Proto-Lolo-Burmese velar clusters and the origin of Lisu palatal sibilants[1]

Zev Handel

University of Washington, Seattle

zhandel@u.washington.edu

0. Abstract

Standard Northern Lisu has two series of palatal sibilants: (alveolo-)palatals [tɕ tɕʰ dʑ ɕ ʑ] and palato-alveolars [tʃ tʃʰ dʒ ʃ ʒ]. The phonemic status of the latter is questionable, since they are in complementary distribution with the former, occurring only before vowels [u] and [ɿ]. The vowel [ɿ] is itself in complemetary distribution with [i], occurring only after the palato-alveolars. Thus the contrasting minimal pair [tɕʰi³³] 'to arrive' and [tʃʰɿ³³] 'Muntjac deer', from a synchronic viewpoint, can be phonemicized either as /tɕʰi³³/ and /tɕʰɿ³³/ (treating the palato-alveolars as allophones of the palatals and /i/, /ɿ/ as distinct phonemes) or as /tɕʰi³³/ and /tʃʰi³³/ (treating [ɿ] as an allophone of /i/, and the two sibilant series as phonemically distinct). While synchronically either approach is possible, the question arises as to how this "overlapping complementary distribution" phenomenon arose historically. What is the origin of the two contrasting syllable types [tɕʰi] and [tʃʰɿ]?

The Lisu palatals have multiple origins. One source is the Proto-Lolo-Burmese palatal initials. Another is Proto-Lolo-Burmese velar clusters with *r or *y. Analysis reveals that the original Lolo-Burmese distinction between clusters such as *kr and *ky, although lost in most environments, is still maintained before high front vowels, resulting in the distinction between [tɕʰi] and [tʃʰɿ]-type syllables.

In this study, the evidence is presented, and a series of sound changes is proposed. Finally, the question of phonemicization of Lisu is revisited from an historical perspective.

I. Introduction

Lisu

Lisu is a language in the Central branch of Loloish, which is in turn a member of the Lolo-Burmese subgroup of Tibeto-Burman. Lisu speakers reside in China's Yunnan Province, eastern and southeastern Burma, and northern Thailand. The dialects of Lisu can be described in terms of a basic tripartite division: northern, central, and southern. The standard Lisu dialect is northern, spoken in the northwest corner of Yunnan, where the Nujiang Lisu Nationality Autonomous Prefecture (Nùjiāng Lìsùzú Zìzhìqū 怒江傈僳族自治区) has been established in a finger of land running north-south along the Burmese border and abutting on Tibet to the north. The vast majority of Lisu speakers speak northern dialects which are mutually intelligible with the standard dialect. A significant number of Lisu speakers in central and southern Yunnan and eastern Burma speak central dialects; speakers of southern dialects are few and mostly reside in Thailand.[2] [3]

The most comprehensive dictionary of standard Lisu is David Bradley's 1995 *Dictionary of the Northern Dialect of Lisu*, a Lisu-English dictionary based on a Lisu-Chinese dictionary (Xú, Mù et al. eds. 1985) published by the Yunnan Nationalities Press. Bradley 1995 (hereafter abbreviated DNDL) serves as the primary data source for this study.[4]

Before 1985, the most reliable published work on Lisu was James Fraser's 1922 wordlist. Fraser's Lisu is a central dialect spoken eight decades ago, but despite the geographic and temporal distance it shows a high degree of similarity

---

[2]   Throughout this article, the term Lisu will refer to the standard dialect, unless otherwise indicated.

[3]   For more on Lisu and for a summary of additional sources on the language, see Bradley 1978:53ff.

[4]   For a review of DNDL, see Handel 1994.

to the modern standard dialect.[5] The southern dialect is more divergent. Bradley (1994:vii) states: "the southern dialect of Lisu ... is not entirely typical of Lisu; it has a reduced final particle system and is inundated with Chinese loans."[6]

The standard dialect of Northern Lisu also has its share of Chinese loans. These are, for the most part, clearly marked in DNDL, and are almost exclusively limited to the political, economic, and ideological spheres. Almost no Chinese impact has been made on basic vocabulary. For the most part Chinese loans have not been assimilated into the Lisu phonological system, instead manifesting a rich system of glides and diphthongs otherwise foreign to Lisu's simple syllable structure. They thus remain transparently of foreign origin to the Lisu speaker. A small number of Chinese terms, borrowed before the 1949 revolution, have been fully assimilated. (Fraser notes a number of Chinese terms in his wordlist as well.)

The reconstruction of Proto-Lolo-Burmese [PLB], the putative ancestor of the Lolo-Burmese languages, has seen tremendous progress in recent decades (see for example Burling 1967, Matisoff 1972, 1978, 1979, Bradley 1978, and Hansson 1989, among others). Among the better-known Lolo-Burmese languages are Burmese, Zaiwa, and Achang (all Burmish); Lahu (Central Loloish); Akha and Mpi (Southern Loloish); and Yi (Northern Loloish).

