

## Chapter 5

### Phonological Description of La Gang Plang

This chapter will present a description of the phonology Plang found in the La Gang village which is located in the Bulang Mountain district. The description will be ordered from largest sound segment, i.e. the word, and then describe progressively smaller units of the sound system. Finally, the suprasegmental aspects of the variety will be described.

#### 5.1 Words

As with the Man Noi and Bang Deng varieties the majority of the words in La Gang are monosyllabic. However, there is also a group of polysyllabic words. Each type of word will be described with examples below.

##### 5.1.1 Monosyllabic Words

The monosyllabic words in Man Noi and Bang Deng can be represented by the structure, #CVC#. The monosyllabic word structure for La Gang is however different and can be represented by the structure #C(C)VC#. Therefore the monosyllabic word can begin either with a single consonant or a consonant cluster. The initial consonant or consonant cluster is followed by a vowel and then a final consonant. Examples of both are listed below.

| #CVC#               |           | #C(C)VC#             |              |
|---------------------|-----------|----------------------|--------------|
| /lik/               | 'pig'     | /klánj/              | 'eagle'      |
| /nám/               | 'blood'   | /p <sup>h</sup> rók/ | 'rib'        |
| /p <sup>h</sup> ók/ | 'to ride' | /plój/               | 'to pasture' |

##### 5.1.2 Polysyllabic Words

As with the Man Noi and Bang Deng variety there are two types of polysyllabic words in the La Gang variety. The first is a sesquisyllabic word, which is composed of a phonologically reduced presyllable and the syllable. Examples are listed below.

|          |            |                          |              |
|----------|------------|--------------------------|--------------|
| #CV.CVC# |            | #CV.CCVC#                |              |
| /ʔa.ròŋ/ | 'horse'    | /sa.k <sup>h</sup> ròŋ/  | 'knee'       |
| /ka.pàh/ | 'to smile' | /ʔa.p <sup>h</sup> r̀̀k/ | 'to step on' |
| /sa.ʔóʔ/ | 'smelly'   | /ta.plàʔ/                | 'noon'       |

The second type of polysyllabic word are compound words. Compound words can occur between two monosyllabic words, a monosyllabic and a polysyllabic word, or between two polysyllabic words. Example are given below.

|                     |   |         |                           |
|---------------------|---|---------|---------------------------|
| #CVC.CVC#           |   |         |                           |
| /t <sup>h</sup> éj/ | + | /nàʔ/   | = /t <sup>h</sup> éj.nàʔ/ |
| 'plow'              |   | 'field' | 'to plow a field'         |

|              |   |           |                  |
|--------------|---|-----------|------------------|
| #CVC.CV.CVC# |   |           |                  |
| /kón/        | + | /ka.ṕ́n/ | = /kón.k.a.ṕ́n/ |
| 'child'      |   | 'female'  | 'daughter'       |

|                 |   |          |                     |
|-----------------|---|----------|---------------------|
| #CV.CVC.CV.CVC# |   |          |                     |
| /ʔa.ṕ́k/       | + | /ka.ʔóʔ/ | = /ʔá.ṕ́k.k.a.ʔóʔ/ |
| 'boat, raft'    |   | 'bamboo' | 'bamboo raft'       |

## 5.2 Syllables

The La Gang syllables, like the Man Noi and Bang Deng syllables, are separated into two types, the presyllable and the main syllable. The main syllable will be referred to as the syllable. Each will be discussed below with examples.

### 5.2.1 Main Syllables

The syllable structure in the La Gang variety can be expressed by the formula  $C_1(C_2)VC$ . All twenty one of the phonemic consonants can fill the  $C_1$  position. The coda position is limited to thirteen consonants. See Table 20 below. The optional  $C_2$  consonant is the most limited of any consonant. When this consonant is present it forms an initial cluster with  $C_1$ .

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

Table 20 La Gang Final Consonants

There are only five consonants that fill the C<sub>1</sub> position, /p, k, p<sup>h</sup>, k<sup>h</sup>, h/ when the in the cluster. See Table 21 below. The /l/ occurs with /p, k, h/ in the consonant cluster, while /r/ occurs with /p<sup>h</sup>, k<sup>h</sup>, h/. The palatal approximant also occurs with /h/ in the cluster. The /hj/ cluster is not well attested in the data, only occurring once in [ʔa á.hjúk<sup>7</sup>] 'ear'. Paulsen's proto-reconstruction includes a voiceless semivowel \*yùk<sup>1</sup> 'ear'.

|   | p <sub>-</sub> | p <sup>h</sup> <sub>-</sub> | k <sub>-</sub> | k <sup>h</sup> <sub>-</sub> | h <sub>-</sub> |
|---|----------------|-----------------------------|----------------|-----------------------------|----------------|
| r | -              | +                           | -              | +                           | +              |
| l | +              | -                           | +              | -                           | +              |
| j | -              | -                           | -              | -                           | +              |

Table 21 La Gang Consonant Clusters

### 5.2.2 Presyllables, Prefixes, and Particles

As in the Man Noi and Bang Deng varieties the presyllable consist of a single consonant and a vowel. There are eleven consonants that can fill the presyllable onset position, /k, k<sup>h</sup>, p, p<sup>h</sup>, s, m, t, ʔ, h, l, j/. The only vowels that occur in the presyllable are /a, u, ʌ/. In fast or relaxed speech /a/ and /ʌ/ can be produced as [ə].

Prefixes and particles both contain a semantic meaning that modify the meaning of the syllable. They 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. Therefore, presyllables and particles can be represented but the formula #CV, but prefixes would be represented by #CV.

