

# Tampuan phonology<sup>1</sup>

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## Introduction

Tampuan is a Mon-Khmer language spoken by approximately 24,000 people in Ratanakiri Province in northeast Cambodia (see map in Appendix I). Tampuan live by swidden farming in an area that extends east from the provincial capital Ban Lung to within 20 kilometers of the Vietnam border, and also south to the town of Lomphat on the Srepok River. In addition, an isolated pocket of 400 Tampuan speakers lives in Kachon near the town of Vouensai along the Sesan River 30 kilometers north of Ban Lung. Tampuan have close contact with their Brao/Krung neighbors to the north, the Kaco<sup>2</sup> to the northeast, the Lao and Khmer to the west, and especially the Jarai to the east.

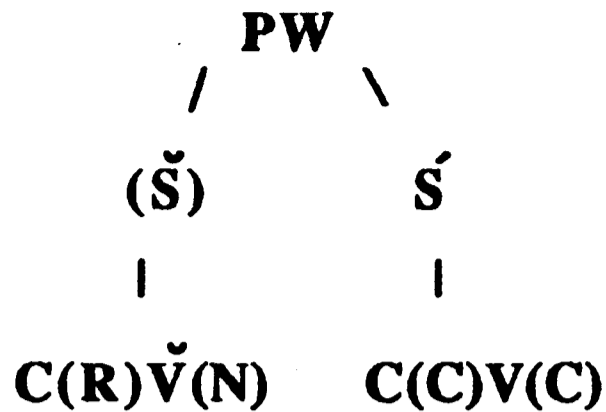
Tampuan has been classified as a language in the Central Bahnaric subgroup, most closely associated with Alak and Bahnar (Thomas 1979:183). There are three dialects of Tampuan, with the northern (Kachon) dialect showing the greatest degree of phonological and lexical difference, at least partially under Lao influence. But a word list comparing eastern and western Tampuan shows only a small percentage of variation. According to Tampuan, all of the dialects are mutually intelligible, even the Kachon dialect. The dialect chosen for study in this paper is the one spoken at Yak Laom commune near the town of Ban Lung, Ratanakiri Province.

## Word and Syllable Structure

Like most Mon-Khmer languages, Tampuan is rich in both monosyllabic and disyllabic forms. The structure of the phonological word (PW) may be expressed schematically as follows:

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<sup>1</sup>This research is the result of input from my many Tampuan friends and teachers, especially Mr. Way Tiang and Mr. Teu Kheer. I am especially indebted to Ken Gregerson for his invaluable input. The analysis and final version of this paper have benefited from his comments throughout, especially on matters of Bahnaric phonology, register, and diachronics. The errors that remain are, unfortunately, my own. Final thanks are due the linguist who has influenced me the most, Dale P. Crowley.



That is, the phonological word (PW) is composed of a main (tonic) syllable ( $\acute{S}$ ) optionally preceded by a pre- (atonic) syllable ( $\check{S}$ ). Presyllables contain a consonant (C), an optional *r* (R), an unstressed vowel (V), and an optional final nasal, *l* or *r* (N). Main syllables contain an initial consonant or consonant cluster (CC), and a vowel or vowel sequence (V) optionally closed by a consonant.

The presyllable C(R) $\check{V}$ (N)- characterizes a range of possible weakly stressed syllables of the following sort:

<u>tətɛʔ</u>	'different'	<u>pərpɛː</u>	'goat'
<u>rəmɛh</u>	'firewood'	<u>trəʔoʔ</u>	'spit up'
<u>pəntaːw</u>	'to build'	<u>ʔnɕən</u>	'nine'
<u>pəlʔak</u>	'armpit'	<u>ʔmhmao</u>	'stone'

Like other presyllables, syllabic nasal presyllables above are also construed here as no more than special cases of a canonical CVN- pattern, that is:



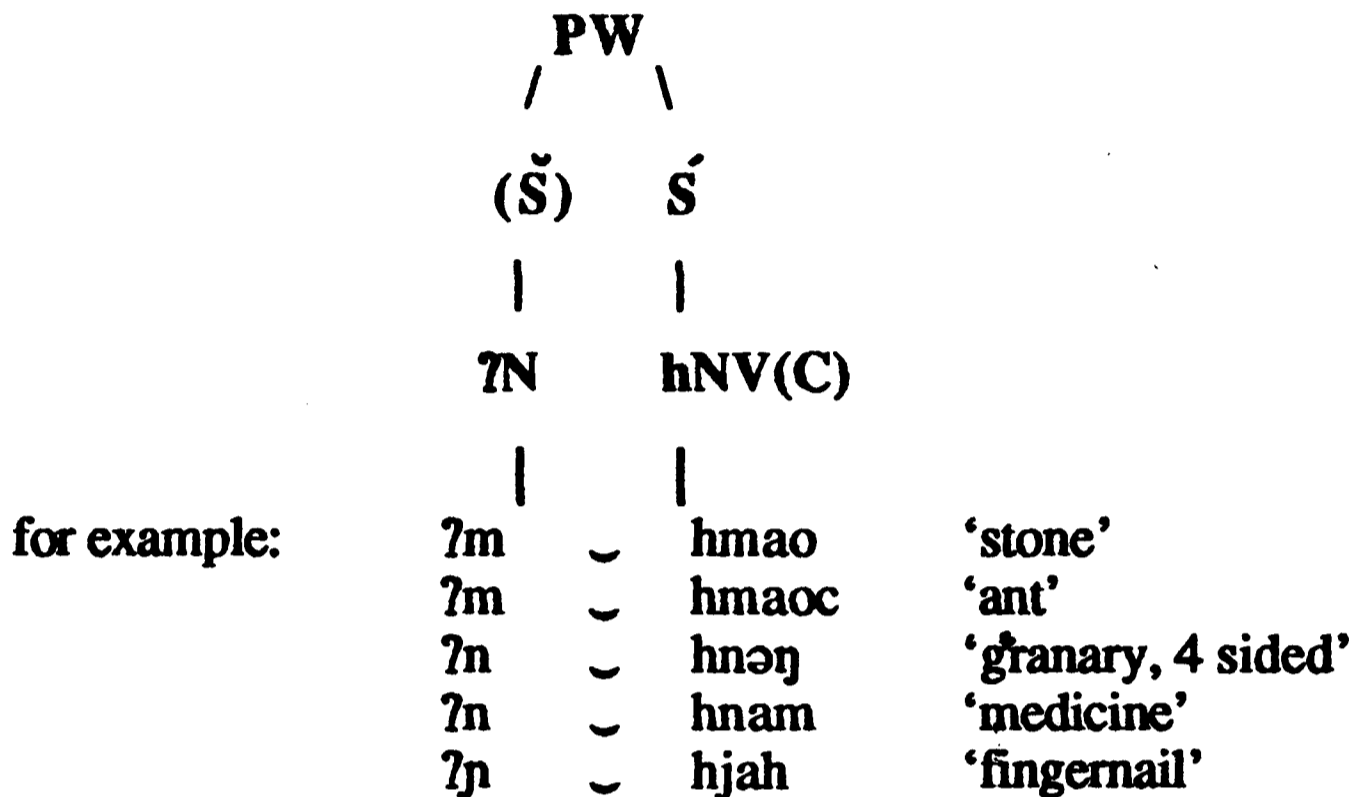
in which syllabic nasal presyllables are launched with glottal stop onsets (C = ʔ) and with VN manifested phonetically simply as a syllabic nasal (ie. VN > N̩). All such predictable N̩ occurrences in presyllables are represented simply as *m*, *n*, *ɲ* or *ŋ*.

Tampuan forms with nasal presyllables may precede voiceless stop initials in the main syllable. Historically, they appear generally to correspond with PNB or other Bahnaric forms with presyllable shapes *pa-* or *ha-* or even *ta-*. Consider the following examples:

<u>ʔnton</u>	'steal'	cf. Bahnar: <i>taton</i>	PHrS: * <i>latòŋ</i> (Smith, 1972)
<u>ʔnɕən</u>	'nine'	cf. PNB: * <i>tačìn</i>	
<u>ʔncit</u>	'ten'	cf. Hr: <i>hajàt</i>	
<u>ʔntrɛː</u>	'pestle'	cf. PNB * <i>adrèj</i>	Khmer: <i>ʔnrɛː</i>
<u>ʔnkɛː</u>	'horn'	cf. PNB * <i>pakeɾ</i>	

These nasal presyllables, though somewhat reduced versions of the already metrically reduced syllables<sup>2</sup> implied by their comparative counterparts elsewhere in Bahnaric, still maintain a separate weak stress and are not to be construed merely as another cluster construction in the onset of the main syllable.

