

On the Origins of Labialized Consonants in Lao

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1. INTRODUCTION. Lao has labialized consonants. As will be illustrated, these must be treated as unit phonemes rather than as clusters. It is hypothesized that Lao underwent a restructuring which limited the maximal syllable to CVC; as a part of this change, some CuV- sequences were reinterpreted as CwV- sequences, where Cw is a rounded consonant which acts as a unit, rather than as a sequence.¹

2. OVERVIEW OF LAO PHONOLOGY. As an understanding of the syllable structure of Lao is essential for following the development of the labialized consonants, an outline of the phonology is presented here.

2.1 THE SYLLABLE. Lao has a canonical syllable structure of the type (C)V(C). All Lao syllables also carry a tone (see §2.4 below). Only the following consonants may occur syllable-finally: /p t k ʔ m n ŋ w j/ (Morev et al. 1979:20).

Syllables that end in a glottal stop may co-occur with only two of the six tones; those that end with any other stop may co-occur with only four of the tones (Morev et al. 1979:20).

Finally, note that treating the final offglides /j/ and /w/ as consonants reduces what are phonetically triphthongs into diphthong + glide sequences.

2.2. VOWELS. Lao has 12 vowels: /i i̯ e ε u u̯ ū̯ ʊ̄ o ɤ ɔ a/ (Morev et al. 1979:18). In closed syllables, any vowel may be either long or short; in open syllables, only long vowels are allowed. For diphthongs, the first element is the syllabic and bears the length if present.

The vowels have a front series, a back rounded series, and a back unrounded series. The diphthongs consist of a high vowel with a schwa offglide.

2.3 CONSONANTS. Lao has 28 consonants (Morev et al. 1979:19). There are five places of articulation, namely labial, alveolar, palatal, velar, and glottal. All places of articulation, except labial, also have rounded consonants; however, not

every plain consonant has a rounded counterpart. The labialized consonants do not occur before round vowels.

It is significant that although Lao has a palatal glide /j/, there are no tautosyllabic Cj- sequences, nor are there any phonemically palatalized consonants.

The consonants are presented below in two tables. The first treats labialization as secondary; the second treats it as primary. The latter arrangement reflects the position on Lao phonology taken here.

	labial	alv.	palatal	velar	glottal
-asp. stop	p	t	c	k	ʔ
+lab. stop		tw	cw	kw	ʔw
+asp stop	p ^h	t ^h		k ^h	
+lab. asp		t ^h w		k ^h w	
+voi stop	b	d			
fric	f	s			h
+lab fric		sw			
nasal	m	n	ɲ	ŋ	
+lab nasal				ŋw	
lateral		l			
+lab lat		lw			
glide	(w)		j	(w)	

TABLE 1. LAO CONSONANTS.

	labial	alv.	lab.- alv.	pal.	lab.- pal.	velar	lab.- vel.	glot.	lab.- glot.
Stop	p	t		c	cw	k	kw	ʔ	ʔw
+asp	p ^h	t ^h	t ^h w			k ^h	k ^h w		
+voi	b	d							
Fric	f	s	sw					h	
Nasa	m	n		ɲ		ŋ	ŋw		
l									
Lat.		l	lw						
Glide				j			w		

TABLE 2. LAO CONSONANTS REVISITED.

Although all consonants may occur syllable-initially, only nine may appear syllable-finally (§2.1). Other limitations of co-occurrence are discussed in the section on the syllable.

The arrangement in Table 2 brings out the limited distribution of the labialized, or rounded consonants. Note that

although all the velars have labiovelar counterparts, just half of the alveolars, and only one of the palatals, have rounded counterparts. This skewed distribution will be brought up again in §3.

2.3.1 THE GLOTTAL STOP. The phonemic status of glottal stop is an issue in Lao phonology. Morev et al. argued that it must be treated as a phoneme (1979:20). If it is not, then one must account for the aberrant behavior of those syllables which end with a glottal stop. Although all six tone categories of Lao may occur with any open syllable, those ending in glottal stop have only short vowels, and occur with only two of the tones. Accounting for this distribution is easier if glottal stop is allowed as a phoneme. This is an issue which warrants further research, but will be ignored henceforth here.

