

CONSONANTAL LENITION AND VOCALIC TRANSFER IN KADAI LANGUAGES: WITH DISYLLABIC PROTO-BE-TAI AS SUPPORTING EVIDENCE

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0 Introduction

The Be forms for ‘stone’, ‘horn’, ‘leg’ etc. have long constituted a significant problem from a Comparative Tai, historical point of view because their initials show “extra-normal” L tone category rather than an H tone, which is otherwise uniformly found in other Tai dialects (cf. Hansell, 1988).

In addition to this, a further, confusing patterning is presented by the occurrence of certain consonants and vowels in Be words such as ‘to laugh’, ‘ear’, ‘snake’ etc. in the process of reconstructing Proto-Be-Tai.

In order to provide these problems with a logically convincing solution, it is now necessary to posit proto-forms other than those set up by simply putting together the existing phonemes of cognate words.

This paper suggests that the phonetic changes here called “Consonantal Lenition (CL)” and “Vocalic Transfer (VT)” occurred in the course of development from Proto-Be-Tai to both Proto-Be and Proto-Tai, and elsewhere widely in the Kadai languages, and supports this hypothesis with descriptions of concrete historical changes from Proto-Be-Tai to modern Be and Tai dialect forms. Both of the CL and VT changes correspond to what has characteristically occurred in certain sesqui-syllable types of words when these turned into monosyllabic forms.

It should be noted that the designation of “Southern Tai” (ST) is used here to include Li Fang Kuei’s (1977) Central Tai (CT) and also Southwestern Tai (SWT). The variety Saek is occasionally referred to independently from Northern Tai (NT) due to its extremely conservative phonetic features, though in principle it would belong to the NT group.

The abbreviations used in this paper are as follows:

PB	Proto-Be
PT	Proto-Tai
PBT	Proto-Be-Tai
(P)NT	(Proto-)Northern-Tai
(P)ST	(Proto-)Southern-Tai
(P)CT	(Proto-)Central-Tai
(P)SWT	(Proto-)Southwestern-Tai
(P)KS	(Proto-)Kam-Sui
PKS (T)	PKS reconstructed by Thurgood (1988)
PLakkja	Proto-Lakkja (cf. Theraphan, 1991)
PHlai	Proto-Hlai (cf. Kosaka, 1996)
PAN	Proto-Austronesian (cf. Dempwolff, 1938)
Be (Qs.)	Qiongsan dialect of the Be language (cf. Liang Min et al., 1996)

Shoichi Iwasaki, Andrew Simpson, Karen Adams & Paul Sidwell, eds. *SEALSXIII: papers from the 13th meeting of the Southeast Asian Linguistics Society* (2003). Canberra, Pacific Linguistics, 2007, pp.93-103.

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The modern Be forms are from Hashimoto (1980) unless otherwise noted. The modern Lakkja forms are cited from Mao Zongwu et al. (1982).

1 Consonantal lenition

First, consider the following interesting phonetic changes.

- *ʔan daj (= 'thing' + 'which') > *ʔa(n)daj > Siam. ʔāraj 'what'
 *ʔan nii (= 'thing' + 'this') > *ʔa(n)nii > Sack. ʔārii 'this (thing)'
 *luuk bauu > *luuk kǎ-bauu > Saek. (luuk) kwəə 'daughter-in-law'
 *tǎpas > Proto-Monic. *twas 'to sweep' (cf. Diffloth, 1984)

Now observe that the Nhaheun language of the Mon-Khmer family (Bahnaric branch) historically demonstrates a series of similar consonant changes in a systematic manner, as follows. Capital C is used to represent an optional consonant.

*Cǎpɸ-	*Cǎɸ-	*Cw-	(ex. *tǎpal > *tǎbal > dwaw 'mortar')
*Cǎm-	*C̃w-		(ex. *tǎmɔɔ > nwɔɔ 'stone')
*Cǎtɸ-	*Cǎd-	*Cɾ-	(ex. *pǎtɛh > *pǎdɛh > brɛh 'earth')
*Cǎn-	*C̃ɾ-		(ex. *kǎnɳɳɳ > *ŋɾɳɳɳ > ŋɾɔɔ 'pillow')
*Cǎcɸ-	*Cǎj-	*Cɸ-	(ex. *kǎceet > *kǎjeet > gjeet 'to kill')
*Cǎk(g)-	*Cǎg-	*Cw-	(ex. *tǎkuaj > *tǎguaj > *dwuaj > dwaj 'horn')
*Cǎs-	*C̃ɸ-		(ex. *kǎsɛɛ > khjɛɛ 'rope')

On the other hand, the following change is seen in Oy (also of Bahnaric branch).

