

A PRELIMINARY SKETCH OF PHONOLOGY OF LIMBU SPOKEN IN SIKKIM

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This paper aims to provide a preliminary sketch of Limbu phonology based on the field recordings conducted under an ongoing Sikkim's Endangered Language Documentation Project (SELDLP) in Sikkim University, India. In the Limbu variety spoken in Sikkim there are 18 consonant phonemes that contrast in the manner and place of articulation. A complementary distribution is observed between various pairs, especially between voiceless and voiced obstruents. Limbu has 11 monophthongs but lacks diphthongs. The canonical form of a syllable is (C)(C)V(C). The rule that regulates syllabication is the Maximal Onset rule. This paper focuses on the analysis of phonological and syllabification rules followed by the language.

Keywords: Limbu, Kiranti, phonology, syllabification, onset maximalisation

1. Introduction

Limbu (ISO 639-3) is spoken by the Limbu community in the eastern Nepal and the Indian states of Sikkim, North Bengal and Assam. Limbu belongs to the Kiranti group within the Tibeto-Burman language family (Bradley, 1997; Thurgood, 2003), shown in Figure 1.

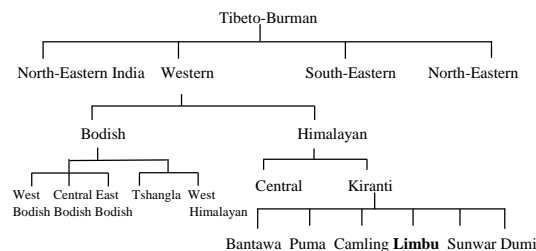


Figure 1: Limbu in the Tibeto-Burman language family (Bradley, 1997)

As per the report of Census of India 2011, total ethnic population of Limbu in India is 1,00,550 (53,703 in Sikkim and 46,847 in North Bengal), with the language users limited to 39,654 (38,733

in Sikkim and 921 in North Bengal). In Sikkim, Limbu community is highly concentrated in the west Sikkim. They are also settled across the other districts in Sikkim. According to the Expanded Graded Intergenerational Disruption Scale (EGIDS), a parameter set by Lewis & Simons (2010) to measure a language's status in terms of endangerment and development, Limbu stands at Level 4 in Sikkim, that is 'Educational', which means the language is in vigorous use, with standardisation and literature being sustained through a widespread system of institutionally supported education. The language is taught up to the university level. In North Bengal and Assam, however, it stands at Level 8a, that is 'Moribund' since only a few people from the grandparent generation use the language. Manger (2022) reports that a special summer school is organized every year in Assam in the effort to revitalize the language. Limbu language teachers from Sikkim and Nepal are invited to teach the language to the younger generation.

Limbu varieties spoken in Nepal have been intensively studied. Some notable linguistic work includes Michailovsky (2002, 2011), van Driem (1987), Weidert & Subba, (1985) among others. However, the varieties spoken in India are not yet adequately studied. This paper focuses on the Limbu variety spoken in Sikkim, India. The aim of this paper is to provide the preliminary phonological sketch of Sikkimese Limbu.

The data comes from the series of fieldwork done under the ongoing Sikkim's Endangered Language Documentation Project (SELDLP) in Sikkim University. The Project is set up by the North East Council (NEC), India, with the objective to document three Kiranti languages spoken in Sikkim, namely Bantawa, Kulung and Limbu. Following the questionnaire developed by the Centre of Endangered Language (CEL), Sikkim University, nearly 1500 words have been collected

from around 20 speakers. The data is collected by conducting data-elicitation sessions in the classroom setting and the series of on-site fieldwork in Aho village in east Sikkim, and Ogen, Timburbung, and Chotasamdur in Soreng district, west Sikkim.