La Gang 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'

### 5.3 Interpretation of Ambiguities

The ambiguities in this variety, as in Man Noi and Bang Deng, are with the final sound segment in the syllable. The presyllable is open but the syllable is closed. With this interpretation of the syllable the final sound segments are considered final consonants and not final vowel. Therefore, where it could be interpreted as a final /i/ or /u/ it has been interpreted as /j/ or /w/.

### 5.4 Phonemes

This section will give an inventory of the phonemic sound segments found in La Gang. Distribution will be given as well as examples and evidence.

#### 5.4.1 Consonants

Twenty seven sound segments were found in the La Gang variety. Of those twenty seven only twenty three were found to be phonemic. The phonemic sounds are represented in Table 22 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  |         |   |
| Voiceless Nasals |                |   |              |   |                | ɲ̥ |                |   |                | ŋ̥ |         |   |
| Fricatives       |                |   | f            | v | s              |    |                |   |                |    |         | h |
| Approximants     | w              |   |              |   | r              |    |                | j |                |    |         |   |
| Lateral App.     |                |   |              |   |                | l  |                |   |                |    |         |   |

Table 22 La Gang Consonant Phonemes

#### 5.4.1.1 Consonant Contrast

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

|                          |                           |                                      |     |
|--------------------------|---------------------------|--------------------------------------|-----|
| /p/ – /p <sup>h</sup> /: | /pón/ 'meat'              | /p <sup>h</sup> ón/ 'five'           | CIE |
| /t/ – /t <sup>h</sup> /: | /táh/ 'rest'              | /t <sup>h</sup> ám/ 'sacred writing' | CNE |
| /c/ – /c <sup>h</sup> /: | /cýt/ 'to dye'            | /c <sup>h</sup> ýp/ 'to blink'       | CNE |
| /k/ – /k <sup>h</sup> /: | /kút/ 'to shave the head' | /k <sup>h</sup> úʔ/ 'tree'           | CNE |
| /c/ – /k/:               | /cìŋ/ 'to sew'            | /kíŋ/ 'expensive'                    | CNE |
| /t/ – /l/:               | /tèc/ 'word, speech'      | /léc/ 'to go in'                     | CNE |
| /l/ – /n/:               | /nàʔ/ 'sour'              | /làʔ/ 'tea'                          | CIE |
| /m/ – /n/:               | /mɔ̃h/ 'name'             | /nɔ̃h/ 'to push'                     | CIE |
|                          | /hým/ 'to bathe'          | /hýn/ 'much, many'                   | CIE |
| /t/ – /n/:               | /tɔ̃h/ 'to pound'         | /nɔ̃h/ 'to push'                     | CIE |
| /n/ – /ɲ/:               | /nók/ 'to look'           | /ɲók/ 'brain'                        | CIE |
|                          | /lòn/ 'to flow'           | /mók/ 'mouth'                        | CNE |
| /ɲ/ – /ŋ/:               | /pɔ̃ɲ/ 'to shoot'         | /pɔ̃ŋ/ 'to blow'                     | CIE |
| /n/ – /ŋ/:               | /nɔ̃ʔ/ 'to drink'         | /ŋɔ̃t/ 'to smell'                    | CNE |
| /ŋ/ – /ŋ/:               | /ŋàj/ 'eye'               | /ŋáp/ 'to yawn'                      | CNE |
| /s/ – /h/:               | /séŋ/ 'diligent'          | /héŋ/ 'fat (animal)'                 | CIE |
| /ʔ/ – /h/:               | /ʔéŋ/ 'feces'             | /héŋ/ 'fat (animal)'                 | CIE |
|                          | /tóʔ/ 'buttocks'          | /tóh/ 'to open'                      | CIE |
| /j/ – /w/:               | /máj/ 'to write'          | /màw/ 'to be drunk'                  | CNE |
|                          | /ját/ 'to cry'            | /wàt/ 'temple'                       | CNE |
| /w/ – /v/:               | /wàh/ 'to be wide'        | /vák/ 'bug, insect'                  | CNE |

There are only two pair of words which contrast in non influencing environment between /f/ and /v/. The contrast between /w/ and /v/ is not well attested, there are only a few words with /w/ in the initial position. Also some words with /w/ in the initial position can be produced as /v/.

#### 5.4.1.2 Plosives

There are nine phonemic plosives occurring at the bilabial, alveolar, palatal, velar, and glottal points of articulation. There are four plosive allophones, /p<sup>ʔ</sup>, t<sup>ʔ</sup>, c<sup>ʔ</sup>, k<sup>ʔ</sup>/, occurring predictably in the word final position. The glottal stop can occur in the

onset of both syllable and word initial and in the coda position. The plosives are listed below with examples.

(121) /p/ voiceless bilabial unaspirated plosive: /pún/ 'four'  
 /pʷl/ 'to fly'  
 /plàn/ 'Plang'

(122) /p<sup>h</sup>/ voiceless bilabial aspirated plosive: /p<sup>h</sup>ón/ 'five'  
 /phíl/ 'bee'  
 /p<sup>h</sup>ruíl/ 'mud'

When in the syllable final position /p/ is realized as a voiceless bilabial unreleased plosive [p̚] as in [r̥p̚] 'grass'.

