

This Chapter is a description of the consonant and vowel phonemes, syllable structure, tone, and lexical and post-lexical phonological rules of Meithei.

2.1 The consonant phonemes

In this section I describe the consonant phonemes in Meithei. It is to be noted that closely related languages, both in a geographical and a genetic sense, such as Tangkhul Naga (Arokianathan 1980), do not exhibit the unaspirated and aspirated voiced series that Meithei has. This feature of the Meithei consonant system can be attributed to the impact of large scale borrowing of Indo-Aryan words into Meithei.

2.1.1 Contrastive distribution

An inventory of the consonant phonemes in Meithei is given in Table 1.

Table 1. Chart of consonant phonemes

	Labial	Alveolar	Palatal	Velar	Laryngeal
Stops	p p ^h b b ^h	t t ^h d d ^h		k k ^h g g ^h	
Affricates			č č ^h j j ^h		
Fricatives		s			h
Nasals	m	n		ŋ	
Lateral/Flap		l			
Trill		r			
Semivowels	w		y		

The phonemic status of the voiceless unaspirated stops and affricate /p, t, k, č/ and the aspirated stops and affricate /p^h, t^h, k^h, č^h/ is established through the

18 minimal pairs in (1) taken from Thoudam (1989b). Note t' roots may be marked for high tone (indicated by an acute accent); unmarked roots have low tone. The details of the tone system are described in section 2.4.

- (1) a. *ká-* 'roast' *khá* 'south'
 b. *tá-* 'hear' *thá-* 'send'
 c. *pá-* 'thin' *phá-* 'catch'
 d. *čá-* 'eat' *sá-* (/čhá/) 'dance'

The aspirated affricate /č^h/ is phonetically realized as [s], [s^h], [š] or [š^h] in native words. The argument for the existence of a /č^h/ phoneme in Meithei has been convincingly presented in Thoudam (1980: 57). He points out that without the existence of /č^h/ an awkward gap would be present in the aspirated stop series. More importantly, the behavior of [s] or [š] in the morphophonemic rule of Deaspiration (see section 2.5) parallels the behavior of the voiceless aspirated stops. The statement and explanation for this rule is made evident if [s] or [š] is underlyingly /č^h/.

In most phonemic spellings of Meithei native words, /č^h/ is written as *s* rather than *čh* since the most common phonetic realization of /č^h/ is [s] (Bhat and Ningomba 1986a, P. Madhubala Devi 1979 and N. Nonigopal Singh 1987, for ex-ample). In borrowed words such as *čhana* 'strainer', a *čh* is used although these may also occasionally surface with [š]. In other phonemic transcription systems (for example, Thoudam 1980), /č^h/ is spelled as *čh* regardless of its phonetic value. I follow the first convention here because this is the more common phonemic spelling system used.

In native words, voiceless stops contrast with the voiced stops in word medial position only. Illustrative examples are given in (2). Voiced unaspirated stops occur in word initial position only in borrowed words and in ideophones (see Chapter 8 for ideophones). The contrastive examples of voiced stops given in (3) are from words borrowed from English in (a) and Hindi in (b). The voiced unaspirated affricate does occur in native words in both initial and medial position. A contrastive example is given in (4).

- (2) a. /p/ *əpókpa* 'swollen'
 b. /b/ *əbok* 'grandmother'
 c. /t/ *láytaŋ* 'basket holding about 12 kilos of grain'
 d. /d/ *laydán* 'only God'
 e. /k/ *laykán* 'hard surface of earth'
 f. /g/ *laygán* 'habitual buyer'

- (3) a. /b/ *bol* 'ball'
 /g/ *gol* 'goal'
 b. /d/ *dari* 'verandah'
 /g/ *gari* 'vehicle'
 (4) /j/ *jəŋ* 'rust'
 /k/ *čəŋ* 'enter'

Contrastive examples of the voiced aspirated stops and affricate are given in (5) from words borrowed from Hindi. These phonemes appear only in words borrowed from Indo-Aryan languages.

- (5) a. /b^h/ *bhara* 'fare'
 /d^h/ *dhara* 'descendants'
 b. /g^h/ *ghari* 'watch'
 /b^h/ *bhari* 'heavy'
 c. /j^h/ *jhari* 'drinking pot'
 /č^h/ *čhuri* 'knife'

The phonemic status of the fricatives /s/ and /h/ is established through the near minimal pair (6). /s/ appears in borrowed words only; /h/ appears in both native and borrowed words. The forms in (6) are borrowed from Hindi.

- (6) /s/ *səkti* 'power'
 /h/ *hək* 'right'

Finally, the phonemic status of the nasal stops, liquid and semi-vowels is established through the near-minimal and minimal pairs in (7).

- (7) a. /m/ *má* 'bed bug'
 b. /n/ *na* 'ear'
 c. /ŋ/ *ŋá* 'fish'
 d. /l/ *lá* 'banana leaf'
 e. /w/ *wá* 'bamboo'
 f. /y/ *yá* 'tooth'

The trill /r/ occurs in borrowed words: compare *rəŋ* 'color' (borrowed from Hindi), with the native word *ləŋ-* 'cast, throw'.

2.1.2 Free variation

As noted above, the phoneme /č^h/ has the unconditioned phonetic variants: [s], [š], [s^h] and [š^h]. See section 2.1.3 for another conditioned variant of /č^h/.

- (8) a. [məčásu] b. [məš^há]
- mə- čə -čhu mə -čhá
- NM- small -ALSO 3P -face
- 'the small one also' 'his face'
- c. /č^hón/ [són] 'weak'
- d. /č^hən/ [š^hən] 'cow'

The aspirated bilabial stop /p^h/ varies freely with the labiodental fricative [f]: thus *Imphal* (the capital of Manipur), may be pronounced [imfal] or [imphal] and *phábə* 'to catch' may be pronounced [phábə] or [fábə]. The lateral *l* varies freely with *n* syllable finally: thus, [lón] or [lól] 'language'. /j/ alternates with [z]: [oza] or [oʃa] 'teacher'.

2.1.3 Complementary distribution

/l/ has two allophones: [l] and a flapped [r] which occurs in intervocalic position by a postlexical rule of Flapping (see section 2.6); [l] and [r] are written as such in the spelling used in this grammar. The unaspirated velar stop /k/ geminates between vowels and subsequently reduces to [ʔ] (see section 2.6). /č^h/ is realized as an affricate [tʃ] before /i/: [tʃín] 'hill'. The phonemes /p/, /t/ and /k/ each have a voiced and voiceless allophone. The voiced allophone is derived in intervocalic position through the application of the Voice Assimilation Rule. This and other lexical rules are described in section 2.5.

2.2 The vowel phonemes

An inventory of the vowel phonemes in Meithei is given in Table 2.

Table 2. Chart of vowel phonemes

	front	central	back
high	i		u
mid	e	ə	o
low		a	

The minimal and near-minimal pairs in (9) establish the phonemic status of these vowels.

- (9) a. /ə/ phá- 'good'
- b. /a/ phá- 'catch'
- c. /i/ pí- 'give'
- d. /o/ pó- 'rest by lying down'
- e. /u/ pú- 'borrow'
- f. /e/ pé- 'weep'

The vowels /u/, /o/, /i/ and /e/ occur in final position as shown by the minimal pairs in (10):

- (10) a. *paru* b. *paro*
- pa -lu -u pa -lə -o
- read -ADIR -IMP read -PROX -SOLCT
- 'read over there' 'go ahead and read, won't you'
- c. *čári* d. *čáre*
- čá -li čá -lə -e
- eat -PROG eat -PERF -ASRT
- 'eating' 'has eaten'

There are no indigenous words beginning with /a/.⁵ Word final [a] may have two origins: /a/ may occur in final position in words like *ipa* 'my father' or as an allophone of /ə/ since in open syllables /ə/ lowers to [a].⁶ The vowel /e/

occurs in initial position in a few words. N. Khelchā Singh's dictionary (1964a) lists only eight under this letter, and of these, five are clearly borrowed. Y. Nungshitombi Devi (1989) claims that there are no native words beginning with /e/. I assume that the words listed by N. Khelchandra Singh, given in (11), are native but archaic or dialectal and that contrastiveness of /e/ in initial position has been lost. Th. Harimohon Singh (p.c.) notes that *en* (11b) is from a non-standard dialect and is *yen* in the Imphal dialect. As noted by Y. Nungshitombi Devi (1989: 4), *a* occurs initially in borrowed words such as *asa* 'hope' (borrowed from Hindi) but is gradually being replaced by [ə] in the spoken language although it is still represented by the grapheme for *a* in the written system.

- (11) a. *ek* 'clan'
 b. *en-* 'look after, look at'
 c. *enbum huyroy čan-* 'offer to deities with due rites to lessen evil deeds done during war'

In open syllables, /o/ freely varies between [o] and [ɔ]. In closed syllables, when /o/ is followed by an obstruent, it is [o]; when it is followed by a sonorant, it is [ɔ]. /i/ is [u] before stops and [i] before sonorants and in open syllables. Phrase finally, /i/ lowers to [e]. /u/ is high, back and round; in phrase final position /u/ is lower and more central [ʊ]. In open syllables /e/ freely varies between [e] and [ɛ]; in closed syllables it is [e]; phrase finally [e] lowers to [ɛ]. In closed syllables, /a/ is [a] after /k/; it is back ([ɑ]), after other consonants and sonorants. In open syllables, /a/ is [ɑ].

When a glide /y/ or /w/ occurs after the vowels /ə/, /a/ or /o/, the following diphthongs are formed:

- (12) a. *əw* *təw-* 'dig'
 b. *əy* *təy-* 'smear'
 c. *aw* *taw-* 'float'
 d. *ay* *táy-* 'hears'
 e. *oy* *tóy-* 'is often'

2.3 Syllable structure

The Meithei syllable consists of a nucleus and an onset and may include a coda. The nucleus consists of a vowel.⁷ Onsets may be simple or complex. For native words, in word initial position, onsets may be: p, ph, t, th, č, čh, k, kh, m, n, ŋ, w, y, h, l. Voiced stop onsets are possible word medially and word

initially in i-phones (see Chapter 8). Vowel initial syllables of prefixes and roots are always preceded by a glottal stop: *əibə* [ʔəʔibə] 'writer' from *ə-* 'attributive' and *ibə* 'to write' or *yáon-* [yáʔon] 'move' from *yá-* 'yield' and *on-* 'turn'. As the glottal stop is predictable, it is not written in the phonemic transcription. Suffixes and enclitics which are vowel initial always occur either with a copy of the coda of the preceding syllable (gemination) or form the second member of a diphthong when the adjacent syllable has no coda. This is illustrated by examples (13a) and (13b) respectively.

- (13) a. *taw-* 'do' + *-e* 'assertive' is *təwwe*
 b. *ú-* 'see' + *-i* 'nonhypothetical' is *úy*

Few complex onsets are allowed. As noted in Thoudam (1980: 48), unaspirated stops and fricatives and voiceless aspirated stops can form clusters with the glides /w/ or /y/. Clusters with /l/ are also possible: these are surface realizations of intervocalic /l/ which, as noted in 2.1.3, occur as [r] in this environment.

Table 3. Examples of complex onsets in native words

pr	<i>čəmpɾa</i>	'lemon'
pw	<i>məwpwə</i>	female address term for younger brother
phr	<i>phrɛŋ</i>	'a way birds flap their wings'
br	<i>səmbɾu</i>	'freckle'
tr	<i>piktru</i>	'small child'
thr	<i>tɪlθɾok</i>	'earthworm'
thw	<i>məθwəy</i>	'inheritance'
dr	<i>káŋdɾum</i>	'hockey puck'
ʃr	<i>həyʃɾaŋ</i>	'knife'
kr	<i>kɾuk</i>	'resin'
kw	<i>kwak</i>	'crow'
ky	<i>kyamləy</i>	'a thorny tree'
khɾ	<i>pákhrá</i>	'widower'
khw	<i>khwəy</i>	'all, every'
khy	<i>Sənəkhyə</i>	a surname
gr	<i>čəgrɪŋ</i>	'dry cooked rice'
sr	<i>Laysɾəm</i>	a clan name
sw	<i>swəy mán-</i>	'vanish'
sy	<i>Syam</i>	male proper name
my	<i>myaw</i>	'meowing of a cat'

Clusters with /l/ are the result of the tendency of *ə* to delete when it is followed by a liquid in the onset of a following syllable (see 2.6.5). Thus 'lemon' may be pronounced as *čampəra* or *čəmpɾa*.⁸ In native words, no other clusters are possible. Possible complex onsets in native words are illustrated in Table 3.

Onsets of borrowed words may consist of voiced unaspirated or aspirated stops, affricates and fricatives in both word initial or medial position. Complex onsets are also limited to consonant-liquid or consonant-glide sequences. N. Khelchandra Singh (1964a: 326) also lists *kʃ* as in *kʃir* 'custard' but this cluster is not common. Examples of clusters in borrowed words are given in Table 4.

Table 4. Examples of complex onsets in borrowed words

Consonant with r		
dhr	<i>dhrubə</i>	'Polaris' (star)
sr	<i>Srabana nakṣatra</i>	'Aquila' (constellation)
Consonant with a glide		
by	<i>byəbəhar</i>	'conduct, usage'
ty	<i>satya</i>	'truth'
dhy	<i>dhyan təw</i>	'to meditate'
jy	<i>jyestha nakṣatra</i>	'Scorpio' (constellation)
gy	<i>gyan</i>	'knowledge'
sw	<i>swamī</i>	'spiritual teacher'; 'god'
Consonant with l		
sl	<i>slet</i>	'slate'
pl	<i>plet</i>	'plate'

The coda in native words may consist of: p, t, k, m, n, ŋ, l. There are no complex codas. This restriction on codas is upheld for borrowed words also. For example, in (14a) to (14c), in words borrowed from English, complex codas are simplified. Since a coda cannot consist of a voiced stop, syllable final stops are devoiced as in (14d).

- (14) a. *distrik* 'district'
 b. *projek* 'project'
 c. *əndərgawn* 'underground'
 d. *hetmasətər* 'headmaster'

2.4 Tone

Meithei exhibits a two-way contrast between low and high tone. Suffixes and prefixes have no tone associated to them; instead, the pitch values observed for these are derived through the spreading of lexically specified tone. Phonological rules of Downstep and Upstep account for phonetic variations of underlying tone.

2.4.1 The data

The data for this study come primarily from the analysis of minimal tone pairs recorded by Th. Harimohon Singh in a sound-proof booth. Each item of the minimal pair was recorded in citation form, in a short phrase, and where possible, as part of a compound. Data on compounds recorded from a female speaker, Mutum Umarani Devi, were also used. A total of 320 tokens were selected to be pitch-tracked and a trace of the fundamental frequency contour of each token was obtained. Pitch tracking was accomplished originally through *Phonology Lab in a Box*, a DOS-based system for A/D D/A conversion, autocorrelation pitch-tracking and amplitude tracking designed by Kenneth Whistler and based partly on pitch tracking routines originally supplied by Mark Liberman. An additional set of words were pitch-tracked using *Signalize* (for pitch tracking with autocorrelation and FTP filters) and *SoundEdit* (for digitization) for the Macintosh.⁹ Values for fundamental frequency and time were entered into the spreadsheet program *Quattro Pro* to derive the graphs provided in this section.

