

Truncation of Sanskrit and Pali Loanwords in Thai

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1. Introduction

Truncation, such as that caused by reduplication or by hypocoristics, has been extensively studied in prosodic morphology. In prosodic phonology, however, truncation has not had much attention paid to it, especially, truncation due to language contact. This paper investigates the truncation patterns of Sanskrit and Pali words in Thai; the former being predominantly polysyllabic and the latter monosyllabic. I argue that these truncation patterns are basically the manifestation of a constraint whereby Thai words must end in bimoraic heavy syllables.

From two Thai dictionaries¹, 800 loanwords (nouns) are collected and their melodic patterns are compared with their original Sanskrit and Pali words.² The melodic correspondence between the Indic and corresponding Thai words can be summarized as follows. Sanskrit and Pali loanwords which end in long vowels are never truncated in Thai (e.g. *vidii* --> *withii* 'method'). Those ending in a [+high] short vowel tend to resist truncation and gain a glottal stop after the vowel (e.g. *sati* --> *satiʔ* 'mindfulness'). There are a large number of Sanskrit and Pali words which lose a word final short vowel in Thai (e.g. *jiivita* --> *chiivít* 'life'); and some may lose two segments (a consonant and a short vowel) in the word final position (e.g. *citta* --> *chít* 'mind'). Still others may lose three segments at the end of a word; that is, -ccv# (e.g. *candra* --> *cán* 'moon') or -vcv# (e.g. *vacana* --> *phót* 'word').

This paper, based on the theoretical constructs of Moraic Phonology (Hayes 1989), argues that all of the above truncation (and non-truncation) patterns can be accounted for simply by: (i) the postulation of a bimoraic heavy syllable template, which has the stipulation of being mobile; and by (ii) just one type of syncope: -v# --> Ø. The template is placed at the right edge of the base which consists of both melody and associated prosodic structure. If the template is not satisfied at this position, the template must move leftward to the next available position. This movement of the template conditions the syncope of a word final short vowel. This syncope (-v# --> Ø) then triggers the application of a set of rules for resyllabification,

such as parasitic delinking, stray erasure, and the application of a well-formed condition on a syllable. The template is again imposed on the rightmost syllable of the base which has just undergone the resyllabification. If the template is satisfied, segmental adjustment and tone assignment are implemented to derive the surface form. If, however, the template is not satisfied for one reason or another, it must move leftward again, conditioning another application of resyllabification.

The outline of the paper is as follows. In Section 2, I will show the various truncation patterns observed in the data I have collected. In Section 3, I will introduce Moraic Phonology (Hayes 1989). In Section 4, I will demonstrate, for each truncation pattern, the prosodic derivations of loanwords.

2. Truncation Patterns

First of all, Indic loanwords which end in long vowels are never truncated:

(1)

karuṇaa	(P, S)	karunaa	'compassion'
gaathaa	(P, S)	khaathāa	'verse'
naarii	(P, S)	naarii	'girl'
viñṇuu	(P)	winyuu	'sage'
vidhii	(P, S)	withii	'method'
paaraguu	(P)	paarākhuu	'saint'

Indic loanwords which end in [+high] short vowels tend to resist truncation. Glottal stops are then obligatorily inserted after the vowels:

(2)

sati	(P)	satiʔ	'mindfulness'
samaadhi	(P)	samaathiʔ	'concentration'
pitu	(P)	pitùʔ	'father'
yaagu	(P)	yaakhùʔ	'rice gruel'

Exceptions:³

jaati	(P, S)	châat	'race'
dhaatu	(P, S)	thâat	'element'

There are countless instances of Sanskrit and Pali words which lose word-final short vowels in Thai. This should be regarded as the unmarked pattern of truncation:

(3)

kaara	(P, S)	kaan	'maker'
jiiivita	(P, S)	chiiwit	'life'
deva	(P, S)	thêep	'deity'
puthujana	(P)	but̪huchon	'common folk'
phala	(P, S)	phôn	'fruit'
wipaaka	(P)	wibâak	'calamity'

Some Indic words may lose two segments (a consonant and a short vowel) in word-final position:

