

CHAPTER 3

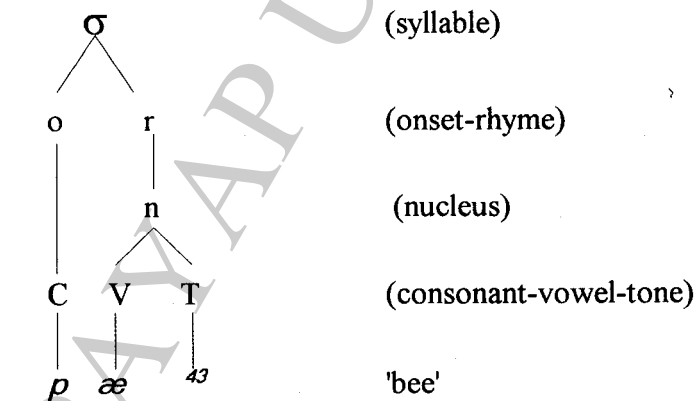
BAKEO SEGMENTAL PHONOLOGY

3.1 Syllable and Word Structure

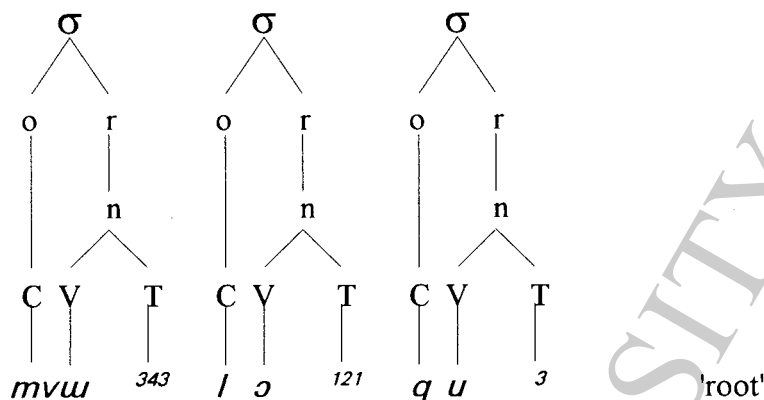
A syllable can be described in two different ways, as a phonological unit or as a phonetic unit.

"The syllable consists of three phonetic parts: (1) the onset, (2) the peak or nucleus, and (3) the coda... For phonological purposes, however, only a single division is relevant, namely between (1) the onset and (2) the core, consisting of the phonetic peak and coda combined... A CV syllable thus has a core with a zero coda." (Hyman 1975:188)

Every Lahu Bakeo syllable is made up of an obligatory consonant followed by an obligatory vowel nucleus and tone. Its structure is presented as: CVT. The structure of a Lahu Bakeo syllable can be expressed as:



Words in Bakeo may have more than one syllable. For example:



There is a syllable boundary between a tone and a following consonant, such as $mvw^{343}.l\ \text{ɔ}^{121}.qu^3$ (the period indicates the syllable break). From this example, therefore, the first syllable boundary is between the tone $[^{343}]$ and the $[l]$. The boundary between the tone $[^{121}]$ and the $[q]$ is the second syllable boundary.

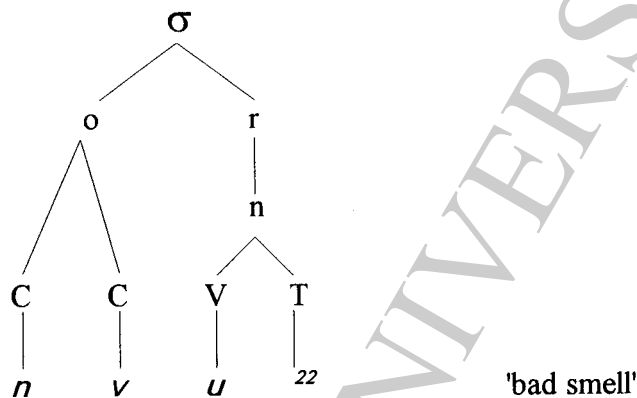
Sirisai (1986), analyzes $[b_v]$, $[t_f]$, $[n_v]$, $[m_v]$, etc, in Red Lahu language as consonant clusters (CC). For example:

- $[b_vu^{44?}]$ 'to be full'
 $[t_fu^{45}]$ 'a handle'
 $[n_vu^{22}]$ 'bad smell'
 $[m_vu^{22}]$ 'mushroom'

These consonant clusters can be expressed as:

C	C
n	v

Therefore, the syllable structure of the Red Lahu word [ŋvu²¹] as analyzed by Sirisai can be expressed as:

