# Pacǒh Phonemes[1]

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**O. Introduction.** Pacŏh is a language of the Mon-Khmer family, spoken by perhaps 8.000 tribespeople in the Huě region of Central Việt Nam. Pacŏh is closely related to the Ta-oaih (Ta-ôi) language of Laos and may be mutually intelligible with some dialects of it. This paper presents the Pacŏh high mountain dialect. The Pacŏh Pahi, a low mountain dialect, is slightly different, partly because of proximity to Vietnamese.

In Việt Nam the Mon-Khmer languages generally have a large number of vowels (e.g. Brôu[2] is considered to have 41 vowel contrasts). Pacŏh does not have as many vowels as some but they are of particular interest because of their symmetrical patterning. The basic 12 vowel system becomes 24 because of short-long contrasts ; then 6 glided vowels are added, giving a total of 30 vowel contrasts.

Pacŏh consonants pattern symmetrically in that they can all occur in both word-initial and word-final positions. Analyses of languages of Southeast Asia have previously interpreted voiced stops as occurring only in word-initial or medial positions, but Pacŏh voiced stops have allophones in word-final position.

## 1. Phonemes

### 1.1. Vowel Phonemes. As shown in figure 1, each of

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[2] A paper on the 41 vowels of Brôu is being prepared for publication by John and Carolyn Miller and Richard Phillips. Brôu is a language in Quảng Trị, Việt Nam.

the basic twelve vowels has a short (marked ʹ) and long contrast. Each of the six vowels of the high and mid-tense categories has a glided counterpart.

Omitting the mid-tense category, the remaining nine basic vowels closely approximate the nine basic vowels of Vietnamese. The three high glided vowels and the short *â* and *á* vowels are also similar to those of Vietnamese. The Pahi dialect of Pacŏh, because of proximity to Vietnamese, has dropped the short and long counterparts of the mid-tense category, but the glides have been kept.

|  | front | | | central | | | back | | |
|---|---|---|---|---|---|---|---|---|---|
|  | *short* | *long* | *glide* | *short* | *long* | *glide* | *short* | *long* | *glide* |
| high | *í* | *i* | *ia* | *ír* | *ɯ* | *ɯa* | *ú* | *u* | *ua* |
| mid-tense | *ĕ́* | *ĕ* | *ĕa* | *ŏ́* | *ŏ* | *ŏa* | *ŏ́* | *ŏ* | *ŏa* |
| mid-lax | *ĕ́* | *ė* |  | *â* | *ơ* |  | *ŏ́* | *ô* |  |
| low | *é* | *e* |  | *á* | *a* |  | *ó* | *o* |  |

*Figure I. Chart of Vowel Phonemes*

### 1.1.1. Vowel Descriptions

/i/ is a high front unrounded vowel [i]. /í/ is phonetically similar to /i/ but shorter; it occurs only before *q* and *h*. /Í/ is a neutralization of short /i/ and /ĕ́/ to [i] in positions other than preceding *q* and *h*. /piq/ [pi ʔ] 'to dig', /pÍt/ [pɪt] 'to lose'. /ia/ is /i/ glided to a neutral central vowel.

The three glided vowels : *ia, ɯa, ua* glide to schwa [iᵊ, ïᵊ, uᵊ].

/ĕ/   is a mid front tense unrounded vowel $\begin{bmatrix} e \\ + \end{bmatrix}$.  /ĕ́/ is phonetically similar to /ĕ/ but shorter. /ĕa/ is  /ĕ/ glided to a neutral central vowel.

  The three mid tense glided vowels ĕa, ŏa, ŏa phonetically glide to [a] because the neutral glide quality is conditioned by the tenseness of the vowel center [ĕa,  ŏa,  ŏa].

/ê/   is a mid front lax unrounded vowel [e]. /ê̆/ is phonetically similar to /ê/ but shorter; it occurs only before q and h and is neutralized with /i/ to /Í/ [ɪ] otherwise. /pĕ́q/ [pĕ́ ʔ] 'to carry', /pĕl/ or /pit/ = /pÍt/ [pit] 'to lose'.

/e/   is a low front unrounded vowel [ɛ]. /é/ is phonetically similar to /e/ but shorter.

