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Hŕlɨ̀ɨ̀ singing and word-tones in Kammu

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This article has the double purpose of analysing a Kammu singing style known as *hŕlɨ̀ɨ̀*, and of using material from *hŕlɨ̀ɨ̀* songs to test a number of problems in Kammu tonal phonology.

In *hŕlɨ̀ɨ̀*, all syllables have approximately the same duration, which is certainly not the case in speech, where there is a contrast between long and short vowels, and where there are unstressed 'minor syllables' with a very short non-phonemic schwa vowel which often disappears completely. This makes *hŕlɨ̀ɨ̀* an ideal medium for studying the tones of minor syllables.

We will show that the melody of a *hŕlɨ̀ɨ̀* song is derived from the lexical tones of the words which make up the song. This analysis is established from major syllables, and by assuming that the same principles apply to minor syllables as well, the linguistic analysis of minor syllable tones made on independent grounds in Svantesson 1983 could be tested.

Linguistic background

The Kammu language belongs to the Mon–Khmer branch of the Austro-asiatic language family. It is spoken by more than 500,000 people in northern Laos and adjacent areas of Vietnam, Thailand and China. There are three major dialects, Northern, Western and Eastern Kammu. The Yùan variety of Kammu treated here is a sub-dialect of Northern Kammu, spoken in the Nalè area in the southern part of Luang Namtha Province. Northern and Western Kammu have developed a system of two tones, high and low (denoted ´ and `, respectively), while Eastern Kammu, spoken further to the east and south in Laos, and also in Vietnam, retains the original state without distinctive lexical tones. The tones have developed from voiceless and voiced initial consonants, which gave rise to high and low tone, respectively. For example, the Eastern Kammu minimal pair *klaaŋ* 'eagle' vs. *glaaŋ* 'stone' with voiceless vs. voiced initial consonant corresponds to Northern Kammu *kláaŋ*

vs. *klàaŋ* with high vs. low tone; see Svantesson 1983 and Svantesson & House 2006 for Kammu tones and tonogenesis.

Like many other Mon-Khmer languages, Kammu has two kinds of syllables, usually called major and minor syllables. Minor syllables are unstressed syllables, whose syllabic element normally is a non-phonemic schwa vowel (not indicated in the phonemic transcription). They always precede a major syllable, and a word cannot consist of only a minor syllable. Words consisting of a minor and a major syllable are called sesquisyllabic. Examples are: *kmùmú* [kə̀m.mú] 'human being, Kammu' and *kmúul* [kə́.mú:l] 'silver'.

According to the analysis in Svantesson 1983, minor syllables carry a tone, which in most cases can be predicted from its segmental composition. There is a potential minor syllable tone contrast only when the minor syllable consists of two consonants and has an unaspirated stop as onset. Due to a tone assimilation rule, the contrast can appear only when the tone of the following major syllable is low. Examples of minimal pairs are *pŋ́kà* 'to wear by the ear' vs. *pŋ̀kà* 'shy' and *pŕnɔ̀* 'broom' vs. *pr̀nɔ̀* 'carrying-sling'. See further Svantesson 2004 and Svantesson & Karlsson 2004 for minor syllables and tones on them.

The functional load carried by the minor syllable tone is low (only about 10 minimal pairs have been found), and the differences in fundamental frequency between the two tones on minor syllables, which are unstressed and short, are small and perceptually not very salient. Furthermore, contrasting minor syllable tones have not been reported for other Mon–Khmer languages with an otherwise similar tone development as Kammu. For these reasons, the analysis of minor syllable tones in Svantesson 1983 may be subject to some doubt, and it is one of the purposes of this article to present independent evidence from *hŕl̀ɨ̀* singing which shows that analysis to be correct.

Word-tones and music

The study of the interaction between music and language is a small but rather active branch of musicology. The studies range from word-and-music relationships in German *Lieder* to the application of generative grammar and cognitive science to musical style. Ethnomusicologists who come in contact with the music of cultures with tone languages can hardly avoid developing an interest in the relationships between musical pitch and word-tone.

