

# 19 *Original and sophisticated features of the Lepcha and Limbu scripts*

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I value this opportunity of making a contribution to the volume to honour James Matisoff especially because it brought to mind the introductory remarks to the article that he contributed, 'A new Sino-Tibetan root \*d-yu-k', for my festschrift, *Prosodic analysis and Sino-Tibetan linguistics: to honour R.K. Sprigg* (Bradley, Henderson & Mazaudon 1989).

For auld lang syne, my dear,  
For auld lang syne,  
We'll tak a cup of kindness yet  
For auld lang syne!

Only three Himalayan languages have scripts of their own, and all three of them are Nepalese languages: Newari, Lepcha, and Limbu, though the majority of Lepcha-speakers live outside Nepal. This article is confined to four remarkable features of the Lepcha and Limbu scripts. I have 4,826 for the number of Lepcha-speakers in Nepal, mostly in the Ilam area, and the number of Limbu-speakers, according to the 1991 Survey also, is 254,288 (Kansakar 1996:6, 8).

The Lepcha script is known these days in the form in which it appears in Mainwaring (1876:1–18; see Appendix 1); and the Limbu script is probably known only in the form in which it appears in Chemjong (1962:21–23; see Appendices 2 and 6); but there are earlier versions of both scripts to be found in handwritten books collected in Darjeeling in the 1840s by Hodgson (1847). These earlier books give an original, and strikingly different, picture of the two scripts from the later, and better known, versions, in which the influence

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of the Tibetan script on the Lepcha, and the Devanagari script on the Limbu is easy to detect.

## 1 The number of syllable-initial symbols

The syllable-initial symbols are customarily presented in the form of a syllabary in which a particular member of the syllabic-vowel system is symbolised jointly with an initial consonant or consonant cluster or a non-syllabic vowel (*y*-, *w*-, or *h*-), or, in the case of 'a, an initial glottal-plosive consonant in free variation with the syllabic vowel as itself syllable-initial (Appendices 1 and 2).

### 1.1 Lepcha

Mainwaring's Grammar gives the total number of symbols in the Lepcha syllabary, the 'á-mo 'mother', as 35; one of the two handwritten books in the Hodgson Collection, *róng-kup sa lháp-sho bo-sho-mú gum* (vol. 79, 1–50, 1903 VS, 1847 AD), now housed in the India Office Library, London, also gives the number of symbols in the syllabary as 35; but they are not quite the same as Mainwaring's symbols. For one thing the symbol *tsha* is missing from the syllabary in both of the Hodgson books, presumably through an oversight. This would, of course, reduce the syllabary's total from 35 to 34 (or 33 for Hodgson's second book, which also has *bla* missing); but they make up the total to 35 (or 34) by including 'a in the syllabary, as the first member of the series: 'a, ka, ga, etc. Minawaring, on the other hand, has treated 'a not as a member of the syllabary but as 'the basis of all vowels, eight in number: 'a, 'á, 'i, 'o, 'ó, 'u, 'ú, 'e' (3). In other words the Hodgson books have treated 'a on the model of the *a* symbol in the Tibetan syllabary, the *gsal-byed sum-cu* 'thirty radicals', in which *a* is placed thirtieth and last, except that 'a is placed first in the Lepcha syllabary of the Hodgson books.

Mainwaring, on the other hand, appears to have treated the 'a, 'á, 'o and 'ó of Lepcha on the model of the sub-sets of four Devanagari symbols shown at (i) below in contrast with the remaining sub-set of six symbols, making a total of ten *svaravaṛṇa* symbols (eleven if *ṛ* is included):

- |     |    |          |            |          |            |          |           |              |
|-----|----|----------|------------|----------|------------|----------|-----------|--------------|
| i.  | 'a | -'a      |            |          |            |          | 'o        | 'au          |
| ii. |    | <i>i</i> | - <i>i</i> | <i>u</i> | - <i>u</i> | <i>e</i> | <i>ai</i> | ( <i>r</i> ) |

However, Mainwaring's scheme goes beyond these two Devanagari sets of vowels; it groups the remaining four Lepcha symbols 'i, 'í, 'u, 'ú and 'e in a single set with 'a, 'á, 'o and 'ó, the initial symbol '-' combined with the eight vowel symbols -', -i', -u, -ú and *e*, on the same principle as the Tibetan script.

