PHONOLOGY AND PHONETICS

1.0 Introductory

The speech sounds of this form of Boro language are described in terms of the following phonemes and their arrangement in normal spoken sequences. These speech sounds include the so-called segmental phonemes and the suprasegmental phonemes or properties. The classificatory labels given below broadly indicate their phonetic nature.

The inventory of Phonemes

(1) Segmental Phonemes

(a) Consonants:

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(b) Vowels:

(i) Non-syllabic (semivowels)

Frictional: h
Frictionless palatal: y
Frictionless rounded velar: w
(1) Syllables (Vowels)

Front  Central  Back
High  1  u
Mid  e  ø  o
Low  a

(2) Suprasegmental phonemes (properties)

(a) Juncture: (Transition and rhythm of successive segments or syllables)

Close juncture: unmarked and indicated by no space
(unites two phonemic syllables)

Open juncture: indicated by space (between two phonemic words)

Terminal juncture: beginning and end of phonemic clauses

(Note: Close junctures between two or more successive segments will be overtly marked by a hyphen /-/ when felt useful or necessary.)

(b) Tones (accompanying syllables)

(1) high, indicated by /1/ superscript before the syllable or /\ over the vowel nucleus

(ii) mid, indicated by /2/ superscript before the syllable or /\ over the vowel nucleus

(iii) low, indicated by /3/ superscript before the syllable or /\ over the vowel nucleus

(iv) neutral, indicated by /0/ superscript before the syllable or nothing over the vowel nucleus
(Note: The neutral tone is dependent on either the preceding or the following non-neutral toned syllable and as such may be left unmarked if it is not felt useful or necessary.)

(c) Contours (accompanying syllables preceding the terminal junctures);

- Steep rise \u2191
- Non-steep rise ↑
- Steep fall \u2193
- Non-steep fall ↓
- Neutral →

(Note: Contours may also be indicated in phonemic writing by the following punctuation marks /! ? . ; and ,/ respectively)

The Phonemic Units

(1) Phonemic syllable is a sequence of (C)(0)V(C) plus Tone;

- C indicates Non-syllabic (consonant) and V indicates Syllabic (vowel); Semivowels are non-syllabic and are covered by C.

A phonemic syllable is here interpreted as a minimum unit of utterance; because a single phonemic syllable with a non-neutral tone may constitute either a phonemic word bound by open juncture or a phonemic clause bound by a terminal juncture.

Phonemic syllables are classified here as neutral toned syllables and non-neutral toned syllables.

Phonemic syllables may also be classified as Open syllables
or Closed syllables looking at the syllable final or Coda; when the coda is zero, it is Open and when the coda is a non-syllable(s) then it is Closed irrespective of having a neutral or non-neutral tone.

(2) Phonemic word is indicated by a space; a phonemic word consists of a non-neutral toned syllable at the minimum preceded by silence and followed by a space or preceded by a space and followed by another space. A space may be read as a non-close or open juncture.

(3) Phonemic clause is indicated by #
A phonemic clause is preceded either by silence or by terminal juncture and followed by a terminal juncture.
A phonemic clause consists of one or more words plus a contour.

In this analysis, a phonemic syllable is considered as a starting point as it is the carrier of the features of tone. The features of tone include a number of phonetic correlates such as stress, vowel-length, voice-quality and glottalization. A Bore utterance consists at the minimum a phonemic syllable with one of the non-neutral tones preceded by silence and terminated by one of the contours and the terminal juncture. It is therefore proposed to describe the structure of the syllable first in terms of syllable-initial (Onset) syllable-nucleus (Peak) and syllable-final (Coda), plus one of the tones.

(Note: The above discussion on the phonemic units is based on the observation; a phonemic word and also a phonemic clause must have a minimum of a non-neutral toned syllable as one of its components
and as such a neutral toned syllable is not permitted alone in an utterance of Boro speech-sounds.)

The Structure of the Syllable.

(a) Syllable types:
(i) Onset + Peak + Neutral tone (open neutral-toned syllable)
(ii) Onset + Peak + Coda + Neutral tone (closed neutral-toned syllable)
(iii) Onset + Peak + Non-neutral tone (open non-neutral toned syllable)
(iv) Onset + Peak + Coda + Non-neutral tone (closed non-neutral toned syllable)

(b) Structure of Non-neutral toned syllables:

This can be described as:

\[ \pm C_1 \pm C_2 + V_1 \pm C_3 + T_1 \]

where \( C_1 \) stands for /ph th s kh b d s g k/, \( C_2 \) stands for /m n r l/, \( V_1 \) stands for /e e G a u e/ , \( C_3 \) stands for /b d s g n p r l y w/, and \( T_1 \) stands for /1 2 3/.

(c) Structure of Neutral toned syllables:

This can be described as:

\[ \pm C_4 + V_2 \pm C_5 + T_2 \]

where \( C_4 \) stands for /ph th s kh b d s g k/, \( V_2 \) stands for /i G u a/, \( C_5 \) stands for /n p y w/, and \( T_2 \) stands for /@/.

The sequences of \( (G)(O)V(G)T \) indicated are illustrated below with allophonic ranges and variations in relation to syllable places.
All examples are regarded as one utterances or sentences without indicating contour marks. The neutral tone is indicated with /0/ as necessary.

I.1 Consonants:

The thirteenth segmental phonemes listed above represent the total number of consonants as to their individual occurrences only. The phonetic interpretation of each consonantal phoneme with their allophones are given below. By consonants we mean all the segmental phonemes minus the three semivowels and the six vowels. From the point of close phonetic interpretation, there are occasions where the difference between a consonant and a vowel almost vanishes. The consonants are usually regarded as the syllabic components representing the Onset and Coda.

The consonantal phonemes */ph th kh/ are voiceless aspirated plosives respectively bilabial, denti-alveolar and velar. The aspiration varies according to the quality of the following vowel and may be regarded as a complex voiceless homorganic friction.

The selection of the symbols */ph th kh/ instead of */p t k/ is based partly on the writer's Indo-Aryan linguistic clarity.

As to the point of pattern congruity, */ph th kh/ are regarded as affricated aspirates before /i θ u/ with or without intervening /a r l/.

*/b d g/ represent bilabial, denti-alveolar and velar voiced plosives without the complex aspiration attributed to */ph th kh/.

The interpretation */b d g/ as syllable finals instead of */ph th kh/ is a matter of convenience, as their is no contrast between voiceless and voiced or between aspirated and non-aspirated in such positions.
This phenomenon may be described as representing either voiceless unexploded stops before pause and before voiceless syllable-initials, or voiced stops, unexploded before voiced consonantal syllable initials and voiced plosives before vowels.

/m n 2/ as nasals are interpreted as bilabial, denti-alveolar and velar with varying degrees of nasalization.

/s z/ as alveolo-palatal fricatives are voiceless and voiced respectively with considerable variations as to the place of articulation.

/r l/ as tremulant and lateral have a number of phonetic peculiarities.

/\phi/

\[\phi h\] occurs syllable initially before /i o u/ with or without intervening /r l n/ as bilabial voiceless plosive aspirates with friction.

\[\phi h\] occurs syllable initially single or in cluster with one of /r l n/ before other vowels as bilabial voiceless aspirated plosive without friction.

Examples

/\phi\phi\phi/ pha/ [\phi h i pha] 'father'  
/\phi\phi\phi/ thla/ [\phi h i thlai 2] 'brass'  
/\phi\phi\phi/ thay/ [\phi h i th a 2] 'fruit'  
/\phi\phi\phi/ pha/ [\phi h e 2] 'plant seeds'  
/\phi\phi\phi/ phay/ [\phi h e i 2] 'strike by hand'  
/\phi\phi\phi/ pha/ [\phi h e i] 'come'  
/\phi\phi\phi/ phu/ [\phi h u 2] 'uproot'  
/\phi\phi\phi/ phu/ [\phi h u 2] 'morning'  
/\phi\phi\phi/ phu/ [\phi h u 2] 'be fat and fleshy'
/²pha2/ [pha:] 'towel'
/²a¹pha/ [apia:] 'my father'
/¹phri ¹phri ²bar/ [phri phri bar] 'breeze' or 'gentle wind'
/²khophra/ [khophray] 'western room of the main house'
/²ha²the¹phla/ [hath¹phlay] 'ashes'
/²da¹phna/ [da¹phmay] 'thigh of a beast'

/th/ [θθ] occurs before /x/ /θ u/ as voiceless slightly aspirated with friction syllable initially single or in cluster with /l e/.
and has a dento-alveolar range of articulation. This range is equally applicable in various allophones of the phonemes represented by
/th ñ r l/

[θ] occurs elsewhere as voiceless aspirated without friction in the dento-alveolar region syllable initially, single or in cluster with /r l/

Examples:

/¹thi/ [θθi] [θθi] 'keep for some one'
/¹thθ/ [θθθ] 'suffice'
/¹thu/ [θθθu] 'go', 'proceed'
/²thi³a/ [θθi³a] 'steep'
/²thi²a/ [θθi²a] 'a parrot-like bird'
/¹thiοa/ [θθiοa] 'does not keep for some one'
/¹thøy/ [θθøy] 'blood'
/³thøy/ [θθøy] 'die'
/²thur'si/ [θθur'si] 'dish' [θθur'gi2]
/¹tha/ [θha] 'exist', 'remain'
/²thet¹tha/ [θet¹tha] 'stammerer'
/¹the/ [θeθa] 'louse'
/²bæ²thra/ [bæθra] 'information', 'message'
/¹the/ [θeθa] 'bind (a canal)'
/ˈθre/ [θrɛr] 'thin'

/ˈkh/

[ˈkʰ̩] occurs before /i o u/ as voiceless velar aspirated
with friction in syllable initial place single or in cluster.

[ˈkʰ] occurs elsewhere as voiceless velar aspirate syllable
initially single or in cluster with /r l n m/. 