Limbu has 18 consonantal phonemes. The contrast is evident between aspirated and unaspirated plosives. Interestingly, Limbu doesn't show contrast between voiced and voiceless plosives and affricates (except unaspirated bilabial plosives), rather they are in complementary distribution¹. The vowel inventory comprises of 11 monophthongs, including the length contrast. Unlike other Kiranti languages, Limbu lacks diphthongs, hence it only has monophthong vowels. The canonical syllable structure of the syllable is (C)(C)V(C). A morpheme can be built of one or more syllables. The onset of a syllable can accommodate two consonants, whereas coda is limited to one consonant.

The sections 2 and 3, respectively, provide a detailed description of consonant and vowel phonemes and their respective allophones, followed by section 4 which shows the distribution of phones in Limbu lexical items. Section 5 gives a detailed overview of Limbu syllable structure and the syllabification rules followed by the language.

2. Consonants

The consonantal inventory of Limbu is summarised in Table 1.

Table 1: Consonant phonemes in Limbu

	Bilabial	Dental	Alveolar	Palatal	Velar	Glottal
Plosive	p b p ^h	t t ^h			k k ^h	ʔ
Nasal	m	n			ŋ	
Fricative			s			h
Trill			r			
Approx.	w (velar)		j			
Lat. Approx		l				
Affricate		ts				

2.1 Contrastive distribution

Nearly every consonant phoneme shown in the Table 1 shows contrast with other corresponding phoneme(s) in terms of aspiration, manner and/or place of articulation, as shown in the subsection 2.1.1. However, there are a couple of phonemes which do not show clear cut contrast discussed in subsection 2.1.2. Nevertheless, these pairs can occur in similar environments, proving that they are distinct phonemes.

2.1.1 Minimal pairs

Following are the minimal pairs for the consonant phonemes shown in the Table 1.

- (1) /p/ versus /b/
sapɔn 'book'
sabɔn 'bend'
- (2) /p/ versus /p^h/
a. pa 'father'
p^ha 'bamboo'
b. pa:ŋma 'to send'
p^ha:ŋma 'to open'
- (3) /t/ versus /t^h/
a. tuŋma 'to bend'
t^huŋma 'to drink'
b. ta:ma 'to come'
t^ha:ma 'to fall'
- (4) /k/ versus /k^h/
a. kakwa 'crow'
k^hakwa 'news'
b. kɔk 'load'
k^hɔk(-ma) 'to cut'
- (5) /p/ versus /t/
a. paŋ 'cliff'
taŋ 'horn'
b. pipma 'to leap'
pitma 'cow'

¹ The contrast between voiced and voiceless plosives is limited to the bilabial only, with only few minimal pairs in the variety spoken in Sikkim. However, fair amount of near minimal pairs can be found to establish the contrast, as in [sapok^h] 'stomach', [labɔk] 'raddish', etc. Further, the distribution of /b/ is rather

limited to the word-medial position (contrary to Phedāpe Limbu (van Driem, 1987)). As it will be shown in the section 2.1.2 that like voiceless dental and velar plosives, voiceless bilabial plosive also undergo voicing when appeared intervocalically.

- (6) /k/ versus /ʔ/
 a. akma ‘to come off easily’ b. p^hak ‘pig’
 aʔma ‘to break off’ p^haʔ ‘help’
- (7) /m/ versus /n/
 maŋ ‘god’
 naŋ ‘snow’
- (8) /n/ versus /ŋ/
 na ‘straight distal visibility’
 ŋa ‘fish’
- (9) /s/ versus /h/
 a. si:ma ‘to die’ b. sɛpma ‘to kill’
 hi:ma ‘to roam’ hɛpma ‘to cut’
- (10) /w/ versus /j/ versus /l/
 wa ‘hen’
 ja ‘perhaps’
 la ‘take’
- (11) /ts/ versus /s/
 a. tserekla ‘July’ b. tsɔkma ‘to join’
 serekla ‘August’ sɔkma ‘thunder’
 c. tsepma ‘to cut’
 sepma ‘to kill’

2.1.2. Near minimal pairs

Liquids

The lateral liquid (voiced alveolar approximant) /l/ is established as a phoneme as it shows contrast with other approximants, /w/ and /j/, as shown in (10). However, the status of rhotic liquid (voiced alveolar trill) /r/ is relatively vague. Its distribution across a lexical item is such that it can only occur word-medially, and as it will be shown in section 2.2, alveolar approximant and trill display complementarity in their distribution in particular environments, especially in the morpheme boundaries. In spite of that, the contrast between these two phones can be witnessed. Even though minimal pairs are not found, one can find quite a few near-minimal pairs to establish this contrast, as in (12).