2.4.2 Roots

Minimal pairs, such as those listed in Table 5, establish the existence of high and low tone roots. As can be seen by the fundamental frequency values for initial pitch given in this table, the roots in column 1 consistently show a higher initial pitch than the roots in column 2. This difference in initial pitch is the most significant distinguishing characteristic of the roots. Initial pitch is affected by syllable shape and the actual segments. Thus a high vowel (as in the root *i* 'blood') has a higher fundamental frequency value than an aspirated consonant or a lateral (such as the root *khóy* 'navel'). In words beginning with aspirated consonants, the difference between the initial frequency of the high and low root is somewhere between 0 to 15 hertz; it is typically much higher for sonorant initial roots.

The absolute values given here are derived from a average value seen over three tokens of each item and are meant to provide the reader with an approximate view of the initial point of the fundamental frequency curve. Some actual fundamental frequency values are presented in Figures 1 to 33.

Table 5. List of minimal tone pairs

Initial pitch with high roots			Initial pitch with low roots		
<i>í</i>	'blood'	140Hz.	<i>i</i>	'thatch'	115Hz.
<i>khóy</i>	'navel'	110Hz.	<i>khoy</i>	'bee'	100Hz.
<i>lá</i>	'banana leaf'	100Hz.	<i>la</i>	'shallow basket'	90Hz.
<i>sín</i>	'firewood'	120Hz.	<i>sin</i>	'ginger'	100Hz.
<i>sám</i>	'hair'	105Hz.	<i>səm</i>	'basket'	90Hz.

High and low tone roots differ in other ways. The pitch for both types of roots falls after the initial pitch and the lower pitch obtained after this fall is sustained, forming a plateau, which is followed by a fall. The plateau is at a higher fundamental frequency for high roots than for low roots, the final pitch for both high and low tone roots is approximately the same.

These facts are illustrated by the fundamental frequency graphs provided in Figures 1–5 where the x-axis refers to time in milliseconds and the y-axis refers to fundamental frequency in Hz.

2.4.3 Suffixes

Words in Meithei can consist of stems or bound roots with suffixes (from one to ten suffixes), prefixes (only one per word) and/or enclitics. Only roots and enclitics are specified for tone in the Lexicon. Figures 6-13 show the fundamental frequency of some bimorphemic and polymorphemic words about which the following observations can be made: (1) fundamental frequency falls in both high and low roots which have one tone-bearing unit; (2) fundamental frequency falls in words with a high root regardless of the number of tone-bearing units and; (3) fundamental frequency rises in words with a low root when there is more than one tone-bearing unit.

These fundamental frequency patterns are the result of tone spreading (Leben 1978, Goldsmith 1990) and the rules of Downstep or Upstep. When the root occurs in a word with more than one tone bearing unit, the root tone

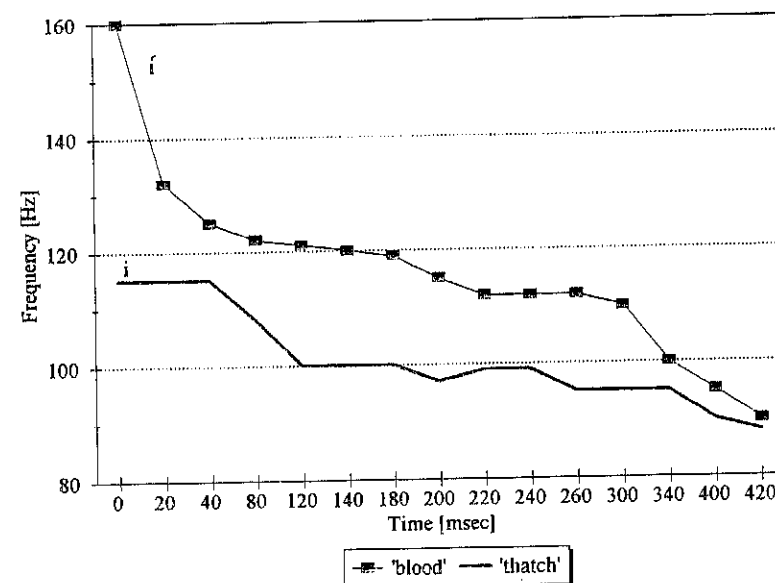


Figure 1. Fundamental frequency of *í* 'blood' and *i* 'thatch'

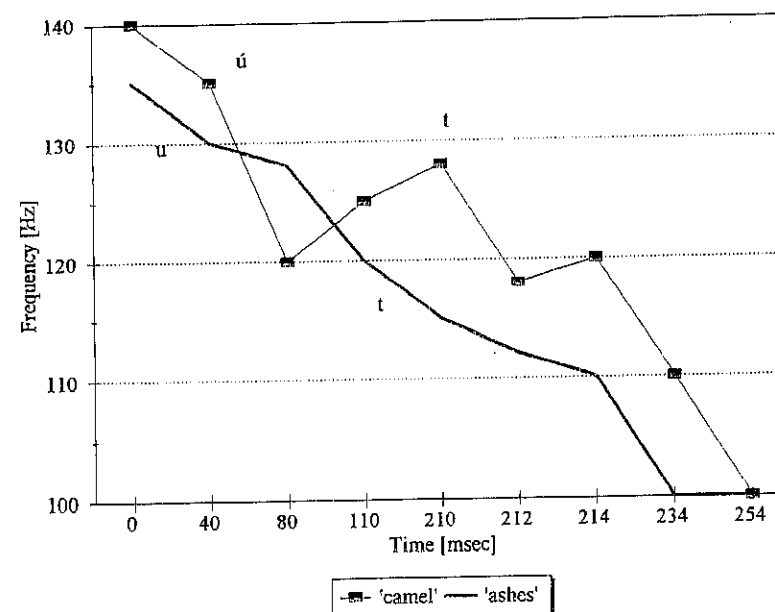


Figure 2. Fundamental frequency of *ú* 'camel' and *ut* 'ashes'

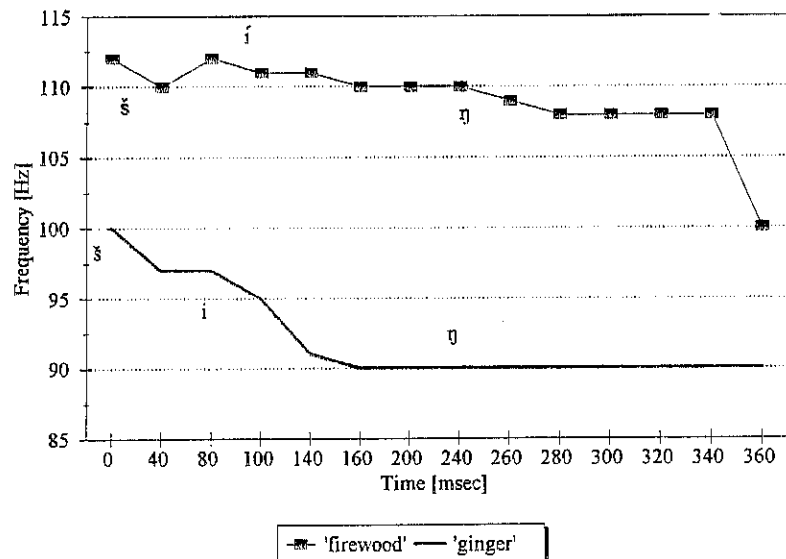


Figure 3. Fundamental frequency of *sɨŋ* 'firewood' and *sɨŋ* 'ginger'

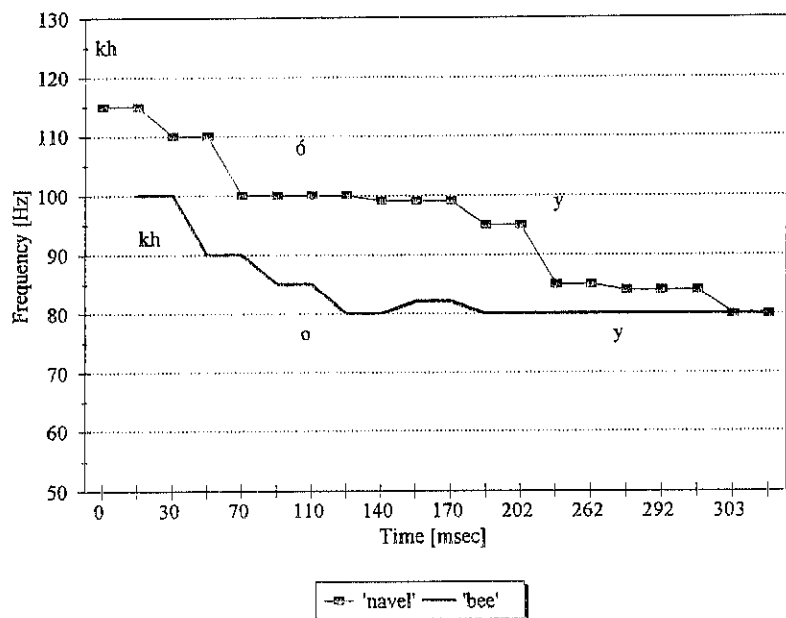


Figure 4. Fundamental frequency of *khóy* 'navel' and *khoy* 'bee'

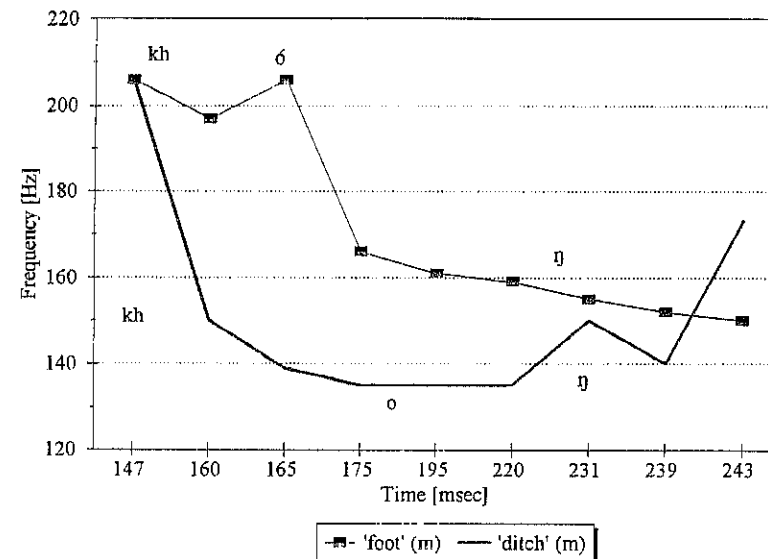


Figure 5. Fundamental frequency of *khón* 'foot' and *khon* 'ditch'

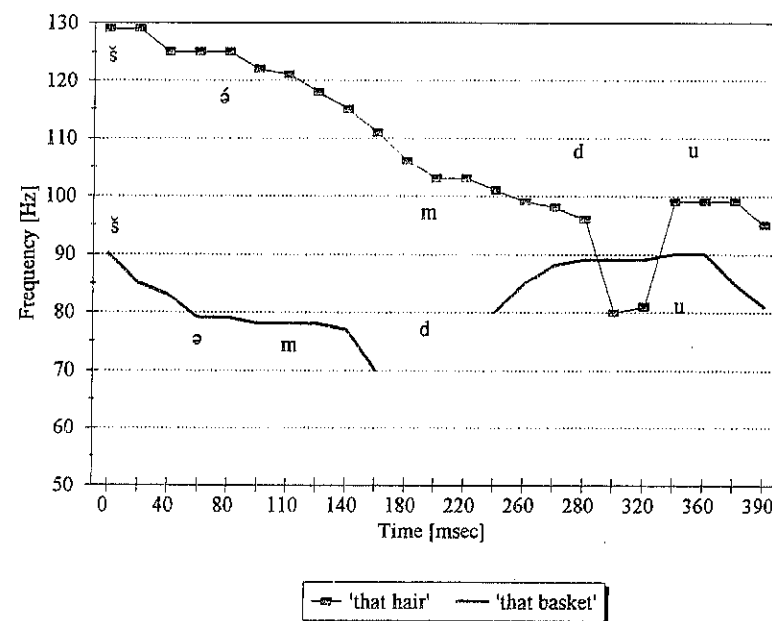


Figure 6. Fundamental frequency of *sámdu* 'that hair' and *səmdu* 'that basket' where the stem *sám* 'hair' and *səm* 'basket' occur with *-tu* 'distal determiner'

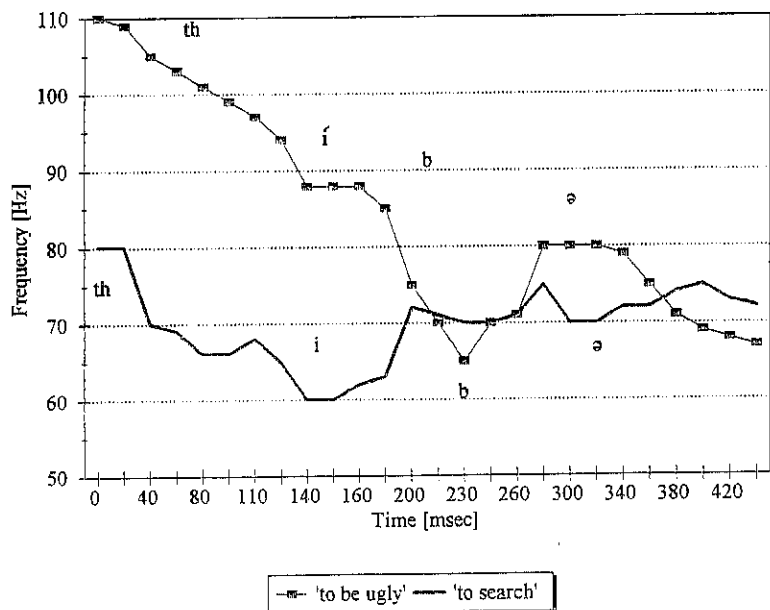


Figure 7. Fundamental frequency of *thibā* 'to be ugly' and *thibā* 'to search' where the stems *thi-* 'ugly' and *thi-* 'search' occur with *-pə* 'nominalizer'

