The metrical structure of Thai in a non-linear perspective

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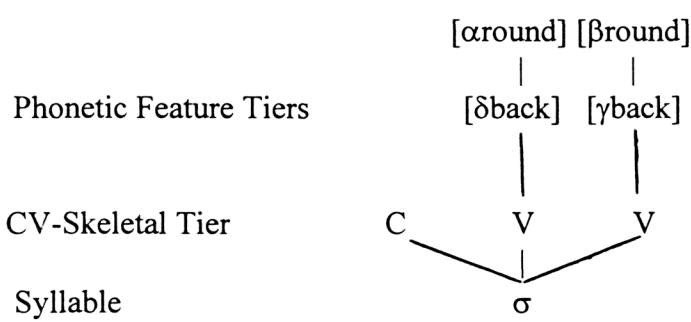
1. Syllables in Autosegmental and Metrical Phonology

Syllables and stress patterns have been considered suprasegments, being external to segmental features of consonants and vowels. In a more recent approach to phonological analysis, the autosegmental approach (Goldsmith 1976, 1990), the distinction between segments and suprasegments is, more or less, neutralized to autosegments. That is, consonants and vowels, phonetic features, and tones are all viewed as autosegments on their own separate tiers. Although autosegments are independent of one another, they are geometrically linked to one another by association lines which express simultaneity in time-- Linked elements jointly represent a sound.

While Clements and Keyser (1985) see syllables as elements on their own syllable tier in a multi-linear representation, Goldsmith (1990) takes a syllable to be a 'hierarchical structure organized on the skeletal tier.' Syllables themselves constitute a phonological plane of metrical structure, upon which stress assignment is based. For example,

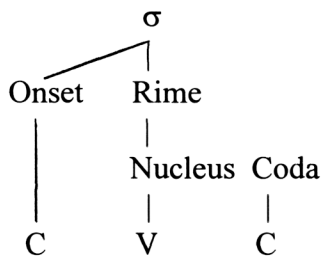
(1)



2. Syllable Organization

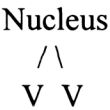
The 'hierarchical' internal structure of a syllable according to Goldsmith, consists of two major constituents: onset and rime; with nucleus and coda as the subconstituents of the rime. The internal structure of the syllable on the syllable plane can be charted as follows:

(2)



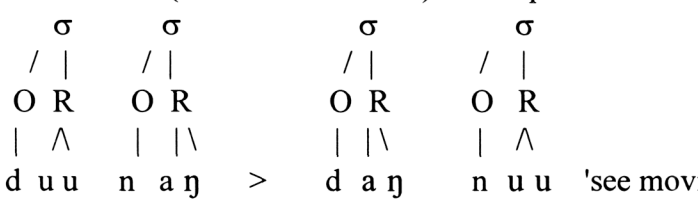
For a complex nucleus, the nucleus node branches as in (3) below:

(3)



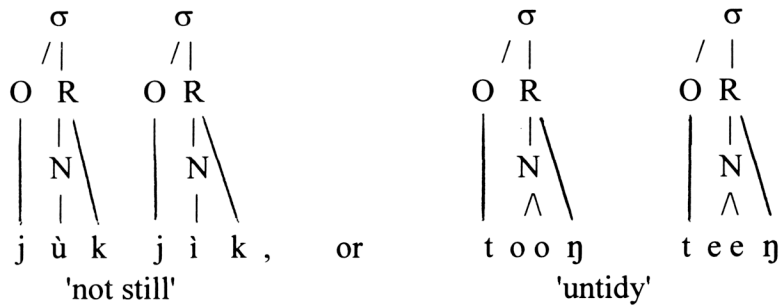
This internal structure of the syllable is psychologically real and is well attested cross-linguistically in phenomena, e.g., language games, speech errors, etc. These constituents and subconstituents of the syllables are evidenced in Thai language games, Kham Phùán (Surintramont 1973) where rimes are permuted, and in a form of reduplication in Thai (Luksaneeya-nawin 1986) where the syllable nucleus behaves differently from the syllable coda in reduplication. For example,

(4)a. Kham Phùán (Surintramont 1973): rimes permutation



Where tones as autosegments may or may not move with the 'melodic' segments of the rime. Thus, [duu nǎŋ] > [daŋ nùú] or [dǎŋ nuu].

b. Special Reduplication (Luksaneeyanawin 1986): vowel ablaut



Whereas Kham Phùán takes a larger unit of rime permutation regardless of the internal structure of the rime itself, the special reduplication in (4)b looks at the subconstituent of the rime, the syllable nucleus. Both phenomena are good evidence of the reality of the internal structure of the syllable for Thai speakers.

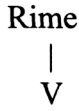
A notion that has been given much weight in Goldsmith (1990) is the 'extrasyllabicity' which is an extra element of the internal structure of the syllable. Such an element is a consonant in either initial or final position of a syllable which, if it is not syllabified during the word-formation process, will be deleted on the phonetic form. At word-final position, such a segment has been traditionally called an 'appendix' or a 'termination' (1990:107). Extrasyllabic segments are evidenced in Thai and may be said to be comparable to [tua kàʔran] in Thai (to be discussed in section 4.2 below).

3. Syllable Weight, Stress, and Metrical Structure

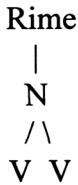
Metrical Phonology (tree theory) analyzes stress patterns as hierarchical representations of relative prominence of syllables and higher constituents in the metrical structure (metrical tree).

In general, stress assignment is based on rhythm and/or syllable weight which looks at the rime structure. While rhythm alternates stress at regular intervals, syllable weight distinction, which is in general binary, i.e. light and heavy, counts moras in the rimes. Heavy syllables are those with branching rimes whereas light syllables are single moraic with non-branching rimes (cf. (5) & (6) below). In a quantity sensitive language, heavy syllables are the ones that attract stresses.

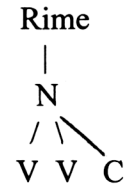
(5) Light syllables are of the form;



(6) Heavy syllables may take one of the following internal structures of the rime:

a. 

b. 

c. 

Syllable weight is crucial to stress assignment in Thai (to be discussed in sections 4 & 5 below).

Metrical Theory, developed from Liberman & Prince (1977) and Prince (1980) (cf. Goldsmith 1990), sees three main hierarchical constituents in the metrical tree;
a. *The syllable, which is the lowest level constituent, with internal structure of the rime being crucial to stress attraction.*
b. *The metrical foot, which is a higher level constituent, constisting of a strong and one or more weak syllables.* A foot may be degenerate, i.e., dominating a single syllable.
c. *The word, which is the highest level, consisting of a strong foot and one or more weak feet.*

For example, (from Luangthongkum 1977)