

The interplay between tone, stress, and syllabification in Thai¹

Uthaiwan Wong-opasi

University of Illinois at Urbana-Champaign
and Syracuse University

0. Abstract

In this study, tone is analyzed as an autosegment closely related to individual phonetic features of segments and such suprasegmental features as stress and syllable structure. Tone assignment in Thai is modular, having a cyclic mode of application throughout word formation, in accordance with two well-formedness conditions on tone. The first well-formedness condition is formulated in terms of syllable structure. Specifically, although Thai tone is lexical, the optimal five lexical tones are constrained by syllable structures. That is, the [-continuant] feature of the coda prohibits mid tone. The distribution of tone is further controlled by the underlying phonetic features of the onset, resulting in distinct tone patterns despite identical rime structures. Due to the autosegmental nature of tone, the second well-formedness condition ensures that one and only one tone can be associated to a phonetic segment. The hypothesis that tone is an autosegment, separated from, but correlates with the stress and syllable structure will be proven via a historical linguistics account of tonogenesis. Additional evidence which supports the claim that both the onset and coda can induce tone will be drawn from different tone outputs governed by varying morphological as well as phonological structures which arise throughout the derivation and compounding of Thai native words and foreign loanwords. Finally, the influence of Thai stress on tone distribution and syllable structure will be treated for the first time in the literature when new data from language games involving foreign loanwords are examined.

1. Background

Thai has *five* lexical tones in the unmarked cases (cf. (1))

- (1) Mid: k h a a² 'a grass (*imperata cylindrica*)'
 Low: k h â a 'galangal, a rhizome'
 Falling: k h â a 'to kill; a servant'
 High: k h á a 'to engage in trade'
 Rising: k h ă a 'a leg'

However, not all five tones occur freely and various researchers, working within both the segmental and autosegmental theories, have attempted to describe the tone occurrence restrictions. We will first outline some of the arguments supporting the segmental analyses (Henderson 1949; Leben 1971, 1973; Gandour 1974) which Yip (1980, 1982) rejected in favor of an autosegmental approach.

Leben argues for a segmental nature of Thai tones because tone may be dependent on vowel length. He points out one tone change phenomenon in Thai which is triggered by a vowel shortening rule. Assuming contour tones to be derived (Leben 1971; Gandour 1974), from the evidence that as a result of vowel shortening, the contour tone in the first element is neutralized to mid in the combinative speech style (cf. (2a)); while tone remains unaltered when vowel shortening does not apply (2b)³, Leben concludes that there is a vowel shortening rule (VV->V) and a convention that simplifies HL or LH to a "compromised" mid tone, phonetically. Furthermore, in the cases of underlying level tone, e.g. a high level tone, no tone change results despite vowel shortening (2c).

- (2) a. thîi năy -> thi 'năy 'where?'
 sîi khăaw -> si 'khăaw 'white'
 săaw săaw -> saw săaw 'young girls'
 wâaŋ wâaŋ -> waŋ wâaŋ 'at your leisure'
 b. thâw ray -> thâw ray 'how much?'
 c. náam chaa -> nám chaa 'tea'

According to Yip, if tone is segmental, when a vowel deletes, tone should be deleted as well (LH->L or H) rather than a compromised mid tone (*M). She also cites Gandour's observation that elsewhere in the language, LH is converted to

H, as in *chăn* -> *chăn* 'I'; *phǎm* -> *phố̌m* 'I, male', and *khǎw* -> *khắ̌w* (third person pronoun). Moreover, upon a close examination of Henderson's data, Yip found examples of HL tone on short vowels followed by a glottal stop or zero in sentence intonation such as *bâ(?)*, *lâ(?)*. Furthermore, Yip cites counterexamples which include cases of tone change accompanying vowel shortening with underlying *level* tones.

- (3) *yàaŋ rai* -> *yaŋ ɲai* 'how?'
yàaŋ níi -> *yaŋ ɲíi* 'this way, like this'

Due to the gaps in Henderson's data for the discussion in her article, Yip cannot offer a firm conclusion but suggests that the tone change in (3) may be morphological rather than phonological or it may be stress conditioned (not by complete absence of stress, like the neutral tone, but rather by secondary as opposed to main stress). This view is supported by Henderson's discussion of the neutral tone in unstressed syllables (1949: 37, fn. 27)

The actual pitch of the neutral tone may vary according to context, but is most commonly mid level.

Also, Henderson (1967) affirms that the stress in forms like (2a), such as *thīi nǎy* -> *thi' nǎy*, falls on the second syllable.

At this point, we would like to suggest treating the vowel shortening and tone change in (2) - (3) as postlexical phenomena which are caused by the stress pattern in Thai. Specifically, Thai is stress-final within a given phonological domain, i. e. a word, a compound, a phrase, or a sentence. Although the two processes usually cooccur as they usually take place in unstressed syllables, they are independent from each other as we may find tone change without vowel shortening (4a) and vice versa (4b).

- (4) a. *nǎŋ sǔu* -> *naŋ sǔu* 'book'
thá? lee -> *tha lee* 'sea'

| | | |
|---------------|-----------------|---------------------------|
| má? rá? | -> ma rá? | 'bitter melon' |
| krà? còk | -> kra còk | 'mirror' |
| thoo rá? thát | -> thoo ra thát | 'television' |
| kaa lá? mee | -> kaa la mee | 'a kind of sweet' |
| pray sà? nii | -> pray sa nii | 'post office' |
| b. taa plaa | -> ta'plaa | 'callous (lit. eye+fish)' |
| pàak kaa | -> pàk kaa | 'pen (lit. mouth+crow)' |
| yàaη nán | -> yàη nán | 'that way, like that' |
| yàaη níi | -> yàη níi | 'this way, like this' |

The last example, yàaη níi -> yàη níi, is found in Henderson as another variant of yàaη níi -> yaη níi (cf. the last example of (3) above). It is cited as a counterexample in Yip 1982.

The preceding discussion of tone neutralization is disapproved of by Gandour who claims that acoustic results showed no evidence of such neutralization (though he eventually admits it in Gandour (1979: 140)). However, we, the native speakers of Thai (Warotamasikhadit 1967; Surintramont 1973) can hear the tone change which approximates the mid tone, although not exactly identical to underlying mid tone, and the shortened vowels which are not exactly equivalent to underlying short vowels, either. Given the nature of these postlexical rules which can be stylistic variants, and therefore optional, the inconclusiveness of the data is expected. Therefore, it may be safer to consider, as a point of departure, the nature of Thai tones in isolative speech. That is, we should concentrate on the tone on each syllable when pronounced in isolation or emphatically since these tones are truly lexical tones which occur at the lexical level in the terms of Lexical Phonology.

We turn now to isolative speech style. Gandour (1974: 138) proposes that the tone domain for each tone is a sonorant segment in syllable rime. That is, a syllable with CV(V)C_s structure, where C_s = a sonorant coda (traditionally called "live" syllable), can have all 5 tones, while syllables checked