Examples:

/khi/ [ˈkʰiʔ] 'stool', 'discharge from the bowels'
/khiˈthu/ [ˈkʰiθuʔ] 'anus'
/khiˈther/ [ˈkʰiθeɾ] 'revenge', 'retaliation'
/kʰu/ [ˈkʰuʔ] 'make naked', 'remove bark or skin'
/kʰuˈa/ [ˈkʰua] 'throw (a baby or a thing on a place)
/kʰuˈa/ [ˈkʰua] 'mist'
/kʰuˈa/ [ˈkʰua] 'cotton'
/kʰraˈkha/ [ˈkʰra kʰa] 'bright and visible'
/kʰa/ [ˈkʰa] 'bind', 'tie'
/kʰar/ [ˈkʰaɾ] 'pluck'
/kʰar/ [ˈkʰaɾ] 'run'
/kʰar/ [ˈkʰar] 'small like a fish'
/kʰo/ [ˈkʰo] 'bamboo basket', 'cage'
/pəkʰla/ [pəkʰla] 'maiden', 'growing girl'
/pəkʰrəb/ [pəkʰrəb] 'cigarette'
/pəkʰri/ [pəkʰri] 'butterfly'
/pəkʰma/ [pəkʰma] 'woman's loin-cloth'
/pəkʰma/ [pəkʰma] 'secret land', 'hidden land'

/p/ occurs syllable-finally before pause (terminal juncture)
as voiceless and unreleased bilabial plosive without aspiration,
There is glottalised in short tone syllable-absence of glottalisation elsewhere "p".

[p] occurs syllable initially between high vowels in word position as voiced bilabial fricative in rapid speech.

[b] occurs syllable initially as bilabial voiced plosive single or in cluster with one of /r l m/

Examples:

/¹gab/  [gap²] 'colour'
/³gab/  [gap'-²] 'weep'
/¹sob/  [ʃəp²] 'love with pretension'
/°si¹khreb/  [çi k̑hreb²] 'cigarette'
/¹sob/  [ʃəp²] 'take by sucking', 'smoke'
/²gi²sib/  [gi'ʒip²] 'fan'
/²bi¹sab/  [bi'zap²] 'book'
/²bi²sab¹phra/  [bi'zap²phra²] 'the books'
/²sib¹sa/  [gi'ʒp²sa²] 'religion'
/²go¹brab/  [go'brap²] 'difficult'
/²gu¹bu²/  [gur²ui²] 'thick'
/²gu³bu²/  [gur²ui²] 'good tuned'
/²bi¹bey/  [bi'ʒi²] 'his grand mother'
/²bi¹bu/  [bi'bum²] 'stomach'
/¹be/  [be ²] 'this', 'it' (in case of a man or a thing)
/²bom/  [bın] 'firewood'
/¹ba/  [baʔ] 'carry on the back'
/³bav/  [ba:q] 'forget'
/¹bay/  [ba²] 'buy'
/³bay/  [ba:] 'break'
/²bi/  [bi'] 'he', 'she'
\[ /'bi/ \quad [bɪ] \quad 'beg', 'pray' \]
\[ /'bu/ \quad [bʊ] \quad 'beat' \]
\[ /'bu/ \quad [bʌ] \quad 'swell' \]
\[ /'bup/\quad [bʌp] \quad 'speak' \]
\[ /'be/ \quad [bɛ] \quad 'pull', 'draw' \]
\[ /'bər'bla/\quad [bər'bla] \quad 'dandruff' \]

/\d/  
\[ [ t 2 ] \quad \text{occurs syllable finally before pause as voiceless,} \]
\[ \text{glottalized and unreleased dento-alveolar plosive without aspiration} \]
\[ \text{in Tone I (short) syllables and without glottalization [t-]} \]

\[ \text{and glottalized elsewhere. This allophone varies freely with the flapped} \]
\[ \text{vibrant [ɾ] or the flapped vibrant plus this allophone [ɾ t]} \]
\[ \text{in different dialects of Goalpara and Kamrup.} \]

\[ [ d ] \quad \text{occurs syllable initially as dento-alveolar voiced plosive} \]
\[ \text{single or in cluster with one of /r 1 n/} \]

\[ [ d ] \quad \text{varies freely with the rolled vibrant [ɾ] dialectally.} \]

\r
\r
**Examples:**  
\[ /'od/ \sim /o�/ \sim /oɾ/ [ o t 2 ] \sim [ oɾ t 2 ] \sim [ oɾ t 2 ] \quad 'bite' \]
\[ /'oɾ/ \sim /oɾ/ \sim /oɾ/ [ o t 2 ] \sim [ oɾ t 2 ] \sim [ oɾ t 2 ] \quad 'fire' \]
\[ /'geɾd/ \sim /g̪eɾd/ \sim /g̪eɾd/ [ ɡ̪eɾd 2 ] \sim [ ɡ̪eɾd 2 ] \sim [ ɡ̪eɾd 2 ] \quad 'big'(in case of man) \]
\[ /'thaɾlid/ \sim /θaɾlid/ \sim [θaɾlid 2 ] \sim [θaɾlid 2 ] \quad 'plaintain tree' \]
\[ /'g̪er'/ \sim /g̪er'/ \sim /g̪er'/ [ɡ̪er 2 ] \sim [ɡ̪er 2 ] \sim [ɡ̪er 2 ] \sim [ɡ̪er 2 ] \quad 'big'(in common) \]
\[ /'dəɾ/ \quad [dəɾ] \quad 'door' \]

* The dialect variants are recorded from different informants; 
various and most of these are attested by Shri B. Barai, the informant-in-
chief.
\[ \text{[x]} \] occurs syllable-finally before pause as voiceless glottalised and unreleased velar plosive without aspiration in short Tone I syllables and without glottalization elsewhere.

\[ [\text{x}] \] has variant form as voiced unexploded \[ [\text{g}] \] before voiced consonantal initial in the following syllable.

\[ \text{[g]} \] occurs initially as velar voiced plosive single or in cluster with one of /r l/
Examples:

/əχɒɡ/ [hɔk̚] 'right'
/
/əwʌθu'sʌɡ/ [wɪθəwɪzamk̚] 'excited'
/
/æɡæn tækʰæj/ [akʰæŋ a·kʰæj] 'left hand'
/
/æɡæn da tækʰæj/ [akʰæŋ daŋ a·kʰæj] 'right hand'
/
/3gæp/ [ɡæ̃p] 'wing of a bird'
/
/1gæp/ [ɡæp] 'be thirsty'
/
/2ɡæpˈɡrip/ [ɡaːp ɡrip?] 'trattle', 'tinkling bell'
/
/1ɡo/ [ɡo] 'be free', 'get release'
/
/3ɡo/ [ɡoː] 'hatch (eggs)'
/
/ɡæɡˈɡlɛj/ [ɡæɡ ɡloʊ ɡ] 'fall'
/
/æɡæɡˈɡlɛj/ [a·ɡæɡˈɡlɛj] 'younger one (brother or sister)'
/
/1ɡɪ/ [ɡɪ] 'be afraid of'
/
/2ɡuˈɡwɪŋ/ [ɡuˈɡwɪŋ] 'short'
/
/ɑhoʊˈɡlu ɑhɒˈɡlu/ [hʊpʰ ɡlu̯ ɡ pʰ ɡlu̯] 'too hot'

/a/

[m̃] occurs syllable-finally before pause voiced, unreleased bilabial nasal with glottal check in short Tone 1 syllables and without glottal check [m̃] in other Tone 1, Tone 2 and Tone 3 syllables.

[m] occurs as voiced bilabial nasal syllable initially single and as second member of clusters with /kh/

/1hæm/ [hæm] 'be weak and feeble'; but /1hæmˈnæj/ /hæmˈnæj/ 'to be weak and feeble'
/
/3hæm/ [hæmˈt] 'be cured'
/
/1kʰæm/ [kʰæm] (Kāmrûp) 'cooked rice'
/
/2kʰæm/ [kʰæmˈt] 'drum'
/
/3kʰæm/ [kʰæmˈt] 'burn'
[n] occurs syllable-finally before pause as voiced unreleased dento-alveolar nasal with glottal stop in short Tone 1 syllables, and without glottal stop [n] in other Tone 1, Tone 2 & 3 syllables.

Examples:

\`mon/ [mən ʰ] 'get'; but /\`mənum/ [mənʰ anywhere]
\`mən/ [mən ʰ] 'ripen', 'boil'
\`ran/ [ran ʰ] 'grow dry'; but /\`rənum/ [ranʰ anywhere]
\`ran/ [ran ʰ] 'divide'
\`bən/ [bən ʰ] 'firewood'
\`ən/ [ən ʰ] 'spread a loom'
\`ən/ [ən ʰ] 'rice-powder'
\`ən/ [ən ʰ] 'love' (verb)
/³Ne/ [nə?] 'house'
/²Ne/ [mə:] 'offer'
/¹Ne/ [nə ʒ] 'you' (singular)
/²bi'na'nav/ [bi'na'naq] 'younger sister'
/¹Phan Omay/ [phannaj] 'to girdle'
/²PhanOmay/ [phannaj] 'to sell'
/¹nu'deŋ'men/ [nu'deŋ mem] 'saw'

/ ³/ 
[ŋ²] occurs syllable–finally before pause as voiced unaspirated velar nasal with glottal check in Tone 1 syllables of short duration and without glottal check [ŋ] in Tone 2 (short), Tone 3 (long), and Tone 3 syllables.
[ŋ] occurs in word-medial position elsewhere as voiced unaspirated velar nasal. It never occurs syllable–initially after pause.

Examples:
/¹gap/ [gap?] 'be thirsty' ; but /¹gap'nav/ [gap'naŋ] 'to be thirsty'
/²gap/ [gapŋ?] 'wing' (of a bird)
/²roŋ/ [roŋ?] 'be gay', 'colour'
/¹Oq'khar/ [q²khar?] [q²khar? 'come out', 'be out'
/²Oq'nI/ [q² ni?] 'see my', 'mine'
/²noq'a/ [noq a?] 'it is not', 'No'
/²noq'gow/ [noq goŋ?] 'true', 'truly'
/²noq'khai/ [noq khaŋ?] 'false', 'it is false'
/¹Biŋ'i/ [Biŋ'gi] [Biŋ'gi?] 'seven stringed' musical instrument'
/²Buŋga/ [Buŋ ga] 'male of a rat'
/^bu*gi/  [ bu* gi² ] 'a load for two men'

Note: /ŋ/ in close junctures as syllable-final or Coda serves partially the function of the syllable-initial or Onset of the following syllable, from the point of phonetic realization.