(123) /t/ voiceless alveolar unaspirated plosive: /tíʔ/ 'hand'  
 /tòk/ 'poor'  
 /táh/ 'to rest'

(124) /t<sup>h</sup>/ voiceless alveolar aspirated plosive: /t<sup>h</sup>éj/ 'plough'  
 /ʔa.t<sup>h</sup>íh/ 'to be strong'  
 /t<sup>h</sup>àw/ 'old'

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

(125) /c/ voiceless palatal unaspirated plosive: /cìŋ/ 'to sew'  
 /còh/ 'to help'  
 /cʷt/ 'to dye'

(126) /c<sup>h</sup>/ voiceless palatal aspirated plosive: /c<sup>h</sup>ʷp/ 'to blink'  
 /c<sup>h</sup>ón/ 'bed'  
 /c<sup>h</sup>óp.muíh/ 'ring'

When in the syllable final position /c/ is realized as a voiceless palatal unreleased plosive [c̚] as in [klù<sup>h</sup>c̚] 'bad'.

|  |        |            |
|--|--------|------------|
| (127) /k/ voiceless velar unaspirated plosive: | /kláj/ | 'eagle'    |
|  | /kìh/  | 'salt'     |
|  | /kén/  | 'to twist' |

|  |                      |                 |
|--|----------------------|-----------------|
| (128) /k <sup>h</sup> / voiceless velar aspirated plosive: | /k <sup>h</sup> rìh/ | 'bear'          |
|  | /k <sup>h</sup> éj/  | 'to wear a hat' |
|  | /k <sup>h</sup> úʔ/  | 'tree'          |

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

|                                      |        |           |
|--------------------------------------|--------|-----------|
| (129) /ʔ/ voiceless glottal plosive: | /hláʔ/ | 'leaf'    |
|                                      | /ʔim/  | 'raw'     |
|                                      | /kúʔ/  | 'to like' |

#### 5.4.1.3 Nasals

There are four phonemic nasals occurring at the bilabial, alveolar, palatal, and velar points of articulation. There are two phonemic voiceless nasals occurring at the alveolar and velar points of articulation. All voiced nasals can occur in both C<sub>1</sub> and coda positions. Voiceless nasals only occur in the onset. The nasals are listed with examples below.

|                                  |       |            |
|----------------------------------|-------|------------|
| (130) /m/ voiced bilabial nasal: | /mút/ | 'cloud'    |
|                                  | /máj/ | 'to write' |
|                                  | /ʔim/ | 'raw'      |
|                                  | /lóm/ | 'sharp'    |

|                                  |       |         |
|----------------------------------|-------|---------|
| (131) /n/ voiced alveolar nasal: | /nòk/ | 'full'  |
|                                  | /nám/ | 'blood' |
|                                  | /nʔn/ | 'who'   |
|                                  | /pún/ | 'four'  |

|                                     |       |            |
|-------------------------------------|-------|------------|
| (132) /ŋ/ voiceless alveolar nasal: | /ŋýt/ | 'to smell' |
|                                     | /ŋìw/ | 'to see'   |

|                                 |       |           |
|---------------------------------|-------|-----------|
| (133) /ɲ/ voiced palatal nasal: | /ɲòk/ | 'brain'   |
|                                 | /ɲàʔ/ | 'house'   |
|                                 | /páp/ | 'to sell' |
|                                 | /mòɲ/ | 'mouth'   |

|                               |        |             |
|-------------------------------|--------|-------------|
| (134) /ŋ/ voiced velar nasal: | /ŋól/  | 'fire'      |
|                               | /ŋàj/  | 'eye'       |
|                               | /kíŋ/  | 'expensive' |
|                               | /rɔ́ŋ/ | 'horn'      |

|                                  |          |             |
|----------------------------------|----------|-------------|
| (135) /ŋ/ voiceless velar nasal: | /ŋáp/    | 'to yawn'   |
|                                  | /ʔá.ŋét/ | 'to listen' |

Unlike Man Noi and Bang Deng this variety has not lost the voiceless nasals. It has, however, lost the cluster of nasal + /h/.

#### 5.4.1.4 Fricatives

There are four phonemic fricatives occurring at the labiodental, alveolar, and glottal points of articulation. Only the glottal fricative can occur in both C<sub>1</sub> and coda positions. All other fricatives occur only in the C<sub>1</sub> position. The fricative phonemes are listed below with examples.

|  |       |            |
|--|-------|------------|
| (136) /f/ voiceless labiodental fricative: | /fíl/ | 'trousers' |
|--|-------|------------|

The /f/ is not well attested, appearing only once in the entire wordlist. However, there is no free variation between /f/ and /v/.

|   |          |                 |
|---|----------|-----------------|
| (137) /v/ voiced labiodental fricative: | /vèj/    | 'fast'          |
|   | /vèk/    | 'to work'       |
|   | /sá.váh/ | 'light, bright' |

|   |        |              |
|---|--------|--------------|
| (138) /s/ voiceless alveolar fricative: | /sɔ́t/ | 'to receive' |
|   | /sím/  | 'bird'       |
|   | /sóʔ/  | 'dog'        |



|                                    |        |                       |
|------------------------------------|--------|-----------------------|
| (139) /h/ voiceless glottal nasal: | /hráj/ | 'tooth'               |
|                                    | /hík/  | 'to cut with a knife' |
|                                    | /lih/  | 'to lay an egg'       |
|                                    | /mùh/  | 'nose'                |

While in Man Noi and Bang Deng the /r/ and /h/ in the onset appear in free variation this is not the case in La Gang. In La Gang, like the Man Noi variety, Bang Deng variety, and the proto-reconstruction, /f/ is not well attested.

