THAI TONES AND ENGLISH LOANWORDS: A PROPOSED EXPLANATION

Robert J. Bickner

English words borrowed into Thai are a source of both bemusement and consternation for language learners and linguists. Native speakers of English who study Thai soon realize that they must learn new pronunciations for words borrowed from their own native vocabulary or they will not be understood when they use those words in conversation with Thai speakers. Scholars have noted that there are definite patterns to changes made in English words borrowed into Central Thai, patterns which may have much to tell us about both the donor and the recipient languages. This brief paper will address one point of the discussion that has been conducted by a number of scholars (see Henderson 1951, Court 1975, Nacasakul 1979, and Gandour 1979, among others).

English consonant clusters are reduced and English vowels and diphthongs are altered or replaced in the same ways by nearly all Thai who speak the dialect of the central plain. These changes or substitutions are covered thoroughly in earlier studies and for the sake of brevity I will not repeat that material; it is the question of tone assignment that I wish to address here.

Words borrowed from English are pronounced with a variety of tones, some of which "feel" right to the native speaker of English, and some of which do not. In some cases the tone used seems to be perfectly in accord with both the native Thai spoken and written systems and with the expectations of the native speaker of English; the borrowed form of "game," which is pronounced /keem/, with mid tone, is an example. The borrowed form of "net" /nét/ is another example of a pronunciation which seems appropriate: the English vowel is rather short in duration, and many Thai words with a short vowel and final /t/ are pronounced with the high tone. The borrowed form of "gas" usually strikes the native speaker of English as a bit odd, however. The pronunciation is either /kâat/ or /kɛ̂ɛt/ (with the two distinct vowel choices possibly the result of simultaneous

borrowings from British and American models), but we know that Thai does not normally allow high tone on checked syllables with a long vowel. Also, if we consider the spelling rules associated with the consonant letter used to represent the sound /k/ (ก), which is a midcategory consonant letter, the high tone is even more inappropriate. Moreover, when we hear the soft drink "Coca-Cola" identified as /khoolâa/, we note what we feel to be a significant difference between the English model and the borrowed form; we would really expect to hear */khoolaa/, with both syllables pronounced with mid tone. Then, when we are told to ask for /soodaa/ ("soda") and not */soodâa/ we are confused. Finally, when we note that "radar" is called by some /reedâa/ and by others /reedaa/, we must seek clarification.

Most discussions (both informal and scholarly) of tone assignment in English borrowings concentrate on, and attempt to explain, pronunciations which seem somehow odd, and simply enumerate without comment examples of words which somehow seem natural. When explanations are offered, however, the assumption often seems to be that the Thai speaker approaches the pronunciation of an English borrowing in the same way that an English-speaking student of Thai learns to decipher a syllable written in Thai characters, that is, by employing a rule-oriented and rather mechanical process focusing on those features of the spoken system that are represented in the written system of Thai.

Motivations for the seemingly anomalous patterns are generally defined in one of two ways. First is style. It is suggested (and this opinion is common among Thai speakers not familiar with linguistic studies) that the pronunciations are some sort of oral quote marks, used to acknowledge the foreign origin of the words, as though by using these pronunciations a native speaker of Thai could avoid appearing presumptuous or overly proud of his or her own erudition. If this were the whole story, however, we could not explain why different tones are used; if the goal is to mark borrowings, why not use the same tone for all of them? Nor do we know why some words are allowed to hide among the native words (/keem/, for example), while others are made to stand out (/kɛ́ɛt/, for example). If we posit an initial "getting to know you" stage, during which a new borrowing is pronounced one way, and then a later stage in which the word is accepted into the native vocabulary and given another pronunciation closer to the native system (/reedâa/ vs. /reedaa/, for example), how shall we account for the stubborn refusal to allow the

ubiquitous /wítsakîi/ "whiskey" to take up a more normal pronunciation, indicative of its familiarity? How shall we explain that /soodaa/ skipped the initial stage entirely? I do not believe that stylistic considerations can explain the situation; too many words which would seem to be likely candidates for such oral quotes do not, in fact, have them.

The second motivation suggested for tone placement applies to those polysyllabic words which, in the borrowed form, are pronounced with falling tone on the final syllable. Such words almost invariably sound odd to the native speaker of English, and are those which draw his or her attention. One suggestion is that the Thai speaker uses falling tone on the unchecked final syllable of a polysyllabic borrowing to imitate the English pattern of a stressed syllable followed by an unstressed syllable, that is, a single Thai syllable is used to imitate features of two English syllables. This explanation, however, does not cover the exceptions to the pattern (again, /soodaa/). Nor does this explanation account for the pronunciation of polysyllabic words with other stress patterns, and it does not address monosyllabic words at all, either those which seem natural or those which seem odd to the native speaker of English. I believe that a closer examination of Thai tones, and of both monosyllabic and polysyllabic borrowings, including those which seem anomalous and those which seem perfectly reasonable to the native speaker of English, can add to our understanding of the situation.

