PROSODIC PHRASING IN TONAL AND NON-TONAL DIALECTS OF KAMMU

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ABSTRACT

Kammu, a Mon-Khmer language spoken in Northern Laos, is a language that has developed lexical tones rather recently, from the point of view of language history. One of the main dialects of this language is a tone language with high or low tone on each syllable, while the other main dialect lacks lexical tones. The dialects differ only marginally in other respects. This type of language material allows us to investigate how the existence of lexical tones in a language influences the use of intonation, especially as a signal for focus and phrasing.

We performed an introductory study of tonal means of phrasing in the tonal and non-tonal dialects of Kammu. As expected, we do find differences in boundary signaling. In both dialects, we found differences between (pragmatically) marked and unmarked boundaries. At marked phrase boundaries we find signaling of focus and of some expressive meanings. The difference between the two dialects is in the functional load of the intonational gestures. Thus, pragmatically marked boundaries are assigned high pitch in the tonal dialect, while in the non-tonal dialect it is a pitch fall that has high pragmatic load.

Keywords: prosodic phrasing, lexical tones, boundary tones, focal accent, Kammu.

1. INTRODUCTION

As far as we know, Kammu (Khmu), a Mon-Khmer language spoken in Northern Laos, is the only well-described language with one dialect which is a non-tonal language and one which is a tone language, but with no other major phonological differences between the dialects (such as those found e.g. between tonal and non-tonal dialects of Tibetan).

The origin of the tones in the tonal dialect is due to the development of high pitch in vowels following a voiceless consonant and low pitch in vowels following a voiced consonant, and the subsequent merger of voiceless and voiced consonants into the unmarked member of the pair, voiceless for stops and voiced for sonorants. Thus, *puuc* 'to undress' became *púuc* (high tone) in the tonal dialect and *buuc* 'wine' became *pùuc* (low tone). The non-tonal dialect kept the original forms unchanged. Other differences, phonological, morphological or syntactic, between the dialects are marginal, and speakers of different dialects understand each other without difficulty [5, 6].

The question dealt with here is if there are any differences in the way phrasing is signaled between the tonal dialect and the non-tonal dialect of Kammu. In this paper, we have concentrated on phrase-final tonal events. The assumption is that the end of a prosodic group is a domain for realization of boundary tones as well as of focus and pragmatically marked tonal gestures.

Our expectation is to find phrasing by tonal means in the non-tonal dialect while this intonational function is limited in the tonal dialect due to the potential conflict with lexical tones. One assumption is that the non-tonal dialect uses local tonal gestures to signal the end of a prosodic group while in the tonal dialect the use of such gestures would be less prominent due to the occurrence of lexical tones. Generally, signaling of phrasing by a local tonal gesture is not systematically found for tone languages, but most often global contour shapes and pausing signal phrasing. Boundary tones marking the utterance are found in Thai and Chinese: the utterance final syllable can have high pitch (marking question or surprise) or low pitch (having different pragmatic meanings, [4, 1]), independent of the lexical tone of this syllable. Marking of juncture is found at clause ends in Thai [2]. As is the case in many other tone languages, including Chinese and Thai, it seems that phrasing can also be signaled on particles in Kammu, in particular on the sentence-final particle *ni*.

2. SPEECH MATERIAL

Two types of speech material were used for this study:

Material 1 consists of recordings made by Kristina Lindell in the 1970s of one male speaker of the non-tonal dialect and two male speakers of the tonal dialect. The three speakers tell a folktale *Àay Cét Réey* 'Mr Seven Rice-cookers'. The material consists of monologues of a semi-spontaneous nature. The speakers show a high level of engagement and are very animated in some parts of the story.

Material 2 consists of recordings of a third male speaker of the tonal dialect. The goal of recording this material was to get more controlled data with different combinations of the two tones in a focal group. The focal group comprises two mono-syllabic words in utterance final position. The test utterances, which were read four times, were:

1. *Nàa màan pɨ̌an pàar píi*
   'She was pregnant for about two years'
2. *Nàa màan pɨ̌an sáam píi*
   'She was pregnant for about three years'
3. *Nàa màan pɨ̌an pàar nɨ̌m*
   'She was pregnant for about two years'
4. *Nàa màan pɨ̌an sáam nɨ̌m*
   'She was pregnant for about three years'

These seemingly strange sentences allude to a passage in the above-mentioned folktale, well-known to all Kammu, and we have also taken advantage of the fact that there are two different words for 'year', one (*píi)* with high lexical tone, and one (*nɨ̌m*) with low lexical tone.

