

## Chapter 3

### Phonological Description of Man Noi Plang

This chapter will give a description of the phonology found in the Man Noi village of the Bulang Mountain district. The description will begin with a discussion on what constitutes a word in this variety. Working at progressively smaller units of the sound system, a description of the syllable will follow the word and then a discussion on the phonemes. Finally the suprasegmental aspects will be covered.

#### 3.1 Words

Words in Plang, as in most Mon-Khmer languages, tend to be monosyllabic. There is, however, a large number of words that consist of more than one syllable. These words with more than one syllable consist of a presyllable and a main syllable.

##### 3.1.1 Monosyllabic Words

The typical monosyllabic word begins with a consonant followed by a nucleus, which is a vowel, and then a final consonant. The syllable structure for the monosyllabic words is #CVC#.

#CVC#

/kúj/	'have'	/píʔ/	'forget'
/lún/	'high, tall'	/jín/	'warm'
/mók/	'at, sit'	/ʔéw/	'to look for'

##### 3.1.2 Polysyllabic Words

There are two forms of polysyllabic words, sesquisyllabic words and compound words. Sesquisyllabic words, widely noted in Mon-Khmer languages, have the following structure: a stressed main syllable, preceded by an unstressed and otherwise phonologically reduced minor syllable (Conver 1999). The maximal structure for a presyllable is #CV.

#CV.CVC#

/ta.léj/	'basin'	/sa.cáʔ/	'ghost'
/ku.cʔʔ/	'seed'	/ma.héŋ/	'strength'

The second class of polysyllabic words comes from the combining of words to form compound words. Compounding can occur between two monosyllabic words and between a monosyllabic word and a sesquisyllabic word. Each kind is listed below with examples.

#CVC.CVC#

/ʔúm/	+	/ʔét/	=	/ʔúm.ʔét/
'water'		'small'		'stream'
/hʔk/	+	/ŋáj/	=	/hʔk.ŋáj/
'hair'		'eye'		'eye brow'
/ʔúm/	+	/tuúʔ/	=	/ʔúm.tuúʔ/
'water'		'vegetable'		'vegetable soup'

#CVC.CV.CVC#

/kón/	+	/ka.pʔn/	=	/kón.ka.pʔn/
'offspring'		'female'		'daughter'
/pʔj/	+	/ka.mèʔ/	=	/pʔj.ka.mèʔ/
'person'		'male'		'man'
/pón/	+	/la.màn/	=	/pón.la.màn/
'flesh'		'oil'		'fat'

### 3.2 Syllables

There are two types of syllables in the Man Noi variety, the main syllable and the minor syllable. Throughout this paper the term *syllable* will be used for the main syllable, while *minor syllable* will be used for the half weighted presyllable.

### 3.2.1 Main Syllable

Man Noi syllable structure is represented in the following formula: #CVC#. All twenty-one phonemic consonants can fill the syllable initial consonant position. There are, however, only twelve consonants which can fill the syllable final position, see 18 below. When in the syllable final position /p, t, c, k/ are unreleased.

	Bilabial		Alveolar		Palatal		Velar		Glottal	
Plosives	p		t		c		k		ʔ	
Nasals		m		n		ɲ		ŋ		
Fricatives									h	
Approximants	w					j				

Table 4 Man Noi Final Consonants

### 3.2.2 Presyllables, Prefixes, and Particles

There are three types of minor syllables in Man Noi Plang, prefixes, particles, and presyllables. Presyllables and particles can be represented as #CV, however prefixes would be represented as #CV. Svantesson (1983:35) states that presyllables are a phonological unit, while prefixes and particles are morphological (and semantic) units.

Consonants occupying the onset position in these minor syllables are restricted to /t, k, m, s, k<sup>h</sup>, l, p<sup>h</sup>/. Vowels that can occur in the minor syllables are restricted to /a, u/. However, in fast speech the /a/ can be reduced to [ə]. The vowel /u/ occurs only with /k/ in the minor syllable.

The minor syllables /ka, sa, ku/ are the most common. These minor syllables fall under the class of presyllables because they have no specified uses. Even though they have no meaning of their own they are an integral part of the word. /ka/ occurs in verbs and nouns and question words, /sa/ occurs in verbs and nouns, and /ku/ occurs in nouns and question words.

(1) /ka/

/ka.téʔ/ 'earth, dirt'

/ka.màŋ/ 'rich'

/ka.páj/ 'medicine'

(2) /sa/

/sa.p <sup>h</sup> óm/	'to be hungry'
/sa.ŋàj/	'far'
/sa.ʔɛ̃ɲ/	'snake'

(3) /ku/

/ku.píʔ/	'fruit'
/ku.tíʔ/	'bracelet'
/ku.júk/	'ear ring'

The minor syllable /ta/ occurs as a presyllable, a prefix and a particle. As a prefix it functions as a classifier in the semantic domain of time, i.e. morning, evening (Lewis 2008:27). As a particle it functions as a causative grammatical marker, for example when added to 'dead' it becomes 'kill'. Each will be listed below with examples.

(4) /ta/ presyllable

/ta.léj/	'basin'
----------	---------

(5) /tá/ prefix 'Time Domain'

/tá.ŋùp/	'morning'
/tá.pùh/	'evening'

(6) /ta/ particle 'Causative Particle'

/ta/	+	/vók/	=	/ta.vók/
/Causative/		'bend, crooked'		'to bend'

/ta/	+	/jɛ̃m/	=	/ta.jɛ̃m/
/Causative/		'dead'		'to kill'

The prefix /k<sup>h</sup>á/ is limited to a specific semantic domain. It only occurs in the semantic domain of location (position).