*Cǎl- > *Cɾ- (ex. *jǎlaa > jraa 'thorn', *hǎlɔŋ > hrɔŋ 'neck' etc.)

The above consonant changes could be arranged in formulae as in Table 1.

Table 1

*-p-, -b-, -m-	> -w-
*-t-, -d-, -n-, -l-	> -r-
*-c-, -ɸ-, -s-	> ^(h) -j-
*-k-, (-g-)	> -w-

These consonant changes as shown above are referred to as Consonantal Lenition (CL) hereafter.

In fact, the Be and Tai languages also underwent a parallel (though not quite identical with the velar series) set of CL changes (Table 2).

Table 2

*-p-, -b-, -m-	> *(-)w-
*-t-, -d-, -n-, -l-	> *(-)r-
*-ɸ-, -z-	> *(-)j-
*-k-, -g-	> *x-, *ɣ-

We will now present the details of CL for the Be and Tai languages (Note that when the minor-syllable initial is specifically taken up in *cf.*, the manner of change follows the described formula).

1.1 CL in Be

Table 3: *Principal formulae*

Proto-Be-Tai		Proto-Be		Be (Hashimoto)
*-p-, *-b-	>	*w-, *ʔw-	>	v-, v- (ex. ‘year’, ‘thin’)
*-d-, *-l-	>	*(ʔ)r-	>	l- (z- in Be (Qs.)) (ex. ‘raw’)
*-k-, *-g-	>	*x-, *ɣ-	>	h-, h- (ex. ‘green’, ‘person’)
<i>cf.</i> *T-d- (> *ʔd-) ¹	>	*ʔl-	>	l- (l- in Be (Qs.)) (ex. ‘red, purple’)
<i>cf.</i> *h-t- (> *(h)nt-) ²	>	*d-	>	d- (ex. ‘stone’)
<i>cf.</i> *h-k- (> *(h)ŋk-)	>	*g-	>	g- (ex. ‘bitter’)
<i>cf.</i> *h/ʔ/k-l-	>	*ʔl-	>	l- (l- in Be (Qs.)) (ex. ‘yellow’)
<i>cf.</i> *mp-	>	*b-	>	ḃ- (ex. ‘cloud’)
<i>cf.</i> *-b-	>	*ʔw-	>	b- (in Be (Qs.); replosivization)

1.2 CL in Saek

Table 4: *Principal formulae*

Proto-Be-Tai		Proto-Saek		Saek
*-p-, *-b-, (*-m-)	>	*hw-, *ʔw-, (*ʔw-)	>	v-, v-, (v-) (ex. ‘rain’, ‘thin’)
*-t-, *-d-, (*-n-)	>	*hr-, *ʔr-, (*r-)	>	r-, r-, (r-) (ex. ‘stone’, ‘red’)
*-j-, *-z-	>	*j-, *j-	>	j-, j- (ex. ‘lover’, ‘to wash’)
*-k-, *-g-	>	*x-, *ɣ-	>	h-, ɣ- (ex. ‘green’, ‘neck’)
<i>cf.</i> *P-b-	>	*ʔb-	>	b- (ex. ‘leaf’, ‘sky’)
<i>cf.</i> *T-d-	>	*ʔd-	>	d- (ex. ‘nose’, ‘navel’)
<i>cf.</i> *R-r-	>	*ʔr-	>	r- (ex. ‘boat’, ‘roof’)
<i>cf.</i> *k-p-, *k-b-	>	*kw-, *kw-	>	kw-, kw- (ex. ‘leg’)
<i>cf.</i> *p-t-, *p-d-, *k-d-	>	*pr-, *pr-, *kr-	>	pr-, pr-, tr- (ex. ‘eye’)
<i>cf.</i> *h-j- (> *h-j-)	>	*s- ³	>	s- (ex. ‘man, male’, ‘to use’)
<i>cf.</i> *h-k- (> *h-ŋk-)	>	*h-g- > *ɣ-	>	ɣ- (ex. ‘bitter’)
<i>cf.</i> (*h-mp-,) *h-nt-, *h-ŋk-	>	(*b-,) *d-, *g-	>	(ph-,) th-, kh- (ex. ‘to arrive’)

