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Tones in Meiteilol: A Phonetic Description

Meiraba Takhellambam

Abstract

Meiteilol is a Tibeto-Burman language spoken in Manipur, a state in the northeastern part of India. Meiteilol has a relatively simple tonal system which is in contrast to the other Tibeto-Burman languages in the area; it has a two way tonal contrast in isolation:

- a) H Level Tone (*i*)
- b) HL Falling Tone (*î*)

The main claim of the paper is that the *Tone Bearing Unit* in Meiteilol is the Rhyme. The paper also claims that the relative simplicity of the tone system of Meiteilol is due to its rich consonantal inventory which can occur at the Coda position and that the realisation of tonal contrast can be affected by the Coda consonants.

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Meiraba Takhellambam, M.Phil.

Tones in Meiteilol: A Phonetic Description

1. Phonological Sketch of Meiteilol

Meiteilol has 20 consonants. Meiteilol exhibits three categories of consonantal constriction; Stops /p t k c m n ŋ p^h t^h k^h/, Fricatives /s h/, and approximants /w j l/. Meiteilol has voiced stops in allophonic distribution, and the lateral approximant has an allophone which is a trill /r/.

Table 1. Consonants in Meiteilol

	<i>Labial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Plosive</i>	p *b	t *d	c *j	k *g	
<i>Plosive Aspirated</i>	p ^h	t ^h		k ^h	
<i>Nasals</i>	m	n		ŋ	
<i>Trill</i>		*r			
<i>Fricatives</i>		s			h
<i>Approximant</i>	w		j		
<i>Lateral Approximant</i>			l		

pa ‘eyelash’ ta ‘spear’ t^ha ‘moon’ ca ‘wax’ ka ‘room’ k^ha ‘south’
ma ‘bedbug’ na ‘ear’ ŋa ‘fish’ sa ‘animal’ ha ‘yam’ wa ‘word’
ja ‘tooth’ lâ ‘banana leaf’

Meiteilol has 6 vowels.

	Front	Centre	Back
High	<i>i</i>		<i>u</i>
Mid	<i>e</i>	<i>ə</i>	<i>o</i>
Low		<i>a</i>	

Table 2. *Vowels in Meiteilol*

2. Syllable Structure

The Syllable structure in Meitei Lol has a defining character; all the verbal roots are monosyllabic, as are all nouns and other categories. The affixes are also monosyllabic; when these affixes are added to the different stems they are analysable into their monosyllabic form. So, all the polysyllabic words can be analysed to be made up of monosyllabic root and the affix/affixes.

The canonical syllable structure of Meitei lol is :

(C₁)(C₂) V (C₃)

Where C₁= All consonant other than a voiced plosive.

C₂= *j/w*

C₃= approximants, nasals, voiceless unaspirated plosives.

The consonants which can occur in the Onset position are:

	<i>Labial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Plosive</i>	<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>	
<i>Plosive aspirated</i>	<i>p^h</i>	<i>t^h</i>		<i>k^h</i>	

<i>Nasals</i>	<i>m</i>	<i>n</i>		<i>ŋ</i>	
<i>Fricatives</i>		<i>s</i>			<i>h</i>
<i>Approximant</i>	<i>w</i>		<i>j</i>		
<i>Lateral Approximant</i>			<i>l</i>		

Table 3. Consonants in the Onset Position

The consonants which can occur in the Coda position are:

	<i>Labial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Plosive</i>	<i>p</i>	<i>t</i>		<i>k</i>	
<i>Nasals</i>	<i>m</i>	<i>n</i>		<i>ŋ</i>	
<i>Approximant</i>	<i>w</i>		<i>j</i>		
<i>Lateral Approximant</i>			<i>l</i>		

Table 4. Consonants in the Coda position

3. Tones in Meiteilol

There are two tones in Meiteilol citation form the *Level Tone* (H´) and the *Falling Tone* (HL). Hyman (2010) describes three stages for studying a tone system. The first stage is to determine the surface tonal structure, for which he advocates the study of words in isolation. The second stage would be to find out tonal alternations. The third stage is the tonal analysis and a formulation of a theoretical model of the language.

This paper discusses the first stage and gives an account of the surface tonal contrast and the *Tone Bearing Unit* in Meiteilol. For recognition of a tonal contrast two kinds of data are primarily considered; first, pairs of words which differ just by pitch and meaning (*minimal pairs*), and second, it is generally required that there is an unconditioned pattern of contrastive pitch. The Data for the study were recorded in citation form of words.

A list of *minimal pairs* is listed below:

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tîn	‘insect’	tin	‘saliva’
kêj	‘granary’	kəj	‘tiger’
t ^h ôŋ	‘door’	t ^h oŋ	‘bridge’
sîŋ	‘firewood’	siŋ	‘ginger’
sễm	‘hair’	səm	‘basket’
mî	‘man’	mi	‘spider’
mâ	‘bedbug’	ma	‘3PS’
lû	‘fishing trap’	lu	‘head’
wâ	‘word’	wa	‘bamboo’
î	‘blood’	í	‘thatch’

At this point to describe Meiteilol tone any further, we need to consider the importance stressed upon the coda position of a syllable for the study of tone especially in Tibeto-Burman languages. In this process, the ramification of the CVC structure into CVS *smooth syllables* and CVT *stopped syllable* (where S= sonorant and T= obstruent) is inevitable. In Meiteilol the realisation of tonal contrast can be affected by the coda consonants. The tone on the *stopped syllables* can be identified with the tones on the *smooth syllables*, where the *stopped syllables* have voiceless unaspirated plosives at their coda position. As described above, Meiteilol displays a rich inventory of consonants which can occur at the Coda position of a syllable.

Hyman (2007) claims that the tones found on *stopped syllables* (CVT) must always be a subset of those found in *smooth syllables* (CVS).

4. Tones on Smooth Syllables (CVS)

Meiteilol can have both Nasals and Approximants in the coda position of syllables. An interesting observation worth mentioning here is that in Meiteilol /l/ and /n/ are phonemically distinctive, but at the syllable final position they are in free variation so either of them can occur in this position. So all the words with /l/ at the syllable final position could also have an allophonic nasal /n/ in the syllable final position. It is observed that the Nasals in

the syllable final position do not block the spread of tone from the vocalic nucleus to the coda position. This observation corroborates with the model suggested by Hyman (1973) which says that sonorants exert no blocking effect, but rather allow any tone to spread through them. Yip (2000) opines that all the sonorant-final syllables being bimoraic is the *Tone Bearing Unit* in Cantonese. Similarly, in Meiteilol the sonorant-final syllable particularly nasal-final syllable have two moras and so acts as the *Tone Bearing Unit*. And that the nasal-final syllables can carry both the H Level tone and the HL Falling tone. In Meiteilol the approximants behave more like consonant rather than the traditional semi-vowel so the vowel + semi-vowel combination is treated as sequences involving vowel + consonant. The lateral approximant /l/ has an allophone which is a trill /r/ which occurs in the intervocalic position. It is observed that the laterals function more or less like the nasals in Meiteilol. The approximant-final syllable display all the attributes displayed by the nasal-final syllable. The approximant-final syllables also carry both the H Level tone as well as the HL falling tone. And the syllable with approximant in the final-syllable position is also a *Tone Bearing Unit*.

	<i>Labial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Nasals</i>	<i>m</i>	<i>n</i>		<i>ŋ</i>	
<i>Approximant</i>	<i>w</i>		<i>j</i>		
<i>Lateral Approximant</i>			<i>l</i>		

Table 5. Sonorants which can occur in the Coda position.