Detailed attempts to describe the phonological development of Lisu from Proto-Lolo-Burmese (Thurgood 1977, Bradley 1978, Matisoff 1972, etc.) have been hampered by a scarcity of data. With the publication of DNDL, we can finally make a more detailed analysis of the phonological processes that gave rise to modern Lisu.

The sounds of Lisu, *the New Lisu Script*, *and the IPA retranscription*

Although DNDL is based on Xú, Mù et. al. 1985, it is not strictly a translation. According to Bradley's introduction, many glosses have been expanded and corrected for the English edition. Bradley has also added form classes and reordered the entries. Finally, and most critically, he has made some

---

[5]   Since DNDL also lists a fair number of Central dialect forms, it should be possible to make a comparative study with Fraser to ascertain how much change Central Lisu has undergone in the last eighty years.
[6]   For a description of Southern Lisu, see Hope 1974.

modifications to the Lisu orthography in order to accurately reflect phonemic distinctions.

The orthography now in use for transcribing Lisu in China is known as "the New Lisu Script" (often called simply the "new script" in Bradley's introduction). It was devised by mainland Chinese linguists and exhibits some obvious parallels to the *pinyin* system used for transcribing standard Mandarin Chinese.[7] Unfortunately, this script, although perfectly practical for reading and writing Lisu, is inadequate as a phonetic or phonemic transcription. For this reason I have retranscribed all DNDL Lisu data in this study in the International Phonetic Alphabet.

The charts below show the correlations between the IPA notation used here and the modified New Lisu Script transcription employed in DNDL. The charts are adapted from Bradley's introduction, but have been modified to reflect new information supplied by him (personal communication 1995) and insights gleaned from a careful inspection of the dictionary entries themselves. It should be noted that the transcription is neither narrowly phonetic nor strictly phonemic. See the appendix for additional notes.

INITIAL CONSONANTS (IPA)

	bilabial	alveolar	palato-alveolar	palatal	velar	glottal
vl unaspirated	p	t	ts	tʃ	tɕ	k	ʔ
vl aspirated	pʰ	tʰ	tsʰ	tʃʰ	tɕʰ	kʰ	
voiced	b	d	dz	dʒ	dʑ	g	
vl fricative	f		s	ʃ	ɕ	x	h
vd fricative	v		z	ʒ	ʑ (j)	ɣ	
nasal	m	n			ɲ	ŋ	ɦ
approximant	w	l	ɹ		j		

7   For example, anyone familiar with *pinyin* romanization will recognize the use of symbols **j**, **q**, and **x** for the palatal series of initial consonants.

NEW LISU SCRIPT

	bilabial	alveolar		palato-alveolar	palatal	velar	glottal
vl unaspirated	b	d	z	zh	j	g	Ø
vl aspirated	p	t	c	ch	q	k	
voiced	bb	dd	zz	rr	jj	gg	
vl fricative	f		s	sh	x	h	h
vd fricative	v		ss	r	y	e-	
nasal	m	n			ni	ng	h-n
approximant	w	l	r		e-		

VOWELS (IPA)   NEW LISU SCRIPT

i,ɿ	y		ɯ	u		i	u̲		e̲	u
e	ø		ɤ	ɔ		ei	e̲i̲		e	o
	æ	a					ai	a		

DIPHTHONGS (IPA)   NEW LISU SCRIPT

ja	ia
wa	ua

TONES (IPA)   NEW LISU SCRIPT

55 (high)	-l
44 (mid-high)	-x
33 (mid)	-Ø
21 (low)	-t
35 (rising)	-q
ʔ21 = 21̲ (low checked)	-r

The problem of phonemicization

There are three sets of sibilants: the alveolars [ts tsʰ dz s z], the palato-alveolars [tʃ tʃʰ dʒ ʃ ʒ], and the palatals [tɕ tɕʰ dʑ ɕ ʑ]. The palato-alveolars are in complementary distribution with the palatals, the former occurring only before the vowels [u] and [ɿ]. It is thus possible to treat the palato-alveolars as allophones of palatal phonemes /tɕ tɕʰ dʑ ɕ ʑ/. However, it is also the case that the vowels [i] and [ɿ] are in complementary distribution, the latter occurring only after the palato-alveolars. It is thus possible to treat [ɿ] as an allophone of phoneme /i/. It is not possible to do both at the same time, however, since Lisu contains contrasting words such as *tɕʰi³³* 'arrive' and *tʃʰɿ³³* 'Muntjac deer'.

Which one of the two possible phonemicizations is preferable? From a synchronic point of view, there does not seem to be any clear choice between them based on distributional patterns alone. The New Lisu Script uses the letter **i** for the two vowels [i] and [ɿ], but employs separate sets of symbols **zh ch rr sh r** and **j q jj x y** for the palato-alveolar and palatal series, thus implicitly recognizing two distinct sets of palatal phonemes.[8]

The object of this study is to determine the historical relationship of these two palatal series, and to see if the results can shed light on the problem of phonemicization. Of particular interest will be the fate in Lisu of Proto-Lolo-Burmese velar-plus-medial clusters **Kr*, **Kl*, and **Ky*.[9]

Proto-Lolo-Burmese initials

PLB has a basic two-way manner distinction in obstruent initials, voiced versus voiceless. Many Lolo-Burmese languages have three-way manner distinctions, but these have been shown to be secondary. Lahu, for example, has a three-way manner distinction, with voiced initials derived from PLB prenasalized consonants, voiceless unaspirated initials from PLB voiced initials, and voiceless aspirates from PLB voiceless initials. Like Lahu, Lisu has a three-way manner

---

[8]   This may reflect the influence of the Mandarin *pinyin* transcription, in which **i** is used to represent allophones [i] and [ɿ], and in which distinct sets of symbols (**zh ch sh r** and **j q x**) are used to transcribe the two post-alveolar series.

