LUND UNIVERSITY

Boundary signaling in tonal and non-tonal dialects of Kammu

Karlsson, Anastasia; House, David; Svantesson, Jan-Olof; Tayanin, Damrong

Boundary signaling in tonal and non-tonal dialects of Kammu

Anastasia Karlsson[1], David House[2], Jan-Olof Svantesson[1] and Damrong Tayanin[1]
[1]Department of Linguistics and Phonetics, Centre for Languages and Literature, Lund University
[2]Department of Speech, Music and Hearing, School of Computer Science and Communication, KTH, Stockholm

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 of the "East Asian" type 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 given language influences the use of intonation in that language, especially as a signal for focus and phrasing.

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

Introduction

As far as we know, Kammu 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 of 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 (Svantesson, 1983; Svantesson and House, 2006).

The question dealt with here concerns whether or not there are any differences in phrasing between tonal and non-tonal dialects of Kammu. In this paper, we have concentrated on phrase-final tonal events. The background 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 tone dialects 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 dialects 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 get a high (marking question or surprise) or a low tone (having different pragmatic meanings (Chen, 1970; Abramson, 1962)), independent of the lexical tone of this syllable. Marking of

juncture is found at clause ends in Thai (Abramson, 1979).

Speech material

Recordings (made by Kristina Lindell in the 1970's) of three male speakers of three Kammu dialects were analyzed. The three dialects are Cwaa and Kwɛɛn (tone dialects of North Kammu) and Uu (the non-tonal dialect of Eastern Kammu). The three speakers retell 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 expressive in some parts of the story. This material is referred to here as Material 1.

Material 2 is comprised of recordings of a male speaker of a tone dialect (Yuan) of North Kammu. The goal of recording this material was to get a more controlled data with different combinations of the two tones in a focal group. The focal group comprises two monosyllabic words in the utterance final position. There are two different words in Kammu for year, one with a high tone and one with a low tone. The test utterances are:

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'

Total occurences: 16.

Procedure

Material 1 was digitalized, transcribed and translated into English by a native speaker of Kammu (one of the authors). After that the recordings were prosodically transcribed by two of the authors using Wave-Surfer and Praat. Pause was taken as the main cue of a prosodic boundary. The tonal properties of the last word (usually monosyllabic) of each prosodic phrase were established in relation to the tonal properties of the immediately preceding word.

The phrase final word realized on frequencies higher than those of the preceding word was transcribed as "high", and "low" when realized on lower frequencies.

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

Results

A distinction is made between marked and unmarked phrase boundaries. In the tone dialects, boundaries in which intonation coincides with the type of the lexical tone are unmarked. Thus, "high unmarked" are boundaries with high lexical tone realized with high pitch and "low unmarked" are boundaries with low lexical tone realized with low pitch. Marked are boundaries with differences between the lexical tone and the actual intonation. We find e.g. high or rising intonation on low lexical tones, such cases are called "high marked" boundaries.

In the non-tonal dialect the distinction between marked and unmarked boundaries is based on the observations on the tonal signaling of focus. Focal accent is of two types in Uu dialect, the falling and the high/rising tonal gesture. There are pragmatic differences between the two gestures but they are not the subject of the present investigation. These gestures are also found phrase finally. Analysis of the context shows that these gestures function as focus signaling. Such boundaries are described as "low marked" and "high marked". In addition to these boundary types, the low flat tone is found phrase finally. In these cases the final word is outside the scope of the focus, and this type of boundary is analyzed as "low unmarked". The category "high unmarked" does not occur in the non-tonal dialect.

Even though the distinction between unmarked and marked boundaries is made on different grounds in the tonal vs. non-tonal dialects, it will be shown that this distinction captures the same functions in the two types of dialects. Statistics are shown in Table 1.

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 (Bruce, 1988). 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 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 statistics.

Table 1: Number and type of phrase boundaries in the three dialects Uu *(non-tonal dialect),* Cwaa *and* Kwɛɛn *(tonal dialects). One speaker per dialect.*

	Uu	Cwaa	Kwɛɛn
Total boundaries	61	53	55
Unmarked low	24	30	32
Unmarked high	-	12	12
Marked low	23	1	3
Marked high	14	10	8

Discussion

Boundary signaling in the non-tonal dialect

In the non-tonal dialect a greater number of occurrences of low than high boundaries is found. Marked and unmarked low boundaries have different phonetic realization. Unmarked low boundaries are realized with a level tone while marked low boundaries are realized as a tonal 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.