Nettl 1958 and List 1963 contain general observations concerning the boundaries of speech and song. Chinese singing and recitation has drawn the attention of several scholars, among others Chao 1956, who defines different singing styles with differing pitch/word-tone relationships, Liu 1974 on *Kūnqǔ* opera, and Yung 1983 on Cantonese opera. Thai song has been studied by among others Morton 1974 and Mendenhall 1975.

In the case of Chinese, Thai and other tone-languages in Southeast Asia, which have several tones, the relation between pitch and word-tone is normally rather complex and not always predictable by simple rules; see for example Tanase-Ito 1988 concerning Thai court song. Concerned with Mandarin Chinese, Wee 2007 sets up rules that take into account salient parts of the word-tones and their combination with musical stressed tones.

Wängler 1958 has discussed matters of song and speech concerning the Hausa language in Africa. The literature concerning some African tone languages shows more similarity to the northern Kammu dialect with two tones. Among these studies are Welch 1974 on Yoruba praise poetry.

Oesch 1979 concludes that in Yao tradition (Thailand) "if the song is syllabic ... the level of the musical version is defined by the relative position of a tone to its preceding tone" and "if the song is melismatic ... the intonation of the word is expressed in music by an ascending or descending melismatic configuration". He also notes that final formulae are musical culminations where the musical movement often dominates.

Lundström & Tayanin 2006 and Lundström 2008 show how the vocal tradition of the Kammu can be seen as a mono-melodic system in which a large number of orally transmitted poems, *tŕnə̀əm*, are sung according to a limited number of melody types, varying with the situation. The singing is orally transmitted and each performance constitutes a re-creation of the *tŕnə̀əm* which includes a certain amount of variation both with regard to the poetry and the way it is fitted with the basic melodic structure.

The most complex singing style is called *tə́əm*. In this singing manner the relation between pitch and word-tone is not clear-cut and simple. In parts of the singing, musical factors dominate over the word-tones (music-pitch centration) and in others the word-tones dominate (word-tone centration).

Hŕl̀ɨ̀ singing

One of the other singing manners is called *hŕl̀ɨ̀*. In this singing style the word-tones are clearly dominating. The ratio between musical pitch dominance and word-tone dominance can be approximated to 10:90 (see

further Lundström 2008). To quote Chao 1956 on Chinese singsong: "it is speech minus the element of intonation". However, *hŕlɨ̀ɨ̀* differs from speech also in another important aspect.

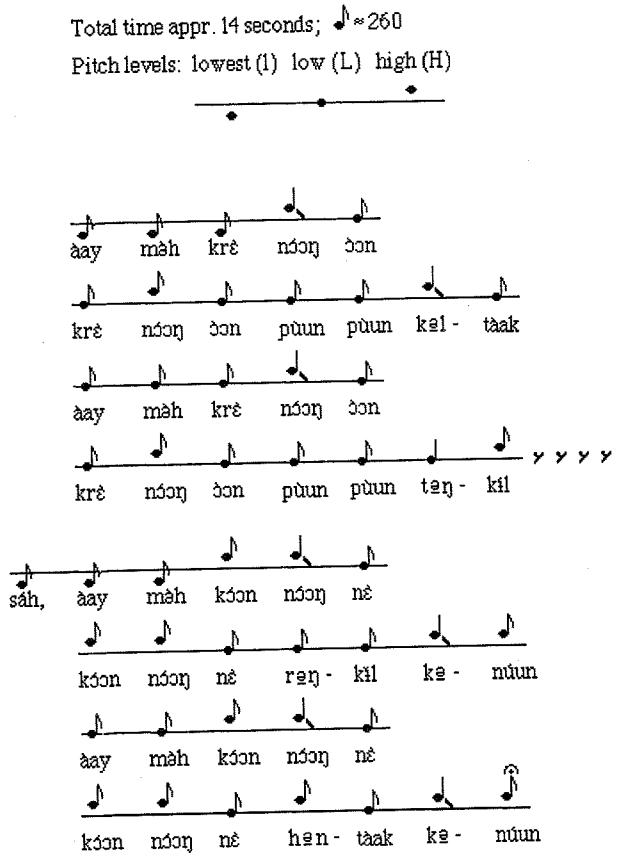
As will be shown below, *hŕlɨ̀ɨ̀* singing is strictly syllabic, i.e. each tone in a song corresponds to one syllable. For the main part it employs only one tone duration – the only exceptions are the penultimate syllable of a line and the very last syllable of a stanza, which are longer. With these exceptions, each syllable is given the same length regardless of vowel length. A minor syllable is, without exception, treated in the same way as a major syllable and is thus given a much longer relative duration than in speech.

