

PROSODIC STRUCTURE AND REDUPLICATION IN THAI

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1.0 INTRODUCTION

Thai, a member of the Sino-Tibetan language family, is the standard spoken and literary language of Thailand and is specifically used in Bangkok and its environ. Thai words are predominantly monosyllabic; however, many are polysyllabic. Inflection is completely lacking in Thai but derivation is well-developed; reduplication is certainly one of the language's most productive word-formation processes.

In this paper, I will account for various kinds of reduplication in Thai within the Prosodic Morphology framework proposed by McCarthy and Prince (1986). McCarthy and Prince propose the theory of Prosodic Morphology, a templatic representation system which attempts to account for various allomorphs by means of a shape-invariant that is prosodic in nature, without any reference to segments. I will argue in this paper that this theory provides a successful way of accounting for reduplication in Thai, one of the language's most productive word-formation processes. The theory can explain the occurrence of various forms of reduplicative affixes such as CVC, CCVC, CVVC and CCVVC. Ablaut, the alternations of vowels or consonants found in the resulting forms of reduplicative words, can also be nicely handled by means of melodic overwriting within the framework of Prosodic Morphology. Since this framework depends on a prosodic description of the language, the prosodic constituents are discussed in section 2. In section 3, the theory of Prosodic Morphology will be sketched and the analysis of Thai reduplication will finally be offered in section 4.

2.0 THE PROSODIC STRUCTURE OF THAI

2.1 A Brief Sketch of Thai Phonology

There are twenty-one consonant phonemes in Thai (/p p^h b t t^h d c c^h k k^h ʔ f s h₁ l r m n ŋ j w/). Of those twenty-one phonemes, only /p t k ʔ m n ŋ j w/ can be final consonants.¹ Moreover, there are nine vowels with distinctive length (/i i: e e: ə ə: a a: u u: o o: ɔ ɔ:/) and three diphthongs (/ia i'a ua/). Of equal significance are five contrastive tones (high [´], low [˘], mid = unmarked, rising = ˇ and falling = ^) which are used to distinguish lexical meaning.

Constraints on the distribution of these lexical tones depend on syllable structure. All five tones may occur on open syllables or on closed syllables ending with a sonorant. On syllables that consist of a long vowel followed by an obstruent, only the low and falling tones are allowed. On syllables containing a short vowel followed by an obstruent, only the low and high tones are permitted. The distribution of Thai tones is summarized in the table below:

Table 1: Summary of Thai Tones

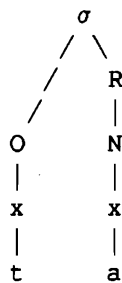
| Syllable Structure | Lexical Tones | | | | |
|-----------------------|---------------|-----|-----|---------|--------|
| | high | low | mid | falling | rising |
| C(C)VV | X | X | X | X | X |
| C(C)VS | X | X | X | X | X |
| C(C)VVS | X | X | X | X | X |
| C(C)VO | X | X | - | - | - |
| C(C)VVO | - | X | - | X | - |

2.2 Theoretical Issues in Syllable Structure

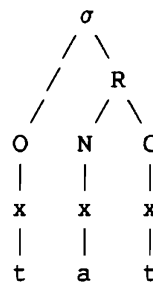
There have been a number of proposals concerning the internal structure of the syllable. These proposals differ with respect to whether they recognize a rime constituent or a flat syllable structure (Hyman (1985)). In both theories, the phonological weight of a syllable is expressed by its internal build-up. According to the theory that recognizes a rime, a light syllable is defined as one whose rime does not branch, and a heavy syllable as one whose rime does branch. Thus, in order to establish the weight of a syllable, only its rime is 'projected' and the heavy vs. light distinction is redefined as one between branching vs non-branching, as illustrated in (1):²