2.1. Procedure

Material 1 was digitalized, transcribed and translated into English by a native speaker of Kammu (author DT). After that the recordings were prosodically transcribed by two of the authors (AMK and DH) using *Wave-Surfer* and *Praat*. Pause was taken as the main cue of a prosodic boundary. The pitch of the last word (usually monosyllabic) of each prosodic phrase was compared to the pitch of the immediately preceding word. When the phrase final word had higher pitch than the preceding word it was labeled "high", and if it had lower pitch it was labeled "low".

Material 2 was analyzed auditorily and visually in *Praat* to obtain data supplementing observations made on Material 1.

3. RESULTS AND DISCUSSION

We make a distinction between marked and unmarked phrase boundaries. Even though this distinction is made on different grounds in the tonal and non-tonal dialects, it will be shown that it captures the same functions in the two dialects.

In the tonal dialect, boundaries are regarded as unmarked if the intonation coincides with the lexical tone: Boundaries with high lexical tone realized with high pitch (as in Figure 2) are labeled "unmarked high" and boundaries with low lexical tone realized with low pitch are labeled "unmarked low". Boundaries with a difference between the lexical tone and the actual intonation are marked. We find e.g. high or rising intonation on low lexical tones, such cases are called "marked high" boundaries (see Figure 3 for an example).

In the non-tonal dialect, we base the labeling of boundaries as marked and unmarked on observations concerning the signaling of focus. A contextual analysis of the material indicates that there are two ways of signaling focal accent in the non-tonal dialect: falling pitch and high (or rising) pitch. These accents occur within the phrase, and also phrase finally, in which case they signal phrase boundaries and are labeled "marked low" and "marked high", respectively. There are pragmatic differences between the two but this is not the subject of the present investigation. In addition to these boundary types, low flat pitch is found phrase finally. In that case the final word is outside the scope of focus, and this type of boundary is analyzed as "unmarked low". The category "unmarked high" does not occur in the non-tonal dialect.

Although different theories propose different numbers of units and different rules for their identification, prosodic units such as (prosodic) word, (prosodic) phrase and (prosodic) utterance, organized hierarchically, are generally recognized [3]. In the material analyzed we did not find any clear distinction between a prosodic phrase and a prosodic utterance. Therefore we operate with only one prosodic unit above the word, namely the prosodic phrase. A considerable number of the prosodic phrases that we identified end with interjections such as 'oh, well, then'. Pauses occur in the material even within prosodic phrases, due

e.g. to hesitation. Boundaries of this type of prosodic groups are also included in our results.

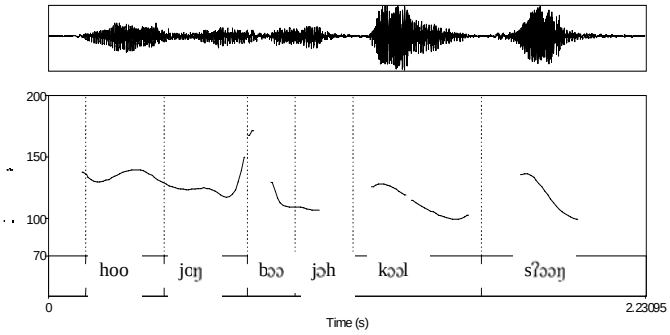
Table 1: Number and type of phrase boundaries for one speaker of the non-tonal dialect and two speakers of the tonal dialect.

	Non-tonal	*Tonal 1*	*Tonal 2*
Unmarked low	24	30	32
Unmarked high	–	12	12
Marked low	23	1	3
Marked high	14	10	8
Total	61	53	55

3.1. Boundary signaling in the non-tonal dialect

Table 1 shows the number of phrase boundaries of different types for the three speakers in Material 1. In the non-tonal dialect there are more occurrences of low than of high boundaries. Marked and unmarked low boundaries have different phonetic realizations in this dialect. Unmarked low boundaries are realized with a level pitch while marked low boundaries are realized as a pitch fall. This falling gesture is also found within phrases and functions as a focal accent. One occurrence of a marked low boundary is illustrated in Figure 1.

Figure 1: F0 contour of the phrase /hoo, joŋ bɔɔ jɔh kɔɔl sʔɔɔŋ/ ‘Over there your father goes to cut trees’ realized with focus on the last two words (‘cut trees’). Non-tonal dialect.



High boundaries are realized as a high level pitch and in three cases as a pitch rise. A high gesture is also found within phrases signaling focus. There seem to be differences in pragmatic meaning between the high and the low focal gesture, in that the low focal accent is more neutral, while the high focal accent is more expressive.