According to Morev et al.'s analysis, there is also a rounded glottal stop. As the primary data source for this paper, Kerr 1972, is arranged according to Lao alphabetical order, and since glottal stop is not represented in Lao orthography, no instances of λw - were found.

2.4 TONE. Lao has six tones. They can be described as low level (11),² mid level (33), high level (44), rising (24 or 214), high falling (53), and low falling (31) (Hoshino & Marcus 1981:13). They are given the following numbers in Morev et al. 1979: low level (5), mid level (4), high level (2), rising (1), high falling (3), and low falling (6).³ As the tones do not bear upon the discussion here, they will not be mentioned again.

3. LABIALIZED CONSONANTS. As noted above, labialized consonants do not occur before round vowels in Lao. Although some languages allow labial and labialized consonants to occur before round vowels, such as Cantonese (e.g. *gwok* 'country'⁴) and Ponapean (e.g. *umwpwul* 'flame' (Rehg 1984:327)), it is entirely possible for the roundness of the consonant to be lost and assimilate to the roundness of the following vowel. This has occurred to a limited degree in Cantonese, in which all earlier sequences of labiovelar + high back round vowel have been simplified to plain velar + high back round vowel sequences (Matthews & Yip 1994:14). Further, there are dialects of Cantonese which do not distinguish *kw*- and *gw*- from *k*- and *g*- (respectively) before any round vowel. These dialects preserve /*k^w*/ and /*g^w*/ in other environments, however.

Tinrin, a Melanesian language of the Austronesian family, also distinguishes plain velars from labiovelars. However, this contrast is not found before any round vowel (Osumi 1995:17).

Gilbertese (Kiribati), a Micronesian language closely related to Ponapean, also has rounded labials, like Ponapean. Unlike Ponapean, Gilbertese does not allow rounded labials before round vowels (Rehg: personal communication).

It would appear that if Lao had once allowed labialized consonants before round vowels, changes similar to the ones attested in Cantonese, or those apparent in Tinrin and Gilbertese, have occurred. This may be why sequences of labialized consonant + round vowel do not occur in Lao.

The labialized consonants in Lao have both limited distribution and infrequent occurrence. As noted above, they do not occur before round vowels. Most instances of labialized consonants are before the low vowel /a/, although there were also several instances of labialized consonants before /ɛ/, and two instances before /i/, listed in Kerr 1972.

Except for the labiovelar stops, the labialized consonants are rare. Kerr 1972 listed very few words with *sw-*, *ngw-*, *cw-*, *thw-*, or *lw-*. However, there were more than 14 pages of *entries with initial khw-*. The majority of the *khw-* entries, being polysyllabic, were not included for consideration here. As noted above, Kerr 1972 listed neither glottal stop nor rounded glottal stop, and this latter sequence shall be ignored hereafter. The relative rarity of the labialized consonants other than the labiovelars attests to their secondary, derived nature.

The labialized consonants are best treated as unit phonemes, rather than as consonant-glide sequences. There are several facts which support this view. One is the canonical syllable in Lao, which is maximally CVC. Another is that there are no Cj- sequences (§2.3). Also, if the rounded consonants were CG sequences, then one might expect that they would occur with all non-labial initial consonants, when in fact, as is shown in Tables 1 and 2, the distribution of rounded consonants is limited. Additionally, there are very few forms with rounded consonants other than the labiovelars. Finally, the labialized consonants pattern as units in word play, as do the aspirated consonants, rather than as C-w or C-h sequences (Morev et al. 1979:21). Note the existence of Chamic languages where aspirated consonants behave as Ch sequences rather than as unit phonemes (Thurgood 1993; Thurgood personal communication).