A list of Minimal Pairs with sonorants in the coda positions:

k ^h ôŋ	‘leg’	k ^h óŋ	‘canal’
kâŋ	‘mosquito’	káŋ	‘a game’
k ^h ôj	‘navel’	k ^h ój	‘bee’
mêŋ	‘dream’	méŋ	‘crematory’
hûj	‘dog’	húj	‘rivet’
sêŋ	‘hair’	sóm	‘basket’

ûn	‘skin’	ún	‘snow’
lêj	‘flower’	lój	‘tongue’

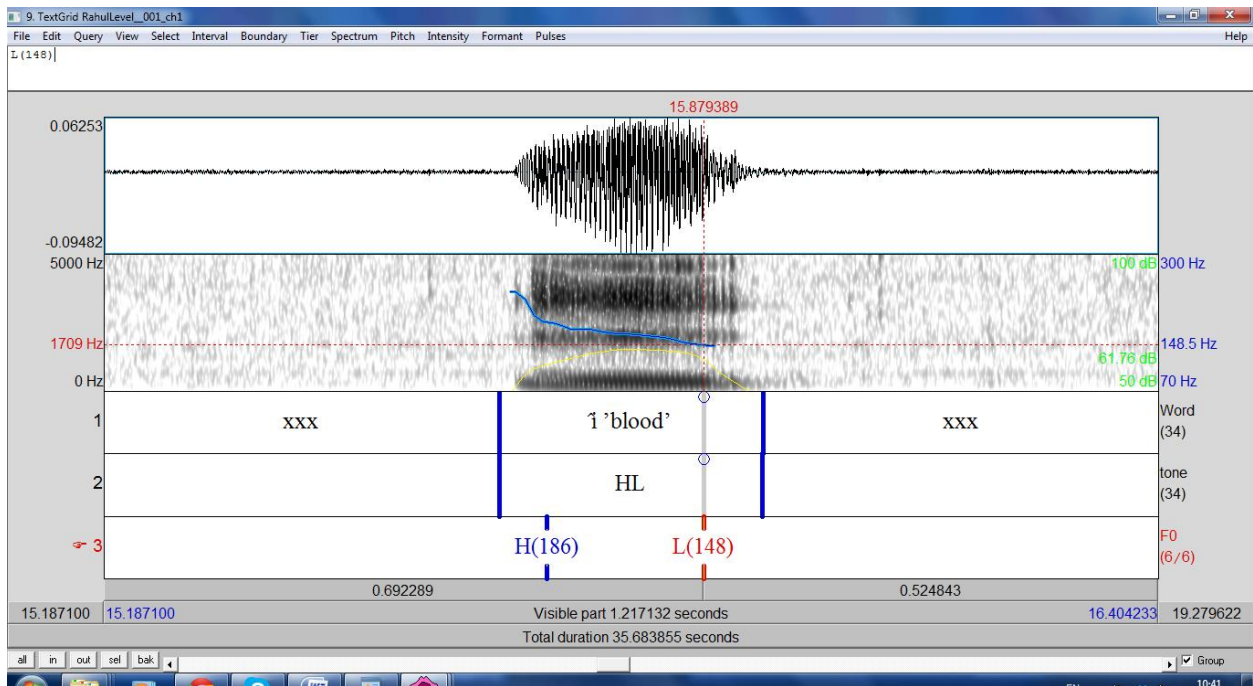


Fig. Spectrogram and Pitch contour for the word î 'blood'

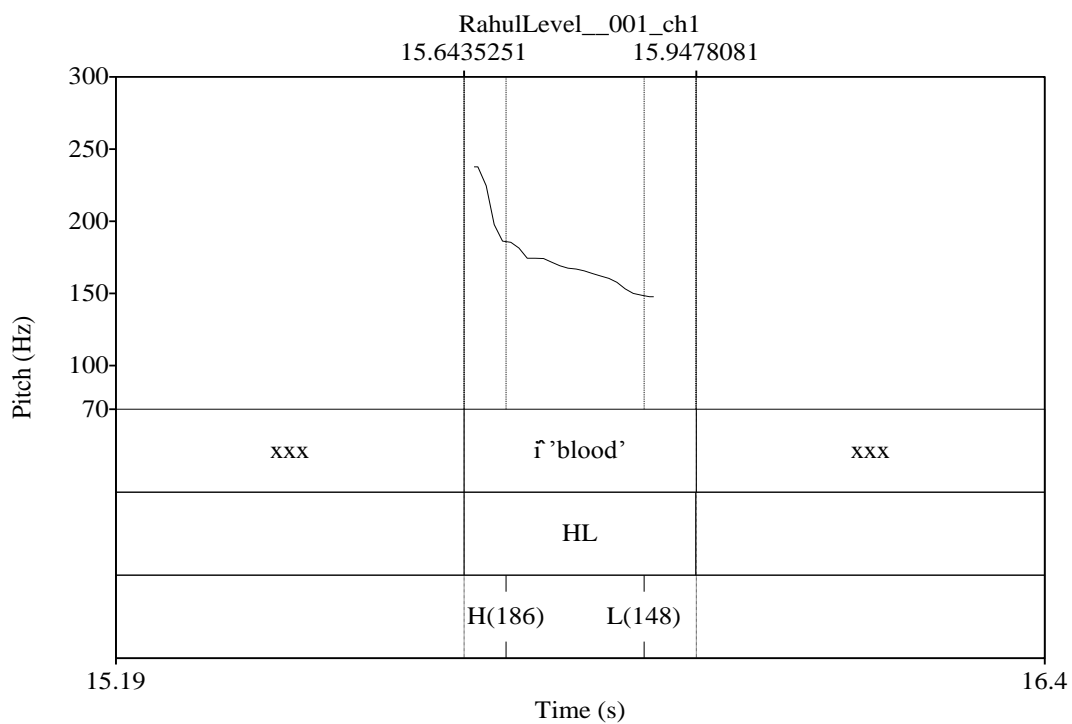


Fig. Pitch contour for the word î 'blood' which has an Initial F0 of 186Hz and Final F0 of 148Hz.