#### 5.4.1.5 Approximants

There are three phonemic approximants and one phonemic lateral approximant. The approximants occur at the bilabial, alveolar, and palatal points of articulation. The lateral approximant occurs at the alveolar point of articulation. Only the alveolar approximant cannot occur in the coda position. All other approximants and the lateral approximant can occur in both the onset and coda positions. Each will be listed below with examples.

|  |                      |               |
|--|----------------------|---------------|
| (140) /w/ voiced labial-velar approximant: | /wàt/                | 'temple'      |
|  | /wàh/                | 'to be wide'  |
|  | /p <sup>h</sup> ráw/ | 'to scatter'  |
|  | /ʔéw/                | 'to look for' |

There is free variation between /w/ and [v] when in the onset. For example, /wàt/ can be pronounced as [vət].

|                                       |       |           |
|---------------------------------------|-------|-----------|
| (141) /j/ voiced palatal approximant: | /júŋ/ | 'village' |
|                                       | /jét/ | 'cloth'   |
|                                       | /lèj/ | 'six'     |
|                                       | /pɿj/ | 'person'  |

|  |          |            |
|--|----------|------------|
| (142) /r/ voiced alveolar approximant: | /ríl/    | 'forehead' |
|  | /rók/    | 'frog'     |
|  | /ʔá.róŋ/ | 'horse'    |

|  |        |                         |
|--|--------|-------------------------|
| (143) /l/ voiced alveolar lateral approximant: | /pláj/ | 'alcohol'               |
|  | /lòn/  | 'to flow'               |
|  | /hʔl/  | 'to go'                 |
|  | /cál/  | 'to be hungry, thirsty' |

The final position clustering of /lh/ which is present in the proto-reconstruction has been reduced to /h/ in La Gang.

lh → h

|                           |   |                   |
|---------------------------|---|-------------------|
| *kìlh <sup>2</sup> 'salt' | → | /kìh/ 'salt'      |
| *kəmòlh 'banana'          | → | /ʔá.móh/ 'banana' |

Man Noi and Bang Deng have also lost the /lh/ cluster in the onset position, however La Gang has retained this feature but it present as /hl/.

lh   → hl  

|                           |   |               |
|---------------------------|---|---------------|
| *lhek <sup>1</sup> 'iron' | → | /hlék/ 'iron' |
| *lhiʔ <sup>1</sup> 'rain' | → | /hléʔ/ 'rain' |

In Man Noi and Bang Deng proto final /r/ have been reduced to a final /h/. In La Gang they have become a final /l/.

  r →   l

|                              |   |                  |
|------------------------------|---|------------------|
| *kàr 'wind'                  | → | /kʔl/ 'wind'     |
| *phʔr <sup>1</sup> 'to fly'  | → | /pʔl/ 'to fly'   |
| *mùr <sup>2</sup> 'to crawl' | → | /mʔl/ 'to crawl' |

#### 5.4.2 Vowels

As in the Man Noi and Bang Deng varieties there are ten vowel phonemes. These phonemes are represented in Table 23 below. There are four front vowels produced at the close, near-close, close-mid, and open-mid positions. There is one central vowel produced at the open position. There are five back vowels two produced at the close, two produced at the close-mid, and one at the open-mid positions.





(152) /ɔ/ open-mid back rounded: /p<sup>h</sup>ɔk/ 'to hang out to dry'  
 /jɔk/ 'weak'  
 /lɔn/ 'to flow'

(153) /a/ open central unrounded: /hlát/ 'to be afraid'  
 /ɲàʔ/ 'house'  
 /nám/ 'blood'

As seen in Table 25 below there are restriction on the vowels according to the consonant they precede.

|                | i <sub>l</sub> | ɪ <sub>l</sub> | e <sub>l</sub> | ɛ <sub>l</sub> | u <sub>l</sub> | u <sub>l</sub> | ʏ <sub>l</sub> | o <sub>l</sub> | ɔ <sub>l</sub> | a <sub>l</sub> |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| m              | -              | +              | -              | -              | -              | +              | +              | +              | +              | +              |
| n              | -              | +              | -              | +              | -              | +              | +              | +              | +              | +              |
| ɲ              | -              | -              | -              | +              | -              | +              | +              | -              | +              | +              |
| ŋ              | +              | -              | +              | -              | +              | +              | +              | +              | +              | +              |
| p <sup>h</sup> | +              | +              | -              | +              | -              | -              | +              | +              | +              | +              |
| t <sup>h</sup> | +              | +              | -              | +              | +              | +              | +              | -              | +              | +              |
| c <sup>h</sup> | -              | -              | -              | +              | -              | -              | +              | -              | +              | +              |
| k <sup>h</sup> | +              | -              | -              | +              | -              | +              | +              | +              | +              | +              |
| ʔ              | +              | -              | +              | +              | +              | +              | +              | +              | +              | +              |
| h              | +              | -              | +              | -              | +              | +              | +              | +              | +              | +              |
| w              | -              | -              | -              | +              | -              | -              | -              | -              | -              | +              |
| j              | -              | -              | +              | -              | -              | +              | +              | +              | +              | +              |

Table 25 Vowels preceding final consonants

Predictably, back vowels do not occur before /w/. The only front vowel to occur before /j/ is /e/. The only front vowel to occur before /w/ is /ɛ/. The back vowels /u, o/ are restricted in that they do not occur before the palatal nasal or palatal plosive. The open central unrounded /a/ is the most unrestricted vowel occurring in every position.

## 5.5 Register Complex

### 5.5.1 Phonation

As with the Man Noi and Bang Deng there are two phonation types in La Gang, modal and breathy. The modal phonation type is a clear phonation with no laxing of the larynx. Words that are produced in the modal phonation can have a slight tensing

when the coda is filled with a glottal stop. Modal phonation words tend to be shorter in length and tend to have a slightly higher pitch.