For the main part of the performance, the *hŕlɨ̀ɨ̀* singing is limited to two pitch levels – the only exception being a few syllables in the beginning of a poetic line after a pause, which are sung to an extra-low tone and can be considered as an introductory formula. The interval between the two dominating pitches varies from a 2nd to a minor 3rd, which means that the pitches can be easily recognized by ear. As will be seen below, the high and low singing pitches are almost invariably used for high and low word-tone, respectively.

Material

The recorded material consists of performances by one Kammu informant, Kàm Ràw (Damrong Tayanin), coming from the Yùan dialect area of northern Laos. A 'studio sample', which was sung on the informant's own initiative, consists of 12 performances and 909 syllables in total. A 'laboratory sample', which was sung on the request of the researcher (HL), consists of 24 performances and 1,393 syllables. Finally, there is an 'experiment sample' consisting of another 12 performances, which the informant had not sung in this style before, which was made in order to test predictions of the rhythm and pitches relative to word-tones. A fourth sample consists of 2 performances by other Yùan informants. In total then there are 50 performances.

A musical transcription of all songs was made by one of the authors (HL). For a simplified transcription of a *hŕlɨ̀ɨ̀* performance see Figure 1. The three initial syllables of the 1st and 5th lines are sung according to the initial formula and not according to word-tone. The minor syllables of the final words of lines 2, 4, 6 and 8 are long because they fall on the penultimate syllable (cf. the penultimate syllables of the other lines). The 4th syllables of lines 6 and 8 are also minor syllables, but are sung at the common short duration. Note that one of them is sung high and the other low.



Translation:

I am a food-tray still soft,
a food-tray still soft, a stepped-on tree-trunk.
I am a food-tray still soft,
a food-tray still soft, a stepped-on tree-stump.

I say, I am a child still small,
a child still small, less than knee-high.
I am a child still small,
a child still small, just about knee-high.

Figure 1. An example of *hŕlɨ̀ɨ̀* singing.

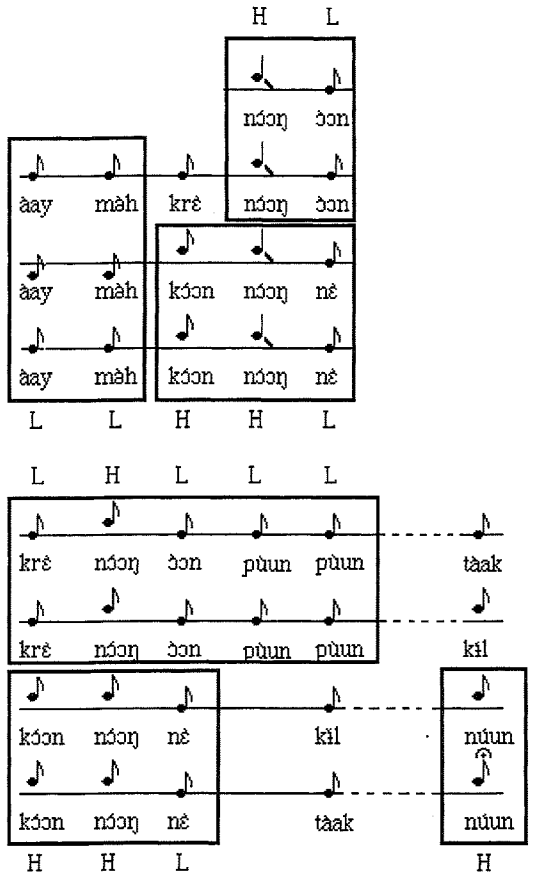


Figure 2. The same performance as in Figure 1.

The minor syllables and initial formulas are cut out and the lines of the poem have been re-grouped to show consistencies in the intonation of word tones (H = high, L = low word-tone).

In Figure 2, the lines of the same poem have been re-grouped in order to show that the same word combinations are given the same intonation in all cases when they occur, for examble *àay màh* = low–low (LL) 3 times out of three, *kɔ́ɔn nɔ́ɔŋ nɛ̀* = high–high–low (HHL) 2 times out of two, and so on.