(1)

a. Light Syllable

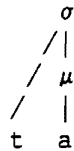


b. Heavy Syllable

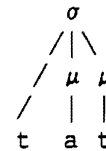


On the other hand, the theory recognizing a flat syllable structure depends on the number of moras to express the weight distinction. It is this theory of internal syllable structure and prosodic weight on which my analysis is based. In the moraic approach, a light syllable consists of one mora whereas a heavy syllable comprises two moras. The status of the syllable onset has different interpretations. For instance, Hyman (1985) and Davis (1990) consider the onset moraic since it is adjoined to a mora position. I, however, follow McCarthy and Prince (1986) and Hayes (1989) in considering the onset to be non-moraic; the onset is attached to the syllable node. This second moraic approach to the internal syllable structure is displayed in (2):

(2) a. Light Syllable



B. Heavy Syllable



As (2) illustrates, a mora has a dual role: it serves as a position of autosegmental association as well as a weight unit. Generally, vowels associate to moras while weightless consonants associate to the syllable node. The mora with its dual role is developed by McCarthy and Prince (1986) as the centre of their theory of Prosodic Morphology.

2.3 Thai Syllable Structure

Thai syllable structure is of the form C(C)VC, C(C)VV, and C(C)VVC where VV is either a long vowel or a diphthong. The onset is obligatory: any consonant or a maximum of two consonants can fill the onset position. The possible clusters are as follows: /p p^h t t^h k k^h/ followed by /l r w/; /t t^h/ followed by /r/ and /w/; /k k^h/ followed only by /w/; and /s/ followed by stops. In the syllable coda, on the other hand, only a restricted set of segments may occur, namely /p t k ʔ m n ŋ j w/.

Over the years, the question concerning the maximum number of moras a syllable can contain has been addressed. In most current theories, the maximum syllable weight is said to be bimoraic (Hyman (1985) and McCarthy and Prince (1986)). However, with a few pieces of convincing evidence from compensatory lengthening and stress, Hayes (1989) and Macken (1990) suggest that trimoraic syllables exist. Following them, I will argue in this section that trimoraic syllables also exist in Thai. The evidence is from the language stress pattern.

In Thai, a syllable consists of one, two, or maximally three moras. A monosyllabic word is obligatorily bimoraic or trimoraic. The only time monomoraic syllables occur is in polysyllabic words in a fast speech style. The first syllable of a bisyllabic word or the first and second syllables of trisyllabic words may contain one mora if it ends in a glottal stop. When the glottal stop is dropped, the tone is always neutralized as mid. This phenomenon is shown in (3):

- (3) a. tǎg.s.ko:n ---> tako:n 'to shout'
 b. sǎ'hǎ'rát ---> saharát 'The United States'
 c. rá'mátrá'wǎŋ --> ramátrawǎŋ 'careful'

After the syllable is defined, each element of the nucleus and coda positions is assigned one mora. Following the assignment of moras, onset is attached to the syllable node. For example, in C1VC2, the syllable contains two moras whereby V takes up one mora and C2 takes up another mora and C1 is linked up to the syllable node.

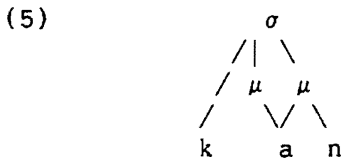
Since the coda position is assigned one mora, the final consonant must be recognized as moraic regardless of how sonorous it is. The evidence supporting this can be drawn from compensatory lengthening in reduplication as well as from insertion of a glottal stop in Indic loanwords in Thai. For example, consider the word *krǎ'sík* ---> *krǎ'síkkǎ'í*: 'mirthfully'. If /k/ is understood as

moraic, then vowel lengthening is easily accounted for. That is, when *k* deletes, the mora position is left empty, and subsequently the vowel *i* lengthens to fill that mora position. If the *k* is non-moraic, compensatory lengthening would not be motivated. Similarly, a glottal stop is obligatorily inserted if the Indic loanwords end in high short vowels, e.g. Pali *sati* ---> Thai *sati*ʔ 'mindfulness' (Miyamoto (1992)). Again, this shows that ʔ is moraic; otherwise, the syllable structure constraint that one mora is not allowed in a final syllable would be violated.