- (12) /r/ versus /l/
 a. selak^h ‘pickle’ b. wa:li ‘pipe’
 kerak^h ‘salty’ a:p^ha:rik ‘how’

Jacques (2012) points out that Limbu sometimes doesn’t show expected alternation of *l* to *r*, for example, 2nd person of *lɔʔ* ‘say’ is *kɛ-lɔʔ* not **kɛ-rɔʔ*. He further argues that *l* and *r* were originally the allophones of a same phoneme, but they now have become contrastive due to the influence of Nepali.

2.1 Complementary distribution

Voiceless and voiced (aspirated and un-aspirated) plosives and affricates

All the unaspirated voiceless plosives —*p*, *t*, *k* (except *ʔ*)— can occur in the word initial, medial and final positions. However, the voiced counterparts of these voiceless plosives —*b*, *d*, *g*— can only occur in the word-medial position, clearly indicating that the environment in which voiced plosives occur is rather restricted. Similarly, the voiced counterparts —*b^h*, *d^h*, *g^h*— of aspirated voiceless plosives —*p^h*, *t^h*, *k^h*— are also restricted to the word-medial position.²

Even though /p/ and /b/ are established phonemes in section 2.1, we see the alternation of /p/ to [b] in certain cases, especially in the morpheme boundaries. Given below is the phonological rule which is followed by the language for the voicing of the voiceless plosives. A [-sonorant] [-continuant] [-voice] consonant becomes [+voiced] iff it occurs intervocally or if it preceded by a [+nasal] consonant and followed by a vowel.

Rule 1: Voicing Rule

$$\begin{array}{l} [-\text{son}] \\ [-\text{cont}] \\ [-\text{voice}] \end{array} \Rightarrow \begin{array}{l} [-\text{son}] \\ [-\text{cont}] \\ [+ \text{voice}] \end{array} / \left. \begin{array}{l} \text{V} _ \text{V} \\ \text{C} _ \text{V} \\ [+ \text{nas}] \end{array} \right\}$$

This rule yields the complementarity of voiceless and voiced plosives. However, for the voicing of

² Note that Limbu shows interesting mechanism of nativisation of the loan words. For example, the English word *bɔtl* ‘bottle’ is pronounced as *pɔtlo*, since a voiced plosive can never occur in the word-initial position in Limbu, therefore produced as voiceless plosive, and there are no retroflex consonants in the

language’s phonology, therefore *ʔ* is replaced by the voiceless dental plosive *t*. Similarly, *gæŋʔɔk* ‘Gangtok’ is pronounced as *kantɔk*.

voiceless velar plosive /k/ the persisting rule is insufficient. The voicing of /k/ also happens when:

- i. When it is preceded by a vowel and followed by the rhotic liquid. For example, [negran] ‘one of the traditional music instruments.’
- ii. When it is preceded by the rhotic liquid and followed by a vowel. For example: [tɔrgakwa] ‘type of bird’.

The Surface Representation (SR) and Underlying Representation (UR) of the lexical items containing a plosive consonant is shown in Table 2.