A further and special subset of syllabic nasal presyllables is that which occurs preceding preaspirated nasal initial consonants in the main syllable, i.e.:



These nasal presyllables preceding preaspirated main syllables appear to evolve historically from CV-NV through C<sub>h</sub>-NV to ʔN-hNV. Something like the following schematic scenario seems to account for contemporary Tampuan forms, taking *ʔmhmao* 'stone' as a case study:

- (i) \*ta mɔː      source form (cf. PNB \*tamɔ)
- (ii) ta > t<sub>h</sub>      t<sub>h</sub> mɔː      syllabic reduced to aspiration (cf. Khmer *thmɔː*)
- (iii) t > ʔ      ʔ<sub>h</sub> mɔː      glottal replacement
- (iv) ʔ<sub>h</sub> > ʔN<sub>h</sub>      ʔm<sub>h</sub> mɔː      epenthetic nasal copying of main syllable initial
- (v) ʔm<sub>h</sub> > ʔm<sub>h</sub>      ʔm<sub>h</sub> hmao      nasal syllabification (> contemporary Tampuan)

Thus, beginning with a simple CV-NV shape reconstructed, for example, for Proto North Bahnaric (PNB) \**tamɔː* (Smith 1972) the presyllable *ta-* is reduced to (ii) *t<sub>h</sub>-*, retaining a modicum of syllabicity through the aspirated transition before nasal *m-* in *t<sub>h</sub>mɔː* (cf. Khmer *thmɔː*). In (iii) the presyllable syllabicity is further reduced with the simplification of [t] to [ʔ] and (iv) an exact point of articulation copy of the main syllable initial nasal is replicated in the presyllable, where in (v) as the only voiced segment in the syllable, that epenthetic nasal attracts the syllabification feature and the attested Tampuan form *ʔmhmao* is achieved. Thus, these preaspirated

<sup>2</sup>Gregerson quips that these reduced atonic syllables help form disyllables that could be termed (with due apologies to Matisoff) *paene-sesquisyllabic* ("near syllabic and one half") words—perhaps a way station to monosyllabicity.

nasals actually reflect earlier plain main syllable nasals which had subsequently undergone special presyllable reductions. (Note that the schematic feature changes (i) through (v) may not necessarily all have been separate temporal stages historically.)

## Tampuan Consonants

Figure 1 displays the 28 consonantal phonemes that occur syllable initially in Tampuan.

	Labial	Dental	Palatal	Velar	Glottal
Voiceless stops	p	t	c	k	ʔ
Aspirates/ Spirants	p <sup>h</sup>	t <sup>h</sup>	ç	k <sup>h</sup>	h
Voiced, glottalized stops	ʔb	ʔd			
Nasals	m	n	ɲ	ŋ	
Liquids	w	l, r	j		
Glottalized liquids	ʔw	ʔl	ʔj		
Aspirated continuants	hm	hn, hl, hr	hɲ		

Figure 1. Tampuan initial consonants

In addition, Figure 2 shows the fifteen consonants that occur in syllable final position.

	Labial	Dental	Palatal	Velar	Glottal
Voiceless stops	p	t	c	k	ʔ
Spirants			ç		h
Nasals	m	n	ɲ	ŋ	
Liquids	w	l, r	j		

Figure 2. Tampuan final consonants

The consonants displayed in Figure 1 occur with certain phonetic details and limitations which we turn to next in our discussion.

Voiceless stops occur in labial, dental, palatal, velar and glottal positions. As a register effect it is worth observing that voiceless stops take allophonic variants that are somewhat more lax and just slightly aspirated preceding lax/breathy vowels (see further the vowel section below). This slight aspiration in consonants preceding lax register vowels is, of course, not unique to Tampuan, appearing in certain dialects of Khmu and in Chong (see for the latter Huffman, 1985:361).

**p** occurs phonetically as a voiceless bilabial stop, and is unreleased syllable finally, as in the following forms: *paj* 'to cook (rice)'; *pɔp* 'to see'; *təpɔp* 'to pity'.

**t** occurs phonetically as a voiceless dental stop, and is unreleased in syllable final position, as in *taor* 'ear'; *trot* 'push'; *tətɔr* 'light, daytime'; *tɔr* 'to connect'.

- k** occurs phonetically as a voiceless velar stop that is unreleased in syllable final position. It is exemplified in the following forms: *kəmaŋ* [kəmaŋ] ‘wife’; *çək* ‘hair’; *kaɪ* ‘fish’.
- c** is a voiceless palatal stop. In final position, /c/ is unreleased and conditions a phonetic *j*-glide from the preceding vowel. This consonant is exemplified by these forms: *caɪk* ‘to walk’; *caɪr* ‘a place’; *pɛc* [pɛʃc] ‘to like, want’.
- ʔ** is a velar stop that occurs in syllable initial or final position, as exemplified by *ʔaɪm* ‘sweet’; *ʔɛɪ* ‘3rd person singular’; *kətoʔ* ‘number specifier for objects’.

Aspirates occur in labial, dental, and velar positions, while spirants occur in palatal and glottal positions. Aspirates and spirants rarely precede lax register vowels. These fully aspirated stops are not to be confused with weakly aspirated voiceless stops referred to earlier that occur as allophonic variants before lax register vowels. Tampuan aspirates and spirants are described individually as follows:

- ph** is a voiceless bilabial aspirated stop that occurs as in the forms *p<sup>h</sup>aɪm* ‘blood’; *p<sup>h</sup>laɪŋ* ‘variety, kind’; *phap* ‘book’; *phɛɪ* ‘unhusked rice’.
- th** is an aspirated voiceless dental stop exemplified as in the forms *t<sup>h</sup>ɛɪʔ* ‘small’; *t<sup>h</sup>ok* ‘difficult’; *t<sup>h</sup>un* ‘season’.
- ç** is a palatal spirant that varies from [ç]~[ç<sup>h</sup>]~[s] as an onset in a main syllable. Like other palatals, in syllable final position it conditions a predictable phonetic *j*-glide from the preceding vowel. The consonant ç rarely precedes lax vowels, and is exemplified in forms such as: *çaim* ‘bird’; *pənouç* [pənouç] ‘person’; *çəçwaɪ* ‘child’; *çoɪ* ‘dog’.
- kh** is a voiceless velar aspirated stop, occurring in forms such as: *k<sup>h</sup>laom* ‘to blow’; *k<sup>h</sup>əɪj* ‘to be accustomed to’; *k<sup>h</sup>wɛɪr* ‘to drill’.
- h** is a glottal spirant that can occur either syllable initially or finally, as in: *hai* ‘to watch’; *kɛh* ‘already’; *hian* ‘to learn’; *hour* ‘to flow’.

Voiced stops are found only in labial and dental positions and are slightly glottalized or prevoiced. They only rarely precede lax register vowels and are described individually as follows:

- ʔb** occurs as a voiced glottalized stop as in these forms: *bə* ʔbɛɛt ‘a little’; *ʔbəroɪ* ‘to sell’; *ʔblɛɪl* ‘blind’.
- ʔd** is a voiced dental glottalized stop as exemplified in *ʔdar* ‘sun, day’; *ʔdaɪl* ‘shallow’; *ʔn ʔdɛɪ* ‘they’ third person plural, definite.

Nasals occur in the labial, dental, palatal, and velar positions before both tense register and lax register vowels, and are described and exemplified as follows:

- m** is a voiced nasal continuant as in the following forms: *maoŋ* [maoŋ] ‘one’; *kəmaŋk* ‘man, male’; *lam* ‘to go’; *məɪr* ‘garden, farm’.
- n** occurs as a dental nasal continuant as exemplified by *nɔh* ‘there’; *pəntaɪw* ‘to build’; *pɪn* ‘we, first person/plural’; *naŋ* ‘to look for’; *pɛnɪk* ‘a pile’.
- ɲ** is a palatal nasal continuant. In syllable final position, it conditions the usual palatal *j*-glide from the preceding vowel. This consonant is exemplified in the following forms: *ɲaɪ* ‘what?’; *ʔaŋ* [ʔaŋ] ‘I, first person singular’; *ʔəɲɪ?*

'life, age'.

ŋ is a velar nasal continuant, as in the following forms: *ŋaɪ* 'work' (n.); *kəlŋaɪc* [*kəlŋaɪc*] 'afternoon'; *pətəŋ* 'instead of, for'; *ŋaɪw* 'forest cat'.