(7) /k<sup>h</sup>á/ prefix 'Location'<sup>9</sup>

/k <sup>h</sup> á.nèj/	'inside'
/k <sup>h</sup> á.nòk/	'outside'
/k <sup>h</sup> á.nòʔ/	'in front'

/p<sup>h</sup>a/ presyllable

(8) /p<sup>h</sup>a/

/p <sup>h</sup> a.ját/	'weak'
/p <sup>h</sup> a.tàj/	'cotton'
/p <sup>h</sup> a.sáh/	'lightning'

/la/ presyllable

(9) /la/

/la.p <sup>h</sup> ỳh/	'leaf'
/la.màn/	'oil'

/ma/ presyllable

(10) /ma/

/ma.c <sup>h</sup> èŋ/	'wok'
/ma.hèŋ/	'strength'

When a presyllable, prefix, or particle contain /a/ and precede a /j/ it assimilates to the palatal and is produced as /a<sup>i</sup>/. Therefore a word such as /sa.jún/ 'light' has an surface form of [sá<sup>i</sup>.júŋ].

Prefixes and particles both contain a semantic meaning that modifies the meaning of the syllable. Aside from grammatical functioning, prefixes and particles differ in that prefixes have an inherent tone, while particles do not. The prefixes for time and location both have inherent tone and do not assimilate to the tone of the following syllable. Particles, such as the causative particle, do not have an inherent tone and therefore assimilate to syllable they precede.

<sup>9</sup> Words with the presyllable /k<sup>h</sup>á/ are loan words from Tai.

Prefixes also differ from particles and presyllables in that they can precede sesquisyllabic words which expands the word structure to #CV.CV.CVC#.

#CV.CV.CVC#

/tá/ + /sa.ŋìʔ/ = /tá.sà.ŋìʔ/  
 time prefix 'sun' 'daytime'

### 3.3 Interpretation of Ambiguities

There are ambiguous segments with final diphthongs. Vowels glide to [i] or [j] and [u] or [w]. These environments, if interpreted as diphthongs, would be the only place where there is an open syllable as the main syllable. All syllables are closed.

Therefore, these semivowels are being interpreted as final consonants, /j/ and /w/.

### 3.4 Phonemes

In this section an inventory of the consonant and vowel phonemes will be presented. The distribution of each phoneme will also be shown.

#### 3.4.1 Consonants

There were twenty-five consonantal sound segments found in the Man Noi variety. Twenty-one of the sound segments were found to be phonemic. The phonemic sound segments are represented in Table 5 below.

	Bilabial		Labio-Dental		Alveolar		Palatal		Velar		Glottal	
Plosives	p				t		c		k		ʔ	
	p <sup>h</sup>				t <sup>h</sup>		c <sup>h</sup>		k <sup>h</sup>			
Nasals		m				n		ɲ		ŋ		
Fricatives			f	v	s							h
Approximants	w				r			j				
Lateral App.						l						

Table 5 Man Noi Consonant Phonemes

#### 3.4.1.1 Consonant Contrast

Phonemes are shown to contrast in identical environments (CIE) or contrast in non-influencing environments (CNE). Contrasts are shown below.

/p/ – /p<sup>h</sup>/      /pʻɣh/ 'to fly'                      /p<sup>h</sup>ɣh/ 'flower'                      CIE  
 /t/ – /t<sup>h</sup>/:      /tòj/ 'to walk'                      /t<sup>h</sup>òj/ 'to be shallow' CIE

/c/ – /c <sup>h</sup> /:	/cèŋ/ 'beside'	/mà.c <sup>h</sup> èŋ/ 'wok'	CNE
/k/ – /k <sup>h</sup> /:	/kák/ 'branch'	/k <sup>h</sup> ák/ 'water buffalo'	CIE
/c/ – /k/:	/cuíʔ/ 'to know'	/kuíʔ/ 'to love'	CIE
/t/ – /l/:	/kà.ràʔ/ 'to steal'	/láʔ/ 'to speak'	CNE
/l/ – /n/:	/lák/ 'late'	/nák/ 'dragon'	CIE
/m/ – /n/:	/mút/ 'cloud'	/núʔ/ 'to suck'	CIE
	/hým/ 'to bathe'	/hýn/ 'much, many'	CIE
/t/ – /n/:	/ká.týt/ 'to snap in two'	/ká.nýt/ 'to swallow'	CIE
/n/ – /ɲ/:	/nám/ 'blood'	/ɲám/ 'often'	CIE
	/ʔèn.nàʔ/ 'this'	/ʔèɲ/ 'to eat'	CNE
/ɲ/ – /ŋ/:	/pýɲ/ 'to shoot'	/pýŋ/ 'to blow'	CIE
/s/ – /h/:	/súʔ/ 'painful'	/huíʔ/ 'to be deep'	CIE
/f/ – /v/:	/fêh/ 'trousers'	/vèk/ 'to labor'	CNE
/ʔ/ – /h/:	/ʔým/ 'salty'	/hým/ 'to bathe'	CIE
	/tóʔ/ 'buttocks'	/tóh/ 'to open'	CIE
/j/ – /w/:	/sàj/ 'sand'	/sàw/ 'twenty'	CIE
	/jáv/ 'cheap'	/wàn/ 'to scatter seeds'	CNE
/w/ – /v/:	/wàn/ 'to scatter seeds'	/væk/ 'insect, bug'	CNE

There is only one contrastive pair between /f/ and /v/. The contrast between /w/ and /v/ is not well attested because there are a few words occurring with /w/ in the initial position which can be produced as [v].

#### 3.4.1.2 Plosives

There are nine phonemic plosives that occur at the bilabial, alveolar, palatal, velar, and glottal points of articulation. The bilabial, alveolar, palatal, and velar plosives all can occur as aspirated syllable initially. Also four plosives, /p, t, c, k/, when they occur syllable final are unreleased, [p̚, t̚, c̚, k̚]. The glottal stop occurs in both the syllable initial and final position. The plosive phonemes are listed with examples below.