4. PROTO-TAI. As Proto-Tai is thoroughly explained elsewhere (Brown 1985; Li 1977), I shall give only a brief sketch here. Although I am aware of Sarawit's 1973 reconstruction of proto-Tai, I did not have access to it while preparing this paper, except indirectly in Strecker 1983.

Brown's proto-Thai includes data from Chiang Rai (Northern Thai), Chiang Tung (Shan), Nakhon (Southern Thai), and Roi-et (Lao) as primary sources. Given the diversity of these languages, and Brown's subgrouping, his proto-language might more properly be considered to be proto-Tai. However, to avoid possible confusion between Brown's reconstruction and Li's, I shall maintain the spelling *proto-Thai* for Brown's work, and *proto-Tai* for Li's.

Li used data from Thai, Lungchow, and Po-ai as his primary sources, but also employed data from Ahom, Shan, Lao, Black Tai, White Tai, Lü, Tay, Tho, Nung, Tien-pao, Wuming, and Ddoi as secondary sources. He also used data from "other languages infrequently.

Since Li did not use Lao as one of his primary sources, it can be difficult to determine the Lao reflex of a given form. However, since Thai is very close to Lao (cf. Gedney 1972:196), the Thai form can, in some instances, be used as a close approximation of the Lao. Further, Li's statements about the SW group (of which Lao is a member) will also be employed when no Lao form is immediately available.

4.1. PROTO-TAI CONSONANTS. Rather than give complete reconstructed consonant inventories, I will restrict myself to the most relevant consonants of the reconstructions.

4.1.1. LABIOVELARS. Both Brown's and Li's protolanguages include labiovelars. Brown reconstructed *gw-, *khw-, and *kw- (1985:103–105), whereas Li had these and *ɣw-, *xw-, and *ɣw- (1977:236). Brown gave the modern Lao reflexes of *gw-, *khw-, and *kw- as *kh-*, *k-*, and *kh-*, respectively. However, this could be an artifact of his analysis of Lao, and not a claim that the proto-Thai labiovelars delabialized en route to modern Lao.

Li claimed that *khw- and *kw- remained unchanged in the SW dialects (of which Lao is a member), and that *gw- was usually represented as *khw-* or *kw-* (1977:236–39). The Thai forms Li gave for *gw- had *khw-* as their reflex, so we might reasonably expect that the Lao forms would also have *khw-* for *gw-. Given that the largest number of entries for labialized

consonants in Kerr 1972 is for the labiovelars stops, in this instance, Li's analysis is accepted over Brown's, and the conclusion is that Lao labiovelar stops descend from proto-T(h)ai labiovelar stops, as shown by Li.

As for *ɲw-, *xw-, and *ɣw-, Li claimed that these came out in Lao as ɲw- or "ɲ-, khw-, and khw-, respectively (1977:239–42). Li listed only one Lao form with ɲw-; this form was not found in Kerr 1972. As all the other Lao forms from *ɲw- are listed as ɲ-, it is difficult to draw any conclusion about the origins of Lao ɲw- from Li's discussion.

4.1.2. OTHER CONSONANTS. Li's reconstructed consonants fall into the classes of labials, labial clusters, dentals, dental clusters, liquids, sibilants, velars, velar clusters, labiovelars, and laryngeals. The palatals fall into the sibilant class. As Lao does not permit consonant clusters, all the proto-Tai clusters have necessarily been simplified in Lao. However, some of the correspondences amongst the modern languages are nontrivial (e.g. *pr- : Thai *t*- : Lungchow *ph(j)*- : Po-ai *t*-), and no general statement about how the clusters were simplified can be made from Li's work. However, in Brown's reconstruction, all the clusters simplified by losing the second consonant, except for *tr-, for which the correspondences are not clear (Brown 1985:224–25) Except for the labiovelars, none of the protolanguage clusters include *w* as a second element; they have only -l- or -r-.

Brown's reconstructed consonants are essentially a subset of Li's, and will not be considered separately.