Miyamoto (1992) proposes the syllable template for Thai shown below:



In postulating this bimoraic syllable template, he assumes that there is no moraic weight distinction between CVC and CVVC. That is, Thai does not have super-heavy syllables, conforming to the general assumption by Hyman (1985) that the maximal weight of a syllable is universally two moras. Therefore, for Miyamoto, the syllable structure of the word *ka:n* 'maker' will look like that in (5):



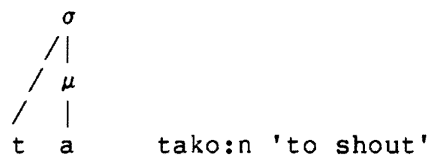
Miyamoto does not give any evidence supporting his argument or the internal syllable structure in (5). Moreover, since vowel length is distinctive in Thai, it seems contradictory that the language does not have weight distinction between V and VV when they are followed by a consonant. On the other hand, if we posit that Thai distinguishes heavy syllables from super-heavy syllables, the distinction between CVC and CVVC can be captured. In fact, the language has to recognize trimoraic syllable structure for the sake of stress. In Thai, stress depends on the weight of the syllable; in non-derived forms, a super-heavy syllable takes the main stress, as illustrated in (6):

(6) Stress Pattern

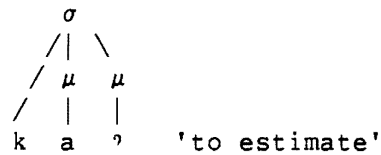
- | | | |
|----|-------------------------------------|---------------|
| a. | 'wæ:w'wæ:w | 'bright' |
| b. | p ^h i:p ^h ā:m | 'to be hasty' |
| c. | 'jâ:pjon | 'ingenius' |

To sum up, Thai has monomoraic light syllables, bimoraic heavy syllables and trimoraic super-heavy syllables. The representation of Thai syllable structure is given in (7):

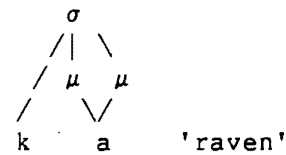
(7) a. Light Syllable



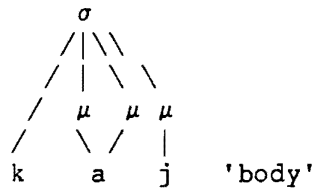
b. Heavy Syllable



c. Heavy Syllable



d. Super-Heavy Syllable



3.0 PROSODIC MORPHOLOGY

The main idea of Prosodic Morphology is that templates that are relevant for morphological processes are defined in terms of the authentic units of prosody. According to McCarthy and Prince (1990), these are: mora (μ), syllable (σ), foot (F), and prosodic word (W). In other words, Prosodic Morphology recognizes those entities as the only legitimate targets for a process like reduplication. This view is different from the CV-skeleta theory of Marantz (1982) since the latter takes segments to be the target of reduplication.

Another difference between the two theories lies in the way they treat allomorphs of reduplicative morphemes. The CV-theory must set out the reduplicative template as the longest observed realization and must then discard empty template slots after the melody has been mapped onto the target frame. Prosodic Morphology, however, assumes that empty templatic slots do not exist; it can define the template as, for example, the syllable which includes in it all possible syllable shapes allowed in the language, and hence, does not have to discard unassociated elements. This is one of the reasons that Prosodic Morphology will have more success than the CV-theory in handling Thai reduplication. The CV-theory cannot adequately account for the full reduplication of words or morphemes which occur in the language since they may have different CV-skeleta. The Prosodic Morphology process copies an entire Thai prosodic word including tones. The template representation system accounts for various allomorphs by means of a shape-invariant that is prosodic in nature, without any reference to segments.

Like proponents of the CV-theory, however, McCarthy and Prince still assume that the entire segmental melody of the reduplication domain is copied onto a new plane. Also, mapping of the segmental material into the template is directional: in unmarked cases, left-to-right for prefixes and right-to-left for suffixes and free choice for root-and-pattern systems. For reduplicative affixation, they assume edge-in reprosodization, by which the affix occurs at an edge. That is, in unmarked cases, prefixes reprosodize at the beginning and suffixes at the end of the domain.

There is another difference between CV-theory and Prosodic Morphology. In Prosodic Morphology, association is assumed to be template-driven in the sense that the phonemic melody is parsed by the affixal template. In the CV-theory, on the other hand, association is assumed to be phoneme-driven whereby the melody elements are matched one by one to the template. In both cases, association is subject to the Well-formedness Condition which states that association lines may not cross and no elements may be skipped.