Before leaving this controversial topic, it is useful to recall that while the symbols 'a, 'á, 'i, 'í, 'u etc. have an *optional* pronunciation with a syllable-initial consonant sound,

namely the glottal plosive (in addition to their pronunciation with a syllable-initial syllabic-vowel sound) mentioned earlier, the glottal plosive consonant is *obligatory* in the combination 'y- and must be pronounced before the non-syllabic vowel for the following y ([ʔj-], in such words as 'yok 'work' (Tibetan *gYog*), 'yu 'turquoise' (Tibetan *gYu*), and ta-'yu 'wife, female'.

## 1.2 Limbu

In Limbu too the position as regards 'a is very much like that of 'a in Lepcha. In the three Hodgson-Collection books vol. 84, pages 1–22 and 23–99 and vol. 87 (*lību haru ko kakhaharā*) has been included in the syllabary, but in the third place, after *ka* and *pa*, in a syllabary of 20 symbols, not in the first place as in Lepcha. Campbell (1855), however, has only 19 symbols in the syllabary because, like Mainwaring for Lepcha as discussed in section (1.1) above, he has removed 'a from the syllabary and associated it with a vowel series: 'a, 'e, ē, ĩ, ī, u, ō, ŏ, ai (210; cf. also van Driem 1987:548).

From the phonetic spelling in Devanagari script that has been added to each member of the syllabary in the Hodgson books it is clear that the vowel sound intended for *ka*, *pa*, 'a, etc. is the open back vowel [ɑ] (Devanagari *kā*, *pā*, -'a, etc., as in reciting that Tibetan syllabary, the *gsal-byed sum-cu*, *ka*, *kha*, *ga*, *nga*, etc., not the vowel sound used in reciting the Devanagari *ka*, *kha*, *ga*, *gha*, etc. in Nepali and Hindi.

Chemjong (1962) agrees with Campbell (1855) in removing 'a from the syllabary and incorporating it in a vowel series, *svavarāṇa*: 'a, -'a, 'i, 'u, 'e, 'ai, 'o, 'au, 'a:, 'e: (21–2; see Appendix 2); but he has gone further, and changed the vowel quality of 'a from the quality resembling the Tibetan, the open back quality, [ɑ], to the Limbu vowel quality nearest to the quality used in reciting *ka*, *kha*, *ga*, *gha*, etc. for Nepali, a half-open back rounded vowel sound ([ɔ]).

Chemjong has gone even further in changing the character of what he calls *śirijaṃgā lipi* (1962:20); he has adapted it to the needs of other Nepalese languages by adding eleven other symbols to the 20 given in the Hodgson Collection books. The extra symbols, 'nayā akṣara', are: *ga*, *gha*, *ja*, *jha*, *da*, *dha*, *ba*, *bha*, *tra*, *sa*, and *gya*. The symbols *ga*, *ja*, *da*, and *ba* are not needed in a Limbu script because the sounds that they symbolise in reading the Devanagari script, voiced sounds, are, with a very few exceptions, in complementary distribution with the corresponding voiceless sounds of *ka*, *ca*, *ta*, and *pa* (Sprigg 1966:452, n.7); so either of these two sets of symbols could represent these voiced/voiceless pairs of sounds, the other set being superfluous. The same relationship, complementary distribution, also applies to the Devanagari symbols *gha*, *jha*, *dha*, and *bha* as compared with *kha*, *cha*, *tha*, and *pha*. It shows remarkable acuity on the part of some linguistically minded Limbu, perhaps 'Siri-jungna, called also the Dorze Lama of Yangrup' (*Gazetteer* 1894:37; see also Sprigg 1959:591) more than two hundred years ago, in that he had detected this phonetic relationship and taken it into account while



no.1:

no.2: *ha ra kha ta tha da la kla pla fla va sa*

It is not clear to me why Thikung Men Salong, or whoever it was that devised the Lepcha script, should have chosen to put the symbols in either of these two orders; but, to some extent, phonetic principles can be seen to be at work:

- a. two of the symbols that have a velar-plosive initial sound, *ka* and *ga*, are grouped together, as the 2nd and 3rd members of the syllabary, in both books;
- b. four of the labial-initial symbols, *pa*, *fa*, *ba*, and *ma*, are grouped together, as the 4th, 5th, 6th and 7th symbols, in both books;
- c. three of the dental-initial symbols, *ta*, *tha*, and *da*, are grouped together, as the 11th, 12th, and 13th symbols of the syllabary as it has been given in book no. 1, and as the 26th, 27th and 28th symbols in book no. 2;
- d. the lateral-initial symbol *la* all six of the symbols that have a lateral cluster as their initial sounds, *kla*, *pla*, *fla*, *bla*, *gla*, and *m̐la*, and the voiceless lateral symbol *hla* are grouped together as symbols 14 to 19 and 21 to 22 in book no. 1 (*va* has been inserted between *gla* and *m̐la* as the 20th symbol); and, in book no. 2, *gla*, *m̐la*, and *hla* have been grouped together as the 8th, 9th, and 10th symbols, while *la*, *kla*, *pla*, and *fla* have been grouped as the 29th, 30th, 31st, and 32nd symbols (as has already been noted above, *bla* is missing from the syllabary in the form in which it appears in book no. 2; it should have come after *fla*);
- e. if the members of the syllabary are looked at from the point of view of blocks of symbols, then the seven symbols 'a to *ma* form the first block in both books; from that point onward the two books diverge, because the second block in book no. 1, comprising the eleven symbols *ha* to *bla*, forms the third block in book no. 2 (with the exception of *bla*, which is missing); the third block of book no. 1, comprising the fifteen symbols *gla* to *cha* (an extra symbol, *va*, has been inserted, in book no. 1, between *gla* and *m̐la*) is the second block of book no. 2:

book no.1: block 1, block 2(+ *va*), block 3

book no.2: block 1, block 3, block 2;

so in book no.2, the order of blocks 2 and 3 is the reverse of what is to be found in book no.1.

## 2.2 Limbu

### 2.2.1 Chemjong's version, on the model of Devanagari

Chemjong has followed the Devanagari script by beginning with the ten *svavarṇa* 'a to 'e:, except that *i*, *u*, and *ṛ* have been omitted and 'a: and 'e: have been added; he continues with the 30 *vyañjana-varṇa* from *ka* to *nya*, and then from *ta* to *ha*, with *tra* and *jnya* added (see Appendix 2).

### 2.2.2 The earlier order, from the Hodgson books

The Hodgson books give the following order:

<i>ka</i>	<i>pa</i>	<i>'a</i>	<i>ma</i>	<i>ta</i>	<i>ya</i>	<i>tha</i>	<i>na</i>	<i>sha</i>	<i>nga</i>	<i>sa</i>	<i>wa</i>
<i>ha</i>	<i>la</i>	<i>ca</i>	<i>pha</i>	<i>kha</i>	<i>ra</i>	<i>cha</i>	<i>nya</i>				

There are no clear indications of a phonetic analysis in this, the earlier, order of the symbols, though there is a slight resemblance to the two earlier orders of the Lepcha script shown in 2.1.2 above: *ka*, *pa*, *'a*, and *ma* all occur in the first four places in the Limbu order of symbols; and the same four occur in the first four places of the Lepcha too, if we ignore the Lepcha *ga*, *fa*, and *ba* symbols, which are not found in Limbu:

Lepcha;	<i>'a</i>	<i>ka</i>	( <i>ga</i> )	<i>pa</i>	( <i>fa</i>	<i>ba</i> )	<i>ma</i>
Limbu:		<i>ka</i>	<i>pa</i>	<i>'a</i>		<i>ma</i>	

## 3 The syllable-final symbols as a separate system

### 3.1 Lepcha; the nine *'á-kup* 'children'

It is mysterious, and quite remarkable, that the Lepcha script should have a set of diacritics to symbolise its (eight) syllable-final consonants: *-k*, *-m*, *-l*, *-n* *-p*, *-r*, *-t*, *-ng* (*kàng*), this last of which comes near to being in complementary distribution with *-ang* when written with *nyín-dó* 'sun-moon'; all of these diacritics are superscript, that is to say they are written above the 'radical' symbol (*'á-mo*), except for two, the *kàng* and the *nyín-dó*, which are prescript (written before the (*'á-mo*) (Tamsang 1982:5; see Appendix 3). Diringer refers to these diacritics in his authoritative study of writing systems of the world in the following terms:

peculiar features of the Lepcha character are the vowel signs and the final marks of eight consonants (*k*, *ng*, *t*, *n*, *p*, *m*, *r*, *l*) which consist of dashes, dots and small circles and are placed above and before the preceding letter (1948:280)

These nine superscript and prescript diacritics for the eight syllable-final consonants are almost unique in the writing systems of the world. It is only in one of the Tibetan styles of writing, the cursive style (*'khyug-yig*), that I can find a parallel: in *'khyug-yig* Tibetan writing too syllable-final *m*, as in *lam* 'road', is written above the radical (*gsal-byed*) in the form of a bar and a loop.