As can be seen, there are no exceptions to the word-tone recitation in this performance. This is normal for the *hŕlɨ̀ɨ* style of singing and deviances occur very seldom, as will be shown below.

Hŕlɨ̀ɨ singing as evidence for some linguistic problems

Syllable structure

According to the linguistic analysis in Svantesson 1983, the consonant clusters *pl-, pr-, tr-, cr-, kl-, kr-, kw-, khw-* and no others can occur as major syllable initials. Words that begin with any other consonant cluster are sesquisyllabic, i.e. consist of a minor and a major syllable. For instance, *klè* 'husband' and *kwáa* 'more than' are monosyllabic while *clɔ̀ɔŋ* 'boat' and *twá* 'fern' are sesquisyllabic ([cɔ̀.lɔ̀ːŋ], [tɔ́.wáʔ]).

All words in the *hŕlɨ̀ɨ* performances which begin with a consonant cluster are listed in Tables 1–3. Table 1 shows those cluster-initial words that were sung as one tone. As seen there, all such words have one of the admitted consonant clusters listed above as onset, and all onset clusters are represented, except *khw-* which has been attested only in a few Lao loans. In addition, all monosyllabic words with a single consonant onset were sung as one tone. All words with another initial consonant cluster were sung as two tones (Tables 2–3). These data show that *hŕlɨ̀ɨ* is strictly syllabic and in complete agreement with the syllable division made on the basis of the spoken language in Svantesson 1983.

Tones of monosyllabic words

The relation between singing pitch and lexical word-tone (as found in the unpublished dictionary by Svantesson, Tayanin, Lindell & Lundström) was checked for monosyllabic words in the *hŕlɨ̀ɨ* material (outside the introductory formulas). For the studio sample, the *hŕlɨ̀ɨ* tone and the word-tone agreed in 666 out of 666 syllables, i.e. 100%, and for the laboratory sample in 1,146 out of 1,150 syllables (99.7%).

Two mismatches concerned two Lao loanwords (*dɛ́ɛ* 'also' and *tém* 'fill') which both were sung low once and high once. Because of influence from Lao, such words may be tonally ambivalent. The two other mismatches are the words *càə* 'shall' and *táa* 'don't', which both were sung according to the lexical tone in several instances, but to the other tone once each. These words are function words which are often unstressed in normal speech. The other two samples, as well as the two performances by other singers, show similar characteristics, with only an occasional mismatch between lexical tone and singing pitch. This demonstrates that *hŕlɨ̀ɨ* should be seen as a *technique* of performing *tŕnàəm.*

Table 1. Monosyllabic words with an onset cluster in the *hŕlɨ̀ɨ́* material. The frequency of each word in the entire material is indicated.

Kàm Ràw:					
crà	to weed	4	kríaŋ	Java plum	4
cráh	pale	3	krí	bulbul	3
crí	taboo	4	kwə́əc	pass over	3
crì	banyan	4	plàa	chop	4
críil	gold	1	plàas	sand snake	1
cróoŋ	scoop	1	plàh	side	3
crúan	*Diospyros*	9	plé	fruit	6
crùk	deep	1	plìa	beautiful	21
klà	coucal	1	plìat	go off	3
klà	wild sugarcane	1	plóoŋ	calf of leg	2
kláak	cluster	1	plòoŋ	rat snake	1
kláaŋ	eagle	4	plóoy	abandon	5
klàaŋ	stone	4	plùŋ	sprout	5
klàat	leave	1	pràay	trap	2
klám	carry	2	prèɛt	carpetgrass	2
klə̀	hair	2	prì	forest	4
kléəm	chock up	1	prìaŋ	people	21
klɛ́ɛr	peep	2	príim	ancient	4
klía	travel around	2	prìiŋ	drum	2
klíaŋ	in	2	prím	overgrown	4
klòh	log	2	pró	wish	8
klók	hogplum	2	próok	squirrel	1
klóoy	necklace	2	pròom	friend	2
kló	snail	1	prú	to smoke	3
klóok	white	1	tràan	[expressive]	4
klóot	treevine	2	tráaŋ	hornbill	2
klùŋ	tumble	4	tró	a fruit	2
klúus	a herb	1	trím	level	2
tróoŋ	throat	4	tró	able	3
kráas	laugh	1	tróoc	draw out	2
kráh	unwrap	2	trù	*Maranta*	1
krɛ̀	low table	15			
Other performers:					
klàh	cut	5	plóo	not at all	3
króoŋ	Mekong	2			