Various aspects of the Thai tone system have been presented in detail elsewhere. The literature on the subject is particularly attentive to pitch height and contour shape. Rather than attempting to repeat that material, I will refer the interested reader to authors who have dealt with the subject (Bradley 1911, 1924; Jones's 1918 study, discussed in Henderson 1976; Noss 1964; Brown 1965; Erickson 1976; Abramson 1962; Gandour 1976; among others). A short summary of points which are of particular relevance to the question of tone assignment in English borrowings is given below.

First, the mid tone is generally described as level throughout most of the duration of the syllable, with a fall in both intensity and pitch height only toward the end. Second, the low tone is generally described as beginning somewhat below the midpoint of the pitch range and falling quickly to a very low level, which is sustained. Third, the rising tone is described as beginning below midlevel, falling

somewhat lower, and then rising steadily to a point well above midlevel. Fourth, the high tone is described as starting at a point above midlevel and rising to a level somewhat above the starting point, which is maintained until very nearly the end of the syllable when there is a sharp fall; the high tone, at least in citation form, has glottal constriction. Finally, the descriptions given for the falling tone show a marked change over the years. In Bradley's first study, in 1911, the falling tone is described as beginning somewhat below midlevel and falling to a very low level. In his 1918 study, Jones described the same fall, but noted a starting point above midlevel and glottal constriction in the falling tone. Later studies have noted a progressively higher starting point for the falling tone and the tendency for a rise in the early part of the syllable to a peak, followed by a steady fall to a point well below midlevel. There is thus a marked difference in pitch height and a change in contour compared to that found in the early studies, but glottal constriction is consistently noted as a part of the tone.

While these points are covered in much of the literature on Thai tone, there are a number of smaller points which often have been overlooked in discussions of English loans. First, Haas (1951) notes that some English words with a final stop consonant are borrowed into Thai with high tone, and that the glottal constriction on a Thai unchecked syllable with high tone seems to the Thai ear to be equivalent to a final stop in an English word. Second, in discussing stops in Thai, Henderson (1964) notes that the Thai final stop is actually composed of a double closure in which oral closure is accompanied by a simultaneous glottal closure. Finally, in the same study Henderson states that for the production of a high tone that will satisfy a critical native speaker, breath force "must be increased with the slight initial rise in pitch, reaching a peak of intensity during the sustained high pitch, and then decreasing quite sharply" (p. 420). A similar "swell" in breath force is sometimes noted for mid-tone words "as contrasted with the uninterrupted diminution of breath force heard in the other three tones" (p. 420).

In most discussions of borrowings from English these seemingly small details are not taken into account. It is clear that pitch height and tone contour are important considerations for the Thai speaker, but what has been overlooked, I believe, is the fact that breath intensity and the state of the glottis are also important, as is the nature of the Thai final stop. It seems that the Thai speaker notes the presence or absence of such features, or what he or she interprets

to be them, in the pronunciation to be imitated, and selects the tones that best reproduce all those features. It is this fact that accounts for much of what seems anomalous in the borrowed forms. An examination of some of these borrowings into Thai will, I believe, illustrate the point I wish to make.

Most of the words in the lists below have been taken from Mary Haas's *Thai–English Student's Dictionary* (1964); a few are from George McFarland's *Thai–English Dictionary* (1944). The former is the more important source, especially with regard to pronunciation. I have tried to limit the discussion to obvious borrowings that have been used in everyday speech throughout the Central Thai dialect area for many years. I hope in this way to offer an explanation for the general pattern of tone assignment and to avoid as much as possible the sometimes affected pronunciations used mainly by individuals with extensive experience abroad, words which are deliberate inventions (some commercial product names such as /ʔɔɔy ʔáp ʔuulaan/ "Oil of Olay," for example), and words which are not so much borrowings as citations developed from foreign spellings (names of most European cities and countries, for example). These latter words, as well as more recent borrowings, will have to be dealt with before the picture is complete, but such a treatment is beyond the scope of a short article. My goal is to point out some previously overlooked information and describe the general pattern of tone assignment in light of it.