Liquids appear in labial, dental, and palatal positions, and can occur with either tense or lax vowels. They are described individually as follows:

w is a voiced, labial approximant that occurs in such forms as these: *wac* [*waɪc*] 'abdomen'; *təwəŋ* 'between, intervening space'; *naɪw* 'new'.

l is a voiced dental lateral approxinant that is exemplified as in the following forms: *ləŋ* 'from'; *ləloŋ* 'to rub briskly'; *ʔdəl* 'to punch, hit'.

r is a dental retroflex which is normally flapped, but in careful articulation is sometimes trilled. Word finally it is always trilled. It is exemplified as follows: *rah* 'to tell'; *rərait* 'to tremble, shiver'; *kraʔ* 'old, aged'; *hour* 'to flow'.

j is a palatal approximant and occurs as in these forms: *joɪc* [*joɪc*] 'wrong'; *ləj* 'continually, throughout'; *jəh* 'although'.

Glottalized liquids are articulated with a simultaneous glottalization of the consonant. They rarely occur with lax/breathy vowels:

ʔw is a glottalized labial approximant that occurs in forms such as: *ʔwai* 'to reside, still'; *ʔwaʔ* 'to brush'. There is only a single occurrence in syllable final position, *naɪwʔ* 'again'.

ʔl occurs as a glottalized lateral, which in the northern dialect has the variant *ʔd*, a glottalized voiced dental stop. It is exemplified in these forms: *ʔloʔ* 'to know'; *ʔloŋ* 'wood'.

ʔj is a glottalized palatal approximant that is exemplified in forms such as: *ʔjouʔ* 'to be afraid'; *ʔjəɪm* 'to borrow'; *ʔjɪt* 'to wipe'.

Pre-aspirated (voiceless onset) continuants occur in labial, dental, and palatal positions, only with tense register vowels in forms such as the following:

hl or ʎl occurs as a preaspirated (voiceless onset) liquid, and is exemplified by *hlaɪ* 'leaf'; *kəhlaɪp* 'wing'.

hr or ɹr is a preaspirated (voiceless onset) dental trill as in the following forms: *hrɛɪ* 'rattan'; *hroɪc* [*hroɪc*] 'to strip off, pull out'; *kəhrɛɪ* 'red'.

hm or m̥m is a preaspirated (voiceless onset) labial nasal found in such forms as: *ʔm hmao* 'rock, stone'; *ʔm hmoɪj* 'guest'.

hn or n̥n occurs as a preaspirated (voiceless onset) dental nasal as in the following examples: *ʔn hnam* 'medicine'; *ʔn hnal~ʔn hal* 'to recognize'.

hp or p̥p occurs in a limited set of forms such as *ʔp hɲah* 'fingernail'.

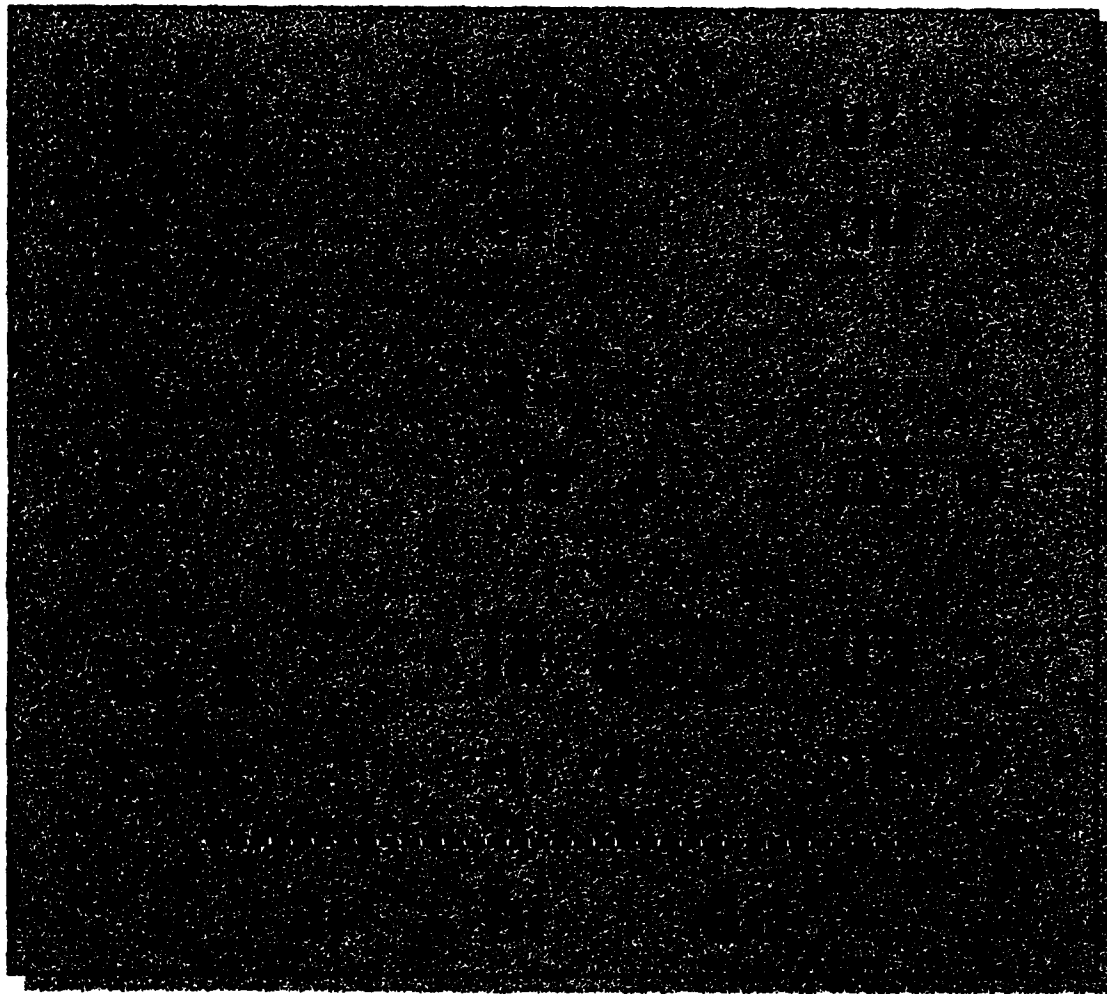
## Tampuan Vowels

Tampuan, like a number of other Bahnaric languages,<sup>3</sup> possesses a prosodic

<sup>3</sup>Tampuan thus diverges from the non-register nature of the Bahnar language itself, a sister Central Bahnaric language.

opposition between phonological words that are clearer and tenser versus those that are breathier and laxer in pronunciation (Smith, 1972). In this kind of phonological system, certain vowel positions and trajectories tend to be associated with one or the other of the tense versus lax prosodies or registers (Henderson, 1952). Native speakers of Tampuan are aware of this contrast, and sometimes refer to it using the terms *than* 'taut' for words spoken with a tenser voice quality, and *thour* 'loose' for those spoken with a lax/breathy voice quality.

Figure 3 represents all Tampuan vowel types in a conventional matrix based on vowel height and advancement. It further distinguishes vowels pronounced with a lax/breathy phonation quality from those with a clearer one. Lax/breathy vowels are marked in Figure 3 with the usual IPA subscripted double dots, thus breathy  $a̤$  is distinguished from clear vowel  $a$ . Such voice quality contrasts occur in nearly every region of the vowel chart: high, mid, low, front, center, back. It will be further observed that lax vowels in general are of a closer variety—that is, higher tongue height—than their clear vowel counterparts. Vowels also occur in long and short varieties, though not for each vowel category, for example, lax vowels  $i̤$ ,  $ɨ̤$ , and  $ʉ̤$  for which no tense counterparts have yet been recorded (a dash in Figure 3 indicates these and other holes in the pattern). Vowels in bold in Figure 3 are lax/breathy while those in grey are tense/clear. For a statistical account of Tampuan vowels, see Appendix II.<sup>4</sup>



*Figure 3.* Tampuan vowels

<sup>4</sup>Tampuan agrees in general with Proto-North Bahnaric in having a significant majority of tense vowels over lax vowels in a dictionary count, 65/35 percent for Bahnaric as compared to 74/26 percent for Tampuan (Smith, 1972:15).

The vowels displayed in Figure 3 occur with certain phonetic details and limitations as described below.