La Gang words that are produced with the breathy phonation are generally longer in duration. Breathy phonation words have an association with the final /h/. These words are also produced with a slightly lower pitch. Breathy words are generally words that have a low tone.

| Modal Vowel | Mean               |                | Breathy Vowel   | Mean               |                |
|-------------|--------------------|----------------|-----------------|--------------------|----------------|
|             | Standard Deviation |                |                 | Standard Deviation |                |
|             | F1                 | F2             |                 | F1                 | F2             |
| i           | 349.6<br>35.7      | 1931<br>31.1   | i               | 372.8<br>54        | 1704.6<br>77.9 |
| ɪ           | 464.9<br>14.1      | 1698.4<br>45.8 | ɪ <sup>14</sup> | 493.3              | 1575.7         |
| e           | 520.9<br>23.8      | 1845.4<br>39.6 | ɛ               | 508.9<br>10.1      | 1682.6<br>63.6 |
| ɛ           | 579.4<br>32.3      | 1720.8<br>51.4 | ɛ               | 593<br>32.8        | 1486.2<br>51.4 |
| a           | 876.9<br>33        | 1449.5<br>33.6 | ɶ               | 893.6<br>39.8      | 1345.9<br>38.3 |
| ʊ           | 355.8<br>21.8      | 1476.7<br>31.6 | ʊ               | 378.3              | 1288.9         |
| u           | 386.6<br>41.7      | 893.6<br>66.7  | ʉ               | 399.9<br>35.8      | 1054.1<br>21.4 |
| ɤ           | 496.8<br>57.1      | 1455.4<br>27.8 | ɤ               | 509.2<br>59.2      | 1360.4<br>38.6 |
| o           | 499.6<br>44.2      | 1004.9<br>53.8 | ɔ               | 535.8<br>45.3      | 1073.8<br>23.3 |
| ɔ           | 711.9<br>41.9      | 1069.7<br>52.9 | ɔ               | 690.3<br>40.5      | 945.1<br>41.3  |

Table 26 La Gang Vowels mean F1 and F2

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

<sup>14</sup> Both /ɪ/ and /ʉ/ are not well attested in the La Gang variety. Each only appeared once in the data.

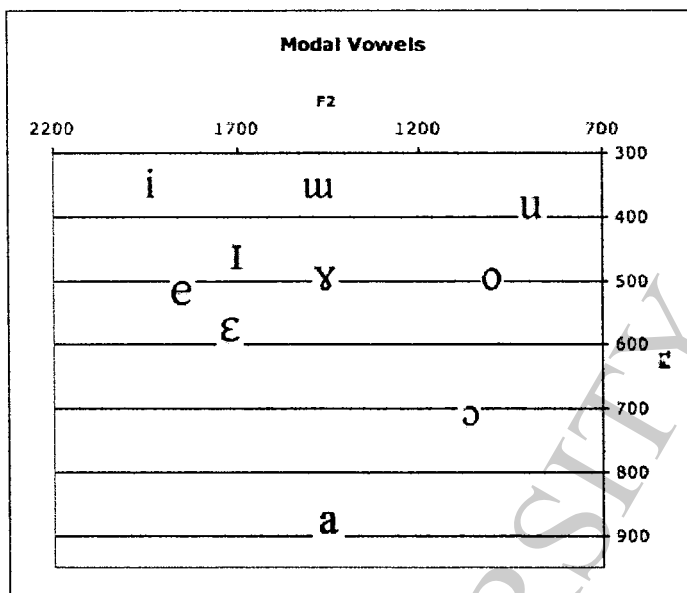


Figure 29 La Gang Modal Vowels

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

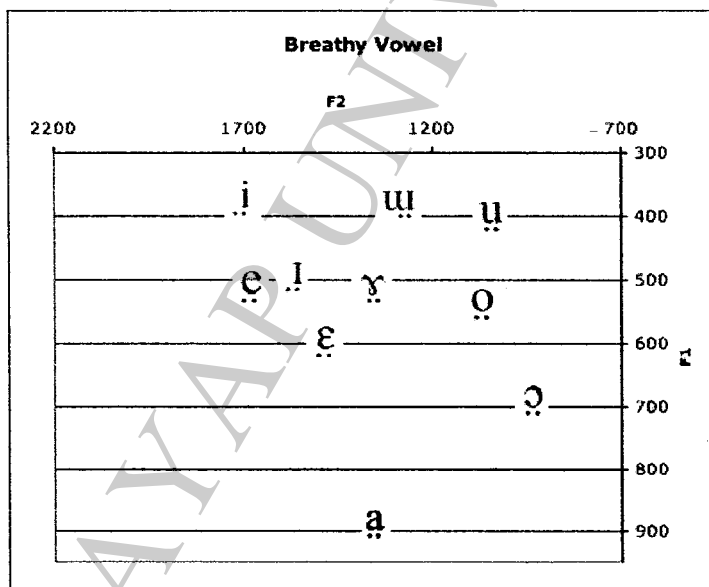


Figure 30 La Gang Breathly Vowels

In summary, In La Gang there are two phonemic phonations, breathy and modal. Using Watkins spectrum of phonation types it can be explained that breathy vowels are modal tending toward breathy and modal vowels are modal tending toward creaky as seen in Figure 31 below.





|   | F2     | F3     |
|---|--------|--------|
| u | 893.6  | 1565   |
| ɯ | 1476.7 | 1556.8 |
| o | 1004.9 | 1607.1 |
| ɤ | 1455.4 | 1650.6 |

Table 27 La Gang Back Vowel F2 and F3 Average

From Table 27 above it can be seen that the F3 of [u] and [ɤ] differ only slightly from the back rounded vowels, but differ greatly in F2. Therefore, it is better to describe these vowels as back vowels rather than central vowels.