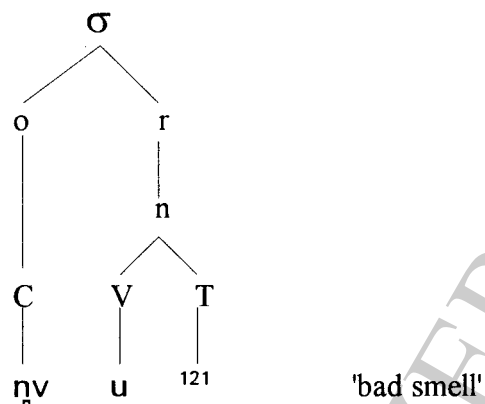


In Bakeo, on the other hand, there are no consonant clusters according to the present analysis. The complex segments in Bakeo, which are similar to those such as /ŋv/ in Red Lahu, are analyzed as single segments (affricates) in this analysis. This is because, there are not any ambiguous clusters that are non homorganic affricates or are not coarticulated. Most of these homorganic affricates are allophones of other segments. This analysis keeps the syllable types as few as possible. So, the number of emic affricates does not justify creating another syllable type. This affricate, therefore, can be expressed as:

C
|
ŋv

Therefore, the syllable structure of the Lahu Bakeo word [ŋvu¹²¹] can be expressed

as:



3.2 Consonants

Lahu Bakeo consonants will be discussed at the phonetic and phonemic levels.

3.2.1 Phonetic Representation and Interpretation of Consonants

Every Bakeo syllable includes one of the following initial consonants.

		Bilabial	Labio - dental	Dental	Alveolar	Palatal	Velar	Uvular	Glottal
Plosive	vl. asp.	p ^h			t ^h		k ^h	q ^h	
	vl. unasp.	p			t		k	q	ʔ
	vd.	b			d		g		
Affricate	vl. asp.			tʃ ^h	ts ^h	tʃ ^h			
	vl. unasp.		pf	tʃ	ts	tʃ			
	vd.		bv	dʒ	dz	dʒ			
Fricative	vl.	ɸ	f		s	ʃ			h
	vd.		v		z	ʒ	ɣ		
Nasal	vd.	m	mv	ɲv	n	ɲ	ŋ		
Approx	vd.					j			
Lateral	vd.				l				

Table 5: Bakeo phonetic contoids

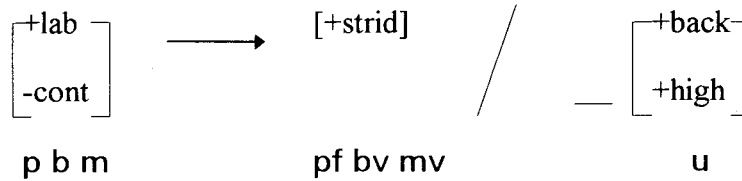
All affricates presented in the above chart are interpreted as single segments. [t], [t^h], [d] and [n] are alveolar. [ts], [ts^h] and [dz] are also alveolar. There are three

affricated plosives [tʃ], [tʃʰ], [dʒ] and one nasal affricate [ŋv] in which the stops are dental.

The labiodental affricates [pf], [bv] and [mv] occur only before the high unrounded back vowel [ʊ], and this vowel does not occur after other consonants. For example:

<i>[mæ³⁴³ʔ.pfʊ⁴³]</i>	'face'
<i>[ʔɔ²¹.pfʊ⁴³]</i>	'price'
<i>[bvʊ¹²¹.ve²³²]</i>	'roar'
<i>[bvʊ¹²¹ʔ.ve²³²]</i>	'write'
<i>[mvʊ³⁴³]</i>	'mushroom'
<i>[mvʊ³⁴³.p^hə²¹ʔ]</i>	'dusk'

Labiodental affricates [pf], [bv] and [mv] are therefore analyzed as allophones of /p/, /b/ and /m/. This process can be seen as a consequence of the process described in section 3.3.1 where the preceding bilabial for this articulation leads to an unrounding of the back vowel (Matisoff 1973a:3, see section 3.3.1). One possible explanation is that the production of the high unrounded back vowel requires a higher articulatory effort than other vowels. The increased muscular tension in the back of the tongue slightly retracts the lower jaw, whereas the upper jaw is not affected by this movement. This makes the lower lip touch the upper teeth in the transition between full lip closure for producing the stops and opening into the vowel. This coarticulatory phenomenon can be expressed in the following rule:

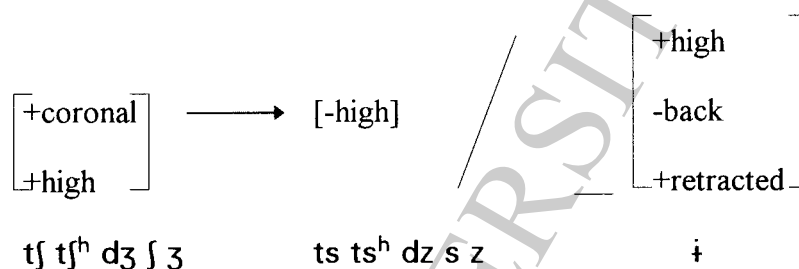


Alveolar affricates and fricatives, [ts], [ts^h], [dz], [s] and [z], occur only before a high unrounded central fronted vowel [i]. For example:

<i>[ts_i⁴³]</i>	'market'
<i>[ts_i²¹.ve²³²]</i>	'cough'
<i>[ts_i^{h:3}.ve³¹]</i>	'sweet'
<i>[ts_i^{h:43}.ve³¹]</i>	'wash'
<i>[dz_i¹²¹]</i>	'liquor'
<i>[dz_i^{343?}.he²⁴.ve³¹]</i>	'put to sleep'
<i>[s_i²¹]</i>	'blood'
<i>[s_i⁴³.ve³¹]</i>	'die'
<i>[z_i^{21?}.ve²³²]</i>	'sleep'
<i>[y_i¹²¹.z_i²¹.ve²³²]</i>	'laugh'

Alveolar affricates and fricatives are therefore analyzed as allophonic variants of the palatal affricates and fricatives /tʃ/, /tʃ^h/, /dʒ/, /s/ and /z/. There is a process of assimilation occurring here. To produce a palatal sibilant, the center of the tongue is

lowered while the edges touch the alveo-palatal region. To produce the high central vowel, the center of the tongue is raised towards the hard palate. In preparing to produce this vowel, the center of the tongue gets raised which causes the blade of the tongue to slightly shift forward. The palatal sibilants and their affricates therefore get realized as their alveolar counterparts before the high central vowel. This phenomenon can be expressed through the following rule:



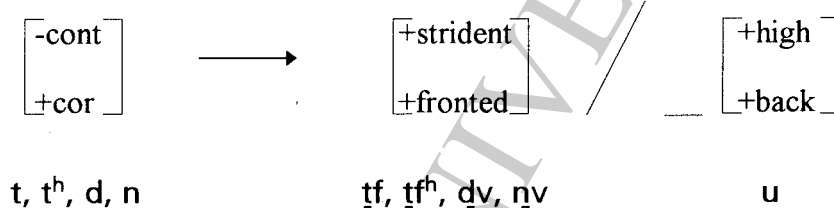
Affricated dental plosives [tʃ], [tʃʰ], [dʒ] and nasal [ɨ] occur only before the high rounded back vowel /u/. Bradley does not mention affricated dental plosives, but he refers to an affricated dental nasal (1979:125). He states that /n/ before /ə/ is an affricated dental nasal [ɨ]. According to my data, affricated dental plosives and nasals occur only before a high back rounded vowel /u/. For example:

<i>[tʃu²¹.ve²³²]</i>	'bury'
<i>[tʃu³.ve³¹]</i>	'stand up'
<i>[tʃʰu³.ve³¹]</i>	'thick'
<i>[dʒu³⁴³.ve³¹]</i>	'dig'
<i>[p^ha⁴³.dʒu¹²¹]</i>	'thigh'

[ŋvu³⁴³] 'cattle'

[ŋvu¹²¹.ve²³²] 'smell (bad)'

Affricated stops are therefore analyzed as allophones of /t/, /t^h/, /d/ and /n/. The consonant anticipates the labialization of the following vowel by getting rounded, the lip rounding then is accompanied with fronting of the tongue as a general extending movement of the front mouth cavity, while there is no further jaw movement necessary. The labio-dental friction is a result of the transition phase between the rounded alveolar stop and the high rounded back vowel, with this additional fronting of lips and tongue. This can be expressed as:



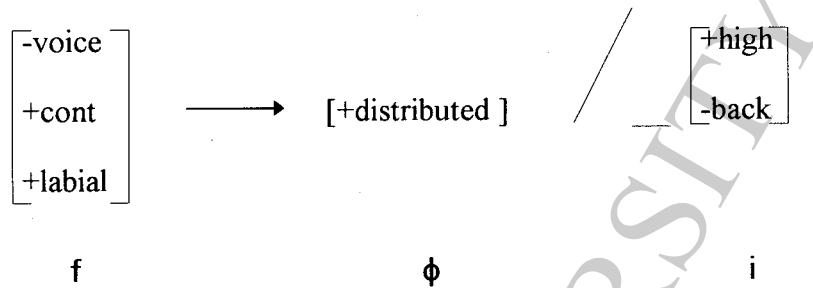
There is one consonant which is not found in other dialects of Lahu, but is found in the Bakeo dialect. It is a voiceless bilabial fricative [ɸ]. This consonant occurs only before a high unrounded front vowel /i/, and the voiceless labio-dental fricative /f/ never occurs in this position. Therefore, it is analyzed as an allophone of /f/. For example:

[ɸi³.ve³¹] 'sew'