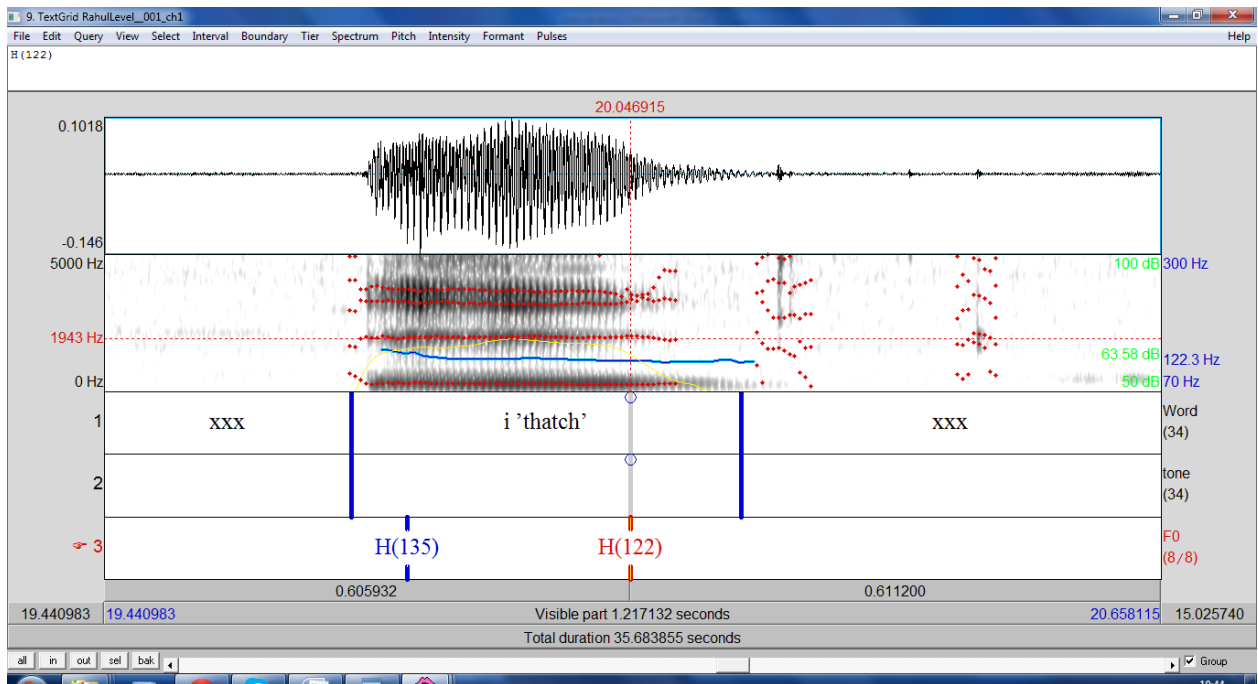


Fig. Spectrogram and Pitch contour for the word *i 'thatch'*

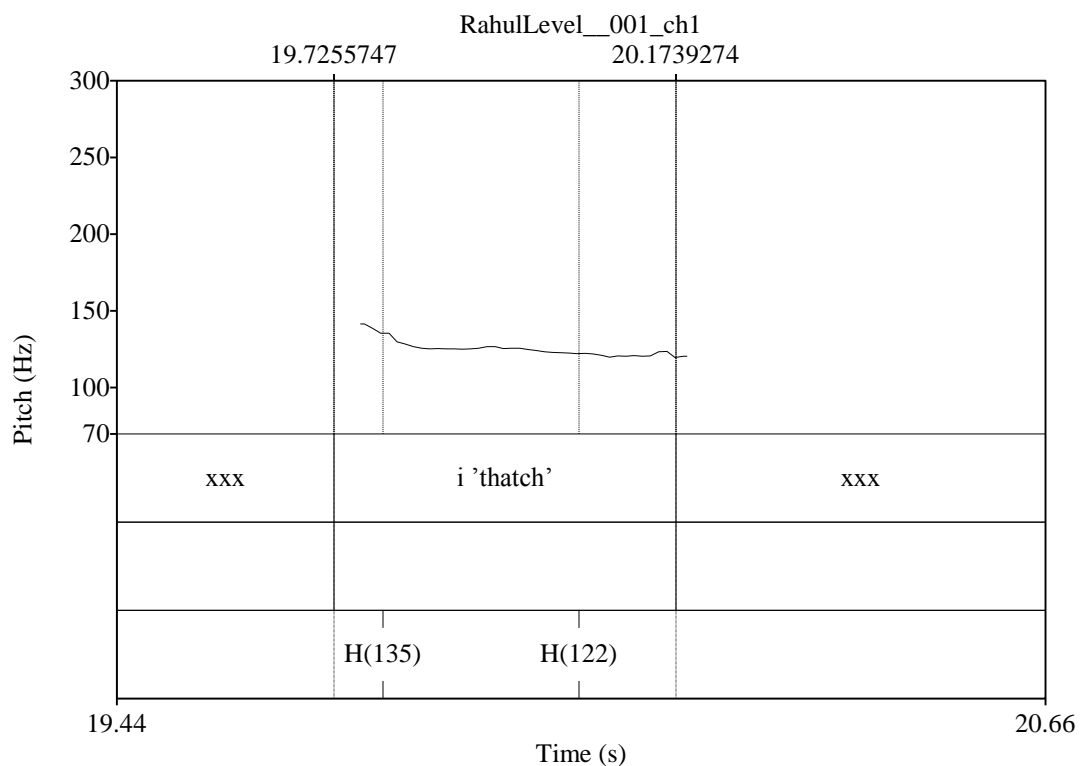


Fig. Pitch contour for the word *i 'thatch'* which has an Initial F0 of 135Hz and Final F0 of 122Hz.

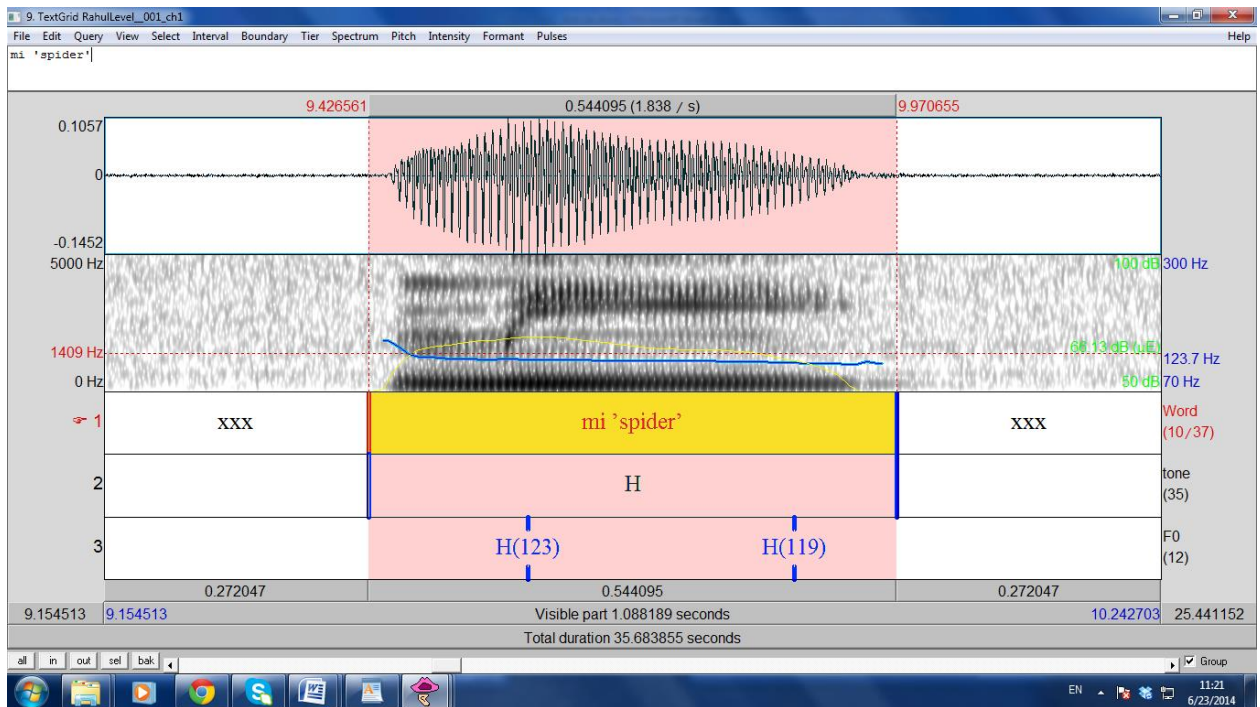


Fig. Spectrogram and Pitch contour for the word *mi 'spider'*.

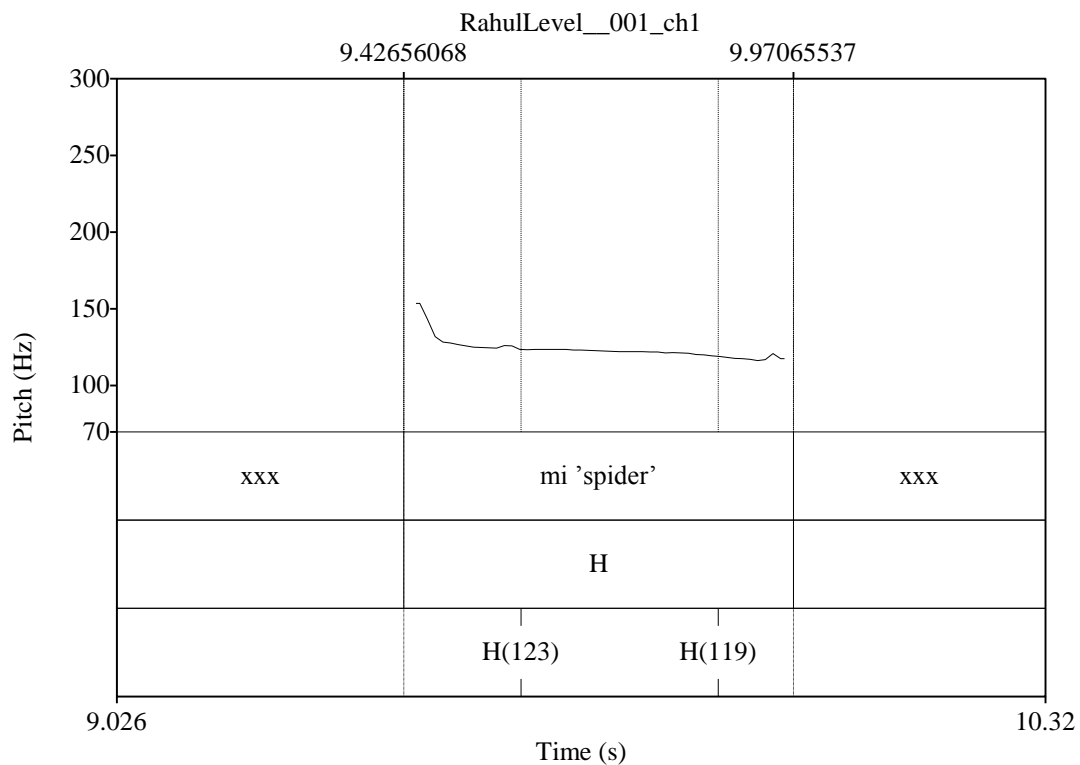


Fig. Pitch contour for the word *mi 'spider'* which has an Initial F0 of 123Hz and Final F0 of 119Hz.