### Lax Register Vowels

The following vowels form a class of lax and slightly breathy syllabics that stand in contrast to the tense register set of vowels.

- i:** is the highest, most fronted vowel in Tampuan and is lax/breathy, as exemplified in these forms: *t̪i:* 'to have'; *p̪i:* 'forest' *ŋ̪i:m* 'lean against'; *p̪i:l* 'mat'.
- ɨ:** is a high centralized vowel pronounced with lax/breathy articulation and occurs in forms such as these: *c̪i:c* 'light in weight'; *kən̪t̪i:l* 'heel'; *kəm̪i:* 'morning'; *p̪i:ʔ* 'father'.
- u:** is a high back rounded vowel pronounced with lax/breathy articulation, as in: *ʔnd̪u:* 'with, along with'; *təŋh̪u:t* 'inhale'; *p̪u:* 'they, 3rd p.pl. indefinite'; *pl̪u:ŋ* 'to tell a lie'.
- ə:** is a long mid central vowel that has a slight lax/breathy articulation. It is exemplified in the forms: *m̪ə:ʔ* 'mother'; *d̪ə:l* 'also'; *kh̪ə:ŋ* 'thing, ingredient'; *kh̪ə:k* 'fail to do'.
- ɛ:** is a long, lax/breathy vowel in the low front position that occurs in a limited number of forms such as these: *kr̪ɛ:* 'bed'; *ʔntr̪ɛ:* 'pestle'.
- ja [iɜ]** is a lax/breathy diphthong in the low central position, though its breathiness is substantially muted following velars. In the Lomphat district to the south, Tampuans pronounce this vowel as *iɜ*. It is exemplified in the following forms: *t̪iɜk* 'water'; *p̪iɜr* 'two'; *tət̪iɜŋ* 'to roast'; *t̪iɜ* 'duck'.
- ua [uɜ]** is a lax/breathy high back diphthong that occurs as in the following examples: *k̪uɜŋ* 'gong'; *ʔntr̪uɜl* 'after'; *t̪uɜm* 'stuck'; *p̪uɜj* 'to follow'.
- i** is a short high front lax vowel that occurs as the variant [i] before velars, and [ɪ] elsewhere, as exemplified in these words: *p̪i:h* 'snake'; *p̪i:m* 'we' inclusive; *kən̪t̪i:ʔ* 'center, middle'; *c̪i:t* 'ten'.
- ɨ** is a short high mid vowel that always occurs with a lax/breathy articulation, as in: *p̪i:r* 'mouth'; *kən̪t̪i:ŋ* 'hide from view'; *t̪i:l* 'until, arriving'.
- u** is a short rounded high back vowel that is lax/breathy in articulation, as exemplified in the forms: *rək̪u:l* 'knee'; *pl̪u:ʔ* 'feverish'; *cr̪u:ʔ* 'deep'.
- ɛ** is a lax fronted mid vowel that occurs in a limited set of forms such as: *kl̪ɛ:h* 'exhausted'; *ʔnt̪ɛ:h* 'below'; *kət̪ɛ:h* 'short in height'; *tət̪ɛ:ʔ* 'different'.
- ə** is a short lax vowel that is sometimes slightly diphthongized as [əɜ]. The following are examples: *pr̪ə:h* 'god'; *prət̪ə:m* 'five'; *təl̪əp* 'accustomed to'; *k̪jə:m* 'near'.
- ɔ** is the lowest, most backed of the lax vowels, and is exemplified by the forms: *t̪ɔ:k* 'monkey'; *p̪ɔ:p* 'to see'; *k̪ɔ:ʔ* 'cooking pot'; *ʔnt̪ɔ:l* 'roof'.



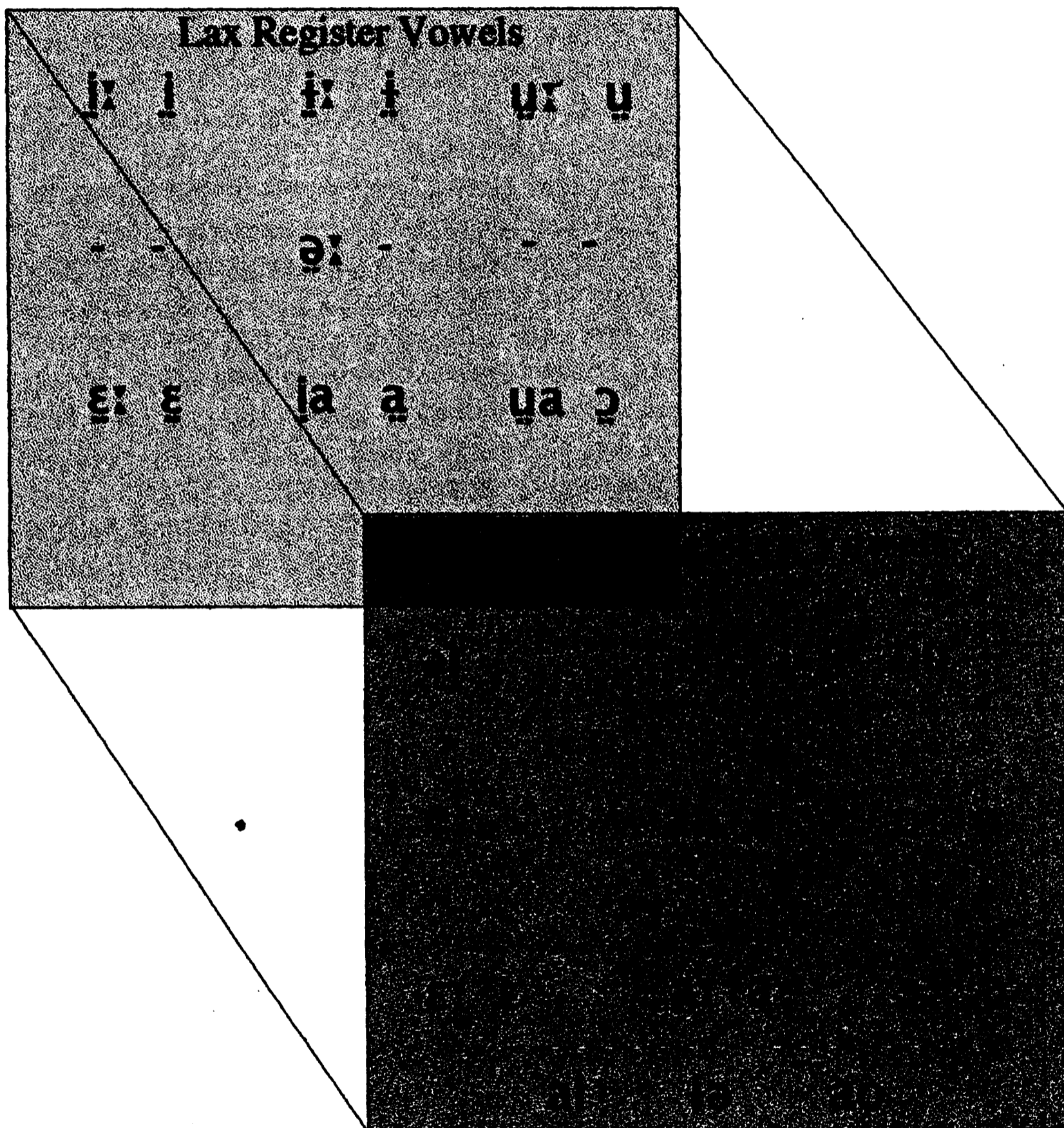
## Tense Register Vowels

The following vowels are articulated with a modal or clear to tense phonation setting and are contrastive as a group with the lax register syllabics described earlier.