Some of the syllable-final consonant sounds, the sounds for *-k*, *-p*, and *-t*, are slightly different from the consonant sounds that are used in syllable-initial position, for *k-*, *p-*, and *t-*: the syllable-final sounds are stops — they have no audible release; but the syllable-initial sounds are plosives — they have plosion, an audible release into a following vowel (or, on occasions, a consonant, *l* or *r*); so, because of this phonetic difference, slight

though it is, one might agree that *-k*, *-p*, and *-t* should be written differently from the *k*-, *p*-, and *t*- of, for example, *ka*(-), *pa*(-), and *ta*(-); but there is no such difference between the syllable-final consonant sounds for *-ng*, *-m*, *-n*, *-r*, and *-l* and the syllable-initial sounds to be heard when one pronounces, for example, the syllables *nga*, *ma*, *na*, *ra*, and *la*. Since these five consonant sounds are pronounced the same in both these two positions in the syllable, it might seem strange that whoever it was who devised the Lepcha script should have chosen not to write them with the same symbols.

In answer to this problem, some linguists at the present time would agree that it does seem strange, and would come to the conclusion that the inventor of the Lepcha script had, in the '*á-kup ka-kyót*', the nine syllable-final symbols, introduced nine unnecessary symbols into the script; but during the last sixty years another school of linguistics has come into being that would give the answer 'no' to this question, and would consider the inventor of the script to be correct in having devised a separate set of symbols for the eight final consonants.

This more recent school of linguistics, to which I myself belong, would point out that since only eight consonants are distinguished in Lepcha in syllable-final position while some thirty-five consonants and consonant clusters like *kl*- and *pl*- are distinguished in syllable-initial position, such as the consonant sounds at the beginning of the syllables *ka*, *ga*, *kla*, and *gla*, the distinctive value (or power of making a distinction in the meaning of words) of *-k*, *-ng*, etc. in a set of only eight possible consonants must be quite different from the distinctive value of the initial consonants symbolised in the syllables *ka*, *nga*, and all the other thirty-three consonants and consonant clusters that need to be distinguished in pronouncing the syllable-initial set. If I compare the Lepcha script to players in football teams, it is as though the Lepchas had invented two different kinds of football game, one game for teams of eight players and the other game for teams of thirty-five players. The value of a member of the eight-member team to his team is quite high, one to eight, one eighth of the total; so his value is quite different from the comparatively low value of a member of the thirty-five-member team to his team, one to thirty-five on average, or one thirty-fifth of the total. If a member of the eight-member team is sent off by the referee, or has to leave the field because of injury, it very much reduces his team's chances of winning; but the thirty-five member team might hardly notice losing one of its members.

This theory that distinguishes separate sets of sound units for different places in the syllable and the word, as I have just illustrated from Lepcha through the thirty-five '*a-mo*' in syllable-initial position and the nine '*á-kup*' in syllable-final position (though the number of final consonant units is only eight because the *kàng* and the *nyín-dó* are both used for *-ng*) was first put forward in 1935, by J.R. Firth, while writing about the Marathi language. Palmer has described how

for the nasals in Marathi he noted a two-term alternance initially, a three-term alternance finally, but, though phonetically there were eight different sounds, one

'unique' homorganic nasal before medial consonants, he comments 'I should not want to identify all those *n* sounds'. (1970:x-xi).

The term 'polysystemic approach' has been given to an analysis such as Firth's, in which there are a number of separate and independent systems; so the inventor of the Lepcha script, astonishing though it may seem, was applying the 'polysystemic approach' to devising the Lepcha script more than two hundred years, perhaps, before Firth had developed his theory and before the term 'polysystemic approach' had been introduced.