The borrowed forms of the words in List 1 fit the description of words in the native vocabulary that may have any of the five tones: all end in a vowel, a diphthong, or a continuant permitted in the native system. Changes made in the vowel or consonant segments of the English model that do not affect tone selection will not be discussed here other than to state that the changes are regular and unexceptional. Most of these words have mid tone, and, perhaps because they seem unexceptional to the native speaker of English, they have not been given detailed treatment in previous analyses of borrowings. If we are to see the overall pattern, however, it is important to understand just why the mid tone is so frequently used in these words.

If we assume that most of these borrowings entered Thai at a time when few Westerners knew the language well (and few Thai knew Western languages), then the models must have been spoken, not written. The models were probably words pronounced in isolation

by native speakers of English. The normal citation form for the English words of List 1 is probably much the same as the mid tone. The words would have been pronounced by the English speaker with resonance beginning either with the initial consonant or with the vowel, and continuing to the end of the vowel, diphthong, or continuant in syllable-final position, with the attempt to be clear throughout the syllable resulting in rather even volume and pitch height, diminishing only toward the end of the syllable. This sustained pitch height is closer to the shape of the mid tone than to any of the other tones: the falling and rising tones have definite contours; the low tone has an early and definite drop; and the high tone has a rise-crest-fall contour. The high and falling tones are also inappropriate because each involves glottal constriction, whereas in the model there is nothing that could be interpreted as glottal constriction. Also, the transition from initial to vowel to final in the model might be interpreted as the swell in breath force. As Henderson (1964) points out, this is associated with the mid tone, as opposed to the low tone, which would further discourage the use of low tone in these words. It seems correct to assume that for the Thai speaker the features of the English citation form for these words more closely resemble that set of features which combine to form the Thai mid tone than any other tone in the system. It happens that, in most of these cases, the English speaker also feels that there is a strong resemblance between the English and Thai pronunciations; in other cases, however, the English speaker feels that there is a marked difference between the English and Thai pronunciations.

Consider, for example, the optional falling tone on the borrowed form of "sir," and the rising tone on the borrowed form of "boy," and the low tone on the borrowed form of "ma'am." The words /sə̂ə/, /bɔ̌y/, and /mɛ̀m/ may sound peculiar to the English speaker, but they do not necessarily contradict the explanation offered for the rest of List 1. These pronunciations may also be motivated by a conscious attempt to imitate a spoken model by selecting from among the elements in the Thai system those most closely approximating all the features present in the model. Perhaps these three forms derive, not from citation forms, but from a different kind of model, of equal clarity, repeated often enough to serve the same function. The falling tone on "sir" may be an imitation of the emphatic, or perhaps military, "Yes, sir!" of English, pronounced with creaky voice; use of the falling tone closely approximates both the contour and the state of the glottis of the model. "Boy" in Thai does

not refer to a male child but to a waiter or bellboy. Thai speakers may have heard English speakers pronounce this word with a fairly high, calling intonation, and imitated it with the Thai rising tone because the rising tone, although lower in pitch than the model, is closer to it in contour than is the high tone, which unlike the model has a distinct rise–crest–fall contour and glottal constriction. As for the Thai word /mèm/, if it is derived from the expression "Yes, ma'am," either the mid or low tones seem appropriate since each tone has a level contour. Of these, however, the low tone, with its "uninterrupted diminution of breath force" (Henderson 1964), is the closest approximation of the most likely model.

Words in lists 1B and in 1C differ only slightly from those in 1A. In the examples in 1B the English model is treated as though it ended with a consonant cluster in which both elements are voiced; the second element is dropped, leaving, in these examples, either "n" or "w." The voicing of these final consonants may make the mid tone the most appropriate, because a level pitch height is maintained until the end of the syllable. Also, in these examples the vowel of the English model is followed by a voiced consonant, and this pattern might be interpreted as the swell in breath force which Henderson notes in the mid tone. The same would be the case for words in 1C, except that /r/ or /l/ after the vowel in the English model often results in a lengthened vowel in the Thai form.

All three sections of List 1, then, contain words pronounced with mid tone. Discussions of borrowings often simply point out the general similarity between the vowel and consonant components of such syllables in the two languages and accept this similarity as the motivating force behind tone assignment. But such explanations only show why the mid tone is possible according to the articulated rules of the Thai writing system, without trying to determine why the tone is actually the most appropriate one of the five available.

List 2 contains single–syllable words, most of which end with a voiceless consonant in the English model; they are pronounced in Thai with either high or low tone. At first glance these borrowings do not seem to follow the native Thai system as well as those of List 1; one would expect the borrowed forms with short vowels to have either high or low tone rather than almost exclusively high tone, and those with long vowels to have either falling or low tone rather than the significant number with high tone, and the absence of any with falling tone.