- əi** is a high fronted diphthong that varies phonetically as [əi] ~ [ʌi] ~ [oi] depending on the dialect. It is exemplified in the forms: *həi* 'house'; *məi* 'older sibling'; *məir* 'swidden field'; *prəit* 'banana'.
- əɪ** is a mid to high central diphthong that occurs in a rather limited set of forms such as: *ʔbəik* 'dirty, bad'; *ʔəik* 'angry'.
- ou** is a mid to high back diphthong, exemplified by *koum* 'to wait'; *mouh* 'nose'; *tour* 'trade, exchange'; *rəlou* 'to rest'.
- e:** is a mid long vowel that occurs mostly in loan words from Lao, as in *keɲ* 'clever'; *pəthet* 'country, nation'; *he:p* 'box'; *khēt* 'province'.
- ɛ:** is a low front long vowel that occurs with a lowered onset in open syllables [ɛɛ], and a lowered off-glide in closed syllables [ɛɛ] ~ [ɛə], as in these forms: *çəkɛ:* 'pig'; *təpɛ:* 'rice wine'; *mɛɛŋ* 'cheek'; *pəʔdɛɛt* 'to ignite'.
- aə** is a central diphthong that varies phonetically from [aə] to [ɜi] in such forms as: *pəhyəə* 'to send'; *ʔbəə* 'not yet'; *taəl* 'to answer'; *paək* 'field house'.
- o:** is a mid back vowel that has a lowered onset in open syllables [ɔo], but in closed syllables it occurs with a lowered/centered off-glide [oɔ] ~ [oə] (except before palatals, where the off-glide is neutralized by the usual palatal j-glide). It is exemplified in the forms: *mɔo* 'black'; *joɔr* 'to use'; *moɔn* 'nephew, niece'; *spo:ɔ* (*spo:ɔc*) 'to touch'.
- ai** is a low central diphthong that varies phonetically from [ai] ~ [ae], as in these forms: *caɪ?* 'to put, place'; *haɪ* 'to watch'; *paɪŋ* 'three'; *ʔaɪt* 'to drink'.
- iə** is a falling central diphthong that occurs most often in names and occasionally in loan words from Lao, as in: *miən* 'a name'; *khəiən* 'a name'; *miəŋ* 'district'.
- ao** is a diphthong that rises from the low central to the mid back position and is exemplified in words such as: *khlaom* 'to blow'; *taor* 'ear'; *klao* 'husband'; *tao* 'there'.
- ɛ** is a low front vowel as in the forms: *ʔjet* 'fallow field'; *pɛh* 'pound rice'; *çɛc* (*çɛ:c*) 'name, to be named'; *rəmɛh* 'firewood'.
- ə** is a mid central vowel that varies phonetically from [ə] to [ə̌], and is exemplified in forms such as: *cək* 'to hold in the hand'; *ʔnçən* 'nine'; *məŋ* 'to depend on'; *khən* 'to be brave'.
- o** is a mid back rounded vowel that occurs in forms such as: *loŋ* 'water well'; *ʔlo?* 'to know'; *thok* 'difficult'; *ʔntoŋ* 'to steal'.
- a** is a low central vowel exemplified in forms such as: *ʔnkan* 'woman'; *war* 'mouse, rat'; *cra?* 'carve, write'; *kal* 'fell a tree'.
- ɔ** is a low back vowel occurring as in these examples: *kɔl* 'head'; *rɔk* 'cow'; *səmlɔŋ* 'star'; *trɔ?* 'true'.

## Vowel Register

The view of Tampuan vowels in Figure 3 may be recast as two separate systems of lax vs. clear vowels, as in Figure 4.



**Figure 4.** Tampuan lax vs. tense register vowel systems

The standard theory explaining register phenomena and the multiplicity of vowels in Mon-Khmer languages is that an original /b d j g/ became devoiced. This loss of phonetic voicing contrast with original /p t c k/ resulted in the doubling of the number of phonemic vowel contrasts (Huffman 1976:576).

In "The Register Problem in Fifteen Mon-Khmer Languages" (1976) Huffman posited four classifications for Mon-Khmer languages in relation to the historical evolution of register: Conservative, Transitional, Register and Restructured. The Conservative and Transitional languages are those that retain the original voiced/voiceless distinctions in the consonants to greater or lesser degrees. Loven, Lawa, and Brao were named as representative of the Conservative stage, and Alak, Souei, and Mal as representative of the Transitional stage.

In the Register stage, according to this scenario, languages reflect the original voiced/voiceless contrast not in their stops but through a derived phonemic vowel register, a complete merging of /b d j g/ and /p t c k/ having taken place by this time. Huffman places in this Register stage certain dialects of Kuy, Chaobon, Chong, Bru, and Mon.

Finally, in Huffman's Restructured stage, former register contrasts have become non-existent or sub-phonemic due to diphthongization and vowel migration. Khmer, with its apparent lack of contemporary phonemic register and its 13 diphthongs, is proposed as a candidate for the restructured category (though Henderson 1952 had originally referred to Khmer specifically in terms of register based partially on diachronic evidence). Huffman later added to the restructured category a Bru dialect in Ubol, Thailand, as well as Nge? and Katang spoken in Saravane Province in Laos (Huffman, 1976).

In *Vowel Permutations in Austroasiatic Languages*, Huffman further described a consistent pattern of diphthongization in a number of the Restructured languages, that is, the lax (second) series high and mid vowels, as well as the low, front vowel /ε/, tended to remain stable in vowel position, while their tense (first) series counterparts became diphthongs, all with lowered onsets. By contrast, in the low central and back positions—/a/ and /ɔ/—it was the *tense* register vowels that showed stasis, while the lax counterparts underwent diphthongization, though with *raised* rather than lowered onsets. Huffman charted this process as in Figure 5.

	KHMER			BRU		
2nd	ii	ii	uu	ii	ii	uu
	↓	↓	↓	↓	↓	↓
1st	əi	əi	ou	eii	ɣii	ouu
2nd	ee	əə	oo	ee	ɣɣ	oo
	↓	↓	↓	↓	↓	↓
1st	εε	aə	aɔ	εεε	əɣɣ	ɔɔɔ
2nd	εε	ia	əɔ	(εε)	ii	uua
	↓	↑	↑	↓	↑	↑
1st	aε	aa	ɔɔ	aεε	aa	ɔɔ

Figure 5. Khmer and Bru (Ubol) vowel Systems (Huffman)

Tampuan presents a remarkably parallel pattern to the vowel trajectories reflected in Khmer and Bru. That is, one can see from Figure 3 that Tampuan lax vowels in the high and mid positions along with the low front vowel / $\epsilon$ / show general stasis, while their tense counterparts have lowered onsets. Again like Khmer and Bru, in the low central and back positions, it is the *tense* series that shows stability while the *lax* counterparts have been diphthongized.

Huffman tentatively placed Tampuan, however, in the transitional category because he felt it could be analyzed in terms of contrasting stops rather than contrasting vowels. But he added that more information, especially the presence of minimal tense/lax pairs following continuants, might place Tampuan in the pure register category. The present paper is offered as a modest first step in renewing detailed research on Tampuan with a view to clarifying some of the important issues that Huffman originally brought into focus through his taxonomy of Mon-Khmer register development.

Taking up the question as to the correlation of initial consonant types with vowel phonation types in Tampuan, as noted under consonant class descriptions above, there is some correlation—but not an absolute one. Figure 6 recapitulates the cooccurrence possibilities between initial consonant types and vowel types (ie. clear vs. breathy):

*Tense/clear Vowel Syllables*

1. Plain voiceless stops [p-]
2. Fully aspirated voiceless stops [ph-]  
and spirants [ç-]
3. Voiced glottalized stops [ʔb-]
4. Glottalized liquids [ʔl-]
5. Preaspirated continuants [hl-]
6. Nasals [N-]
7. Liquids [l-]

*Lax/breathy Vowel Syllables*

- Weakly aspirated vl. stops [p<sup>(h)</sup>]  
-----  
-----  
-----  
-----  
Nasals [N-]  
Liquids [l-]

*Figure 6. Co-occurrence of consonant types and vowel types*

That is, tense/clear vowel syllables cooccur with a unique set of initial consonant types (1-5), while lax/breathy vowel syllables allow only (1) weakly aspirated stops uniquely. Both clear and breathy syllables may be initiated with nasal and liquid consonants (6,7).

Thus, it appears that the most pervasive and systematic contrast among syllable types is borne by the prosodic, phonational features of clear vs. breathy, not any initial consonant sets. This argues for a synchronic characterization of Tampuan as having advanced beyond Huffman's Transitional Stage and crossed the threshold of a Register language, albeit, perhaps not by much.

Regardless of present categorization, only time will tell whether Tampuan will in Huffmanesque fashion be pulled inexorably on towards a Khmer-like post-register restructuring via radical migrations of former register counterparts across

vowel space. The presence of diphthongs in nearly every section of the vowel chart may be an indication that such restructuring is already taking place. Further, it is perhaps not without potential consequence that in the eastern dialect of Tampuan vowels seem to be in process of losing much of their tense-lax phonation distinction.