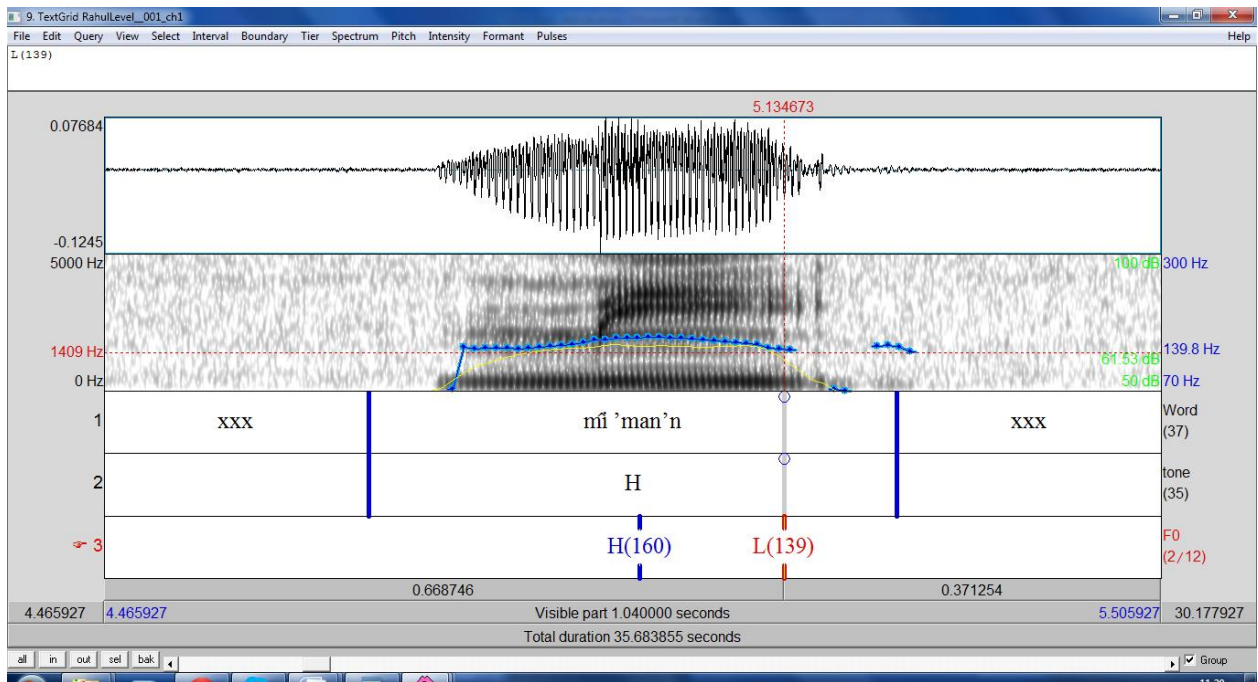


Fig. Spectrogram and Pitch contour for the word *mî 'man'*.

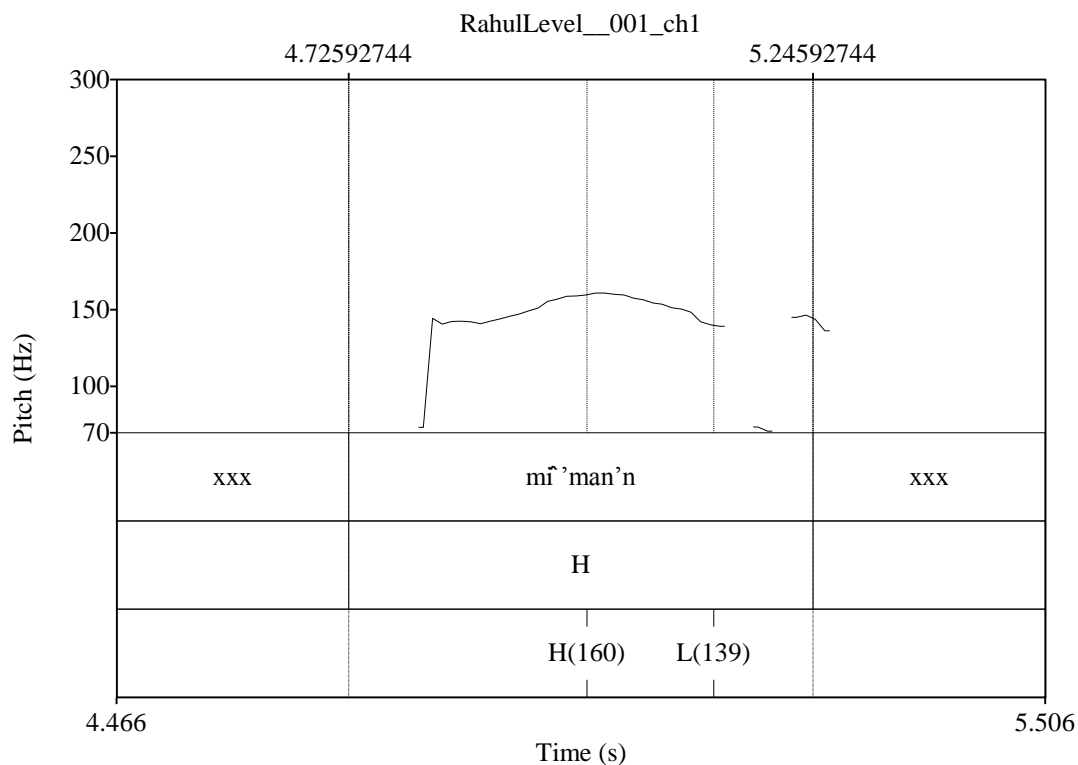


Fig. Pitch contour for the word *mî 'man'* which has an Initial F0 of 160Hz and Final F0 of 139Hz.

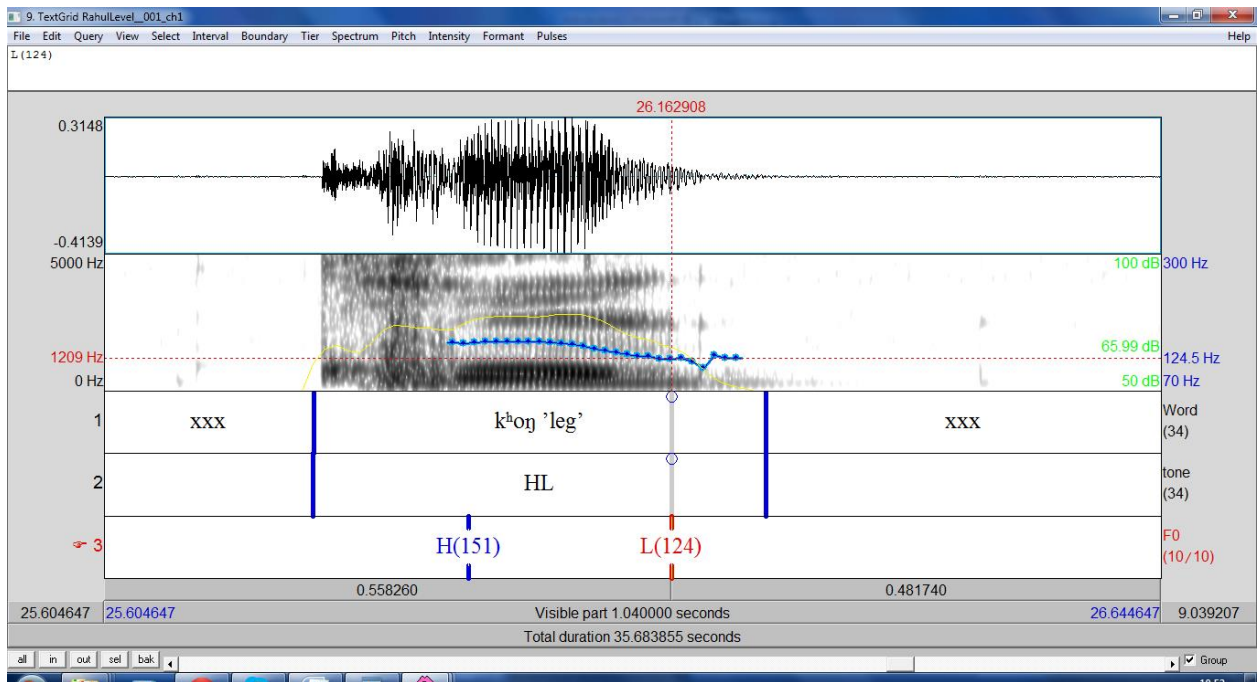


Fig. Spectrogram and Pitch contour for the word *kʰoŋ 'leg'*.