### 3.2 *Limbu*

The main differences between the Limbu syllable-final diacritics (Appendix 6) and the corresponding Lepcha symbols are that:

- (i) the Limbu symbols, *-k*, *-t*, *-m*, *-ng*, *-n*, *-p*, and *-l*, are postscript, except for *-t* and *-ng*, which are subscript;
- (ii) the two final symbols *-k* and *-p* are almost the same in shape as the syllable-initial symbols *k-* and *p-*, and so, perhaps, hardly qualify to be classed as diacritics; and
- (iii) Limbu has clusters of syllable-final symbols, such as *-m-* and *-k*, *-ng-* and *-k*, and *-k-* and *-t*.

On the other hand, the Limbu syllable-final symbols resemble the Lepcha syllable-final symbols at 3.1 above in forming a separate set, or system, of mutually defining units; so Limbu can also claim that its script implies that the phonological analysis on which it is based should be regarded as polysystemic. Such an analysis would, of course, commend itself to the followers of J. R. Firth's theory, prosodic analysis.

## 4 The seven *la-thyu* as Lepcha diphonic symbols

The fourth remarkable feature of the Lepcha script, for which the credit, according to Tamsang, should be given to a Lepcha, Thikung Men Salong, is the set of seven symbols *kl-*, *pl-*, *fl-*, *ml-*, *gl-*, and *hl-* termed *la-thyu*; each symbolises a cluster of two consonant sounds the second of which is a lateral sound, except that *hl-* symbolises a single sound, a voiceless frictionless lateral consonant or voiceless 'l' sound (cf. Tamsang 1982:5-6). The six members of the *la-thyu* that symbolise consonant clusters, all the *la-thyu*, that is, except *hl-*, can be termed diphonic because for them a single symbol is used to symbolise not one but two consonant sounds linked together in a cluster. Diphonic symbols such as these are not to be found in the Tibetan script; indeed they are rarely to be found in any other of the world's scripts. The only other such symbols that readily come to mind are the letters *zeta*, *xi*, and *psi* of the Greek alphabet, which symbolise, respectively, the clusters of consonants [zd] (or perhaps, [dz]), [ks], and [ps], which Allen refers to as 'consonant groups represented by single symbols' (1968:53-57).



## 5 Conclusion

I think that the four original, and sophisticated, aspects of the Lepcha and Limbu scripts that I have mentioned above amply justify my claim that the scholars who are credited with devising these two scripts, Thikung Men Salong, perhaps, or Chador Namgyal, the third Chogyal of Sikkim, for the Lepcha and, for the Limbu, Sirijunga, 'the Dorze Lama of Yangrup', were outstanding and forward-looking linguists.

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**Appendix 1: Lepcha Consonants** མཚོ་ལྷོ་ལྷོ་ (‘ámo re)

k	kh	g	ng	
ཅ	ཆ	ཇ	ཉ	
c	ch	j	ny	
ཊ	ཋ	ཌ	ཎ	
t	th	d	n	
ཏ	ཐ	ཌ	ཎ	
p	ph	f	b	m
པ	ཕ	ཆ	ཇ	ཉ
ts	tsh	z	y	
ཏ	ཐ	ཌ	ཎ	
r	l	h	v	
ཏ	ཎ	ཐ	ཌ	
	s	sh	w	
	ཌ	ཎ	ཏ	
kl	gl	pl	fl	
ཏ	ཎ	ཐ	ཌ	
	bl	ml	hl	
	ཏ	ཐ	ཌ	

Appendix 2: Limbu (Chemjong 1962:21–22)

Svaravarṇā (vowels)

स्वर-वर्णा

𑄧	𑄨	𑄩	𑄪	𑄫
अ	आ	इ	उ	ए
𑄬	𑄭	𑄮	𑄯	𑄰
ऐ	ओ	औ	अः	एः

Vyañjanvarṇā (consonants)

व्यञ्जन-वर्णा

𑄱	𑄲	𑄳	𑄴	𑄵
क	ख	ग	घ	ङ
𑄶	𑄷	𑄸	𑄹	𑄺
च	छ	ज	झ	ञ
𑄻	𑄼	𑄽	𑄾	𑄿
त	थ	द	ध	न
𑅀	𑅁	𑅂	𑅃	𑅄
प	फ	ब	भ	म
𑅅	𑅆	𑅇	𑅈	𑅉
य	र	ल	व	ञ
𑅊	𑅋	𑅌	𑅍	𑅎
श	ष	स	ह	ञ