In addition to the basic apparatus of the framework that I have outlined, "Melodic Overwriting" is another part of Prosodic Morphology which will play a key role in the analysis of Thai reduplication. In certain types of reduplication, a portion of the reduplicative affix has a fixed melodic shape regardless of the base melody. In CV-theory, these cases will be treated by means of "Prespecification" whereby a particular feature is associated to a position in the template. McCarthy and Prince argue against prespecification in the light of 'echo' words in English such as *table-shmable*, *book-shmook*, and so on. Since the echo word phenomenon is a result of full reduplication, no template can be determined, and as a consequence, nothing can be prespecified. As an alternative, McCarthy and Prince propose melodic overwriting in which a feature changing association overwrites the original melodic material copied from the base. Thus, in the echo word *table-shmable*, *shm* overwrites *t*, then the templatic melody *shm* associates with the onset of the syllable template and the *t* is subsequently delinked.

4.0 REDUPLICATION

4.1 Types of Reduplication in Thai

Reduplication in Thai is total. That is, the process copies the whole phonological word, including tones, from the base. The evidence supporting this claim comes from forms like *di:di:* 'very good' (from *di:*), *wæ:wwa:wwæ:wwa:w* 'bright' (from *wæ:wwa:w*) and *ʔa:nʔa:n* 'read continuously' (from *ʔa:n*) where, after the process of reduplication, long vowels and the low tone occur in both the base and the reduplicative affix.

Recall that reduplication is one of the most productive word-formation processes in Thai. In fact, it has been observed that every grammatical word-category can be reduplicated. Tentatively, there are four main types of reduplication in Thai: simple reduplication, emphatic reduplication, negative reduplication, and evocative reduplication. 4.1.1 Simple Reduplication

Simple reduplication copies the whole base. That is, a copy is generated that looks exactly the same as the base. Simple reduplication can operate on words of different classes and will trigger some change in the meaning of each word. For instance, the reduplication of a noun changes the quantity from singular to plural;³ that of an adjective shows generality; that of an adverb adds to intensity; that of a verb indicates the continuity of an action; and that of a classifier exhibits distribution of an action. Examples of simple reduplication are shown below:

- (8) a. *dək* 'child' ---> *dək'dək* 'children'
 b. *nâŋ* 'sit' ---> *nâŋ'nâŋ* 'sit continuously'
 c. *di:* 'well' ---> *di:'di:* 'very well'
 d. *bæ:n* 'flat' ---> *bæ:n'bæ:n* '(sort of) flat'
 e. *nâ:* 'page' ---> *nâ:'nâ:* 'page by page'

Considering the examples in (8), it is difficult to predict whether the copying process is prefixal or suffixal due to the full reduplication. However, a consistent stress pattern is evident; the main stress falls on the second syllable of the reduplicative forms whereas the secondary stress falls on the first syllable. Thus, it seems reasonable to claim that, with simple reduplication, the process is prefixal in which case the base receives the main stress and the affix gets the weak one. In the reduplicative form of bisyllabic bases, the main stress is assigned on the antepenultimate and last syllables, but the stress is a little stronger on the last one, e.g. *nâ:râk* 'cute' ---> *nâ:'râknâ:'râk* '(sort of) cute'

4.1.2 Emphatic Reduplication

Like simple reduplication, emphatic reduplication copies the entire base. This reduplicative affix is a prefix with a fixed high tone. Emphatic reduplication only operates on verbs, adjectives, and adverbs to add emphasis to the words. With emphatic reduplication, the main stress is assigned on the base, whereas the prefix receives the secondary stress. Instances of emphatic reduplication are given below:

- (9) a. $c^h\acute{o}p$ 'like' ---> $c^h\acute{o}p^c^h\acute{o}p$ 'really like'
 b. *kin* 'eat' ---> *kín'kin* 'really eat'
 c. *nīāj* 'tired' ---> *nīāj'nīāj* 'really tired'
 d. *suāj* 'lovely' ---> *súaj'súaj* 'really lovely'