/s/

[ ʃ ] occurs as voiceless fricative with alveolo-palatal range of articulation in syllable initial place before front vowels /e/ and also before the advanced allophone of /a/ in Tone I syllable.

[ s ] occurs as voiceless palato-alveolar fricative in syllable initial position before back vowels /u e/, and also before the back allophones of /a/.

The affricate allophone of the phoneme /s/ is heard as dialect variation in the north-west areas of Goalpara, but the variation is not significant.

Examples:

/¹si/  [ qi? ] 'cloth'

/²si/  [ qi: ] 'wet'

/³se/  [ qi? ] 'snatch away'

/¹ser/  [ qe? ] 'observe by pressing'

/²ser/  [ qe: ] 'sear' (in weight)

/³ser/  [ qe:] 'leak water' (as of a roof)

/¹sa/  [ qa²] 'north', 'make rope'

/²sa/  [ sa:] 'ache' (verb)

/³sa/  [ sa: ] 'place fishing instruments or nets'
\[ /\text{su}/ \quad [\text{s}\text{u}] \quad 'wash', 'sew', 'thorn' \]
\[ /\text{3su}/ \quad [\text{s}\text{u}\text{i}] \quad 'weigh', 'measure' \]
\[ /\text{1so}/ \quad [\text{s}\text{o}] \quad 'make pieces' \]
\[ /\text{1so}\text{g}/ \quad [\text{s}\text{o}\text{g}] \quad 'cook' (verb) \]
\[ /\text{3so}\text{g}/ \quad [\text{s}\text{o}\text{g}] \quad 'seek opportunity' \]
\[ /\text{1sor}/ \quad [\text{s}\text{o}\text{r}] \quad 'all around' \]
\[ /\text{2sor}/ \quad [\text{s}\text{o}\text{r}] \quad 'who' \]
\[ /\text{3sor}/ \quad [\text{s}\text{o}\text{r}] \quad 'iron' \]
\[ /\text{2soyma}/ \quad [\text{s}\text{o}\text{m}\text{a}] \quad 'dog' \]
\[ (\text{m})'\text{an}'\text{em}'\text{er}/ (\text{m}) \quad [\text{th}\text{a}\text{g}\text{e}\text{m}\text{a}] \quad [\text{th}\text{a}\text{g}\text{e}\text{m}\text{a}] \quad \text{just go}' \]
\[ /\text{2san}\text{ari}/ \quad [\text{s}\text{a}\text{n}\text{a}\text{r}] \quad 'swim' \]
\[ /\text{2go}\text{lala}/ \quad [\text{g}\text{o}\text{lala}] \quad 'shirt' \]
\[ /\text{1arg}/ \quad [\text{a}\text{r}\text{g}] \quad 'silently', 'secretly' \]
\[ /\text{1alim}/ \quad [\text{a}\text{l}\text{im}] \quad 'polished', 'uniformly round' \]
\[ /\text{1arap}/ \quad [\text{a}\text{r}\text{ap}] \quad 'light', 'ray' \]

\[ /\text{z}/ \]

\[ [\text{z}] \quad \text{occurs syllable-finally before pause (short) syllable, as voiceless alveolar fricative with glottal check in Tone 1 and without glottal check elsewhere.} \]

\[ [\text{z}] \quad \text{occurs as voiced fricative with alveo-palatal range of articulation in syllable initial place before front vowels /i\text{e}/ and the advanced allophone of /a/, and non-initially in a word before back vowels /u o/ and back allophones of /\text{a}/.} \]

\[ [\text{z}] \quad \text{occurs as voiced palatal-alveolar affricate initially in a syllable before back vowels /u o/ and back allophones of /\text{a}/ and also non-initially in a word after nasals in close juncture.} \]

\[ [\text{z}] \quad \text{occurs as voiced alveolar fricative syllable initially as the first member of clusters with /r l/ and before central vowels.} \]
The allophonic ranges of the phoneme /a/ as to the regions from alveolar to palatal are mostly dialect variations.

Examples:

/æ2ro²/ [ærɔs²] 'prayer'
/ægus¹ti/ [æwɔs²θi²] 'lip'
/æhas¹tay/ [haɾs²θai²] 'try'
/æsi/ [si] 'tear' (verb)
/æsi/ [so²] 'cloth'
/æs/ [so²] 'fishing net', 'net' (or all kind)
/æsən⁰nay/ [znɔn¹] 'to begin', 'firstly'
/æsən⁰nay/ [znɔn¹] 'to be defeated'
/æs/ [za²] 'eat'
/æs/ [za³] 'be', 'become'
/æsan⁰su¹phu/ [znɔn¹phu²] 'didday', 'noon'
/æsu¹su¹phu/ [znɔn¹phu²] 'exited'
/æsug¹/ [zəy²] 'we'
/æso³s/ [zə³za³] 'be assembled'
/ædav¹so⁰/ædav¹s/ [dəg sa³] 'hem'
/æzu¹maı/ [dzu⁴maı²] 'home made wine', 'rice-beer'
/æsənay/ [dzə⁴naı²] 'cloud'
/æsin¹rə/ [zi⁴nə³] 'chain'
/æsan¹si/ [ga⁴zi²] 'waist'
/ædav¹sla/ [dəg sla²] 'cock'
/æga¹arə/ [ga⁴arə²] 'bad', 'unwell'
/æga¹sleq/ [ga⁴sləq²] 'walk on the tip of the legs'

/r/

[ɾ] occurs as voiced dento-alveolar flapped without with one tap or flap in syllable final position with glottal check in [same]
Some I syllables and as the second member of the syllable initial clusters with all the plosives and fricatives and /h/. There is glottal stop in Some I short syllables when this allophone occurs syllable finally before pause. As clusters with /th d/, it has dental range only.

\[ p \] occurs elsewhere as voiced alveolar rolled [\textit{r}].

\[ f \] varies freely with \[ t^\text{\textacute{e}} \rightarrow t^\text{\textacute{e}} \] or \[ p^\text{\textacute{e}} \rightarrow p^\text{\textacute{e}} \] and \[ p \] varies freely with \[ d \] due to dialect differences.

Examples:

\[ /\text{ba}^2 / [\text{ba}^2] \quad 'jump' \]
\[ /\text{bar} / [\text{bar} (-\text{a})] \quad 'wind' \]
\[ /\text{bar} / [\text{bar} (-\text{i})] \quad 'bloom' \quad (\text{as} \quad \text{flower}) \]
\[ /\text{hor} / [\text{hor} (-\text{i})] \quad 'night' \]
\[ /\text{bar} / [\text{bar} (-\text{i})] \quad (\text{dialectally} \quad /\text{h}^\text{\textacute{e}} / [\text{bar} (-\text{i})] \quad 'send' \]
\[ /\text{hor} / [\text{hor} (-\text{i})] \quad 'send' \quad 'hang' \quad (\text{a thing}) \]
\[ /\text{khor} / [\text{khor} (-\text{i})] \quad 'dig' \quad \text{cell by nail'} \]
\[ /\text{bar} / [\text{bar} (-\text{i})] \quad 'cautious itch' \]
\[ /\text{kho'as} / [\text{kho'as} (-\text{a})] \quad 'dung' \quad \text{meas'} \]
\[ /\text{kho'as} / [\text{kho'as} (-\text{a})] \quad \text{'national} \quad \text{festival of the Baraq'} \]
\[ /\text{kha'ma'} / [\text{kha'ma'} (-\text{a})] \quad 'elbow' \]
\[ /\text{kho'as} / [\text{kho'as} (-\text{a})] \quad 'mustard seed-cake' \]
\[ /\text{khar'd} / [\text{khar'd} (-\text{a})] \quad 'feel' \quad \text{itching too much} \]

\[ /\text{za} / [\text{za}^2] \quad 'leak' \quad (\text{as} \quad \text{from a pot}) \]
\[ /\text{za} / [\text{za}^2] \quad 'ask to stay' \]
\[ /\text{ray} / [\text{ray}^2] \quad 'harm by magical power or witchcraft' \]
\[ /\text{ray} / [\text{ray}^2] \quad 'abuse' \]
\[^{3}\text{ray}/ [\text{rai}\^{1}] 'speak'\]
\[^{2}\text{g'}\text{a}^{2}\text{ra}\^{2} \text{ma}/ [\text{ga}'\text{ra}^{2}\text{ma}]'\text{threat'}\]
\[^{2}\text{gi}^{2}\text{ru}^{2}\text{ba}^{2}\text{ru}/ [\text{gi}^{2}\text{mu}^{2}\text{ba}^{2}\text{ru}] 'terrible'\]
\[^{2}\text{khe}^{1}\text{re}/ [\text{ka}'\text{ho}^{2}] 'head'\]

\[^{2}[\text{l}2] \text{ occurs syllable-finally before pause as voiced alveolar fricationless lateral with glottal check in Tone 1 short syllables and without glottal check in elsewhere.}\]

\[^{2}[\text{l}1] \text{ occurs elsewhere as voiced alveolar fricationless lateral with resonance corresponding to a following vowel ; as the second member of syllable initial clusters with all the plosives, fricatives and } /\text{h}/, \text{ the voicing is less prominent.}\]

\[^{2}[\text{l}] \text{ varies freely with } [r] \text{ due to dialect divergence in a few words}\]