Table 2: UR and SR of plosives

	UR	SR	Gloss
[p]	kelan-pa	kelan-ba	‘male dancer’
	kappo-pa	kappo-ba	‘grandfather’
[d]	into	indo	‘border’
	ketumpa	kedumba	‘ripe’
[g]	tɔrkakwa	tɔrgakwa	‘a kind of bird’
	tɛku	tɛgu	‘peak’
[b ^h]	up ^h aŋ	ub ^h aŋ	‘fence’
	lomp ^h eʔ	lomb ^h eʔ	‘mattress’
[d ^h]	mut ^h oʔ	mud ^h oʔ	‘beard’
	maŋ ^h a	maŋ ^h a	‘altar’
[g ^h]	kek ^h ik	keg ^h ik	‘bitter’
	t ^h aŋk ^h ok	t ^h aŋg ^h ok	‘pillow’

Like plosives, voiceless alveolar affricate /ts/ also undergoes voicing when it occurs intervocalically or if it is preceded by a [+Nasal] consonant and followed by a vowel. However, the occurrence of [d͡z] is quite limited as it is predominately found in the compounded words as shown in (13).

- (13) a. lendik ‘day’ + tsa ‘food’ = [lend͡za] ‘lunch’
- b. junsik ‘evening’ + tsa ‘food’ = [jund͡za] ‘meal eaten in the evening’
- c. sendiʔ ‘night’ + tsa ‘food’ = [send͡za] ‘meal eaten at night’

The rule 1 is not applicable to all obstruents. It is limited to plosives and affricates only, which share [-continuant] feature. Fricative consonants, which are [+continuant] (and the voiceless glottal plosive /ʔ/) do NOT undergo the voicing rule.

Voiceless alveolar fricative and voiceless aspirated alveolar affricate

Interesting alternation of voiceless alveolar fricative /s/ to affricate [ts^h] is noticed in Limbu (also reported in Michailovsky (2002, 2011)). This alternation is predominant in the compound words, in the environment where the second morpheme begins with /s/ and is preceded by a morpheme that ends with /t/. In addition to this, ‘semi-assimilation’ of the preceding /t/ is also noticed, as in (14).

- (14) a. pit ‘cow’ + sa ‘meat’ → [pitsts^ha] ‘beef’
- b. net ‘two’ + si ‘NSG’ → [netsts^hi] ‘two’
- c. jat ‘eight’ + si ‘NSG’ → [jatsts^hi] ‘eight’

Liquids

Though, lateral liquid /l/ and rhotic liquid /r/ show contrast (discussed in section 2.1.2), the lateral liquid /l/ becomes [r] intervocalically or in the compound word-formation process, as in (15).

- (15) a. ne ‘two’ + leŋ ‘time’ = [nireŋ] ‘twice’
- b. mi ‘fire’ + lap ‘flame’ = [mirap] ‘flame’
- c. wa ‘bird’ + lap ‘feather’ = [werap] ‘feather’

2.2 Free variation

Though there are not many instances of free variation in Limbu, frequent free variation can be seen between voiceless aspirated bilabial plosive *p^h* and voiceless bilabial fricative *f*. Both these sounds can occur in the same environment without the changing the meaning of a lexical item, as in (16).

- (16) *p^h ~ f*
 - a. a:p^ha:le ~ a:f:a:le ‘when’
 - b. p^ha:ŋip ~ fa:ŋip ‘ninety’
 - c. la:ŋp^he ~ la:ŋfe ‘paw’

3. Vowels

There are seven phonemic vowels in Limbu, shown in Table 3.

Table 3: Vowel phonemes in Limbu

	Front	Central	Back
Close	i		u
Close-mid	e		o
Open-mid	ɛ		ɔ
Open		a	

Following are the minimal quadruplets for the front vowels.

- (17) /i/ versus /e/ versus /ɛ/ vs /a/
 /ipma/ ‘to make somebody sleep’
 /epma/ ‘to paste’
 /ɛpma/ ‘to fan the fire’
 /apma/ ‘to hit by instrument (by force)’

Following are the minimal triplets for the front vowels.