1.3 CL in NT

Table 5: Principal formulae

Proto-Be-Tai		Proto-Northern-Tai		Northern Tai dialects
*-p-, *-m-	>	*hw-, *w-	>	f-, f- etc. (ex. ‘rain’, ‘tree’)
*-t-, *-n-, *-l-	>	*hr-, *r-, *r-	>	r-, r-, r- etc. (ex. ‘stone’)
*-j-	>	*j-	>	j- etc. (ex. ‘lover’, ‘to point’)
*-k-, *-g-	>	*x-, *y-	>	h-, h- etc. (ex. ‘green’)
cf. *h-j- (> *h-j-)	>	*s-	>	s- etc. (ex. ‘man, male’)
cf. *h-k- (> *h-ŋk-)	>	*h-g-) > *y-	>	h- etc. (ex. ‘bitter’)
cf. *h-m/n/ŋ/l-	>	*hm-, *hn-, *hŋ-, *hl-	>	m-, n-, ŋ-, l- etc. (ex. ‘dog’)
cf. (*h-mp-,) *h-nt-, *h-ŋk-	>	(*b,) *d-, *g-	>	(ph-,) th-, kh- etc. (ex. ‘to arrive’)
cf. *-b-, *-d-	>	*ʔb-, *ʔd- ⁴	>	b-, d- etc. (ex. ‘thin’, ‘red’)
cf. *h/k/p-l-	>	*hl-, *kl-, *pl-	>	l-, kl-, pl- etc. (ex. ‘yellow’)

1.4 CL in ST

Table 6: Principal formulae

Proto-Be-Tai		Proto-Southern-Tai		Southern Tai dialects
*-p-	>	*hw-	>	f- (ex. ‘rain’)
*-t-	>	*hr-	>	h- (ex. ‘stone’)
*-k-, *-g-	>	*x-, *y-	>	x/kh-, x/kh- etc. (ex. ‘green’)
cf. *h-p-, *h-t-, *h-k-	>	*ph-, *th-, *kh- ⁵	>	ph-, th-, kh- etc. (ex. ‘to extract’)
cf. *-b-, *-d-	>	*ʔb-, *ʔd-	>	b-, d- etc. (ex. ‘thin’, ‘red’)
cf. *k-t- (> *[k/t] ^h ʔt-)	>	*t ^h r- (only in PCT)	>	th-, h- etc. (ex. ‘stone’)

Examples of CL follow.

*Cǎpii ⁰	>	*wii ⁰	>	*wəj ⁰ (PB) > vəi ⁵⁵ ‘year’
*Cǎlak	>	*rok (PB)	>	lok ⁵⁵ , zək ⁸ (Qs.) ‘to steal’
*Cǎdiinj ⁰	>	*ʔriinj ⁰	>	riinj ¹ (Saek) ‘red’
*Cǎnam ²	>	*ram ² (PNT)	>	ram etc. ‘water’
*hǎjaaj ⁰	>	*hjaaj ⁰	>	*saaj ⁰ (PNT) > saaj etc. ‘man, male’
*kǎtin ⁰	>	*[k] ^h ʔtin ⁰	>	*hǎtin ⁰ > *hrin ⁰ (PNT/PSWT) > riin, hin etc. ‘stone’

2 Vocalic transfer

Vocalic Transfer (VT) is defined here as a movement of the minor-syllable vowel to the medial position of the major syllable in the course of lexical monosyllabization.

In VT proposed by Benedict (1975, p.182-3), the appearance of the vowel *-ua(-) is attributed to the minor-syllable vowel *-i- (corresponding to what is represented here as *-ĩ-), whereas in the author’s opinion, *-ua(-) must have occurred by way of diphthongization from *-aa(-) due to the voiced nature of the major-syllable initial (cf. Chapter 3).

As a consequence, what is meant by VT here is different from Benedict's in that it is not responsible for *-ua(-) diphthongization, and indicates in concrete the type of phonetic changes described in formulae below (Table 7, 8). It is to be mentioned that the distinction between "Standard type" and "Medial-encroaching type" of VT below is not really based on the existence of some explicit or inevitable boundary between the two. C_i in formulae is used here to represent the major-syllable initial.