/ʉ/ is a high central unrounded vowel [ɨ]. /ʉ́/ is phonetically similar to /ʉ/ but shorter. /ʉa/ is /ʉ/ glided to a neutral central vowel.

/ŏ/ is a mid central tense unrounded vowel $\begin{bmatrix} ə \\ + \end{bmatrix}$ /ŏ́/ is phonetically similar to /ŏ/ but shorter. /ŏa/ is /ŏ/ glided to a neutral central vowel.

/o/ is a mid central lax unrounded vowel [ə]. /â/ is phonetically similar to /o/ but shorter.

/a/ is a low central unrounded vowel [a]. /á/ is phonetically similar to /a/ but shorter.

/u/ is a high back rounded vowel [u]. /ú/ is phonetically similar to /u/ but shorter. /ua/ is /u/ glided to a neutral central vowel.

/ŏ/ is a mid back tense rounded vowel $\begin{bmatrix} o \\ + \end{bmatrix}$. /ǒ/ is phonetically
  similar to /ŏ/ but shorter. /ŏa/ is /ŏ/ glided to a neutral
  central vowel.

/ȯ/ is a mid back lax rounded vowel [o]. /ő/ is phonetically
  similar to /ȯ/ but shorter.

/o/ is a low back rounded vowel [ɔ]. /ó/ is phonetically similar
  to /o/ but shorter.

## 1. 1. 2.  Vowel Contrasts

| | | |
|---|---|---|
| *pih* 'to fill holes' | *pih* 'a poison' | *piah* 'to wash' |
| *pĕh* 'flipping of fish' | *pĕh* 'to pick up' | *tĕah* 'a level yard' |
| *tâmpêh* 'to flap wings' | *tupêh* 'a fence' | |
| *péh* 'to gather net' | *peh* 'snap of trap' | |
| *pɨrh* 'a generation' | *hɨrh* 'so there!' | *chɨrah* 'a name' |
| *pŏh* 'to speak' | *hŏh* 'excl., tired' | *pŏah* 'to rain in' |
| *tâmpȧh* 'in formation' | *porh* 'roomy' | |
| *pȧh* 'to slap' | *pah* 'spacious' | |
| *púh* 'to hit' | *huh* 'excl., thirsty' | *puah* 'to make traps' |
| *pǒh* 'to divide' | *pŏh* 'side of fish' | *pŏah* 'white' |
| *pőh* 'to open' | *póh* 'deer call' | |
| *póh* 'night fishing' | *poh* 'dead center' | |

Not all of the thirty vowel contrasts occur in every envi-
ronment. Short vowels cannot occur in open syllables. *i* and *ê̌*
share *Í* except before *h* and *q*. Mid-lax and low front vowels
*ê, e* cannot occur with final palatals *ch, s, nh, y, j*. Back

vowels $u$, $\breve{o}$, $\hat{o}$, $o$ cannot occur with final $b$ or $w$.

**1. 2. Consonant phonemes** The six categories of consonants in figure 2 are arranged according to phonetic criteria. In section 2.3 (fig. 3) they are arranged according to distributional criteria.

| | *bilabial* | *alveolar* | *alveopalatal* | *velar* | *glottal* |
|---|---|---|---|---|---|
| vl. stops : | $p$ | $t$ | $ch$ | $k$ | $q$ |
| vd. stops : | $b$ | $d$ | $j$ | | |
| nasals : | $m$ | $n$ | $nh$ | $ng$ | |
| liquids : | | $r/l$ | | | |
| fricatives : | | | $s$ | | $h$ |
| semivowels : | $w$ | | $y$ | | |

*Figure 2. Phonetic Chart of Consonant Phonemes*

## 1.2.1. Problems of Interpretation

**1.2.1.1.** Word-final $[w^{\text{?}}]$ and $[y^{\text{?}}]$ are interpreted as complex unit phonemes rather than as sequences of semivowel plus glottal stop because word-final position can be filled only by single consonants.

