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Lexical prosody, typological variation, and an integrated dynamical model of prosodic structure

Models of prosody have been considering boundaries (that mark phrase edges) and prominence (that marks the rhythmically or conceptually important parts of an utterance) as independent, and the temporal, tonal and pausal dimensions of these prosodic functions as also independent. Our work probes their integration, and reveals that lexical prosody plays a pivotal role.

Using kinematic data of Greek, Japanese and Korean, we begin by assessing the effects of prominence on the coordination of temporal and constriction events at prosodic boundaries. The test languages represent different types of the prosodic typology: Greek uses lexical stress, Japanese lexical pitch accent, while Korean does not have any lexically-defined prosodic marker. We show that lexical prominence, i.e., stress in Greek and pitch accent in Japanese, has a systematic effect on the initiation of phrase-final lengthening. In Korean, which lacks lexical prosody, it is the location of phrasal prominence that affects phrase-final lengthening instead. Interestingly, prominence marking in Korean is itself realized by the means of prosodic boundaries, allowing us thus to see the connection between prominence- and boundary-marking more directly.

Further analyses of the Greek data show that phrasal prominence (marked mainly by a pitch accent on the lexically stressed syllable) does not alter in any way the interaction between lexical stress and phrase-final lengthening. Moreover, stress has an effect on boundary tone coordination that is parallel to that on phrase-final lengthening. Both events are initiated earlier within phrase-final words with non-final stress as opposed to final stress. The effect of stress extends to the articulatory configurations during inter-phrasal pauses, which reach their point of achievement later in words with final stress than in words with non-final stress and at a stable temporal distance from boundary tone onsets.

Examining next the supralaryngeal kinematic control of prominence in Greek, we present evidence that articulatory gestures under prominence are longer, larger and faster than their non-prominent counterparts. Importantly for our understanding of how boundary marking works, these kinematic effects mark solely stress, not being further modified by pitch accent and/or focus, and extend beyond the stressed syllable. Examination of the tonal, pausal and prominence system of the other test languages is ongoing.

This work challenges current definitions of prosodic functions, brings linguistic attention to the ways that prosodic events and prosodic levels interact, and proposes an integrated dynamical model of prosodic structure that captures significant dimensions of typological variation.