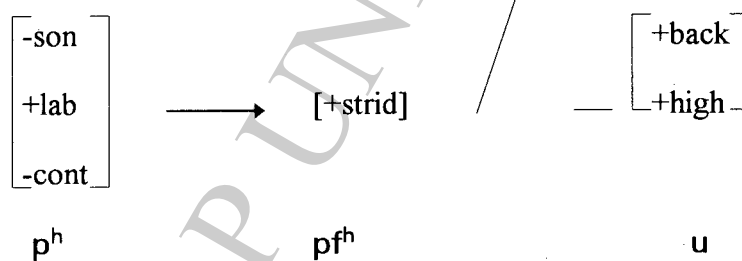
[mo¹²¹.ɸi²¹ʔ] 'cloud'

[ɸi²⁴] 'opium'

This can be explained as a matter of coarticulation. The height of the lower jaw bone for /i/ is about the same as for the bilabial fricative, whereas the labiodental fricative would require a slight lowering of the lower jaw bone. This fact can be expressed as:



Bradley (1979:12) states that in Bakeo, the voiceless aspirated bilabial plosive /p^h/ has a labiodental affricate allophone [p^hf^h] before the high unrounded back vowel [u]. This process can be expressed in a rule as:



Bradley does not give examples of this process. However, this phenomenon is found in Black Lahu, as in the word [p^hf^hu] 'silver'. In contrast, the same word occurs as [p^hu³] in my data (e.g. see sample 0373 p. 91). Therefore, there is no evidence for a voiceless aspirated labiodental affricate allophone in this Lahu Bakeo variety.

3.2.2 Phonemic Representation of Consonants

There are 27 consonant phonemes in Lahu Bakeo. All of them only occur initially in a syllable.

		Bilabial	Labio-dental	Alveolar	Palatal	Velar	Uvular	Glottal
Plosive	vl. asp.	p ^h		t ^h		k ^h	q ^h	
	vl. unasp.	p		t		k	q	ʔ
	vd.	b		d		g		
Affricate	vl. asp.				tʃ ^h			
	vl. unasp.				tʃ			
	vd.				dʒ			
Fricative	vl.		f		ʃ			h
	vd.		v		ʒ	ɣ		
Nasal	vd.	m		n	ɲ	ŋ		
Approx	vd.				j			
Lateral	vd.			l				

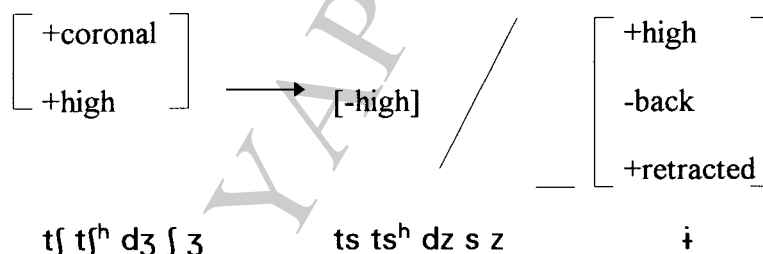
Table 6: Bakeo consonant phonemes

The consonant phonemes are almost the same as those presented by Bradley for the Bakeo phonological system (1979:125). The only differences are the addition of /ʒ/ and /ɲ/, and the substitution of /h/ for /x/.

Bradley presents a palatal nasal [ɲ] as an allophone of /n/. He suggests that this allophone occurs only before /i/. On the other hand, in the data presented here there is contrast between /n/ and /ɲ/. Therefore, this consonant is not an allophone, but a separate phoneme. For example:

/n-ɲ/	/ni ²⁴ .ve ³¹ /	'press'	/ɲi ³⁴³ /	'two'
	/və ¹²¹ .na ^{343ʔ} /	'cobra'	/ʔa ³ .ɲa ^{24ʔ} /	'younger brother sister'
	/yʉ ¹²¹ .ni ^{343ʔ} /	'turban'	/q ^h a ²¹ .ɲi ³⁴³ .le ³¹ /	'how many'

There is a voiced palatal fricative phoneme /ʒ/ in the Bakeo dialect, but there is only one example in the present data: /ʒi¹²¹.pa^{21ʔ}/ 'roach'. However, by symmetry, it fits the rule which was presented previously in 2.3 as:



Because of this general process occurring in the language, we expect to find, with more data, other occurrences of /ʒ/.

3.2.3 Bakeo Consonant Phonemes

All sounds are made with egressive air.

