

Lexical tones are timed to supralaryngeal articulatory events:

Converging evidence from variability, stability, and informativity in BKK Thai

In this talk, I present an investigation of tone production by speakers of Bangkok (BKK) Thai. I focus on three questions: (i) whether tones are produced timed to articulatory events or their acoustic consequences, (ii) on the nature of the time-locking mechanism, and (iii) on the types of coordination involved. The data I present shows that the most stable lag holds between the tonal onset and the vocalic gesture onset. Three pieces of evidence, uncovered by means of newly developed methods, point to this conclusion. Lower variability of this articulatory lag; higher stability in the face of rate and tonal context changes; higher mutual information between tonal onset and vocalic gesture initiation. The uncovered **articulatory** timing of lexical tone onsets also suggests a positive time-locking pattern, deviating from strict synchronicity. On the basis of the evidence uncovered, I also delve into problems that tones pose for their integration into models of speech production. The first is that our conclusions might be influenced by methodologies relying on acoustic f_0 -based tonal onset estimation for tones. That is because, when evaluating the impact of tone on articulatory trajectories, synchronic patterns emerge, particularly in the jaw kinematics. Second, In a post-hoc comparison, the data I present also suggests that the most stable coordination is onset-to-onset and not target-to-target, a type of coordination suggested by recent models of speech production. Third, an observed puzzling reduction in transgestural acoustic lags with a decrease in rate can be interpreted straightforwardly within the onset-to-onset coordination framework. I conclude that Bangkok Thai speakers time their production of lexical tones to an articulatory event, the vocalic gesture, in an onset-to-onset fashion. I evaluate the consequences of my findings against various competing models of speech production.