2.1 Standard type

Table 7: Principal formulae

*C _i C _i aa	>	*(-)C _i 'jaa	(> *-ia)	(ex. 'hand' in KS; 'snake' in Be)
*C _i C _i aw	>	*(-)C _i 'jaw	(> *-iaw)	(ex. 'to laugh' in Be and NT)
*C _i C _i ak	>	*(-)C _i 'ja(a)k	> *(-)C _i 'jaak	(ex. 'woman, girl' in KS)
*C _i C _i up	>	*(-)C _i 'jup		(ex. 'raw' in Sui)
*C _ü C _i aa	>	*(-)C _i 'waa	(> *-ua)	(ex. 'navel' in Sui, Hlai; 'boat' in Sui, NT)
*C _ü C _i aw	>	*(-)C _i 'waw	(> *-uaw)	(ex. 'to laugh' in Saek)
*C _ü C _i aj	>	*(-)C _i 'waj	(> *-uaj)	(ex. 'stream' in ST)
*C _ü C _i ii	>	*(-)C _i 'wii		(ex. 'trace', 'chicken louse', 'stream' in NT)

Examples of VT (Standard type) follow.

*C _i maa ⁰	>	*C _ǝ mjaa ⁰	>	*ʔmjaa ⁰ (PKS) 'hand'
cf. *[C _ǝ]maa ⁰	>	*mua ⁰	>	*mia ⁰ > mie ² (Lakkja) 'hand'
*C _i dup	>	*C _ǝ djup	>	*ʔdjup > djup ⁷ (Sui) 'raw'
*k _ǝ raw ⁰	>	*k _ǝ rwaw ⁰	>	*[k] ^h ǝruaw ⁰ > *hruaw ⁰ (Saek) 'to laugh'
cf. *k _ǝ ruu ⁰	>	*kruu ⁰ (PKS (T)) '„'		
*k _ǝ rii ²	>	*[k] ^h ǝrwii ²	>	*h _ǝ rwii ² > *hrwii ² (PNT) > rui, vii etc. 'stream'
cf. *k _ǝ rii ²	>	*[k] ^h ǝrii ²	>	*h _ǝ rii ² > *hrii ² (Saek) > rii ⁴ '„'
*k _ǝ raj ²	>	*k _ǝ rwaj ²	>	*[k] ^h ruaj ² (PST) > khuei, huaj etc. 'stream' ⁶
*C _ü rii ⁰	>	*[C _ǝ]rwii ⁰	>	*rwii ⁰ (PNT) > lwii, zvi etc. 'trace'
cf. *[C _ǝ]rii ⁰	>	*rii ⁰ (Saek)	>	rii '„'

2.2 Medial-encroaching type

Table 8: Principal formulae

*C _i C _i aa	>	*(-)C _i 'jaa	>	*(-)C _i 'jǝə (assim.)	>	*(-)C _i 'uuu (reciprocal assim.)
*C _i C _i ak	>	*(-)C _i 'jak	>	*(-)C _i 'jǝək (assim.)	>	*(-)C _i 'uuk (reciprocal assim.)
*C _ü C _i aa	>	*(-)C _i 'waa	>	*(-)C _i 'woo (assim.)	>	*(-)C _i 'uu (assim.)
*C _ü C _i ak	>	*(-)C _i 'wak	>	*(-)C _i 'wok (assim.)	>	*(-)C _i 'uuk (assim.)
*C _ü C _i ii	>	*(-)C _i 'wii	>	*(-)C _i 'ooj		

Examples of VT (Medial-encroaching type) follow.

*Cĩmaa ⁰ >	*Cõmjaa ⁰ >	*Cõmjəə ⁰ >	*[Cõ]muuu ⁰ (PBT) ‘hand’
*Cĩlak >	*Cõljak >	*[Cõ]ljək >	*luuk (PNT) ‘child’
cf. *[Cõ]lak >	*lak (PLakkja) ‘person’		
*kũraa ⁰ >	*kõrwaa ⁰ >	*[k] ^h rwoo ⁰ >	*[k] ^h ruu ⁰ (PST) > khjuu, huu etc. ‘ear’
cf. *kõraa ⁰ >	*[k] ^h õraa ⁰ >	*hõraa ⁰ >	*ṣaa ⁰ > *ṣaa ⁰ (PB) > sa ¹³ ‘..’
*Cũlak >	*[Cõ]lwak (> *lwok) >		*lu(u)k > *luuk (PST) ‘child’
*Cũrii ⁰ >	*[Cõ]rwii ⁰ (> *ruuj ⁰) >		*rooj ⁰ (PST) > rɔɔj etc. ‘trace’

Following are some phonetic changes similar to the ones described above (medial-encroaching type).