While these words may seem anomalous, one can offer an explanation similar to that proposed above for words in List 1. If one assumes that the borrowed forms originated from attempts by Thai speakers to reproduce English models as exactly as possible, then the impression of contour and presence or absence of glottal constriction are probably crucial factors, as is the nature of the final stop in both Thai and English. Part of what makes these pronunciations seem odd to the native speaker of English may be that he or she readily notices pitch height but ignores almost completely contour shape and the state of the glottis, whereas the Thai speaker pays special attention to these features because of their significance in the tone system of Thai.

The first words in List 2A are modeled on English words with a voiceless final consonant sound following a short vowel, that is, a vowel normally not pronounced with a glide in English speech. Because these words seem to fit exactly the orthographic requirements for high tone, that is, they are checked syllables with a short vowel ("short" in both English and Thai terms, since they are of rather brief duration in the English models), the high tone selection does not go contrary to the analyst's expectations. The only peculiarity is the use of long /aa/ or /ɛɛ/ in "gas" (simultaneous borrowing from British and American models may explain the vowels, but not their length). The other words in list 2A are modeled on English words in which the vowel is usually followed by a glide. In these cases, Thai replaces a vowel-plus-glide combination that is not used in Thai with a long vowel from the Thai system, as in the words "mail" and "fair" from List 1. With the List 2 words, however, the consonant final is retained, creating what is the clearly anomalous pronunciation of a checked syllable with a long vowel and high tone.

As with words in List 1, words in List 2 may contain features which, although insignificant to the native speaker of English, are noted by the speaker of Thai and used to guide him or her in tone selection. The differences between the Thai and English syllable-final stop sounds are probably significant here. In a Thai final stop, both oral and glottal closure occur simultaneously, but in an English final voiceless stop the resonance of the preceding vowel may continue briefly after oral closure is completed. At the time of oral closure the intensity of the resonance is diminished and then quickly falls off as the vocal cords come to rest. This pattern may seem to the Thai speaker to be very similar to the final portion of a Thai syllable with high tone, in which pitch height and breath force fall sharply and

simultaneously, with accompanying glottal constriction. Thus an English final voiceless stop resembles the Thai high tone on an open syllable. English diphthongs or voiced nasal consonants which precede stops may reinforce the impression that high tone is appropriate, since the presence of the glide or nasal in the model would accentuate the fall of pitch and breath force, again reminding the Thai speaker of the characteristic rise–crest–fall of the high tone. In either case, the English final stop, in which vowel resonance continues for a time after oral closure is completed, is probably interpreted as the constriction appropriate to the high tone.

In the first eight words in List 2B, English final clusters are simplified, in these examples leaving a voiced nasal, a semivowel or a stop. In each case the word is pronounced with high tone. Thai does not permit final clusters and so in these words the first element of the English cluster is retained. The English final stop is reinterpreted, and is retained in a sense in the form of the glottal constriction of the high tone. The pronunciation of "stamp" is an exception to the pattern. The explanation probably is that the word entered Thai in spelling form rather than spoken form, with orthographic signals used to negate the final "p," in effect making a word similar in nature to "game."

List 2C contains words in which the final English cluster is composed of /l/ or /r/ plus a stop, and in each case /l/ or /r/ is either dropped (except in learned pronunciations, like that of "waltz") or replaced by a lengthening of the preceding vowel. The vowels of "cork" and "chalk" in the first part of the list remain short, perhaps because the velar stop final in these English words makes for a comparatively shorter voicing time for the preceding vowel, which is reflected in the Thai pronunciation.

The last five words of List 2C come from English words ending with /r/ plus a voiced consonant. As is expected, these voiced English finals are devoiced in the Thai forms, but the anamoly is that the tone is low in each of these words, which is unlike any previous examples. Because the English models end in a voiced consonant, however, they do not have any feature which resembles glottal constriction, making the high tone inappropriate. In addition, there is probably nothing which could be interpreted as the "swell" in intensity sometimes found in the mid tone, since the presence of the /r/ would create, not a swell of intensity, but a uniform diminution of intensity and pitch throughout the syllable, making it resemble the

low tone to the Thai ear.

The words in List 3 are polysyllabic words borrowed into Thai from English. It is more difficult to deal with polysyllabic loans since several patterns seem to exist in these words, and more than one pronunciation is common for a number of them. Since the distinction between checked and unchecked syllables is significant for monosyllables, the polysyllables are divided in the same way for discussion. In addition, stress placement in the English model seems to be an important factor as well, and so the examples are divided accordingly. List 3 contains loanwords which in English are not stressed on the final syllable.