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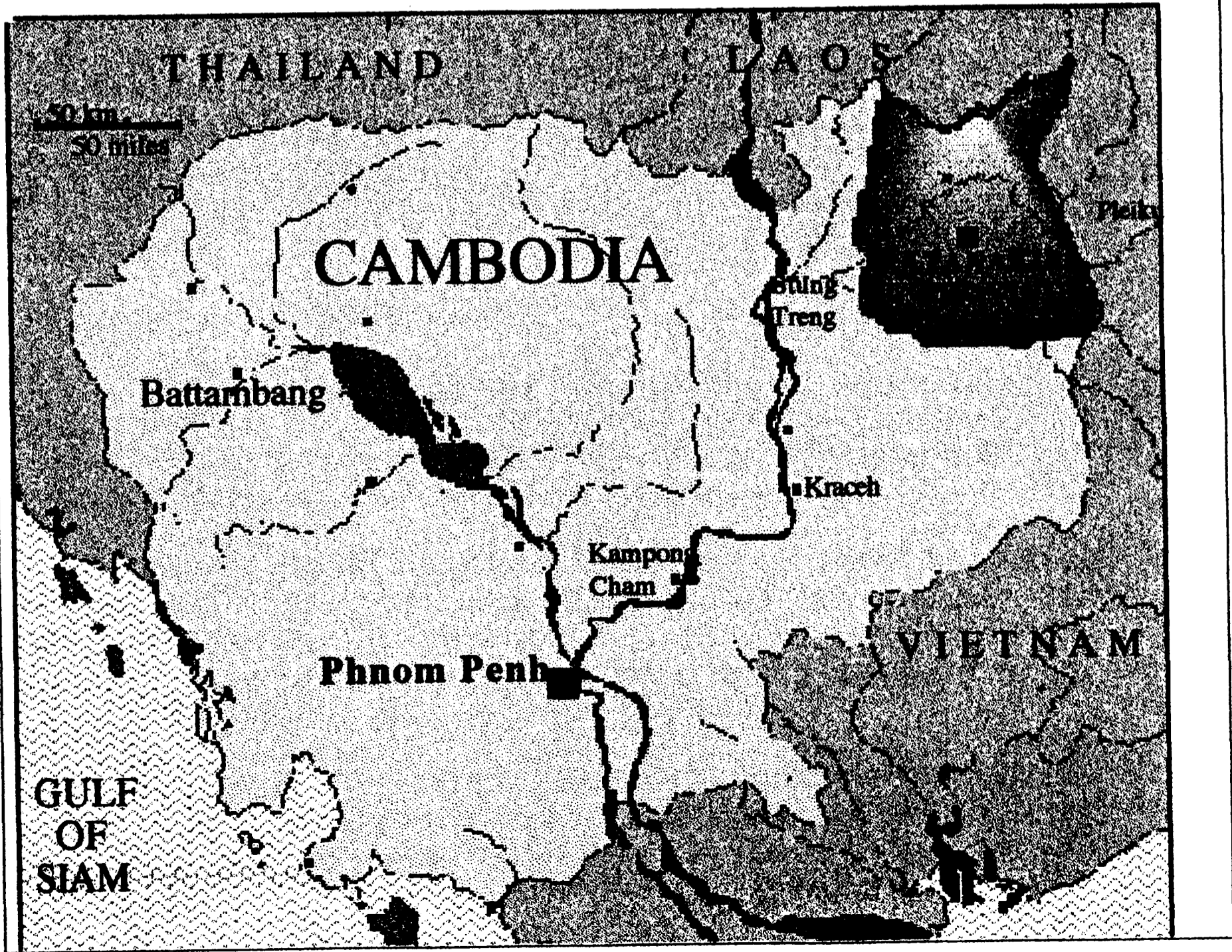
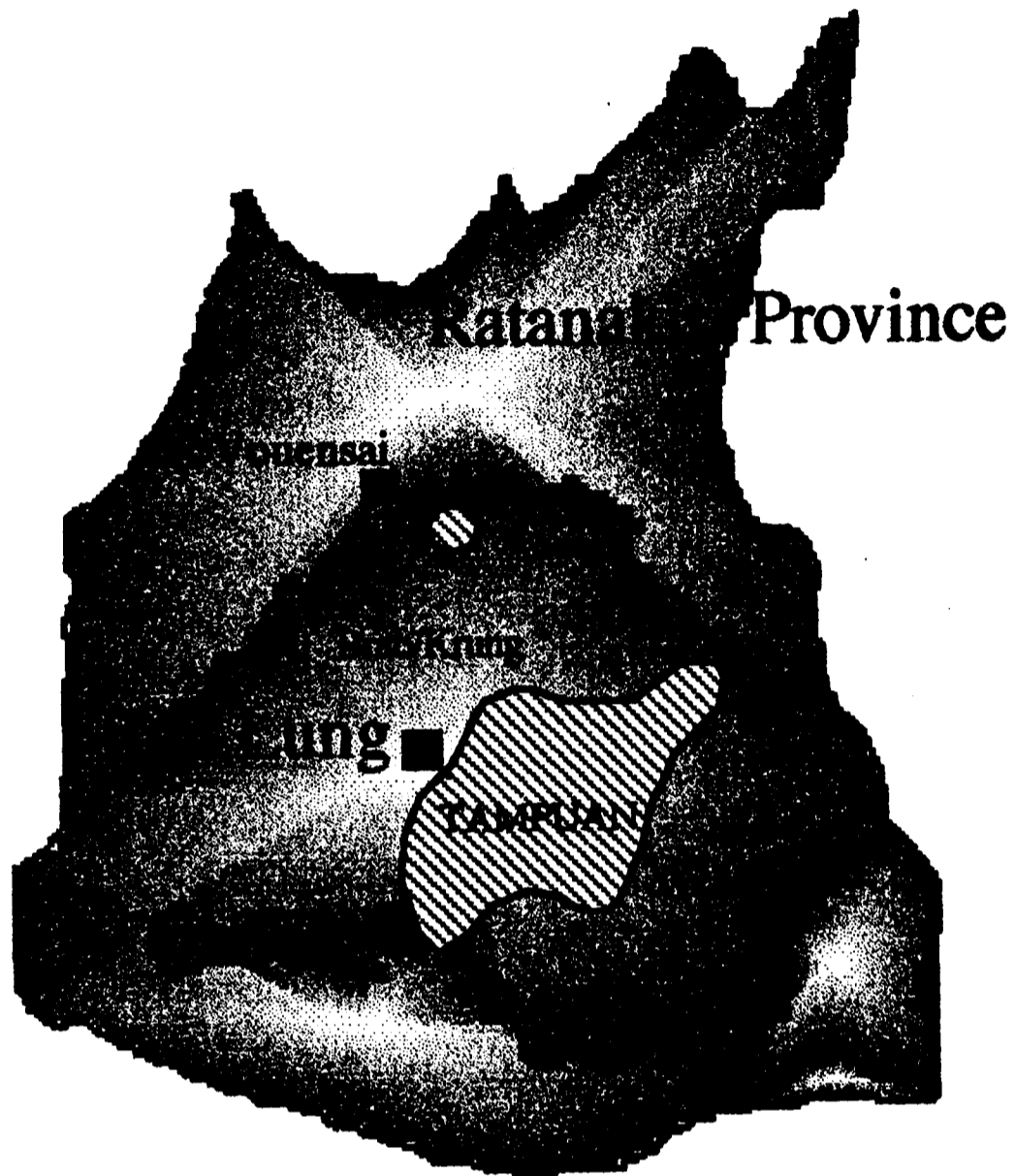
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Appendix I. Map of Tampuan speaking areas in Ratanakiri Province, Cambodia

Appendix I.  
Map of Tampuan  
speaking areas,  
Ratanakiri Province,  
Cambodia



*Appendix II. Tampuan Vowel Frequencies*  
(Text Count)

Vowel	Text Count	Percent of Total	Text Rank	Dictionary Rank
a	852	21.0%	1	1
a:	396	9.8%	2	2
ɔ	288	7.1%	3	3
ə	264	6.5%	4	16
ɛ:	246	6.1%	5	4
o:	236	5.8%	6	7
o	162	4.0%	7	11
əi	142	3.5%	8	8
ai	136	3.3%	9	9
i:	128	3.2%	10	12
ɛ	127	3.1%	11	14
i	126	3.1%	12	25
ao	117	2.9%	13	5
ɔ:	112	2.8%	14	24
ɯ	108	2.7%	15	10
i:	86	2.1%	16	22
ia	76	1.9%	17	13
aə	72	1.8%	18	17
ɤ	72	1.8%	19	6
ou	64	1.6%	20	15
ɔ	64	1.6%	21	20
ɯ:	57	1.4%	22	18
ɔ:	42	1.0%	23	21
ɯa	20	0.5%	24	19
ɛ:	16	0.4%	25	27
əi	12	0.3%	26	28
ɛ	8	0.2%	27	26
i:	3	0.1%	28	23
iə	1	0.0%	29	29
ɛ:	0	0.0%	30	30
<b>Total</b>	<b>4033</b>	<b>100</b>		