**Examples:**

\[^{2}\text{be}^{2}\text{hol}/ [\text{be}'\text{ho}^{2}] '\text{trip'} \text{ (of cart and other vehicles)\]
\[^{2}\text{xal}^{2}\text{ma}^{2}\text{ni}/ [\text{xal}'\text{ma}^{2}\text{gi}] '\text{coming year'}\]
\[^{2}\text{su}^{2}\text{hol}/ [\text{so}'\text{ho}^{2}] '\text{mental unity'}\]
\[^{2}\text{la}^{1}\text{w}/ [\text{la}'\text{g}] '\text{be long'}\]
\[^{2}\text{la}^{2}\text{w}/ [\text{la}'\text{g}] '\text{gourd'}\]
\[^{2}\text{le}^{1}\text{la}/ [\text{li}'\text{la}] '\text{stammerer'}\]
\[^{2}\text{li}^{1}\text{r}/ '~\text{li}^{1}\text{r}/ '~\text{li}^{1}\text{d}/ [\text{li}'\text{r}] ~[\text{li}'\text{r}] ~[\text{li}'\text{r}] '\text{write'} '\text{plaster walls'}\]
\[^{2}\text{li}^{2}\text{r}/ [\text{li}'\text{r}] '\text{be heavy'}\]

\[^{2}\text{le}^{2}\text{m}/ [\text{le}^{2}\text{m}] '\text{be merged in water'}\]
\[^{2}\text{le}^{2}\text{m}/ [\text{le}^{2}\text{m}] '\text{be ill'}, '\text{suffer from fever'}\]
\[^{2}\text{ol}^{1}\text{khla}/ [\text{ol}^{1}\text{khla}] '\text{maiden'}, '\text{grown up girl'}\]
\[^{2}\text{le}^{3}\text{khla}/ [\text{le}^{3}\text{khla}] '\text{writing'} \text{ (in paper or book)\]
\[^{2}\text{lu}^{3}\text{ar}/ '~\text{li}^{3}\text{ar}/ '~\text{ru}^{3}\text{ar}/ '~\text{ru}^{3}\text{at}/ [\text{lu}^{3}\text{ar}] [\text{li}^{3}\text{ar}] [\text{ru}^{3}\text{at}] \sim [\text{ru}^{3}\text{at}] '\text{leech found on the ground'}\]

1.2 Semivowels: Non-syllabic vowels

Semivowels /h y w/ are non-syllabic; that is, these three phonemes do not occur as peaks of a syllable. On the other hand, these phonemes are considered as vowels because their phonetic interpretations are based on the accompanying syllables or vowels.

/h/ is a frictional, semivowel occurring syllable initially single or in clusters with /p l/ followed by a vowel which determines its resonance. It is conceived as a non-syllabic vowel associated with vowels and tones. It never occurs syllable finally before pause. It is easily distinguished from the aspiration of /ph, th, kh/ and the glottal stop [ʔ] of Tone I syllables with short duration.

/y/ is a frictionless palatal non-syllabic vowel corresponding to the vowel /l/ with shorter duration and greater tenselessness.

/w/ is a rounded velar non-syllabic vowel corresponding to the vowel phonemes /o u/ with shorter duration and greater tenselessness.

/y w/ are considered as non-syllabic, because they in all cases agree with other consonants from the point of pattern congruity. It is therefore felt unnecessary to establish a series of so-called
'diphthongs'. /w y/ as separate phonemes contrast their corresponding vowels in respect of tonal attributes without being the peak of a syllable. In an alternative way of analysis, /w y/ can be eliminated as separate phonemes in favour of their corresponding vowel phonemes on the ground of their predictable and limited occurrences in the final place of a syllable, and thereby admit a series of diphthongs and vowel-clusters.

/\n
[k] as voiceless in Tone 1 and Tone 2 syllables.

[h] as voiced with elements of breath or murmur in Tone 3 syllables.

Examples:

\[1^1 ha/ \quad [ha] \quad 'land'
\[2 ha/ \quad [ha] \quad 'be able'
\[3 ha/ \quad [ha] \quad 'out by pressing' (verb)
\[1 hop/ \quad [hop] \quad 'catch' (verb)
\[2 hop^3 saw/ \quad [hop^3 saw] \quad [h' nə' a] [h' nə' a] \quad 'woman', 'female'
\[1 hu/ \quad [hu] \quad 'land', 'a measure by the palms'
\[2 hu/ \quad [hu] \quad 'rub', 'cleanse'
\[1 hə/ \quad [hə] \quad 'make', 'construct'
\[1 ho/ \quad [ho] \quad 'give', 'drive'
\[2 həv^1 a/ \quad [həv^1 a] \quad [həv a] [hə a] \quad 'man', 'male'
\[2 hə' ara/ \quad [hə' ara] \quad 'fighting bullock'
\[2 gə^3 hlə/ \quad [gə^3 hlə] \quad 'youth', 'hero'

/y/

[\[] the only allophone of this phoneme occurs syllable finally after /eə, eə, uə/ in a syllable, as the closing element of 'diphthongs'.

Examples:

\[3 oy/ \quad [ɔj] \quad 'plough'
\[3 goy/ \quad [gɔj] \quad 'areca-nut', 'betel-nut'
/3sav/ [beq] 'forget'
/3khow/ [kheq] 'open a knot'
/10w/ [es] 'fry'
/3sw/ [ês] 'pleagh'
/1aw/ [aë] 'lull', 'sothe'
/10uv/ [âr] 'rice-beer'
/301sav/ [ês, ə] 'high'
/1phriw 'phriw/ [phri phri] 'voice of kingfisher'
/2siw/ [si u] 'life', 'soul'
/1siw 'siwbar/ [siu siu bar] 'sound of gentle wind'

* A dialect variant of /3ey/ is /3ow/.
LIP POSITION OF BORO VOWELS

Fig. 1. 1 in 1st
Fig. 2. 3 in 3st
Fig. 3. e in 1st

Fig. 4. e in 2se
Fig. 5. a in 1ha
Fig. 6. o in 1ra

Fig. 7. o in 3or
Fig. 8. u in 1su
Fig. 9. e in 1he

Fig. 10. ay in hay
<table>
<thead>
<tr>
<th>No.</th>
<th>Vowel</th>
<th>Key-word</th>
<th>Meaning</th>
<th>Lip position</th>
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<tr>
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<td>11</td>
<td>1a</td>
<td>cloth</td>
<td>close</td>
</tr>
<tr>
<td>2</td>
<td>31</td>
<td>3a</td>
<td>web</td>
<td>(less) close</td>
</tr>
<tr>
<td>3</td>
<td>1e</td>
<td>be</td>
<td>this</td>
<td>half close</td>
</tr>
<tr>
<td>4</td>
<td>2e</td>
<td>2e</td>
<td>this much</td>
<td>less half close</td>
</tr>
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<td>1a</td>
<td>1a</td>
<td>land</td>
<td>open</td>
</tr>
<tr>
<td>6</td>
<td>0o</td>
<td>0rd</td>
<td>fire</td>
<td>half open</td>
</tr>
<tr>
<td>7</td>
<td>3o</td>
<td>3o</td>
<td>widen</td>
<td>less half open</td>
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<tr>
<td>8</td>
<td>1u</td>
<td>1u</td>
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<td>close</td>
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<td>hello</td>
<td>neutral - close</td>
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<td>11</td>
<td></td>
<td></td>
<td>(w/; Instruction: Page 3... )</td>
<td>stop</td>
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</table>
1.3 Vowels.

Vowels are described below with their allephonic ranges in relation to their length, stress and tone. All the six vowels /i, u, e, o, a, ə/ are syllabic and these are the peaks or nuclei of syllables. These occur single in a syllable and for our convenience we have not accommodated any vowel cluster of two different vowels, the possibility of such vowel clusters are eliminated by the two non-syllabic semi-vowels /v, y/ which are regarded as more consonantal from the point of their syllabic positions i.e. /v, y/ occur as coda and interludes (in word-medial position) like all other consonants and as such these two are not regarded as integral parts of syllable-nucleus.

We have already listed the phonemic tones as high, mid, low and neutral /1, 2, 3, 0/ and their detailed descriptions are given in a separate section. In this section, length and stress as attributes to vowels in relation to their tones are described and marked in broad phonetic transcriptions.

There are five degrees of relative vowel length on phonetic level: extra-long, long, half-long, short and extra-short, symbolized as V:, EM, V:, V, V. The extra short allophone [v] is also voiceless.

Three degrees of stress are normally relevant on phonetic level in addition to 'emphasis' or 'emphatic stress' and these four are symbolized as V, V, V, and V (strong or loud, medium or secondary, weak and emphatic). In monosyllables or one syllable utterances, strong or loud stress is inherently a simultaneous component to the syllabic tone and as such it is associated with tones /1, 2, 3/. In disyllabic words or utterances, strong
or loud stress either with a medium or a weak stress may be
associated with the syllables in tones /o 1/, /1 0/, /2 0/, /0 2/, /3 0/, /0 3/ and the possible (permitted) sequences
of /1 2 3/. Emphasis or emphatic stress occurs along with normal
strong or loud stress levels in monosyllabic or polysyllabic
words associated with relevant tones and one of the contours.

/1/

The front vowel phoneme /i/ represents close and unrounded
allophones in relation to stress and tone as follows:

\[
 \begin{array}{ll}
 [i] & \text{in loud and medium stressed syllables (or briefly stressed syllables) represents a very close vowel associated with tone 1;} \\
 [i] & \text{this allophone in Tone 1 syllables is either short with glottal} \\
 & \text{check before pause or considerable long without glottal check} \\
 & \text{before pause and elsewhere.}
\end{array}
\]

\[
 \begin{array}{ll}
 [i] & \text{in stressed syllables represents a less close vowel} \\
 & \text{associated with tone 2; this allophone is half-long without any} \\
 & \text{glottal check.}
\end{array}
\]

\[
 \begin{array}{ll}
 [i] & \text{in stressed syllables represents lowered and retracted vowel} \\
 & \text{than } i \text{ and is associated with tone 3; this is long without glottal} \\
 & \text{check and may be lengthened in comparison to the allophones in} \\
 & \text{tones 1 and 2.}
\end{array}
\]

\[
 \begin{array}{ll}
 [i] & \text{in weak stressed syllables (or briefly unstressed syllables) represents an extra} \\
 & \text{short front vowel with ranges from voiceless } [i] \\
 & \text{to voiceless } [e] \text{ associated with neutral tone; it is frequently} \\
 & \text{heard as being assimilated with preceding or following consonant} \\
 & \text{in the corresponding voiceless fricative form. This is shown} \\
 & \text{phonetically in an alternative transcription.}
\end{array}
\]

Examples: (in different syllable places and word medial positions);

stress marks are indicated before a syllable)
\[ /s_i\] in stressed syllables represents the most close mid front vowel \[ e\] with glottal check in tone 1 when it is short before pause and without glottal check when it is considerably long before pause and elsewhere. This also has a tendency towards half-lengthness in close syllables.

\[ /s_i\] in stressed syllables represents less close mid front vowel with half-length \[ e\] in tone 2. This allophone has a range between \[ e\] and \[ e^r\]. In close syllables \[ e^r\] occurs as half-length.

\[ /s\] in stressed syllables represents more open and considerably retracted vowel of full length associated with tone 3. \[ s\] occurs in close syllables.

\[ /z\] in weak stressed syllables is of the nature of voiceless \[ i\] described in the preceding section.

