

Stress, accent and intonation in Sherpa (Sino-Tibetan)

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For a given pitch contour in a given language, it is not clear what the differences are between tone, accent and intonation, other than as they are phonologically or functionally defined. Bolinger (1961, 1972), Beckman (1986) and others have defined tone as paradigmatic, like stress, as a feature of the lexicon, and intonation and accent as syntagmatic, having a functional or organizational role in grouping and defining relationships among phrases in an utterance. However, stress is also organizational and relational in character, as the basis of rhythm and metric structure, and phonetic criteria alone will not distinguish tone from accent or intonation. Yet these concepts are robust enough to be powerful discriminating tools in language typology and phonological theory.

In this paper we will provide an analysis of the prosodic structure of Sherpa, a Sino-Tibetan language spoken in the upper Khumbu Valley in Nepal from acoustic recordings gathered in the field. While tonal contrasts in Sherpa have been observed (Kent, 1970; Schöttelndreyer, 1971; Kelly, 2004), characterizing the tonal patterns in Sherpa has been elusive, the prosodic system is known to be confounded by the complex interaction of several factors including, stress, accent and intonation with the linguistic structures. By far the clearest and most succinct statement of the tonal system is Kelly's (2004) "*a word level contrast between two falling tones, one which begins higher than the other, overlaid with a stress system.*"

Analyzing data from 4 speakers (3 male one female) reciting a short list of isolated words and short conversational utterances, and working from tone contours and a small set of lexical items, we found evidence for two contrastive pitch contours showing a **clear bimodal distribution pattern**- even in a speaker with a very narrow pitch range. Both contours were falling, one beginning higher than the other, as Kelly noted. We also found evidence for canonical intonational marking, a fall and a rise, which interacted with tonal patterns, recovered from the short conversational recordings. Additionally, we found evidence that both these patterns interact with a stress system at the structural word level (words are primarily mono- and bi-syllabic). In effect we identify the Sherpa system, not as a tone system, but as a stress and contrastive accent language, with intonational system.

Stress and pitch accent hypothesis: Sherpa

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Word stress 'σ

Word accent 'σ

The suggested word typology:

	*				
mono-syllables	'σ		'σ		
	*			*	
bi-syllables	'σ σ	'σ σ		σ 'σ	σ 'σ

Accent, like stress, is lexical; pitch (H) is assigned to accented syllables. Stress and accent are independent properties (stress attracts accent) and, though lexical, they act as organizational and relational features in utterances. We lay out data and analysis and provide an explanation of how this information is recoverable from the acoustic output as a basis for modeling.

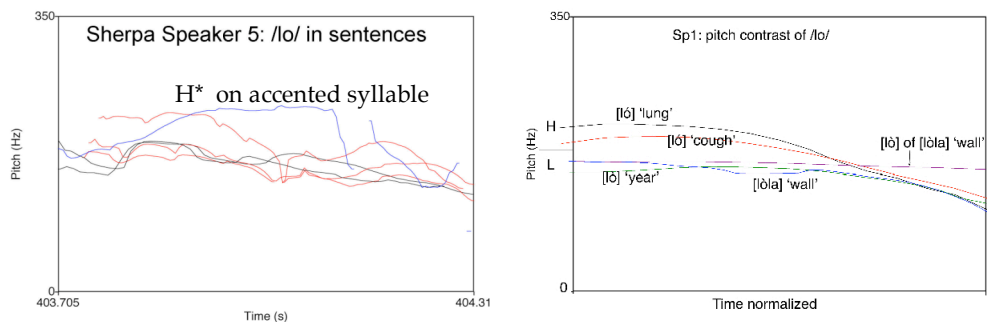


Figure 1a: Pitch contour of 6 utterances (three sentences) from one speaker (male) of Sherpa (Sino-Tibetan) containing the syllable /lo/. The rise in the (blue) utterance is to the contrastively accented word lo' 'cough'. (b) bimodal distribution of pitch accent types, H vs L falling (intonational) and medial (dashed- flat).

References

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