### 5.5.2 Tone

There are two tonemes in the La Gang variety. The allotones that are present in the Man Noi and Bang Deng variety are not present in the La Gang variety. As seen in Figure 32 below.

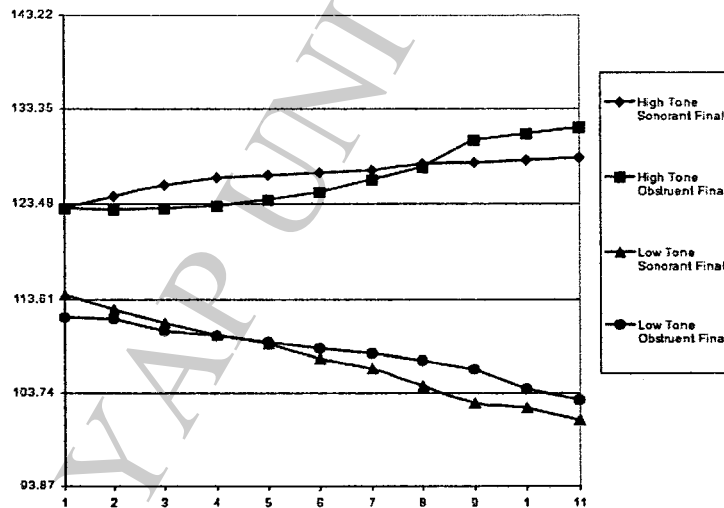


Figure 32 La Gang Tone Averages

#### 5.5.2.1 Tone Contrast

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

- /k/ – /k̄/:      /kíp/ 'to cut with scissors'    /ríp/ 'grass'      CNE  
 /l/ – /l̄/:      /sín/ 'to count'                              /p̄ín/ 'to layaside'    CNE

|             |                                     |                             |     |
|-------------|-------------------------------------|-----------------------------|-----|
| /é/ – /è/:  | /k <sup>h</sup> éj/ 'to wear a hat' | /lèj/ 'six'                 | CNE |
| /é/ – /è/:  | /péʔ/ 'fat (person)'                | /pèʔ/ 'goat'                | CIE |
| /á/ – /à/:  | /máw/ 'cat'                         | /màw/ 'to be drunk'         | CIE |
| /ú/ – /ù/:  | /p <sup>h</sup> ruíl/ 'mud'         | /kà.mùl/ 'gold'             | CNE |
| /ú/ – /ù/:  | /ʔú/ 'to shout'                     | /mù/ 'ugly'                 | CNE |
| /s/ – /s̃/: | /p <sup>s̃</sup> ʔ/ 'milk'          | /j <sup>s̃</sup> ʔ/ 'to do' | CNE |
| /ó/ – /ò/:  | /tóh/ 'to open'                     | /tòh/ 'to chop'             | CIE |
| /ó/ – /ò/:  | /lój/ 'three'                       | /lòj/ 'to swim'             | CIE |

### 5.5.2.2 High Tone

The La Gang average high tone is a level tone of /44/ that has a slight rise. The tone begins 123 Hz and rises to 129.8 Hz. See **Figure 33** and **Figure 34** below.

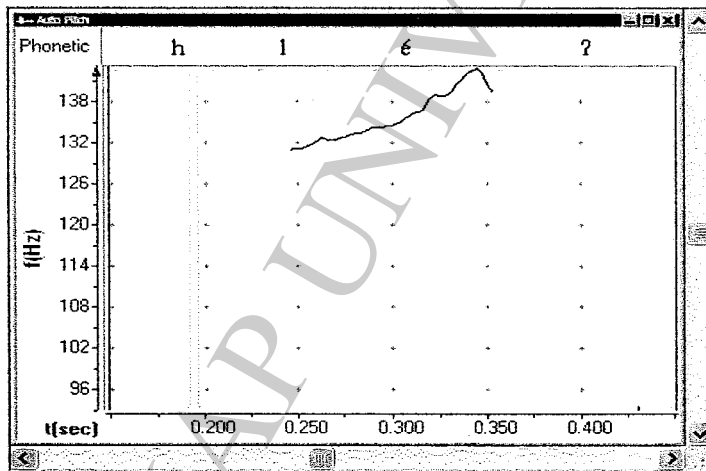


Figure 33 'rain'

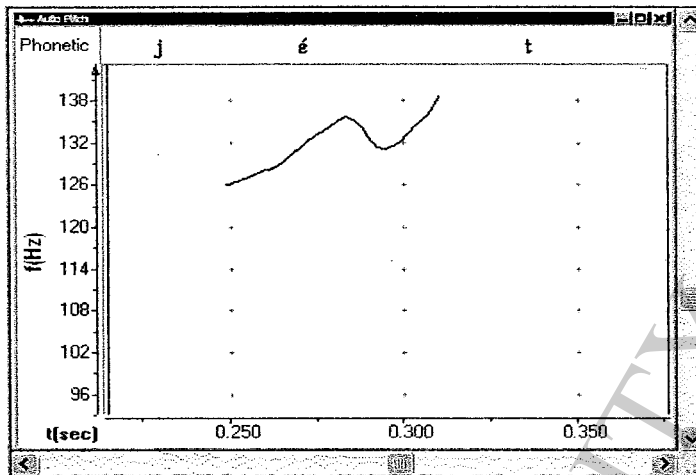


Figure 34 'cloth'

Words with a high tone and end in a sonorant tend to have a more level tone. As seen in Figure 35 and Figure 36 below.