Appendix 3: Limbu (Campbell 1855:Plate I)

<p>The Limboo, or Yakthung ba Language consists of Twenty Eight Letters viz. nineteen Consonants, and nine vowels, which are as follow.</p>	<p>- o āng - o āng - u ah - ५ ap. Similar with the Tibetan and Lepcha this language has also a "ya x Ra" affixed thus</p>
<p>Consonants.</p>	<p>thus</p>
<p>Ka Ba Ma Ta Ya 𑄑 𑄒 𑄓 𑄔 𑄕</p>	<p>- २ ya - १ Ra The vowels, Finals and ya</p>
<p>Tha Na Sha Nga Sa 𑄖 𑄗 𑄘 𑄙 𑄚</p>	<p>&amp; Ra are thus affixed to the Letters.</p>
<p>Wa Ha La Ja Bha 𑄛 𑄜 𑄝 𑄞 𑄟</p>	<p>𑄑 Ka 𑄒 Ba 𑄓 Ma 𑄔 Ta 𑄕 Ya 𑄖 Tha 𑄗 Na 𑄘 Sha 𑄙 Nga 𑄚 Sa 𑄛 Wa 𑄜 Ha 𑄝 La 𑄞 Ja 𑄟 Bha</p>
<p>Kha Ra Chat Nya 𑄠 𑄡 𑄢 𑄣</p>	<p>𑄑 Kai 𑄒 Kaik 𑄓 Kaek 𑄔 Kaek 𑄖 Kik 𑄗 Kik 𑄘 Kik 𑄚 Kik 𑄛 Kaik</p>
<p>Vowels. a ē ē ī ī u o o ai 𑄤 𑄥 𑄦 𑄧 𑄨 𑄩 𑄪 𑄫 𑄬 𑄭</p>	<p>𑄒 Kaik 𑄓 Kaek 𑄔 Kaek 𑄖 Kik 𑄗 Kik 𑄘 Kik 𑄚 Kik 𑄛 Kaik</p>
<p>There are also Seven</p>	<p>𑄑 Kaik 𑄒 Kaek 𑄓 Kaek 𑄖 Kik 𑄗 Kik 𑄘 Kik 𑄚 Kik 𑄛 Kaik</p>
<p>Finals - २ āk - ५ āk - ५ am</p>	<p>𑄑 Kam 𑄒 Kem 𑄓 Kem</p>

## Appendix 4: Lepcha Final Consonants

Uniting these with  $\mathfrak{A}$  *a*, the basis of all the vowels, they, with their several names and pronunciations, stand thus—

<i>Finals.</i>	<i>Names.</i>	<i>Powers.</i>
$\mathfrak{A}^{\acute{a}}$ ak	$\mathfrak{W}^{\bar{e}}$ la kát	k
$\mathfrak{A}^{\grave{a}}$ am	$\mathfrak{W}^{\bar{e}}$ la nyat	m
$\mathfrak{A}^{\hat{a}}$ al	$\mathfrak{W}^{\bar{e}}$ la sám	l
$\mathfrak{A}^{\circ}$ an	$\mathfrak{D}^{\circ}$ nun	n
$\mathfrak{A}^{\circ}$ ab or ap	$\mathfrak{O}^{\circ}$ ba kup	b or p*
$\mathfrak{A}^{\tilde{a}}$ ar	$\mathfrak{F}^{\tilde{a}}$ dar	r
$\mathfrak{A}^{\bar{a}}$ at	$\mathfrak{E}^{\bar{a}}$ kat	t
$\mathfrak{A}^{\sim}$ ang	$\mathfrak{E}^{\sim}$ kang	ng
$\mathfrak{A}^{\sim}$ ang	$\mathfrak{S}^{\sim}$ nyíndó	ang

Appendix 5: Limbu Finals (Chemjong 1962:23)

मात्रा तथा संयुक्ताक्षर (Conjoint Letters)


Sprigg, R.K. "Original and sophisticated features of the Lepcha and Limbu scripts". In Bradley, D., Lapolla, R., Michalovsky, B. and Thurgood, G. editors, *Language variation: Papers on variation and change in the Sinosphere and in the Indosphere in honour of James A. Matisoff*. PL-555:291-304. Pacific Linguistics, The Australian National University, 2003. DOI:10.15144/PL-555.291  
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