- (18) /u/ versus /o/ versus /ɔ/
 /tsukma/ ‘small (feminine)’
 /tsokma/ ‘to do’
 /tsɔkma/ ‘to join’

3.1 Vowel length

As opposed to the neighbouring Kiranti languages like Bantawa (Doornenbal, 2009), and Belhare (Bickel, 2003), vowel length is contrastive in Limbu. The length contrast is evident for the high vowels /i/ and /u/, back mid vowel /ɔ/, and the low vowel /a/. Minimal pairs for length contrast are shown in 19.

(19) Minimal pairs for the vowel length contrast:

- a. /i/ versus /i:/
 /tsiŋma/ ‘to hide’
 /tsi:ŋma/ ‘to cool down something’
- b. /a/ versus /a:/
 /tsakma/ ‘to dress’
 /tsa:kma/ ‘to cross a water body’
- c. /ɔ/ versus /ɔ:/
 /hɔmma/ ‘to put off’
 /hɔ:mma/ ‘to swell’
- d. /u/ versus /u:/
 /luŋma/ ‘lungs, heart’
 /lu:ŋma/ ‘to strip off fruit from tree’

This length contrast is neutralized in open word-final syllables, since in this position all the vowels are produced with significant lengthening.

3.2 Vowel allophones

High vowels and near-high vowels

The high (unlengthened) vowels /i/ and /u/ become near-high vowels [ɪ] and [ʊ], respectively, iff they occur in a closed syllable, as in [pɪt] ‘cow’, [hɪm] ‘house’, [tsɪŋma] ‘to hide’, [lʊŋ] ‘stone’, [lʊŋma] ‘to strip off fruits from tree or plant’, [nɔkma] ‘to erase’, etc. Figure 2a and 2b show the waveform and spectrographic representations of the high back rounded vowel *u* in an open syllable (in [ku.dza] ‘eatables’) and in a closed syllable (in [nɔk.ma] ‘to erase’), respectively.

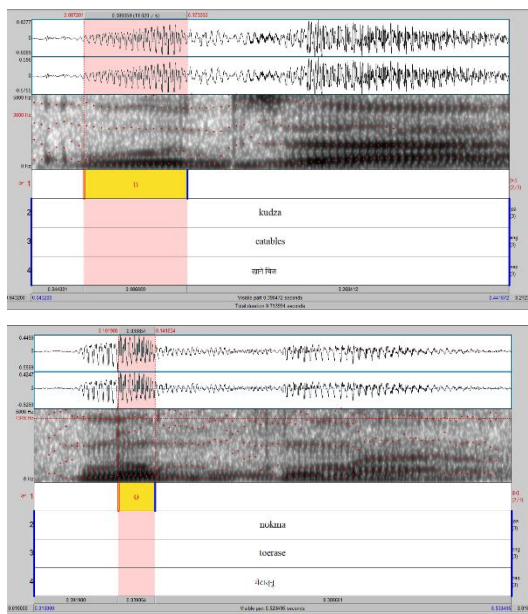


Figure 2: a) acoustic representation of [u] in an open syllable; b) acoustic representation of [ʊ] in a closed syllable

Figure 3 shows the F1 and F2 values of /u/ in 2a and 2b.³ In the open syllable, the F1 value of the vowel is 377.594 Hz, whereas in the closed syllable the value is 423.154 Hz, clearly showing the increase in the F1 value of the high back vowel *u* in a closed syllable.

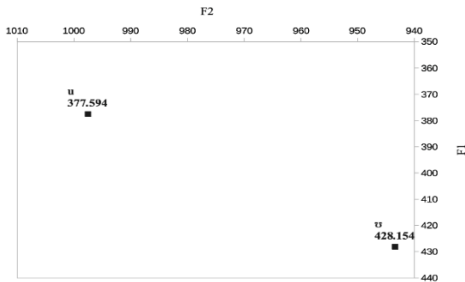


Figure 3: F1 and F2 values of high back vowel in [ku.dza] and [nok.ma]⁴

As opposed to other closely related Kiranti languages, namely Sunwar (Borchers, 2008), Camling (Ebert, 2003), Dumi (Rai, 2016), Kulung (Rai, 2021) and others, Limbu doesn't seem to have true diphthongs. Here are some instances of diphthong *ej* as in [neʔedrej] 'elder brother's wife/husband, husband's elder brother's wife', [p^huʔedrej] 'husband's elder brother'. However, it is in free variation with the monophthong /e/. Further, when this pair of vowel and glide occur in the word medial position it is divided by the syllable break, as in 21.