[9]   Capital **K** is here employed as a cover symbol for the velar initials.

distinction. Lisu is more conservative, however, in preserving PLB voicing. The PLB voiceless initials have become aspirates in Lisu, while PLB glottalized initials have become voiceless unaspirated (Bradley 1978:127-130).

The PLB syllable-initial canon is listed below, following Matisoff (1979) with some notational modifications:[10]

p	t	ts	tš	k	kʷ	ʔ
b	d	dz	dž	g	gʷ	
m	n	(ñ)	ŋ	ŋʷ		
	s		š	hʷ	h	
	z	(ž)				
w	l		y	r		

All four resonants could serve as medials, although clear-cut examples of medial *l are rare. Root initials could be glottalized or preceded by a voiced stop, nasal, or spirant prefix. The development of these initials into Lisu is summarized in Section II below.

Data sources and notation

Established PLB roots used in this study are from a number of publications, including Benedict 1972, Bradley 1978, Matisoff 1970, 1972 [TSR], 1978, 1985, 1988. To save space, I have not made specific attributions.

Developments are illustrated by etymon-reflex sets in the following format:

Set	Proto-Gloss	PLB root	Lisu form and gloss
[1]	TUSK	*džway¹	dʒɿ⁴⁴ 'dog's fang; canine tooth; tiger's fang'

Where the cited Lisu form is a compound, the reflex morpheme is indicated by underlining, and the meaning of the other morphemes is given in a footnote. If there is an irregularity of correspondence, I represent it with a minus sign followed by a letter indicating the part of the syllable in which the

---

10   In the literature, PLB forms (and PTB forms) are traditionally given in Americanist notation. Thus **y** represents a palatal glide [j]. There has however been some inconsistency in the transcription of PLB palatal affricates, where **j**, **ǰ**, and **dž** have all been used to represent [dʒ]. I have consistently transcribed the PLB palatal series as **tš**, **dž**, **š**, **ž** in reconstructed forms.

irregularity occurs. **T** stands for tone, **I** for initial, **R** for rhyme, **S** for semantics. I use **t** instead of **T** when a low Lisu tone carries a historically unjustified final glottal stop—these syllables should not be considered irregular.[11] Where DNDL also lists a central dialect form, it is given after a slash following the standard dialect form. Related forms in other languages are occasionally given in footnotes.[12]

II. The development of PLB initials in Lisu

Based on the work of Thurgood 1977, Bradley 1978, Matisoff 1972, and Handel 1995, the development of PLB initials into standard Lisu is summarized in the following charts. In the first chart, bilabial initials are used to represent initials at all places of articulation. For example, *b* represents voiced obstruents *b*, *d*, *dz*, *dž*, *g*, *g^W*, and the chart indicates that these develop into voiced initials in Lisu.

PLB Manner of Articulation		Lisu Reflex	Example
voiced obstruent	*b	b	*bya^2 > bja^{21} 'bee'
prenasalized obstruent	*N-b, *N-p	b	*N-krəw^2 > -gu^{21} 'dove'
glottalized obstruent	*ʔb	p	*ʔdoŋ^1 > tu^{33} 'thousand'
voiceless obstruent	*p	p^h	*taŋ^2 > t^{h}ɔ^{21} 'pine'
nasal	*m	m	*min^1 > mi^{44} 'tasty'
glottalized nasal	*ʔm	m	*ʔŋa^2 > ŋwa^{55} 'borrow'

In the next chart, voiceless initials are used to represent initials of all manners of articulation. Thus *k* represents velar initials *k*, *g*, *ŋ*, and the chart indicates that these develop into velars in Lisu.

---

11   For an explanation, see Handel 1995.
12   Written Burmese [WB] forms are from Benedict 1976 and Lahu forms are from Matisoff 1988. Lahu and Written Burmese forms are cited according to the formulations laid out in the introduction to Matisoff 1988.

