicative class considers pronunciation to be a small part of linguistic competence, which itself is a small part of communicative competence". Celce-Murcia, et al., (1996) perceives that, "Proponents of the Communicative Approach have not dealt adequately with the role of pronunciation in language teaching, nor have they developed an agreed-upon set of strategies for teaching pronunciation communicatively". Among the newer methods and approaches

they surveyed, only the *Silent Way* emphasizes accuracy in pronunciation; the other methods and approaches (*Community Language Learning*, *Total Physical Response*, *Suggestopedia*, and the *Communicative Approach*) assume that adequate pronunciation will naturally follow with sufficient practice. This begs the question of whether the teacher's own pronunciation is an adequate model. In fact, most practitioners of these newer communicative approaches tend to be either native speakers (NS) or bilingual non native speakers (NNS). But the learner-centred approach to the communicative classroom often diminishes the teacher's role in modelling language. It is not clear that the average communicative language teacher would disseminate linguistic facts per se, or even need be conversant with most formal rules of the language. The relative informality of communicatively oriented classes may generate more student speech, yet accuracy cannot be a priority in such classes, because teacher corrections of student errors are rare.

1.1.3 Practical Impediments to Teaching Pronunciation

While grammar, lexis, and syntax are often taught and corrected, even in communicative classes which practice oral skills, the more basic pronunciation is usually not taught or corrected in the same way—partly for lack of an objective and universal standard, partly because of the additional class time an assessment of students' pronunciation would require, and partly because of the lack of teacher training in, and the value teachers place upon, the sounds of the language they teach. In many classrooms these conditions combine to create a nearly insurmountable obstacle to acquiring correct pronunciation generally.

With nearly a billion people in the world using English either as a mother tongue or fluently as a second or official language, nobody 'owns' English. Even

within a single country, who is to say which particular accent is 'correct'? Even at the level of a single utterance there are many variables to consider, such as phonetic, stress, and intonation. Limiting the analysis to the single *word* may involve many factors, not the least of which is the ability and impartiality of the listener to decide whether or not pronunciation falls within the range of the acceptable, and to what degree it might deviate from it. We see here in microcosm the problems in formally assessing this aspect of communicative ability. The teacher or *listener* is one side of the communication equation. In the absence of an approved universal standard, teachers ought not to alternatively use themselves (what they are able to comprehend) as the benchmark of acceptable pronunciation. It is only natural for them to do so, however, and many tend to err on the side of leniency, rather than strictness. There may also be an inherent divergence between the aims of teaching oral or communicative skills and the curricular demands of the educational bureaucracy, which stress the written, grammatical structure. Curricula in primary and secondary schools already value literacy above the oral skills, which are also harder to test. Pronunciation, as compared to the listening skill tested in say, dictation, is exceedingly time consuming to formally evaluate, for each student needs to be listened to in isolation. Even informal feedback within the course of routine lessons may be time consuming, and the teacher may opt for other, more verifiable priorities, such as lexis and its spelling. Most curricula involve significant 'teaching to the test', and many pedagogues-- *pace* Read-- do not perceive pronunciation as influencing or 'transferring' much to testable items.

The lack of a universal standard of acceptable English pronunciation, coupled with the lack of pedagogical guidelines for incorporating pronunciation teaching into existing classes that teach oral skills, has caused many teachers to sidestep the issue of

pronunciation at the word level. Some, aiming for NS-like standards of performance in functions, collocations, and idioms, realize nonetheless that non-native pronunciation is the rule rather than the exception among their learners, and assume that it is generally not perfectible except with children (the Critical Period Hypothesis[3]). Some may assume that their learners' pronunciation is adaptable and will naturally improve with more communication. Both types of teachers tend to focus on suprasegmental aspects of English phonology to the extent they teach pronunciation at all (Celce-Murcia, et al., 1996: 10). Hence, the **–ed** and **–s** inflections are not a primary focus of contemporary communicative TESOL classrooms.