English

year [jɪə]	(vs. German. Jahr [ja:r])
warn [wɔːə]	(vs. German. warnen [va:rnən])

Chinese

/jə/ [jɛ̃] ‘also’	(vs. /tə/ [tɕ̃] ‘to get’)
/wə/ [wɔ̃] ‘I, me’	(vs. /kə/ [kɕ̃] ‘to separate’)

3 Diphthongization

The supposition of proto-sesqui-syllabic structure and the subsequent CL change have made it possible to hypothesize that the diphthongized vowel *-uaa(-) is due to the voiced quality of the major-syllable initial.

*põraak >	*põruak >	*p ^h ruak (PT) ‘taro’	(cf. PKS. *-aak)
*hõlaa ⁰ >	*hõlua ⁰ >	*hlua ⁰ (PT) ‘to be left over’	(cf. PKS/PHlai. *-aa)
*Tõdaaj ⁰ >	*Tõduaj ⁰ >	*ʔduaj > dɔɔj (Saek) ‘empty’	(cf. PST. *-aaj)
*põlaak >	*põluak >	*pluak (PST) ‘bark’	(cf. Saek. -aak)

We must bear in mind, however, that the fact of the diphthongization not occurring regularly where expected cannot be explained satisfactorily for the time being. See the following counter-examples where diphthongization failed to occur.

*hõlaa ⁰ >	*hlua ⁰ (PT) ‘to be left over’ VS.	*hõnaa ⁰ >	*hnaa ⁰ (PT) ‘thick’
*põlaak >	*pluak (PST) ‘bark’ VS.	*kõlaak >	*klaak (PST) ‘scabies’
*maa ⁰ >	*mua ⁰ > *mia ⁰ > mie ² (Lakkja) ‘hand’ VS	*maa ⁰ >	ma ² (Lakkja) ‘you’

4 Conclusion

CL, in a sense, can be characterized as a sort of medialization of the major-syllable initial under a strong drift of monosyllabization, whereas VT can be regarded as a sort of medialization (via metathesis) of the minor-syllable vowel.⁷

Therefore, we can say that two waves of medialization (chronologically, first for the minor-syllable vowel, and the second for the major-syllable initial) occurred in the process of monosyllabization of sesqui-syllabic proto-forms in the Tai-Kadai family.

*Cĩmaa⁰ > *Cǎmǎa⁰ > *wuur⁰ (NT) ‘hand’ (-j- for the first, -w- for the second)
 *Cũlaan⁰ > *Cǎlwaan⁰ > *luan⁰ (NT) ‘to crawl’ (-w- for the first, -r- for the second)

In the present study, we have shown that certain historical changes in Mon-Khmer languages offer crucial evidence for the postulation of CL.

The reconstructed sesqui-syllabic proto-forms, moreover, make it easy to hypothesize the occurrence of phonetic changes such as assimilation, dissimilation, metathesis, simple dropping of the minor syllable etc. that we end up depending upon to explain some “problematic” correspondences in Kadai languages as well as their genetic identification at a higher level.⁸

DATA (excerpt)

The manner of Be’s (Hashimoto, 1980) tonal split is as follows.