	<b>Text</b>	<b>Diction.</b>
	<b>Count</b>	<b>Count</b>
<b>Tense Vowels</b>	<b>80%</b>	<b>74%</b>
<b>Lax Vowels</b>	<b>20%</b>	<b>26%</b>

*Appendix III.*  
Selected Tampuan Glossary

<b>ʔb</b>		<b>cɔ:k</b>	'cup'
<b>ʔbaə</b>	'not yet'	<b>crəʔ</b>	'stab'
<b>ʔbaək</b>	'to open'	<b>craʔ</b>	'write, carve'
<b>ʔbao</b>	'to smell'	<b>crɪm</b>	'bathing place'
<b>ʔba:k</b>	'white'	<b>crɪʔ</b>	'deep'
<b>ʔbəi</b>	'rain'	<b>cɪŋ</b>	'leg'
<b>ʔbəik</b>	'dirty'	<b>cwal</b>	'rent, hire'
<b>ʔbəro:</b>	'sell'		
<b>ʔbəʔbeɪt</b>	'a little'	<b>ʔd</b>	
<b>ʔbleh</b>	'to harvest fruit'	<b>ʔdaom</b>	'urinate'
<b>ʔble:l</b>	'blind'	<b>ʔdaoŋ</b>	'float'
<b>ʔbo:</b>	'or'	<b>ʔdar ɕaək</b>	'yesterday'
<b>ʔbo:k</b>	'tiger'	<b>ʔdar ɕeʔ</b>	'early afternoon'
<b>ʔbuaŋ</b>	'spoon'	<b>ʔdar cɔm</b>	'what day?, when?'
		<b>ʔdar lac</b>	'east (sun exits)'
		<b>ʔdar mut</b>	'west (sun enters)'
		<b>ʔdar pɔŋ</b>	'midday, noon'
		<b>ʔdar</b>	'sun, day'
		<b>ʔda:l</b>	'shallow'
		<b>ʔdaʔ</b>	'pretty, clean, good'
		<b>ʔdək</b>	'pull'
		<b>ʔdə:l</b>	'also'
		<b>ʔdou</b>	'number specifier for people'
			'coconut'
		<b>ʔdouŋ</b>	
<b>c</b>		<b>h</b>	
<b>ca:k</b>	'walk'	<b>hah</b>	'at, locative'
<b>car</b>	'a place'	<b>hah cɔm</b>	'where?'
<b>caiʔ</b>	'put, place'	<b>hai</b>	'to watch'
<b>caŋ</b>	'hew timber'	<b>hak</b>	'vomit'
<b>caŋ</b>	'tail'	<b>hap</b>	'receive'
<b>caŋ</b>	'friend'	<b>haŋ</b>	'side of a river or lake'
<b>cap</b>	'grasp'	<b>həi</b>	'house'
<b>cəik</b>	'pineapple'	<b>hər</b>	'throw'
<b>cək</b>	'hold in the hand'	<b>hian</b>	'learn'
<b>cəŋ</b>	'future auxiliary'	<b>hla:</b>	'leaf'
<b>cəne:k</b>	'share, portion'	<b>hom</b>	'bathe'
<b>cəne:ŋ</b>	'beside, near'	<b>hɔt</b>	'tobacco'
<b>cəŋhaiʔ</b>	'far'	<b>hour</b>	'flow'
<b>cɛ: cɛ:</b>	'sing'	<b>hre:</b>	'rattan'
<b>cɛ:</b>	'don't'	<b>hɪt</b>	'blow'
<b>cɛ:k</b>	'divide'	<b>hwaŋ</b>	'rabbit'
<b>ɕjal</b>	'smooth'	<b>hwat</b>	'pull out'
<b>ɕjaʔ</b>	'to lead'	<b>hyo:ŋ</b>	'lose something, be los
<b>ɕjh</b>	'ride'		
<b>ɕjɪn</b>	'accompany'		
<b>ɕjɪŋ</b>	'sew'		
<b>ɕjɪr</b>	'descend'		
<b>ɕjɪ:c</b>	'light in weight'		
<b>com</b>	'kiss'		
<b>cɔm</b>	'question particle'		
<b>cəʔ</b>	'floor'		



<b>k</b>		<b>kərmjɪt</b>	'yellow'
<b>kac</b>	'strip off, harvest rice'	<b>kətac</b>	'break (of wire, rope)'
<b>kal</b>	'cut a tree'	<b>kətaŋ</b>	'hear'
<b>kam</b>	'arrow'	<b>kəta:m</b>	'possible, OK'
<b>kanəiʔ</b>	'comb'	<b>kəta:r</b>	'board, plank'
<b>kaop</b>	'stay temporarily'	<b>kətəh</b>	'short'
<b>kap</b>	'bite'	<b>kətoʔ</b>	'number specifier for objects'
<b>kəŋ</b>	'hard'		
<b>kəŋ</b>	'seed'	<b>kətraək</b>	'close, shut'
<b>ka:</b>	'fish'	<b>kətrail</b>	'cut wood'
<b>kam</b>	'work, non-manual'	<b>kjɪt</b>	'expensive, prestigious'
<b>ka:p</b>	'speak'	<b>klaəm</b>	'liver'
<b>kəçaiʔ</b>	'unripe, green'	<b>klaŋ</b>	'heavy'
<b>kəcəm</b>	'spy, watch secretly'	<b>klao</b>	'husband'
<b>kəcəm</b>	'garlic, onion'	<b>klə:r</b>	'plate'
<b>kəcəp</b>	'durable, firm'	<b>kləh</b>	'exhausted'
<b>kəcət</b>	'cut through something'	<b>klə:</b>	'pound, mill'
<b>kəçə:</b>	'rope'	<b>kəh</b>	'chop with an axe'
<b>kəçj:l</b>	'lazy'	<b>kəl</b>	'head'
<b>kəçoh</b>	'spit'	<b>kəl jaŋ</b>	'forehead'
<b>keh</b>	'already'	<b>kər</b>	'rake'
<b>kəhla:p</b>	'wing, feather'	<b>koum</b>	'wait'
<b>kəhrəi</b>	'red'	<b>kouŋ</b>	'stairs, ladder'
<b>kəiʔ</b>	'comb'	<b>kəʔ</b>	'cooking pot'
<b>kəkə:p</b>	'converse, discuss'	<b>kə:m</b>	'save (money, gold)'
<b>kəkyl</b>	'spider'	<b>kə:m</b>	'child'
<b>kəlɲa:c</b>	'afternoon'	<b>kə:r</b>	'shave'
<b>kəmaŋ</b>	'wife'	<b>kram</b>	'sink, be submersed'
<b>kəma:k</b>	'man, male'	<b>krəŋ</b>	'enough'
<b>kəməl</b>	'odor, a smell'	<b>krəp</b>	'number spec. for small objects'
<b>kəmli:</b>	'morning'		
<b>kəməl</b>	'cloud'	<b>kraʔ</b>	'old, of living things'
<b>kənat</b>	'cloth'	<b>krjɪn</b>	'to be cold, shivering'
<b>kənaʔ</b>	'thing'	<b>krjɪp</b>	'every'
<b>kəŋcrou</b>	'rainbow'	<b>kro:c</b>	'citrus fruits'
<b>kəŋjɪh tɿw</b>	'same'	<b>kɲaŋ</b>	'gong'
<b>kənoŋ</b>	'in, into'	<b>kɲaj</b>	'boundary, of garden'
<b>kəŋəŋ</b>	'mediator, representative'	<b>kɲl</b>	'beginning'
<b>kəntɿ:l</b>	'heel'	<b>kwəʔ</b>	'trap, to snare'
<b>kəntjʔ</b>	'center, middle'	<b>kjam</b>	'near'
<b>kəntout</b>	'package, small'	<b>kjaʔ</b>	'watch for, wait for'
<b>kəŋʔia</b>	'now'		
<b>kəpa:ç</b>	'cotton'	<b>kh</b>	
<b>kəpə:ŋ</b>	'shoulder'	<b>khai</b>	'moon, month'
<b>kəpou</b>	'buffalo'	<b>khə:</b>	'value, price, usefulness'
<b>kəpɲl</b>	'thick'	<b>khən</b>	'dare, be brave'
<b>kərkəik</b>	'laugh'		