- (21) a. [tse.jan] 'tomb'
 b. [ke.jog.pa.ren] 'doer/ worker'

There are quite a few lexical items comprising of vowels only (limited to two), but they cannot be analysed as diphthongs since they are divided by the syllabic break. Further, in these words there is an optional insertion of the glottal stop /ʔ/ as in (22a-b) or the palatal glide /j/ as in (22c-d).

- (22) a. [ɔ(ʔ).i] 'porcupine'
 b. [pɔ(ʔ).i:t] 'cucumber'

- c. [si.ri.(j)e.t^hək.ma] 'quiver'
 d. [te.(j)on.si] 'incarnation'

Since there is no proof of true diphthongs that show contrast with the monophthongs, this paper claims that vowel inventory of Limbu spoken in Sikkim is purely composed of monophthongs.

4. Distribution

Sections 2 and 3 discuss the phonemes and their allophones in detail. This section focuses on the distribution of the phonemes in the Limbu lexical items. Tables 4 and 5 show the distributions of consonants and vowels respectively, with relevant examples.

Table 4: Distribution of consonants

	Word initial	Word medial	Word final
p	<i>pɔri</i> 'comb'	<i>t^hakpa</i> 'rope'	<i>hap</i> 'nest'
b	—	<i>heboʔ</i> 'tooth'	—
p ^h	<i>p^hoʔ</i> 'waist'	<i>lap^hek</i> 'leech'	—
t	<i>tɛn</i> 'place'	<i>atti</i> 'where'	<i>tet</i> 'cloth'
t ^h	<i>t^hak</i> 'body'	<i>pɔ:t^han</i> 'shawl'	<i>hukput^h</i> 'fist'
k	<i>keba</i> 'tiger'	<i>iksa</i> 'earth'	<i>t^hik</i> 'one'
k ^h	<i>k^hi</i> 'thread'	<i>makk^hi</i> 'blood'	<i>ek^h</i> 'back'
ʔ	—	—	<i>sɪʔ</i> 'louse'
m	<i>mi</i> 'fire'	<i>pema</i> 'fly'	<i>sam</i> 'soul'
n	<i>nam</i> 'sun'	<i>indo</i> 'border'	<i>ɔn</i> 'horse'
ŋ	<i>ŋa</i> 'fish'	<i>ninge</i> 'oil'	<i>lan</i> 'leg'
s	<i>sa</i> 'flesh'	<i>kusi</i> 'kernel'	—
h	<i>ha:t</i> 'who'	<i>sɔhi:k^h</i> 'sugar'	—
r	—	<i>pɔri</i> 'comb'	—
l	<i>la:ba</i> 'moon'	<i>wali</i> 'pipe'	—
w	<i>wali</i> 'pipe'	<i>akwa</i> 'crow'	—
j	<i>ja</i> 'perhaps'	<i>tsejan</i> 'grave'	—
ts	<i>tsa</i> 'food'	<i>kotso</i> 'dog'	—

Table 5: Distribution of vowels

	Initial	Medial	Final
i	<i>iloma</i> 'nurse'	<i>ninge</i> 'oil'	<i>wali</i> 'pipe'
i:	<i>i:tma</i> 'to think'	<i>pi:t</i> 'suck'	—
e	<i>ek^h</i> 'back'	<i>tet</i> 'cloth'	<i>u:me</i> 'camel'
ɛ	<i>ekma</i> 'fracture'	<i>netsts^hi</i> 'two'	—
a	<i>atti</i> 'where'	<i>t^hak</i> 'body'	<i>tsa</i> 'food'
a:	<i>a:jen</i> 'today'	<i>ha:t</i> 'who'	—
ɔ	<i>ɔn</i> 'horse'	<i>pɔri</i> 'comb'	<i>surɔ</i> 'lately'

³ Note that here we only focus on the F1 values, since the height at which vowel is produced is of primary concern. Higher the F1 lower the vowel height and vice-versa.