List 3A contains polysyllabic loanwords which are pronounced in Thai with the falling tone on the final syllable. This frequent use of the falling tone nearly always strikes the English-speaking student of Thai as odd, but an explanation similar to that advanced for tone on monosyllabic borrowings can be offered for these polysyllabic words as well.

One would expect most native speakers of English to pronounce the words in List 3A with a reduced vowel ("cola"), or vowel plus glide ("cocoa"), or with either a reduced vowel plus nasal or a syllabic consonant ("doctor," "fashion") in the final syllable. The English pronunciation of these syllables would be unlike the sustained pitch characteristic of the Thai mid tone, which frequently has a "swell" at the midpoint of the syllable and a fall in pitch only toward the end of the syllable. The English pronunciation also would be unlike the low tone, which begins below midlevel, falls lower, and then maintains a level pitch. The final syllables of the English models probably approach most closely the falling tone, with its rapid drop in pitch height; it also may be that the Thai speaker notes what he or she interprets to be glottal constriction as the English speaker allows the vocal cords to come to rest.

It should be pointed out that the falling tone as measured by Bradley and Jones was much lower in pitch than it is in ordinary speech today. Also, during the 1940s and 1950s, older, more conservative speakers used a falling tone of somewhat lower pitch than that used by younger speakers (personal communication from William J. Gedney). Thus it may be argued that the pattern of assigning the falling tone to borrowings not stressed on the final syllable, when that final syllable is unchecked, was established when the tone was lower and perhaps more similar to the English words

borrowed into Thai. On the other hand, it is common to hear even Thai speakers who know English pronunciation very well use the falling tone on the unstressed, unchecked, final syllables of English family names when using them in conversation with other Thai speakers. This application of the falling tone to words that are clearly not borrowings suggests that there is more than simply the weight of precedent behind the use of the falling tone, and that there is still something fundamentally similar between the falling tone and the unstressed, unchecked, final syllable of an English polysyllabic word. This also suggests that pitch height is relatively less important in selection of one or another of the Thai tones for an English borrowing than is the contour and the state of the glottis of the spoken model being imitated.

Words in List 3B present a new problem: why are these words assigned mid tone on the final syllable when many of them have the same characteristics described for words in List 3A? I believe the answer lies partly in the nature of the syllable concerned and partly in the route through which the borrowing entered Thai. The word "program" is an example of a borrowing which most probably entered the language through imitation of the speech of Americans; it is unlikely that the /ɛɛ/ vowel would be used if the model was a British pronunciation or a written rather than a spoken word. In a spoken model the low front vowel followed by /m/ would create a rather level pitch throughout the syllable, with a drop in intensity at the end; the Thai mid tone would thus be the best imitation.

The same explanation would apply to a word like "electron," although such a word is more likely to have come into common use in Thai through writing than through speech. The effects of the written system are surely more pronounced for some words than for others; words like "poker" and "rugby" (from List 3A), for example, probably did not enter enter the language through learned texts, while words like "electron" and "civilize" would hardly have reached the ear of the average Thai through casual attempts at conversation with an occasional Western passer-by. Thus it seems valid to seek different kinds of explanations for different kinds of words.

In the case of "electron" the most likely source is basic science texts which are largely devoted to explaining English scientific terminology. Especially on the basic level, when students are learning vocabulary, these textbooks define terms and explain concepts in Thai. The vocabulary is often transliterated, with the words written in

both Thai script and English. The student would see the new word in Thai characters first, which would reinforce the impression that a correct pronunciation must include tone. Since Thai authors usually transliterate an English "o" with ◌ั, the character representing the vowel "ɔɔ," students would naturally pronounce the word as shown in List 3B. Thus, this pronunciation can be explained by reference either to the phonology of spoken Thai or to the effects of the written system.

A number of other words, which would probably have been included in List 3A were they based on spoken models, appear in List 3B. Among these are "gallon," "margarine," "alcohol," and "soda." The metric system is used throughout Thailand and liquids are not normally measured in gallons, so it is again quite possible that the source for this word was textbooks or technical materials translit-erated into Thai characters; the fact that the English "o" is nearly always transliterated with the character ◌ั would explain the vowel, and reading from a transliteration in Thai characters would explain the tone. The word "margarine" is almost certainly an instance of borrowing through written materials; this is the only likely explanation for /-ka-/ as the second syllable of the word. Again, a Thai speaker reading a transliteration of these words would assign the syllables in question a mid tone because of the rules of the Thai writing system.