/p ^h /	[p ^h]	/p ^h i ⁴³ /	[p ^h i ⁴³]	'dog'
		/p ^h a ²¹ ? .p ^h o ²¹ ?/	[p ^h a ²¹ ? .p ^h o ²¹ ?]	'caladium'
/p/	[p]	/pa ¹ /	[pa ¹ ?]	'frog'
		/pa ³ .tæ ⁴³ /	[pa ³ .tæ ⁴³]	'rabbit'
	[pf]	/mæ ⁴³ ? .pu ⁴³ /	[mæ ³⁴³ ? .pfu ⁴³]	'face'
		/ʔo ²¹ .pu ⁴³ /	[ʔo ²¹ .pfu ⁴³]	'price'
/b/	[b]	/bo ⁴³ /	[bo ³⁴³]	'room'
		/bæ ²¹ .ve ³ /	[bæ ¹²¹ .ve ²³²]	'burning hot'
	[bv]	/bu ²¹ .ve ³ /	[bvʷ ¹²¹ .ve ²³²]	'roar'
		/bu ²¹ ? .ve ³ /	[bvʷ ¹²¹ ? .ve ²³²]	'write'
/t ^h /	[t ^h]	/t ^h e ⁴³ ? .ve ³ /	[t ^h e ⁴³ ? .ve ³¹]	'kick'
		/t ^h o ²¹ ?/	[t ^h o ²¹ ?]	'flag'
	[t ^h]	/t ^h u ³ .ve ³ /	[t ^h u ³ .ve ³¹]	'thick'
/t/	[t]	/tæ ⁴³ /	[tæ ⁴³]	'one'

		<i>/te⁴³.ha³/</i>	<i>[te⁴³.ha³]</i>	'hundred'
	[tʃ]	<i>/tu²¹.ve³/</i>	<i>[tʃu²¹.ve²³²]</i>	'bury'
		<i>/tu³.ve³/</i>	<i>[tʃu³.ve³¹]</i>	'stand up'
/d/	[d]	<i>/dɔ²¹.ve³/</i>	<i>[dɔ¹²¹.ve²³²]</i>	'drink'
		<i>/da^{21?}.ve³/</i>	<i>[da^{121?}.ve²³²]</i>	'good'
	[ɖ]	<i>/du⁴³.ve³/</i>	<i>[ɖu³⁴³.ve³¹]</i>	'dig'
		<i>/p^ha⁴³.du²¹/</i>	<i>[p^ha⁴³.ɖu¹²¹]</i>	'thigh'
/k ^h /	[k ^h]	<i>/k^ha^{43?}/</i>	<i>[k^ha^{43?}]</i>	'crossbow'
		<i>/k^hæ⁴³.q^hɔ^{43?}/</i>	<i>[k^hæ⁴³.q^hɔ^{43?}]</i>	'cup'
/k/	[k]	<i>/kə²¹/</i>	<i>[kə²¹]</i>	'sweat'
		<i>/ʔa³.ka^{43?}/</i>	<i>[ʔa³.ka^{43?}]</i>	'water'
/g/	[g]	<i>/gu⁴³/</i>	<i>[gu³⁴³]</i>	'dove'
		<i>/ʔa³.ga³.le³/</i>	<i>[ʔa³.ga²³.le³¹]</i>	'spider'
/q ^h /	[q ^h]	<i>/q^hɔ⁴³/</i>	<i>[q^hɔ⁴³]</i>	'feces'
		<i>/mu^{21?}.q^ho³/</i>	<i>[mvu^{121?}.q^ho^{3?}]</i>	'pot'
/q/	[q]	<i>/qɔ⁴³/</i>	<i>[qɔ⁴³]</i>	'nine'

		<i>/qɔ²¹ʔ.la²¹.ve³/</i>	<i>[qɔ²¹ʔ.la¹²¹.ve²³²]</i>	'return'
/ʔ/	[ʔ]	<i>/ʔɔ²¹/</i>	<i>[ʔɔ²¹]</i>	'rice (cooked)'
		<i>/ʔɔ²¹.ha³.ku³/</i>	<i>[ʔɔ²¹.ha³.ku³]</i>	'spirit'
/tʃ ^h /	[tʃ ^h]	<i>/tʃ^hɔ³/</i>	<i>[tʃ^hɔ³]</i>	'person'
		<i>/ʔɔ²¹.tʃ^hɔ⁴³/</i>	<i>[ʔɔ²¹.tʃ^hɔ⁴³]</i>	'friend'
	[ts ^h]	<i>/tʃ^hi³.ve³/</i>	<i>[ts^hi³.ve³¹]</i>	'sweet'
		<i>/tʃ^hi⁴³.ve³/</i>	<i>[ts^hi⁴³.ve³¹]</i>	'wash'
/tʃ/	[tʃ]	<i>/tʃe³.ve³/</i>	<i>[tʃe³.ve³¹]</i>	'sour'
		<i>/mæ⁴³ʔ.tʃo²⁴.ve³/</i>	<i>[mæ³⁴³ʔ.tʃo²⁴.ve³¹]</i>	'blind'
	[ts]	<i>/tʃi⁴³/</i>	<i>[tsi⁴³]</i>	'market'
		<i>/tʃi²¹.ve³/</i>	<i>[tsi²¹.ve²³²]</i>	'cough'
/dʒ/	[dʒ]	<i>/dʒɔ³.mo⁴³/</i>	<i>[dʒɔ²³².mo³⁴³]</i>	'king'
		<i>/dʒu⁴³.ve³/</i>	<i>[dʒu³⁴³.ve³¹]</i>	'walk'
	[dz]	<i>/dʒ²¹/</i>	<i>[dzi¹²¹]</i>	'liquor'
		<i>/dʒi⁴³ʔ.he²⁴.ve³/</i>	<i>[dzi³⁴³ʔ.he²⁴.ve³¹]</i>	'put to sleep'
/f/	[f]	<i>/fə³.ve³/</i>	<i>[fə³.ve³¹]</i>	'send'