(4)

citta	(P, S)	chit	'mind'
netra	(S)	nêet	'eye'
parisuddha	(P)	borisùt	'purity'
pakṣa	(S)	pàk	'a half moon'
varga	(S)	wák	'paragraph'
sangha	(P)	soṅ	'Buddhist order'

Some of the Indic loanwords may lose even three segments. The examples in (5) show the loss of -vcv# in word-final position:

(5)

koonagamaṇa	(P)	koonakhom	'a Buddha'
prayojana	(S)	prayòot	'advantage' ประโยชน์
vacana	(P, S)	phot	'word'
vetana	(P, S)	wêet	'wages'
sampuuraṇa	(P)	sombuun	'full'
paccavekkhaṇa	(P)	patcawêek	'contemplation'

The Indic loanwords in (6) are examples of those which lose -ccv# at word-final positions:

(6)

kosindra	(S)	koosin	'name for Indra'
candra	(S)	can	'moon' - จันทร์
yantra	(S)	yon	'mechanical device'
śāstra	(S)	sàat	'science' ศาสตร์

3. Theoretical Background

In analyzing the data in Section 2, I assume that the truncation and non-truncation patterns of Sanskrit and Pali loanwords in Thai are basically phonological phenomena which are sensitive to the syllable weight of word-final syllables. The most suitable model to accommodate this assumption may well be Moraic Phonology, in the frameworks of Hyman (1985) and especially Hayes (1989). The essential mechanism of Moraic Phonology is summarized concisely in the following passage: (Hayes 1989: 260)

(7)

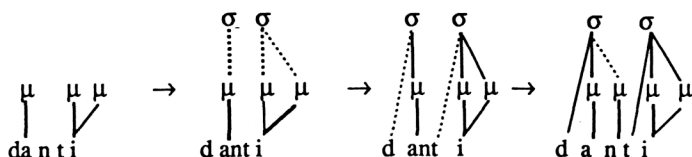
[M]oras appear in underlying representation, to represent length and syllabicity contrasts. Moras can also be created by language-specific versions of the Weight by Position rule. Other than that, monomoraic segments are simply adjoined to the appropriate position: the mora for syllable-final consonants and the syllable for syllable-initial consonants. (Hayes 1989: 260).

Derivations of the two words in (8) can demonstrate how a set of rules in Moraic Phonology (Hayes 1989) can

actually associate segmental, moraic, and syllabic tiers with each other to construct syllable structures:

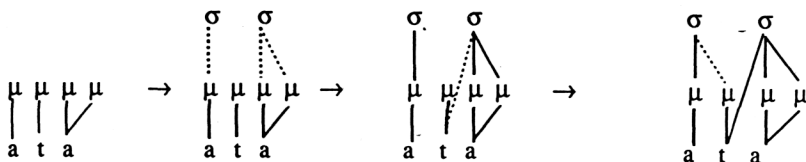
(8)

a. dantii (P) 'elephant'



underlying σ -assignment adjunction adjunction adjunction
form prevocalic Weight by remaining
consonants Position segments

b. attaa (P) 'self'

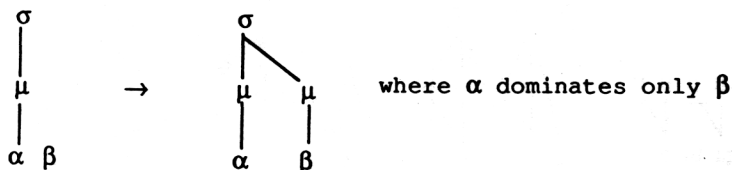


underlying σ -assignment adjunction adjunction adjunction
form prevocalic Weight by remaining
consonants Position segments

In (8a), an underlying form has segments and moras which represent length; a short vowel being linked to just one mora and a long vowel being linked to two moras. In σ (syllable)-assignment, syllables are linked to these moras. As mentioned in (7), onset segments are then directly linked to syllables and a syllable-final consonant is assigned a mora by Weight by Position. (8b) differs from (8a) in that the former has no segment which receives a mora by Weight by Position. Unlike (8a), however, (8b) involves in the association of the initial syllable with the mora which represents the weight of a geminate.