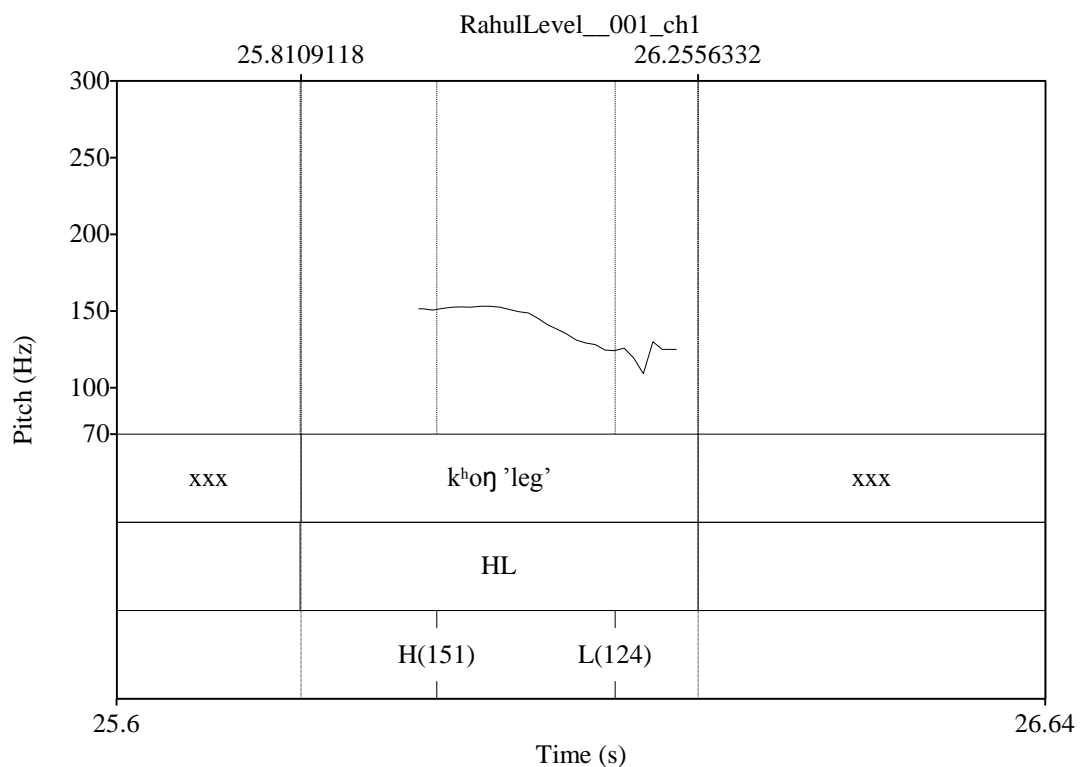


Fig. Pitch contour for the word *kʰoŋ 'leg'* which has an Initial F0 of 151Hz and Final F0 of 124Hz.

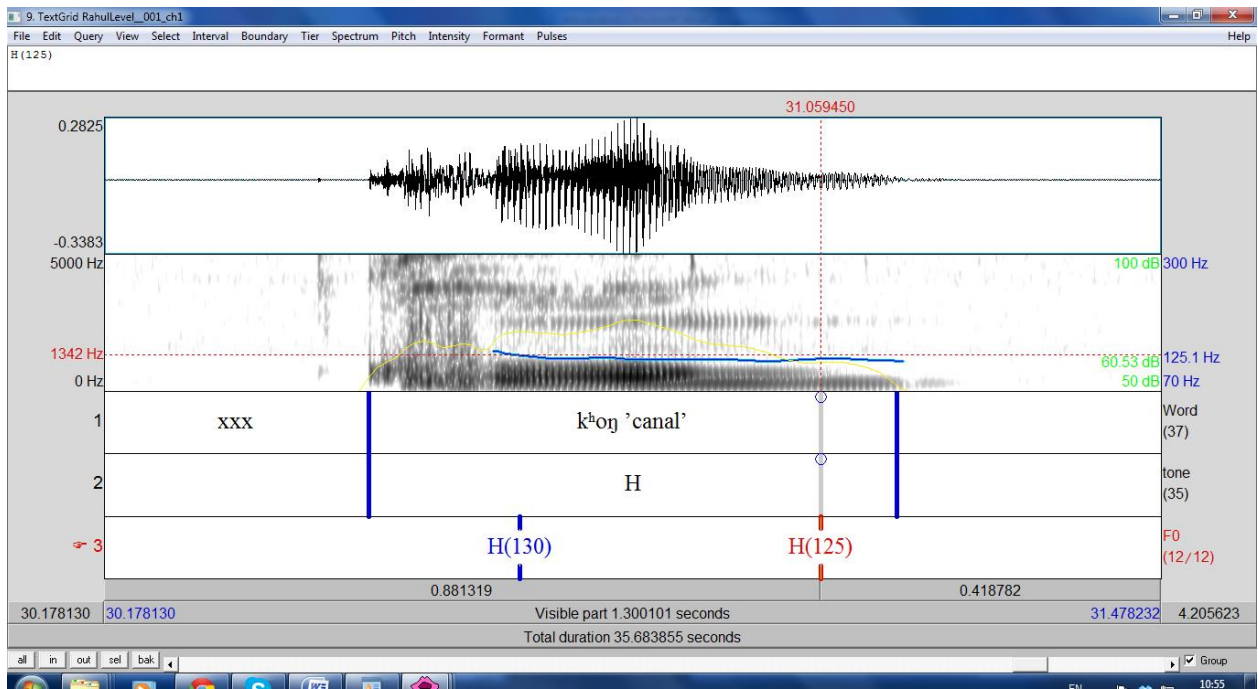


Fig. Spectrogram and Pitch contour for the word *kʰoŋ* 'canal'.

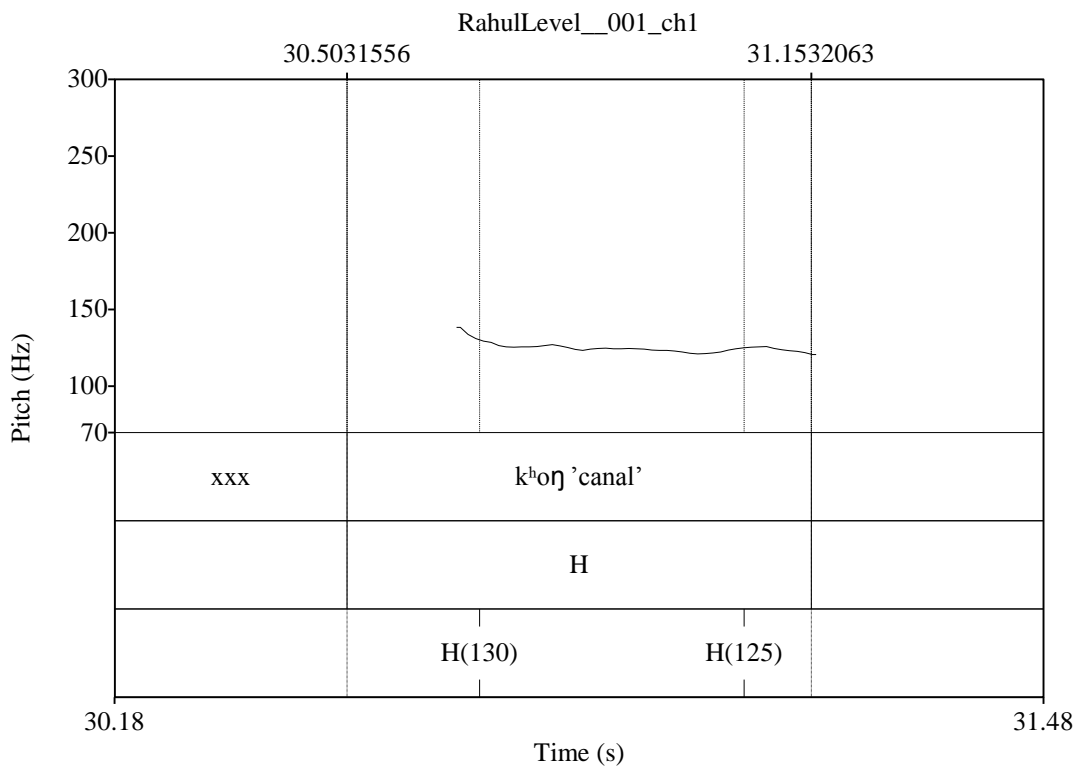


Fig. Pitch contour for the word *kʰoŋ* 'canal' which has an Initial F0 of 130Hz and Final F0 of 125Hz.

