

Morphology-Prosody Interface: Stress Pattern in Budai Rukai

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This paper investigates stress distribution in Budai Rukai, a Formosan language. The stress distribution in this language is illustrated by the data in (1)-(4).

(1) Main stress in roots (adapted from Chen 2006: 251-252)

a. Monosyllables are stressed:

<u>Stress</u>	<u>Shape</u>	<u>Root</u>	<u>Gloss</u>
H́	CV́:	kú:	'owl'

b. Penults are stressed in disyllabic words:

<u>Stress</u>	<u>Shape</u>	<u>Root</u>	<u>Gloss</u>
́LL	CV́CV	láva	'flying squirrel'

c. Heavy penults are stressed:

<u>Stress</u>	<u>Shape</u>	<u>Root</u>	<u>Gloss</u>
H́L	CV́VCV	táuθo	'tail'
LH́H	VCV́:CVG	abá:baj	'woman'
LH́L	CVCV́:CV	kará:ða	'pangolin'

d. Elsewhere antepenults are stressed:

<u>Stress</u>	<u>Shape</u>	<u>Root</u>	<u>Gloss</u>
́LH	CV́CVG	págaj	'rice'
́LL	CV́CVCV	válsi	'tooth'
́LH	CV́CVCVG	l̥ikulaw	'leopard'

(2) Main stress in suffixed forms (adapted from Chen 2006: 252)

<u>Stress</u>	<u>Morpheme</u>	<u>Affixation</u>	<u>Gloss</u>
ĹLL	kanə-anə _{suffix}	kanəanə	'food'
LH́LL	wa-[d̥ə:lə-ŋa _{suffix}	waɖə̀ləŋa	'saw'
ĹLL	ma-[pusa-lə _{suffix}	mapúsələ	'twenty'
LĹLL	a-[ələb-anə _{suffix}	aələ́banə	'to be closed'
LĹLL	sanu-[tu u-lu _{suffix}	sanutú ulu	'three times'
LLĹLL	kala-[bətəŋ-anə _{suffix}	kalabətə́ŋanə	'millet festival'

(3) Primary stress in prefixed or infix forms (adapted from Chen 2006: 253)

<u>Stress</u>	<u>Morpheme</u>	<u>Affixation</u>	<u>Gloss</u>
LH́	wa _{prefix} -[pə:	wapə:	'to squeeze'
ĹL	la _{prefix} -[d̥usa	laɖ́usa	'couple'
ĹLL	wa _{prefix} -[tinono	watínono	'to weave'
LĹL	ma _{prefix} -θa _{prefix} -[limu	maθalímu	'muddy'
LĹLL	ma _{prefix} -sa _{prefix} -[sulapə	masasúlapə	'smooth'
HĹLL	ŋi _{prefix} -a _{infix} -[vələvələ	ŋiavələ́vələ	'to move'
LLĹLL	paŋu _{prefix} -da _{prefix} -[davatsə	paŋudadávatse	'by walking'

(4) Secondary stress in words with four or more than four syllables (adapted from Chen 2006: 253-254)

<u>Syllable</u>	<u>Budai Word</u>	<u>Gloss</u>
ĹLLH́L	lupàkavá:lə	'the day after tomorrow'

̀̀̀̀̀	tàràdámərə	‘one month’
̀̀̀̀̀	kàikamə́anə	‘today’
̀̀̀̀̀	kalàkətsə́lanə	‘winter’
̀̀̀̀̀	tàtsəkətsəkə́lanə	‘family’
̀̀̀̀̀	kalàdàlənədə́janə	‘summer’

Considering first where primary stress is placed, Budai Rukai has a Latin-type stress pattern: stress the penult if heavy, else stress the antepenult. This means that a moraic trochee is built as to the right edge of a word as possible, yet overridden by the restriction that the final syllable is unfootable. This can be captured by the following constraint rankings:

(5) *Penult and ultima both light: (primary) stress on antepenult*

- a. Trochee >> Iamb: (́́)L >> (́́)L
- b. NonFinality >> {Align-Hd-R, Align-Ft-R}: (LL)L >> L(LL),
- c. NonFinality >> Parse-σ: L(LL)L >> (LL)(LL)
- d. FootBinarity >> Parse-σ: L(LL)L >> (L)(LL)L

(6) *Final syllable does not bear stress*

NonFinality >> Weight-To-Stress: (LL)H >> (LL)(H)

(7) *(Primary) stress on heavy penult*

NonFinality >> {Align-Hd-R, Align-Ft-R}: L(́́)L >> L(́́L)

Second, since the prohibition against footing a final syllable is overridden in monosyllabic words, we may attribute the violation of NonFinality in these cases to ranking WdCon (cover constraint from Selkirk 1995) over the former. Third, the fact that secondary stress appears from the right to the left suggests that Parse-σ dominates Align-Ft-R, which in turn is ranked over Align-Ft-L. Equally worth noting is that the head of a prosodic word must be the rightmost foot, from which we infer that Align-Hd-R dominates Align-Hd-L. However, the analysis presented so far cannot explain why primary stress never falls on prefixes and infixes, especially in the case of a prefix attached to a bisyllabic root (e.g., *la_{prefix}-qísa*). To address this problem, I invoke the notion of *Positional Augmentation* (Smith 2002), which states that when a phonological requirement specifically affects phonologically strong positions, that requirement must enhance perceptual salience. According to Smith (2002), strong positions include main-stress syllables, initial syllables, long vowels, roots, and onsets. And the property required for a root as a strong position is stress. Consequently, I propose that the relevant constraint coming into play in the case of prefixed and infixed forms in Budai Rukai is HaveStress/Root, which bans a root without bearing stress. In addition, HaveStress/Root must also dominate NonFinality, as illustrated by a bisyllabic sequence consisting of a monosyllabic prefix attached to a monosyllabic root (e.g., *wa_{prefix}-pə́:*). Note that since Align-Hd-R dominates Align-Hd-L, in prefixed and infixed sequences that have four or more than four syllables, Align-Hd-R will ensure that the head foot is the last foot. As a result, primary stress falls exclusively on syllables of the root, whereas syllables of the prefixes and infixes can only bear secondary stress. Another important point worth noting is that what HaveStress/Root demands is that a root bear stress; the constraint does not require the stress to be primary. Thus, either primary or secondary stress on the root will satisfy the constraint. Along this line of thought, if there was a stack of suffixes, containing at least three syllables, in a sequence consisting of four or more than four syllables in total, Trochee and NonFinality would ensure that primary stress falls on the antepenult, which would be a syllable in the concatenation of suffixes. In that case, the root would bear secondary stress. However, due to the lack of data involving multiple suffixes in a single word, I leave this issue open for further investigation.

References **Chen**, Chun-Mei. 2006. *A Comparative Study on Formosan Phonology: Paiwan and Budai Rukai*. Ph.D. dissertation, University of Texas at Austin. **Selkirk**, E.O. 1995. The prosodic structure of function words. In J.N. Beckman, S. Urbanczyk, and L. Walsh Dickey (eds.), *University of Massachusetts Occasional Papers in Linguistics* 18: Papers in Optimality Theory, 439-470. Amherst: GLSA. **Smith**, J.L. 2002. *Phonological Augmentation in Prominent Positions*. PhD diss., UMass Amherst.