The optional pronunciations for "hydrogen" and "radar" suggest that these words may have entered Thai from two sources: from speech (resulting in a falling-tone pronunciation) and from writing (resulting in a mid-tone pronunciation). One might expect a similar pair of optional pronunciations for "alcohol," but Thai uses "whiskey" (from List 3A) for beverages, and normally reserves the word "alcohol" for medical and scientific usage. It is likely, therefore, that the pronunciation for "alcohol" is derived from written materials, not barroom conversation. One curious word is "soda," a ubiquitous beverage in Thailand that nearly always accompanies /wítsakîi/; one would not expect so obvious a borrowing to have a pronunciation suggesting that it entered Thai through a written form, especially since the name of its companion beverage appears to be based on a spoken form. The answer may be in the packaging of the product; it is quite possible that the average Thai learns his pronunciation of the word from seeing it transliterated into Thai characters on bottles and cases, with the mid tone required by the written system. Transliteration of the word on fire

extinguishers is another possible source for the pronuciation.

List 3C also includes polysyllabic English words that are not stressed on the final syllable. These words, however, have either a sibilant or a stop consonant in final position. A brief look at the list shows an array of tone placement that defies explanation of the sort suggested above. This is accompanied by great variety in pronunciation of the consonant and vowel sounds, and words of this type frequently have two or more Thai spellings, a situation found for only a very few of the monosyllables and polysyllables cited previously. This suggests that words of this type do not lend themselves well to incorporation into the Thai system, with the result that no consensus has been reached about how to handle them. There is some evidence that suggests influence by spoken English models (use of the vowel /ɛ,/ in the pronunciation of "accident," for example, where English pronunciation requires /æ/ but English orthography uses "a"), and some that suggests imitations of the English written form (use of /-ff-/ in the pronunciation of "office," for example). At this point, discussion of these forms is a process of sorting out bits and pieces of conflicting influence rather than searching out and defining a single, underlying, motivating force.

The first items in List 3C are alike in that they have final "s" in English. Thai orthography allows the letters which represent this sound to be used in syllable-final position, but pronunciation rules dictate that those letters have the value of /t/ in this situation. The words are also alike in that one would expect the English pronunciation to have a reduced vowel form in the final syllable of each; thus the /i/ in "tennis," the /aa/ in "Christmas," and the /ee/ in "Everest" suggest imitation of a written rather than a spoken form. The use of /a/ in the borrowed form of "bonus" is also interesting since many Thai, when attempting to transliterate Thai names into English, use the letter "a" for Thai /aa/ and the letter "u" for Thai /a/; someone fairly well versed in both languages might be likely to use the sound "a" when trying to read "bonus."

Additionally, the reduction of the unstressed vowel in English pronunciations must be a complicating factor. It is quite possible that the vowels of many monosyllables have sufficient duration to create the impression of contour even when the final is voiceless. With the words under consideration here, however, the final syllable may be so reduced that there is insufficient duration to create that impression of contour. Tone selection, then, may be based on a

letter-by-letter transliteration, which would dictate high tone for the final syllables of these words because of Thai spelling rules. The tendency for Thai to stress final syllables and reduce first syllables, in direct contrast to the pattern of the English model, probably is significant here also.

As further evidence of the influence of the written forms, one may look again to the pronunciations of "Everest" and "Christmas," which in English speech have reduced final syllables ending in /st/ and /s/, respectively. Thai has long vowels in each of the final syllables, which certainly could not be the product of imitation of speech, and the same is true for the /ee/ vowel in the first syllable of "Everest." As for tone placement, the falling tone on the last syllable of "Christmas," if it is written with the long-vowel symbol, follows the rules of Thai spelling and may be the result of pronunciation of a transliteration. The high tone on "Everest" does not follow the Thai spelling rules, and it would be difficult to explain it as the result of imitation of an English intonation since the syllable is so reduced in normal speech; it may be that the tone selection is a conscious imitation, not of the English model, but of the pronunciation pattern which applies with such regularity to checked monosyllables borrowed from English.

The low tone used for the borrowed form of "physics" may result from imitation of a spoken model, since in this English word the final syllable has a rather low pitch. But, since monosyllabic borrowings of this type are not pronounced with low tone, it is more likely that a written model is the source. The word "concrete" is difficult to explain since the stress in English varies and one cannot know with any certainty the shape of the model. One would expect high tone on the final syllable of "accident" if a spoken model were involved, but a transliteration could suggest either mid tone or high tone, depending on how the transliterator chose to spell the word. As with the final "p" of "stamp," the final "t" of "accident" could be negated by orthographic signals.