		/tʃa ²¹ .fi ³ /	[tʃa ²¹ .fi ³]	'weasel'
	[ϕ]	/fi ³ .ve ³ /	[ϕi ³ .ve ³¹]	'sew'
		/fi ²⁴ /	[ϕi ²⁴]	'opium'
/v/	[v]	/va ²¹ ʔ/	[va ¹²¹ ʔ]	'pig'
		/pa ¹ .vi ³⁴³ /	[pa ¹ .vi ³⁴³]	'civet'
/ʃ/	[ʃ]	/ʃæ ⁴³ ʔ/	[ʃæ ⁴³ ʔ]	'three'
		/q ^h a ³ .ʃu ²¹ ʔ/	[q ^h a ³ .ʃu ²¹]	'same'
	[s]	/ʃi ²¹ /	[sɿ ²¹]	'blood'
		/ʃi ⁴³ .ve ³ /	[sɿ ⁴³ .ve ³¹]	'die'
/ʒ/	[ʒ]	/ʒi ²¹ .pa ²¹ ʔ/	[ʒi ¹²¹ .pa ²¹ ʔ]	'roach'
	[z]	/ʒi ²¹ ʔ.ve ³ /	[zɿ ²¹ ʔ.ve ²³²]	'sleep'
		/ʎi ²¹ .ʒi ²¹ .ve ³ /	[ʎi ¹²¹ .zɿ ²¹ .ve ²³²]	'laugh'
/ʎ/	[ʎ]	/ʎo ²¹ ʔ/	[ʎo ¹²¹ ʔ]	'needle'
		/ʎu ⁴³ .ʃi ²¹ /	[ʎu ³⁴³ .sɿ ²¹]	'in front'
/h/	[h]	/ha ³ /	[ha ³ ʔ]	'dry field'
		/ʔɔ ³ .ha ³ .pa ³ /	[ʔɔ ³ .ha ³ .pa ³]	'month'

/m/	[m]	/mɔ ⁴³ /	[mɔ ³⁴³]	'thing'
		/ʔɔ ²¹ .mæ ³ /	[ʔɔ ²¹ .ma ²³²]	'name'
	[mv]	/mu ⁴³ /	[mvu ³⁴³]	'mushroom'
		/mu ⁴³ .p ^h ə ^{21ʔ} /	[mvu ³⁴³ .p ^h ə ^{21ʔ}]	'dusk'
/n/	[n]	/nɔ ²¹ /	[nɔ ¹²¹]	'you'
		/na ^{21ʔ} .ʔu ²⁴ /	[na ^{121ʔ} .ʔu ²⁴]	'con5versation'
	[ŋv]	/nu ⁴³ /	[ŋvu ³⁴³]	'cattle'
		/nu ²¹ .ve ³ /	[ŋvu ¹²¹ .ve ²³²]	'smell (bad)'
/ɲ/	[ɲ]	/ɲi ⁴³ /	[ɲi ³⁴³]	'two'
		/ɲi ³ .ma ³ .pi ³ /	[ɲi ²³² .ma ²³² .pi ^{3ʔ}]	'chest'
/ŋ/	[ŋ]	/ŋa ²¹ /	[ŋa ¹²¹]	'I'
		/ŋɔ ²⁴ .ve ³ /	[ŋɔ ²⁴ .ve ³¹]	'look at'
/j/	[j]	/jɔ ⁴³ /	[jɔ ³⁴³]	'he'
		/ja ^{21ʔ} .qɔ ³ /	[ja ^{121ʔ} .qɔ ³]	'path'
/l/	[l]	/lɔ ²¹ /	[lɔ ¹²¹]	'cart'
		/la ^{21ʔ} .fa ²¹ /	[la ^{121ʔ} .fa ²¹]	'left'

3.3 Vowels

In this section Lahu Bakeo vowels will be discussed at the phonetic and phonemic levels.

3.3.1 Phonetic Representation and Interpretation of Vowels

There are eleven phonetic vowels in Bakeo.

	Front Unrounded	Central fronted Unrounded	Central Unrounded	Back Unrounded	Back Rounded
High	i	ɨ	ɨ	ɯ	u
Mid	e		ə		o
Low	æ		a		ɔ

Table 7: Bakeo vocoids

Two of these, the high unrounded back vowel [ɯ] and the high unrounded central fronted vowel [ɨ], occur only after certain consonants.

