Towards a theory of stress and intonation in Besemah: An acoustic study
Bradley J. McDonnell
University of California, Santa Barbara

The majority of Austronesian languages of Indonesia have been said to have predictable stress. Traditional analyses based on impressionistic judgments state that stress falls on either the penultimate, as in Standard Indonesian (Cohn, 1989), or the final syllable, as in Acehnese (Durie, 1985). However, recent attempts to characterize stress in Austronesian languages of Indonesia have demonstrated that determining word-level stress is not trivial (Ebing (1997) for Standard Indonesian, van Heuven, Roosman, & van Zanten (2008) for Betawi Malay, and Stoel (2006) for Banyumas Javanese). In fact, these studies have shown that such Austronesian languages show no evidence for word-level stress.

Besemah is a conservative Malayic language in the highlands of southwest Sumatra that has not received a description of its prosodic system. Impressionistically, Besemah is like many languages of Sumatra where stress appears to be realized on the final syllable of words spoken in isolation. However, it is unclear (1) if stress is a word- and phrase-level phenomenon or only a phrase-level phenomenon, (2) what the acoustic correlates of stress are in Besemah, and (3) how these acoustic correlates of stress (duration, F0, and intensity) interact with larger prosodic units to cue word-level prominence. In this paper, I present phonetic data showing that word-level stress falls on the final syllable of the word, despite several effects from phrase-level prominence that obscure patterns of word-level stress.

This study of Besemah prosody is based on two data sets. The first data set includes 240 instances of 20 tokens produced twice in isolation and once in a frame by two male and two female participants recorded in the village of Karang Tanding, South Sumatra. I measured the average duration, F0, and intensity of the vowels in each token. The results reveal that, while intensity is not a reliable correlate of word-level stress, duration is a robust correlate for both words in isolation and words in a frame. However, for words in isolation, F0 cannot be regarded as a correlate of word-level stress in a straightforward fashion. For two of the speakers, higher F0 appeared on the penultimate syllable, while for the other two speakers higher F0 appeared on the final syllable. Figure 1 shows that the token [katə̃] ‘word’ uttered in isolation has higher F0 on the final syllable, while Figure 2 shows that the same token has higher F0 on the second syllable.

This leads to problems in the analysis, unless we recognize that words in isolation also receive phrase-level accent (cf. Ladd, 2008: 33). That is, the difference between Figure 1 and Figure 2 can be accounted for in an autosegmental/metrical analysis by positing a ‘continuing’ high boundary tone (H%) in Figure 1, but a ‘declarative final’ low boundary tone (L%) in Figure 2. Further support for this analysis comes from naturally occurring speech in the second data set. When a word is in a non-final position in the phrase, stress is consistently realized on the final syllable, (i.e., the duration is longer and the F0 is higher on the final syllable of the word). The phrase [katə̃ ini] ‘this word’ in Figure 3 shows that F0 is higher on the final syllable of [katə̃] ‘word’, while the final syllable of [ini] ‘this’ has a final low boundary tone. With a number of examples from a corpus of Besemah narratives, this study shows that Besemah has word stress, despite a number of recent studies that show that languages of Indonesia do not have stress at the word-level.

REFERENCES
Figure 1 - The $F_0$ of the token [katə] 'word' with an H% from the first female speaker.

Figure 2 - The $F_0$ of the token [katə] 'word' with a L% from the second female speaker.

Figure 3 - The $F_0$ of the phrase [katə inĩ] 'this word' with a L% from the first female speaker.