3.2. Boundary signaling in the tonal dialect

We find no dissimilarities between the two speakers of the tonal dialect in Material 1. A question to be addressed is whether unmarked high boundaries are indeed always unmarked. Here we do find differences between the phonetic realizations of the high lexical tone on boundaries denoted by us as unmarked. It could be supposed that the realization of a high final lexical tone in higher frequencies signals marked high boundary tone and does have a pragmatic function. A study of this is planned as the next step of our investigation.

One striking feature is the low incidence of marked low boundaries in the tonal dialects, i.e. cases when the high lexical tone is produced with low pitch. Two reasons for this can be proposed. First, low pitch conflicts with the high lexical tone. Second, we do not find any low or falling focal accents in our material. Our observations are that the focal accent within a phrase is realized by pitch raising. Thus, low pitch seems to have low, if any, pragmatic functional load in the tonal dialect.

These results were compared with Material 2. In all cases in Material 2 we find high boundaries at the end of the utterances. Their realization depends on the lexical tone. The utterances end with high level pitch when the lexical tone is high and with a rising tonal gesture when the lexical tone is low, see Figure 2 and Figure 3. Pragmatically, the utterance final word is a part of a focal group. Thus both types of boundaries should be analyzed as (pragmatically) marked high boundary tones. This supports our assumption about the necessity to distinguish between high boundaries on high lexical tones as marked vs. unmarked.

Figure 2: F0 contour of the utterance /nàa màan pɨ̀an pàar píi/ 'She was pregnant for about two years' with focus on the last two words. Tonal dialect.

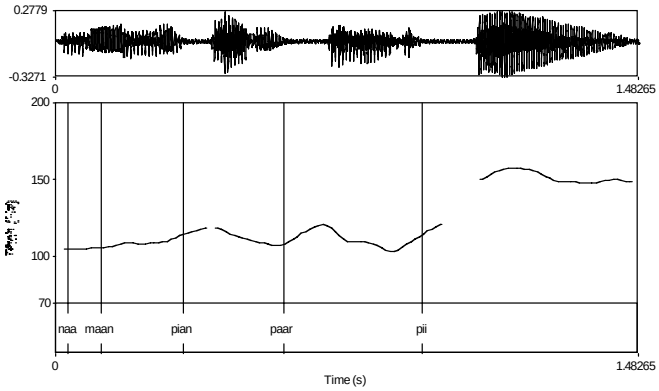
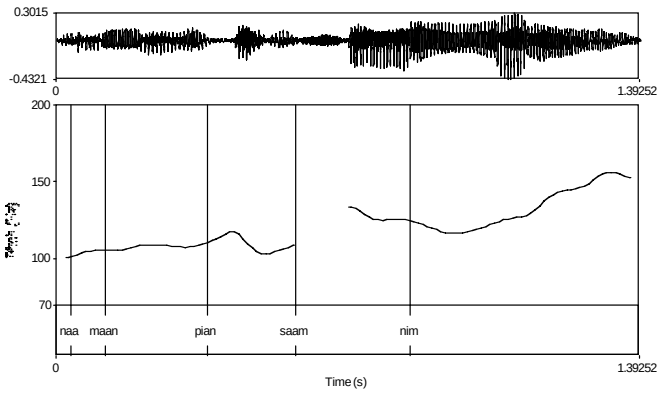


Figure 3: F0 contour of the utterance /nàa màan pɨ̀an sáam nɨ̀m/ "She was pregnant for about three years" realized with focus on the last two words. Tonal dialect.



The fact that we find differences in the tonal contours at the marked high boundaries depending on the type of the lexical tone is interesting. Our earlier observation is that focal accent is realized as high pitch in the tonal dialect. Thus we can suppose that at marked boundaries on the low lexical tone we observe two tonal events with two different functions. The beginning of the rising gesture is the realization of the low lexical tone while the following pitch rise functions at the phrase level (see e.g. Figure 3). Also in Material 1 the tonal shape of the marked high boundaries is in many cases a tonal rise (seven of eight cases for the first speaker, and five of ten cases for the second one).

3.3. Comparison of prosodic phrasing in the tonal and non-tonal dialects

As expected, we do find differences in signaling prosodic boundaries in the tonal and non-tonal dialects of Kammu. Both dialects use marked and unmarked boundaries, and in both cases, marked boundaries signal focus and other pragmatic functions (e.g. a high degree of expressiveness is often found in Material 1). The differences between the dialects are to be found in the phonetic realization of the marked prosodic boundaries. Thus, in the non-tonal dialect low (falling) boundaries are more frequent than high boundaries, while in the tonal dialect almost all marked boundaries are high. The tonal fall has a high functional load in the non-tonal dialect in that it signals focus. In the tonal dialect we could not identify any low gestures with focal function, and instead a raising of the F0 level is used for pragmatic purposes.

4. ACKNOWLEDGMENT

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