[ɯ] occurs only after labiodental affricates [pf], [bv] and [mv], and these consonants occur only before this vowel. For example:

[mæ³⁴³ʔ.pfw⁴³] 'face'

[ʔɔ²¹.pfw⁴³] 'price'

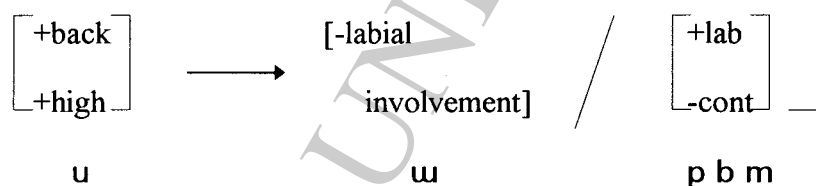
[bvɯ¹²¹.ve²³²] 'roar'

[bvʷ¹²¹? .ve²³²] 'write'

[mvʷ³⁴³] 'horse'

[mvʷ²³.ve³¹] 'high'

An explanation for why the unrounded vowel causes the realization of stops as affricates has been given in section 3.2.1. There is also an explanation for why the high unrounded back vowel [ʊ] can be analyzed as an allophone of the high rounded back vowel /u/. During the production of bilabial stops, the lips prepare for the subsequent rounded vowel by getting rounded during lip closure. This is a rather high articulatory effort on the lips and may motivate dissimilation. Therefore, the redundant lip rounding is dropped, causing the unrounding of the following /u/. It can be expressed in the rule as:



The high unrounded central fronted vowel [ɨ] occurs only after alveolar affricates, fricatives [ts], [ts^h], [dz], [s], [z], and a palatal nasal [ɲ], and these consonants occur only before this vowel, except the palatal nasal which also occurs elsewhere. For example:

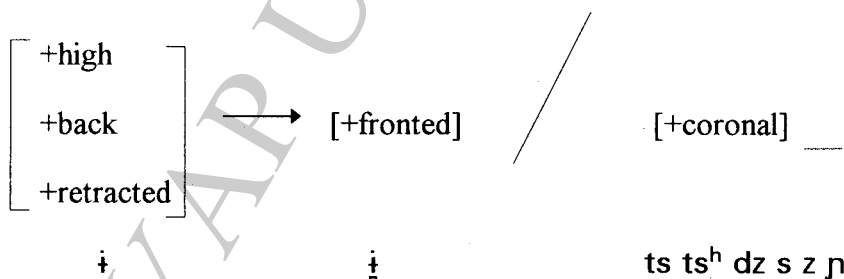
[ts^h_ɨ⁴³.ve³¹] 'wash'

[na³⁴³? .ts^h_ɨ⁴³] 'medicine'

[ts_ɨ²¹.ve²³²] 'cough'

$[k^h i^{33} . ts i^{24} . qu^{37}]$	'knee'
$[dz i^{121}]$	'liquor'
$[ʔ a^{33} . ka^{43} ʔ . dz i^{343} . tʃ^h e^{33}]$	'waterfall'
$[s i^{21}]$	'blood'
$[y u^{343} . s i^{21}]$	'in front'
$[z i^{121} ʔ . ve^{232}]$	'sleep'
$[y i^{121} . z i^{121} . ve^{232}]$	'laugh'

The high unrounded central fronted vowel [ɨ] is therefore analyzed as an allophone of /i/. There is a process occurring here in which the high central unrounded back vowel moves slightly forward, and the consonants move farther to the front (see section 3.2.1). This can be expressed as:



This process is very similar to processes discussed in section 2.3, but in that section, Matisoff talks about /i/ being extra high, whereas in Bakeo this vowel is further forward.

3.3.2 Phonemic Representation of Vowels

There are nine vowel phonemes in Lahu Bakeo.

	Front Unrounded	Central Unrounded	Back Rounded
High	i	ɨ	u
Mid	e	ə	o
Low	æ	a	ɔ

Table 8: Bakeo vowel phonemes

Bradley states that there is an allophone [ʌ] which is an allophone of /ə/, occurring only after the alveolar nasal /n/ and the palatals /tʃ/, /tʃʰ/, /dʒ/, /ʃ/ and /j/. However, there is no allophone [ʌ] in my data.

3.3.3 Bakeo Vowel Phonemes

/i/	[i]	/tʃʰi³/	[tʃʰi³ʔ]	'barking deer'
		/pi³.pa³/	[pi³.pa³ʔ]	'cockroach'
/e/	[e]	/ve²¹ʔ/	[ve¹²¹ʔ]	'leech'
		/te³.ve³/	[te³.ve³¹]	'do'
/æ/	[æ]	/jæ²¹/	[jæ¹²¹]	'house'