4.2. PROTO-TAI VOWELS. In keeping with the hypothesis of this paper—that Lao labialized consonants are derived from proto-Tai C-round vowel-V sequences—only those proto-Tai vowels that fit this description shall be examined.

Brown reconstructed only *ua- (1985:106), as did Sarawit (1973, cited in Strecker 1983:33). On the other hand, Li reconstructed *ue, *ɔi, *oi, *ou, *uai, and *uəi. As Li's reconstructions offer more to work with, they will be considered here. However, it needs to be noted that some of Li's reconstructions are phonetically questionable, and somewhat formulaic. Further, there are some irregularities in the correspondences that require further analysis (Gedney 1972; Strecker 1983).

For the diphthongs, Li stated that proto-Tai *ue is reflected as Lao *ua*; that *ɔi generally came out as SW ɔɔi; that *oi was

found in only a small number of words, and came out as Thai *ai*; that *ou came out as Thai and Lungchow *au*. For the triphthongs, proto-Tai *uai became Thai *uai*. Li was uncertain about proto-Tai *uəi, positing it to account for aberrant correspondences in what would otherwise be *uai. It would appear that the most likely candidates for Lao rounded consonants had proto-Tai *ue or *uai.

5. HYPOTHESIZED CHANGES. Lao allows no tautosyllabic consonant clusters. In this respect, it is different from both the closely-related language Thai and their parent language proto-Tai. This change from allowing clusters to disallowing them was accomplished by means of a conspiracy of changes, only one of which shall be investigated here. (It can be noted, however, that one of the other changes was the loss of medial liquids; they may have merged first, as has happened in Thai.)

The change that is the subject of this paper is CONSONANT ROUNDING. By this, I mean that in some instances, a sequence of CuV was reinterpreted as C^wV. This change reinterpreted the round vowel as labiality or roundness on the preceding consonant.

This change in Lao is paralleled in Cantonese. Chen and Newman (1984a:160–161; 1984b:356–359) proposed a phonotactic condition for Cantonese they called TRI-SEG, presumably because no Cantonese syllable can consist of more than three segments: consonant, vowel, and consonant. They proposed seven distinct changes between Middle Chinese and modern Cantonese to account for the changes in possible syllable structure. One of these changes they called LAB-VEL (1984a:161–162); this name was presumably derived from the term *labiovelar*. In LAB-VEL, a sequence of a velar and a high back round vowel was reinterpreted as a labiovelar (1984a:161).

It is proposed that in Lao, the change CONSONANT ROUNDING applied under similar conditions as LAB-VEL applied in Cantonese, except that CONSONANT ROUNDING was not limited to velar consonants. If CONSONANT ROUNDING also applied to labial consonants, all such instances have been lost in modern Lao.

Like LAB-VEL, CONSONANT ROUNDING is proposed as part of a broader change in Lao, one which parallels TRI-SEG in Cantonese.

5.1. PROBLEMS AND RESERVATIONS. The proto-Tai reconstructions available to me are largely segmental, and give few proto-Tai words. Unfortunately, due to this relative unavailability of proto-Tai forms corresponding to modern Lao rounded consonants, it is difficult to fully formulate CONSONANT ROUNDING at this time, and so it must remain a tentative hypothesis. Those forms with proto-Tai reconstructions I have been able to find are all labiovelars, and the derivations from proto-Tai to Lao are trivial.

A larger problem for consonant rounding exists, however. It is the issue of why some proto-Tai forms underwent consonant rounding, and why other, apparently similar forms, did not, for in Kerr 1972, the majority of forms with a labial as the second orthographic element are Cu forms, and not C^w forms. This is another issue which might be resolved with richer data for proto-Tai.

The hypothesis that modern Lao rounded consonants are from earlier CuV- clusters could also be supported with data from related languages, which might have cognate words with CuV- sequences. Thai is a closely related and well-documented language, and is the best place to start such a search. Unfortunately, I cannot read Thai, and the only romanized dictionary available to me (Haas 1955) had no apparent cognates for any of the Lao words with rounded consonants, other than some words with labiovelars. Since forms with labiovelars do not constitute data which would either support or refute this hypothesis, I must leave the question open until such time as I am able to recruit the assistance of someone literate in Thai.