PLB Place of Articulation		Lisu Reflex	Example
velar	*k	k	*kaw^1 > k^{h}u^{33} 'call'
plus medial	*kr, *ky	tɕ / tʃ	*krəy^1 > tɕ^{h}i^{33} 'foot'
labialized	*k^W	k / kw	*k^{W}əy^2 > k^{h}ɤ^{21} 'dog'
palatal affricate	*tš	tɕ / tʃ	*tšow^2 > tʃ^{h}u^{21} 'thorn'
dental stop	*t	t	*taŋ^2 > t^{h}ɔ^{21} 'pine'
dental affricate	*ts	ts	*dza^1 > dza^{44} 'food'
bilabial	*p	p	*pru^1 > p^{h}u^{33} 'silver'
spirant	*s	s	*swa^2 > si^{21} 'tooth'
palatal	*š	š / h	*ši^2 > ʃʅ^{21} 'seven'
resonant	*r	v / Ø	*rəw^2 > vy^{21} 'bone'
labiovelar	*w	w / v	*wa^2 > wa^{21} 'snow'
lateral	*l	l	*lak > læʔ^{21} 'hand'
palatal	*y	ɹ / Ø	*yip > jiʔ^{21} 'sleep'

The chart above demonstrates, as mentioned earlier, that there are two sources of Lisu palatals: PLB palatal affricates and PLB velar clusters. We will now investigate the reflexes of these two sources more carefully.

III. PLB velars and velar clusters

Consider the following chart, adopted from Matisoff 1978:5, which summarizes the fate of PLB velars in Lahu (a Central Loloish language), Mpi (a Southern Loloish language), and Written Burmese (a Burmish language). **Q** is a cover symbol for uvular stops and **C** is a cover symbol for palatal sibilants.

PLB	*K	*Ky	*Kr	*Kl	*K^W
Lahu	Q	C	K	K	P
Mpi	K	C	K	Ky	K
WB	K	Ky	Kr	Kr ~ Ky	K^W

Ky and *Kr* clusters develop distinctly in each of these three languages, with medial *y* causing palatalization in Lahu and Mpi. In Lisu, however, PLB

velars palatalize under the influence of both medials *y and *r (and presumably *l, although examples are few).[13] The developments of PLB velars and velar clusters in Lisu are exemplified below. Compare, for example, sets (6) and (7) with sets (13) and (14).

• PLB simple velars

[2]	SOW (v)	*ka¹	k^hwa^{33} 'sow'
[3]	CALL	*kaw¹	k^hu^{33} 'cry; yell; call'
[4]	BITTER	*ka²	k^hwa^{21} 'bitter; salty; strong'
[5]	WEAR	*ga²	gwa^{21} 'put on'

• PLB velars + *-r-

[6]	SIX	*C-krok	$tɕ^hɔ\gamma^{21}$ 'six'	
[7]	FEAR	*N-krok	$dʑɔ^{33}$ 'fear' (v)	
[8]	FRIGHTEN	*ʔkrok	$tɕɔ^{35}$ 'scare; threaten'	
[9]	CROSSBOW	*krak	$tɕ^hæ^{35}$ 'crossbow'	
[10]	COLD	*N-krak	$dʑæ^{33}$ 'cold'	14
[11]	COLD	*ʔkrak	$tɕæ^{33}$ 'cold; gruesome'	

• Exception:

| [12] | STAR | *ʔgray¹ | ku^{33} 'star' (bound) | -IV 15 |

• PLB velars + *-y-

[13]	FRIEND	*kyaŋ¹	$tɕ^hɔ^{21}$ 'friend'	-T	
[14]	WAIST	*gyok	$dʑɔ^{21}tsi^{55}$ 'back'	-t	16
[15]	BEAT/SHAKE	*N-gyök	$dzɤ\gamma^{21}$ / $dzø\gamma^{21}$ 'strike, blow (of wind); whip'		
			$dzɤ\gamma^{21}lɔ^{33}$ / $dzø\gamma^{21}$ 'flint'		17

---

13   PLB labiovelar initials develop into Lisu velars, not into bilabial stops as they do in Lahu (see Matisoff 1978), with one possible exception. However, they do pattern with PLB bilabial stops in their effect on the development of vowels (Handel 1995).

14   Possibly related are the Lisu forms $tɕhi\gamma^{21}$ 'icy cold' and $tʃhɿ\gamma^{21}$ 'cold; chilly; icy cold'.

15   The Lisu form has irregular vocalism. Lisu -u is the regular reflex of *-ay after *r-. This suggests the possibility of establishing a variant PLB root *ʔg-ray¹, if corroborating evidence can be found in other Loloish languages.

16   tsi^{55} 'joint'

17       $lɔ^{33}$ 'rock'. Compare the Lahu forms $jɔʔ$ 'hit, beat' and $mí-jɔʔ$ 'flint' ($mí$ 'fire').

[16]   VEGETABLE *ʔgyak   tsɤ⁵⁵tɕæ̱⁵⁵tɕʰæʔ²¹ 'shrub'   -S

• PLB velars + *-l-

[17]   BOIL   *ʔglak   tɕa⁵⁵ 'boil; decoct'

In the examples given so far, we have seen Lisu palatal initials [tɕ tɕʰ dʑ
ɕ ʑ] as reflexes of PLB velar clusters, but we have not seen any palato-alveolars
[tʃ tʃʰ dʒ ʃ ʒ]. On the basis of data like this, previous scholars have concluded
that PLB *Ky and *Kr merge in Lisu, just as I indicated in the charts summarizing
initial consonant development. For example, Bradley 1978:134 lists the following
developments for Lisu from Proto-Lolo-Burmese/Proto-Loloish:

PLB	*TS	*C	*KY	*KR	*KL
Lisu	TS	C	C	C (K)	K

However, a more careful analysis of the data reveals that a difference *can* be
established—but only in the case of Lisu unrounded high front vowels.