4.1.3 Negative Reduplication

This type of reduplication again copies the whole morpheme from the base but this time the reduplicative affix is a suffix with a fixed vowel, either /æ/ or /ə/. If the base is bisyllabic, the suffix has either one of the two vowels fixed on the second syllable. This pattern of reduplication serves to convey a negative attitude toward a thing or a person. In this case, both the base and the suffix receive main stress and in bisyllabic words, the main stress falls on the antepenultimate and last syllables. Examples of negative reduplication are given in (10):

- (10) a. *di:* ---> *di:dæ:* OR *di:də:* 'good + disagreement'
di:dæ: ʔaʔráj rót k^han nɪ:
 good+NEG what car CLASS this
 '(I don't agree) (with you) that this car is good.'
- b. *lâw* ---> *lâwlâw* OR *lâwlêw* 'whiskies + annoyance'
dī:m ju: dāj lâwlâw t^háŋwan
 drink ASP can whiskies+NEG all-day
 '(I'm really annoyed) (he) has been drinking all day.'
- c. *ro:ŋrian* ---> *ro:ŋrianro:ŋræ:n* OR *ro:ŋrianro:ŋrə:n* 'school + boredom'
māj hěn jak paj ləj ro:ŋrianro:ŋræ:n
 NEG see want go ASP school+NEG
 '(I'm so bored) (I) really don't want to go to school'

4.1.4 Evocative Reduplication

Like negative reduplication, evocative reduplication is a suffix copy of the phonological word base. The process is called 'evocative' because it adds a sense of expressiveness and rhythmic melody to the words. With evocative reduplication, the main stress falls on both the base and the suffix. If the base is bisyllabic, the resulting forms of reduplicative words will have the main stress fall on every syllable. The suffix has a particular vowel pattern fixed in it, as provided in (11):

(11) Vowel Patterning

| | | | | |
|---|---|---|--|---|
| i | ĩ | - | | u |
| ↑ | | | | |
| | | | | |
| e | ə | | | o |
| ↑ | | | | |
| | | | | |
| æ | a | < | | ɔ |
| ↑ | | | | |
| | | | | |

Instances of evocative reduplication are shown below:⁴

- (12) a. tûŋ ---> tûŋtîŋ 'sprightly'
 b. sūp ---> sūpsíp 'gossip'
 c. sa'dûŋ ---> sa'dûŋsa'dîŋ 'flinging manner'
 d. jó: ---> jó:jé: 'leaning to one side or the other'
 e. ʔo:n ---> ʔo:nʔe:n 'swaying'
 f. tɔ' ---> tɔ'tæ' 'totteringly'
 g. mɔm ---> mɔmmæm 'dirty'
 h. p^him ---> p^himp^ham 'mumblingly'
 i. jî:t ---> jî:tjât 'slowly'
 j. kaʔjîk ---> kaʔjîkkaʔjâk 'unstill'

Having laid out the types of reduplication in Thai, I will now turn to the analysis of each type using the Prosodic Morphology of McCarthy and Prince.

4.2 The Analysis of Thai Reduplication

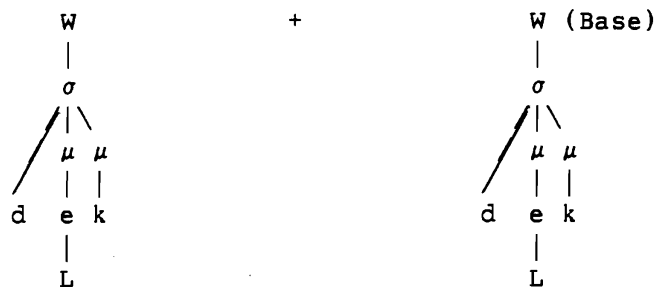
In Thai, the base or the prosodic unit which is available for reduplication is prosodically circumscribed as a phonological word. The analysis of each type of reduplication is offered below:

4.2.1 Simple Reduplication

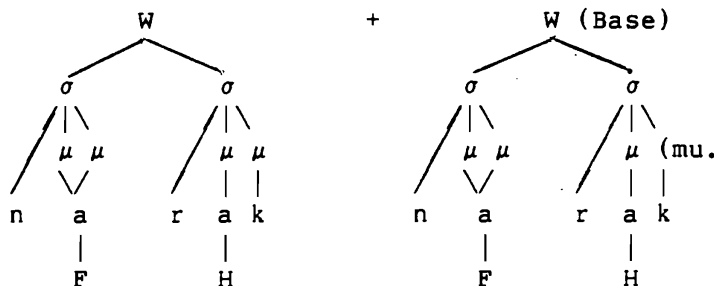
The application of Prosodic Morphology to simple reduplication is very uncomplicated. Since the target of copying process is an entire phonological word, then all elements within the word, including tones, will be copied on to a new plane. Because the process is prefixal, the word temp-

late is attached to the left edge of the base which has been defined as a phonological word. This is illustrated in (13) which is a monosyllabic word and (14) which is a bisyllabic word:

(13) dək 'child' ---> dək dək 'children'



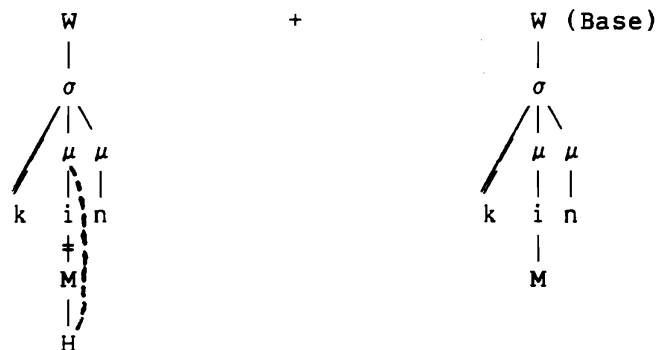
(14) nā:rák 'cute' ---> nā:ráknā:rák '(sort of) cute'



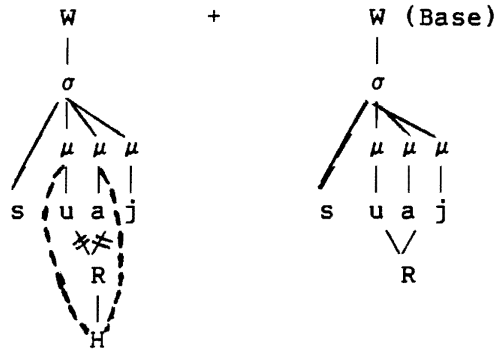
4.2.2 Emphatic Reduplication

As in simple reduplication, the target of the copying process of emphatic reduplication is a phonological word and the reduplicative template is prefixed to the base, as shown in (15) and (16). This time, however, the mid tone in *kin* in (15) and the rising tone in *suaj* in (16) are overwritten by a high tone. The high tone then associates with the vowel of the word template and the mid and rising tones are subsequently delinked.

(15) kin 'to eat' ---> kínkin 'really eat'



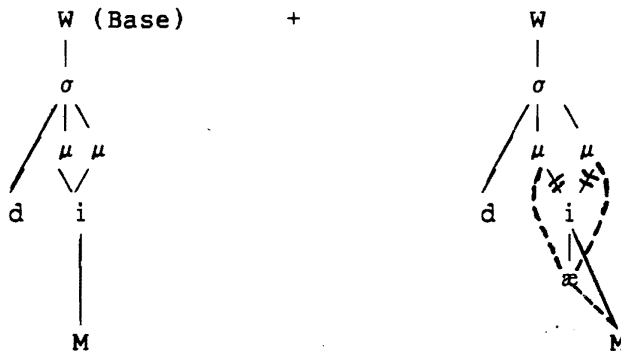
(16) súaaj 'lovely' ----> súaajsúaaj 'really lovely'