- (11) /p/ voiceless bilabial unaspirated plosive: /pùn/ 'to receive'  
 /pìʔ/ 'to forget'  
 /péj.làʔ/ 'bat'

- (12) /p<sup>h</sup>/ voiceless bilabial aspirated plosive: /p<sup>h</sup>ih/ 'to sweep'  
 /p<sup>h</sup>éh/ 'bee'  
 /p<sup>h</sup>ɔn/ 'five'

When in the syllable final position /p/ is realized as a voiceless bilabial unreleased plosive [p̚] as in [cáp̚] 'to be correct'.

- (13) /t/ voiceless alveolar unaspirated plosive: /tìm/ 'low, short'  
 /tèʔ/ 'arrow'  
 /tà.pàj/ 'noon'

- (14) /t<sup>h</sup>/ voiceless alveolar aspirated plosive: /t<sup>h</sup>éj/ 'to sweep'  
 /t<sup>h</sup>ém/ 'bee'  
 /t<sup>h</sup>ɔp.t<sup>h</sup>ɔp/ 'to slap'

When in the syllable final position /t/ is realized as a voiceless alveolar unreleased plosive [t̚] as in [ʔit̚] 'to sleep'.

- (15) /c/ voiceless palatal unaspirated plosive: /cìŋ/ 'to sew'  
 /cùm/ 'soybean'  
 /cúk.cók/ 'to deceive, cheat'

- (16) /c<sup>h</sup>/ voiceless palatal aspirated plosive: /c<sup>h</sup>ʔŋ/ 'blanket'  
 /mà.c<sup>h</sup>èŋ/ 'wok'  
 /ʔá.c<sup>h</sup>éh/ 'to sneeze'

When in the syllable final position /c/ is realized as a voiceless palatal unreleased plosive [c̚] as in [kéc̚] 'to sprout'. The /c<sup>h</sup>/ is not well attested, it only appears three times in the data. Also as listed above one occurrence, /ʔá.c<sup>h</sup>éh/ 'to sneeze', is an onomatopoeia. The only contrast that is found is in a non-influencing environment, /c<sup>h</sup>ʔŋ/ 'blanket' and /cʔ/ 'rice seedling.'



(17) /k/ voiceless velar unaspirated plosive:	/kén/	'to twist rope'
	/kón/	'son'
	/ká.váj/	'tiger'

(18) /k <sup>h</sup> / voiceless velar aspirated plosive:	/k <sup>h</sup> íʔ/	'firewood'
	/k <sup>h</sup> ák/	'water buffalo'
	/ká.k <sup>h</sup> ʔp/	'to meet'

When in the syllable final position /k/ is realized as a voiceless velar unreleased plosive [k̚] as in [lík̚] 'pig'.

(19) /ʔ/ voiceless glottal plosive:	/tìʔ/	'one'
	/léʔ/	'rain'
	/cúʔ/	'to know'

According to Paulsen's (1992:170) Proto-Plang both \*p and \*k occur in a cluster with \*l. However, Man Noi has lost this clustering. Where the reconstructed proto-language has \*pləŋ 'Plang' the Man Noi pronunciation has changed to [paŋ]. There are also words that show evidence that glottal closure is disappearing. These words were said in careful speech and when asked to repeat them were produced without the final glottal closure.

/sù/ 'straight'	/jón.mù/ 'where'
/kʔ/ 'to swell'	/ká.ná/ 'what'
/pʔn.mù/ 'how many'	

In summary there are nine phonemic plosives with four allophones. Unlike the proto language the Man Noi plosives do not occur in clusters in the onset. While the majority of words contain a coda there are a few words which have lost their glottal stop closure.

### 3.4.1.3 Nasals

There are four phonemic nasals occurring at the bilabial, alveolar, palatal, and velar points of articulation. All nasals can occur in both onset and coda positions. Below the nasal phonemes are listed with examples.

(20) /m/ voiced bilabial nasal:	/mút/	'cloud'
	/máj/	'to write'

	/sím/	'bird'
	/j̀̀m/	'to die'
(21) /n/ voiced alveolar nasal:	/núk/	'night'
	/núj/	'pit, stone'
	/kán/	'matter'
	/p <sup>h</sup> ̀̀n/	'five'
(22) /ɲ/ voiced palatal nasal:	/ɲén/	'to grasp, hold'
	/ɲàʔ/	'house'
	/l̀̀ɲ/	'blunt'
	/páɲ/	'to sell'
(23) /ŋ/ voiced velar nasal:	/ŋáp/	'to yawn'
	/ŋ̀̀j/	'fire'
	/ʔéŋ/	'faeces'
	/k <sup>h</sup> úŋ/	'drum'

Paulsen states that several Waic languages contain a nasal + /h/ cluster and these correspond to the voiceless nasals or liquids in Plang. However, both the Shinman and Samtao varieties tend to voice the nasals (1992:181). Man Noi has lost the voiceless nasals and like Shinman and Samtao have voiced nasals.

#### 3.4.1.4 Fricatives

There are four fricatives occurring at the labiodental, alveolar, and glottal points of articulation. Fricatives produced at the labiodental and alveolar points can occupy the onset position. The fricative produced at the glottal point of articulation can occupy both onset and coda positions. The fricative phonemes are listed below with examples.

(24) /f/ voiceless labiodental fricative: /féh/ 'trousers'

The /f/ is not well attested, appearing only once in the data.

(25) /v/ voiced labiodental fricative:	/vèj/	'fast, quick'
	/vàk/	'insect, bug'
	/ká.váʔ/	'door'

In fast speech /v/ can be produced as [β].

(26) /s/ voiceless alveolar fricative:	/súʔ/	'to be new'
	/sóʔ/	'dog'
	/ká.sáŋ/	'elephant'

(27) /h/ voiceless glottal fricative:	/héj/	'forehead'
	/húk/	'frog'
	/hèh/	'root'
	/mùh/	'to crawl'

The voiceless glottal fricative /h/ does appear in free variation with [r] in the onset. For example when eliciting the word 'to steal' the speaker first said /kó.rúk/ but others present said that they pronounced the word as /kó.húk/, the main speaker then said that he used both.

