Linking tone and stress: the role of metrical structure in Kubeo

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In this paper I present an analysis of word prosody in Kubeo, an Eastern Tukanoan language spoken in the Northwest Amazon (cf. Chacon 2012). The paper will demonstrate that Kubeo has both STRESS and TONE systems, though the actual way they correlate is distinct at different phonological levels. The analysis I present for this complex system contributes to the view that stress and tone are PROTO-TYPES in the way languages organize word-level prosody (cf. Hyman 2006), and that the output words is the result of how both systems behave independently and co-dependently, whether in the underlying, derivational or output level.

The derivation of Kubeo word-level tone melodies is both relative to and secondary to the derivation of the metrical structure, which is created by parsing words into iambic feet iteratively, beginning from the left edge of phonological words. The left-most foot head bears primary stress and all subsequent foot heads bear secondary stress, creating a rhythmic alternation of stressed and non-stressed syllables. Every word has a foot, even monosyllabic ones.

Kubeo has three underlying contrastive tones, H, HL and Ø, which are assigned to the first foot head at the left edge of the word, coinciding with the location of primary stress. Tone spreading is predictable and constrained by metrical structure: in simple terms, tone spreading targets one and only one foot to the right of the primary stressed syllable. Words with an underlying H tone have a rising melody over the first two feet, as each syllable is realized with a higher pitch than the previous syllable. Words with underlying HL tones create a falling melody, as each syllable is realized with a lower pitch than the previous syllables. Words with Ø tone have no particular rising or falling pitch patterns, but evince the rhythmic alternation of the stressed syllables as determined by the metrical structure.

The output form of words is the result of how stress and tone manipulate the phonetics of duration and pitch. Increased duration is the default feature of both primary and secondary stressed syllables (a typical behavior of languages with stress and tones systems [cf. Hyman 2006, Hulst 2010] or with "even iambic" feet [cf. Hayes 1995]). Pitch is primarily manipulated by the dynamics of tone spreading, though in syllables falling outside the scope of tone spreading or in the absence of underlying tones (i.e. Ø), stress can also increase the pitch level. Thus, in the case of pitch one finds a hierarchy of prosodic categories, with tone having priority over stress. This follows the observation that pitch is prototypically associated with tone, and less so with stress (cf. Hyman 2006).

I propose that stress and tone are independent systems in Kubeo and that the language cannot be "reduced" to "pitch-accent" or "tone-accent" types. Furthermore, I analyze the stress and tone correlation in Kubeo in a modular fashion: (i) in the output forms, the interaction between stress and tone regarding pitch follows the hierarchy and proto-type approach given in the previous paragraph; (ii) in the derivation, stress is a *by-product* of the metrical structure and tones are *parasitic* to the metrical structure.

Point (ii) above is based in a non-standard view that metrical structure is an independent phonological process, required by prosodic phonology, and function as the actual link between stress and tones in Kubeo. This analysis is particularly relevant to ongoing debates about languages and "types" where *rhythm*, *prominence* and *pitch* are in a complex interrelationship (cf. Rice 1990, Pearce 2006, Zec 2006, Hyman 2006, van der Hulst 2010).

References cited

Chacon, Thiago Costa. 2012. The Phonology and Morphology of Kubeo: the documentation, theory and description of an Amazonian language. PhD dissertation. University of Hawai'i at Manoa.

Hayes, Bruce. 1995. Metrical Stress Theory. Principles and case studies. The University of Chicago Press, Chicago.

van der Hulst, Harry. 2010. In A Survey of Word Accentual Patterns in the Languages of the World, ed. by Harry van der Hulst, Rob Goedemans, and Ellen van Zanten. 1–54. Berlin: Mouton de Gruyter.

Hyman, Larry M. 2006. Word Prosodic Typology. Phonology 23:2:225-257. Cambridge University Press.

Pearce, Mary. The interaction between metrical structure and tone in Kera. *Phonology* 23 (2006): 259-286.

Rice, Keren. Prosodic Constituency in Hare (Athapaskan): Evidence for the Foot. *Lingua 82* (1990): 201-244.

Zec, Draga. Footed tones and tonal feet: rhythmic constituency in a pitch-accent language. *Phonology* 16 (1999): 225-264.