Examples:

\[ /s\m/ \quad [\text{\textipa{	ext{em}}}~\text{\textipa{	ext{em}}}] \quad \text{\textipa{mat}, \text{\textipa{bad}}} \]

\[ /s\r/ \quad [\text{\textipa{er}}] \quad \text{\textipa{move with a handle or finger}} \]
/3er/ $[e_1:]$, 'grow', 'increase'
/3e'lu'/ $[e_1:\text{u}]$, 'alight', 'a little'
/3e'lu'/ $[e_1:\text{u}]$, 'cause sensation in armpit (playfully)
/3e'lu'/ $[e_1:\text{u}]$, 'so much big'
/3e'lu'/ $[e_1:\text{u}]$, 'this', 'it'
/3e'lu'/ $[e_1:\text{u}]$, 'here', 'in this place'
/3e'lu'/ $[e_1:\text{u}]$, 'prick with nails'
/3e'lu'/ $[e_1:\text{u}]$, 'sugar-cane'
/3e'lu'/ $[e_1:\text{u}]$, 'pinch'
/3e'lu'/ $[e_1:\text{u}]$, 'trip' (of carts)
/3e'lu'/ $[e_1:\text{u}]$, 'place for throwing cow dung etc.', 'dung-mound'

(Note: /3 e/ contrast in stressed syllable only; both occur in syllable initial, final and word medial position. In unstressed syllables with neutral tone /3phi'ma/, /3khi'kha/ may be interpreted as $[\text{phi} \text{m} ^2]/[\text{phi} \text{m} ^3]/[\text{khi} ^3]$

/a/

The phoneme /a/ represents an open unrounded low vowel with different allophones in relation to stress and tone as follows:

[a] in stressed syllables is interpreted as a front variety of the above with glottal check when it is short before pause and without glottal check when it is considerably long before pause and elsewhere being associated with tone 1.

[a] in stressed syllables is interpreted as central with half-length associated with tone 2.

[a] in stressed syllables is interpreted as back variety of the phoneme with full length and is associated with tone 3. (I.P.A. symbol for this is $\text{a}^1$

[a] in unstressed syllables is interpreted as an unrounded mid central vowel of very short duration associated with neutral tone. (I.P.A. symbol for this is $\text{a}^0$)
Examples:

/1an/ [Ian] 'I'

/2a1 an/ ~ /2a1 khan/ [a:1 a:n] ~ [a:1 khan] 'Bangle', 'bracelet'

/1 say/ [yai2] 'the watery rice-bowl'

/2 say/ [kai] ['ka'] 'sit near fireside'

/3 say/ [ka:1] 'cart vegetables'

/1 ha/ [ha?] 'hand'

/2 ha/ ['ha:] 'be able'

/3 ha/ [ha:] 'cut by pressing'

/1 ha/ [ha] 'what is it?'

/2 ha ni1 phray/ [ha ni phrai] 'from the land'

/2 bi2 ni1 phray/ [bi ni phrai] 'from him', 'afterwards'

/2 kha1 n Oy/ [kha] 'has already eaten'

/2 kha2 n Oy/ [kha:1] 'has already been'

/2 khe0 kha1 ni/ [khe kha ni] 'elbow'

/0 ha2 lay/ ~ /ha Oy/ [ha lay] ~ [ha lai] 'has been able'

/0/ is interpreted as back rounded vowel with the following allephones:

[ə] in stressed syllables represents half-open variety with duration parallel to the above vowels /1 e a/ and is associated with tone 1 and tone 2 as [ə] and [ə] respectively.

[œ] in stressed syllables represents an opener variety with full length and is associated with tone 3. (I.P.A. symbol for this is between [ə] and [œ])

[ø] in stressed syllables occurs word medially when followed by the low open unrounded vowel /a/ in immediately succeeding syllable.

In unstressed syllables the voiceless allophone of this phoneme [ø] overlaps with the similar allophone of /u/ described in the next sub-section.
Examples:

/²̆/ 'send'
/³̆/ 'night'
/³̆/ 'bent', 'hanging'

/²o²̆/ ['eː,ba]~['ba'] 'then', 'after that event'
/²o¹kha/~/²ne¹kha/ ['eː,kha²]~['ne,kha²'] 'rain'
/²̃²a/~/²̃²a/ ['u,á]~['u,a'] 'bamboo'
/³̃y~/³̃a/ ['u,á]~['i,á'] (cf. 1,2) 'plough'
/²go²̆thə/ ['go,θə] 'child'
/²go²̆do~/²go²̆na/ ['gɔ,θə]~['gɔ,θə'] 'neck'
/²go²̆tha/ ['gɔ,θə] 'the child'
/²go²̆thə phə/ ['gɔ,θə phə] 'the children'

/u/ is interpreted as a close back fairly unrounded vowel with the following allophones:

[um] is short and tense with or without glottal catch in tone 1 stressed syllables under conditions parallel to the allophones of /i e a/

[um:] in stressed syllables is half-long, less close than above with tendency to become lax, associated with tone 2.

[um] in unstressed syllables is long more lax and lowered than the associated with tone 3 above allophone, (Close transcription for this is o)

[um] in unstressed syllables is interpreted as a back unrounded vowel with a range from the voiceless /u/ to voiceless /o/ of very short duration with a tendency of being assimilated with preceding or following consonant in the corresponding voiceless fricative form. (Close transcription for this is o).

Examples:

/¹um/ ['u m:] 'sharpen'
/³um/ ['u :m] 'behind', following
/u^khum/  ['u^khum^']  'roof of house'
/2su^me^mu^  ['su^me^mu^']  'mild and sweet' (reduplicative)
/2c^m'hu^  ['c^m'hu^']  'sting of a scorpion'
/2c^m'hu^  ['c^m'hu^']  'frog'
/lu^  ['lu^']  'build', 'spin', 'pour'
/2khu^lu^m/  ['khu^lu^m']  'worship', 'salute'
/2gum^thu^thru^  ['gum^thu^thru^']  'chin', 'lower front of face'
/khu^a/  ['khu^a']  'mist'
/khu^a/  ['khu^a']  'does not pierce', 'does not make naked'
/khu^ga/  ['khu^ga']  'mouth', 'beak'

/θ/ represents an unrounded vowel with a range form close to half-close and from central to back. Its range partially overlaps with that of /u e/, but /θ/ has greater lip spreading and it contrasts with /u e/ in all relevant positions. The following allophones are described in relation to tone and stress: (The nearer I.P.A. symbol for this phoneme /θ/ is /θ/)

[θ] in stressed syllables unrounded almost close back vowel with short duration and glottal check before pause associated with some short tone syllables and without glottal check and considerable length elsewhere in other tone 1 syllables.

[ə] in stressed syllables represents less close and nearer to central unrounded vowel with half-length A in tone 2.

[ə] in stressed syllables represents half-close and central unrounded vowel with full length in tone 3.

[ə] in unstressed syllables is interpreted as half-close or even lower unrounded vowel with very short duration associated with...
neutral tone corresponding to the neighbouring syllable as to its back or advanced quality. (The nearest I.P.A. symbol is "o").

Examples:

/ˈeɪ]/~/'ə/[ə#] 'hello'

/ˈeɪ]/~/'bɹɪ]/' [si bɹɪs ] 'hello'(at a distance)

/ˈʃəʊ,krɪ]/~/'shaʊ,krɪ]/ ['tʃəʊ,krɪ]~[tʃəʊ,krɪ] 'curry'

/ˈθɜːr]/ [θ.ɹə] 'thus', 'such'

/ˈkherent]/ [kherent ] 'lost', 'missing'

/ˈkherent]/ [kherent ] 'ear'

/ˈbær]/ [bær ] 'body'

/ˈsmˌkeɪ]/ [smˌkeɪ] 'small scented'

/ˈpʊl]/ [pʊl ] 'pull', 'draw'

/ˈlæ]/ [læ ] 'garland'

/ˈlɛŋ]/ [lɛŋ ] 'drink' (verb)

/ˈzæ]/ [zæ ] 'has eaten'; also cf. [ˈzæ ə] '

/ˈdæ]/ [dæ ] 'has been'; also of [ˈdæ ə]

/ˈlaːˈbeəd]/ [ˈlaːˈbeəd]/ 'has brought'; [ˈlaːˈbeəd]

### Tones

1.4 By tone we have meant the totality of supra-segmental features associated with the utterance of the syllable as a whole excluding the features of juncture and contour. Boro syllables are accompanied by one of the four tones/1 2 3 0/ in addition to the segmental phonemes which are regarded as placed components as to the syllable positions i.e. initial(onset), final(coda), nucleus(peak), medial(interlude) in respect of two or more syllables; but tone has no assignable place in the syllable and as such it is considered as a property of the syllable as a whole.

These four tones determined out of Boro utterances are arrived at after the applications of usual phonemic procedures of contrast,
complementation, pattern congruity and substitution. These four
tones are lexically significant, contrastive and having relative pitch
differences on each syllable. Examples of tonal differences are
drawn from utterances bearing one or more syllables in isolation or for
one-word-sentences with normal speaking style appropriate to
unimpassioned statement or reply. In the above examples of
consonants and vowels, tones are indicated on each syllable. Vowel-
length, stress, voice-quality, presence or absence of glottal check
and also pitch register and pitch contour are regarded as attributes
to tone; these are the phonetic correlates and a few of them namely
stress, length and glottal check are described maximally in relation
to the vowel phoneme which functions as the nucleus or the peak of a
syllable. Boro is a tone language with gliding-pitch contour system
though an element of level pitch register overlap is evident under
limited conditions of junctures.