The Man Noi fricatives have not deviated from the proto-language. In the proto language /f/ is not well attested, this is also the case in the Man Noi variety. One other word was found to contain /f/, /fáj/ 'to worship', however this is a borrowed term from Tai.

#### 3.4.1.5 Approximants

There are three approximants in the Man Noi variety and they occur at the labial-velar, palatal, and alveolar positions. There is also one lateral approximant, which occurs at the alveolar point of articulation. Both /w/ and /j/ can fill both onset and coda positions. However, in the coda position the approximants create off-glides of the vowel. The lateral approximant and the alveolar approximant, /l/ and /r/, can only occupy the onset position. These phonemes are listed below with examples.

(28) /w/ voiced labial-velar approximant:	/wàt/	'temple'
	/wàn/	'to scatter seed'

There are two reasons that /w/ is suspicious. First there are only two occurrences in all the data. One occurrence, /wàt/ 'temple', is a loan word from Tai. The second is that /w/ can be produced as [v] and [β]. For example, /wàt/ can be pronounced in free variation as [vət̚] or [βət̚].

- (29) /j/ voiced palatal approximant:
- |  |       |             |
|--|-------|-------------|
|  | /jét/ | 'cloth'     |
|  | /jàm/ | 'cry, bark' |
|  | /jəm/ | 'to die'    |
- (30) /l/ voiced alveolar lateral approximant:
- |  |       |           |
|--|-------|-----------|
|  | /lík/ | 'pig'     |
|  | /lòt/ | 'to pull' |
|  | /làj/ | 'two'     |
- (31) /r/ voiced alveolar approximant:
- |  |          |            |
|--|----------|------------|
|  | /kó.rúk/ | 'wolf'     |
|  | /kà.ràʔ/ | 'to steal' |

Paulsen (1992:187) states that the Proto Plang \*lh clustering in final position is now only present as /h/. This seems to be the case in Man Noi as well. As well the \*lh cluster in word initial position has been reduced to a voiced alveolar lateral approximant.

- |  |                                   |
|--|-----------------------------------|
| (32) $lh \rightarrow h$                          | (33) $lh_ \rightarrow l_$         |
| *kìlh <sup>2</sup> 'salt' → /kìh/                | *lhek <sup>1</sup> 'iron' → /lék/ |
| *kəmòlh <sup>1</sup> 'banana' → /kà.mòh/         | *lhi <sup>ʔ1</sup> 'rain' → /léʔ/ |
| *pìlh <sup>1</sup> 'sweep' → /p <sup>h</sup> ih/ |                                   |

Man Noi does not have consonant clusters where the Proto-Plang does. They have lost clusters altogether. Also the /r/ and /l/ no longer contrast in final position. The \*r has been reduced to /h/ and the \*l has been reduced to /j/.

- |   |   |
|---|---|
| (34) $l \rightarrow j$                          | (35) $r \rightarrow h$                  |
| *ŋòl <sup>2</sup> 'fire' → /ŋòj/                | *kàr <sup>1</sup> 'wind' → /kuíh/       |
| *prel <sup>1</sup> 'hail' → /p <sup>h</sup> éj/ | *mhar <sup>1</sup> 'rice field' → /máh/ |

Since Man Noi Plang has lost consonant clusters in the onset the approximants differ from the proto language. For instance, in Proto-Plang \*r clusters with \*p<sup>h</sup> and \*k<sup>h</sup> and \*l clusters with \*p, k, h, but these clusters are all absent from Man Noi.

### 3.4.2 Vowels

There are ten vowel phonemes in the Man Noi variety. The phonemic sound segments are represented in Table 6 below. There are four front vowels, five back vowels, and one central vowel. Vowels are produced with clear or breathy register, however the back consonants influence the preceding vowel. Vowels that end in glottal stops can be produced with a slight creaky phonation.

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

Table 6 Mon Noi Vowels

#### 3.4.2.1 Monophthongs

Vowel phonemes are listed below with examples.

- (36) /i/ close front unrounded:            /sím/            'bird'  
     /tìʔ/            'hand'  
     /ká.kíʔ/        'to pile up'

- (37) /ɪ/ near-close near-front unrounded:    /sím/            'Tai'  
     /ʔit/            'to sleep'  
     /ká.ít/        'hate'

- (38) /e/ close-mid front unrounded:            /léʔ/            'rain'  
     /méh/            'to return'  
     /ká.néʔ/        'monkey'





before the palatal nasal or palatal plosive. The open central unrounded vowel, /a/, is the most unrestricted vowel occurring in every position.

### **3.5 Register Complex**

Register in Man Noi is not one singular feature, but is made up two features that are interrelated. The two features present in this complex are phonation type and tone. These features will be discussed below.

#### **3.5.1 Phonation**

There are two phonemic phonation types in the Man Noi variety; clear and breathy. The clear register is produced with no alteration in voice quality. However, when in association with a final glottal stop the word can be produced with slight tensing and is usually shorter in duration.

Vowels produced with a breathy phonation tend to have an association with final /h/. Also breathy vowels tend to be longer than the modal vowels. While the back vowels have a lower F1 when produced with a breathy phonation, the only front vowel to have a lowered F1 is /i/. As seen in Table 9 below



Modal Vowel	Mean Standard Deviation		Breathy Vowel	Mean Standard Deviation	
	F1	F2		F1	F2
i	347.8 50.2	2168.7 70.6	i	397.8 70.2	1821.9 76.4
ɪ	434.3 17.9	1701.4 52.1	ɪ	420.9 24.3	1546.6 39.1
e	477.2 30.6	1885.8 32.2	e	465.9 58	1733.3 24
ɛ	588.37 59.9	1901 50.3	ɛ	573.2 48	1744.1 24.5
a	805.6 54.9	1411.2 38.3	a	758.4 39.5	1241.9 31.4
u	374.3 21.3	1414.6 34.5	u	402.4 12.3	1264.9 46.9
u	393.7 30.4	903.6 50.7	u	419.5 40.2	1077.9 39.2
ɹ	458.5 22.9	1461.7 27.5	ɹ	479.6 58.8	1295.3 81.2
o	471.4 45.1	1067 33.4	o	464.5 53.2	875.4 61.5
ɔ	602.9 38.8	935.4 37.6	ɔ	618 41.4	1073.1 44.4

**Table 9 Man Noi Vowels mean F1 and F2**

Using the mean value of the formants the following figure graphically displays the modal vowels.