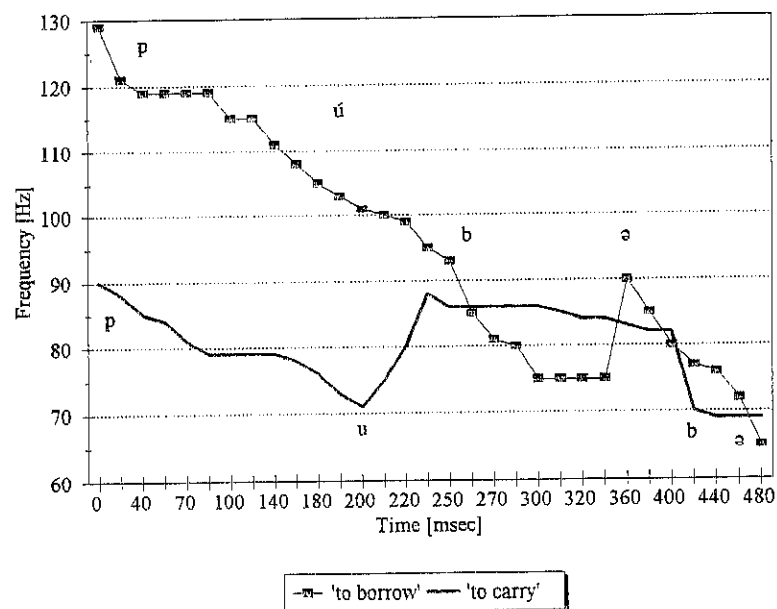


Figure 8. Fundamental frequency of *pūbā* 'to borrow' and *pubā* 'to carry' where the stems *pū-* 'borrow' and *pu-* 'carry' occur with *-pə* 'nominalizer'

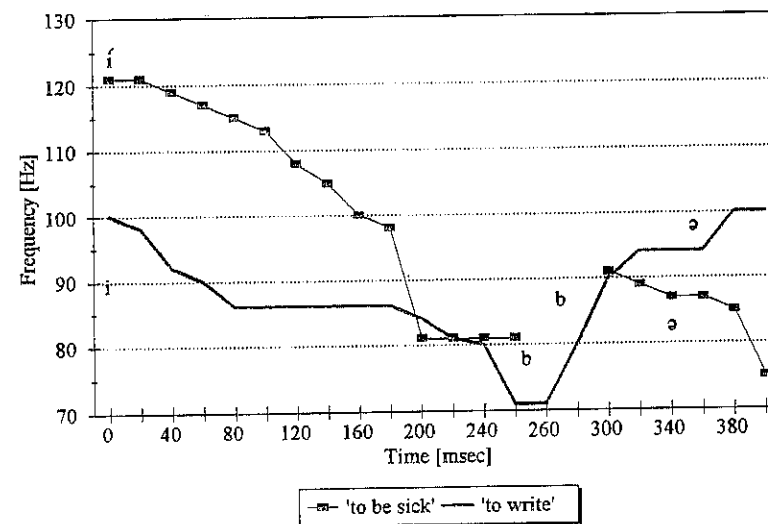


Figure 9. Fundamental frequency of *ibā* 'to be sick' and *ibā* 'to write' where the stems *i-* 'sick' and *i-* 'write' occur with *-pə* 'nominalizer'

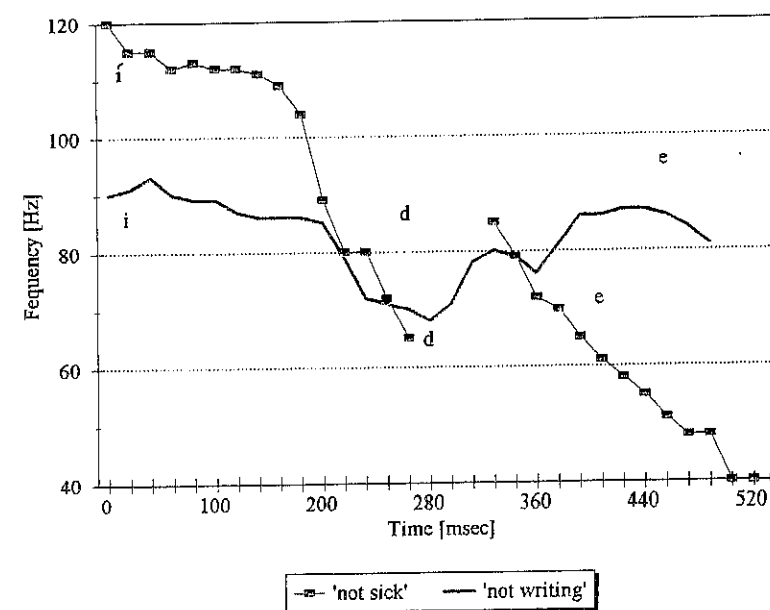


Figure 10. Fundamental frequency of *ide* 'not sick' and *ide* 'not writing' where the stems *i-* 'sick' and *i-* 'write' occur with *-tə* 'negative'

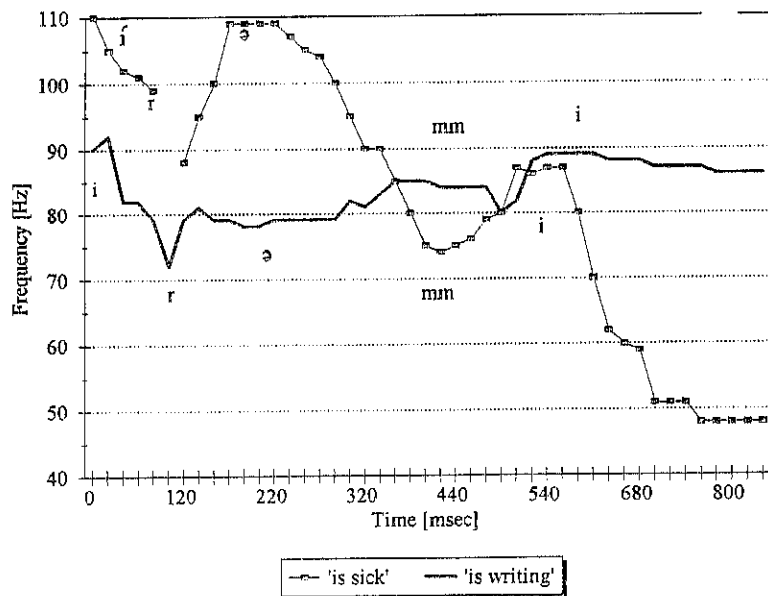


Figure 11. Fundamental frequency of *irəmmi* 'is sick' and *irəmmi* 'is writing' where the stems *i*- 'sick' and *i*- 'write' occur with *-ləm* 'indirect evidence' and *-li* 'progressive'

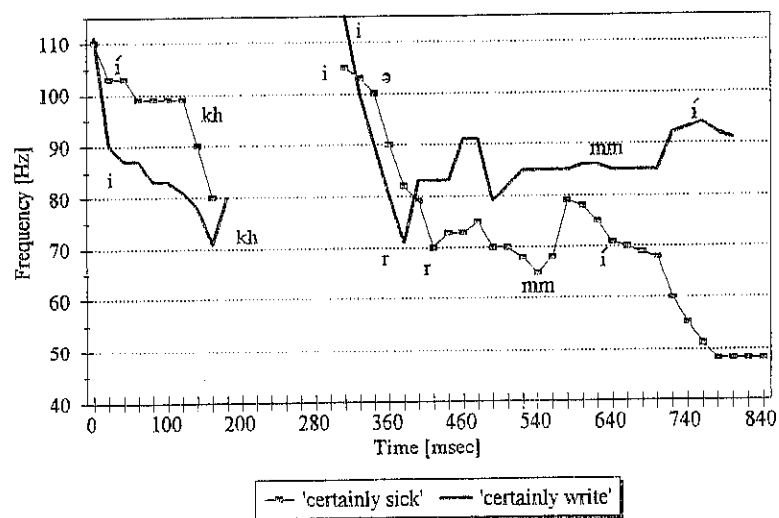


Figure 12. Fundamental frequency of *ikhirəmmi* 'certainly sick' and *ikhirəmmi* 'certainly write' where the stems *i*- 'sick' and *i*- 'write' occur with *-khi* 'certain', *-ləm* 'indirect evidence' and *-i* 'non-hypothetical'

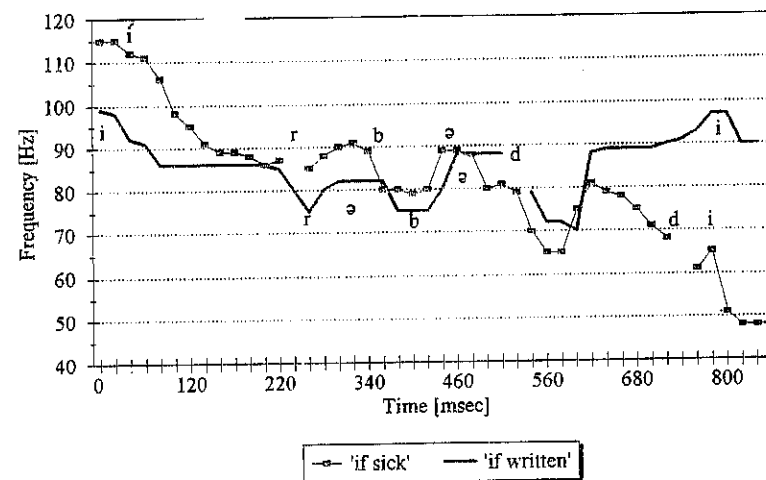


Figure 13. Fundamental frequency of *irəbadi* 'if sick' and *irəbadi* 'if written' where the stems *i*- 'sick' and *i*- 'write' occur with, *-lə* 'prospective', *-pə* 'nominalizer' and *-ti* 'delimitative'

is spread to every unit to the right of the root that does not already have a tone. Adjacent high tones trigger Downstep as stated in (15a); adjacent low tones trigger Upstep as stated in (15b).

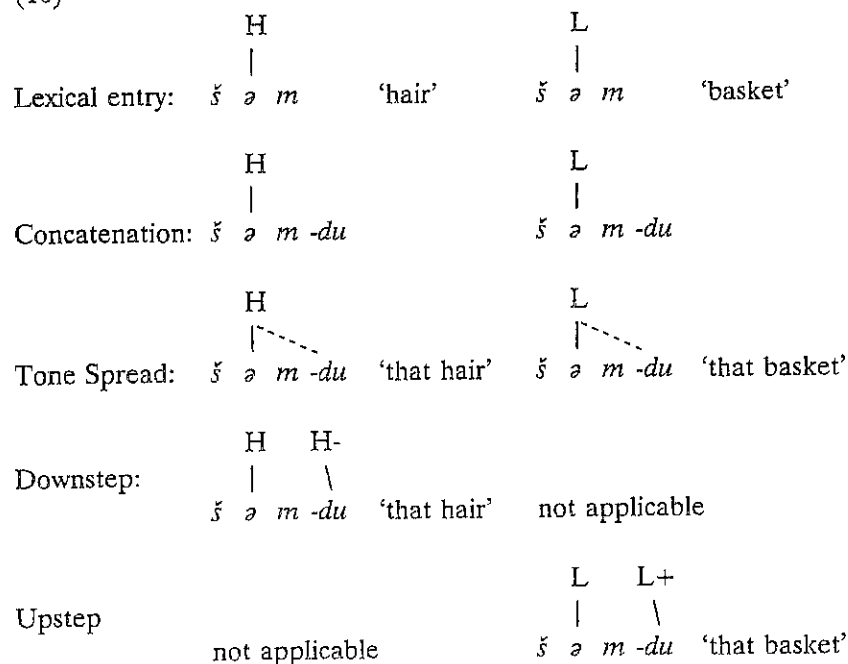
(15) Tone rules

- Downstep: When H1 and H2 are on contiguous syllables, H2 is downscaled.
- Upstep: When L1 and L2 are on contiguous syllables, L2 is augmented.

The successively lower pitch exhibited by tone-bearing units from the left to the right edge of words is "step-like" rather than a smooth curve, which could be attributed to downtrend (or downdrift (Anderson 1978: 139)), or the natural tendency for pitch to lower from the beginning to the end of an utterance.

These facts can be represented as in (16) where the minus sign signifies a downscaled tone and the plus sign an augmented tone.

(16)



The application of Downstep or Upstep derives the "crisscross" exhibited by the low stem which has a rising contour and the high stem which has a falling contour. See Figures 6-13.

2.4.4 Lexicalized suffix combinations

Meithei has a small set of clausal subordinators that are lexicalized combinations of nominalizing suffixes. As will be shown below, these suffixes have high-low tone and contrast with homophonous productive suffix sequences which have no underlying tone. Minimal pairs are given in Table 6. Figures 14-17 illustrate the contrastive tone of a lexicalized suffix sequence compared to a productive suffix sequence. In Figure 14 the pitch curve for the root *thí* 'ugly' is given for a root plus productive suffix sequence *thí-də-nə* 'not being ugly' and for the root plus lexicalized suffix sequences *thí-dána* 'due to being ugly'. The root has the predicted initial high fundamental frequency, followed by a reduction of pitch. Both the productive and lexicalized suffix sequences have a falling pattern. The fundamental frequency of the lexicalized suffix sequence, however, is higher than that of the productive sequence, both at the initial and final point of the curve. The facts are represented in (17): in the Lexicon, the suffix is listed with high tone; the root tone does not spread since the suffix already has a tone associated to it. The second syllable of the suffix

gets high tone through spreading, this is followed by the application of Downstep.