$[w^{\text{?}}]$ and $[y^{\text{?}}]$ are further interpreted as word-final allophones of voiced stops /$b,j$/, for two reasons. First, they are phonetically similar. $[^{\text{?}}b]$ and $[w^{\text{?}}]$ share bilabial and glottal features, and $[^{\text{?}}j]$ and $[y^{\text{?}}]$ share alveopalatal and glottal features. These (and $d$) are the only consonants which have a complex glottal feature. Word-initial allophones are preglottalized while word-final allophones are post-glottalized.

Secondly, not to combine  [w?] and  [y?] with voiced
stops would   result in voiced stops being the only consonants
not  occurring in  word-final position, and [w?] and [y?] being
tha only consonants not occurring in word-initial position. So
combining them would  seem to be the logical answer.

It  would  appear that  /d/  does not have a semivowel
possibility which  would  lend  itself to  use as a  word-final
allophone  of  /d/.

**1.2.1.2.** Aspirated stops are interpreted as clusters of
stops  *p*, *t*,  *k* plus *h* because they are  parallel to a  pattern
of stops *p*, *t*, *k* plus liquids *r*, *l*. Aspirates, like clusters, occur
only in main-syllable-initial   position ; whereas  unit consonants
can occur  also in presyllable-initial and  word-final positions.
Furthermore, clusters can be  divided by morphological infixes
and it appears that aspirates do the same. However, when
stop plus *h* is divided, the *h* is  dropped since it cannot occur
in presyllable-final position. *prêh* 'to sweep  house' becomes
*pârnêh* 'a house  broom'; but *khiar* 'to sweep yard' be-
comes *kaniar* 'a yard  broom', losing the  *h*.

## 1.2.2. Consonant  Descriptions and  Contrasts.

/p/ is a  simple voiceless bilabial  stop [p].
   p : ph *paq* 'a bundle', *phaq* 'to chisel'; p: b *pár* 'to fly',
   *bár* 'to  guard'; p:w *pi* 'to talk', *wi* 'to have'.

/t/ is a  simple voiceless  alveolar stop [t]. t : th *tŏ* 'self',
   *thŏ* 'a fish trap'; t : ch *táq* 'to work', *cháq* 'trunk'; t : d
   *túng* 'deaf', *dúng* 'house'.

/ch/ is a voiceless alveopalatal stop $\left[t^{y}\right]$.

In syllable-initial positions /ch/ has a slightly affricate allophone $\left[\overset{v}{ts}\right]$. ch: s *cheng* 'lime', *seng* 'green'; *tâch* 'tall and skinny', *tâs* 'to pound'; ch: tr *choaq* 'a bird trap', *troaq* 'to pound'.

/ch/ and all other alveopalatal consonants have an [i] onglide in syllable-final positions (e. g. /tâch/$\left[tâit^{y}\right]$).

/k/ is a simple voiceless velar stop [k]. k: kh *koj*[3] 'to carve', *khoj* 'already'; k: q *qakay* 'a child', *qaqay* 'sick'.

/q/ is a glottal stop [?]. q: k (see /k/); q: h *qát* 'to live', *hát* 'fast'.

/b/ is a voiced bilabial preglottalized stop [?b]. Post-glottalized [w?] is considered an allophone of /b/ in word-final position. b: p (see /p/); b: w *baq* 'to chew', *waq* 'a grave'; *chéb*[3] 'to poke at', *chéu* 'to start into'.

/d/ is a voiced alveolar preglottalized stop [?d]. It has no word-final counterpart. d: t (see /t/).

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[3] The symbolization used in this paper differs from current orthographic practice in the following main points: /q/ is left unwritten word-initially, but is written — word-medially, and -q word-finally. /b/ is written as b- and -uq. /j/ is written dy- and -yq. /s/ is written x- and -ih. /k/ is written c except before front vowels. /w/ is written v- and -u. Phonemic symbolization might have been preferable in most cases, but these conventions have been indicated by local pressures.

/j/ is a voiced alveopalatal preglotalized stop [ʔdy]. Post-glottalized [yʔ] is a word-final allophone of /j/. j : d *jŏm* 'to wrap', *dŏm* 'ripe'; j : y *jŏm* 'to wrap', *yŏm* 'bent down'; *soy* 'tail', *asoj* 'to itch'.