1.1.4 Priorities in Pronunciation Teaching

Pronunciation might be taught and evaluated more intensively as part of existing TESOL programs, provided that teachers were equipped to model and evaluate such pronunciation, and if it could be perceived as relevant by the students by its incorporation into existing student assessments. To some degree pronunciation in reading aloud is tested at the local school level, if not at the level of national examinations, but the testing priorities have been unsystematic and ill-defined in that unsuitably difficult complex codas may be tested in beginning-intermediate classes[4] (Appendix I), and the difficult and easy are frequently mixed. Prevailing curricula, whether grammatical, lexical, or functional in nature tend to be graded in difficulty, with simpler and more common elements preceding more complex and rarely used elements. A similar approach might be employed when focusing on the pronunciation of complex codas and the grammatical inflections they contain. There has been much theoretical speculation on what might constitute and cause the former for various L1 groups, while databases of English corpora are now available to illustrate the latter.

Priorities might be determined by comparing the accuracy outcomes of individual complex codas or their phonological categories with their frequencies in English usage. Complex codas which are frequently used and which score poorly in accuracy, and hence, could benefit from more than average improvement, should be taught first to effect the greatest overall improvement. Thus, a hierarchy of instructional benefit might be established to show teachers which complex codas or groups of complex codas should be taught first or taught remedially to Thai learners.

Few local English learners have the opportunity to practice speech in naturalistic communication or in speech patterns as formerly included in Audio-Lingual or Situational (Present-Practice-Produce) drill. While pronunciation is not currently stressed in most Thai classrooms, local TESOL practitioners cannot simply return to the pre-communicative days of the Audio-Lingual drill. Teaching pronunciation would not obviate using newer methods and approaches, including Communicative Language Teaching (CLT) or Task Based Learning; it is supplementary, and not an alternative. Celce-Murcia et al., (1996) includes many pronunciation exercises within CLT frameworks. But teachers should demand a minimum standard of pronunciation in English classes that are conversation based, much as they would of grammar.

1.2 Illustration of a Grammatical Problem

The **–ed** and **-s** inflections are taught in Thai English classes from the early grades and their omission or improper use may cause communication breakdowns--may change the grammatical intent, and thus the communicative content: singulars may be indicated when plurals are meant, present tense indicated when talking about the past. Less often there is overcompensation, and the learner uses the past and plural

when intending the present or singular. Usually the NS or bilingual NNS interlocutor notes the mistake and moves on. Occasionally the mistake is not timely determined by the interlocutor and true miscommunication may occur, especially when the mistake is grammatically plausible and contextual cues are absent. Since Thais also have difficulty knowing when to use the articles, "a", "an", and "the", which like the plural inflection do not exist in Thai, ambiguity may result from the utterance, "They have car". Is it, "They have cars", "They have a car", or even, "They have the car"? All of these three alternative possibilities are subsumed in the Thai utterance, เขามีรถ [khăw mii rót] {they (to have) car}. When the use of the past tense is not well understood, the following simple answer may be ambiguous. NS: "Where did you go"? Thai: "I stay at home". It is not clear whether this Thai has realized that the NS is asking about the past; "where do you go" might be the assumption, in which case, he is saying that he intends to stay at home. It is evident that communication between such interlocutors is highly dependent on context and may call for frequent clarification. Intelligibility in speech may suffer less than in writing, where the reader may not have the opportunity to clarify number and tense in real time.

Redundant strategies which specify number or time in addition to the grammatical case (which is supposed to already reflect them) might be employed, e.g., "They have **two** car" (They have two cars), and "I stay home **yesterday**" (I stayed home yesterday) ฉันอยู่บ้านเมื่อวาน [tɕʰăn jùu bâan mîa waan]. In these examples, plural and past tense are relayed despite errors in the grammatical case. The careful learner must remember to be redundant, however, and many Thai speakers may lapse, particularly because Thai grammar allows them to: อยู่บ้านเมื่อวาน [jùu bâan

mîa waan] {Stay home yesterday}, or even อยู่บ้าน [jùu bâan] {Stay home} would be perfectly acceptable and idiomatic Thai replies.

1.3 Characteristics of English Inflected Complex Codas

The syllable is usually described as containing an onset and a rhyme (Roach 2000). The onset is optional, but in English may contain up to 3 consonants together; if more than one, it is a complex onset or beginning consonant cluster. The rhyme contains the vowel(s) and may also contain up to 4 consonants following the vowel; if more than one, it is a complex coda or an ending consonant cluster. A simple coda contains just one ending (postvocalic) consonant, while complex codas consist of more than one ending consonant. Complex codas are of two basic types: inflected or uninflected. Inflected complex codas arise from either **–ed** or **–s** grammatical inflectional affixes applied to either a simple or complex coda, e.g., "waits" /weɪts/, "lunched" /lʌntʃt/. Uninflected complex codas are not derived from the grammatical inflections, e.g., "lunch" /lʌntʃ/. But the inflections do not always increase the number of ending consonants in a coda. Inflections can create either syllabic or non-syllabic allomorphs. Only the latter inflections add one consonant to the coda.