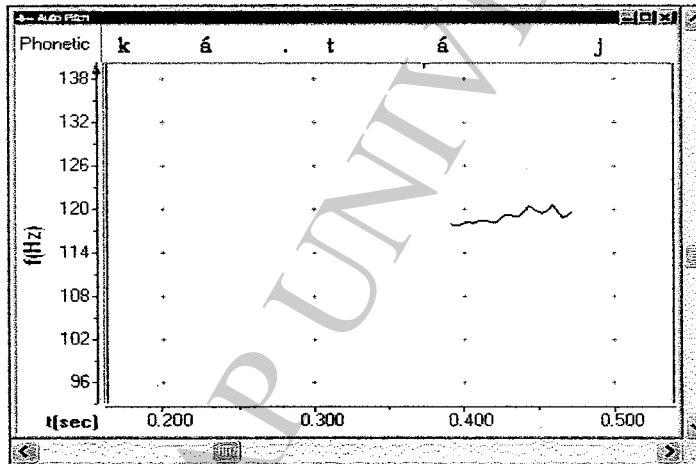


Figure 35 'rabbit'

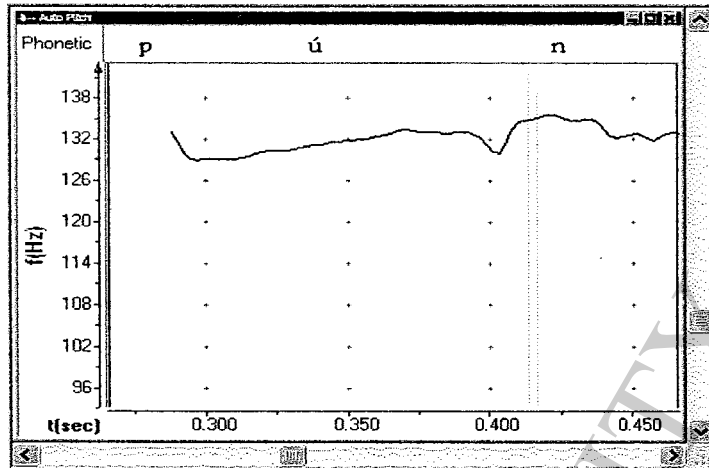


Figure 36 'four'

### 5.5.2.3 Low Tone

The average low tone in La Gang is a falling tone of /21/. It begins at 112.8 Hz and falls to 101.9 Hz. See **Figure 37** and **Figure 38** below.

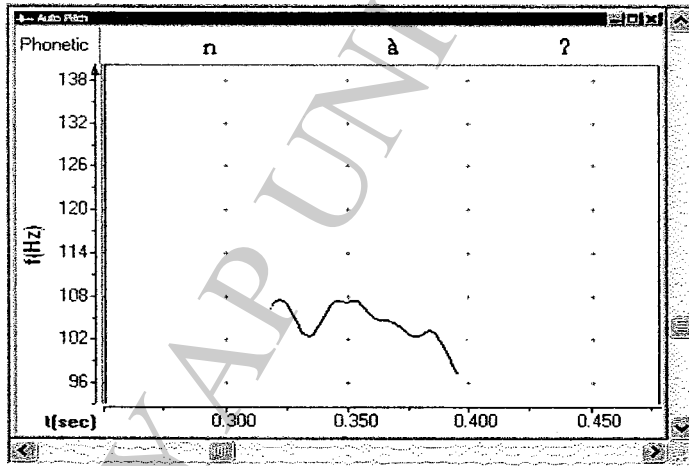


Figure 37 'sour'

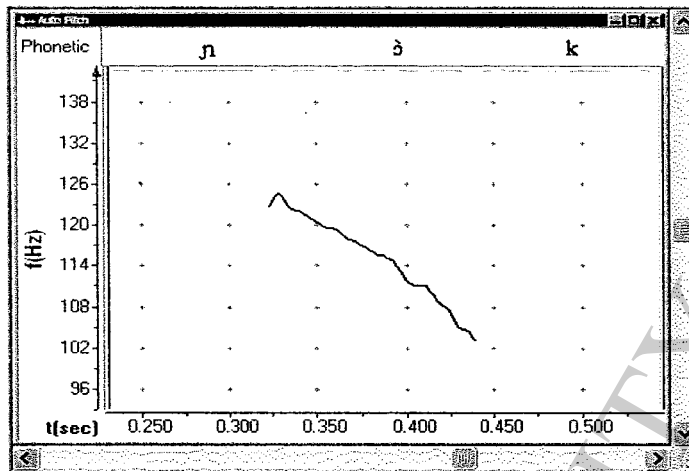


Figure 38 'brain'

Unlike low tone words which end in sonorant finals in Man Noi and Bang Deng low tone words in La Gang that end in a sonorant final do not differ from words ending in an obstruent. See **Figure 39** and **Figure 40** below.