⁴ I would like to thank Pabitra Chettri for assisting me in plotting the vowels.

ɔ:	—	tɔ:kʰ ‘rice’	—
o	otma ‘to glitter’	kotso ‘dog’	aro ‘now’
u	unlim ‘cand’	luŋ ‘stone’	tʰegu ‘peak’
u:	u:me ‘camel’	su:kwa ‘bag’	—

5. Syllable structure

The canonical form of Limbu syllable consists of obligatory vowel and optional consonants in onset and coda positions, as shown in Figure 4, where σ stands for syllable, C stands for consonant and V stands for vowel. The optional elements are shown in paranthesis.

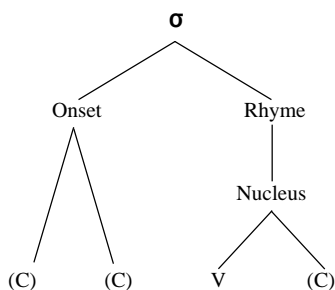


Figure 4: Syllable structure of Limbu

A Limbu word may consist of one or more syllables. The first rule that regulates syllabification is the *Onset Maximalization*, whereby the intervocalic consonants are maximally assigned as the onset rather than the coda. Examples in 23 clearly show the syllabification of the words where the intervocalic consonant has to be the onset of the following syllable rather than the coda of the first syllable.

- (23) a. [su.rɔ] *[sur.ɔ] ‘lately’
- b. [we.rap] *[wer.ap] ‘feather’

In the case of consonant clusters in the intervocalic position the sequence of consonants must split over

two syllables (24a-b), except when two consonants make a valid syllable onset, as in (24c).

- (24) a. [kejɔgparen] ‘doer/worker’
 [ke.jɔg.pa.ren]
 *[ke.jo.gpa.ren]
- b. [pʰakletsʰa] ‘piglet’
 [pʰak.le.tʰa]
 *[pʰa.kle.tʰa]
- c. [siktsjenba] ‘ant’
 [sik.tʰsjen.ba]
 *[sikts.jen.ba]

The distribution of potential syllabic constituents within a syllable is listed in Table 6. Every phonemic consonant can appear in the syllable initial position, i.e., the onset of a syllable, except the voiceless glottal plosive /ʔ/, which is strictly limited to the coda position. However, the onset position can be empty, like in [ɔn] ‘horse’, [inɔ] ‘border’, [imma] ‘to sleep’.

Table 6: Phonotactic distribution of Limbu syllable constituents

(C)	(C)	V	(C)
p b pʰ t tʰ k kʰ	j	i i: u u:	p t k ʔ
m n ŋ		e o	(tʰ kʰ) ⁵
s h		ɛ ɔ ɔ:	m n ŋ
ts		a a:	
r			
w l j			

The consonant clusters, like vowel clusters (diphthongs), are not common in Limbu. Only possible consonant cluster is where C₁ has to be an obstruent (except ʔ) and C₂ must be a palatal glide /j/.⁶ Further, the consonant cluster is only allowed in the onset position, shown in (25).

⁵ Only voiceless aspirated dental and velar plosives can occur in coda position. However, it is limited to the word-final syllable. In the word-medial syllable, it can only occur in the onset. Though aspiration contrast is evident for voiceless plosives, the contrast is neutralized at coda. Therefore, hu:kʰ and hu:k both mean ‘hand’.