I have already noted that contrasting syllables types *tɕi* and *tʃɿ* present a
problem for the synchronic phonemicization of Lisu. From a diachronic
standpoint, syllables like these raise a different question: Are the contrasts the
result of dialect mixture, or is their development historically conditioned?

We can answer this question by focusing on the distinction between PLB
Kr and *Ky*. Consider the following minimal pair:

[18]   HORN   *kraw¹   hwa²¹ɔ⁵⁵tɕʰi³³ 'animal horn'   18 19
[19]   SWEET   *kyaw¹   tʃʰɿ³³ 'sweet; salty'

Based on this minimal pair, we can hypothesize that PLB syllables of the
type *Kraw* yield Lisu palatal initials and vowel [i], while syllables like *Kyaw*
yield palato-alveolar initials and vowel [ɿ]. (After all other proto-initials, *-aw*
normally gives Lisu -i). Let us call this hypothesis the Medial Distinction
Hypothesis, or MDH. Below are listed all the PLB roots with velar cluster initials

---

18   *hwa²¹* 'animal'; *ɔ⁵⁵* 'head'
19   In Lisu, all vowel-initial syllables are articulated with initial glottal stop. For readability,
I have not transcribed such syllables with a glottal stop. For example, I write *ɔ⁵⁵* rather than *ʔɔ⁵⁵*.

which I have found in the literature for which Lisu reflexes with vowel [i] or [ɿ] exist. They are divided into two groups, (A) and (B), according to the Lisu initial and vowel.

(A) Reflexes of PLB velar clusters in [i] *with palatal initials*:

[20]	SWEAT	*ʔgrwəy²	tɕi⁵⁵ji³³ 'sweat; dew'		20
[21]	SEW	*grup	dʑiʔ²¹ 'sew'		
[22]	LAC	*ʔgrip	tɕi⁵⁵ 'lacquer'		
[18]	HORN	*krəw¹	hwa²¹ɔ⁵⁵tɕʰi³³ 'animal horn'		
[23]	DGHTR-IN-LAW	*krəy²	tɕʰiʔ²¹ma³³ 'daughter-in-law'	-t	
[24]	FOOT	*krəy¹	tɕʰi³³ 'foot'		
[25]	COPPER	*grəy²	dʑi²¹ 'bronze, copper'		

(B) Reflexes of PLB velar clusters in [ɿ] *with palato-alveolar initials*:

[26]	PARROT	*gyəy²	a⁵⁵dʒɿ²¹ 'parrot'		21
[19]	SWEET	*kyəw¹	tʃʰɿ³³ 'sweet; salty'		
[27]	MOVE	*N-kyit	dʒɿ⁴⁴ 'move (intr.); yield'		
[28]	MOVE	*ʔgyit	tʃɿ⁵⁵ 'move'		
[29]	MELT	*ʔgrəy¹	tʃɿ³³ 'melt; smelt'	-V	
[30]	GRIND	*N-krit	dʒɿ³³ 'grind'	-V	

Of the seven reflexes in Group A, all have PLB *r-cluster initials. Of the six reflexes in Group B, four have *y-cluster initials. I believe this is sufficient evidence for establishing distinct sound laws. As for the two exceptions, we can perhaps attribute them to the general tendency throughout Lolo-Burmese languages to some degree of confusion between medial *r and medial *y.

There is further evidence to support the Medial Distinction Hypothesis. A second source of Lisu palatal affricates is the PLB palatal affricate series of initials. Below is a list of every Lisu reflex I have found with vowel [i] or [ɿ] derived from a PLB palatal initial.

---

20   *ji³³* 'water'
21   *a⁵⁵* 'animal prefix'

(C) Reflexes of PLB palatal affricates in [i] *or* [ʅ]:

[1]	TUSK	*džway¹	dʒʅ⁴⁴ 'dog's fang; canine tooth; tiger's fang'		
[31]	WIDOW	*tšəw²	mɤ²¹tʃʰʅ²¹ 'widow; widower'		22
[32]	GOAT	*V-tšit	a⁵⁵tʃʰʅ²¹ 'goat'		23
[33]	TEAR, RIP	*ʔdžut	tʃʅ³⁵ 'tear'	-T	24
[34]	SUCK	*ʔtšup	a⁵⁵tʃʅ³⁵ 'milk'		25
[35]	SUCK	*C-tšup	tʃʰʅ²¹ 'suck'		

There are six such examples, all with Lisu palato-alveolar initials. But Group C contains *no* examples of syllables like *tɕi*—Lisu palatal affricates plus [i]—derived from PLB palatals. This suggests that Group B and C syllables shared a common feature at the proto-level, in opposition to Group A syllables, which are all descended from velar clusters with medial *r*.