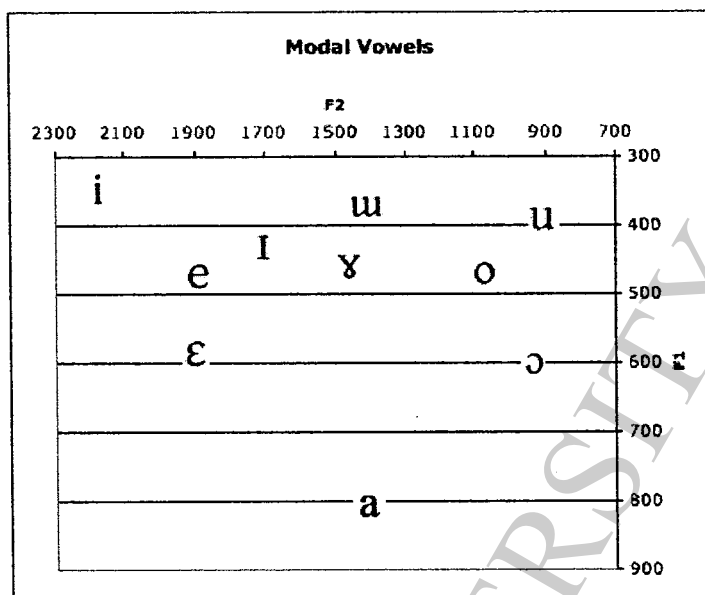


Figure 5 Man Noi Modal Vowels

Using the mean value of the formants the following figure graphically displays the breathy vowels.

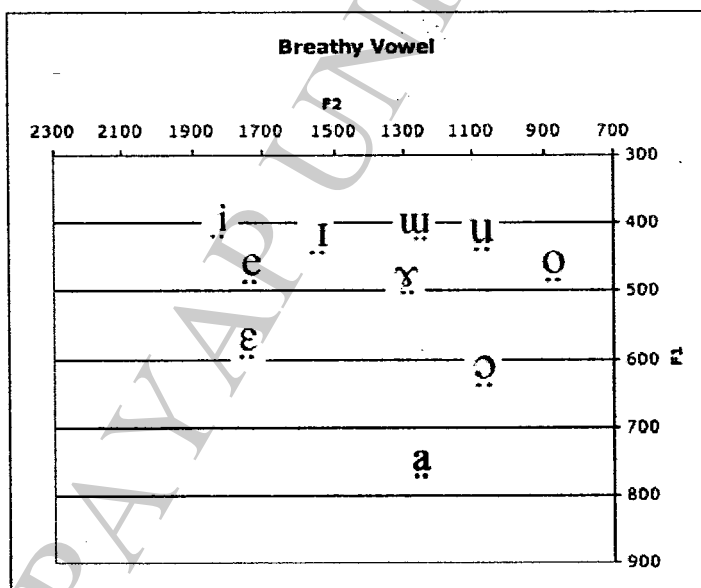
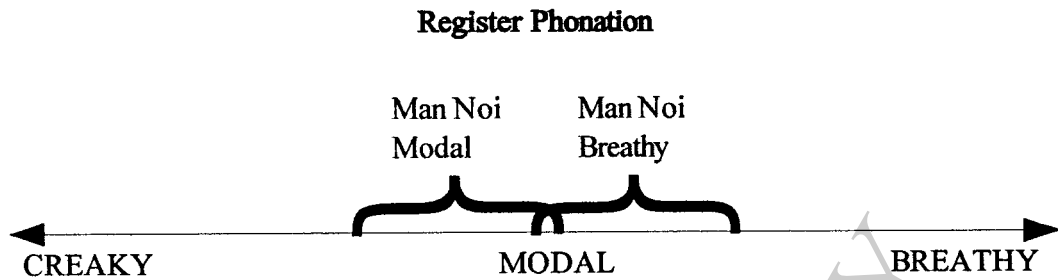


Figure 6 Man Noi Breathy Vowels

In summary there are two phonation types in Man Noi Plang, breathy and modal. Using Watkins phonation continuum, see Section 2.4, Man Noi phonation types can be described as such: breathy phonation is modal tending towards breathy, modal phonation is modal tending toward creaky as seen in Figure 7 below.



**Figure 7 Man Noi Phonation**

### 3.5.1.1 Phonation Contrast

Phonation is shown to contrast in identical environments (CIE) or contrast in non-influencing environments (CNE). Contrasts are shown below.

/i/ – /ḭ/:	/k <sup>h</sup> f <sup>h</sup> / 'bear'	/k <sup>h</sup> / 'salt'	CNE
/ɿ/ – /ɿ̰/:	/sín/ 'cooked'	/p̰ín/ 'to lay aside'	CNE
/e/ – /ḛ/:	/kéh/ 'to pick fruit'	/l̰èh/ 'six'	CNE
/ɛ/ – /ɛ̰/:	/lék/ 'iron'	/v̰èk/ 'to work'	CNE
/a/ – /a̰/:	/páp/ 'to sell'	/p̰àp/ 'white'	CIE
/u/ – /ṵ/:	/huúk/ 'feather, hair'	/tṵj/ 'to buy'	CNE
/u/ – /ṵ/:	/pún/ 'four'	/p̰ùn/ 'to receive'	CIE
/ɤ/ – /ɤ̰/:	/pýɲ/ 'to shoot'	/l̰ýɲ/ 'blunt'	CNE
/o/ – /o̰/:	/lóʔ/ 'peel, husk'	/p <sup>h</sup> òʔ/ 'clothing'	CNE
/ɔ/ – /ɔ̰/:	/tɔj/ 'to walk'	/s̰ɔj/ 'to cut with knife'	CNE