Table 6. Minimal Pairs of lexicalized suffixes and homophonous productive suffix sequences¹⁰

Lexicalized combinations	Productive suffix sequences
<i>-tána</i> 'by Ving', (composed of the locative marker <i>-tə</i> and the instrumental marker <i>-nə</i>)	<i>V-tə-nə</i> 'due to not Ving' where <i>-tə</i> is the negative marker and <i>-nə</i> is the instrumental marker
<i>-nəbə</i> 'in order to V', (composed of the instrumental marker <i>-nə</i> and the nominalizer <i>-pə</i>)	<i>V-nə-pə</i> 'to V together' where <i>-nə</i> is the reciprocal marker and <i>-pə</i> is the nominalizer
<i>-túna</i> 'Ving' (composed of the distal determiner <i>-tu</i> and the instrumental marker <i>-nə</i>)	<i>N-tu-nə</i> 'that N out of all others' (composed of the distal determiner <i>-tu</i> and the contrastive marker <i>-nə</i>)
<i>-ləbə</i> 'having Ved', (composed of the perfect marker <i>-lə</i> and the nominalizer <i>-pə</i>)	<i>V-lə-pə</i> 'has Ved here' where <i>-lə</i> marks an action which takes place towards the speaker and <i>-pə</i> is the nominalizer

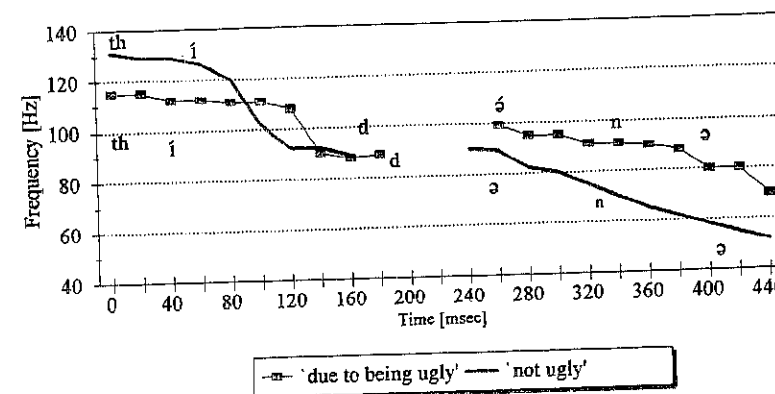


Figure 14. Fundamental frequency of *thídána* 'due to being ugly' where the stem *thí-* 'ugly' occurs with *-tána* 'due to Ving' and *thídána* 'not ugly' where the same stem occurs with *-tə* 'negative' and *-nə* 'instrumental'

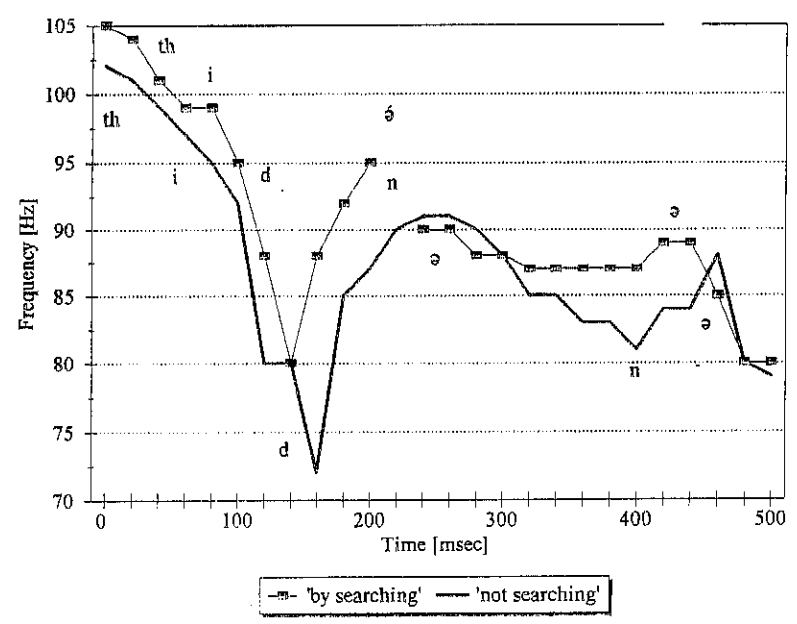


Figure 15. Fundamental frequency of *thidánə* 'by searching' where the stem *thi-* 'search' occurs with *-tánə* 'due to Ving' and *thidənə* 'not searching' where the same stem occurs with *-tə* 'negative' and *-nə* 'instrumental'

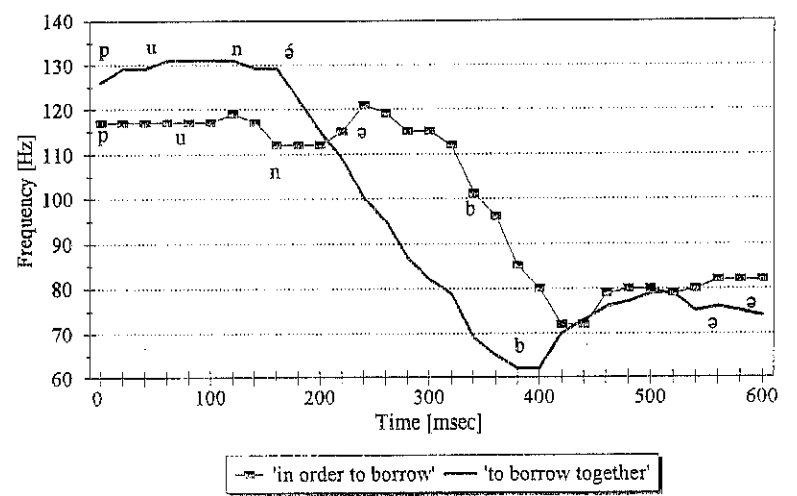


Figure 16. Fundamental frequency of *púnəbə* 'in order to borrow' where the stem *pú-* occurs with *-nəbə* 'in order to V' and *púnəbə* 'to borrow together' where the same stem occurs with *-nə* 'reciprocal' and *-pə* 'nominalizer'

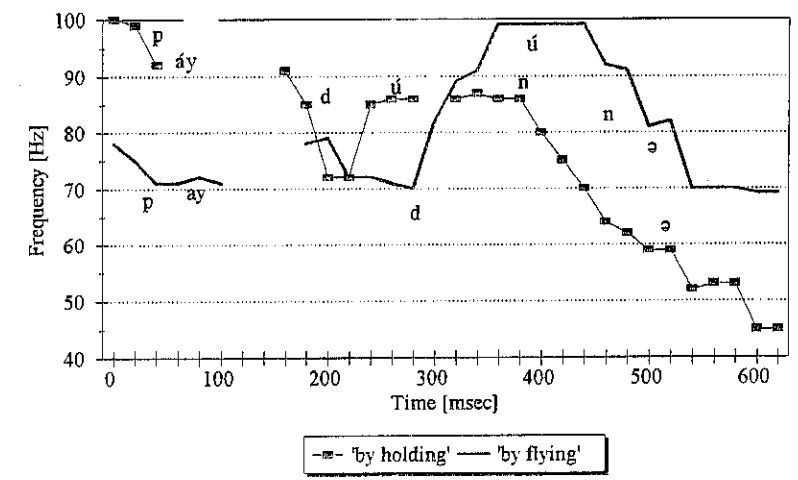


Figure 17. Fundamental frequency of *páyúdnə* 'by holding' and *paydúnə* 'by flying' where the stems *páy-* 'hold' and *pay-* 'fly' occur with *-túnə* 'by Ving'

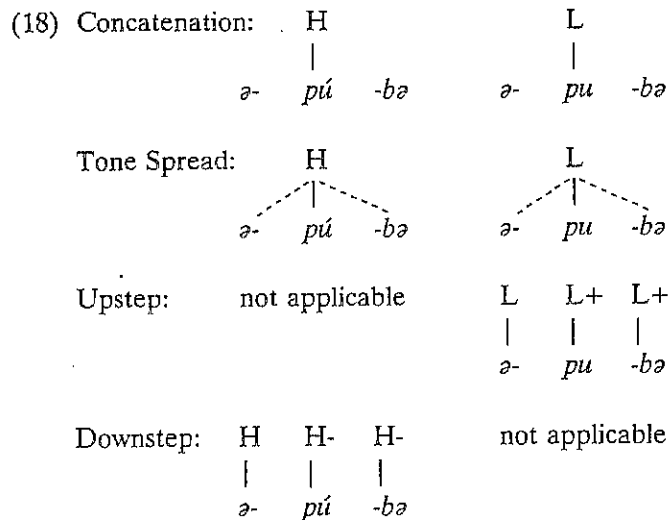
(17) Concatenation:	H	H
	thí	-dánə
Tone Spread:	H	H
	thí	-dánə
Downstep:	H	H H-
	thí	-dánə

Additional examples of lexicalized suffixes are given in Figures 15-17.

2.4.5 Prefixes

Prefixes, like suffixes, do not have lexically assigned tone. Instead, they receive their tone through the spreading of the root tone. As shown in (18) this will result in adjacent high or low tones and the triggering of Downstep and Up-

step, respectively. The application of this rule is shown in a comparison of Figures 8, 18 and 19. When *a-* 'attributive' is prefixed to a low tone root, the pitch of the root is 20 Hz higher than when that root occurs without a prefix. When the attributive prefix occurs with a high tone root, the pitch of the root is 20 Hz lower than when that root is word initial. These facts are represented as in (18).



In conjunction with depression or raising of pitch due to segmental effects, Upstep and Downstep with prefixing has dramatic effects on phonetic output. For example, a high tone, consonant initial root followed by a semi-vowel has a lower initial pitch than a high tone, vowel initial root because consonants have lower pitch than vowels. If a prefix is attached to the consonant initial root, a lowering of pitch due to Downstep occurs. The following semivowel will cause a rise in pitch so that the overall curve will be rising, resembling words with low tone roots. Thoudam (1980: 66) refers to this as a "kind of shift in which the tone number one [rising] is heard as tone number two [falling] and vice-versa. This generally occurs whenever a prefix *a-* is added to the form."

2.4.6 Compounds

Since roots can have either high or low tone, the potential combinations of these tones in compounds is high-high, high-low, low-high, and low-low. As shown above, adjacent tones cannot have the same value: Downstep and Upstep are triggered with compounding of two high roots or two low roots,

respectively. The application of these rules explains why compounds with a high second root consistently exhibit a lower pitch in this position as opposed to in isolation. For instance, as shown in Figure 20, the initial frequency of *čət* 'go' is 205 Hz in isolation, but in Figure 21 it is 197 Hz in the compound *khónčət*; in Figure 22, the fundamental frequency of *čák* 'food' in isolation is 115 Hz but 111 Hz in the compound *ókčák* (Figure 23). Similarly, the second root in low-low compounds consistently exhibits a higher pitch in this position than in isolation. The difference between the fundamental frequency curves of high-low and low-low roots is illustrated in Figure 24 which opposes *khónjaw* 'big foot' and *khónjaw* 'canal'. Examples of high-high compounds are given in Figures 25-26; high-low compounds are given in Figures 27-29; low-high are given in Figures 30-31; low-low is given in Figure 32.

2.4.7 Enclitics

Enclitics may be specified for tone. As shown in the minimal pairs contrasting the locative suffix *-tə* and the exclusive enclitic *-tá*: *yumdə* 'to the house' versus *yumdá* 'only the house' where *yum* means 'house'.

As noted by native speakers and documented in Bhat and Ningomba (1986b), there is a contrast between the forms in (19).

(19) a. <i>čárəmmi</i> čá -ləm -li eat -EVD -PROG 'was eating'	b. <i>čárəmmí</i> čá -ləm -í eat -EVD -NHYP 'ate'
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The nonhypothetical verbal marker *-í* acts like an enclitic in the phonology in that it has high tone, even though from a morphological point of view it is an inflectional element. These facts are illustrated in Figure 33, which gives the pitch curve for the high tone root 'sick' with the nonhypothetical marker. Here the predicted falling pattern for adjacent high tones occurs. The second pitch curve on Figure 33 is of the low tone word 'written': here the usual rising pitch for low tone roots does not occur as there is no trigger for Upstep. Rather, the pitch levels out after a less than a 5 Hz rise for the suffix vowel.

2.4.8 Summary and conclusion

There are two lexical tones in Meithei: high and low. Roots, lexicalized suffixes and enclitics have lexical tone, while suffixes and prefixes are assigned

40 tone by rule. Downstep applies to a sequence of two high tones in contiguous syllables and Upstep applies to two low tones on contiguous syllables.

In the available literature there appears to be no consensus on how many or what tones there are in Meithei. Pettigrew (1912) describes two tones, high and low; N. Promodini Devi (1989a), Thoudam (1980) and L. Mahabir Singh (1988) argue for two tones, falling and level; Inder Singh (1975) describes three tones, falling, rising and level; and W. Tomchou Singh (1986) argues for three tones described as light, medium, and heavy. If we look past the labels, however, we can see that each investigator is in basic agreement with the facts presented in this section.

Those investigators who describe two tones for Meithei use the same minimal pairs to establish tones as I do here. For example, L. Mahabir Singh (1988: 3)¹¹, describes *i* 'blood' as having a fall(ing) tone and *i* 'write' as having a level tone, which correspond to my high and low tone, respectively. Given the fundamental frequency contours occurring for high tone roots in isolation (see the steep fall in fundamental frequency from initial pitch in Figure (1)), it is obvious what prompted Mahabir Singh to label this a falling tone. Inder Singh's (1975) description of a three tone system is influenced largely by the traditional notion, recorded in pedagogical works such as W. Tomchou Singh (1986: 102–111), that posits three stress distinctions: light, medium, and heavy. Heavy and light correspond to what I label as high and low respectively: thus, *púbə* 'to borrow' is given as an example of a heavy root and *pubə* 'to carry' is given as an example of a light root, medium tone refers to downscaled high or upscaled low tone in prefixed forms.

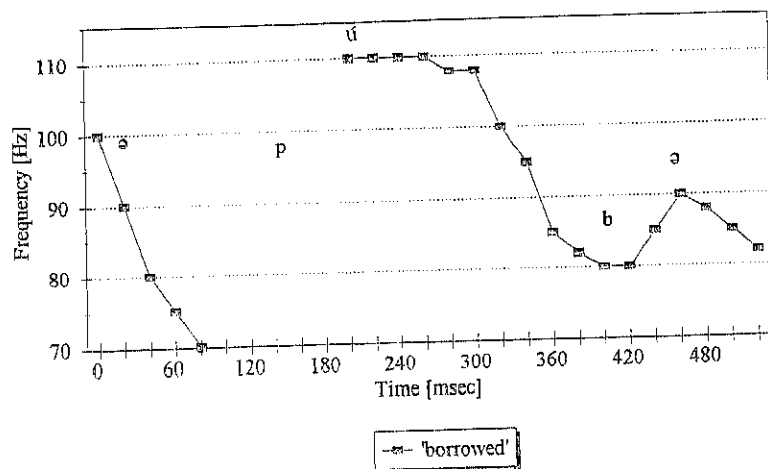


Figure 18. Fundamental frequency of *apúbə* 'borrowed' where the stem *púb-* 'borrow' occurs with *ə-* 'attributive' and *-pə* 'nominalizer'

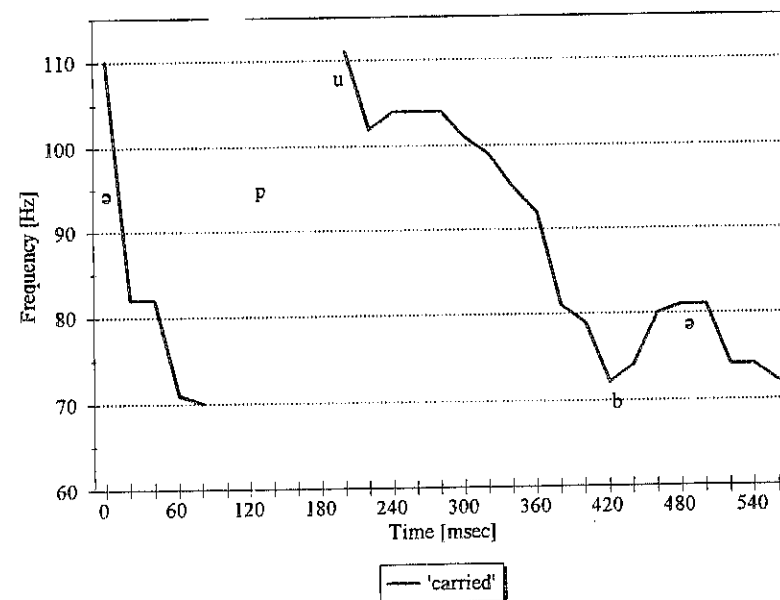


Figure 19. Fundamental frequency of *apubə* 'carried' where the stem *pu-* 'carry' occurs with *ə-* 'attributive' and *-pə* 'nominalizer'