⁶ The possibility of labial-velar glide w to occur in the C₂ position cannot be ruled out. However, out of 1500 words

(approx.) collected till date, I have come across only two lexical items with a consonant cluster in the word initial position where C₂ is w. Those are kwa? ‘uncle’ and tswa ‘water’. Further, [tswa] and [tsuwa] for ‘water’ are interchangeably used by most speakers. Due to lack of strong evidence, this paper claims that C₂ position in a consonant cluster can only be occupied by palatal glide /j/.

- (25) a. [k^hjasə] ‘puppy’
 b. [sjaʔ] ‘raw rice’
 c. [siktsjenba] ‘ant’
 d. [t^hjat] ‘saliva’

However, when the pair of obstruent consonant and palatal glide occurs word medially, they must split over two syllables (as in (26a-b)), except when two consonants make a valid syllable onset (26c).

- (26) a. [ak^h.jen] ‘how many’
 *[a.k^hjen]
 *[ak^h.en]
 b. [iŋ.ja] ‘father’s sister’
 *[i.ŋja]
 *[iŋ.ja]
 c. [sik.^{ts}jen.ba] ‘ant’
 *[sikts.jen.ba]
 *[si.ktsjen.ba]

Like consonant clusters, in case of geminates in the intervocalic position, consonants are split over two syllables, as in (27a-c). Note that in Limbu, geminates can only occur word medially.

- (27) a. [tappə] ‘gambling’
 [tap.pe]
 *[ta.ppe]
 b. [nəsse] ‘earring’
 [nes.se]
 *[ne.sse]
 c. [ɪllək] ‘lie’
 [ɪl.lək]
 *[ɪ.llək]

The syllable coda position is strictly restricted to voiceless stops and nasals as in 28.

- (28) a. [tsilep] ‘wall’
 b. [sət] ‘butter/ ghee’
 c. [tək] ‘cooked rice’
 d. [p^huʔ] ‘brother’
 e. [on] ‘horse’
 f. [joŋ] ‘net’

- g. [him] ‘house’

Like onset, the coda position (syllable final position) can be empty, as in [i:] ‘trap’, [k^hi] ‘thread’, [iksa] ‘earth’, [ɔʔi] ‘porcupine’, etc. A consonant cluster can never occur in the coda position.

6. Conclusion

To conclude the paper, the phonemic inventory of the Limbu variety spoken in Sikkim has 18 consonants and 11 vowels. The paper provides minimal pairs and near-minimal pairs to establish the contrast between the phonemes. An interesting contrast that breaks the pattern congruity is noticed between voiceless and voiced bilabial plosives. However, there are several instances where, like other voiceless plosives, /p/ also undergoes the voicing rule, especially in the morpheme break; hence showing the complementarity in the distribution. Similarly, lateral liquid /l/ and rhotic liquid /r/ which are established as phonemes, show complementarity in certain cases. There are instances of alternation of /l/ to [r] in the intervocalic environment. As suggested in Jacques (2012), Tambahang (2012), these contrasts are potentially late developments in the language that might have resulted due to the influence of the neighbouring languages.

The vowel inventory consists of monophthongs only. An interesting alternation of high vowels /i/ and /u/ to the near-high vowels [ɪ] and [ʊ] is noted in the closed syllables.

The canonical structure of a Limbu syllable is (C₁)(C₂)V(C). The onset of a syllable may contain a sequence of two consonants where C₁ can be any consonant phoneme except /ʔ/ and C₂ must be the palatal glide /j/. The coda can only accommodate one consonant, and is restricted to voiceless plosives and nasals. In the process of syllabication, the Maximal Onset rule is strictly followed by the language, whereby the intervocalic consonant has to be the onset rather than the coda. Further, if there is an intervocalic consonant cluster, as in VC₁C₂V, then C₁ becomes the coda of the preceding syllable and C₂ becomes the onset of the following syllable.

Acknowledgements

I would like to extend sincere thanks to the SELDP team, Dr. Samar Sinha, Prof. Tanmoy Bhattacharya, Pabitra Chettri, Bishal Rai, Reena Rai, and Rupesh Rai, for their constant support, and their invaluable suggestions and comments that helped me in shaping this paper.

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