1.3.1 Comparative Syllable Structure

Most languages contain only V, CV (consonant, vowel), VC, or CVC syllable structures, of which the CV is ubiquitous in world languages. English contains up to a CCCVCCCC syllable structure, with as many as four ending consonants in coda[5]. Thai contains up to a CCVVC syllable structure, with no complex codas. Bell & Hooper (1978) states that languages are more likely to have complex onsets than

complex codas. While about half the world's languages contain the former, less than one quarter have the latter. A survey of 200 languages (Fudge & Shockey, 2000) showed that 9% allow final 2-consonant clusters, and only 4% allow final 3-consonant clusters. Of the major Asian languages: Chinese, Hindi, Arabic, Japanese, Bengali, Javanese, Thai, and Vietnamese, only Hindi and Arabic contain some ending consonant clusters in standard pronunciation.

1.3.2 English Syllabic and Non-Syllabic Allomorphs

One distinction with these **–ed** and **–es** inflections is whether they create syllabic or non-syllabic allomorphs. Syllabic allomorphs are phonetically notated [əd] and [əz], or sometimes [ɪd] and [ɪz]. The phonological rule for the creation of a syllabic allomorph is as follows: following the sibilants /s/, /z/, /ʃ/, /ʒ/ and their combinations with alveolar plosives (/tʃ/, /dʒ/), one will get a syllabic /əz/ allomorph with the –s morpheme. Following simple alveolar plosives (/t/ or /d/) one will get a syllabic /əd/ allomorph with the –ed morpheme (the syllabic allomorph is always voiced). Thus, the plural of the following **noun** words contains syllabic /əz/: *bus* (*busses*) /bʌsəz/; *cause* (*causes*) /kɔzəz/; *wish* (*wishes*) /wɪʃəz/; *garage* (*garages*) /gərɑʒəz/; *match (matches) /mætʃəz/; judge* (*judges*) /dʒʌdʒəz/. Conversely, the past tense of the same words in verb form would contain non-syllabic allomorphs, voiced (/d/) if following voiced phonemes (*cause, garage, judge*): (caused) /kɔzd/; (garaged) /gərɑʒd/; (judged) /dʒʌdʒd/, and voiceless (/t/) if following voiceless phonemes (*bus, wish, match*): (*bussed*) /bʌst/; (*wished*) /wɪʃt/, (*matched*) /*mætʃt*/.The past tense –ed form of the verbs, *wait* (*waited*) /weɪtəd/; and *embed* (*embedded)* /əmbedəd/ contain

syllabic [əd] allomorphs. Conversely, the third person singular of these verbs would contain non-syllabic allomorphs: voiced (/z/) if following voiced phonemes (*embed*) (embeds) /əmbedz/; and voiceless (/s/) if following voiceless phonemes (wait) (waits) /weɪts/. Stems not ending in sibilants or alveolar stops will always take non-syllabic allomorphs with the same (progressive) voicing as the stem ending, e.g., "asks" /æsks/, "asked" /æskt/; "films" /fɪlmz/, "filmed" /fɪlmd/.

By definition, syllabic allomorphs form a new syllable. Non-syllabic allomorphs complicate the syllable structure by forming an ending consonant cluster, or complex coda. Thus, the syllabic allomorph is contained in "busses" /bʌsəz/, which is represented as CVCVC (two syllables) with no complex coda, while the non-syllabic allomorph is in "bussed" /bʌst/, which would be represented as CVCC (one syllable with an ending consonant cluster). A similar process works for stem morphemes which already contain an ending consonant cluster: "ask" /æsk/, which contains a double ending cluster will contain a triple cluster when a non-syllabic allomorph (**-ed** = /t/, or **–s** = /s/) is added /æskt/, /æsks/; "glimpse" /glɪmps/, which contains a triple cluster in its stem morpheme will contain a quadruple cluster with the non-syllabic allomorph, /t/ "glimpsed" /glɪmpst/. Virtually all quadruple ending consonant clusters are derived from either **–ed** or **–s** forms.