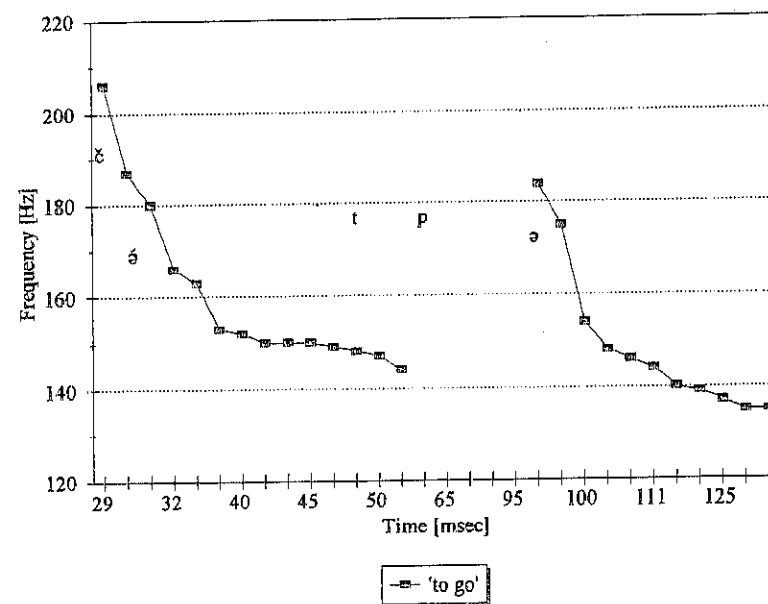
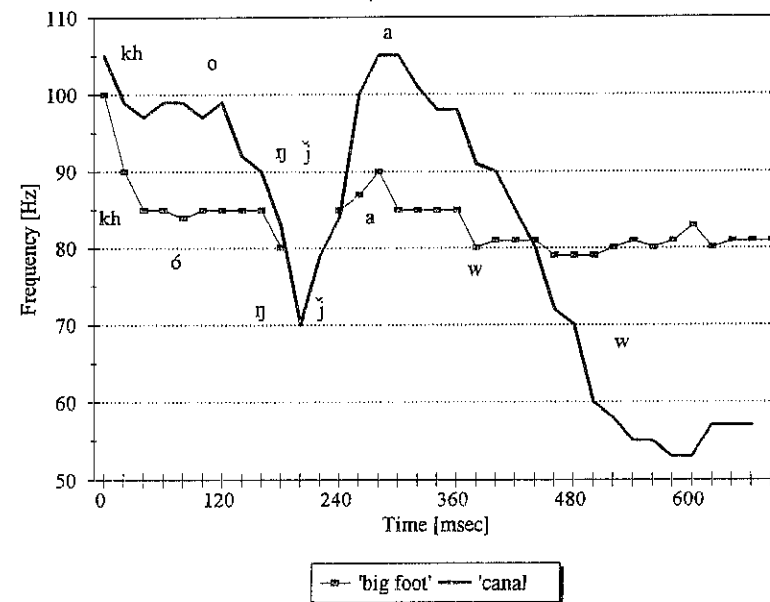
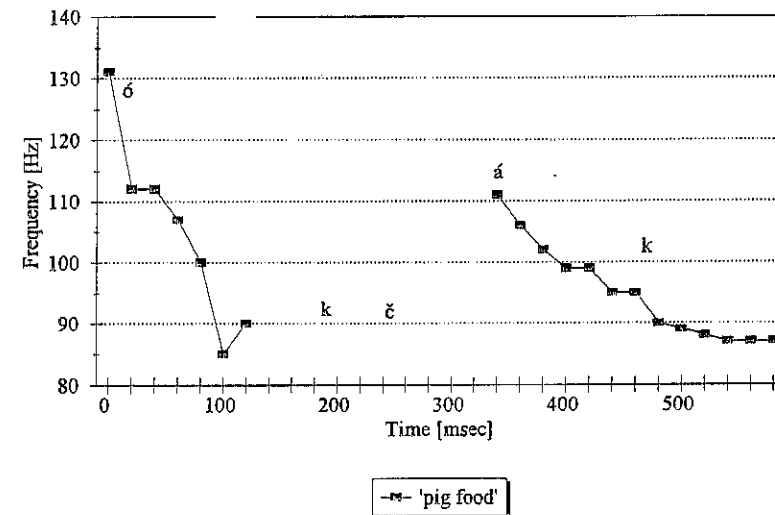
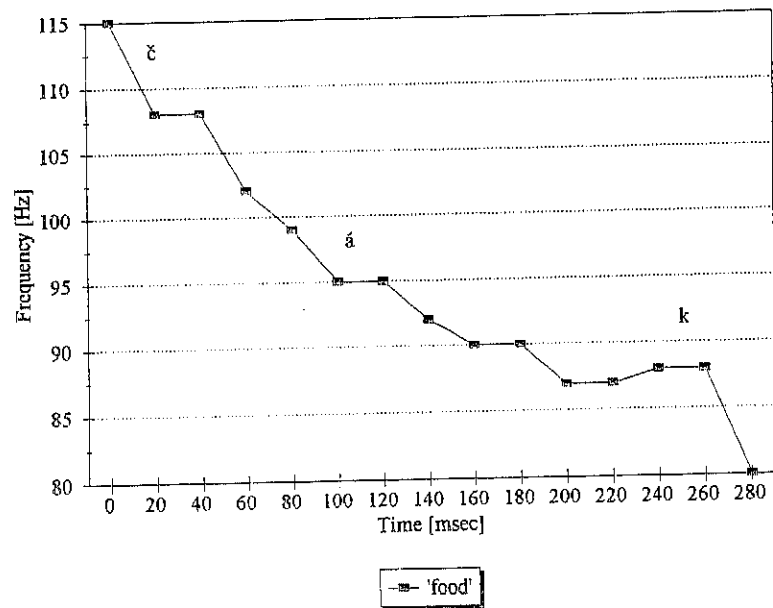
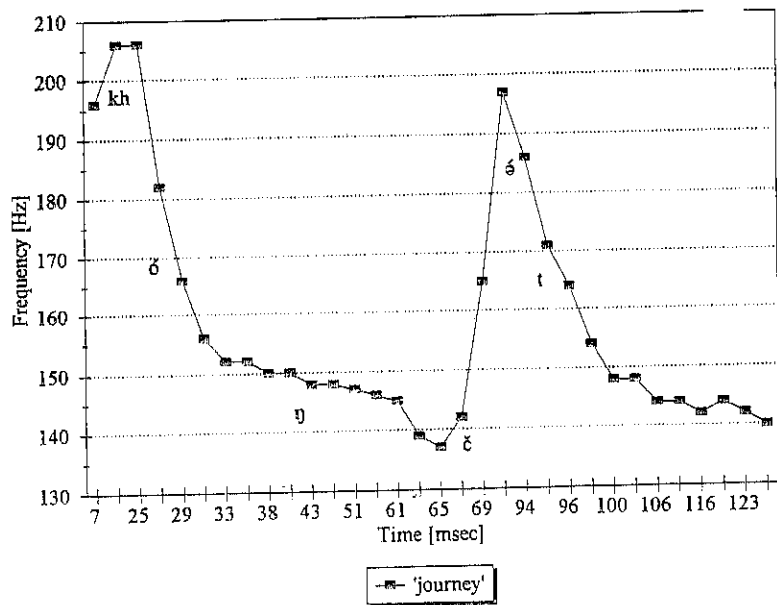


Figure 20. Fundamental frequency of *čáipə* 'to go' where the *čát-* 'go' occurs with *-pə* 'nominalizer'



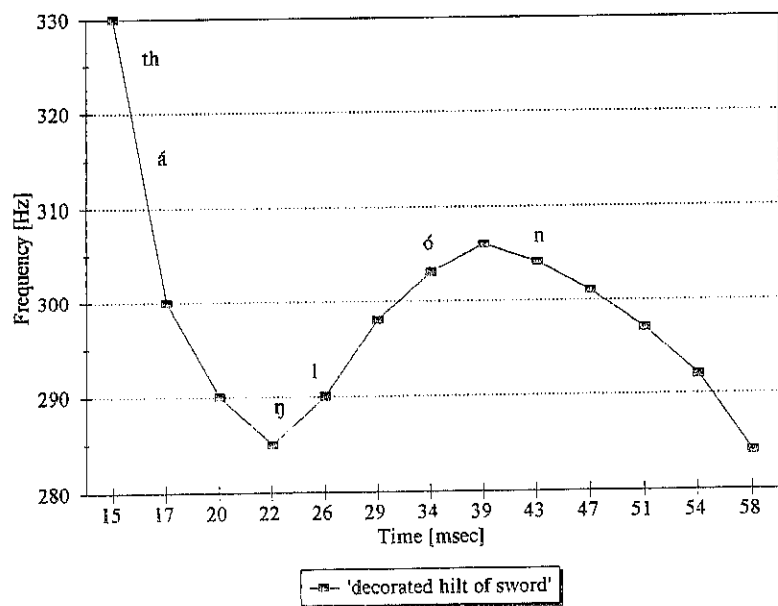


Figure 25. Fundamental frequency of *thánlón* 'decorated hilt of a sword' composed of *thán* 'sword' and *lón-* 'embroider'

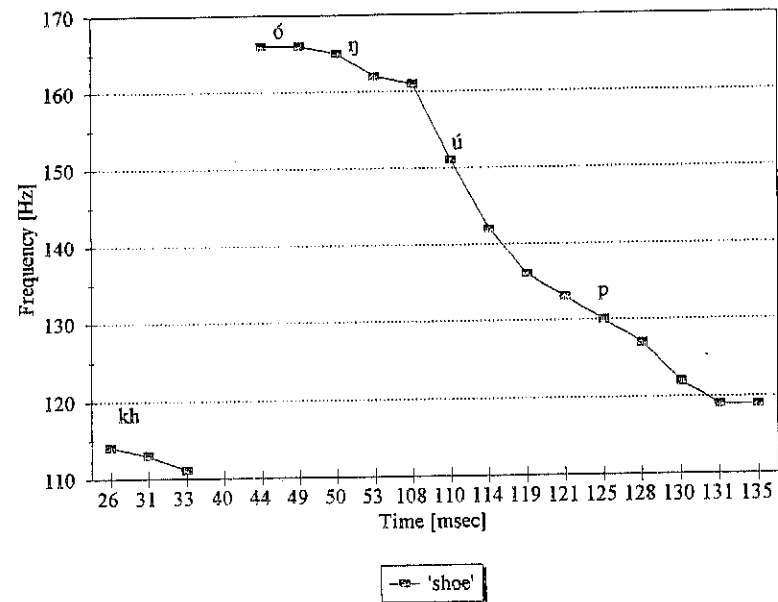


Figure 26. Fundamental frequency of *khónúp* 'shoe' composed of *khón* 'foot' and *úp-* 'wear'

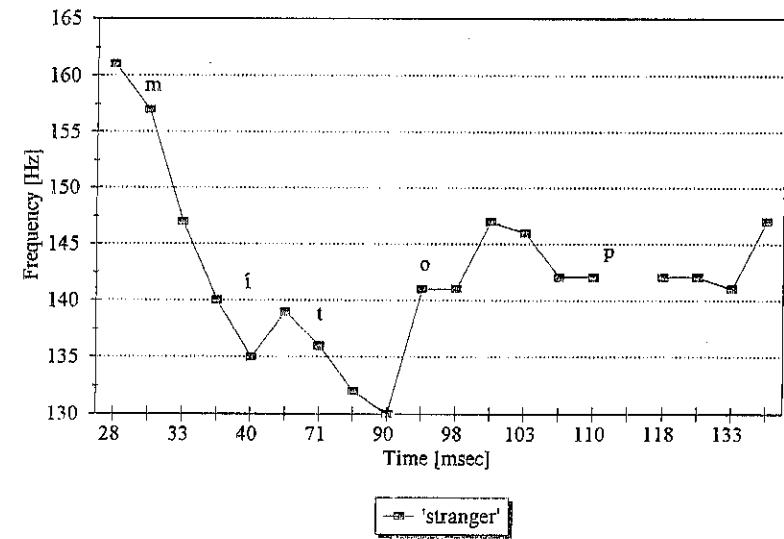


Figure 27. Fundamental frequency of *mítop* 'stranger' composed of *mí* 'man' and *top-* 'other'

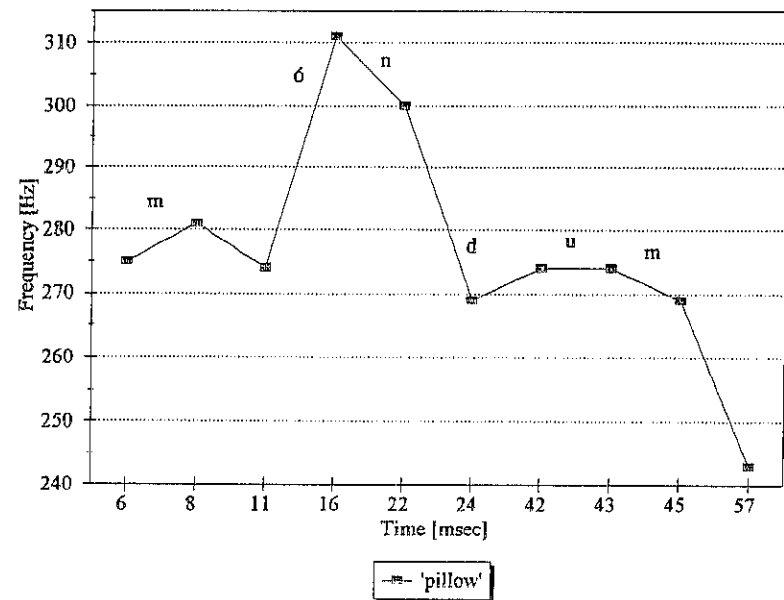


Figure 28. Fundamental frequency of *mónđum* 'pillow' composed of *món* 'pillow' and *tum-* 'sleep'

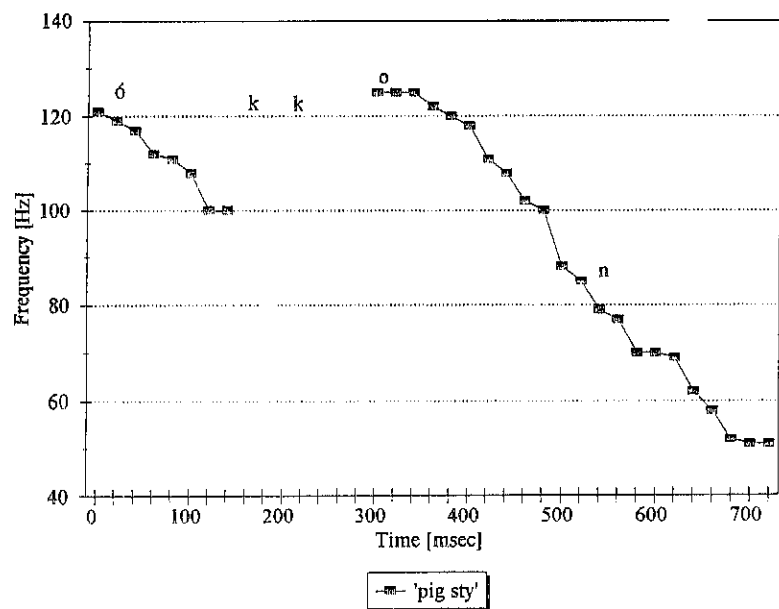


Figure 29. Fundamental frequency of *ókkon* 'pig sty' composed of *ók* 'pig' and *kon-* 'encircle'

