# Variation in Prosodic Phrasing in Bodo

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This paper presents a production study of the way the prosodic contour of Bodo sentences is altered as a result of violating the normal syntactic order of phrases. Bodo belongs to the Tibeto-Burman group of languages and it lexically distinguishes L and H tones. Brahma and Sarmah (2012) shows that the H tone in Bodo is pronounced with a rising contour and the L tone with a falling contour. Bodo follows the SOV pattern of word order. The TBU in Bodo is the syllable and lexical tone surfaces on the rightmost syllable both in derived and non-derived disyllabic words (Sarmah, 2004). The study presented here is based on data collected from 4 male speakers of Bodo. The data set consisted of 195 scripted sentences, each eliciting a particular type of utterance with different lexical tonal pattern as well as of different length. Each iteration of the individual sentences is analyzed by extracting its pitch contour using the software- Praat 5.3.04_win32 (Boersma and Weenink, 2012). For all the iterations, time normalized f0 contours, mean pitch, max pitch, min pitch and duration are extracted using the script Prosody Pro (Xu, 2013). The results show that in sequences of lexical tones in Bodo, all except the ones occurring at the edges of Intonational Phrases (IP) preserve their underlying specification. In an IP consisting of a sequence of High tones, each successive tone undergoes non-automatic downstepping. Thus in a sentence consisting of four words specified with High tones like *bieú bibarinú tʰaizoú hɔrduŋ́* 'He has given mango to Bibari', the High tones are realized as H ↓H ↓H H where the last High tone succumbs to the L% (Figure 1). A detailed observation of the various sentence types has revealed that the pattern of non-automatic downstepping of successive High tones in Bodo operate within the domain of intermediate phrase (*ip*). A preceding High tone, forming part of another intermediate phrase, cannot initiate the process of downstepping of the following High tones. An all High tone sentence with a pre-posed topicalized constituent presents an instance of this process of inserting an *ip* boundary after the pre-posed element. Figure 2, with the indirect object pre-posed to the sentence initial position, shows how the second High tone is realized at a higher target than the first one. Another instance of prosodic variation is presented by *ip*s which do not adhere to any syntactic organization. The f0 contour of a sentence like (1) shows that the noun *daoduí* 'egg' and *zanaiá muzáŋ 'eating* is good' form two different prosodic units, although the second *ip* here does not have any syntactic grounding. Based on acoustic evidence of similar nature, this paper describes how the global contour pattern in Bodo sentences vary both because of syntactic reorganization and prosodic factors. The global pattern of declination and downstepping in a Tibeto-Burman (TB) language like Kuki Thaadow has been described in studies like Kim (2005), and the findings presented in this paper also add more to the phenomenon of intonation in tone languages.
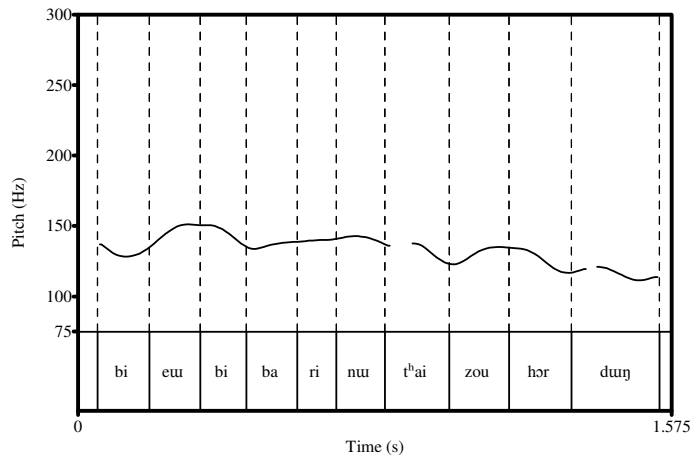
Figure 1: Pitch track of *bi-eɯ́  bibari-nɯ́ tʰaizoú hɔr-dɯɳ́*
he-Nom Bibari-Dat mango give-Prf
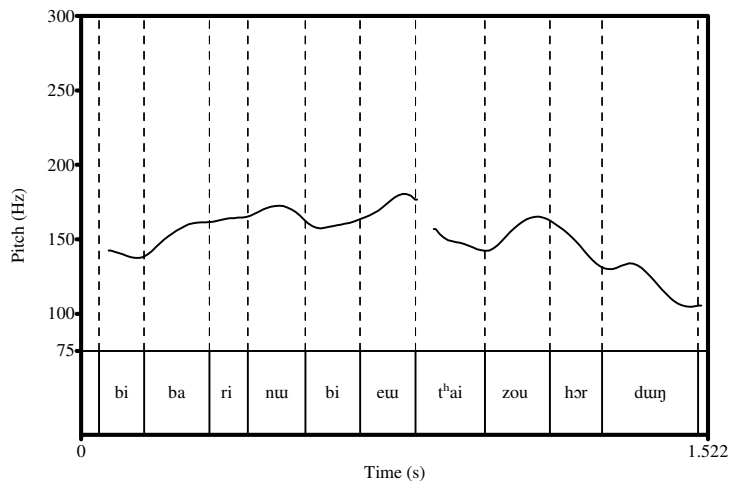'He has given mango to Bibari'



Figure 2: Pitch track of *bibari-nɯ́  bi-eɯ́ tʰaizoú hɔr-dɯɳ́*
Bibari-Dat he-Nom mango give-Prf
'(It is to) Bibari, he has given mango'

(1) *daodɯí   za-naiá   mɯzáŋ*
     Egg      eat-Nom good
     Eating egg (is) good.


References:

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