The development of high front vowels following PLB velars, velar clusters, and palatal initials can be reduced to a single general principle, if we consider medial *y* to have had a [+palatal] feature (shared with PLB palatals *C*), but medial *r* to have been [-palatal]. (This is supported by developments in other Lolo-Burmese languages, such as Lahu and Mpi, in which *Ky* clusters often palatalize and merge with original palatals, but *Kr* clusters do not.)

The Lisu developments in question can be described by either of the following sets of ordered rules, where [+high-front] is short-hand notation for those PLB vowels which normally develop into Lisu [i].[26] The rules are illustrated with the two roots in [18] and [19] (tones omitted for simplicity).

---

22   *mɤ²¹* is obscure, but is clearly related to the first syllable of Lahu *mê-chɔ̂-pā* 'widower' and *mê-chɔ̂-ma* 'widow', and possibly also to the first syllable of WB *mut-chûi-bhui* 'widower' and *mut-chûi-ma* 'widow'.

23   *a⁵⁵* 'animal prefix'

24   The unaspirated Lisu initial points to a PLB glottalized initial, but the tone points to a PLB plain voiceless initial. The Lisu form could be regularly derived from a variant *ʔtšut*.

25   *a⁵⁵* 'familiar prefix'

26   By "normally" I mean here after initials other than velars and palatals. For example, compare set [32] GOAT above with PLB *tit* SOAK > Lisu *thi²¹* 'soak'.

- Ordered rules for the development of Lisu palatals (set 1)   *krəw   *kyəw

(1)	*V[+high-front] > [ɿ] / [+palatal] __		*kyɿ
	*V[+high-front] > [i] elsewhere	*kri	
(2)	*Ky-, *Kr- > Tɕ-	tɕʰi	tɕʰɿ
(3)	Tɕ- > Tʃ- / __ [ɿ], [u]	tɕʰi	tʃʰɿ

- Ordered rules for the development of Lisu palatals (set 2)   *krəw   *kyəw

(1)	[+palatal] > Tʃ-	*krəw	*tʃʰəw
(2)	*Kr- > Tɕ-	*tɕʰəw	*tʃʰəw
(3)	*V[+high-front] > [ɿ] / Tʃ- __		tʃʰɿ
	*V[+high-front] > [i] elsewhere	tɕʰi	
(4)	Tʃ- > Tɕ- except after [ɿ], [u]	tɕʰi	tʃʰɿ

The first set of rules states that PLB vowels which otherwise develop into [i] will instead become [ɿ] after [+palatal] proto-initials (that is to say, after *C and *Ky but not after *Kr). Following the palatalization of velar clusters (and their merger with PLB palatals), the vowel [ɿ] then conditions the development of palato-alveolars.

The second set of rules states that *Kr clusters developed differently from both *Ky clusters and palatals *C. The palato-alveolar reflexes of the latter then conditioned the development of the vowel [ɿ], after which they merged with the palatals except before [ɿ] and [u].

It is not possible to conclusively choose one set of rules over the other as more plausible. It seems to me, however, that the first set is to be preferred for three reasons. First, the development in Set 2 requires one more rule than that in Set 1, and is therefore more complex. Second, the Set 2 hypothesis that *Kr and *Ky clusters developed first into two distinct palatal series, which only later merged in most environments, runs counter to the palatalization pattern seen in other Lolo-Burmese languages. Third, the conditioning factor for the merger in Rule (4) of Set 2 seems suspect, as we would not expect palato-alveolars to be further palatalized by low vowels.

The MDH is of considerable help in reconstructing certain PLB roots. Consider another minimal pair in Lisu:

$la^{33}dzi^{44}$ 'skin of river deer'

$la^{33}dʒ̩^{44}$ 'tooth of river deer'

We have already seen the form $dʒ̩^{44}$, which is derived from *dž̌way¹ TUSK (set [1]).

According to the MDH, we know that dzi^{44} 'skin' cannot be derived from a PLB palatal initial; the source must be a root in *gr-. (We also know from regular rules of tonal development that it must be PLB proto-tone 1). Thus before we have even found a single Lolo-Burmese cognate, we know we have a root that looks something like *grəy¹ or *grəw¹.

IV. PLB palatal and dental affricates

Lisu clearly distinguishes PLB palatal affricates from PLB dental affricates, unlike both Burmese and Lahu. (Akha seems to share this trait with Lisu.) Lisu cognates can thus be used to determine the place of articulation of affricate-initial roots. In a few cases I have revised the reconstruction of established roots where the place of articulation of the initial had previously been indeterminate. The Lisu reflexes of PLB palatal affricates are palatal affricates before most vowels, and palato-alveolar affricates before [u] and [ŋ].