Inspection of monosyllabic words, whose word-tones are linguistically unproblematic, thus shows an almost complete agreement between the word-tones and the tones used in *hŕlɨ̀ɨ́* singing. In what follows, this fact will be used to test the analysis of *minor* syllable tones under the assumption that the tone sung in *hŕlɨ̀ɨ́* reflects lexical word-tones in this case as well.

Minor syllables consisting of only one consonant

At least in slow speech, minor syllables consisting of one consonant are usually pronounced with a schwa vowel following the consonant (e.g. *kmúul* [ká.mú:l] 'silver'). All sesquisyllabic words in the *hŕlɨ̀ɨ́* material with such

minor syllables are listed in Table 2. It can be seen that they are invariably sung as two syllables.

These words can be divided into three groups depending on their expected tonal behaviour, depending on the type of consonant the minor syllable consists of:

(a) voiceless unaspirated stop (*p, t, c, k*),

(b) voiceless fricative or voiceless aspirated stop (*s, h, ph, th, ch, kh*)

(c) voiced liquid (*l, r*)

Words in groups (a) and (b) always have the same tone on the minor and major syllables, which can be analyzed by assuming that the domain of the tone is the entire sesquisyllabic word (Svantesson 1983). For words in group (a), the tone can be either high or low, but for words in group (b) the tone must be high.

These assertions are supported by the *hŕlɨ̀ɨ́* in the Kàm Ràw material, the two syllables of such words are sung on the same tone in all but two or three occurrences. The word *knúun* 'knee' is sung high–low once, which may be the result of unclear intonation (it is the final word of a song). The word *ktáaŋ* 'plain' was difficult to hear. A real exception is the Lao loan-word *ptúu* 'gate' which was sung low–high.

In the two songs by other performers, the word *skíi* 'today' is twice sung on what seems to be low–low and twice high–high. The low–low occurs in the beginning of sentences and should possibly be interpreted as initial words which are not recited in agreement with the word-tones.

The two words *kʔíip* 'centipede' (1 token) and *pʔáat* 'sore' (3 tokens) are consistently sung as high–low by the third informant, which suggests that he treats words with this structure (beginning with a cluster consisting of an unaspirated stop and a glottal stop) differently from Kàm Ràw, although their dialects are very close to each other. In the Kàm Ràw material there is only one word of this kind, *kʔáañ* 'wasp', sung as high–high, as expected.

The third group (c) of words have a minor syllable consisting of one of the liquids *l* or *r*. In Svantesson 1983, such minor syllables are analysed as having their own tones, which must be low, regardless of whether the major syllable tone is low or high. This assertion agrees completely with the *hŕlɨ̀ɨ́* material.

Table 2. Words whose minor syllable consists of one consonant.

For each word, the lexical form and the ways it was sung in the *hŕlɨ̀ɨ̀* material and their frequency is indicated. The symbol ° indicates that this part of the word belonged to the introductory formula. Mismatches between lexical tone and singing pitch are marked *.

Kàm Ràw:

a. Minor syllables consisting of an unaspirated stop:

clóɔŋ	riverbank	cá.lɔ́ɔŋ	3				
cmè	rope	cà.mè	2				
kmè	which	kà.mè	2				
kmúul	silver	ká.múul	3				
kné	rat	ká.né	2				
knì	that one	kà.nì	2				
knúun	knee	ká.núun	3			ká.nùun*	1
ktáam	crab	ká.táam	7	kə°.taam°	3		
ktáaŋ	plain	ká.táaŋ	1				
któŋ	egg	ká.tóŋ	2				
ktʌ́ʌt	cackle	ká.tʌ́ʌt	1	kə°.tʌʌt°	1		
kʔáañ	wasp	ká.ʔáañ	2				
pkáay	return	pá.káay	2				
pnìm	termite hill	pà.nìm	1				
pté	soil	pá.té	1				
ptʌ̀ʌt	burning	pà.tʌ̀ʌt	2				
ptúu	gate			pə°.túu	1	pà.túu*	1
pwàaŋ	sky	pà.wàaŋ	1				
pyàa	title	pà.yàa	2				
pyá	send	pá.yá	1	pə°.yə°	1		
tkán	bamboo rat			tə°.kan°	1		
tkúut	buttonquail	tá.kúut	1				
tlàa	thin bamboo	tà.làa	2				
tlɔ́ɔy	banana	tá.lɔ́ɔy	2				