/m/ is a simple bilabial nasal [m]. m : n *máq* 'to bear', *náq* 'person'.

/n/ is a simple alveolar nasal [n]. n : m (see /m/) ; n : nh *náq* 'person', *kanháq* 'to put in' ; n : ng *nŏh* 'name', *ngŏh* 'to go out'.

/nh/ is a simple alveopalatal nasal [ñ]. nh : n (see /n/) ; nh : ng *kâlngáh* 'to bite at', *ngâlngáh* 'to show off', [iñ] is a syllable-final allophone of /nh/ (e.g. *pân* 'to wait', pânh [*pâiñ*] 'full'.

/ng/ is a simple velar nasal [ŋ]. ng : n (see /n/) ; ng :nh (see/nh/).

/r/ is a voiced alveolar trill [r̃]. r : l *ráh* 'to fall', *láh* 'if'.

/l/ is a voiced alveolar lateral [l]. It has a flapped [ǐ] allophone in syllable-final positions. l : r (see /r/).

/s/ is a voiceless alveopalatal fricative [š] alternating freely to aspirated stop $\left[t^{y}h\right]$. s : ch (see /ch/) ; s : h *seng* 'green', *heng* 'to warm'. [ih] is a word-final allophone of /s/ (e.g. *tâmpâh* 'in formation', *pâs* [*pâih*][3] 'to paint'.

/h/ is a voiceless glottal fricative [h]. h : s (see /s/) ; h : q (see /q/).

/w/ is a voiced bilabial rounded vocoid [w]. In syllable-initial position it alternates freely with a slightly fricative allophone [ƀ]. In word-final position it is a non-syllabic vocoid [w]. w : p (see /p/) ; w : b (see /b/).

/y/ is a voiced alveopalatal vocoid. Syllable-initial it has a tense allophone [y]. Word-medially between vowels it has a tense fricative allophone $\begin{bmatrix} y \\ + \end{bmatrix}$. Word-finally it has a lax non-syllabic allophone [i]. qayoy $\begin{bmatrix} {}^{\gamma}ayoi \\ + \end{bmatrix}$ 'an insect'.

## 2.    Phoneme Distribution

Pacoh words are made up of a main syllable which may be preceded by an unstressed presyllable. Presyllables are often morphologically significant.

**2.1.**    Presyllables have the pattern : $C_1 \, V \pm C_2$

**2.1.1.**    Vowels (V) occurring in the presyllable are $a, i, u$. These three vowels can only occur in open syllables ($C_1 \, V$). In closed syllables ($C_1 \, V \, C_2$) these three vowels are neutralized to $\hat{a}$, presumably for the sake of fewer contrasts since the addition of another phoneme position would tend to shorten the duration of the vowel.

**2. 1. 2.**    The consonant positions in the presyllable are $C_1, \; C_2$.

**2. 1. 2. 1.**    $C_1$ is filled by all consonants.

Examples of $C_1 \, V$: <u>pa</u>pi 'to converse', <u>ti</u>nŏl 'a post', <u>ku</u>-chĕt 'to die'.

Consonants other than voiceless stops $p, t, k, q$ and the liquids $r, l$, can occur in $C_1$ only as reduplications of the main-syllable-initial consonant, e. g. *babás* 'to fish', *chicha* 'to eat', *bâmbar* 'to divide by two', *sânhsŏar* 'to tell stories'.

**2. 1. 2. 2.** $C_2$ is filled only by nasals and liquids. Nasals assimilate to the same point of articulation of the main-syllable-initial consonant.

Examples of $C_1VC_2$: *pângkra* 'to repair', *târpi* 'to debate', *kâlngŏaq* 'a squash'.

There are a few combinations of fillers for $C_1V$ and $C_1VC_2$ which have not yet been found, but presumably all are possible.

**2.2.** Main syllables are composed of $C_3V \pm C_6$ or $C^4C_5V \pm C_6$.

**2.2.1.** All thirty vowel contrasts can occur in closed main syllables, that is when followed by $C_6$. Short vowels cannot occur in open syllables; so only eighteen vowel contrasts are possible in open syllables.

**2.2.2.** $C_3$ main-syllable-initial position can be filled by any consonant.

$C^4$ cluster-initial position can be filled by voiceless stops $p, t, k$. *tl* never occurs.