• PLB palatal affricates

[1]	TUSK	*dž̌way¹	$dʒ̩^{44}$ 'dog's fang; canine tooth; tiger's fang'	
[36]	ANIMAL (dom.)	*dž̌ay²	$dzɤ^{21}$ / $dzø^{21}$ 'domesticated animal'	
[37]	THORN	*tš̌ow²	$tʃʰu^{21}$ 'thorn'	
[31]	WIDOW	*tš̌əw²	$mɤ^{21}\underline{tʃʰ}̩^{21}$ 'widow; widower'	
[38]	STRETCH	*tš̌an³	$tɕʰɤ^{33}$ / $tɕʰø^{35}$ 'stretch; spread'	-V [27]

[27]   The PLB root is Matisoff 1985 #11. Three distinct proto-allofams are set up there, all with dental initials: *tsan³ > Lahu *che* 'stretch out, extend, stick sthg out (e.g. leg, arm, tongue)'; *dzan³ > WB *can'* 'stretched out, lengthened'; *ʔdzan³ > WB *chan'* 'stretch out straight, lengthen sthg'. The Lisu form has a palatal affricate, however, so we revise Matisoff's reconstruction. We would expect Lisu -e, not -ɤ, from *-an. But note that in DNDL under the entry *phi³³* the gloss reads 'stretch out (same as *tɕhe³³*); extend', and here the expected vowel -e turns up.

• PLB dental affricates

[39]   HAWK   *dzwan¹   dzø⁴⁴ 'eagle'
[40]   TEN   *tsay¹   tsʰi³³ 'ten'
[41]   OBSTRUCT   *tsəw²   tsʰi²¹ 'block'   [28]

V. Conclusion

Despite surface appearances, Lisu is a Loloish language which does preserve the distinction between PLB *Kr* and *Ky* clusters, but only in a limited environment. Tracing the different developments of these PLB clusters provides us with an insight into the historical development of the two series of palatal sibilants.

Earlier I suggested that such an historical analysis might enable us to shed light on the synchronic phonemicization of Lisu. There are, of course, a number of factors that can be considered in carrying out a phonemic analysis. We have already seen that a purely structural analysis gives inconclusive results. Another factor which is often cited is "psychological reality" or "native intuition". I am unaware of any studies which might be illuminating in this regard. It may be tempting to take the phonemicization implicit in the New Lisu Script as indicative of the intuition of native speakers, but we must bear in mind that the script was developed with *pinyin* romanization as a model. Finally, we may wish to consider historical factors. It is often the case in the history of a language that conditioned sound changes are first manifested synchronically as conditioned allophonic variation. As a general principle, then, we can assume that the most likely candidates for allophones of a single phoneme are those conditioned variants which have developed most recently, while historically earlier splits are more likely to become phonologized as additional changes occur in the language.

In Section III I argued that the following ordered rules are the best working hypothesis for the development of palatals in Lisu.

---

[28]   WB *chui'* 'stop up, obstruct' (from tone 3 variant of the root)

(1)   *V[+high-front] > [ɿ] / [+palatal] __

         *V[+high-front] > [i] elsewhere

(2)   *Ky-, *Kr- > Tç-

(3)   Tç- > Tʃ- / __ [ɿ], [u]

Based purely on historical factors, then, we can conclude that the most consistent phonemicization takes /i/ and /ɿ/ as distinct phonemes, and sets up the palato-alveolars as allophones of the palatals:

         /Tç-/ -> [Tʃ-] / __ /ɿ/, /u/

Whether this is in fact the best synchronic phonemicization remains to be tested against additional data.

APPENDIX

Notes on the sound system of Lisu, *the New Lisu Script*, *and the IPA retranscription*

New Lisu Script spellings (as modified by Bradley 1994) are given in **bold face**.

• **r** is used for both the palato-alveolar voiced fricative [ʒ] and the alveolar approximant [ɹ]. This is generally not a problem because the two are in complementary distribution, with [ʒ] occurring only before the vowel [ɿ]. (Note that the other palato-alveolar initials can also occur before [u]). **ru** somewhat confusingly thus represents the sequence [ɹu] and not [ʒu].)[29] ; **ri** represents [ʒɿ], and all other instances of initial **r** represent [ɹ]. Bradley also comments (p.c. 1995) "thus [ɹ] and [ʒ] are allophones of /j/". See below.

• **h** is used for both the velar fricative [x] and the glottal fricative [h]. Bradley describes this distinction as "marginal". Without recourse to distinguish them, I have transcribed both in IPA as [h].

• **e-** is used for both the palatal approximant [j] (in the sequence **ei** = [ji]) and the voiced velar fricative [ɣ] (in the sequences **ea** = [ɣa] and **eo** = [ɣɔ]).

• **y** represents the voiced palatal fricative [ʑ], but this is only marginally distinct from the palatal approximant [j] represented by **e-**. In fact, these two phones seem to have merged almost completely in the Northern dialect, and Bradley does not even list them separately in his chart of phonemes, writing "**j~ ʑ**". Technically, [j] appears only before [i] ([ji] is an allophonic variant of /i/ after the zero (i.e. glottal stop) initial); whereas [ʑ] can appear before any vowel, including [i]. But in fact [ji] and [ʑi] contrast in only a few words and are frequently confused; many words formerly spelled **yi** = [ʑi] are now spelled **ei** = [ji] in the New Lisu Script, such as 'water'. Accordingly I have transcribed both **y** and **e-** in IPA as [j].