b. Minor syllables consisting of *h, s* or an aspirated stop:

hyíar	hen	há.yíar	3				
scáaŋ	elephant	sá.cáaŋ	4				
skíi	today			sə°.kii°	6		
slɛ́ɛp	chives	sá.lɛ́ɛp	2				
slóh	walk	sá.lóh	3	sə°.loh°	1		
slɔ́ɔk	barbet	sá.lɔ́ɔk	10				
snáam	court			sə°.naam°	1		
spát	grab	sá.pát	1				
spɔ́	giant bamboo			sə°.pɔ́	1	sə°.pɔ°	1
sʔím	onion	sá.ʔím	2				
khdát	pineapple	khá.dát	1				

c. Minor syllables consisting of l or r:

ltrèeŋ	[expressive]	là.trèeŋ	1				
lʔèn	[expressive]	là.ʔèn	1				
lʔèt	[expressive]	là.ʔèt	1				
rháaŋ	bamboo	rà.háaŋ	1	rə°.háaŋ	1		
rlàay	turn over	rà.làay	2				
rsúut	burst	rà.súut	2				
rwàay	tiger	rà.wàay	2				
ryèeŋ	nearly over	rà.yèeŋ	1	rə°.yèeŋ°	1		
ryòol	gibbon	rà.yòol	2				

Other performers:

kmáat	salted meat	ká.máat	4				
kyɔ̀ɔŋ	Sichuan pepper	kà.yɔ̀ɔŋ	2				
kʔíip	centipede					ká.ʔiip*	1
pʔáat	sore					pá.ʔàat*	3
scáaŋ	elephant	sá.cáaŋ	2				
skíi	today	sá.kíi	2	sə°.kii° ?	2		
rkàañ	a tree	rà.kàañ	1				

Minor syllables consisting of two consonants

At least in slow speech, minor syllables with two consonants are pronounced with a schwa vowel betweeen them, e.g. *pŕlòŋ* [pár.lòŋ] 'gate', and all such minor syllables have a tone of their own. All sesquisyllabic words in the *hŕlɨ̀ɨ̀* material with these minor syllables are listed in Table 3, where they are divided into three classes depending on their expected tonal behaviour. Words in group (a) have a minor syllable with an initial unaspirated stop. These minor syllables can have either high or low tone, with the restriction that a sequence of two high tones never occurs. Words in group (b) have a two-consonant minor syllable beginning with *s* or *h*. Such minor syllables are analysed as always having high tone. Group (c) words, finally, have a minor syllable beginning with *l* or *r*, and they are analysed as always having low tone. Inspection of Table 3 shows that these assertions are in almost complete agreement with the *hŕlɨ̀ɨ̀* material. There is only one word, *kr̀làk* 'drum', which is not sung in agreement with the word-tones on one occasion.

Conclusion

By analysing how monosyllabic words were sung in the *hŕlɨ̀ɨ̀* style, the rules for this type of singing were established. *Hŕlɨ̀ɨ̀* was shown to be strictly syllabic, and all syllables have approximately the same duration. After an introductory formula sung on a very low tone, the *hŕlɨ̀ɨ̀* tones faithfully reflect the lexical tones of the Kammu words.

There was no noticeable difference in the exactness of the three samples sung by the main informant Kàm Ràw, which means that he uses *hŕlɨ̀ɨ̀* singing as a technique which he can apply to poems (*tŕnàəm*) he has never sung previously in that manner (as in the experiment sample).

The two available *hŕlɨ̀ɨ̀* performances by other informants agree completely with those of Kàm Ràw in the treatment of word-tones and syllables, indicating that *hŕlɨ̀ɨ̀* singing is a general technique.