<table>
<thead>
<tr>
<th>Tones</th>
<th>Length</th>
<th>Voice-quality</th>
<th>Pitch Register</th>
<th>Pitch Contour</th>
<th>Vowel Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Extra-short</td>
<td>'voiceless and dependent'</td>
<td>'dependent centralised'</td>
<td>'whisper'</td>
<td>'more lax'</td>
</tr>
<tr>
<td>1</td>
<td>Short with glottal check or lengthy without glottal check or extralong</td>
<td>'clear'</td>
<td>'high'</td>
<td>'level or rising'</td>
<td>'tense'</td>
</tr>
<tr>
<td>2</td>
<td>Half-long without glottal check</td>
<td>'clear'</td>
<td>'mid'</td>
<td>'level or medium as falling'</td>
<td>'tenselessness'</td>
</tr>
<tr>
<td>3</td>
<td>Lengthy without glottal check</td>
<td>'breathy'</td>
<td>'low'</td>
<td>'falling'</td>
<td>'lax'</td>
</tr>
</tbody>
</table>

The tones are described below with their phonetic correlates and
Tone 1 is characterized by clear voice with tense and short vowel nucleus with glottal check in syllable final position before pause (terminal juncture); the pitch register is high and the pitch contour appears to be level. When the vowel nucleus is without glottal check it may be lengthened to a considerable extent and the pitch contour is rising. In syllables followed by close juncture the glottal check is absent and the pitch contour appears to be rising. In syllables in the syllable before rise-steep contour tone 1 has vowel nucleus of extra-length and without glottal check.

Tone 2 is also characterized by clear voice with less tense and half-long vowel nucleus in contrast to tone 1; there is never a glottal check associated with this vowel; the pitch register is middle with level contour in word medial position (syllables in close juncture) and falling before pause (in terminal juncture).

Tone 3 is characterized by breathy voice with elements of creak sometimes, the vowel nucleus is lax and lengthy in contrast to that of tone 2; the pitch is low falling. This vowel nucleus is without glottal check. In syllables followed by close juncture, the proportion of falling is less than syllables in terminal juncture.

Tone 0 is characterized by whispered and voiceless quality of voice with extra-short vowel nucleus; the pitch register and contour are dependent on preceding or succeeding syllable with which the syllable in tone 0 (neutral) is bound in close juncture. The syllables with neutral tone acquire equal or less amount of pitch from the neighbouring tones which may have one of the non-neutral tones /1 2 3/.
Examples: (cf. also subsections from 1.6 to 1.28)

| /'bar/ | [ˈbaɾʔ] | 'jump' |
| /'bar/ | [ˈbaɾʔ] | 'wind' |
| /'bar/ | [ˈbaɾʔ] | 'bleen' |
| /'rai/ | [ˈraiʔ] | 'harz by magic or witchcraft' |
| /'rai/ | [ˈraiʔ] | 'abuse' (verb) |
| /'rai/ | [ˈraiʔ] | 'speak' |
| /'haɾ/ | [ˈhaɾʔ] | 'send' |
| /'haɾ/ | [ˈhaɾʔ] | 'night' |
| /'haɾ/ | [ˈhaɾʔ] | 'hand', 'hang' |
| /'Æy/ | [ˈæiʔ] | 'watery' (as in rice-beer) |
| /'Æy/ | [ˈæiʔ] | 'sit on fire-side' |
| /'Æy/ | [ˈæiʔ] | 'sort vegetables' |
| /'khoন/ | [ˈkhoন] | 'arrange clothes' |
| /'khoন/ | [ˈkhoন] | 'sing', 'occasion' |
| /'khoন/ | [ˈkhoন] | 'pick up one by one' |
| /'aɪɾ/ | /'aɪɾ/ | [ˈaɪɾ] | [ˈaɪɾ] | [ˈaɪɾ] | - | 'cloth' |
| /'aɪɾ/ | [ˈaɪɾ] | 'be wet' |
| /'aɪɾ'kha/ | [ˈaɪɾ'khaʔ] | 'grown up girl', 'maiden' |
| /'khu/ | [ˈkhuʔ] | 'make naked', 'pierce into' |
| /'khu/ | [ˈkhuʔ] | 'throw (a baby or a thing on a place' |
| /'khuʔa/ | [ˈkhuʔaʔ] | 'mist', 'fog' |
| /'khuʔa/ | [ˈkhuʔaʔ] | 'does not pierce into', 'does not make naked' |
| /'khuʔa/ | [ˈkhuʔaʔ] | 'does not throw on a place' |
| /'khuʔaɾ/ | [ˈkhuʔaɾʔ] | 'prick with nails' |
| /'khuʔaɾ/ | [ˈkhuʔaɾʔ] | 'sugar-cane' |
| /'kha/ | [ˈkhaʔ] | 'pluck' |
Close juncture is phonemic in Boro 24 and three types of juncture are described below in respect of mutual sequences of successive phonemic syllables, phonemic words, and phonemic clauses. Two or more syllables may occur in nearest sequences without intervening space or pause; such syllables are spoken in transition and rhythm which are different from syllables spoken with intervening space or pause. Close juncture is unmarked and indicated usually between two immediately bound phonemic syllables by no space i.e., such syllables form a close-knit utterance which we call a phonemic word. Close juncture also obtains between various constituents of the syllable. To distinguish one syllable from another, a hyphen/-/ will be used when it is necessary. A phonemic word may consist of a single syllable also. Open juncture is indicated by space between two close-knit segments with or without close junctures i.e., between two phonemic words. The
The preceding phonemic word may occur in the stream of utterances after silence or another space or a pause. The succeeding phonemic word may be followed by a pause or another space in the stream of utterances.

Terminal juncture is indicated by pauses /##/ and it unites two or more phonemic clauses occurring in immediate sequences. In the stream of utterances, a phonemic clause may be preceded by silence or another (terminal juncture) may be preceded by a pause which accompanies one of the intonational or terminal contours.

Examples:

/1nøp/ 'you' (singular and non-nominal); close juncture between onset and peak and between peak and of the syllable.

/2nøp-thaŋ/ 'you' (singular and nominal); close juncture between two syllables forming a phonemic word.

/2nøp-thaŋ/ 'you go'; open juncture between two phonemic words followed by a terminal juncture.

/2nøp 3thaŋ/ 'you remain living'; open juncture between two phonemic words followed by terminal juncture.

/1ha/ 'land'; close juncture between onset and peak of the syllable.

/2ha 2baŋ/ 'buy land'; open juncture between two phonemic words followed by a terminal juncture.

/1ha 0baŋ/ 'has already been able'; close juncture between two syllables forming a phonemic word followed by a terminal juncture.

/2ha 0baŋ/ 'has already out by pressing'; close juncture between two syllables forming a phonemic word followed by a terminal juncture.
 Contrast between close and open and also between open and terminal junctures as to the transition and rhythm are shown in the above examples. Open juncture is indicated by space and terminal juncture is indicated by pause ##. The contrast between close and terminal junctures are seen as we compare the last three examples /3ha0bay##/: /2ha0bay##/: /1ha0bay##/: Between the first and second syllables there are close junctures indicated by without space; after the syllable /-Obay/, there is pause which is indicated by ## and it contrasts with the above close junctures and also with open juncture of the example /2ha 2bay##/, 'buy land'.

The above discussion establishes the validity of junctures in Boro.
1.6 Contours

1.6 Contours or terminal contours are described as transition and
rhythm on intonational level associated with phonemic clauses.
A phonemic clause is indicated by pause \#\#. The contour or terminal
juncture may be of three major types with five minor divisions:

1. Rise: Intonational contour of the clause as a whole may be
called rising or rise according to the behaviour of the
tonal curve at the syllable before pause; the rise may
be steep or abrupt, and this is known as (i) steep rise
contour /\#. When the rise is not steep, it is termed
(ii) Non-steep rise contour /\#. 

2. Fall: The tonal curve of the syllable before pause in a clause
may be falling; there are two degrees of fall; (i)ii)
Steep fall /\#/ and (iv) Non-steep fall /\#.

3. Neutral: When the tonal curve of the syllable before pause does
not rise or fall appreciably, it is called neutral.
This is more or less a suspensive intonational contour.
This is the fifth contour (v) Neutral /\#/

Symbols for these five contours are /\#/; /\#/; /\#/ and \# may
alternatively be written by these five punctuation marks/! ? . ; /

Examples:

/\#ha\#/ 'What is it!'
/\#ha'do\#/ 'do out by pressing'
/\#ha'\#/ 'you do out by pressing'
\# /\# 'Oh! that (in a distance)'
/\# 'what else!'
'all around!'  
"Will you go?"  
"Do you go just now?"  
"Who (is) he?"  
"This (is) a piece of iron."  
"Will you go?"  
"Will you go (after a while)?"  
"He will go."

"You have already cut by pressing."  
"This fish will be alive!"  
"You also drink and I shall also drink."

"You also drink; I shall also drink."

"If you go, (then) I shall also go."

"You also proceed and I shall also go."

The younger brother said, "What do you say? (I) will surely go with you, my older brother!"

Juncture may broadly be analysed under two heads: close juncture and non-close juncture. Syllables spoken in close juncture are phonemically written without space or any intervening terminal contour marks. Open and terminal junctures are non-close junctures and they require some sort of marking.

When a syllable precedes another syllable in close juncture, the tone curve of the preceding syllable is as follows:
Tone 1: high, short with level pitch without glottal check or considerably lengthy with rise, but of lesser pitch than a syllable in non-close juncture.

Tone 2: mid, half-long with level pitch contour.

Tone 3: low, less lengthy and falling than a syllable in non-close juncture.

Tone 0: dependent on the following syllable and acquires pitch of that syllable with extra-short duration.

Examples:

Tone 1: /'a'pha/ 'palm of foot'
/'en\thaw\'thaw/ 'pet', 'favourite'
/'en\duq/' 'has got'

Tone 2: /'ege2sorg/ 'stone'
/'go3lam/' 'middle'
/'go3lam/' 'bent'
/'gu1dup/' 'hole'
/'lem0duq/' 'has been ill'
/'ray0duq/' 'has abused'

Tone 3: /'khan3sow/' 'small after burning'
/'khan2g1i/' 'be burnt'
/'g2g1f1uq/' 'water'
/'khay1so/ 3may1sa/' 'vomitation'
/'sem0may/' 'to begin'

Tone 0: /'oku4s\'i/' 'prick by nail'
/'oku3s\'i/' 'sugar cane'
/'oku2seq1gra/ 'viesa', (an insect that makes a shrill sound)
When a syllable precedes space in open juncture, the tone curve of that syllable is as follows:

**Tone 1:** high, short and level pitch without glottal check and considerably long with rising without glottal check, the pitch is less high than a syllable before terminal juncture.