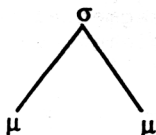
Weight by Position, defined in (9) below, should be regarded as rendering closed syllables heavy by assigning a mora to a coda consonant when it is adjoined to a syllable:

(9) Weight by Position (Hayes 1989: 258)

**4. Prosodic Derivations of Loanwords**

Having examined the basic mechanism of Moraic Phonology, in this section I would like to account for the melodic patterns of the loanwords cited in Section 2. In the course of exposition, a few more rules will be introduced from Hayes (1989). In addition, I will postulate a small number of prosodic rules, as well as the following template.

(10) Bimoraic Heavy Syllable Template

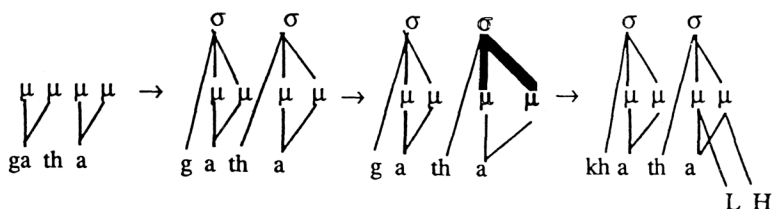


In postulating this bimoraic heavy syllable template, I assume that in Thai there is no weight distinction between CVC and CVVC. That is, Thai does not have super-heavy syllables, conforming to the general assumption that the maximal weight of a syllable is universally two moras (Hyman 1985).⁴

4.1. Derivation of Loanwords Which End in Long Vowels

With a set of the rules cited so far from Hayes (1989) and the bimoraic heavy syllable template defined in (10), it becomes possible to account for at least one of the patterns in Section 2; that is, the non-truncation pattern for the Indic words which end in long vowels. As mentioned in (1), when Indic words end in long vowels, these words are never truncated in Thai.

(11) gaathaa (P, S) --> khaathăa 'verse'



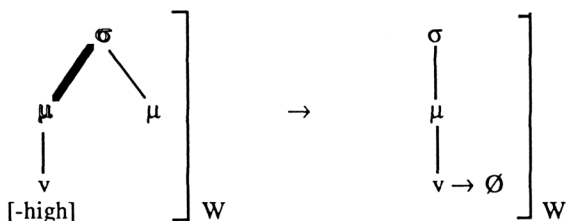
underlying form post-adjunction template-superimp.⁵ segmental adjust.& tone implement.

In the underlying form in (11), moras are associated to the nuclear vowels, representing the length or weight of the vowels. After the application of the set of the rules in (8) (post-adjunction), the bimoraic heavy syllable template in (10) is superimposed on the word-final syllable (template-superimposition). Because the geometric description of the syllable with binary branching mora nodes satisfies the weight condition imposed by the template, segmental adjustment and tonal assignment are finally implemented to derive the surface form.⁶

4.2. Derivation of Loanwords with -cv# Syncope

The derivations of loanwords in the other truncation patterns are not as simple as (11) and in order to account for their derivations, I postulate the following syncope rule which deletes a word-final short vowel.