### 3.5.1.2 Close Back and Close-Central Vowels

From the visual representation of the vowels it must be answered whether [u] and [ɤ] are better interpreted as [i] and [ə]. Ladefoged and Bladon (1982) observed this problem in cardinal vowels. Ladefoged observed this in distinguishing the difference between close central and front vowels, while Bladon observed it between close central and back vowels. They observed that lip rounding changes the F2 and F3. In close front vowels, the articulatory action of rounding the lips lowers F3 greatly and the F2 only slightly, while in close back vowels the same action lowers F2 greatly and alters F3 only slightly (Watkins 2002:57).

	F2	F3
u	931.5	1548.6
ɯ	1083.5	1586.9
o	870.4	1672.3
ɤ	1353.2	1664.5

Table 10 Man Noi Back Vowel F2 and F3 Average

From Table 10 above it can be seen that the F3 of [ɯ] and [ɤ] differ only slightly from the back rounded vowels, but differ greatly in F2. Therefore, it is better to describe /ɯ/ and /ɤ/ as back vowels rather than central vowels.

### 3.5.2 Tone

The second feature present in the Man Noi register complex is tone. There are two tonemes in the Man Noi variety and each tone has one allotone. The allotones are based on a positional variation. The two level tones are classified as a high and low tone. Each tone will be discussed further below.

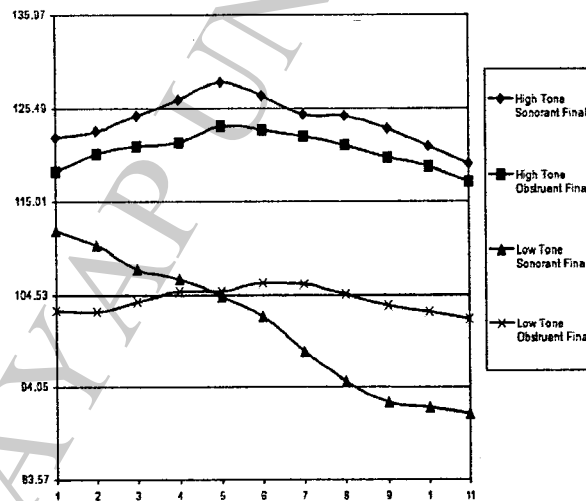


Figure 8: Man Noi Tone

#### 3.5.2.1 Tone Contrast

Tonemes are shown to contrast in identical environments (CIE) or contrast in non-influencing environments (CNE). Contrasts are shown below.

/í/ – /i/:	/píʔ/	'year'	/pìʔ/	'forget'	CIE
/í/ – /i/:	/sín/	'cooked'	/sìm/	'to count'	CIE
/é/ – /è/:	/cénʔ/	'light, bright'	/cènʔ/	'beside'	CIE
/é/ – /è/:	/pén/	'all'	/pèn/	'to grasp'	CNE
/á/ – /à/:	/kánʔ/	'eagle'	/kànʔ/	'mouse, rat'	CIE
/ú/ – /ù/:	/ká.túúm/	'dark'	/cùúm/	'soybean'	CNE
/ú/ – /ù/:	/ʔúm/	'water'	/cùm/	'small bowl'	CNE
/ý/ – /ÿ/:	/mýj/	'snow'	/mÿj/	'ugly'	CIE
/ó/ – /ò/:	/lók/	'to pull up'	/nòk/	'full'	CNE
/ó/ – /ò/:	/pój/	'to pasture'	/pòj/	'to loosen'	CIE

### 3.5.2.2 High Tone

The high tone occurs normally when the high tone ends with an obstruent final. The high tone is a /44/ tone. It begins at 118 Hz rises to 123 Hz and ends at 117 Hz. as seen in Figure 8 above. This can be seen in Figure 9 and Figure 10 below. There is one high allotone which is based on syllable final consonants.

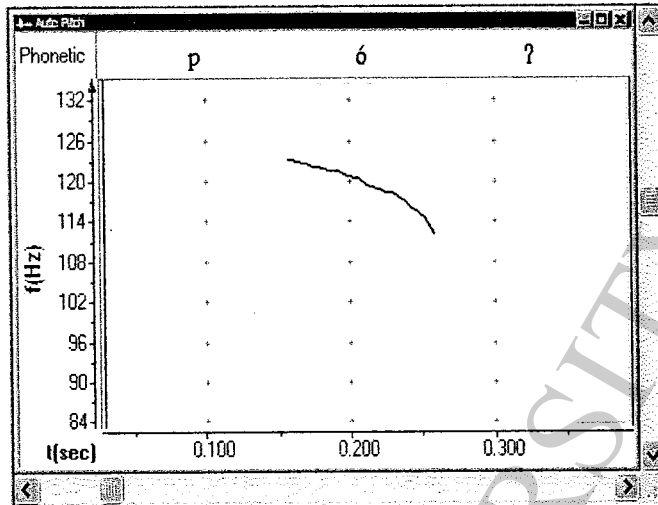


Figure 9: 'to carry on back'

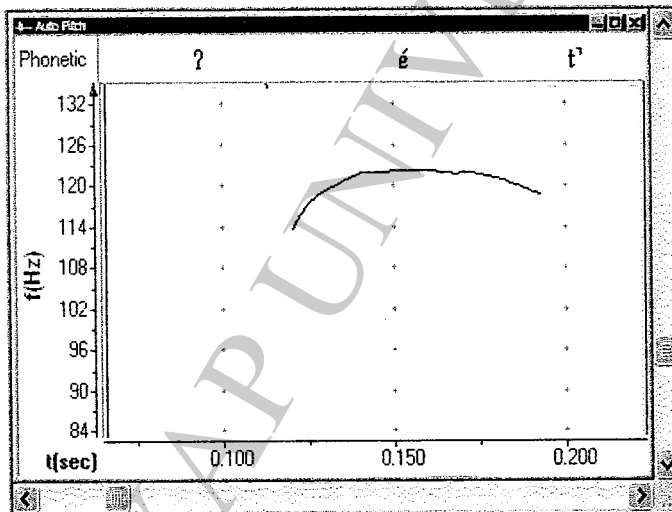


Figure 10: 'small'

The high allotone occurs when the high tone ends in a sonorant final causing the tone to be raised resulting in an allotone of [454]. It generally begins at 122 Hz rises to 128 Hz and then ends at 120 Hz . As seen in Figure 11 and Figure 12 below.