1.3.3 Frequency of Complex Codas in the British National Corpus

Complex codas occur about 115 times in 1,000 words according to the British National Corpus of 100 million words sampled in universal usage—literary as well as oral (Appendix B). Doubleton codas occur far more often (about 105 times per 1,000

words) than tripleton codas (about 9 times per 1,000 words). Quadruple codas occur relatively rarely—slightly more than 0.1 times per 1,000 words. Among common codas which occur more often than 0.05 per 1,000 words (Appendix D) arising from the grammatical inflections, doubletons codas are also more frequent (78.7 per 1,000 words) than tripletons (3.2 per 1,000 words). The two most frequent complex codas /nd/ (31.7/1,000 words) and /nt/ (23.1/1,000 words), together account for 54.8 occurrences per 1,000 words, or almost half of all complex coda occurrences. The /nt/ codas no longer regularly derive from past tense **–ed** inflections in English, though some older usages are retained, e.g., *learnt*, *burnt*. Its most common examples are contractions, such as *won't*, *can't*, *don't*, *isn't*, etc.

The **–ed** and **–s** grammatical inflections account for approximately one in ten English words. As complex codas they occur about once in twelve words. Approximately 72% of English complex coda occurrences may arise from **-s** or **-ed** non-syllabic allomorphs. Ending **-ed** codas occur about twice as often as ending **-s**, and there are slightly more **-ed** than **-s** variants (23 vs. 20) among the most common complex codas in the listing (Appendix D). Voiced **-ed** complex codas occur more than twice as often as do the voiceless **-ed**, **-s**, and voiced **-s** codas.

The voiced /nd/ coda is the most frequent, and among the 25 most common doubletons, 13 are voiced. Among the next 25 most frequent doubletons, only 9 are voiced. The 25 most common tripletons contain just 7 voiced clusters. All quadruple clusters are voiceless. Among codas arising from grammatical **–ed** and **–s** inflections contained in the final listing of codas occurring more than 0.05 times per 1,000 words, the situation is much the same. Doubletons contain 12 voiceless and 17 voiced constituents, while tripletons contain 11 voiceless and only 3 voiced constituents. This

frequency distribution indicates that coda complexity and voicing are negatively correlated, and that rarity and voicing are also negatively correlated.

1.4 Pronunciation Difficulties and Intelligibility

Intelligibility in oral communication clearly depends on the interlocutor or the listener, and can rarely be evaluated from a totally neutral standpoint; the listener cannot be factored out. The most important variables seem to be whether or not the interlocutors come from homogeneous or heterogeneous linguistic backgrounds and their extent of exposure to the accents present. These variables operate within and outside the classroom. Jenkins (1995) found that EFL learners comprehend the speech of similar linguistic groups best, followed by native English speakers, followed by L2 speech of dissimilar L1 groups. What constitutes a dissimilar group? In Jenkins' pair dialogues (2000) Swiss French and Swiss Germans had communication breakdowns due to pronunciation. Hence, even linguistic differences within the same linguistic family of West European languages within a small country may potentially give rise to errors grave enough to cause breakdowns. Pronunciation errors, like grammatical errors, can be categorized as frequency errors and grave errors. The first errors occur often, but rarely cause unintelligibility; grave errors often cause communication breakdowns. The errors that occurred in Jenkins' disparate L1 dyads were compounded because there were listening as well as speaking errors. Most of these grave errors (27/40) were simple segmental errors

Brindley (1998) describes the idea of identifiable listening skills, including lower order skills that involve understanding utterances at the literal level, and higher order skills like inferencing and critical evaluation. A commonly used description of listening involves the idea of both top-down and bottom-up processing. Kelly (1991)

describes bottom-up processing as one in which the listener receives the input as sound and begins to interpret the meaning. The top-down process involves "the application of cognitive faculties in the attempt to give the sound input meaning. The mind sets up the expectations and the sound provides confirmation". When enough information arises from both sources, then successful perception occurs. Thus, both types of processing occur simultaneously (Buck, 2001), although the contribution of both types is not necessarily constant and equal over the course of an utterance. Kelly further states,

> When the text and words are highly predictable, the listener does not need to rely much on bottom-up processing. When the listener's expectations are low, however, he or she is forced to use the sensory level bottom-up processing. Because the words and texts are rarely predictable for beginning TESOL listeners, they usually have low expectations of the upcoming spoken input, and thus are forced to rely mostly on bottom-up processing.