	Ø	1	2	D
H	13	33	33	33
L	55	21	21	55

1 Proto-Be-Tai

1.1 Diachronic changes of initials (original simple or cluster type)

PBT > PB > Modern Be

*p- > *p- > ɸ- (ex. ‘mouth’, ‘wing’)
 *b- > *b- > ɸ- (ex. ‘leaf’)
 *m- > *m- > m- (ex. ‘ant’, ‘fruit’)
 *t- > *t- > d- (ex. ‘eye’, ‘liver’)
 *d- > *d- > d- (ex. ‘body louse’, ‘ashes’)
 *n- > *n- > n- (ex. ‘this’, ‘otter’)
 (*j- > *ʃ- > s- (ex. ‘hole’))
 *ɲ- > *j- > ʒ- (ex. ‘mosquito’)
 *k- > *k- > g- (ex. ‘to eat’, ‘to go up’)
 *g- > *g- > g- (ex. ‘neck’, ‘to itch’)
 *ŋ- > *ŋ- > ŋ- (ex. ‘gills, cheek’)
 *r- > *r- > l- (z- in Be (Qs.)) (ex. ‘house’, ‘strength’)
 *l- > *l- > l- (l- in Be (Qs.)) (ex. ‘to choose’, ‘deep’)
 *w- > *w- > v- (ex. ‘fire’, ‘seed’)
 *s- > *h- > h- (ex. ‘pillar’, ‘pestle’)
 *h- > *h- > h- (ex. ‘shell’, ‘to smell, fragrant’)
 *ʔ- > *ʔ- > ʔ- (ex. ‘to take’, ‘to go out, to emerge’)
 *ʔj- > *ʔj- > ʒ- (ex. ‘to stay’, ‘to stand’)
 *pl- > *p- > ɸ- (ex. ‘fish’, ‘water leech’)
 *br- (> *dz-) > *j- > tʃ- (ex. ‘tomorrow’)
 *mp- > *b- > ɸ- (ex. ‘sky, cloud’)
 *ml- > *m- > m- (ex. ‘insect’, ‘seed, grain’)

- *kr- > *x- > h- (ex. ‘*head*’, ‘(for two persons) to carry’)
 *gr- > *ɣ- > h- (ex. ‘*mortar*’)
 *ŋw- > *ŋw- > v-/ŋ- (before a round vowel) (ex. ‘*sun, day*’)

1.2 Diachronic changes of initials (original sesqui-syllabic type)

PBT > PB > Modern Be

- *kǎp- > *w- > v- (ex. ‘*hair (body), feather*’)
 *hǎm- ~ ʔǎm- > *ʔm- > m- (ex. ‘*dog*’, ‘*flea*’)
 *hǎt- (> *(h)nt-) > *d- > d- (ex. ‘*stone*’, ‘to split, to chop’)
 *hǎn- ~ ʔǎn- > *ʔn- > n- (ex. ‘*face*’, ‘*mouse*’)
 *hǎj- ~ ʔǎj- > *ʔj- > ʒ- (ex. ‘*big*’, ‘*scabies*’)
 *hǎk- (> *(h)ŋk-) > *g- > g- (ex. ‘*bitter*’, ‘*knee*’)
 *hǎŋk- (> *ŋx-) > *ŋ- > ŋ- (ex. ‘*rice*’)
 *hǎŋg- (> *ŋɣ-) > *ŋ- > ŋ- (ex. ‘*chin*’)
 *tǎŋ- > *ʔŋ- > ŋ- (ex. ‘to cry, to weep’)
 *pǎr- (> *[p]^hr- > *hr- > *ɣ- > *ç- > s-/ʃ- (ʃ- appearing before -u) (ex. ‘*vegetable*’)
 *kǎr- (> *[k]^hr- > *hr- > *ɣ- > *ç- > s-/ʃ- (ʃ- appearing before -u) (ex. ‘*way, road*’)
 *hǎr- ~ ʔǎr- > *ʔr- > l- (z- in Be (Qs.)) (ex. ‘to laugh’)
 *bǎl- > *ʔr- > l- (z- in Be (Qs.)) (ex. ‘*gall bladder*’)
 *kǎl- > *ʔl- > l- (l- in Be (Qs.)) (ex. ‘*fish scale*’, ‘*far*’)
 *hǎl- ~ ʔǎl- > *ʔl- > l- (l- in Be (Qs.)) (ex. ‘*yellow*’, ‘*grandchild*’)
 *-p- > *w- > v- (ex. ‘*year*’, ‘to dream’)
 *-b- > *ʔw- > v- (ex. ‘*thin*’, ‘*shoulder*’)
 *-m- > *ʔm- > m- (ex. ‘*mucus*’, ‘*tree, sugarcane*’)
 *-d- > *ʔr- > l- (z- in Be (Qs.)) (ex. ‘*black*’, ‘*raw*’, ‘to get’)
 but, *Tǎd- (> *ʔd-) > *ʔl- > l- (l- in Be (Qs.)) (ex. ‘*red, purple*’)
 *-k- > *x- > h- (ex. ‘*green*’; excepting the above-mentioned case of *hǎk-)
 *-ik- (> *-kj- > *xj-) > *s- > t- (ex. ‘to cross’, ‘to crow’)
 *-g- > *ɣ- > h- (ex. ‘*person*’)
 *-ig- (1) (> *-gj- > *ɣj-) > *z- > t- (ex. ‘*thatch*’)
 *-ig- (2) (> *gj-; dropping of minor syllable ?) > *j- > tʃ- (ex. ‘to squeeze’)
 *-l- > *r- > l- (z- in Be (Qs.)) (ex. ‘to steal’; except *b/k/h/ʔ-l-)
 *-s- > *s- > t- (ex. ‘*tail, extreme*’)