Variation of the final syllables of "lipstick" and "Atlantic" is interesting; imitation of a spoken model might suggest high tone, if the reasoning for checked monosyllables suggested above is correct and applicable here. And the character used to represent /t-/ in Thai writing requires a low tone on all checked syllables, which would suggest a written model. However, the variation also may stem from the spelling choices made by transliterators, since special

diacritics may be added to create tone placements that are out of the ordinary. Thus it may be that these words are the result of two separate borrowing methods, or it may be that transliterators, aware of differing patterns in the language, have chosen different ways of writing these words, or all of these possibilities may exist simultaneously.

Finally, the words "latitude" and "mustard" deserve attention. As for "latitude," the structure of the final syllable fits the description given earlier for checked monosyllables given high tone; even though the final syllable is unstressed, the vowel and the voiced final stop may have sufficient duration to create the impression of contour. On the other hand, the low tone variant fits the pronunciation suggested by a transliteration. For this word, then, it is possible to point to two clear explanations for the two pronunciations. As for "mustard," the presence of /-r-/ gives duration to the syllable, as does the voiced final; as with "lord" and "Ford," the low pitch and flat contour of the Thai low tone most closely resemble the model. Transliteration would, however, produce the same result if the transliterator used the Thai symbol for /t-/, and so either a spoken or written model is possible for these pronunciations.

These two words fit easily into the patterns offered as motivations behind tone placement: imitation of spoken models and imitation of written models. The fact that other words in List 3C show such variety and are so difficult to explain suggests that Thai cannot easily fit into the native system those polysyllabic words which end with an unstressed checked syllable.

One final category needs to be mentioned, although there are very few words involved; these are words which, in English, have stress on the final syllable. List 4A contains four words ending with unchecked syllables to which Thai assigns mid tone, and a fifth word with rising tone. Two explanations can be given for the mid tone. The first is that the words were borrowed into common speech through transliteration and that the tone corresponds to the rules of Thai writing. The second explanation is that the English stress pattern, with the final voiced nasal or semivowel, creates a level contour best imitated by the mid tone, unlike the words of List 3A, in which the English stress pattern creates a contour best imitated by the falling tone and its glottal constriction. The vowel /ɛɛ/ in the word "magazine" suggests that this word, at least, is the product of borrowing through speech; borrowing through the written form

would probably give the vowel /a/ or /aa/.

The rising tone of the second syllable of the Thai pronunciation of the word "hello" is clearly the result of imitation of a spoken model. The word "hello" is used in Thai almost exclusively as an opening for telephone conversations, and is undoubtedly patterned after the English speaker's pronunciation in that situation, in which case the pitch of the model is higher than that of the imitation. While the Thai high tone may be closer in pitch height to the English pronunciation of "hello" in telephone conversations, the English model does not have a rise–crest–fall pattern, nor is there glottal constriction, both of which are characteristic of the Thai high tone. The rising tone, even though it is relatively lower in pitch than the likely English model, does not have a drop in pitch at the end of the syllable and also has no glottal constriction, and in these respects is closer to the English model than is the high tone. This is a small but clear piece of evidence that one should look for attention to contour and the presence or absence of glottal constriction as motivating factors behind tone selection in polysyllabic loans, just as with the monosyllabic loans discussed above, and also that the placement of stress in the spoken model is significant.

List 4B contains three words in which the English form ends in a checked syllable which is stressed. The Thai word /théknìk/ ends with a low tone on the final syllable, which would be contrary to expectation, but it is not at all certain that this word is actually based on the English word "technique"; it may be that a European language is the source. The words "cement" and "percent" might also be expected to have high tone, as with the borrowed form of "tent." The mid tone may be the result of the effect of stress placement, which gives a flattened contour to the English form, making mid tone more appropriate. It is equally possible, however, that the words were borrowed from transliterated forms with orthographic signals nullifying the effect of the English final stop (as with "stamp"). Comments regarding members of List 4 must be considered tentative, since they are based on so small a set of examples.

In summary, I have suggested that analysis of tones used in English borrowings into Thai must include consideration of several factors which are often overlooked. In order to demonstrate this point I have examined a number of borrowings which have gained wide acceptance in the Central Thai dialect region and have been used in the language for some time. I have suggested that there are two

likely routes through which these words entered Thai, that is, through speech and through writing, and that the route travelled by a particular word will influence its pronunciation in Thai. For those words which entered the language through speech, it is important to consider contour shape as well as several seemingly minor details of the phonology of the different Thai tones in order to understand the pattern of tone assignment. It is also important to consider the differences between the final stop in English and the final stop in Thai, since the English final stop is likely to be interpreted by the Thai speaker as the glottal constriction which he or she associates, in Thai words, with part of the tone system.

