Acoustic analysis of Glottal Stops in Mundari

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The objective of this paper is to analyze the phonetic realization of glottal stop in Mundari. Glottal stop is a frequently appearing feature in Mundari, an Austroasiatic language spoken in India. While a glottal segment is historically attested in the Austroasiatic language phylum, synchronic studies reveal that glottal articulation surfaces differently in different languages. For instance, in Sora intervocalic glottal stops have three different phonetic realizations- including, a complete vocal fold closure, a complete closure accompanied by creaky phonation and a voiced glottal stop [1]. Likewise, Gorum is also known to have three distinct glottal articulations, including, a complete glottal stop, pre-glottalized obstruents and creaky voice [2]. In the case of Mundari, glottal constriction is known either as an allophonic variant of a word final velar voiced obstruent [3,4] or as a vocalic feature separating identical vowel sequences [5]. However, apart from Sora, there has not been any instrumental study of glottal stops in the Austroasiatic languages spoken in India. The present study analyzes the glottal stop in Mundari and its possible articulatory variations using spectrographic evidence.

Crosslinguistic evidence suggests that glottal stops are often realized partially by exhibiting laryngealization instead of a complete stop and these characteristics may vary based on the context [6]. Also, changes in *f*0, amplitude and spectral measures of source features are some of the widely observed correlates of glottal stops [7]. Moreover, it has been observed that in naturally spoken continuous speech, these features do not strongly correlate to the realization of glottal stops [9]. Therefore, in this study we measure changes in *f*0, amplitude and spectral features both in continuous speech and isolated segments in Mundari. Preliminary observation of Mundari speech data suggests that intervocalic glottal stops in isolated words are primarily produced with either a complete closure of the vocal fold (see Fig.1) or with a creaky phonation (see Fig.2). In some instances, a dip in the *f*0 is observed in the region of the glottal stop. In the word final position, some creakiness is observed in the offset of the preceding vowel.

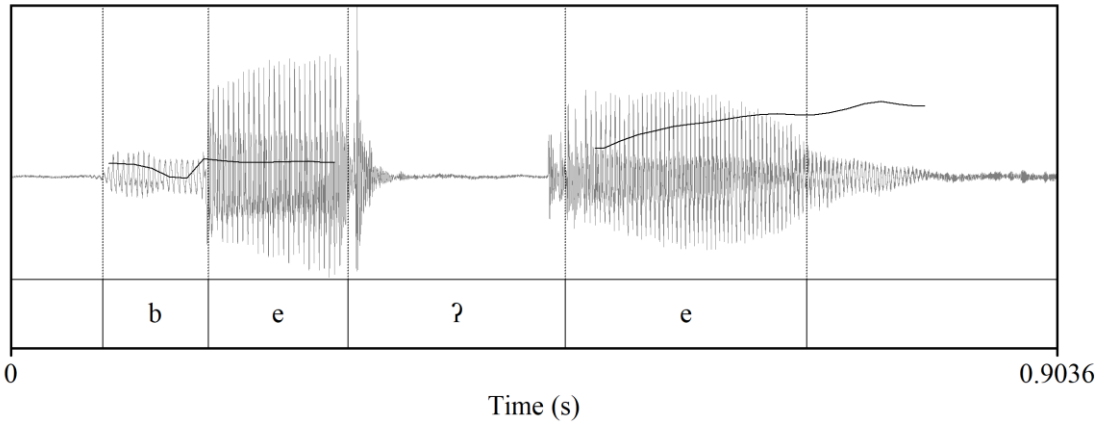

Fig. 1 Intervocalic glottal stop [ʔ] in Mundari realized as a complete stop in the word *beʔe* ‘to spit’.

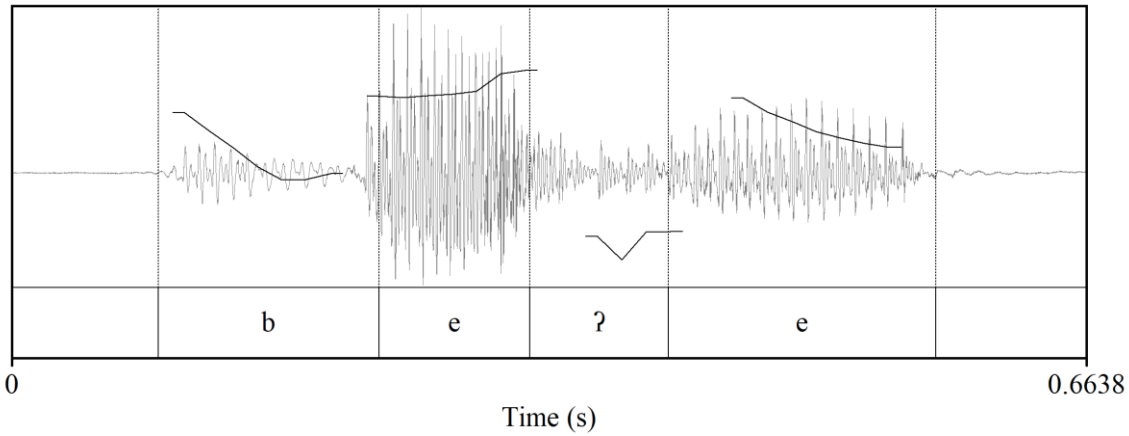

Fig. 2 Intervocalic glottal stop [ʔ] in Mundari realized with creaky phonation in the word *beʔe* 'to spit'.

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