Reflexes of fundamental frequency as an acoustic correlate of stress in Rebkong Amdo Tibetan

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Cross-linguistically, relative syllable prominence can be conveyed by four acoustic resources: pitch (measured as fundamental frequency), loudness (intensity or spectral tilt), vowel duration, and/or vowel quality. Data from Rebkong Amdo Tibetan illustrates that these resources may be utilized quite differently by different speakers – or even by the same speaker.

Rebkong Amdo is a non-tonal variety of Tibetan spoken in Rebkong County, Qinghai Province, PRC. Recordings of six speakers of Rebkong Amdo were collected by the author in Qinghai and in Kathmandu, Nepal; these were analyzed to determine the acoustic correlates of stress in disyllabic words, which dominate the lexicon.

Disyllabic non-verbs (nouns, adjectives, and numerals) are stressed on the second syllable ($\sigma_2$); the primary acoustic correlate of this $\sigma_2$ stress is fundamental frequency (F0). Disyllabic verbs, in contrast, appear to be stressed on the first syllable ($\sigma_1$); evidence from a limited word list indicates that $\sigma_1$ stress is conveyed by both fundamental frequency and intensity.

 Speakers employ different strategies of manipulating F0 in order to convey the relative prominence of $\sigma_2$ in non-verbs. That is, stress can be expressed by pitch height or by pitch movement: (a) the pitch contour may be flat in both syllables but higher in $\sigma_2$; (b) the pitch contour may be flat or slope gently up or down in $\sigma_1$ but fall sharply and steadily in $\sigma_2$; or (c) the pitch contour may be generally flat or curve gently in $\sigma_1$ but define a prominent arcing curve in $\sigma_2$. These patterns are in free variation: they do not correspond systematically to segmental content, syllable structure, or morphological composition.

While one speaker of Rebkong Amdo consistently produces non-verbs that fit pattern (a), another produces some non-verbs that fit pattern (a) and some that fit patterns (b) and (c). But whether $\sigma_2$ is characterized by a higher mean F0 (Hz), a steeper pitch slope (Hz/100 msec), or both, the prominence of fundamental frequency is quantifiable and consistent. These patterns can thus be regarded as complementary reflexes of F0. Furthermore, as Amdo is one of the conservative “Archaic” dialects of Tibetan, these findings contribute to the reconstruction of similar prosodic and acoustic patterns for Proto-Tibetan, the common parent of the more than 200 modern spoken varieties of the language.