$C_5$ cluster-second position can be filled by liquids $l, r$ and fricative $h$.

$C_6$ word-final position can be filled by any consonant except $d$.

**2.3. Summary of Consonant Categories** Consonant categories as arranged according to distributional criteria in figure 3 are slightly different from the consonant categories in figure 2 which are arranged only according to phonetic criteria.

|  | *Presyllable,* | | *Main syllable* | | | |
|---|---|---|---|---|---|---|
|  | $C_1$ | $C_2$, | $C_3$ | $C_4$ | $C_5$ | $C_6$ |
| vl.  stops $p,t,k$ | X |  | X | X |  | X |
| aspirate $h$ | X |  | X |  | X | X |
| nasals $m,n,nh,ng$ | X | X | X |  |  | X |
| liquids $r,l$ | X | X | X |  | X | X |
| glot. stops $b,d,j,q$ fricatives $s,ch$ semivowels $w,y$ | X |  | X |  |  | X |

*Figure 3. Distribution of Consonant Categories*

The voiceless stops $p,t,k$ can occur in $C_1$, $C_3$, $C_4$, and $C_6$ position ; but $ch$ and $q$ cannot occur in $C_4$. Therefore they have been reassigned to other categories with like distribution. $ch$ is reassigned to the fricative category to which it has some phonetic similarity (see 1.2.2). $q$ is reassigned to the voiced stop category since glottal stop has no voiced-voiceless contrast and since the voiced stops share a glottal feature. This category is relabeled « glottalized stops. »

The aspirate $h$ can occur in $C_1$, $C_3$, $C_5$, and $C_6$ positions. $h$ is unique in that it is different from fricatives because they cannot occur in $C_5$; liquids which do occur in $C_5$ also occur in $C_2$, but $h$ cannot occur in $C_2$.

The nasals $m,n,nh,ng$ can occur in $C_1$, $C_2$, $C_3$, and $C_6$ positions.

The liquids $r,l$ can occur in $C_1$, $C_2$, $C_3$, $C_5$, and $C_6$ positions. The liquids are more versatile than the other six categories in that they can occur in five out of six consonant positions.

The glottalized stops $b,d,j,q$, and the fricatives $s,ch$, and the semivowels $w,y$ can occur in $C_1$, $C_3$, and $C_6$ positions.

It can be seen from this arrangement of categories that all consonant categories can occur in $C_1$, $C_3$, and $C_6$ positions. Glottalized stop, fricative, and semivowel categories can occur only in these three basic positions. The voiceless stop, nasal, liquid, and aspirate categories are different according to occurrence in $C_2$, $C_4$, or $C_5$ positions.

If we were to consider evidence from Pacȟoh Pahi concerning $ch$ and $q$, we would keep $ch$ in the voiceless stop category since it can occur in $C^4$ in Pahi, e. g. $chro$ 'rice'. $q$ could not be reassigned to the voiced stop category because voiced stops in Pahi can also occur in $C^4$. So $q$ might be reassigned to a 'miscellaneous' category with $s$, $h$.

**2.4. Summary of word patterns** (see fig. 4 Examples).

The word can be summarized as follows: $\pm$ presyllable $(C_1V \pm C_2)$ + main syllable $(C_3V \pm C_6)$ or $(C^4C_5V \pm C_6)$

## MAIN SYLLABLES

| Presyllables | $C_3V$ | $C_3VC_6$ | $C_4C_5V$ | $C_4C_5VC_6$ |
|---|---|---|---|---|
| none | pi | páh | pla | kláh |
| $C_1V$ | pə.pi | tə.páh | ka.kra | ta.kláh |
| $C_1VC_2$ | târ.pi | târ.páh | pâng.kra | târ.kláh |

*Figure 4. Examples of Word Patterns*[4]

4. pi 'to talk', pəpi 'to converse', târpi 'to debate', páh 'to slap', tapáh 'to slap involuntarily', târpáh 'to slap each other', pla 'hook', kakra 'a tree', pânkra 'to repair', kláh 'to split', takláh 'to split involuntarily', târkláh 'to split between persons'.