**Tone 2:** mid, half-long with level or less falling than a syllable before terminal juncture.

**Tone 3:** low, long and falling, but with less degree of length and fall than a syllable before terminal juncture.

**Tone 0:** dependent on the preceding syllable and acquires pitch equal or less from that syllable.

**Examples:**

**Tone 1:** 
/1a1pha 2goa\#/
You also drink'.
/2mo2eem 1goa\#/  'healthy body'.
/2si1ni 3ra\#/  'send or give (a) fan'.
/2si1ni o6ma1ga/  'his mouth'.

**Tone 2:**
/2her 2goa\#/  'middle of night', midnight'.
/2mo2eem 2ga3ban/  'healthy body'.
/2si2sib 1her\#/  'send or give (a) fan'.

**Tone 3:**
/2ra3dah 2ga3wri/  'bad news'.
/3goj 2la1bo\#/  'bring botol-nut'.

**Tone 0:**
/2moj 1nem-okey-o6ma\#nem-o6mo-okey\#/  'have you got or not?'.
/2moj\#bo 1goj6em 4ma\#na\#/  'Will you drink?'

The tone curve of a syllable before pause or terminal juncture.
will be of different types and these are already indicated in our preceding discussion on contours.

**Tone 1:** In a syllable before steep rise contour tone 1 has the following features: high, extra-long, and rising without glottal check. The pitch is higher than a syllable before non-steep rise contour. There may be emphatic stress above the normal stress.

In a syllable preceding non-steep rise contour tone 1 is less high than a syllable before steep rise contour beginning with short vowel nucleus and level pitch tending towards considerable rise with length. With glottal check the vowel nucleus is shorter and high level and without glottal check it is longer and high rising.

In steep fall contour, the syllable before pause in tone 1 has high, short and level pitch with glottal check with tendency towards abrupt fall; without glottal check the vowel nucleus is longer and rising in pitch; pitch is however lower than the rise in non-steep contour in respect of register and contour.

In non-steep fall contour, the preceding syllable in Tone 1 has less high pitch with tendency towards falling with longer vowel nucleus without glottal check in comparison to the syllable before fall steep contour.

A syllable before neutral contour has in tone 1 features of considerably long vowel nucleus without glottal check with high pitch; there is no appreciable rise or fall of the contour followed by a pause of short duration,
Examples:

/"sor ""#/ 'All around'

/"ba ""#/ 'What is it'

/"be ""#/ 'He (is) here'

/"be 2aer 3#/ 'This (is) a plot of land?'

/"be 2aer 3#/ 'This (is) a plot of land. (indeed)

/"na ko 60#/

'I do not eat (habitually)'

/"na 60gen 6#/ 'You will eat.'

/"2be 7stap 6g0 2a1ro 2h1e 1stap 6gen 6#/ 'You go ahead and he will also go.'

/"2be 7stap 6g0 1lep 6ay 1lep 6gen 6#/ 'You also drink. I shall also drink

/"2lep 6"bl 2ap 7be 1lep 6gen 6#/ 'If you drink, (then) I shall also drink.'

/"sag 2aum 6#/ 'I say, "You (are) a bad man."
Tone 2: In steep rise contour, the syllable in tone 2 has not been observed. It may be so because of the nature of rising contour, tone 2 is not allowed in this position before pause.

In non-steep rise contour, tone 2 syllable is mid and half-long with rising pitch.

In steep NE fall contour, tone 2 is mid and half-long with level pitch with a tendency to sharp fall.

In non-steep fall contour, tone 2 is interpreted as mid and half-long with level pitch with slow and lesser fall than the above steep fall contour.

In neutral contour, the preceding syllable in tone 2 is mid and half-long with level pitch without any perceptible fall.

Examples:

/maŋ ʃa t#/ 'You (de) cut by pressing.'

/maŋ ʃəiŋ ʃəŋ'əŋ ʃəŋ ʃa t#/ 'You arrange the clothes.'

/bo ʃaŋ ʃəŋ ʃəŋ ʃaŋ ʃa do t#/ 'This (is) a male shoe.'

/ʃiŋ'əŋ ʃəŋ ʃaŋ ʃəŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ ʃaŋ shader;
My bottle (is) empty; therefore, I do not drink.

If you cut by pressing, (then) I shall also cut by pressing.

Tone 3: In steep rise contour, no example of syllable in tone 3 has been observed.

In non-steep rise contour, tone 3 syllable is low and long with lesser degree of fall than a syllable before fall steep contour.

In steep fall contour, tone 3 is interpreted as low and long with maximum falling pitch.

In non-steep fall contour, tone 3 is low and long with lesser degree of fall than the steep fall contour, but the degree of fall is more than that of the non-steep rise contour.

In neutral contour, the preceding syllable with tone 3 is low and long with tendency towards fall, but without appreciable falling or rising.

Examples:

\[ ^{2} \text{mar} \ 3 \text{thay} \] 'You remain living.'

\[ ^{2} \text{mar} \ 2 \text{man} \ 2 \text{ra} \text{2na} \ 3 \text{na} \] 'You become a king.'
'This (is) my iron.'

'My book is in the house.'

'My book is in the house; and your book has already been lost.'

'If you become (a) king, (then) I shall rejoice.'

'If it rains, the road will be bad.'

Tone 0: In steep rise contour, no example of syllable with tone 0 has been observed.

In non-steep rise contour, tone 0 syllable acquires the pitch of the preceding syllable with one of the non-neutral tones /1 2 3/. Tone 0 is permitted in clauses bound by fall steep, non-steep fall and neutral contours also and the phonetic correlates of this tone always correspond to those of the non-neutral tones /1 2 3/ with which the tone 0 is in close juncture. The degree of pitch of tone 0 syllable is equal or less than the preceding non-neutral tone.
Examples:

/2m9 y009,9em \+\+ '/Will you go?'

/2m9 y009,9em \# '\You will go.'

/2m9 y009,9em \# '\You will remain living.'

/2m9 2m9 \# /k\m y009,9em ^\009,9em \# / 'I ate rice and left the curry too.'

/2m9 \# /b009,9em ^\009,9em \# / 'I have already said, "You (are) a bad boy.'

1.7 Distribution:

If we start in our analysis from large to small i.e. from utterance to minimum units, we also arrive at similar phonemic units termed as clauses, words, and syllables bound by different junctures.

The relation of a syllable to a word, and of a word to a clause is described in 1.0 and further.

The structure of neutral and non-neutral toned syllables are discussed and illustrated in sufficient details with relation to onset, peak and coda. As to the permitted onsets of non-neutral toned monosyllables in isolation or as one word utterance we have /ph th s kh b d s g n m r l h/ as simple initials and /phr thr sr khr b r dr sr gr al bl/ as complex initials.

The permitted peaks are /1 2 3 9/ with one of the three permitted tones /1 2 3/.
The permitted codas are /b d s g m n y v/; all are simple and no complex codas are permitted.

From the point of distribution, comparable phonemes /ph b/, /th d/, /th g/, /s z/ contrast syllable initially and also as first members of permitted complex initials. The contrast is between voiceless aspirates and voiced non-aspirates.

Syllable finally /b d s g/ only occurs as unreleased voiceless non-aspirates before pause without corresponding comparable phemes.

Syllable initially we have /m n/ and syllable finally /m n y/. /m n/ contrast syllable initially and finally; /y/ is permitted as coda only.

/y l/ can occur as onsets and codas and also as second members of permitted complex initials.

/h/ occurs only syllable initially.

/y w/ occurs only as codas after /a e u o/ and /ae e i/ respectively.

The following types of monosyllables occur in the language: V indicates peak or vowel nucleus with a non-neutral tone; C is any consonant or semivowel other than the peaks; contour marks are omitted in the examples.

V /'o/ "hello"
/'o/ "yes"
VG /'um/ "sharpen"
/'aw/ "fry"
CV /'ni/ "he" or "she"
In disyllabic words in isolation, neutral toned syllable may precede or follow the non-neutral toned syllable. The following tone sequences are permitted: /01/, /02/, /03/, /10/, /12/, /13/, /20/, /22/, /23/, /33/.

In disyllabic words with both non-neutral toned syllables, the permitted tone sequences are: /11/, /21/, /22/, /23/, /24/, /32/, /33/, /34/.

The permitted onsets of neutral toned syllables are: /ph th sh kh b d g n n/

In the preceding neutral toned syllable /ph th s kh/ are permitted onsets. In the following neutral toned syllables /th s kh b d g n n/ are permitted onsets.

The permitted peaks of neutral toned syllables are /1 ò u a/ with voiceless and extra short duration. The neutral tone is associated with one of these permitted peaks.

The permitted cedas are /n y y w/. The preceding neutral toned syllables have no cedas.

As to the permitted onsets of non-neutral toned syllable in a disyllabic word, we have /phl thl khl dl sl gl gm gn phn dn an/
in br kl km kkm/ as complex initials in the second syllable of
the disyllabic word in addition to the simple and complex initials
The interpretation of all the complex initials as clusters of two
non-comparable phonemes is supported by bare phonological features
of rhyming, lateralization and nasalization. Clusters of
two identical or same consonants, such as /ss/ or /ss/ as complex
initials of the second syllable are allowed as dialect-variants.

The permitted peaks and codas of non-neutral toned syllables
in disyllabic and polysyllabic words are like those of monosyllabic
words mentioned above.

Examples of disyllabic words in isolation are given in
foregoing sections. As tone mark is indicated in each syllable,
the syllable division mark /-/- is omitted in phonemic writing.

For trisyllabic words in isolation, no extra statement as to
the permitted onsets, peaks and codas is necessary, but there is
limit to the tone sequences of neutral and non-neutral toned
syllables.