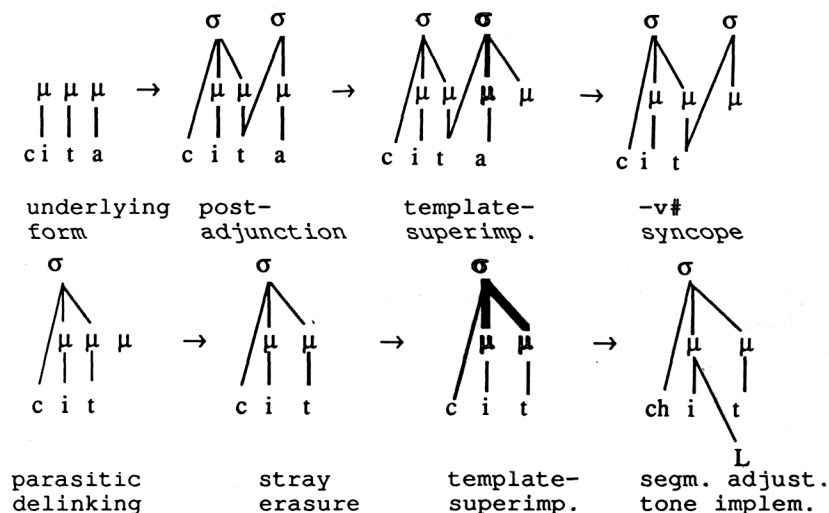
(12) -V# Syncope Rule



This rule says that if the weight condition of the template is not satisfied and the nuclear vowel of the word final light syllable is [-high], the nuclear vowel must be syncopeated. This rule thus does not apply: (i) to the words which end in long vowels, as in (11); and (ii) to the words which end in [+high] short vowels, such as samaadhi (P) (--> samaathî?) 'concentration'; pitu (P) (--> pitù?) 'father' in (2).

As stated in the introduction, I stipulate that there is an interaction between the syncope rule in (12) and the template in (10) which, I assume, is 'mobile'. This interaction of the template and the syncope rule, as well as the application of resyllabification, are demonstrated in (13) where the Indic word loses -cv# (cf. 4):

(13) citta (P, S) --> chit 'mind'

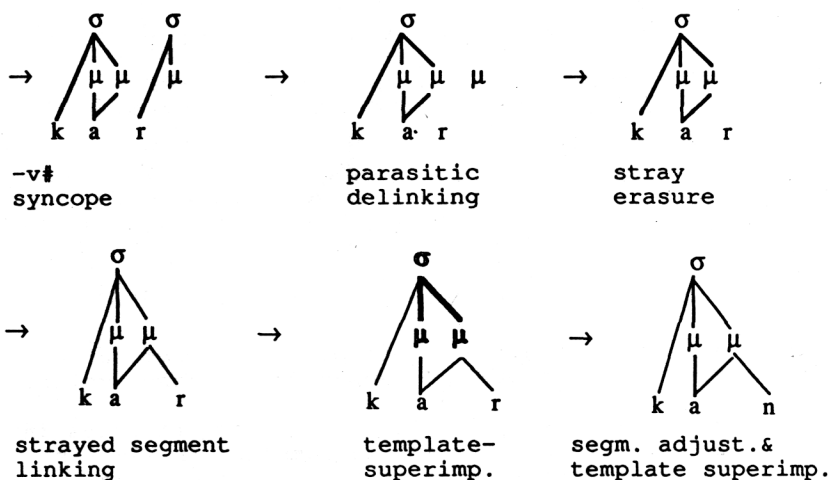
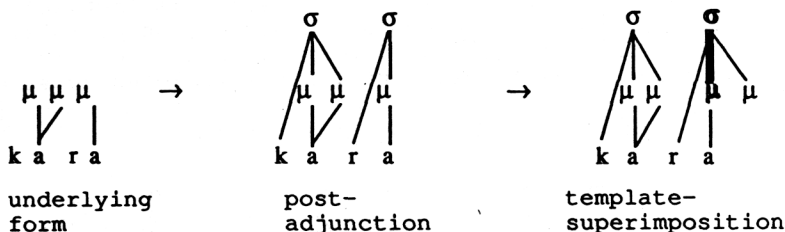


Here, after the application of the set of rules in (8) (post-adjunction), the mobile template in (10) is placed at the rightmost edge of the base (template-superimposition). Because the template is not satisfied, the syncope rule in (12) is invoked so as to delete the word-final [-high] vowel (#v-syncope). The application of Parasitic Delinking, then, deletes the syllable whose nuclear vowel has just been syncopated. Stray Erasure erases the mora which is then floating. After these processes of resyllabification, the template is imposed again which, at this time, is satisfied by the syllabic geometry. Segmental adjustments and tone implementation provide a finishing touch to this derivation.