Table 3. Words whose minor syllable consists of two consonants

For each word, the lexical form and the ways it was sung in the *hɾ̀lɨ̀* material and their frequency is indicated. The symbol ° indicates that this part of the word belonged to the introductory formula. Mismatches between lexical tone and singing pitch are marked *.

Kàm Ràw

a. Minor syllables with unaspirated stop onset:

cǹhó	plug	càn.hó	2				
cńtrì	a plant	cán.trì	6				
cŋ̀klɛ́ɛr	peep	càŋ.klɛ́ɛr	1				
cŋ̀kɔ̀or	bright	càŋ.kɔ̀or	2				
cŋ̀kwá	widen	càŋ.kwá	1				
kl̀póom	close	kàl.póom	4				
kl̀tàak	a tree	kál.tàak	2				
kl̀wàa	echo	kál.wàa	1				
kl̀ʔàak	crow			kəl°.ʔaak°	1		
kǹmú	human being			kəm°.mu°	1		
kḿpɔ̀	a tree	kám.pɔ̀	1				
kǹní	behind	kàn.ní	5				
kǹní	footprint	kàn.ní	1	kən°.ni°	1		
kǹsúun	step on	kàn.súun	2				
kǹtrók	smack	kàn.trók	4	kən°.trók	1		
kǹtúuy	hold	kàn.túuy	1				
kɾ̀làk	drum			kər°.lak°	1	kár.làk*	1
kɾ̀lìaŋ	fall	kàr.lìaŋ	2				
kɾ̀nìas	pillow	kàr.nìas	2				
kɾ́nɔ̀on	womb	kár.nɔ̀on	2				
pǹsɨ́am	cultivate	pàn.sɨ́am	1				
pɲ́ʔɛ̀n	[expressive]	pán.ʔɛ̀n	1				
pŋ̀kà	shy	pàŋ.kà	2				
pŋ̀kìit	lean against	pàŋ.kìit	2				
pɾ́kàay	opposite	pár.kàay	1				
pɾ́lɔ̀ə	half.hearted	pár.lɔ̀ə	2				
pɾ́lìak	continue	pár.lìak	1				
pɾ́lɔ̀ŋ	gate	pár.lɔ̀ŋ	3				
pɾ́lɔ̀oy	float	pár.lɔ̀oy	2	pər°.looy°	1		
pɾ̀nɛ̀ɛt	charm	pàr.nɛ̀ɛt	1				
pɾ̀nɔ̀	carrying-sling			pər°.nɔ̀	1		
pɾ̀tɲ́	owner	pàr.tɲ́	3				
pɾ́tùh	half.hearted	pár.tùh	2				
pɾ̀yɔ̀oŋ	dragon	pàr.yɔ̀oŋ	10				
tl̀mɔ̀oŋ	outskirts	tál.mɔ̀oŋ	6				
tl̀pák	broken	tàl.pák	2				
tḿlàañ	plaited	tám.làañ	2				
tǹpír	pigeon	tàm.pír	2				
tǹpóh	trough	tàm.póh	2				
tǹpóh	bracken	tàm.póh	4				
tǹhɔ́oy	joke			tən°.hɔoy°	2		
tǹkɨ́an	ascent	tàn.kɨ́an	4	tən°.kɨ́an°	2		
tńlò	pool			tən°.lo°	2		
tń?àay	bamboo mat	tán.àay	2				
tń?ùus	to sound	tán.ùus	1				
tŋ̀kɨ́l	tree stump	tàŋ.kɨ́l	2				
tŋ̀kɨ́r	to sound	tàŋ.kɨ́r	1				
tɲ́kɔ̀	to sound	táŋ.kɔ̀	2				
tŋ̀nì	like that	tàŋ.nì	2				

tɲ́ràp	call each other	táŋ.ràp	1		
tɾ́cà	grow apart	tár.cà	2	tər°.ca°	1
tɾ́kɔ̀t	thought	tár.kɔ̀t	2	tər°.kət°	1
tɾ̀khán	separate	tàr.khán	2		
tɾ̀kɔ́ot	lizard			tər°.kɔɔt°	2
tɾ̀nàŋ	roofed	tàr.nàŋ	2		
tɾ́tɛ̀ɛp	grow closer	tár.tɛ̀ɛp	1		
tɾ́tì	center	tár.tì	2		
tɾ́tɔ̀	double	tár.tɔ̀	2		
tɾ́yès	call each other	tár.yès	1		
tɾ́ʔɔ̀	cock.crow	tár.ʔɔ̀	1		
tɾ̀ʔɔ̀ol	[expressive]	tàr.ʔɔ̀ol	1	tər°.ʔɔol°	1