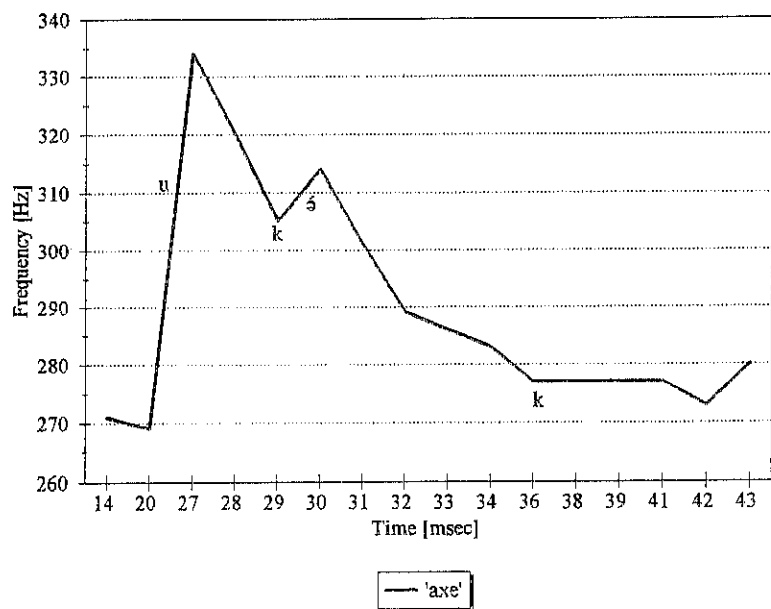


Figure 30. Fundamental frequency of *ukák* 'axe' composed of *u* 'wood' and *kák-* 'cut'

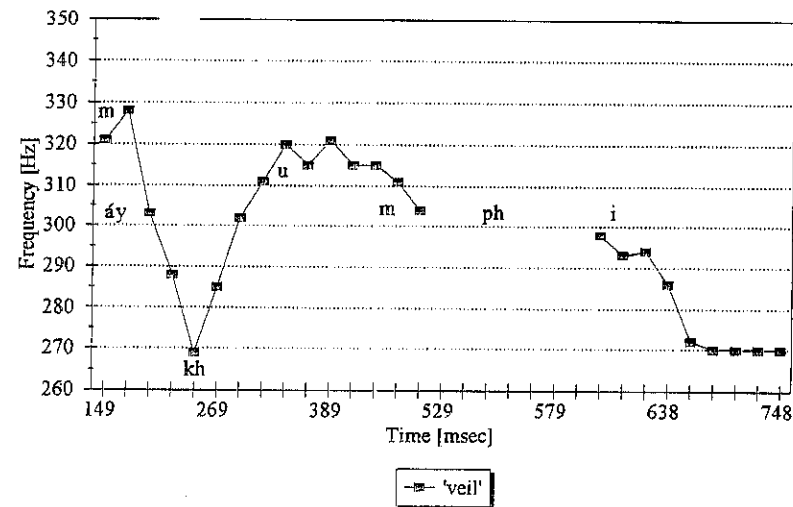


Figure 31. Fundamental frequency of *máykhumphí* 'veil' composed of *máy* 'visage', *khum-* 'cover', *phí* 'cloth'

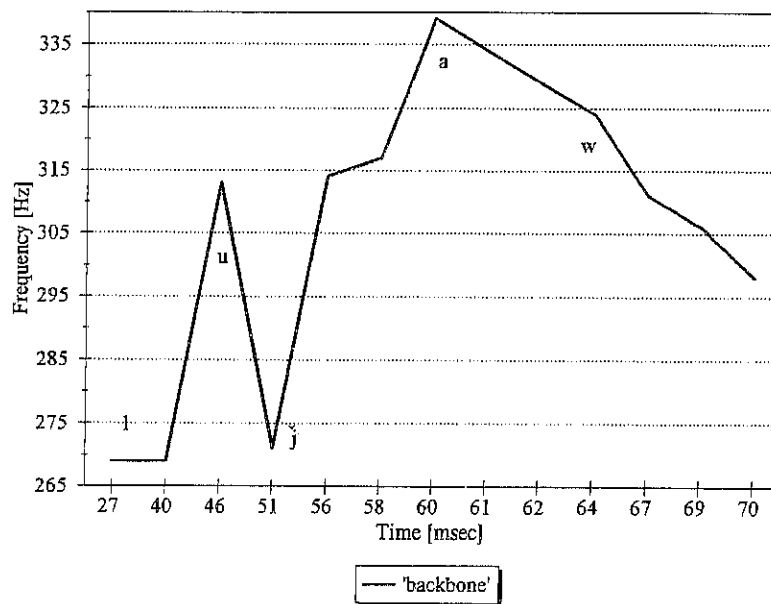


Figure 32. Fundamental frequency of *luřaw* 'backbone' composed of *lu* 'head' and *řaw-* 'big'

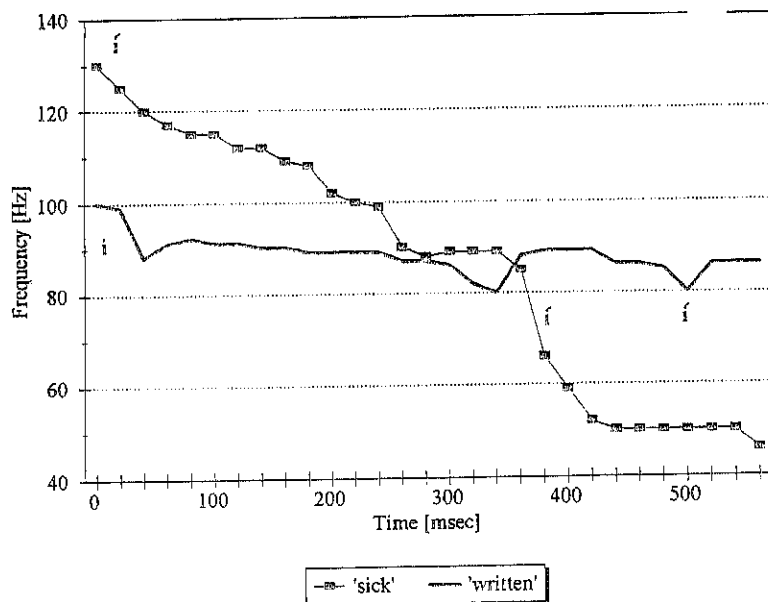


Figure 33. Fundamental frequency of the stems *í* 'sick' and *i-* 'write' with the nonhypothetical marker *-í*

2.5 Lexical rules

In this section, the phonological rules of Meithei are described along with examples of application and specification of the morphological environments where a rule applies or fails to apply. Rules are formalized using the nonlinear phonological representations of feature geometry. The version of feature geometry assumed here is Sagey (1986).¹² I assume that there are two basic types of phonological rules: lexical and postlexical (Pulleyblank 1986, Selkirk 1984, Booij and Rubach 1987). In Meithei the difference between these classes is that lexical rules apply only in particular morphological environments and are structure-preserving (i.e. they do not introduce sounds that are not present in the phonemic inventory of Meithei), whereas postlexical rules apply across the board and are not necessarily structure-preserving.

2.5.1 Voice assimilation

Syllable-initial voiceless unaspirated stops are voiced between voiced segments.¹³ As illustrated in (20a), the Voice assimilation rule, applies on the

49
nominalizer *-j* when it is suffixed to a root that ends in a voiced segment. When the root ends with a voiceless segment, the initial stop of the suffix is voiceless. Similar examples are given in (20b) to (20d) with the genitive, the locative, and the associative markers, respectively.

- (20) a. *-pə* 'nominative' *čábə* 'to eat' *pikpə* 'to be small'
 b. *-ki* 'genitive' *thagi* 'of moon' *phuritki* 'of shirt'
 c. *-tə* 'locative' *čində* 'on hill' *khuttə* 'in the hand'
 d. *-kə* 'associative' *mīgə* 'with man' *khuukə* 'with hand'

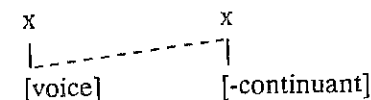


Figure 34. The Voice assimilation rule

Voice assimilation fails to apply with prefixation. For example in (20e) prefixation of *i-* 'first person pronominal' does not cause the initial consonant of the root *pa* 'father' to voice. See also (20f-h).

- (20) e. *pa* 'father' *ipa* 'my father'
 f. *pú* 'grandfather' *mápú* 'his/her grandfather'

- g. *məpa* *ə* *-tən* *-pə*
 NM -read ATT -short -NOM
 'method of reading' 'that which is short'

Voice assimilation also applies in compounds where the application of the rule is contingent on the syllable shape of contiguous roots in the compound. Voicing does not apply when contiguous syllables do not end in a sonorant or when the first syllable does not have a coda. This is illustrated in (21a) to (21i). CVN stands for a syllable with a nasal in coda position and CVS stands for a syllable with a semivowel in coda position.

80 (21) Voice assimilation in compounds

a. CVN-CVC

<i>təmpák</i>	stretch out-broad	'valley'
<i>tənpák</i>	bread-broad	'bread'
<i>tómpók</i>	single-issue	'eldest son'
<i>núnpák</i>	stone-broad	'slab'

b. CVS-CVC

<i>háypán</i>	fruit-hang	'fruit plants'
<i>laykúp</i>	disease-cover	'chicken pox'
<i>laykut</i>	land-low	'pit'
<i>laypók</i>	god-born	'genius'
<i>laypót</i>	god-thing	'worship articles'

c. CVC-CVN

<i>pátpán</i>	lake-border	'sides of a lake'
<i>púkčúm</i>	mind-desirable	'honest'
<i>púkčén</i>	mind-run	'mind/motive'

d. CVC-CVS

<i>púkčawba</i>	belly-big	'pot bellied'
<i>yótčay</i>	iron-beat	'implement for spiring'

e. CVC-CVC

<i>lokčap</i>	take from water-squeeze	'dell'
<i>púkčát</i>	belly-go	'cholera'

f. CV-CVN

<i>ńáten</i>	fish-bow	'bow-shaped fish'
<i>ńátón</i>	fish-top	'fish (<i>Labeo pangusia</i>)'
<i>ńápay</i>	fish-fly	'fish (<i>Notopterus chitala</i>)'

g. CV-CVS

<i>wákoy</i>	topic-take detour	'digression'
<i>ńátóy</i>	fish-often	'fish (<i>Barbus ticto</i>)'
<i>míkawrón</i>	man-call-language	'art of being a medium'

h. CV-CV

<i>lukókpa</i>	clear-head-nom	'shave head completely'
<i>lutón</i>	head-top	'upper head'
<i>mútop</i>	man-distinct	'stranger'
<i>natek</i>	ear-broken	'shallow nose bridged'
<i>əčápót</i>	ATT-eat-thing	'sweets'
<i>wačet</i>	bamboo-cut	'split bamboo'
<i>wačap</i>	bamboo-cut	'splint'
<i>wáčop</i>	word-insult	'obscene word'
<i>wakók</i>	bamboo-head	'root part of bamboo'
<i>watón</i>	bamboo-top	'top of bamboo'
<i>laymákon</i>	land-mother-place	'female's palatial room'

i. CV-CV

<i>sání</i>	body-hair	'body hair'
<i>múčá</i>	man-child	'other's child'
<i>múka</i>	man-rise	'envious'
<i>míta</i>	man-fall	'inhabited'

j. V-CVN

<i>ičén</i>	water-run	'water current'
<i>ipun</i>	thatch-bind	'bundle of thatch'
<i>ukon</i>	tree-embrace	'clump of trees'
<i>upan</i>	tree-bear fruit	'growing tree'
<i>utaybi</i>	tree-depend	'parasitic plant'
<i>učám</i>	tree-ordinary	'ordinary wood'
<i>upum</i>	tree-rotten	'rotten tree'

k. V-CVC

<i>ičep</i>	thatch-rest on side	'roof holder'
<i>ipák</i>	water-broad	'ocean'
<i>ipót</i>	thatch-thing	'2 thatch bundles'
<i>ukák</i>	tree-cut	'log'
<i>ukók</i>	tree-head	'tree trunk'
<i>upák</i>	tree-broad	'plank'
<i>utúp</i>	tree-ready to fell	'log'

l. V-CV

<i>ika</i>	thatch-rise	'single thatch'
<i>ika</i>	water-rise	'flood water'

Voice assimilation in compounds does occur when contiguous syllables have sonorants in coda position. This is shown in examples (21m) to (21o).

(21) m. CVN-CVN

<i>núŋdúm</i>	stone-pointed	'stone'
<i>pándúm</i>	arum-pointed	'the root of arum'
<i>sámdón</i>	hair-top	'hair ends'
<i>síŋbun</i>	firewood-bind	'bundle of firewood'
<i>lámbán</i>	path-arum	'wild pan'
<i>lámbán</i>	path-border	'side of road'
<i>lámdon</i>	path-mount	'a high land'
<i>lámjén</i>	path-run	'race'
<i>lámjin</i>	path-in	'guide'
<i>lámjinbi</i>	path-in-benefactive	'give advice'
<i>lánbun</i>	war-drum	'war drum'
<i>lánjén</i>	war-run	'war evacuation'
<i>mondum</i>	soft-sleep	'pad, pillow'
<i>sámbun</i>	hair-bind	'tuft of hair'
<i>séndón</i>	money-owe	'debt'
<i>sínjén</i>	wood-enter	'axe'
<i>yéngon</i>	hen-place	'chicken coop'
<i>yumbanlón</i>	house-rule-language	'household rules'
<i>yumgom</i>	house-uncompact	'urinal'
<i>kumjin</i>	year-border	'year's early part'
<i>lənjin</i>	shine-in	'clue'
<i>minjén</i>	name-enter	'admission form'
<i>nəmbon</i>	back-bulge	'hunchback'
<i>səngom</i>	cow-udder	'milk'
<i>səngon</i>	cow-place	'cow shed'

n. CVN-CVS

<i>punjaw</i>	drum-big	'big drum'
<i>tənɲəy</i>	bow-arrow	'bow and arrow'
<i>lámboybi</i>	path-wander-feminine	'nun'
<i>lámjaw</i>	path-big	'meadow'
<i>lánjaw</i>	war-big	'war'
<i>núŋgáy</i>	stone-sever	'gravel'
<i>yónjaw</i>	monkey-big	'ape'
<i>yumjaw</i>	house-big	'big house'
<i>pəngoy</i>	dam-fence	'encircle'

o. CVN /

<i>lənɲá</i>	cast-eat	'vulture'
<i>lenɲa</i>	thread-stitch	'seam'
<i>pánda</i>	arum-fall	'ground arum branch'
<i>sənbú</i>	cow-man	'owner of cattle'

When the first syllable ends with a semi-vowel, it is impossible to predict whether or not voicing will occur. Voice assimilation tends to occur on CVS-CVS sequences but tends not to occur on CVS-CVN sequences.