4.3. Derivation of Loanwords with -v# Syncope

The following is the derivation for the loanwords which lose final short vowels (cf. 3). This truncation pattern is found extensively in Thai and should be regarded as the unmarked pattern:

(14) kaara (P, S) --> kaan 'maker'



In (14), up to the stage of Stray Erasure, the derivational processes should be regarded as being the same as those in (13). Unlike (13), however, Stray Erasure of a mora in (14) creates a strayed segment /r/. To account for this, I postulate Strayed Segment Linking whereby this strayed segment is linked to the preceding mora. Because Stray Erasure precedes Strayed Segment Linking, there is no possibility that the strayed mora and the strayed segment are linked to each other: the possibility would create additional, hence undesirable, processes in the derivation. This ordering of Stray Erasure (of a mora) before Strayed Segment Linking also accords with the spirit of Weight by Position in that the rightmost consonant in a syllable obtains its weight only by means of Weight by Position. The rest of the derivation in (14) should not require any further explanation.

4.4. Derivation of Loanwords with -ccv# Syncope

Sanskrit words which lose -ccv# in Thai have a specific melodic pattern; that is, they have a series of three consonants: the first "c" being associated to penultimate syllables and the last c's to the word-final syllables.⁷

(15)

kosindra	(S)	koosĭn	'name for Indra'
candra	(S)	can	'moon'
yantra	(S)	yon	'mechanical device'
ṣaastra	(S)	sàat	'science'

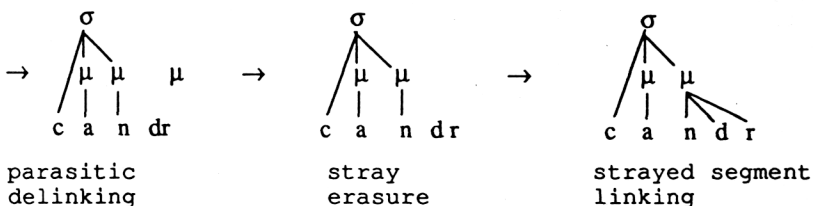
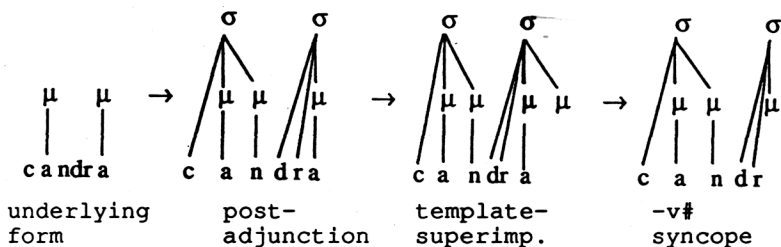
The derivation of loanwords with such a truncation pattern is by no means problematic to this prosodic approach. What is required, then, is a language-specific phonotactic constraint.

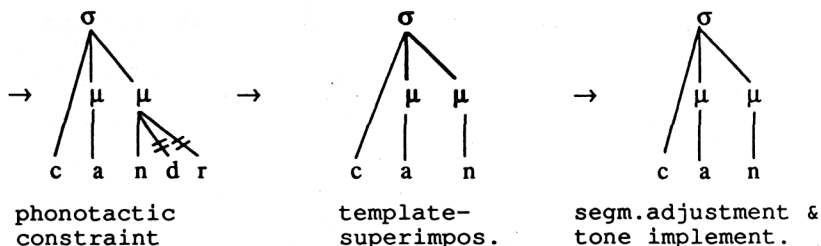
(16) Segmental Constraint on the Word-final Mora:

The rightmost mora in a syllable can have one and only one consonant.

The derivation of *candra* (S) 'moon' in (17) shows how this constraint is imposed in deriving its truncated form, *can* in Thai.

(17) *candra* (S) --> *can* 'moon'





In (17), the derivation up to the stage of Stray Erasure should be regarded as the same as (14). By Stray Segment Linking, then, the two strayed segments /d/ and /r/ are linked to the immediately preceding mora, creating a tri-consonantal mora. Because Thai does not allow such a mora, all the segments but the leftmost one are eliminated by the implementation of the constraint in (16). This process is then followed by template satisfaction, segmental adjustment, and tone implementation.