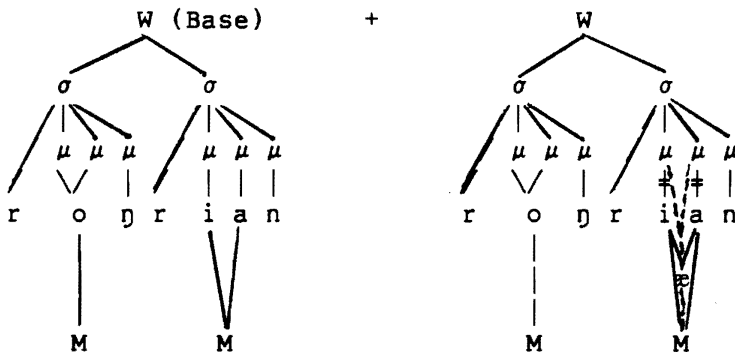
4.2.3 Negative Reduplication

The target of the copying process for negative reduplication is also a whole phonological word. Since the process is suffixal, the reduplicative template is attached to the right edge of the base, as shown in (17) and (18). Moreover, the template has either /æ/ or /ə/ fixed in it, and thus, either one of the two vowels overwrite /i/ in *di:* in (17) and /ia/ in *ro:ɣrian* in (18). Then the template melody /æ/ associates with the vowel on the skeletal tier and the /i/ and /ia/ are next delinked.

(17) di: 'good' ----> di:dæ: 'good + disagreement'

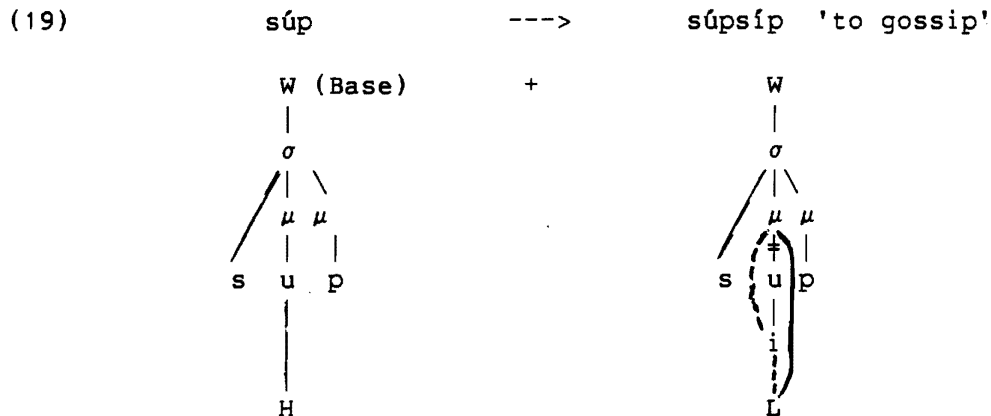


(18) ro:ɣrian 'school' ----> ro:ɣrianro:ɣræ:n 'school + boredom'



4.2.4 Evocative Reduplication

Like other types of reduplication, the target of evocative reduplication is a phonological word and the reduplicative template is prefixed to the base. As (19) illustrates, /u/ in the suffixed template is overwritten by /i/. The template melody /i/ then associates with the vowel of the syllable template and the /u/ is again delinked. This works the same way with other vowel correspondences like o-e, i-a, and ɔ-æ where the former will be overwritten by the latter.



5.0 CONCLUSION

In this paper, I have shown that various types of reduplication in Thai can be accounted for by employing the theory of Prosodic Morphology proposed by McCarthy and Prince (1986). Since all the kinds of reduplication that have been recognized so far result from full copying, it will be interesting to find out whether there are other types of reduplication that exhibit partial copying. If there were, then it would be challenging to explore if this framework could also account for partial reduplication. These questions will need further research.

NOTES

- 1 I represent stop phonemes in final position with /p t k/. Since phonemes are always pronounced unreleased finally, all stops are neutralized, and therefore, there is no way we can tell whether voiced and aspirated stops can occur as codas.
- 2 This structure represents the X-Theory. In the CV-theory, on the other hand, the X slots are replaced by the Cs and the Vs.
- 3 There are cases where nouns undergoing simple reduplication function as adjectives. These adjectival nouns then exhibit the same meaning as adjectives do, which is generality, e.g.,

man 'grease' ---> manman 'greasy'

chǎn māj c^hɔp kin k^hɔ̃:ŋ manman
 I NEG like eat thing greasy
 'I don't like to eat greasy things'

- 4 Haas (1942) notes that other vowel correspondences like æ-o, e-a, etc., are also found but they are very rare. Therefore, I will, at this point, treat them as exceptions which are lexically specified.

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