6. CONCLUSIONS. Lao, unlike (at least some) other Tai languages, has a phonotactic constraint against tautosyllabic consonant clusters. One of the results of this constraint was the genesis of rounded consonants, in addition to its inherited labiovelars. It is proposed that this can be accounted for by a change called CONSONANT ROUNDING; however, at this point, the data available to me are insufficient to fully justify this hypothesis.

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² The numbers in parentheses indicate Chao tone values (assigned by the author).

³ The diagrams for the tone contours in Hoshino and Marcus do not necessarily agree with those given in Morev et al., and tones 5 and 6 may be reversed between the two systems.

⁴ Cantonese is presented in modified Yale romanization (see Matthews and Yip 1994).

Appendix 1.

List of Lao words with labialized consonants

Lao	Gloss	Proto-Tai
kvà:	before; moved	
kvay	to swing; unsteady	
kvák	rotate by hand; beckon; to bind; t.o. tree	
kvâ:k	enlarge	
kvang	very far	
kvâ:ng	spacious	
kva:ng	deer	kwaŋ (B)
kvē:ng	brandish; wave; throw	
kvāt	brandish	
kvâ:t	sweep	
kvē:t	to mark	
kvan	t.o. bamboo	
kvà:n	court (of law); rest house; pull; pond; reunite; hoard	
kvē:n	familiar	
kvia:n	cart	
khva:y	earthen insect mound	
khvan	stalk; stem; end	
khvâ:	right (side)	
khvâ:y	interlace; in disorder	
khvâ:k	stake; deadfall; thorn	
khvâ:ng	obstruct; protect; veer; t.o. bamboo; horizontal; broad	
khvâ:ng	throw	
khvē:ng	province, region	
khvâ:n	spirit; prosperity; happiness; crown of head; gift; frightened; axe	khwan (B) xwən A1(L)
khvâ:n	where flower attaches to stem	
khvē:n	hang, suspend	
khvâ:	reach for, search for;	
khvâ:	grope, grab	
khvâ:	grope, grab	
khvī:	unfurl, expand	
khváy	agitate	

khvāy	all	
khvām	turn over, capsize	xwəm C1(L)
khvāk	gouge; pull out w/ hand; wave at w/ hand	
khvā:k	spreading	
khvè:k	sound of cloth tearing	
khvāng	distant	
khvā:ng	throw	
khvā:ng	to circle; wave; liquefy; t.o. bean	
khvè:ng	turn back and forth; wander; whirl	
khvá:y	water buffalo	gwai (B)
khvāt	engrave, dig out	
khván	smoke, steam, haze; cut a circle around	ɣwən A2(L)
khvān	part of fruit which attaches to stem; shave	
khvá:n	animal trainer; roll into a ball; scoop out	
khvé:n	fatiguing; tired; serious; region	
khvá:m	word; story; affair	
cvā:t	startle w/noise, awaken w/ noise	
ngvā:k	turn L and R; make a horse rise; look back	
ngvām	invert	
svá:	(ancient name)	
svá:ng	t.o. snake	
svà:t	be conscious; sound of rain falling	
svá:n	explode, burst	
svā:n	scatter; expand	
svà:n	shovel; lift	
thvá:y	estimate; correct	
lvà:t	coat, pave; draw, paint; be full, overflow	
hvá:y	uterus	

hvā:y	fragrant
hvà:y	exclamation of surprise
hvà:t	bunch

Key to the appendix

All Lao forms are cited as they appear in Kerr 1972.

(B): from Brown's 1962 reconstruction

(L): from Li's 1977 reconstruction

t.o.: type of

Kerr tone symbols

Low	Mid	HF	LR	H	LF
a	ā	à	ǎ	á	â

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