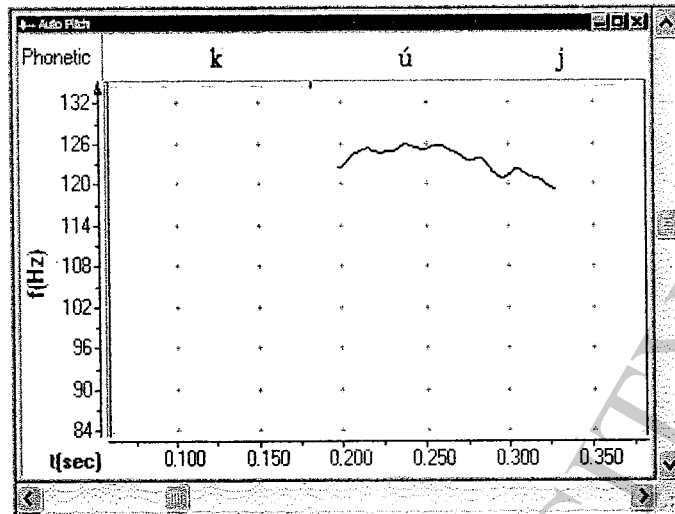


Figure 11: 'have'

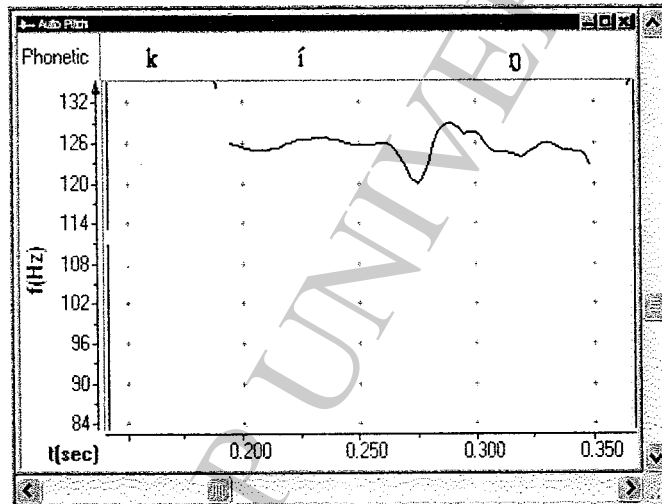


Figure 12: 'price'

### 3.5.2.3 Low Tone

The normal tone occurs when the low tone ends with an obstruent final. It is level tone of /22/. It begins at 102 Hz rises to 105 Hz and ends at 101 Hz as seen in Figure 8 above. This can be seen in Figure 13 and Figure 14 below. As with the high tone there is one allotone which are based on the syllable final consonant.

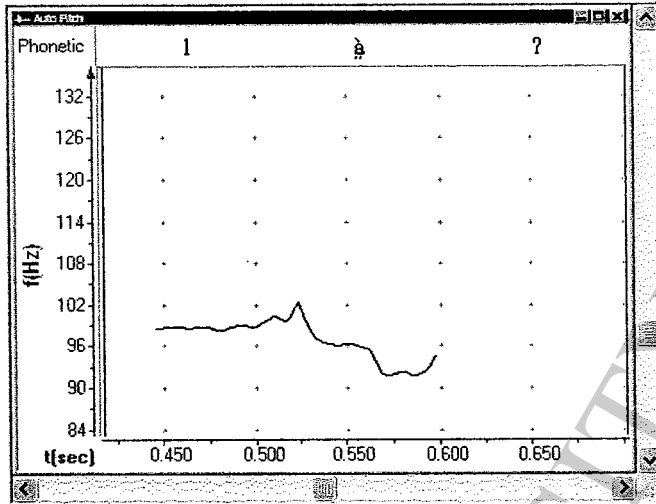


Figure 13: 'tea'

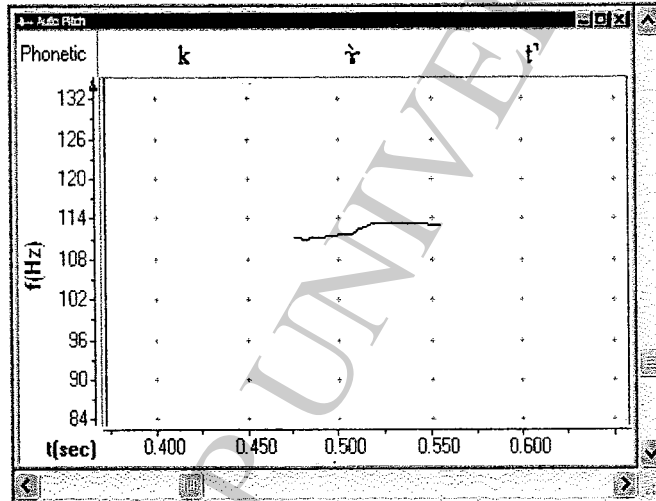


Figure 14: 'chop'

The low allotone occurs when the low tone ends in a sonorant final causing the tone to fall more significantly resulting in an allotone of [31]. It generally begins at 111 Hz falls to 91 Hz. Low tones with obstruent finals average to a tone of /22/. As seen in Figure 15 and Figure 16 below.