In the following table the acoustic measurements of the average fundamental frequency Intensity and duration for some of the data used for the study is shown:

H (Level Tone)							
Word	Meaning(POS)	Avg F0	I F0	F F0	Intensity	Duration	Syl Duration
puŋ	Hour(N)	143.9	146.9	136.6	70.94	0.17	0.29
tin	Saliva(N)	120.2	130.04	115.7	55.87	0.25	0.4
kaŋ	A game(N)	124.4	130.4	124.4	65.24	0.33	0.52
kəj	Tiger (N)	132.3	138.3	127.3	65.81	0.23	0.36
p ^h əm	Bed(N)	125.5	127.9	127.3	63.1	0.24	0.37
t ^h oŋ	Bridge(N)	121.2	124.3	118.6	61.31	0.27	0.45
k ^h oŋ	Bee(N)	136.5	140.7	131.5	67.84	0.22	0.47
məŋ	Crematory(N)	129.8	134.2	127.5	65.64	0.3	0.51
ləm	Fathom(N)	146.9	156.4	131.9	68.7	0.17	0.37
huŋ	Rivet(N)	136.3	143.9	133.4	66.55	0.24	0.51
un	Snow(N)	144.3	150.2	139.2	67.45	0.29	0.43
ləj	Tongue(N)	132.1	137.2	129.2	65.33	0.26	0.42
pi	Tears(N)	133.6	139.5	127.3	73.1	0.11	0.29
pe	Umbrella(kind of big one)(N)	134.5	137	135.5	70.9	0.2	0.32
la	Big round winnow for drying grains(N)	129.3	129.5	128.9	62.09	0.25	0.44
lu	Head(N)	136.1	138.5	134.3	63.6	0.27	0.54
wa	bamboo(N)	143.2	147.4	136.9	65.54	0.1	0.34

In the following table the acoustic measurements of the average fundamental frequency Intensity and duration for some of the data used for the study is shown:

HL Falling Tone							
Word	Meaning(POS)	Avg F0	I F0	F F0	Intensity	Duration	Syl Duration
pûŋ	Drum(N)	145.3	155.1	128.8	71.22	0.16	0.30
tîn	Insect(N)	166.9	178.5	135.4	59.4	0.12	0.20
kâŋ	Mosquito(N)	143.3	155.7	122.8	70.56	0.16	0.28
kêj	Granary(N)	145.6	155.4	132.9	68.31	0.14	0.22
t ^h ôŋ	Door(N)	127.6	142.3	117.2	65.21	0.16	0.33
sîŋ	Firewood(N)	132.8	144.9	115.3	69.42	0.2	0.45
sêm	Hair(N)	147.1	160.8	123.4	68.57	0.17	0.42
k ^h ôj	Navel(N)	147.3	166.7	117	73.36	0.13	0.34
môŋ	Dream(N)	156.7	167.2	133.3	67.28	0.12	0.33
hûj	Dog(N)	160.5	184.7	130.9	70	0.15	0.35
ûn	Skin(N)	173.5	190.9	134	70.38	0.15	0.25
lêj	Flower(N)	131.8	139.5	125.9	66.49	0.22	0.39
mâ	Bedbug(N)	137.3	145.9	123.8	69.53	0.12	0.29
lî	Cane(N)	153.5	162.8	138.5	65.56	0.14	0.32
lâ	Banana leaf(N)	143.6	152.7	132.2	67.1	0.12	0.27
lû	Fishing trap/basket(N)	146.3	154.7	132.7	65.35	0.17	0.40
wâ	Word(N)	139.2	148.9	127.1	64.02	0.08	0.31

5. Tones in Stopped Syllables

Meiteilol has only voiceless obstruent at the syllable-final position. The presence of obstruent final or “stopped” (CVT) syllable restricts the number of contrasting tones. In Meiteilol the obstruent-final syllable carries only the HL Falling tone.

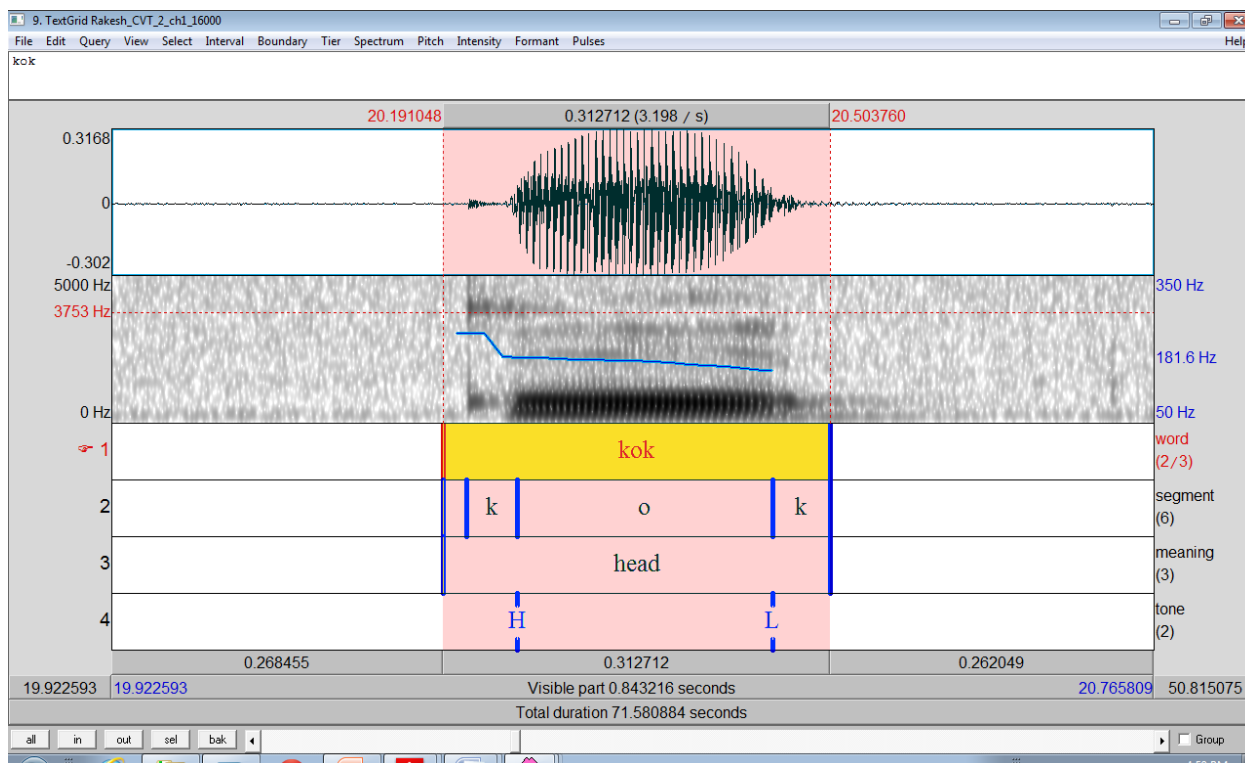


Fig. Spectrogram and Pitch contour for the word kok ‘head’.