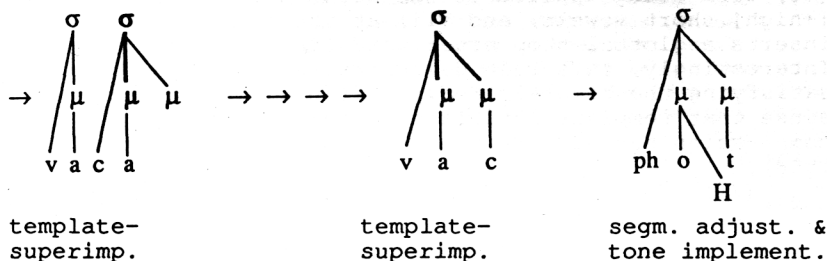
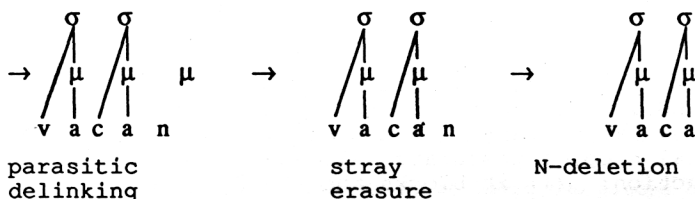
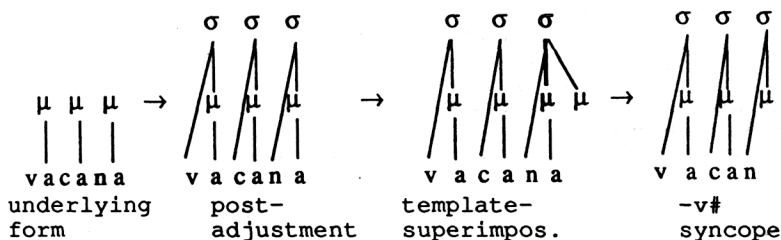
4.4. Derivation of Loanwords with -vcv# Syncope

The Sanskrit and Pali words which lose -vcv# in Thai have a certain melodic pattern: the antepenultimate segments are [-high] vowels and penultimate segments are nasals:

(18)		
koonaagamaṇa (P)	koonaakhom	'Buddha'
prayojana (S)	prayòot	'advantage'
vacana (P, S)	phòt	'word'
vetana (P, S)	wêet	'wages'
sampuuraṇa (P)	sombuun	'full'
paccavekkhaṇa (P)	patcawêek	'contemplation'

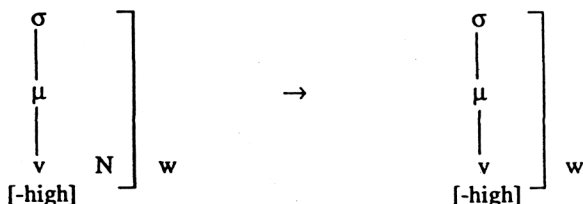
The truncation pattern of this type is rather exceptional in that these words undergo the process of resyllabification twice in spite of the fact that the initial resyllabification results in the satisfaction of the weight condition imposed by the bimoraic heavy syllable template⁸. As seen in (19), a stipulation is introduced to account for this peculiar pattern.

(19) vacana (P, S) --> phót 'word'



In (19), after the application of Stray Erasure, instead of applying Strayed Segment Linking, the derived form is fed into a N(asal)-Deletion rule which eradicates the strayed N. This rule is defined as follows:

(20) N-Deletion Rule



This rule accounts for a loanword-specific tendency. That is, if a final syllable of a derived loanword is

associated to a [-high] short vowel and N, such a loanword must undergo another resyllabification. Why a [-high] short vowel? As shown in (17), when a final syllable is associated to a [+high] vowel and N, there is no further application of resyllabification.