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

Boundary signalling in the tonal dialects

We find no dissimilarities between the two tonal dialects. A question to be addressed is whether unmarked high boundaries are indeed always unmarked. Here we do find differences between
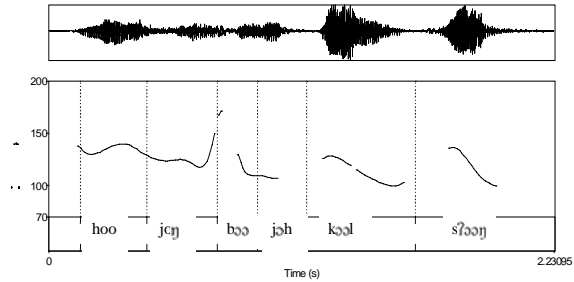

Figure 1: F0 contour of the phrase /hoo, joŋ bɔɔ jɔh kɔɔl sʔɔɔŋ/ *"Over there father you go cut tree" realized with focus on the last two words. Male speaker, Uu dialect (non-tonal).*

the phonetic realizations of the high lexical tones 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. This study is planned as the next step of our investigation.

One striking feature is the small number of marked low boundaries in the tonal dialects, i.e. cases when the high lexical tone is produced with low intonation. Two reasons can be proposed here. First, low intonation 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 intonation seems to have a low if any functional loading in the tonal dialects.

These results were matched with Material 2. In all cases in Material 2 we find high boundaries at the end of the utterances. Their realization depends on the type of the lexical tone. The utterances end with a high level tone when the lexical tone is high (Figure 2) and with a rising tonal gesture when the lexical tone is low (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.

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 the focal accent is realized as a high tone within the tonal dialects. 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 tonal rise functions at the phrase level. Also in Material 1 the tonal shape of the high marked boundaries is in many cases a tonal rise (seven of eight cases in Kwɛɛn and five of ten cases in Cwaa).
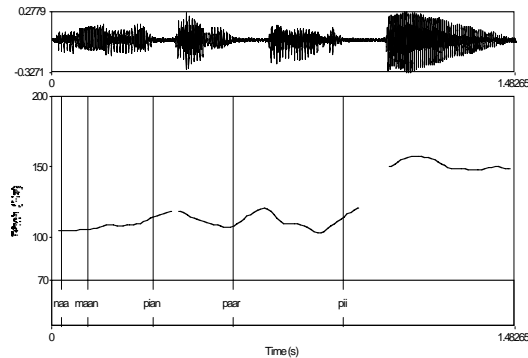

Figure 2: F0 contour of utterance 1: /nàa màan pǐan pàar píi/ "She was pregnant for about two years" realized with focus on the last two words. Male speaker, Yuan dialect (tonal).
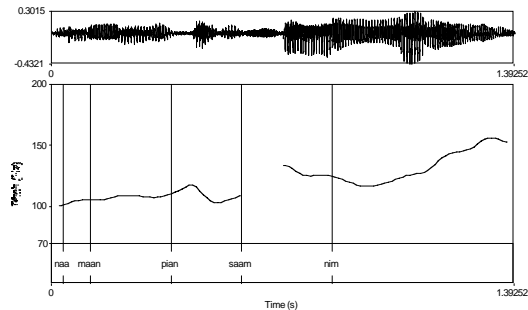

Figure 3: F0 contour of utterance 4: /nàa màan pǐan sáam nǐm/ "She was pregnant for about three years" realized with focus on the last two words. Male speaker, Yuan dialect (tonal).

Comparison of boundary signals in the tonal vs. non-tonal dialects

As awaited we do find differences in signaling prosodic boundaries in the tonal and non-tonal dialects of Kammu. Both types of 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 in the phonetic realization of the marked prosodic boundaries. Thus, in the non-tonal dialect low (falling) boundaries are more frequent, while in the tonal dialects almost only high marked boundaries are found. The tonal fall has a high functional load in the non-tonal dialect in that it signals focus. In the tonal dialects we could not identify any low gestures with focal function, and instead a raising of F0 level is used for pragmatic purposes.

Acknowledgment

References

Abramson, Arthur S. (1962). The vowels and tones of Standard Thai: acoustical measurements and experiments. *International Journal of American Linguistics,* 28 (No. 2 Part III)

Abramson, Arthur S. (1979). Lexical tone and sentence prosody in Thai. In: Fischer-Jørgensen, Eli, Rischel, Jørgen, Thorsen, Nina (eds.), *Proceedings of The Ninth International Conference of Phonetic Sciences.* Copenhagen, 2:380-87.

Bruce, Gösta. (1988). *Allmän och svensk prosodi. (Praktisk lingvistik* 16). Lund: Dept. of Linguistics and Phonetics, Lund University.

Chao, Yuen Ren. (1970). *A grammar of spoken Chinese.* Berkeley: University of California Press.

Svantesson, Jan-Olof. (1983). *Kammu phonology and morphology.* Lund: Gleerup.

Svantesson, Jan-Olof and House, David. (2006). Tone production, tone perception and Kammu tonogenesis. *Phonology* 23, 309-33.