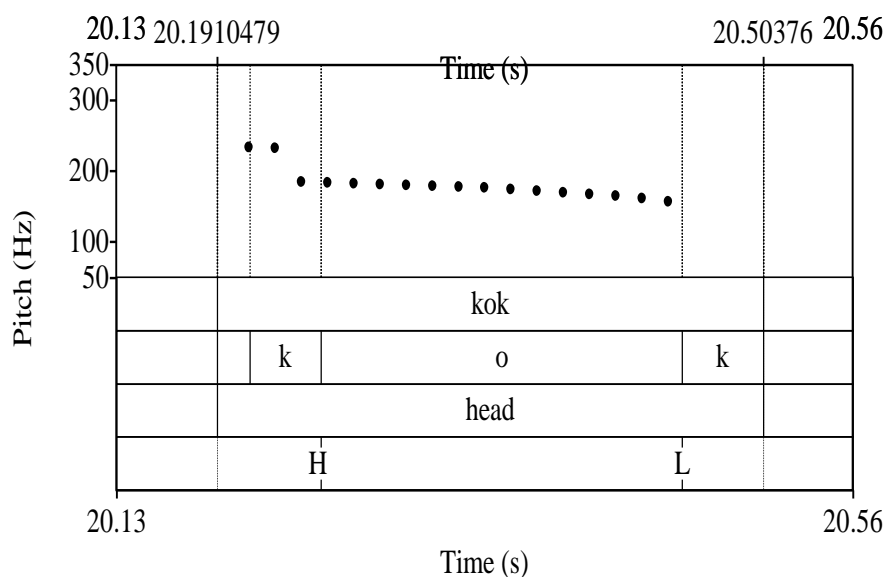


Fig. Pitch contour for the word kôk ‘head’

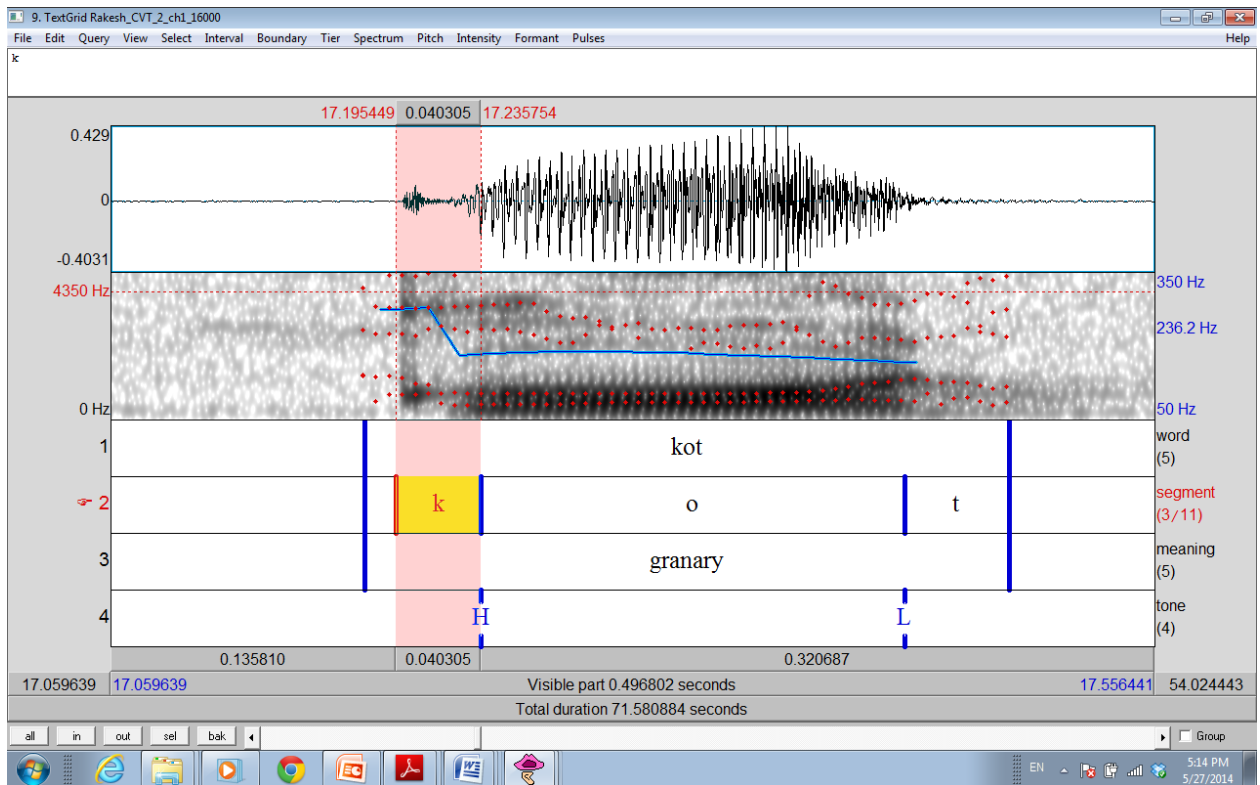


Fig. Spectrogram and Pitch contour for the word *kôt* 'granary'.

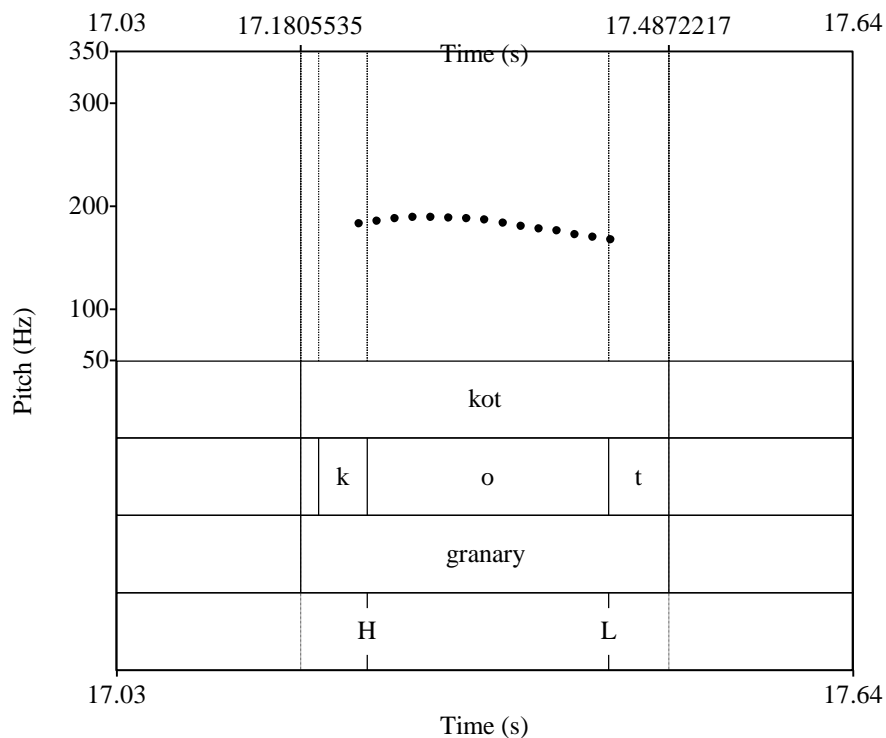


Fig. Pitch contour for the word *kôt* 'granary'