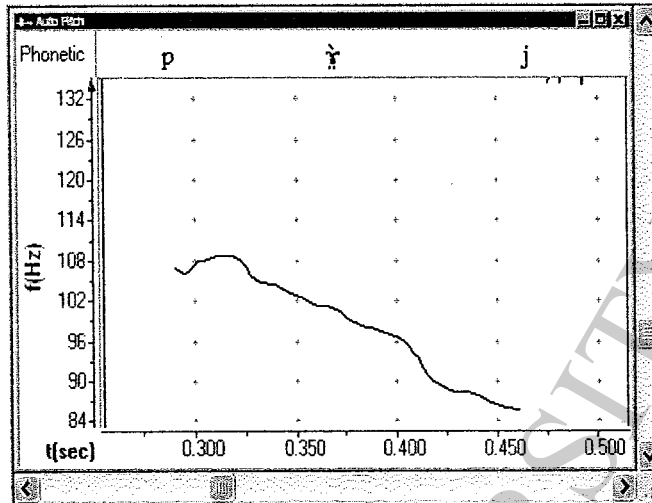


Figure 15: 'person'

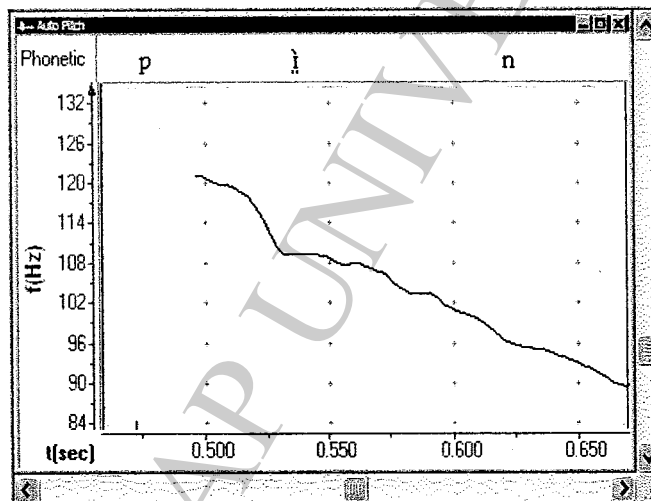


Figure 16: 'to lay aside'

In summary in Man Noi there are two contrastive tones, high and low. Each tone has one allotone that is the result of the final consonant.

### 3.5.3 Phonation and Tone

Speakers are aware that both tone and phonation are present. In trying to describe phonation they would say that the throat was either *jin* 'tight' or *song* 'loose'. However, they stated that this feature of the language was more present in older people, i.e. people older than forty-five. The more dominant feature with the younger people, who have studied in Chinese schools, seems to be tone. When asked

to distinguish between two similar sounding words the participant would always refer to the tone being different. How these feature function together is still unclear, but by the low occurrence of words with a breathy phonation it seems that tone is the more dominant feature in general.

### 3.6 Phonological Processes

This section will describe the phonetic explanation of the allophonic occurrences in the language.

#### 3.6.1 Word

##### 3.6.1.1 Voice Assimilation

When the voiceless plosives /p, t, k/ follow a voiced nasal after a syllable break the voiceless plosive is produced as voiced. This can be written as:

[-cont] → [+voiced] / [+nasal]\_\_

- |      |                  |           |             |
|------|------------------|-----------|-------------|
| (46) | Underlying Form: | /ʔúm.púʔ/ | 'milk'      |
|      | Surface Form:    | [ʔúm.búʔ] | 'milk'      |
| (47) | Underlying Form: | /hóm.ʔim/ | 'garlic'    |
|      | Surface Form:    | [hóm.ðim] | 'garlic'    |
| (48) | Underlying Form: | /lʔn.kúʔ/ | 'yesterday' |
|      | Surface Form:    | [lʔn.gúʔ] | 'yesterday' |

##### 3.6.1.2 Final Plosives

The plosives /p, t, c, k/ when in final position are realized as unreleased. This is written by the rule

[-cont] → unreleased / \_#

- |      |                  |         |                |
|------|------------------|---------|----------------|
| (49) | Underlying Form: | /káp/   | 'chin'         |
|      | Surface Form:    | [káp̚]  | 'chin'         |
| (50) | Underlying Form: | /luʔt/  | 'deaf'         |
|      | Surface Form:    | [luʔt̚] | 'deaf'         |
| (51) | Underlying Form: | /hèc/   | 'word, speech' |
|      | Surface Form:    | [hèc̚]  | 'word, speech' |

- (52) Underlying Form: /jùk/ 'to lift'  
 Surface Form: [jùk̚] 'to lift'

### 3.6.1.3 Tonal Assimilation

Presyllables have no inherent tone. Therefore presyllables assimilate to the tone of the syllable that they precede.

- (53) Underlying Form: /ta.léj/ 'basin'  
 Surface Form: [tá.léj] 'basin'
- 54) Underlying Form: /sa.táʔ/ 'tail'  
 Surface Form: [sá.táʔ] 'tail'

### 3.6.1.4 Glottal Deletion

When the first word in a compound word ends in a glottal stop the glottal stop is deleted when combined with the second word. The deletion rule can be written as:

$$/ʔ/ \rightarrow \emptyset / \_ \sigma$$

- (55) /lóʔ/ + /k<sup>h</sup>úʔ/ = /lóʔ.k<sup>h</sup>úʔ/  
 'peel, husk' 'tree' 'tree bark'
- Underlying Form: /lóʔ.k<sup>h</sup>úʔ/ 'tree bark'  
 Surface Form: [ló.k<sup>h</sup>úʔ] 'tree bark'

### 3.6.1.5 Allotone

As stated above there are two tonemes, high and low, as well as two allotones. These can be understood by the rules stated below.

High Tone → Augmented High / \_[+son]

Low Tone → Falling Tone / \_[+son]