(21) p. CVS-CVS

<i>háɲjaw</i>	fruit-big	'a kind of fruit'
<i>laybáw</i>	god-news	'gospel'
<i>layjaw</i>	disease-big	'small pox'
<i>kəɲjaw</i>	tiger-big	'a species of tiger'
but:		
<i>wáɲtáy</i>	plaster-smear	'plaster the wall'

q. CVS-CVN

<i>laybun</i>	god-drum	'field for festival'
<i>moybun</i>	expel-drum	'conch shell'
<i>páwɲén</i>	news-run	'message'
<i>kəybán</i>	tiger-border	'gate to fence in hunted tiger'
<i>tawjín</i>	float-border	'fruit from marshy land'

but:		
<i>háɲkon</i>	fruit-place	'orchard'
<i>húɲkon</i>	dog-place	'kennel'
<i>layčín</i>	land-border	'cloud'
<i>laykən</i>	land-dry	'land'
<i>laytin</i>	god-together	'god'
<i>laytúm</i>	land-make pointed	'clod'
<i>layčáŋ</i>	land-enter	'post portion'
<i>laykon</i>	flower-place	'flower garden'
<i>laypan</i>	flower-plant	'flowering plant'
<i>laytón</i>	tongue-top	'tip of the tongue'

r. CVS-CV

<i>laybú</i>	god-man	'temple guard'
but:		
<i>ləwpú</i>	paddy-man	'paddy field owner'

54 A summary of the facts illustrated by (21) is given in Table 7, which opposes five possible syllable shapes and shows in which combinations voicing occurs and in which it does not. NF indicates that a representative form is not found in my data.

Table 7. Voicing or lack of voicing in contiguous root syllables

First root	Second root				
	CVN	CVS	CV	CVC	V
CVN	+	+	-/+	-	NF
CVS	-/+	+/-	-/+	-	NF
CV	-	+/-	-/+	-	NF
V	-	NF	-	-	NF
CVC	-	-	NF	-	NF

Voice assimilation can be characterized as a rule that has affected a limited number of compounds and as a rule whose application will spread to eventually cover all applicable compounds. The changing status of Voice assimilation is supported by the presence of doublets: that is, examples of the same form where the rule has applied in one case and not applied in the other. A few examples are given in (21s).

- (21) s. CV-CVC *khubák/khupák* hand-broad 'palm'
 CVS-CVC *khoyják/khoyčák* bee-food 'bait'
 CVS-CVC *lāybák/lāypák* land-broad 'country'

2.5.2 Deaspiration

A rule similar to Grassmann's Law deaspirates a consonant when it is preceded by /h/ or an aspirated consonant. Deaspiration is illustrated in (22) with the derivational suffixes *-khat* 'V upward', *-thok* 'V outward' and *-khay* 'totally affect' suffixed to roots. In examples (22a), (22c) and (22d), a consonant that is deaspirated by this rule subsequently undergoes Voice assimilation.

(22) root

- a. *thin* 'pierce'
 b. *khik* 'sprinkle'
 c. *hi* 'trim'
 d. *sét* 'tear'

root + derivational suffix

- thingət* 'pierce upwards'
khikʔət 'sprinkle upwards'
hidok 'trim outwards'
*ségay*¹⁴ 'tear up'

This long distance dissimilation is an effect of the *Obligatory Contour Principle* (McCarthy 1988), i.e. identical elements cannot be adjacent on a single autosegmental tier. Deaspiration, which disallows adjacent aspirated consonants within a word, is motivated by the *Obligatory Contour Principle*. A formal representation of the rule is given in Figure 35.

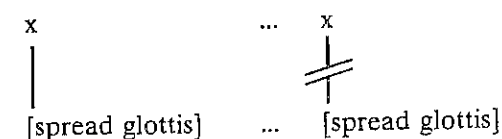


Figure 35. The Deaspiration rule

Deaspiration also occurs in compounds but it is impossible to predict where the rule will apply. For example, by comparing (23a) and (23b), it is seen that application or lack of it is not determined by tone.

(23) a. Deaspiration does apply

tone	compound	gloss of roots	gloss of compounds
HH	<i>phījēt</i>	cloth-wear	'dress'
HL	<i>phījēt</i>	cloth-cut	'torn cloth, costume'
LL	<i>səŋgom</i>	cow-udder	'milk'
LH	<i>čumfju</i>	filter-blow	'broom'

b. Deaspiration does not apply

HH	<i>thúpphám</i>	conceal-place	'shelter'
HL	<i>khónsaj</i>	foot-march	'marching'
LL	<i>thánkháŋ</i>	transport-startle	'stumbling block'
LH	<i>thakháy</i>	moon-subtract	'fortnight'

The (non)application of Deaspiration is not determined by syllable shape. In (23c) to (23m) where C stands for obstruent and S for sonorant, I have pro-

vided examples of where the rule fails to apply and where the rule does apply for each possible syllable configuration and sequence.

(23) compound	gloss of roots	gloss of compound
c. CVS-CVN		
<i>khawjén</i>	bag-constrict	'throat'
<i>pháygan</i>	thigh-spread	'place on thigh'
<i>háyján</i>	fruit-average	'an edible fruit'
d. CVC-CVS		
<i>phǎkkay</i>	tear-remove husk	'tear off'
e. CVN-CVN		
<i>khamthén</i>	stop-reach	'at last'
<i>khónthán</i>	voice-transport	'echo'
<i>khónphám</i>	voice-place	'utterance'
<i>khónthán</i>	foot-carry	'footstep, transport'
<i>khónphám</i>	foot-place	'footing'
<i>khónsán</i>	foot-long	'tall person'
<i>thánkhum</i>	knife-cover	'sheath'
<i>thánšan</i>	knife-long	'sword'
<i>thunphám</i>	arrive-place	'destination'
<i>thámphám</i>	place-place	'depository'
<i>phámphám</i>	seat-seat	'mode of sitting, to seat'
<i>phankhón</i>	stool-leg	'bench'
<i>phənpám</i>	find-place	'address'
<i>sənthón</i>	gold-door	'southwest'
<i>sənsén</i>	cow-look after	'look after cattle'
	cattle	
but:		
<i>khánjén</i>	shed-clear	'office, court'
<i>khamgón</i>	stop-voice	'whirl wind'
<i>khumjín</i>	cover-in	'cloak, hide'
<i>khóngun</i>	foot-hole	'foot print'
<i>khomjín</i>	breast-in	'teat'
<i>thónjín</i>	door-in	'gate'
<i>səngom</i>	cow-udder	'milk'
<i>səmbán</i>	short-border	'fence'

f. CVN-CVN

<i>khunthók</i>	village-out	'habitation'
<i>khomthák</i>	breast-drink	'suck'
<i>khónthók</i>	voice-out	'utterance'
<i>thántha</i>	transport-place	'bring down'
<i>thíntha</i>	beat drum-place	'strike'
but:		
<i>khóngaklay</i>	leg-stop-disease	'rickets'
<i>thángat</i>	ferry-up	'lift'
<i>thəndok</i>	subscribe-out	'pay one's share'
<i>thunbá</i>	arrive-get	'reach'

g. CVS-CVC

<i>khóythú</i>	mind-mix	'enrage'
<i>phawthók</i>	paddy-out	'product of paddy'
but:		
<i>pháwdok</i>	famous-out	'famous'

h. CV-CVN

<i>thathúm</i>	moon-salt	'small cake of salt'
<i>tháphám</i>	release-place	'where dead body is kept'
<i>phithon</i>	cloth-supply	'supply with cloth'
<i>phithón</i>	cloth-wear	'put on cloth'
but:		
<i>phisum</i>	cloth-wring	'wring water out of cloth'
<i>khájanthəw</i>	under-need-duty	'prayer'
<i>khudán</i>	hand-help	'tray'
<i>thabən</i>	moon-dance	'moonlight'
<i>thígún</i>	dung-hole	'anus'
<i>phigon</i>	cloth-fold	'roll of cloth'
<i>phijum</i>	cloth-filter	'strainer made of cloth'

i. CV-CVS

<i>thípháy</i>	ugly-thigh	'call of nature'
<i>thíbəybót</i>	ugly-thigh-thing	'one who is passing excrement'
but:		
<i>phújəy</i>	beat-stick	'beat with a stick'

j. CVS-CVS

<i>phawkháy</i>	paddy-strip off	'take paddy from granary'
but:		

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<i>phawdoy</i> <i>phawbáy</i>	paddy-increase paddy-group	'interest of paddy lent' 'stack paddy'
k. CVN-CVS <i>khomkháy</i> <i>sámphoy</i> but: <i>khangáy</i> <i>thínkáy</i> <i>sínghay</i>	breast-split hair-tear spread-cut hinder-cut firewood-winnow	'wean' 'tear one's hair' 'half' 'pierce' 'outhouse for fuel'
l. CV-CVC <i>phisét</i> but: <i>phidúp</i> <i>phúđót</i> <i>phijól</i>	cloth-wear cloth-fold beat-obstruct cloth-long	'wear cloth' 'Shrada cloth' 'beat' 'length of trouser'
m. CV-CV <i>khusi</i> <i>phísá</i> <i>thasi</i> <i>sáthí</i> but: <i>phigá</i>	hand-death cloth-body moon-die body-ugly cloth-under	'defeat, freedom' 'texture' 'new moon' 'ferocious' 'undergarment'
n. CVC-CV <i>khuttha</i> <i>khutthá</i> <i>khutthí</i> <i>khutsú</i> <i>thàkkhá</i> <i>sákkhí</i>	hand-place hand-release hand-ugly hand-pound up-down face-ugly	'lay hands on' 'throw up hands (can't cure)' 'fear' 'weapon, implement' 'up and down' 'ugly'
o. CVN-CV <i>khomkha</i> <i>khóngha</i> <i>khónsá</i>	collect-bitter foot-plant foot-body	'severe bitterness' 'mode of stepping' 'toe'

There are no cases of the rule applying in syllable sequences CVC-CV; CVN CV; CVS-CV; CVC-CVN; CVC-CVN and CVC-CVC.

<i>thánph.</i> <i>phámtha</i> <i>phámtháđok</i> <i>phúmthí</i> <i>sáñsa</i> <i>sánthí</i> <i>sámphá</i> <i>sámphábi</i>	sword-arrest seat-place seat-give up-out water weeds-ugly shed-build cow-dung hair-good hair-catch	'grab the opponents sword' 'make bed' 'resign from post' 'heap of floating water weeds' 'building' 'cow dung' 'hairy' 'hair pin'
p. CVS-CV <i>khuytha</i> <i>theythá</i> <i>phawsú</i>	wither-moon shift-release paddy-pound	'fade' 'hand down' 'pound paddy'
q. CVC-CVN <i>khutthinjin</i> <i>khutthán</i> <i>khutthum</i> <i>khutsaη</i> <i>sákkhəη</i> <i>sákkhám</i>	hand-prevent-in hand-transport hand-sweet hand-length face-know face-place	'interfere' 'change hands' 'expert gardener' 'thievish' 'acquaint' 'countenance'
r. CVC-CVC <i>khutthók</i> <i>khutsókna</i> <i>thàkthók</i>	hand-out hand-touch up-out	'come to blows' 'shake hands' 'rebound'

Thus, deaspiration in compounding must be characterized as a lexicalized process. However, it is a productive rule in relation to suffixation as illustrated in (22).

2.5.3 Lateral deletion and Velar deletion

There are two lexical rules which affect *kl* clusters. First, *kl* clusters which are formed through suffixation are reduced to *k*.

$$l \rightarrow \emptyset / k _$$

Figure 36. The Lateral deletion rule

60 The application of Lateral deletion is illustrated in (24a)-(24c): in (24a) and (24b) the *l* of the perfect marker *-lə* and in (24c) the *l* of the indirect evidential marker *-ləm*, delete. This is followed by the Gemination of *k* and the subsequent reduction of *kk* to *kʔ* (see sections 2.6.1 and 2.6.2).

- (24) a. *yókʔəbə*
 yók -*lə* -*pə*
 rear -PERF -NOM
 'rear up'
- b. *khóktokʔe*
 khók -*thok* -*lə* -*e*
 peel -OUT -PERF -ASRT
 'peeled off'
- c. *lakʔəmmi*
 lak -*ləm* -*li*
 come -EVD -PROG
 'came here'

In the second rule, *kl* clusters which are formed through the suffixation of a First (morphological) Level derivational verb suffix or the distal marker *-lək* to a verb stem ending with *k* result in the deletion of that velar consonant.

$k \rightarrow \emptyset / __ l$

Figure 37. The Velar deletion rule

The Velar deletion rule is exemplified in (25a) and (25b) where the *k* of *-thok* is deleted with the suffixation of the directional marker *-lək*. After the application of Velar deletion rule, the Flapping rule applies so that the underlying *l* surfaces as *r*.

- (25) a. *thórəkpa* b. *puθorəkʔu*
 thók -*lək* -*pə* *pu* -*thok* -*lək* -*u*
 out -DISTAL -NOM carry -OUT -DISTAL -IMP
 'to come out' 'carry out!'

It is apparent that *kl* clusters are treated in opposite ways by Velar deletion rule and Lateral deletion. It is equally apparent that the application of these rules is restricted to specific morphological environments. For example in (25c) there are two *kl* clusters: one formed through the suffixation of the

61 distal marker *-lək* and the second through the suffixation of participializer *-ləgə*. Velar deletion applies in the first case and Lateral deletion in the second even though the structural description of both rules is met in both cases.¹⁵

- (25) c. *čonθhorəkʔəgə*
 čon -*thok* -*lək* -*ləgə*
 jump -OUT -DISTAL -AFTER
 'having jumped out'

Although the rules of Lateral deletion and Velar deletion do not apply on compounds, and words such as those in (26) must be viewed as being listed in the Lexicon, there is some evidence that the application of Velar deletion is spreading to compounds since forms like *čáklem* 'leftover rice' also appear as *čárem*. However, this is not a common variant.¹⁶

- (26) *čáklem* rice-remainder 'leftover rice'
 paklák get-power over 'snatch'
 pháklán reed-kind of thatch 'wall'
 pháklén reed-best 'mat'
 pháklon reed-kind of bamboo 'mat made of flat bamboo pieces'

The application of Lateral deletion and Velar deletion is irrelevant with prefixation: since no prefix ends with *k*, the cluster *kl* never occurs at the prefix-root boundary.