		<i>/dzæ⁴³.ve³/</i>	<i>[dzæ³⁴³.ve³¹]</i>	'stop'
/ɨ/	[ɨ]	<i>/bæ²¹.ɣɨ²¹/</i>	<i>[bæ¹²¹.ɣɨ¹²¹]</i>	'pus'
		<i>/mu⁴³.kɨ²¹.ʃi²¹/</i>	<i>[mvw³⁴³.kɨ²¹.ʃi²¹]</i>	'star'
	[ɨ]	<i>/tʃɨ²¹?/</i>	<i>[tsɨ²¹?]</i>	'waist'
		<i>/ʃɨ⁴³? .ʃi²¹/</i>	<i>[sɨ⁴³? .ʃi²¹]</i>	'fruit'
/ə/	[ə]	<i>/kə³.va²⁴.mə³/</i>	<i>[kə³.va²⁴.mə³¹]</i>	'sugar'
		<i>/p^hə⁴³.tu²¹/</i>	<i>[p^hə⁴³.tʃu²¹]</i>	'fan'
/a/	[a]	<i>/p^ha³/</i>	<i>[p^ha³?]</i>	'cloth'
		<i>/la²¹? .fa²¹/</i>	<i>[la¹²¹? .fa²¹]</i>	'left'
/u/	[u]	<i>/na²¹? .ʔu²⁴/</i>	<i>[na¹²¹? .ʔu²⁴]</i>	'con5versation'
		<i>/tʃ^hu³.ve³/</i>	<i>[tʃ^hu³.ve³¹]</i>	'fat'
	[u]	<i>/mu⁴³.kɨ²¹.ʃi²¹/</i>	<i>[mvw³⁴³.kɨ²¹.ʃi²¹]</i>	'star'
		<i>/mu²¹?/</i>	<i>[mvw¹²¹?]</i>	'grass'
/o/	[o]	<i>/po³.lo³.dʒe²¹?/</i>	<i>[po³.lo²³².dʒe¹²¹?]</i>	'termite'
		<i>/ʔa³.po²¹?/</i>	<i>[ʔa³.po²¹?]</i>	'shirt'
/ɔ/	[ɔ]	<i>/no²¹/</i>	<i>[no¹²¹]</i>	'you'

/dʒ/	x	x	x	x	x	x	x		x
/f/	x			x	x	x			
/v/	x	x	x		x	x			
/ʃ/	x	x	x	x	x	x	x		x
/ʒ/	x			x					
/g/			x	x	x	x	x	x	x
/h/	x	x	x	x	x	x	x	x	x
/m/	x		x		x	x	x	x	x
/n/	x		x			x	x	x	x
/ŋ/	x			x		x	x		
/ŋ/			x			x			x
/j/		x	x			x	x	x	x
/l/	x	x	x		x	x	x	x	x

Table 9: Bako consonant - vowel combination

From Table 9, we can see that:

/p^h/ can occur with all vowels.

/p/ can occur with vowels; /i, æ, ɪ, ə, a, u, o, ɔ/.

- /b/ can occur with vowels; /i, æ, ə, a, u, o, ɔ/.
- /tʰ/ can occur with vowels; /e, æ, a, u, o, ɔ/.
- /t/ can occur with vowels; /i, e, æ, ə, a, u, o, ɔ/.
- /d/ can occur with vowels; /i, a, u, o, ɔ/.
- /kʰ/ can occur with vowels; /æ, ɪ, a, u, o, ɔ/.
- /k/ can occur with vowels; /æ, ɪ, ə, a, u, ɔ/.
- /g/ can occur with vowels; /æ, ɪ, ə, a, u, ɔ/.
- /qʰ/ can occur with vowels; /e, ɪ, ə, a, u, o, ɔ/.
- /q/ can occur with vowels; /æ, a, u, o, ɔ/.
- /ʔ/ can occur with vowels; /i, æ, ɪ, ə, a, u, o, ɔ/.
- /tʃʰ/ can occur with vowels; /i, e, æ, ɪ, a, u, o, ɔ/.
- /tʃ/ can occur with all vowels.
- /dʒ/ can occur with vowels; /i, e, æ, ɪ, ə, a, u, ɔ/.
- /f/ can occur with vowels; /i, ɪ, ə, a,/. It does not precede black vowels.
- /v/ can occur with vowels; /i, e, æ, ə, a,/. It does not precede black vowels.
- /ʃ/ can occur with vowels; /i, e, æ, ɪ, ə, a, u, ɔ/.

/ʒ/ can occur with vowels; /i, ɪ/.

/ʒ/ can occur with vowels; /æ, ɪ, ə, a, u, o, ɔ/.

/h/ can occur with all vowels.

/m/ can occur with vowels; /i, æ, ə, a, u, o, ɔ/.

/n/ can occur with vowels; /i, æ, a, u, o, ɔ/.

/ŋ/ can occur with vowels; /i, ɪ, a, u, /.

/ŋ/ can occur only with low vowels; /æ, a, ɔ/.

/j/ can occur with vowels; /e, æ, a, u, o, ɔ/.

/l/ can occur with vowels; /i, e, æ, ə, a, u, o, ɔ/.

PAYYAP UNIVERSITY