(a) All the three syllables may have non-neutral tones /1 2 3/
(b) Two may have non-neutral and one may have neutral tone
(c) Two may have neutral and one may have non-neutral tone

Of these three permitted situations, we have the following
tone sequences:

(a) /1 1 1/, /1 2 2/, /1 3 3/, /2 1 1/, /2 1 3/, /2 2 1/, /2 3 3/, /2 3 1/, /2 3 2/, /2 3 3/, /3 3 3/, /3 2 1/, /3 3 2/, /3 3 3/
(b) /0 1 1/, /0 2 1/, /0 3 1/, /0 2 3/, /0 2 0/, /0 3 0/, /0 3 2/, /0 3 3/, /0 3 0/, /0 3 2/, /0 3 3/
(c) /1 0 0/, /2 0 0/, /3 0 0/, /0 3 0/, /0 3 0/
Examples: (in addition to given in sections from 4A to 4B)

\[1^\prime \text{pha'ni/} \quad \text{of the palm of foot'};
\[1^\prime \text{sho' sli thi/} \quad \text{'brightness' , 'dazzling';}
\[1^\prime \text{gap'pay s/e ma/} \quad \text{'a watery insect';}
\[1^\prime \text{ba' di/} \quad \text{'of this type'};
\[1^\prime \text{thaw'la n a/} \quad \text{'pet', 'favourite';}
\[\text{1^\prime poco la bo/} \quad \text{'then also';}
\[\text{2^\prime thay'la ce'la/} \quad \text{'one fruit only';}
\[\text{2^\prime leq'la ga/} \quad \text{'pet-bellied';}
\[\text{2^\prime leq'la pher/} \quad \text{'teeth';}
\[\text{2^\prime leq'la bar/} \quad \text{'morning star', 'Venus';}
\[\text{2^\prime ser'la av/} \quad \text{'in the middle';}
\[\text{2^\prime la'la av/} \quad \text{'on the bridge';}
\[\text{3^\prime khan'gli' la/} \quad \text{'to smell after burning';}
\[\text{3^\prime may'la n a/} \quad \text{'near the goddess of Naxax harvested (Lakshmi)';}

(b) \[\text{0^\prime khi'gra'no/} \quad \text{'latrine';}
\[\text{0^\prime kha se'gra/} \quad \text{'sickana' (an insect that makes shrill sound);}
\[\text{0^\prime kha'la' ni/} \quad \text{'elbow';}
\[\text{0^\prime kha'la' av/} \quad \text{'in the sugar-cane';}
\[\text{0^\prime leq'la dop/} \quad \text{'has become gay';}
\[\text{0^\prime la'la bo/} \quad \text{'has already eaten together';}
\[\text{3^\prime kar'gli' dop/} \quad \text{'has been burnt';}
\[\text{3^\prime khan'he' bo/} \quad \text{'has already smelt after burning';}
\[\text{1^\prime thap'la dop/} \quad \text{'has pretended to go';}
\[\text{0^\prime thay'la dop/} \quad \text{'has walked';}

(c) \[\text{1^\prime le'la dop' ma/} \quad \text{'ate';}
\[\text{0^\prime le'la' dop' ma/} \quad \text{'(did) out by pressing';}
Permited situations are:-

(a) One neutral and three non-neutral tones;
(b) Two neutral and two non-neutral tones;
(c) Three neutral tones and one non-neutral tone;
(d) Four non-neutral tones.

There are limits to the individual occurrences of tones in the above permited situations. As to the permited onsets, peaks and cedas, the lists of these given in respect of disyllabic words will hel good.

A few examples of the permited situations are:-

(a) /⁴ni₂kha₂ni¹phray/ 'from the maiden';
(b) /⁴za¹pha⁰dø⁰møm/ 'ate together';
(c) /⁴khu¹ser⁰dø⁰møm/ 'pricked by nail';
(d) /⁴ha²tha²su¹ni/ 'feast given at betrothals';
/⁴nøg²sør²ni¹phray/ 'from you (plural)'.

Words with five, six and even with more syllables are permited in this language. Though there are no further restrictions as to onsets, peaks and cedas in the subsequent dyamic level, there are limits to the permited situations of neutral and non-neutral toned syllables and individual tone-sequences.

The following examples of words with five or more syllables are
given to indicate the possible situations and sequences:

\[ \text{ba}^2\text{ma}^2\text{ma}^2\text{li}^1\text{ni} / \] of the (bird) bat', 'bat's'

\[ \text{ba}^2\text{ma}^2\text{ma}^2\text{day}^1\text{a} / \] the son-in-law

\[ \text{ba}^2\text{ro}^2\text{han}^2\text{di}^1\text{le} / \] hornet

\[ \text{si}^2\text{kha}^2\text{nho}^2\text{ni}^1\text{phray} / \] from the maidens

\[ \text{kha}^2\text{se}^2\text{phor}^2\text{ni}^1\text{phray} / \] from the sugar-canes

\[ \text{kha}^2\text{se}^2\text{gra}^2\text{phor}^2\text{ni}^1\text{phray} / \] from the cicadas

\[ \text{ba}^2\text{di}^2\text{de}^2\text{gla}^2\text{phor}^2\text{ni} / \] of the cranes (bird)', 'the cranes'

\[ \text{ba}^2\text{ro}^2\text{han}^2\text{di}^1\text{le}^1\text{phray} / \] the hornets

\[ \text{kho}^2\text{kha}^2\text{ni}^2\text{phor}^2\text{ni}^1\text{phray} / \] from the elbows

\[ \text{ba}^2\text{ro}^2\text{han}^2\text{di}^1\text{le}^1\text{phor}^2\text{ni} / \] of the hornets

\[ \text{ba}^2\text{ma}^2\text{ma}^2\text{day}^2\text{phor}^2\text{ni}^1\text{phray} / \] from the son-in-law

\[ \text{ba}^2\text{ma}^2\text{ma}^2\text{li}^2\text{phor}^2\text{ni}^1\text{phray} / \] from the bats

\[ \text{ba}^2\text{ro}^2\text{han}^2\text{di}^1\text{le}^1\text{phor}^2\text{ni}^1\text{phray} / \] from the hornets

\[ \text{ma}^2\text{pha}^2\text{phim}^2\text{baw}^2\text{lay}^2\text{baw}^2\text{lay}^1\text{no} / \] has eaten once again together, it is said

\[ \text{ma}^2\text{pha}^2\text{phim}^2\text{baw}^2\text{ma}^2\text{lay}^2\text{baw}^2\text{lay}^1\text{no} / \] has eaten certainly once again together, it is said

The phonemic words are thus may be of monosyllables, or poly-syllables. The last word of the example's text is composed of nine syllables with definite temal situation and sequences. The types of syllables are:

\[ 1-0-0-0-0-0-0-0-0. \] These syllables follow the rules of structure described in and further.

As to the permitted complex initials of the word medial positions, alternative way of analysis and interpretation are possible. Such analysis will have to base on phonemic realization of segmental units which are permitted as clusters in and around
syllable-division. We have listed the permitted complex initials numbering twenty six on the basis of inventory of phonemes and their phonological interpretations.

The complex initials of monosyllables /phr thr ar khr br ar dr gr sl bl/ also occur as syllable initials or onsets of polysyllables in word medial positions. Therefore their relevance as complex initials or onsets presents no difficulty; on the other hand /phl thl khl dl sl gl gn gn an am hr pmn bl kha kha/ occur not in monosyllables, but in polysyllables as complex onsets word medially. These complex onsets allow consideration as to the actual cuts for syllable division; /phl thl khl dl sl gl hr hl/ are parallel complex onsets to these of monosyllables. From the pattern congruity, these may very well be interpreted as permitted units of clusters.

The remaining complex onsets /phn gn gn gn am bm kha kha/ present phonological features which differ from the clusters of /fr l/ or the prosodies of nasalisation and lateralisation. There are no gaps in the occurrences of clusters of /fr l/ with /ph th kh s s b d g h/.

But the clusters of /m n/ are permitted with /ph kh b d g s m/ partially in the sense that there are gaps of a considerable number. The prosodies of nasalisation present structural gaps in respect of polysyllabic complex onsets.

The following example of complex onsets would clarify the above observations.

/²[b]mnap/ [b-mnap] varies with /²[b]mnap/ "wife's younger sister"
/²[b]ign/ [b-ign] varies with /²[b]ign/ "owner"
A Note on Transcription.

The transcribed text given in section 6 represents an attempt to present the findings of the foregoing sections of Boro Phenology. This is a scientific way of presenting the phonemic elements in a modified form of the International Phonetic Association Alphabet as revised to 1951. This phonemic writing differs from the here-to-fellowed ways of Boro writing method utilizing modified selected Assamese scripts and of Boro missionary writing method utilizing modified Roman scripts. Both the methods are far from scientific findings as the significant tones and intonational contours remain almost unrepresented. The Boro popular method with Assamese scripts adopted under the auspices of organizations like Boro Sahitya Sabha, and a considerable number of literary organizations has already served the purpose of bringing linguistic-syrn-literary consciousness among the educated Boro. They have got in this Assamese script different types of creative and folk productions.

The Boro missionary method has its own advantage and usefulness in respect of translation of the Bible and other Christian scriptures and also in preparation of Boro text books for primary and secondary schools of Boro Christian Missions.

I have given in 6.1 two types of phonemic writings based on my phonemic analysis the second method is designed not for very
technical literature, but for popular literature. The phonemic based remaining the same, I prefer to the first method for truly linguistic work. I have chosen 'The Tale of Ram and Rami' as a specimen of as connected text quoted from the book "Bare Kacharir Jana Sahitya", 1957, p.77 written by Sree Sree Sree Shabendra Narsi. The reading is by my informant-in-chief (Shri Narsi) in normal spoken style. It may be mentioned that the Bare text in the book follows the Bare popular method of writing. The phonetic text appended by to this book of Shri Narsi differs a little in respect of representation of a few segmental phonemes and also of tones and contour.

1.9 Concluding Remarks

The interpretation of Bare phonemes in respect of their production and distribution is here primarily based on the articulatory and auditory procedures. There is still enough scope for application of instrumental analytical procedures to determine the Bare phonemes.[2]

[2] A few observations of the foregoing phonemic analysis were conducted in phonetic laboratories of Deccan College, Poona and I.M. Institute of Hindi Studies and Linguistics, Agra University during my attendance in the different sessions of the School of LINGUISTICS (1954 - 1960).