The Phonetics and Phonology of Fataluku Intonational Downstep

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Intonational analysis of any language must deal with the crucial question of how many discrete tonal levels are necessary to account for the observed prosodic behavior. Though the autosegmental-metrical theory of intonational phonology would ideally address all intonational systems with a binary distinction between high (H) and low (L) tonal targets, more recent research in the AM framework has suggested that levels such as mid (M), downstepped high (!H) or superhigh (^H) may be required for a number of languages (Jun and Fletcher 2015). In this talk, I present a phonetic description of the intonational high peaks occurring in broad focus utterances in the language Fataluku. I show how the substantial variation observed in the absolute f0 frequency of peaks can be explained with reference to a phonological process of downstep operating on a single underlying phonological level (H) and discuss the relationship between phonetics and phonology in downstep.

The focus of this investigation, Fataluku (ISO 639-3 dgd, IPA [fatáluku]), is an underdocumented Papuan language spoken on the eastern tip of East Timor, in island Southeast Asia (Lewis et al. 2015). Fataluku exhibits a pattern of intonational contours aligned with the accentual phrase (AP). An accentual phrase typically contains between one and four words, and bears a rising-falling intonational melody that peaks on the second mora. This system can be analyzed with reference to a high (H) target aligned with the second mora of each AP (Heston 2015).

While this analysis explains the shape of AP-level contours, it does not address the substantial variability observed in the height of intonational “high” peaks, even within the same utterance. This brings up an important question: is it necessary to posit multiple levels of intonational peaks (including perhaps a downstepped high or mid category), or can the discrepancy in frequency be attributed to phonological processes? A related question concerns the analysis of the final boundary tone for interrogatives, a rising-falling pattern over the final syllable the author has previously analyzed as L+HL%.

Does the phonetic realization of this boundary tone accord with the realization of other high tones in Fataluku’s intonational phonology?

In order to address these questions, I analyze the speech of six native speakers of Fataluku, examining broad focus declaratives and polar questions. Each speaker was recorded saying twelve pairs of declarative and polar question. Materials included words of varying lengths, from one to four syllables; syllable weight was also varied. Two to three repetitions were collected from each speaker, the most natural of which were chosen for analysis.

Results confirm previous observations, in that, while previous work recognizes only one category of high tonal target, actual phonetic realizations of this high differ significantly in their absolute and relative f0. The general pattern is for the first peak in an intonational phrase (IP) to be realized with the highest f0; each peak is subsequently
lower than the preceding. Linear mixed effects models are used to determine the contribution of continuous (e.g., time) and categorical (e.g., position in the IP) factors in the realization of intonational tones.

I conclude that, at least in the case of broad focus utterances, only one level of high tone needs to be posited. A phonological process of downstep causes each phonological high in an IP to be realized in a successively lower and narrower pitch range. The L+HL% boundary tone for questions is realized in an especially narrow pitch range: I attribute this to the combined effects of downstep and intonational undershoot, rather than positing an intermediate mid or downstepped high tone phonologically.

This study contributes to the description of the prosody of Fataluku, a language whose prosody has posed a number of challenges to previous analyses. This study also contributes to the study of intonational downstep, comparing the natural phonetic effects of downdrift with the effects of categorically-triggered phonological changes. Future work will address the effects of focus on tonal realization, as well as the relationship between prosodic and syntactic phrasing.

Selected References