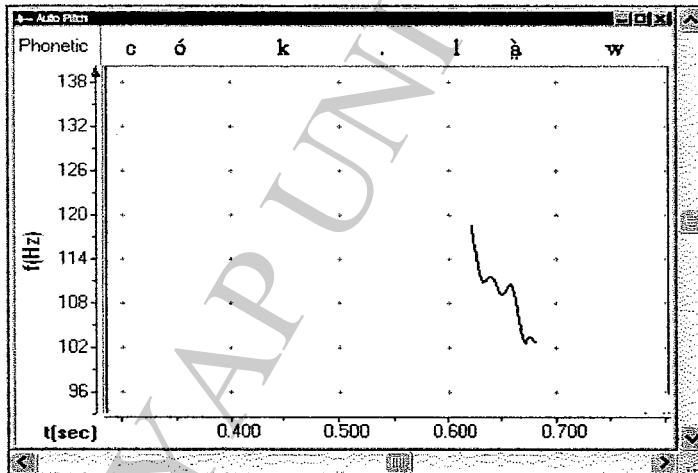


Figure 39 'butterfly'

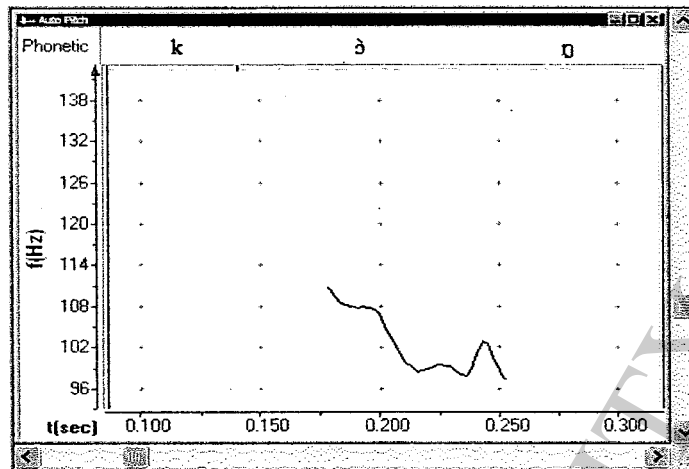


Figure 40 'bottle'

In summary the La Gang Plang variety has two tones, high and low. The high tone is a level tone of /44/ which rises slightly. The low tone is a falling tone of /21/.

### 5.5.3 Phonation and Tone

As with Man Noi and Bang Deng there is a limited number of words that occur with breathy phonation in La Gang. La Gang has not changed from the proto language as much as the other two villages and Paulsen (1992:192) describes phonation as a historical feature of the language it would be assumed that La Gang would have a more dominant feature of phonation in the register complex. However, it is currently unclear from the data which feature is more dominant. As in the case of Man Noi and Bang Deng speakers would identify tone as the feature that differed when asked to distinguish between two words.

## 5.6 Phonological Processes

This section will present the phonetic analysis of the La Gang variety.

### 5.6.1 Word

#### 5.6.1.1 Voice Assimilation

As with Man Noi and Bang Deng there is voicing assimilation in the La Gang variety. Voiceless plosives when following a voiced nasal after a syllable break the voiceless plosive is produced as voiced. This can be written by the rule:

$$[-\text{cont}] \rightarrow [+ \text{voiced}] / [+ \text{nasal}]_-$$

(154) Underlying Form: /cŋ.pŋ/ 'stairs'

- |       |                  |           |          |
|-------|------------------|-----------|----------|
|       | Surface Form:    | [cón.bón] | 'stairs' |
| (155) | Underlying Form: | /són.tín/ | 'heel'   |
|       | Surface Form:    | [són.dín] | 'heel'   |
| (156) | Underlying Form: | /ʔúm.kóc/ | 'sweat'  |
|       | Surface Form:    | [ʔúm.góc] | 'sweat'  |

Although there is no occurrence of a voiceless palatal plosive [c] following a voiced nasal in the wordlist, it is assumed that the voicing rule would apply in this situation as well.

#### 5.6.1.2 Final Plosives

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

[-cont] → unreleased / \_#

- |       |                  |                       |                 |
|-------|------------------|-----------------------|-----------------|
| (157) | Underlying Form: | /c <sup>h</sup> ʔp/   | 'to blink'      |
|       | Surface Form:    | [c <sup>h</sup> ʔp̚]  | 'to blink'      |
| (158) | Underlying Form: | /k <sup>h</sup> rʔt/  | 'to drop, fall' |
|       | Surface Form:    | [k <sup>h</sup> rʔt̚] | 'to drop, fall' |
| (159) | Underlying Form: | /pəc/                 | 'saliva'        |
|       | Surface Form:    | [pəc̚]                | 'saliva'        |
| (160) | Underlying Form: | /rók/                 | 'frog'          |
|       | Surface Form:    | [rók̚]                | 'frog'          |

#### 5.6.1.3 Tone Assimilation

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

- |       |                  |          |          |
|-------|------------------|----------|----------|
| (161) | Underlying Form: | /ka.cèʔ/ | 'river'  |
|       | Surface Form:    | [kà.cèʔ] | 'river'  |
| (162) | Underlying Form: | /ʔa.móh/ | 'banana' |
|       | Surface Form:    | [ʔá.móh] | 'banana' |





|                    |          |   |           |                |
|--------------------|----------|---|-----------|----------------|
| (167) ɔ → ɔ'/_c, ɲ | /vɔc/    | → | [vɔ'cʰ]   | 'to cut, reap' |
|                    | /mɔɲ/    | → | [mɔ'ɲ]    | 'mouth'        |
| (168) u → u'/_c, ɲ | /súc/    | → | [sú'cʰ]   | 'to suck'      |
|                    | /ʔá.múɲ/ | → | [ʔá.mú'ɲ] | 'wife'         |

### 5.7 Summary

The phonological summary of the La Gang variety is that words are either monosyllabic or sesquisyllabic. Monosyllabic words can be written with the structure #C(C)VC#. Sesquisyllabic words can be written with the maximum structure #CV.C(C)VC#. Compound words can also be formed from combining these two types of words. There are twenty-three phonemic consonants, ten phonemic vowels, and two phonemic tones. Register, while phonemic, is not the dominant feature of the register complex.