The same may be true of NSs when they are confronted with what they perceive as unintelligible speech; they sometimes quickly revert to sensory bottom-up processing if there are many blanks (unknown words) to be filled. TESOL teachers, being more exposed to various L1 accents, and able to rely more on top-down processing, would have fewer problems understanding learner speech than would their students, especially those from dissimilar L1's. This is one reason why teachers might naturally be too lenient, as remarked on page 8.

1.4.1 Social Environment

The traditional Thai English class typically contains a native Thai teacher and a homogeneous group of students who have either Standard Thai or a regional dialect as their L1. Standard Thai is used as the medium of instruction for all classes other than English itself. Bilingual and international schools tend to be more multilingual;

often the teacher and her students will have differing L1's, though again, Standard Thai may be the true *lingua franca* in the bilingual school. International schools do not presuppose a knowledge of or facility in Thai. The mispronunciation or lack of articulation of complex codas arising from the inflections would pose little difficulty in the monolingual Thai classroom for three reasons. Firstly, there is little authentic oral communication which could lead to communicative breakdown. Secondly, the teacher may not stress the pronunciation of the inflections or even consistently use them. Thirdly, such traditional classes are homogeneous, with most students at similar stages of development; it is unlikely that a student would use plurals or past tense in communication with another who did not know them.

The more the communicative class approaches that level characteristic of an international school, the more expected will be the pronunciations of the inflections. Yet, the tenets of CLT are pragmatic, not dogmatic, and teachers make allowances for omissions. They may assume that pronunciation will naturally improve. Written omissions are more serious, as they can affect intelligibility for the reader (teacher). There may be communicative breakdowns or misunderstandings between NS students and fluent NNS students who mispronounce the inflectional affixes beacuse NS are taught early on in the primary grades to retain the grammatical affixes (**-ed** or **–s**) at all costs—even if it means deletions elsewhere in the coda.

It is outside the classroom where miscommunication mainly takes place. The lack of a shared context, the lack of exposure to a new interlocutor's accent, the heterogeneous levels of facility with English and the disparate L1's all play a part. Communication may be merely transactional and in the present, since here there is at least some mutual expectation of what will be discussed. Telephone conversations may be awkward, and face to face talk in a low-noise environment may be preferred.

Given a certain facility with English and acquisition of the inflections and their phonology, the main variable seems to be the level of exposure to the Thai accent and grammatical interferences and the English facility of the foreign interlocutor. NS have the advantage over NNS in most cases because they can make inferences, and use a top-down listening approach. Thai English learners can also understand NS better than NNS with dissimilar L1's, as Jenkins (1995) points out. Recently arrived NS may be at a disadvantage in that they may expect the inflectional affixes to be used and understood. Many, but not all, learn to accommodate to the limitations of many Thai speakers.

1.4.2 Word Environment

Examples in Roach (2000) of altered **–ed** and **–s** inflected complex codas that might occur in casual or rapid NS speech, and which might feasibly be imitated by NNS, include elision (deletion) of the final coda consonant when the following word begins with a consonant, e.g., 'looked back' /lʊkt bæk/, which is often simplified to [lʊk bæk] by the deletion of medial /t/. In this case the two words in sequence created a medial consonant cluster /ktb/ which is hard even for NS to pronounce rapidly without some juncture between the two words. It holds *a fortiori* that Thai speakers would have even more difficulty with such a medial consonant cluster. Roach states that with a combination of three plosives (as in the example just given) or two plosives and a fricative, e.g., 'moved to' /muvd tu/, the medial consonant (/d/) is apt to be elided. The same process also works with the latter combination in some single-word codas, e.g., 'acts' /ækts/, 'scripts' /skrɪpts/, 'gasped' /gæspt/, and 'asked' /æskt/, where the medial plosive is also apt to be deleted by many NS. Two plosive-one

fricative combinations where /s/ is the medial consonant are much less problematic, e.g., 'fixed' /fɪkst/, and 'elapsed' /ilæpst/, which would imply that **–s** inflections would be less likely to be deleted when coming before words beginning with a consonant (except of course for those beginning with the sibilants, /s/, /z/, and /ʃ/, where they might be deleted or assimilated)[6]. Any instrument which attempts to measure the accuracy of complex codas must take account of connected speech patterns such as these, and assume that complex coda finals might be deleted when they come before words beginning with a consonant. Here the native-speaker standard can be employed, since NS themselves are the greatest practitioners of connected speech elisions. A word combination such as *old man* might well be simplified in casual speech to *ol' man*; however, where the first word contains an **–ed** or **–s** inflection, the final consonant should be retained, if possible.