2.5.4 Total assimilation of *l*

The lateral *l* assimilates in place and manner of articulation with a preceding nasal. The rule of Total assimilation of *l* applies when verbal derivational affixes such as *-ləm* 'indirect evidence' are suffixed to a verbal root or stem ending in a nasal. This is illustrated (27a). Note that the progressive marker *-li* also undergoes Total assimilation of *l*. However as illustrated in (27b) to (27d), Total assimilation of *l* does not apply on compounds.¹⁷

- (27) a. *yeŋŋəmmi* b. *khónlám* c. *khonlám* d. *kəbokləy*
 yeŋ -*ləm* -*li* *khón* -*lám* *khon* -*lám* *kəbok* -*ləy*
 look -EVD -PROG foot -path ditch -path *kəbok* -flower
 'looking' 'footpath' 'canal' 'type of flower'

Furthermore, Total assimilation of / never applies to clitics. Thus the interrogative marker cannot assimilate to the preceding nasal.¹⁸

- (27) e. *nún̄thilwayrəmlə* but ***nún̄thilwayrəmmə*
 núŋ -thin -way -ləm -lə
 sun -poke -thereabouts -EVD -INT
 'Is it in the daytime?'

Total assimilation of / is formalized in Figure 38.

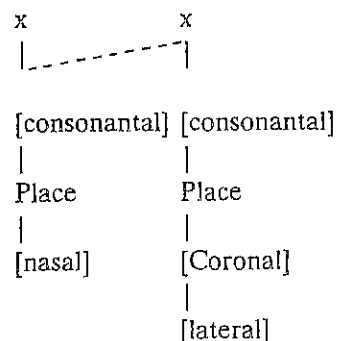


Figure 38. The Total assimilation of / rule

2.5.5 Summary

The facts described in this section are summarized in Table 8. I have shown that there are phonological rules in Meithei which apply in certain morphological environments but fail to apply in others. Additionally, there are rules which apply across-the-board with affixation but are semi-productive (an environment can be specified for the Voice assimilation rule but the application of rule is spreading to other environments) or lexicalized (a general statement about the application of Deaspiration cannot be formulated) for compounds. There are several possible theoretical frameworks that can be used to characterize these rules as a system: in Chelliah (1992a), I used the framework of Lexical Phonology and Morphology to show how morphological processes can be paired with phonological rules to restrict the application of phonological rules to particular morphological environments; in Chelliah (1995a), I used the theory of Autolexical Syntax to show how an interactive module of phonology and morphology and a system of constraints can account for the same facts.

Table 8. Lexical phonological rules and their interaction with the morphology.

Rule	Productivity	Phonological environment	Morphological environment
Voice assimilation	productive	syllable initial obstruent which occurs after a sonorant	suffixation
Voice assimilation in compounds	semi-productive (environment of application becoming unpredictable)	syllable initial obstruent which occurs after a sonorant	compounding
Deaspiration	productive	contiguous syllables with aspirated consonants in onset	1st level derivational suffixes
Deaspiration in compounds	not productive	cannot specify	compounds
Lateral deletion	productive	kl	suffixation (not on <i>-lək</i> 1st level derivational verb suffix)
Velar deletion	productive	kl	on <i>-lək</i> 1st level derivational verb suffix
Total assimilation of /	productive	syllable initial / preceded by a nasal	suffixation

2.6 Post-lexical rules

As stated in the beginning of this section the application of a post-lexical rule is not restricted to a particular morphological environment but takes place wherever the environment is met. The post-lexical module of Meithei has as its input lexical items on which lexical rules have applied. In this module pho-

64 phonological rules apply automatically wherever the phonological environment is available.

2.6.1 Diphthongization and Gemination

As noted in section 2.3, syllables in Meithei must have an onset. There are two phonological rules which serve to uphold this restriction on syllable structure. When a root is concatenated with a suffix that begins with a vowel, as in (28), a diphthong is formed.

- (28) a. *ú-* 'see' + *-í* 'nonhypothetical' → *úy* 'sees'
 b. *čá-* 'eat' + *-u* 'imperative' → *čáw* 'eat'

c. <i>pháráy</i>	d. <i>pháráy</i>
phá -lə -í	phá -lu -í
good -PROX -NHYP	good -TDIR -NHYP
'has been good here'	'has been good there'

Since there are six vowels in Meithei, potentially 36 vowel-vowel sequences can occur. These are presented in Table 9. Since there are no suffixes which begin with either *ə* or *a*, I have left these out of Table 9.

Table 9. Possible Vowel Sequences in Meithei

	i	e	o	u
i	<u>i</u>	iyē	iyō	iyū
e	eyi	<u>e</u>	eyō	eyū
ə	əy	əy	əw	əw
a	ay	ay	aw	aw
o	oy	oʔe	<u>o</u>	ow
u	uy	uʔe	uʔo	<u>u</u>

As indicated by the underlined segments in the chart, identical short vowels that are juxtaposed through affixation coalesce. Vowel sequences where the first vowel is [-round] and the second is [+high] result in a diphthong. This is also true for sequences of [+back, -round] vowels (i.e. *ə* and *a*) and [-high] vowels (i.e. *o* and *e*). It seems that these latter sequences (*əo*, *ao*, *əe*, and *ae*) undergo a vowel heightening rule whereby the second vowel is raised (*o* → *u* and *e* → *i*). I am assuming that [+high] is the default specification and will be filled in later.

Thus *əo*, *ao*, *əe*, and *ae* would be *əu*, *au*, *əi* and *ai*. This rule then feeds the Diphthongization rule (Figure 40).

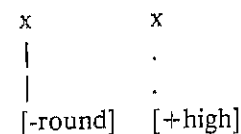


Figure 39. The Vowel heightening rule

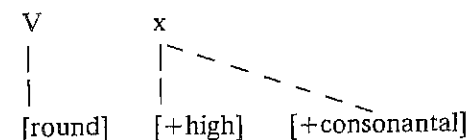


Figure 40. The Diphthongization rule

In those cases where Diphthongization does not apply, the vowel sequence may be broken up through

- the insertion of a glide when the first vowel is front and high. For example, *pí* 'give' + *-u* 'imperative' results in *píyū* 'Give!'.
- the insertion of a glottal stop when the first vowel is back. For example, *pu* 'carry' + *-o* 'solicitive' results in *puʔo* 'Won't you carry?!'.

The processes of Glide Insertion and Glottal stop insertion are formalized in Figure 41.

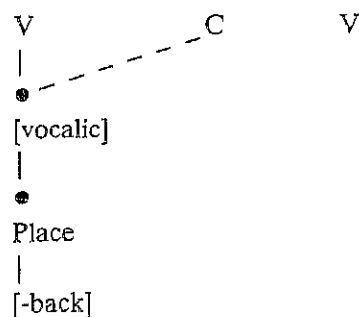


Figure 41. The Glide/Glottal Stop Insertion rule

The Glide/Glottal stop insertion rule spreads the features of the place node of the vowel to the empty C slot only if the vowel is [-back]. If the vowel is not [-back], there are no place features to spread and the consonant, which lacks specification for place, surfaces as ?.

Syllables without onsets also arise when stems ending in consonants are concatenated by vowel initial suffixes. In such cases the final consonant is copied and provides the required onset.

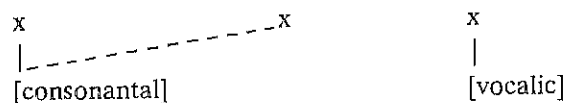


Figure 42. The Gemination rule

The application of Gemination is illustrated in (29), with the nonhypothetical suffix -í as in (29a-c); the experiential suffix -e as in (29d); and the imperative suffix -u in (29e,f). There are no examples of Gemination applying with prefixation since there are no prefixes which end with consonants.

- (29) a. čél- i' čéllí 'runs'
 b. čáj- 'enter' čájí 'enters'
 c. ləy- 'be' ləyyí 'is'
 d. thám- 'keep' thámme 'keeps'
 e. thəm- 'keep' thəmmu 'keep!'
 f. yeŋ- 'look' yeŋŋu 'look!'

When a stem final əw or əy occur adjacent to syllable initial -u (e.g. -u 'imperative' (29g)) or -i (e.g. -í 'nonhypothetical' (29h,i)), respectively, the vowel deletes and the tone of deleted segment is absorbed by the root.

- (29) g. həw- 'start' həw 'begin!'
 h. úy- 'see' úy 'looks'
 i. həy- 'proficient' həy 'is proficient'

2.6.2 Dissimilation and Debuccalization

In sequences of identical oral stops the second stop may be weakened. Thus in forms like (30a) and (30d), the application of Gemination is followed either by the dissimilation or the weakening of the second consonant. The sequence *tt* surfaces as *tl* as in (30a). When the *tt* sequence is not the result of Gemination, it reduces to *tʔ* as in (30b,c). The sequence *kk* surfaces as *kʔ* as in (30d) to (30e). The sequence *pp* surfaces as *pʔ* as in (30f).

- (30) a. čát 'go' čátlu 'go!'

- b. čátʔoybə
 čát -toy -pə
 go -INTEND -NOM
 'intending to go'

- c. khítʔáj
 khít -táj
 little -explicit
 'a particle, just a little'

- d. thák 'drink' thákʔu 'drink!' thákʔe 'drank'

e. *hállak'ʔi*
 hál -lək -i
 return -DISTAL -NHYP
 'returns'

f. *káp* 'cry' *káp'ʔi* 'cries'

A stop changing to ʔ can be characterized as a case of Debuccalization (McCarthy 1988: 88): a consonant loses its place of articulation, it has no articulation above the glottis and only the open glottis gesture is retained. This process is formalized in Figure 43.

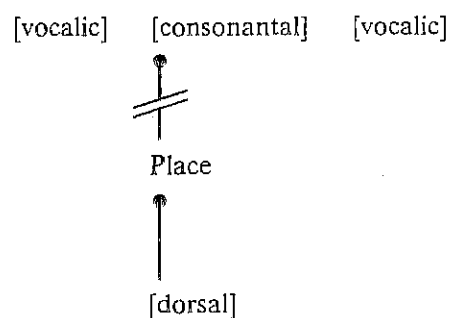


Figure 43. Debuccalization

In fast speech, the second consonant in these stop sequences is unreleased: thus *lakkəni* 'will come' surfaces as [lakʔəni].

2.6.3 Flapping

In intervocalic position, the lateral *l* becomes a flap *r*. This is illustrated in example (31a) to (31g).

- (31) a. *ləybək* 'country' e. *čáre*
 irəybək 'my mother land' čá -lə -e
 eat -PERF -ASRT
 'has eaten'
- b. *li-* 'ancient'
 əribə wári 'old story'

c. *sáram*
 sá -lém
 body -path
 'hunt'

d. *ləyrón*
 ləy -lón
 land -embroider
 'layer of earth'

f. *wáron*
 wá -lón
 word -language
 'words'

g. *layrel*
 lay -len
 snake -best
 'python'

Flapping is formalized in Figure 44.

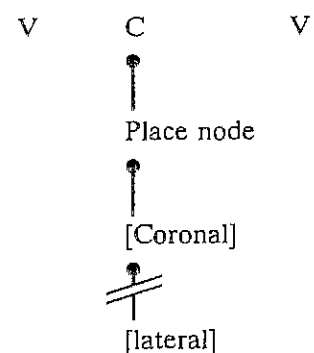


Figure 44. The Flapping rule

2.6.4 Simplification of rC clusters

Consonant clusters of the form *rC* are broken up by the insertion of schwa between the two consonants. Thus *Mənipurdə* 'at Manipur' may be pronounced as *Mənipurədə*. This is related to the fact that native Meithei words do not end in liquids: final *l* surfaces as *n*; *r* never occurs word finally as it is derived from underlying intervocalic *l*.

2.6.5 Schwa deletion

If the onset of a syllable is a liquid or a nasal and the vowel of the preceding syllable is a *ə*, then that *ə* may delete. This is seen in (32) where *Cər* and *Cr* sequences freely vary with each other. *ə* might delete in *Cər* sequences where the initial *C* is a stop.¹⁹

- (32) a. *kuntra*
 kun -təra
 twenty -ten
 'thirty'
- b. *čárəbra*
 čá -lə -pə -lə
 eat -PERF -NOM -INT
 'Have you eaten?'

2.6.6 Alternation of vowels with schwa

Vowels may alternate with ə on the surface. This occurs most often in suffixes (see (33a) and (33b)), but may also occur in roots (see (33c) and (33d)).

- (33) a. *oysinnu*
 oy -sin -u
 be -IN -IMP
 'may it be'
- b. *oysənnu*
- c. *tələb* 'salary' d. *tolob* 'salary'

The writing system of Meithei encodes only the lexical rules that have been described here. Thus neither the effects of Flapping or the *k* to *ʔ* rule show up in written Meithei. Thus, although in normal conversation and in elicitation situations speakers will implement all lexical and post-lexical rules, the more educated speaker will be able to provide two variants of a word: forms where post-lexical rules have applied and the equivalent forms where these rules have not applied. Children who have not yet learned to read and write cannot make these distinctions. Furthermore, according to Th. Harimohon Singh, children often have to be taught the composition of morphemes that have been obscured through fast speech phenomena.

Chapter 3 Grammatical preview

This chapter is an overview of the morphosyntax of Meithei; it introduces the structures and key concepts that will be discussed in detail in Chapters 4–9. It contains a discussion of phrase structure rules, phrasal categories, major and minor lexical categories, and inflectional and derivational affixal categories.

3.1 Phrase structure of the main clause

There is no evidence in Meithei for a verb phrase constituent (see Chapter 4 for arguments); thus, the Meithei clause consists of a verb (V) and the arguments (i.e. noun phrases) this verb subcategorizes for. (1a, b) are the phrase structure rules which derive root sentences in Meithei.

- (1) a. $S \rightarrow NP^* V$
 b. $NP^* \rightarrow NP NP NP \dots$

As reflected in phrase structure rule (1b), the asterisk which follows the noun phrase indicates (following the convention used in Hale 1983) that the verb may occur with any number of noun phrases. There is no particular order imposed on the arguments; instead, word order is determined by pragmatic factors (see Chapter 4 for details). The maximum number of noun phrases that may occur with a verb is restricted by the subcategorization frame of that verb (see section 4.2). Since Meithei allows for the omission of arguments, the minimum number of noun phrases that may occur with a V is zero.

To be grammatical, a sentence must consist of an inflected verb, that is, a verb root and an inflectional suffix. All inflectional suffixes are illocutionary mood markers which indicate sentence type (e.g. declarative, optative, imperative, etc., see Chapter 5 for details). As shown in Figure 1, the inflectional marker may be preceded optionally by three derivational categories.

First level derivation consists of eight suffixes that describe the extent to which an agent desires or intends to affect some object and the direction and manner in which an action is performed. Second level derivation consists of suffixes that have meanings such as 'comitative', 'reciprocal', 'V for someone other than self', 'V for sake of self', 'causative', 'wish to V', 'V to excess', 'V habitually or repeatedly', 'V in the nick of time', 'V ahead or behind expected time', 'indirect evidence', 'proximal', 'distal', 'action away from speaker',