1.3 PBT examples of original sesqui-syllabic type

PBT. *[kǎ]pon⁰ ‘*hair (body), feather*’

(> *kǎpon⁰ > *won⁰ >) PB. *wun⁰ > vun⁵⁵

> PT. *pon⁰~*pǎkon⁰(metath.) > *pon⁰(NT)~*xon⁰(ST) > pun, khon, xun etc.

PBT. (*kǎtin⁰ >) *[k]^hǎtin⁰ ‘*stone*’

(> *hǎtin⁰ > *(h)ntin⁰ >) PB. *din⁰ > đin⁵⁵

(> *[k]^hǎtin⁰ >) PT. *[k/t]^hǎtin⁰ > *hrin⁰(NT/SWT)~*t^hrin⁰(CT) > riin, thin etc.

PBT. *[hən]təŋ⁰ ‘to arrive’

> PB. *təŋ⁰ > dŋ¹³

> PT. *həntəŋ⁰ > ntəŋ⁰ ~ *həntəŋ⁰ > *dāŋ⁰(NT) ~ *thuwŋ⁰(ST) > tən, thuwŋ etc.

PBT. *[pə]kaa⁰ ‘leg’

(> *kəpaa⁰ (metath.) >) PB. *wa⁰ > va⁵⁵

> PT. *[pə]kaa⁰ ~ *kəpaa⁰ (metath.) > *kaa⁰ (NT) ~ *xaa⁰ (ST) ~ *kwaa⁰ (Saek) > kaa, xa, kwaa etc.

PBT. *həkəm⁰ ‘bitter’

(> *həkəm⁰ > *(h)ŋkəm⁰ >) PB. *gam⁰ > gam⁵⁵

> PT. *həkəm⁰ > *həŋkəm⁰ (> *həgəm⁰ > *ɣam⁰)(NT) ~ *khom⁰(ST)

> ɣam etc.

PBT. *[kũ ~ kə ~ ø]raa⁰ ‘ear’

(> *kəraa⁰ > *[k]həraa⁰ > *hraa⁰ > *saa⁰ >) PB. *ɕaa⁰ > sa¹³

> PT. *[kũ]raa⁰ > *rua⁰(NT) ~ *kərwaa⁰ (> *[k]hruu⁰)(ST)

> ruu, rua, khjuu etc.

PBT. *[k/h][ĩ ~ ũ]raw⁰ ‘to laugh’

(> *hīraw⁰ > *həŋjaw⁰ >) PB. *ɣriaw⁰ > liau¹³, ziau² (Qs.)

> PT. *k[ĩ ~ ũ]raw⁰ > *kəŋjaw⁰ ~ *kərwaw⁰ > *[k]hriaw⁰ (NT) ~

*[k]hruaw⁰ (Saek) ~ *k[ĩ]rua⁰ (ST; dissim.)

> riaw, ruaw, khua, hua etc.

1.4 P(B)T examples of original sesqui-syllabic type

The following sesqui-syllabic forms are those restrictedly reconstructed at the PT level for the moment, though potentially being traced back to the PBT level.

P(B)T. (*kəstaw⁰ >) *[k]həstaw⁰ ‘head louse’

> PB. *--- > ---

(> *[k]həstaw⁰ >) PT. *[k/t]həstaw⁰ > *hraw⁰(NT/SWT) ~ *t^hraw⁰(CT)

> raw, thaw

P(B)T. *h[ũ ~ ə]mii⁰ ‘pubic hair’

> PB. *--- > ---

> PT. *h[ũ ~ ə]mii⁰ > *həmwii⁰ ~ *həmii⁰ > *hmooj⁰(ST) ~ *hmii⁰(NT) > mɔɔj, mii

P(B)T. *p[ũ ~ ə]lii¹ ‘to release’

> PB. *--- > ---

> PT. *p[ũ ~ ə]lii¹ > *pəlwii¹ ~ *pəlii¹ > *plooj¹(ST) ~ *plii¹(Saek)

> plɔɔj, plii etc.