1.5 Summary

The **–ed** and **–s** inflectional affixes occur frequently, and often create complex codas which are hard for speakers of languages which do not have them to pronounce. While some difficult complex codas are often simplified, the pronunciation of the **–ed** and **-s** inflections is expected among NSs. Although pronunciation generally may lack a universal pedagogical standard, this should not relieve teachers of their responsibility to help students become more intelligible. Few of the current TESOL teaching methods or approaches emphasizes pronunciation—particularly of the inflectional affixes, and local testing standards may be arbitrary where they exist at all. Bilingual English Thai dictionaries have varying Thai transliterations of English words, which are often incompletely used by learners or altered, as shown in popular

transliterations of loanwords. Bilingual Thai English dictionaries seldom provide any phonetic representation of English words at all. Monolingual English dictionaries seldom provide instructions on the pronunciation of inflected complex codas by referring to the progressive assimilation rule. Grammar course-books may wrongly presume that teachers have sufficient phonetic training to model or explain phonetic feature and voicing to their students. Oral communicative breakdown is more apt to occur outside the monolingual classroom environment. While there is a large variety of syllable structures and a large number of complex codas in English, most of the most frequently used complex codas are voiced and most of their use arises from the –**ed** and –**s** grammatical inflections.

Section 1.1.4 suggested how pronunciation might be granted more importance and perhaps formal status in TESOL curricula by prioritizing the complex codas by both their frequency and degree of accuracy or imputed difficulty. In this way a hierarchy of instructional benefit might be established to show teachers which complex codas or groups of complex codas should be taught first or taught remedially to Thai learners and which complex codas could be saved for future instruction.

1.6 Research Objectives

- To discover patterns of ease/difficulty within the selected group of complex codas, that could be explained by theories in applied linguistics and rank them by their degree of spoken accuracy or imputed difficulty.
- To rank the complex codas by their frequencies in normal use.
- To compare the accuracy and frequency of selected complex codas to suggest pedagogical focus on selected codas.

1.7 Definition of Linguistic Terms

Disclaimer: the following linguistic definitions are not meant to be authoritative or exhaustive, and the reader may find much more information online or by consulting phonological texts.

In phonology texts, slashes, e.g., /t/ represent the phoneme, or the family of allophones, while brackets, e.g., [t^h] represent the allophonic realizations of a phoneme. This convention is followed in this study.

When two or more Thai letters have the same phonetic characteristics, only the most common example is listed. Thus, for the Thai examples of the voiceless aspirated stops /p^h/, /t^h/, and /k^h/, only พ, ท, and ค are listed, although there may be other Thai orthographical examples which could be listed in addition, e.g., ภ, ถ, and ฆ.

The loanword adaptation of English words containing postvocalic /l/, /s/, /tʃ/, and /dʒ/ often involves the transliteration with Thai letters such as ล, ส, ช, and จ, respectively, which implies that they are pronounced as [n], [t], [t], and [t] because Thai learners are instructed to pronounce them so in their L1. But the latter are not **allophones** of the L1 ล, ส, ช, and จ. Nevertheless, postvocalic /l/, /s/, /tʃ/, and /dʒ/ may be obstacles for Thai learners of English regardless of their phonological status, as their substitution with [n], [t], [t], and [t] has become as habitual for many learners as allophonic processes. Thai loanword adaptation is described at length in Kenstowicz, M. & Suchato, A. (2005) already cited.

Affricate: a stop followed by a fricative. English example: the /tʃ/ in ***chip***. Thai example: the /tɕʰ/ in ช้าง (elephant) /tɕʰɑáŋ/.