4.5. Derivation of Loanwords which End in [+High] Short Vowels

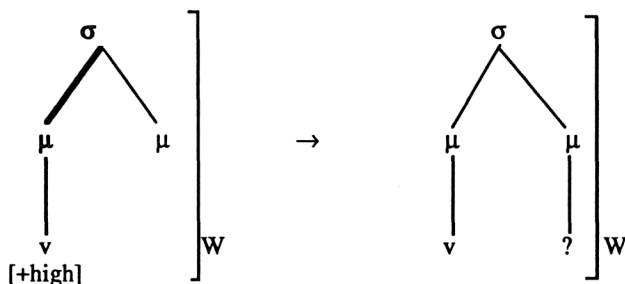
The last group of loanwords end in a [+high] short vowel. These words are usually not truncated.⁹ The following are some of the examples:

(21)

sati	(P)	sati?	'mindfulness'
samaadhi	(P)	samaathi?	'concentration'
pitu	(P)	pitù?	'father'
yaagu	(P)	yaakhù?	'rice gruel'

As mentioned earlier, in these cases, a glottal stop must be inserted after short vowels so as to make the final syllable heavy. To account for the insertion of a glottal stop, I postulate rule (22) which has a double function: (i) it blocks the -V# Syncope Rule in (12) from being applied to the words which end in [+high] short vowels; and (ii) at the same time, it inserts a glottal stop after word final [+high] vowels. Interestingly, this rule demonstrates a different way of satisfying the bimoraic heavy syllable template in the sense that template satisfaction may use not only a compression but also an expansion of the base (Steriade 1988).¹⁰

(22) Glottal Stop Insertion Rule



5. Conclusion

Based on Moraic Phonology, this paper demonstrated how all the truncation and non-truncation patterns of Sanskrit and Pali loanwords in Thai could be accounted for prosodically. A basic assumption of the paper was that all these patterns were due to a language-specific constraint that Thai words must end in bimoraic heavy syllables. This assumption was represented by a

bimoraic heavy syllable template which could render answers to the questions: (i) why are Sanskrit and Pali words which end in long vowels never truncated in Thai?; and (ii) why do some words which end in short vowels obligatorily obtain a glottal stop word-finally? In regard to the truncation patterns, I assumed that all the truncation patterns involved just one type of syncope: $-v\# \rightarrow \emptyset$. The interaction of the bimoraic heavy syllable template, the syncope rule, and the process of resyllabification accounted for the truncation patterns exhibited by Sanskrit and Pali loanwords in Thai with a minimal amount of stipulation.

Notes

¹ That is, McFarland (1954) and Roral Edition (1982).

² Rhysdavid's (1972) is used for the comparison with Pali and Monier-Williams (1899) is used for the comparison with Sanskrit.

³ There are a few exceptions to this generalization.

⁴ This assumption is supported by at least two pieces of evidence in Thai. A language game (Surintramont 1973) provides the first piece of evidence. In the game, $-VC$ and $-VVC$ rimes can be exchanged between two syllables as long as they meet tonal constraints, suggesting that the CVC and CVVC syllables have no weight distinction; for example, $ph\ddot{o}m + yaaw$ 'long hair' \rightarrow $phaaw y\ddot{o}m$. Second, *Chǎn* (one of the five styles in Thai poetry), whose meter is sensitive to syllabic weight, does not differentiate CVVC from CVC (Hudak, 1985, 1986, 1990). Also, in *Chǎn*, CVVC is never treated as the combination of one light and one heavy syllable as, for example, practiced in some of Arabic poetry (cf. Hayes 1989).

⁵ The thicker lines and highlighted characters indicate the matching part of the geometric description of the syllable in question and the bimoraic template in (15).

⁶ Here, tone should be imagined to project into the page. That is, the representation should be regarded three-dimensionally (Hyman 1985, Hayes 1989).

⁷ These examples obviously indicate that Pali does not have a sequence of three consonants. Geiger (1943) may be the best source to know about the melodic characteristics and correspondences between Sanskrit and Pali.

⁸ Interestingly, in *Chǎn* heavy syllables with a nasal are often treated as light syllables (Hudak, 1990).

⁹ As mentioned in (2), there are some exceptions to this pattern.

¹⁰ This template expansion supports the claim that a glottal stop, which is often regarded as having no moraic weight, has a moraic weight. (cf. Hyman 1985).

¹⁰ This template expansion supports the claim that a glottal stop, which is often regarded as having no moraic weight, has a moraic weight. (cf. Hyman 1985).

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