P(B)T. *[kə ~ Cə]leep ‘husk of rice’

> PB. *--- > ---

> PT. *[kə ~ Cə]leep > *kleep (ST) ~ *reep (NT) > klɛep, yeep, rip etc.

Notes

1. As for the capital letters other than C, their meanings are as indicated below:
P = p/b
T = t/d
R = r or some sonorant of that kind impossible to determine for the moment
L = l or some sonorant of that kind impossible to determine for the moment
For those having proceeded to undergo a preglottalization (phonetically considered as a kind of fortition) in Be and Saek —both of them are so to speak “CL language”—, we posit a minor syllable having a homorganic initial with that of the major syllable. See the following diachronic changes bringing about a fortis (or geminated) initial in Nhaheun, and a minor-syllable alternation between So and Kui.
cf. (*kǎpaan ~) *pǎpaan > Nhaheun. ^hpaan ‘*crowd*’ (cf. Laven. kǎpaan)
cf. (*hǎlaan ~) *lǎlaan > Nhaheun. ^hlaan ‘*trough*’ (cf. Laven. hlaan)
cf. So. cǎlēa: ~ Kui. lǎlia ‘*thorn*’
2. The nasalizing feature of the sound of h is further confirmed in the following examples.
cf. *hǎtaŋ > *(h)ntaŋ > Nhaheun. dan ‘*bitter*’ (cf. Laven. hntaŋ)
cf. *hǎlcɔŋ > *(h)nlɔŋ > *nnɔŋ > Nhaheun. ^hnɔŋ ‘*bridge*’ (cf. Laven. hlɔŋ)
cf. *hǎcɔŋ > *(h)ncɔŋ > Laven. hpjɔŋ ‘*shrimp*’ (cf. Nhaheun. cɔŋ)
3. *hj- > s- is a phonetic change that occurred in Lawa as well (ex. ‘*ear*’).
4. It is very characteristic in NT that sesqui-syllabic *-b- and *-d- went through fortition (and not CL) differently from Saek, and commonly with ST.
5. In regard to the difference between *-k- > *x- and *h-k- > *kh- in PST, White Tai still maintains the distinction as in /xun/ ‘*hair (body), feather*’, /xǎul/ ‘*horn*’ etc. for the former and /khum/ ‘*bitter*’, /khǎul/ ‘*rice*’ etc. for the latter.
6. Alternation between NT *-ii and ST *-aj is also attested with ‘*fire*’, ‘*chicken louse*’ etc.
7. In fact, there do exist cases in which VT seems to have occurred in Giarai (cf. Romah Dêl, 1977) and Northern Roglai (cf. Thurgood, 1999) (_____ noted by R.K.).
Malay. tǎliŋa vs. Giarai. tongia ‘*ear*’
Malay. ular vs. Giarai. loa ‘*snake*’
Malay. mĩnum vs. Giarai. moñum ‘*to drink*’
Malay. hĩdup vs. Northern Roglai. hadĩu? ‘*alive*’
Malay. pĩrak vs. Northern Roglai. parĩa? ‘*silver*’
Malay. dũri vs. Northern Roglai. darũəi ‘*thorn*’
8. In addition to the ones that have been frequently mentioned since long like ‘*eye*’, ‘*hand/five*’, ‘*raw*’, ‘*head louse*’ etc., we have very interesting examples in terms of comparison with Austronesian such as the following. Namely, all the three underwent VT in the manner of *-u-i > *-wii.
PBT. *Cǎrii⁰ ~ *rii⁰ ‘*trace*’ VS. PAN. *huḍi ‘*latter part*’
PT. *hǔmii⁰ ~ *hǎmii⁰ ‘*pubic hair*’ VS. PAN. *gumi[‘] ‘*beard*’
PT. *pǔlii¹ ~ *pǎlii¹ ‘*to release*’ VS. PAN. *puliḥ ‘*to recover*’
The idea of ‘*putting again (to the original state)*’ could be the semantic core for the both cases.

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