Allophone: phonetic realization of a phoneme. English examples: as [pʰ] in *pot* [**pʰ**ɒt] /**p**ɒt/ or as [p] after /s/ in *spot* [s**p**ɒt] /s**p**ɒt/. Thai examples: as [pʰ] pre-vocalically in ผล (fruit) /**pʰ**ŏn/, or as unreleased and unaspirated [p̚] in กบ (frog) [ko**p̚**].

Alveolar: place of articulation at the hard palate just behind the teeth. Example: /t/, /d/, /s/, /z/, /n/, /l/.

Approximant: a consonant formed with very little friction. English examples: /r/, /w/, and /j/ as in the words ***red***, ***white***, and ***yellow***, respectively. The last two consonants are similar to vowels, and are sometimes referred to as 'semivowels' or 'glides'. These two approximants *approximate*, as it were, to the vowels /u:/ and /i:/, respectively. In fact, North American phoneticians sometimes represent the vowels /i:/ and /u:/ as /iy/ and /uw/. The Thai equivalents may be written as ย and ว.

Aspirated (consonant): characterized by the release of air following the pronunciation of a stop. Phonetically notated with superscript h as in *top* [tʰɒp]. Both Thai and English contain three aspirated stop allophones, viz., pʰ, tʰ, and kʰ. Thai examples: pre-vocalic พ, ท, and ค.

Assimilation: change in the place or manner of articulation or the voicing of a consonant when it occurs before or after another consonant. English example: "quite good" /kwaɪt/ /gʊd/ when combined, may sound as [kwaɪkgʊd]. The alveolar /t/ assimilates to the velar /k/ as the following consonant /g/ is also velar. This is known as *regressive* assimilation.

Bilabial: literally, 'two lipped'. A place of articulation for the English consonants /p/, /b/ and /m/. Thai has 4 bilabial consonant phonemes: พ /pʰ/, ป /p/, บ /b/, and ม /m/.

Coda: the consonant or consonants which follow the vowel in a syllable. "Go" has no coda; "get" has a simple coda containing /t/; and "gets" has a complex coda containing /ts/.

Complex Coda: a coda consisting of two or more consonants e.g., in "cats" /kæts/.

Consonant Cluster: Two or more consonants which occur together in a syllable. "Streets" /stri:ts/ contains a consonant cluster both in the onset and in the coda.

Contrast: two sounds contrast, and are different phonemes, if a minimal pair can be constructed consisting of two words which not only sound different, but have different meanings. English example: *list* /lɪst/ and *least* /li:st/, which solely differ in terms of the vowel. The /i:/ and /ɪ/ contrast is widespread in English, with many such minimal pairs. The Thai unaspirated voiceless stops ป /p/, ต /t/, and ก /k/ *contrast* with their aspirated equivalents, พ /pʰ/, ท /tʰ/, and ค /kʰ/, whereas the English unaspirated voiceless stops are merely allophones (see Appendix A).

Diphthong: two vowels together wherein the first 'glides' to the second. English example: the /aɪ/ in "like". The Thai equivalent vowel combination is phonetically identical, but is usually phonologically analyzed as gliding to the semivowel, /j/, e.g., ไต /taj/ (kidney), เมา /maw/ (drunk).

Doubleton: a two-consonant cluster, e.g., "can't" /kænt/.

Elision: deletion of a consonant phoneme in connected speech.

Final (position): occurring at the end of the coda, e.g., the /s/ in "cats".

Fricative: a consonant produced with air friction, e.g., the English and Thai /f/, /s/, and /h/. English has six additional fricatives (see Appendix A).

Glide (n): a semivowel, such as /w/ or /j/.

Glottal Stop: sound made when the vocal cords are pressed together to stop the flow of air and then released; for example, the break separating the syllables of the interjection *uh-oh.* It may be a common substitute for unpronounceable consonants both for TESOL learners and some native speakers.

Interdental: also referred to as **dental**—a place of articulation between the teeth (actually where the tongue abuts the upper teeth) as used in the English words *the* /ðə/ and *thing* /θɪŋ/. Thai does not contain interdental consonants.

Interference: transfer of linguistic, including phonological characteristics of a learner's native language (L1) into the language learned (L2). Loanword adaptation as described in the forward to this section is a good example of interference.

Intrusion: additional consonant added when pronouncing certain consonant combinations in codas. English example: *warmth* /wɔmpθ/.