b. The onsets *h* and *s:*

hḿcò	sad	hám.cò	3		
hḿpíat	kudzu	hám.píat	2		
hḿpràŋ	horse	hám.pràŋ	2		
hḿpúut	change skins	hám.púut	2		
hḿpúuy	nest	hám.púuy	2		
hḿtùuc	bend	hám.tùuc	2		
hńlùk	valley	hán.lùk	1		
hńtàak	below	hán.tàak	2		
hɾ́lɨ̀	recite	hár.lɨ̀	2		
hɾ́lɔ̀oy	float	hár.lɔ̀oy	2		
hɾ́lɔ̀	word	hár.lɔ̀	2		
hɾ́nàa	wet field	hár.nàa	1		
hɾ́yà	shoulder bag	hár.yà	2		
sḿplɔ́	baby	sám.plɔ́	2		
sńlàr	lath	sán.làr	1	sən°.lar°	1
sńlɔ̀	bark	sán.lɔ̀	2		
sńtí	wrist chain	sán.tí	2		
sńtɔ̀or	water pipe	sán.tɔ̀or	4		
sńtrùh	downstream	sán.trùh	2		
sñ̀tùuñ	fair			səñ°.tuuñ°	1
sŋ́kòm	wear by the ear	sáŋ.kòm	1	səŋ°.kom°	5
sŋ́rɔ̀h	go through	sáŋ.rɔ̀h	3		
sɾ́lìaŋ	cogongrass	sár.lìaŋ	2	sər°.liaŋ°	1
sɾ́nìit	rubbing	sár.nìit	1	sər°.niit°	1
sɾ́nìm	medicine	sár.nìm	1		
sɾ́mìat	locust	sát.mìat	3		
sɾ́ʔyúut	fair	sát.ʔyúut	1		

c. The onsets *l* and *r:*

lǹkhwán	well-built	làn.khwán	1	lən°.khwán	1
lŋ̀nàh	[expressive]	làŋ.nàh	2		
rk̀ŋɔ̀ak	beautiful	rək.ŋɔ̀ak	2		
rmŋ̀iim	clothes	rəm.ŋ̀iim	1		
rmɲ̀ɔ́oc	caress	rəm.ɲ̀ɔ́oc	1	rəm°.pɔɔc°	1
rŋ̀cúŋ	chamber			rəŋ°.cúŋ	1
rŋ̀kìl	about	rəŋ.kìl	2		
rŋ̀kɔ́oŋ	mountain ridge	rəŋ.kɔ́oŋ	7		
rŋ̀tɔ̀oŋ	staircase	rəŋ.tɔ̀oŋ	4		

Other performers:

cŋ̀krɔ̀	pile up	cáŋ.krɔ̀	1		
pɾ̀pìñ	star	pàr.pìñ	1		
tk̀nóok	[expressive]	tək.nóok	2		

hŕnìip	spoon	hér.nìip	l	
sŕlɔ̀	bark	sér.lɔ̀	l	
sŕtɛ̀h	bowl	sér.tɛ̀h	l	
lm̀pɔ̀ɔŋ	speak			ləm°.pɔɔŋ°l
lm̀tàaŋ	eggplant	làm.tàaŋ	2	
rǹcɛ̀	[expressive]	ràŋ.cɛ̀	2	

By applying the rules for *hŕlɨ̀ɨ* singing to sesquisyllabic words consisting of one minor and one major syllable, it was found that both the syllable division and the tones assigned to minor syllables in an earlier linguistic analysis of the language correlated extremely well with what was found in the *hŕlɨ̀ɨ* material, which thus provides independent evidence for that analysis.

The study of the *hŕlɨ̀ɨ* style of singing has proven to be fruitful from the points of view of musicology as well as linguistics. This style of singing is different enough from speech to function as a source of new information, and at the same time is so close to speech that the linguistic information is not distorted.

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