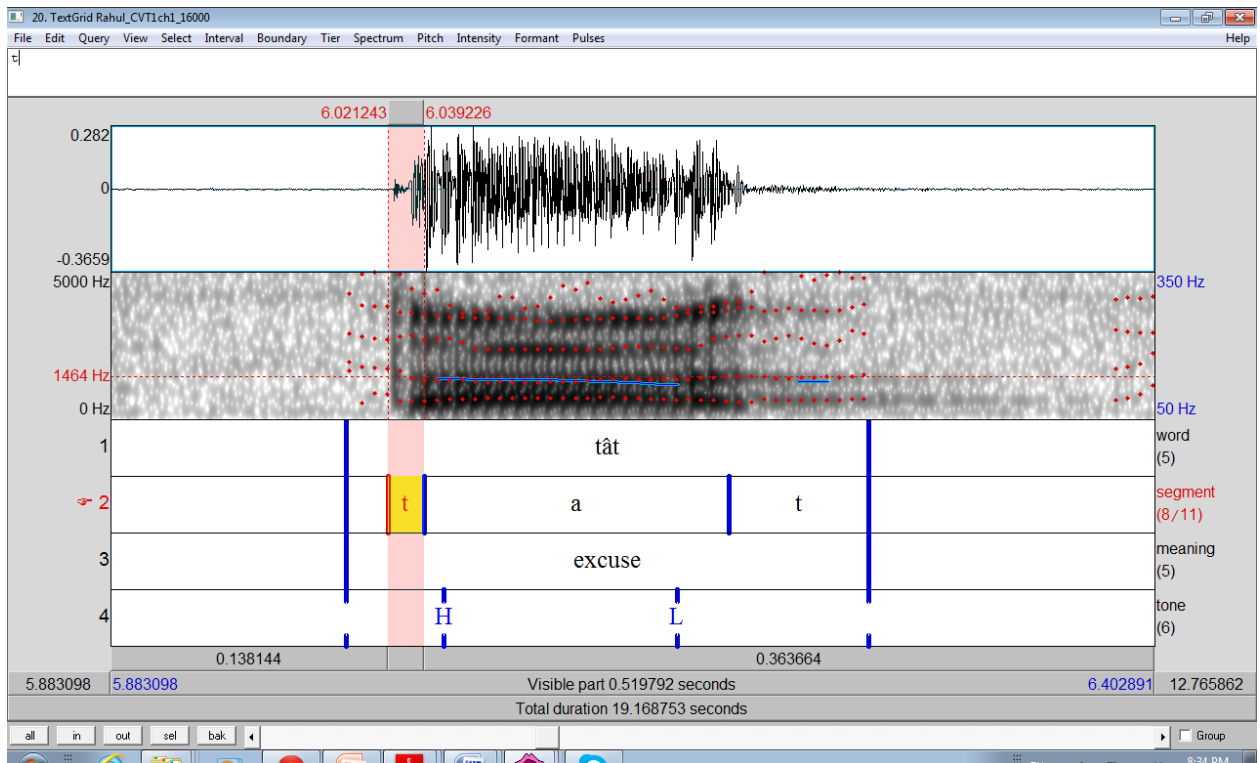


Fig. Spectrogram and Pitch contour for the word tât 'excuse'.

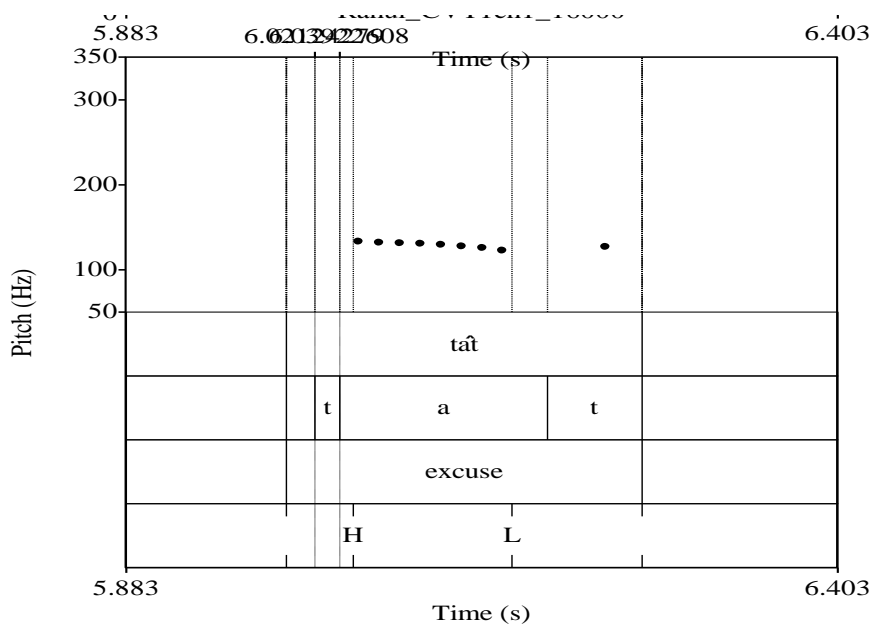


Fig. Pitch contour for the word tât 'excuse'

In the following table the acoustic measurements of the average fundamental frequency Intensity and duration for some of the data used for the study is shown:

HL Contour tone						
Word	Meaning(POS)	Avg F0	I F0	F F0	Intensity	Duration
pât	Lake(N)	126.6	129.2	121.9	68.74	0.07
pôt	Thing(N)	137.2	142.4	132.2	74.9	0.04
pôk	Grey hair(N)	154.9	157.6	149.8	75.4	0.04
cêk	Brick(N)	166	173.4	157.4	73.56	0.09
câk	Rice(cooked)(N)	153.4	158.5	148	69.62	0.09
cûk	Pole(N)	180.7	181.4	178.4	72.69	0.031
kâp	span(N)	151.5	161.5	137.6	72.32	0.09
p ^h êk	Mat(N)	140.4	143.9	137	73.08	0.039
t ^h êk	Caterpillar(N)	139.1	142.4	134	67.77	0.03
t ^h âk	Status(N)	115.1	122	109.5	62.21	0.07
t ^h ôp	Brain(N)	135.8	145.6	120.8	68.55	0.09
k ^h ût	Hand(N)	196.8	202.3	186.6	75.66	0.04
mît	Eye(N)	167.8	171.4	157.1	68.18	0.04
mûk	Ink(N)	164.3	168.8	153.5	66.15	0.05
hîk	Louse(N)	175.5	184.2	161.2	71.45	0.05

6. Conclusion

The Tone Bearing Unit in Meiteilol is the Rhyme of the syllable. In Meiteilol the sonorant final syllables or smooth syllables (CVS) bears both the H Level tone and the HL Contour tone while the obstruent-final syllables can bear only the HL Contour tone is presumably because of the syllable weight. The sonorant-final syllables have codas that can contribute to the syllable weight. Considering this fact that the sonorant in the coda position

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can be clubbed together with the nucleus and the syllabic rhyme acts as the *Tone Bearing Unit* in Meiteilol. This clubbing together of the nucleus and the sonorant coda is an attested feature which is observed in many Sino-Tibetan languages. The logical argument to second Rhyme as the Tone Bearing Unit is the observation that sonorants do not block the spreading of tone while the obstruents in the coda position especially the stop consonants are known to block the spreading of tone. Meiteilol allows only the voiceless unaspirated stop consonants in the coda position; presumably this is the reason why only sonorant-final syllables have rhyme as the Tone Bearing Unit. While in the case of obstruent-final syllable only the vocalic nucleus is the Tone Bearing Unit. The Meiteilol vowels are monophthongs and do not have length distinctions. The logical reason for the constraint on the realization of tonal contrast at the coda position is because the duration for contrast is limited in the obstruent-final or stopped syllables due to the shortening of vowel nucleus in stopped syllables.

Tone found on stopped syllables is always a sub-set of those found on the smooth syllables.

Meiteilol has two tones:

- i) H Level Tone, and
- ii) HL Contour Tone

Meiteilol sonorant-final syllable (CVS) can have both H Level Tone and HL Contour tone. While in the obstruent-final syllable (stopped syllables) only the HL Contour Tone can occur. This finding is in sync with the coda constraint on tone which states that tone found in obstruent-final syllable is only a sub-set of the tones found in the sonorant-final syllable. The generalization that the complexity of final-syllable is inversely related to the complexity of tonal systems is verifiable from the current study. The relatively complex tonal systems are associated with those languages which have a limited sound inventory at the syllable final position. Whereas languages with a richer sound inventory at the final syllable position have a less complex tone system.

Meiteilol has a rich inventory of consonants that can occur at the word final position. The phonemes that occur at the word final position in Meiteilol are the voiceless stops /**p t k**/ the nasals /**m n ŋ**/ the approximants /**j w l**/ the vowels /**i e a o u**/. The richness of the consonants occurring at the final position of the syllable in Meiteilol is contrary to Tibeto-

Burman tendencies. The finding corroborates with the fact that Meiteilol has a relatively non-complex tonal system and has only two tones a H Level tone and a HL Contour tone in Isolation.

References

Hyman, L.M. (1973). The Role of Consonant Types in Natural Tone Assimilations. In Larry Hyman (Eds.), *Consonant Types and Tone* (pp.153- 179). Los Angeles: University of South California.

Hyman, L.M. (2010). Kuki Thaadow: An African Tone System in Southeast Asia, UC Berkeley Phonology Lab Annual Report.

Hyman, L M. (2007). *Coda Constraints on Tone*, University of California, Berkeley.

Matisoff, J A. (1973). Tonogenesis in Southeast Asia. In Larry Hyman (Eds.), *Consonant Types and Tone* (pp. 71-95). Los Angeles: University of South California.

Pike, K . (1972). *Tone Languages*. Ann Arbor: University of Michigan Press.

Yip, M. (1980). *The Tonal Phonology of Chinese*. Dissertation. MIT.

Yip, M. (1989). Contour Tones. *Phonology*, 6(1) , 149-174.

Yip, M. (2002). *Tone*. Cambridge: Cambridge University Press.

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