LIST 1A

/keem/	game	/rim/	ream
/khriim/	cream	/wiw/	view
/khiw/	queue	/hɛm/	ham
/sen/	cell	/kia/	gear
/boo/	bow	/chia/	cheer
/tan/	ton	/səə, sə̂ə/	sir
/bɔm, bəɔm/	bomb	/bia/	beer
/bɔn/	ball	/fɛɛ/	fair
/plɛn/	plan	/mee/	mail
/frii/	free	/bɔ̌y/	boy (waiter)
/fɛɛn/	fan	/bəə/	num*ber*
		/mɛ̀m/	ma'am

LIST 1B

/prɔn, pɔn/	bronze	/len/	lens
/pəɔn/	pound	/fiw/	fuse

LIST 1C

/fɔɔm/	form	/thəəm/	term
/faam/	farm	/paam/	palm
/fəən/	fern	/fiim/	film

LIST 2A

/kɔ́k/	cock	/búk/	book
/kɛ́p/	cap	/fít/	fit

/chɔ́k/	shock	/káat, kɛ́ɛt/	gas
/flúk/	fluke	/khéek/	cake
/súp/	soup	/séep, séef/	safe
/sét/	set	/nóot/	note
/nét/	net	/ʔóok/	oak

LIST 2B

/khém/	camp	/bɛ́ŋ/	bank
/tén/	tent	/díw/	duece
/thɛ́ŋ/	tank	/ʔék/	"X"
/pám/	pump	/líp, líf/	lift
		/satɛm/	stamp

LIST 2C

/kɔ́k/	cork	/lɔ̀ɔt/	lord
/chɔ́k/	chalk	/fɔ̀ɔt/	Ford
/chə́ət/	shirt	/wɔ̀ɔt/	ward
/máat/	march	/bɔ̀ɔt/	board
/máak/	mark	/sə̀əp/	serve
/wɔ́ɔn, wɔ́ɔls/	waltz		
/káat, kháat/	card		

LIST 3A

/kookôo/	cocoa	/lékchə̂ə/	lecture
/dɔ́ktə̂ə/	doctor	/wítsakîi/	whiskey
/dɔnlâa,dɔɔlâa/	dollar	/ʔɛ́ppə̂n/	apple
/thɛ́ksîi/	taxi	/sateechân/	station
/mɛ́kʔaathə̂ə/	McArthur	/thɛŋkôo/	tango
/bɛ́təərîi/	battery	/chəərîi/	cherry
/pókkə̂ə/	poker	/khoolâa/	cola
/fɛɛchə̂n/	fashion	/hɔndâa/	Honda
/rákbîi/	rugby	/fɛntâa/	Fanta
/rayfə̂n/	rifle	/pépsîi/	Pepsi
/lɔ́ttəərîi/	lottery		

LIST 3B

/kɛɛlə(ə)n/	gallon	/ʔiléktrəən/	electron
/khrístian/	Christian	/maakariin/	margarine
/prookrɛ(ɛ)m/	program	/ʔɛlkəəhəə/	alcohol
/niwkhlia/	nuclear	/baràndii/	brandy
/rátsia/	Russia	/soodaa/	soda
/reeyɔŋ, –yɔn/	rayon	/haydrooyen/ /haydrooyên/	hydrogen
/linin/	linen	/reedaa,–dâa/	radar
/siwilay/	civilize		

LIST 3C

/ʔɔffít/	office	/phlástìk/	plastic
/tennít/	tennis	/phlátsatìk/	
/boonát/	bonus	/ʔéksiden/ /ʔéksidén/	accident
/khɔɔmmiwnít/	communist	/lípsatìk/ /lípsatík/	lipstick
/ʔeewəəréet/	Everest	/ʔèɛtlɛɛntìk/ /ʔéɛtlɛɛntík/	Atlantic
/khrítsamâat/	Christmas	/létticùut/ /létticúut/	latitude
/binlîat/	billiards	/mátsatàat/ /mástàat/	mustard
/khɔnkrìit/	concrete		
/méttrìk/	metric		
/físìk/	physics		

LIST 4A

/ka(a)tuun/	cartoon	/hanlŏo/ /halŏo/	hello
/mɛkkaasiin/	magazine	/hooten/	hotel
/riiwiw/	review		

LIST 4B

/thékníik/	technique	/siimen/	cement
/pəəsen/	percent		

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