• The sequence **ni** is used for both [ni] and [ɲi]. (The orthography maintains the distinction between [n] and [ɲ] before vowels other than **i**. For example, **na** =

---

29   Bradley p.c. 1995.

[na], **nia** = [ɲa].) In order to preserve the distinction, in his version of the dictionary Bradley has retranscribed syllables pronounced [ɲi] as **nyi**. This distinction is in turn preserved in the IPA transcription. However, an analysis of the dictionary shows that **nyi** = [ɲi] appears only in Central dialect forms, and never in the standard dialect. Bradley (p.c. 1995) has confirmed this observation. In other words, /n/ and /ɲ/ have in fact merged before /i/ in the standard dialect.

• **u** is used for both [u] and [y]; **e** is used for both [ɤ] and [ɯ]; **ei** is used for both [e] and [ø]. Because these distinctions carry light functional loads in Lisu, this inadequacy in the script does not present a problem for Lisu speakers. In his version of the dictionary Bradley has used underlining to make the relevant distinctions, retranscribing vowels [y], [ɯ], and [ø] as **u**, **e**, and **ei** respectively. Unfortunately this retranscription has been inconsistent. While head entries in the dictionary are generally correct, underlining is often missing (and occasionally extraneously added) in subentries and example sentences. A further inconsistency was revealed to me by Bradley (p.c. 1995): "... most Northern speakers lack the [e] versus [ø] contrast distinguished by **ei** versus **ei** in the dictionary; but all have the [ɤ] versus [ɯ] contrast distinguished by **e** versus **e**. This is therefore a problem with the orthography. [y] is very marginal even in those dialects which have it ...." I have nevertheless retained all three distinctions in my IPA transcription. Even if they have been neutralized in the standard dialect they may be of diachronic signficance.

• **i** is used for both [i] and [ɿ][30]. [ɿ] has extremely limited distribution, occurring only after the palato-alveolar initials. Those initials in turn do not take [i]. It is tempting to consider [ɿ] to be an allophone of [i] in this environment. However, this would preclude the possibility of considering the palato-alveolar series to be allophones of the palatal series occurring before [u] and [ɿ], also an attractive analysis as the two series are in complementary distribution.

---

[30]   In the introduction to DNDL, Bradley writes [ʐ̩] for the apical vowel, and notes that a palatal pronunciation [ʒ̩] also occurs. I have substituted [ɿ].

BIBLIOGRAPHY

BENEDICT, Paul K. 1972. *Sino-Tibetan: A Conspectus*. Contributing editor: James A. Matisoff. Cambridge: Cambridge University Press.

_____, ed. 1976. *Rhyming Dictionary of Written Burmese*. Reprinted in *Linguistics of the Tibeto-Burman Area* 3.1.

BRADLEY, David. 1978. *Proto-Loloish*. (Scandinavian Institute of Asian Studies Monograph Series, 4.) London: Curzon Press.

_____. 1994. *A Dictionary of the Northern Dialect of Lisu* (China and Southeast Asia). (Pacific Linguistics Series, C-126.) Canberra: The Australian National University.

BURLING, Robbins. 1967. *Proto-Lolo-Burmese*. (Indiana University Research Center in Anthropology, Folklore and Linguistics, publication 43.) The Hague: Mouton.

HOPE, Edward. 1974. *The Deep Syntax of Lisu Sentences*. (Pacific Linguistics Series, B-34.) Canberra: Australian National University.

FRASER, J. O. 1922. *Handbook of the Lisu (Yawyin) Language*. Rangoon.

HANDEL, Zev. 1994. "Review of *A Dictionary of the Northern Dialect of Lisu (China and Southeast Asia).*" *LTBA* 17.1:141-154.

_____. 1995. "Lisu and Proto-Lolo-Burmese: Another Look." Unpublished ms.

HANSSON, Inga-Lill. 1989. "A comparison of Akha, Hani, Khatu, and Pijo." *LTBA* 12.1:1-91.

LEWIS, Paul. 1989. *Akha-English-Thai Dictionary.* Bangkok: Darnsutha Press Co. Ltd.

MATISOFF, James A. 1970. "Glottal Dissimilation and the Lahu High-Rising Tone: a tonogenetic case study." *Journal of the American Oriental Society* 90.1:13-44.

_____. 1972. *The Loloish Tonal Split Revisited.* (Research Monograph, 7.) Berkeley: Center for South and Southeast Asian Studies.

_____. 1978. *Mpi and Lolo-Burmese Microlinguistics*. (Monumenta Serindica, 4.) Tokyo: Institute for the Study of Languages and Cultures of Asian and Africa.

_____. 1979. "Problems and Progress in Lolo-Burmese: Quo Vadimus." *LTBA* 4.2:11-43.

_____. 1985. "God and the Sino-Tibetan Copula: with some good news concerning selected Tibeto-Burman rhymes." *Journal of Asian and African Studies* 29.

_____. 1988. *The Dictionary of Lahu*. University of California Press, Berkeley.

THURGOOD, Graham. 1977. "Lisu and Proto-Lolo-Burmese." *Acta Orientalia* 38:147-207.

XU Lin 徐琳, MU Yuzhang 木玉璋 et al. (eds.) 1985. *Li-Han Cidian* 傈汉词典. Kunming: Yunnan Nationalities Press.