khət	'think'	mæŋ	'cheek'
khə:k	'fail, miss'	mouç	'clear a field'
khə:ŋ	'thing, possession, ingredient'	mouh	'nose'
khə:y	'accustomed'	mo:	'black'
khlaom	'blow'	mom	'niece, nephew'
khlēh	'sprain'	mot	'enter'
khɯ:	'pair'		
khja:l	'wind, air'		
		<b>n-ŋ-ŋ</b>	
l		ŋam	'weep'
lac	'leave, exit, leak'	ŋaŋ	'look for'
lah	'cut open'	ŋaoy	'visit'
lam	'go'	ŋa:	'what?'
ləjet	'hungry'	ŋa:k	'difficult'
ləŋ	'pointed'	ŋa:r	'manual labor'
ləp	'spread on'	ŋa:w	'forest cat'
ləhoŋ	'papaya'	na:w?	'again'
ləkao	'self, body'	ŋən	'we, 1st p. pl. exclusive'
lələŋ	'rub briskly'	ne:w	'type, kind'
ləŋ	'from'	nəh	'that, there'
ləŋ?wai	'sit'		
ləwan	'swallow'	<b>p</b>	
ləwaŋ	'careful'	paək	'field house'
ləjəm	'good'	pah	'break, split'
lə:	'with, of, and'	pəhjaə	'send'
lə:y	'throughout, all the way'	paŋ	'shoot'
lə?	'fall'	par	'to fly'
lə?ət	'cold, cool'	pat	'be extinguished'
lian	'money'	pa:c	'splash water on'
loŋ	'water well'	pa:y pə:r	'to cook rice'
ləp	'fold'	pa? cəm	'where? where at?'
lyam	'go to a meeting'	pəc	'want, like'
		pəh	'pound rice'
		pəiç	'wash clothes'
		pəka:w	'flower'
<b>m</b>		pəlai	'well, better'
mac	'wring'	pəl?əc	'butt, backside'
mai?	'mother, leader, boss'	pəŋ	'at'
maŋ	'night'	pənao	'interpretation of dream'
maoŋ ja?	'cousin (one grandmother)'	pəŋçəŋ	'get married'
		pəŋhian	'teach'
mat	'eye'	pəŋhjoŋ	'cause to lose, disappear'
ma:j	'daughter-in-law'	pəŋjil	'drunk'
məi	'older sibling'	pəŋim	'mountain'
məir	'swidden field'	pəŋir	'speech'
məreç	'red pepper'	pənouç	'person'
mə:?	'mother'	pəntəw	'kill'

pəntarw	'build'	pum	'potato, tuber'
pətar	'spin'	pwəh	'calf of the leg'
pəɲ	'full'	pya:	'cucumber'
pɛ:l	'shovel'		
pəʔam	'delicious'	ph	
pəʔdɛt	'light fire'	phah	'when, while'
pəʔdouh	'grow something'	phap	'book'
pja	'who'	pha:	'say, if'
pjak	'target'	pham	'blood'
pjal	'hunt'	phəiʔ	'full, satisfied'
pjh	'snake'	phɛ:	'uncooked rice'
pjil	'mat'	phlain	'type, kind, variety'
pjin	'we, 1st p. pl. inclusive'	phouŋ	'clan, ancestral seed'
pjh	'come'	phouŋ maŋ	'dawn'
pil	'forget'	pho:	'corn'
pɪr	'mouth'		
pɪ:k pɪ:k	'slowly'	ʔ	
pɪ:ʔ	'father'	ʔaə	'call'
plai	'fruit'	ʔait	'drink'
plain	'sky'	ʔaŋ	'I, 1st p. sing.'
plɥ:	'thigh'	ʔaon	'hide'
plɥ:ŋ	'tell a lie'	ʔa:	'this'
plɥʔ	'feverish'	ʔam	'sweet'
pək	'fall over'	ʔəih	'you, 2nd p. sing.'
poŋ	'oil, fat'	ʔəik	'angry'
pər	'please, ask for, beg'	ʔəiʔ	'pain, sickness'
pəh	'salt'	ʔɛ:	'he, she, it, 3rd p. sing.'
pəp	'see'	ʔiaŋ	'many'
pəɾ	'cooked rice'	ʔmhmao	'rock, stone'
prai	'salty'	ʔmhmaoc	'ant'
praot	'frightened'	ʔmh mou	'ashes'
prəçɔ:ŋ	'compete'	ʔmh mouy	'guest'
prəit	'banana'	ʔmpaŋ	'on, above'
prənɥ:k	'pile, stack'	ʔmpaɾ	'door'
prəŋət	'soul'	ʔmpoŋ	'ask'
prətəh	'meet by chance'	ʔmpyɛt	'tongue'
prəwəil	'cause to turn back'	ʔphaəm	'breathe'
prəyɔm	'fix'	ʔhəit	'tall'
prjh	'scatter (seed)'	ʔhəhah	'fingernail'
prj:	'forest'	ʔhnal	'recognize, remember'
prɔʔ	'do or make'	ʔhnam	'medicine'
pɥaŋ	'shin'	ʔhnəi	'in-law'
pɥay	'follow'	ʔhnək	'have a cold'
pɥt	'heart, mind'	ʔkan	'woman'
pɥ:	'they, 3rd p. pl. indefinite'	ʔkəh	'just now'
pɥ:k	'pile up'	ʔkaɾ	'skin'

ʔŋkɛ:	'horn'	rah	'tell'
ʔŋkian	'bowl'	raoŋ	'meeting house'
ʔŋkɔk	'back of the body'	ra:w	'wash (surface)'
ʔŋkou	'neck'	rəiç	'untie, take clothes off'
ʔntaəh	'chest'	rəik	'carry from shoulder po
ʔnta:w	'stand up'	rəkɛŋ	'elbow'
ʔntəit	'after'	rəkyl	'knee'
ʔntɛh	'under, below'	rəlou	'rest'
ʔntɪ:p	'hand something'	rəmaŋ	'deer'
ʔnton	'steal'	rəmɛh	'firewood'
ʔntɔl	'roof'	rəŋap	'silent'
ʔntɔ?	'explain, show how'	rəŋhai	'take care of, look after
ʔntrəw	'widow'	rəŋlak	'hand of bananas'
ʔntrɛ:	'pestle'	rəŋ'ja:	'claw'
ʔntrɪal	'before'	rəphɔl	'smooth, slippery'
ʔntrɪŋ	'worm'	rəpoŋ	'argue, fight'
ʔn'da:	'some'	rətəŋ	'thin, not thick'
ʔn'dəih	'ye, 2nd p. pl.'	rəwɛh	'elephant'
ʔn'dɛ:	'they, 3rd p. pl. definite'	rəjah	'root'
ʔn'dy:	'with'	rɛ:w	'back basket'
ʔɔh	'dip, spoon out'	rɔh	'old, of things'
ʔoŋ	'fire'	rɔk	'cow'
ʔɔn	'give'	rɔl	'play, of children'
ʔɔŋ	'son-in-law'	rɔp	'every'
ʔo: tən	'not yet'	rouj	'fly (insect)'
ʔo:k	'bad'		
ʔyl	'dull (knife)'		
		ç	
ʔl-ʔw-ʔy		çaəm	'happy'
ʔlat	'abandon, leave'	çaə? pe:	'originally, long ago'
ʔlɛh	'short'	çaim	'bird'
ʔləŋ	'long'	çaŋ	'knife'
ʔlomŋ rəik	'carrying pole'	çao	'grandchild'
ʔlomŋ	'wood'	çaot	'sharp'
ʔlo?	'know'	çai:	'eat food'
ʔwai	'reside, continue'	çak	'saw wood'
ʔjəp	'suck'	çar	'story, topic, problem'
ʔjər	'chicken'	çɛc	'be named, name'
ʔjɛt	'fallow field, scrub forest'	çəçwa:	'young, child'
		çəi	'head louse'
ʔjɔk	'take'	çəir	'dig'
ʔjou	'rise up'	çəkɛ:	'pig'
ʔjou?	'afraid'	çɛm	'take care'
ʔjɪ:t	'rub, wipe'	çəmləŋ	'star'
		çəmrəp	'spare'
		çəntok	'boil, (N -- boiled sou)
		çəŋ'jao	'left side'
ɾ			
raəç	'choose'		