Labiodental: (literally lip-teeth); place of articulation of a consonant which uses the lower lip and upper teeth. The Thai and English /f/ is an example.

Liquid (n or adj.): a phonetic grouping which contains the English /l/ and /r/.

Nasal: manner of articulation in which consonants are produced by lowering the soft palate and allowing air to escape through the nose. English and (Thai) /m/ (ม), /n/ (น), and /ŋ/ (ง) are examples.

Obstruent: A major classification of consonant phonemes which includes stops, fricatives, and affricates, and does not include nasals, liquids, or approximants. English contains 15 examples: /p/, /b/, /f/, /v/, /θ/, /ð/, /t/, /d/, /s/, /z/, /ʃ/, /ʒ/, /tʃ/, /dʒ/, /k/, /g/, while Thai contains 12: /pʰ/, /p/, /b/, /f/, /tʰ/, /t/, /d/, /s/, /tɕʰ/, /tɕ/, /kʰ/, and /k/.

Onset: consonant(s) occurring before the vowel of a syllable. "Go" has a simple onset /g/; "glee" has a complex onset /gl/; "in" has no onset.

Phoneme: a family of related phones, called allophones, that the speakers of a language think of, and hear or see, as being categorically the same and differing only in the phonetic environment in which they occur. See also **Contrast.**

Phonotactic: restrictions in a language on the permissible combinations of phonemes. Phonotactics defines permissible syllable structure, consonant clusters, and vowel sequences by means of *phonotactical constraints*.

Plosive: equivalent to *stop*; a consonant produced by stopping the air flow and then suddenly releasing it. English examples: /p/, /b/, /t/, /d/, /k/, /g/. Thai lacks /g/, but has three more stops: the unaspirated voiceless ป /p/, ต /t/, and ก /k/.

Postvocalic: occurring immediately after the vowel. Example: the /t/ in *cat* /kæt/ and the /s/ in *cast* /kæst/. There are 20 postvocalic phonemes in English, but only 6 in Thai (/p/, /t/, /k/, /m/, /n/, and /ŋ/) or 8 if counting the glides, /w/ and /j/.

Progressive voicing assimilation: where consonants following other consonants in the coda assume the same voicing status. English example: *lives* /laɪvz/, where the –s inflection is sounded as /z/ because the antecedent /v/ was voiced. The voiceless *lips* /lɪps/ also follows the pattern.

Quadrupleton: Four consonants in a cluster. In English these may only occur in codas. Example: *texts* /teksts/.

Repair Strategy: manner in which a learner deals with an awkward consonant cluster. Examples: deletion, substitution, epenthesis.

Rhotic: variety of English in which postvocalic /r/ is pronounced, such as North American English. Non-rhotic varieties, such as most British, e.g., RP do not pronounce the postvocalic /r/ unless the word following begins with a vowel.

Segmental: pertaining to phonological *segments,* i.e., phonemes, and their combinations in syllables.

Sibilant: fricatives with high-pitched turbulent sound, e.g., /s/, /z/, /ʃ/ and /ʒ/.

Stop: equivalent to *plosive*.

Suprasegmental: pertaining to units of speech sound larger than the syllable, e.g., stress, intonation.

Tripleton: three consonants in a cluster. Example: attempt /ətempt/.

Unaspirated: voiceless consonants lacking aspiration. The Thai ป /p/, ต /t/, and ก /k/ and the English allophones of /p/, /t/, and /k/ in *spot*, *stop*, and *Scot* are examples.

Velar: place of articulation on the soft palate of /k/, /g/ and /ŋ/. Thai contains the first and the third consonant and an unaspirated velar consonant, ก.

Voicing: phonemes (consonants and vowels) may be either voiced or voiceless. English vowels are always voiced. There are 15 voiced English consonants: /b/, /m/, /v/, /ð/, /d/, /z/, /l/, /n/, /r/, /j/, /w/, /ʒ/, /dʒ/, /g/, and /ŋ/. There are 9 voiceless English consonants: /p/, /f/, /θ/, /t/, /s/, /ʃ/, /tʃ/, /k/, /h/, or 10 counting the glottal stop /ʔ/. Thai has only 9 voiced consonants: /b/, /m/, /d/, /n/, /l/, /r/, /w/, /j/, and /ŋ/, and nasals are the only voiced postvocalic consonants (see Appendix A).