

Laryngeal features and contrasts in Mehri stops

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Our main research question is whether presence versus absence of aspiration rather than VOT is the basis for laryngeal contrasts in the stop system of Mehri, a Modern South Arabian language. Table 1 presents Mehri stops with realizations, glottal states, and laryngeal and emphatic phonological features based on analysis of data from 10 native speakers. A Semitic language, Mehri has triads of homorganic voiceless-voiced-emphatic obstruents (/tḏ kḡk/). Our justification for grouping emphatic /tḏ kḡ/ and voiced /b d g/ together laryngeally is fourfold. Firstly, they lack aspiration in contrast to voiceless /t k/. Secondly, they pattern together morphologically. For example, verb stems in which the initial vowel is lengthened (L-stems) prefix /a/ and geminate the first root consonant if it is [spread], otherwise prefix /a/ without root consonant gemination: /akko:mal/ 'to finish' vs. /ago:rab/ 'to try', /akko:lab/ 'to upset'. Quadriliteral and reduplicative verbs follow the same pattern: /akkarbal/ 'to crawl' vs. /agargar/ 'to gurgle', /akarfad/ 'to turn over'. Thirdly, although there are several glottal states involved (closed, narrow, voiced), their distribution is governed by the emphatic–plain contrast and by position (see Table 1). Fourthly, in utterance-final position [spread] stops glottalize with aspirated release, while all [constricted] stops glottalize with ejective release (fig. 1). We thus have 'neutralization' between these three non-distinctive glottal states in favour of ejectivity (closed) which supports Iverson & Salmons' (2006) prediction that neutralization to voice is rare finally, though it does occur variably foot-internally.

Regarding VOT, initial [spread] stops have long-lag VOTs of c.30–50ms and ejective /tḏ kḡ/ also display similarly long-lag VOTs (fig. 2) due to the time it takes the larynx to shunt the compressed air out of the vocal tract before voicing can be initiated. Placing stops in the same category on the basis of long VOT would thus group the ejective stops with the aspirated stops. While ejectives pattern with aspirated stops in Quechua (Gallagher 2011), in Mehri they pattern with voiced stops. The relevant parameter is not VOT *per se*, but whether the interval between stop release and vowel onset contains aspiration noise or not. In the case of all [constrictive] stops it is the lack of aspiration that renders them laryngeally equivalent: /b d g/ lack aspiration due to voicing, /tḏ kḡ/ due variably to glottal closure, narrowing, and voicing.

Regarding markedness, [spread] stops are marked by aspiration and meet one of Mielke's (2008) criteria for an active feature by triggering a phonological process (gemination) whereas [constricted] stops do not. [spread] is thus a marked feature in a language that has prevoicing (fig. 3) albeit not as a separately distinctive feature; however, final devoicing occurs categorically, indicating that voice is active while not distinctive. The resulting 'neutralization' is to typologically marked ejectives. It is not clear that laryngeal realism has foreseen this kind of situation.

Fricatives appear to fall into the same two laryngeal categories. [spread] fricatives trigger gemination in the same environments as [spread] stops; [constricted] (emphatic and plain) fricatives, along with sonorants, fail to trigger gemination and are variably voiced. Their glottal state characteristics and laryngeal phonology are currently under investigation.

	Foot-initial with glottal state	Foot-internal with glottal state	Prepausal with glottal state	Contrastive Laryngeal feature	Contrastive Emphatic feature
/t/	[t ^h] open	[t ^h] open	[ʔ ^h] open	[spread]	[plain]
/k/	[k ^h] open	[k ^h] open	[ʔk ^h] open	[constricted]	
/b/	[ɓ] voiced	[ɓ] voiced	[pʷ] closed		
/d/	[ɗ] voiced	[ɗ] voiced	[tʷ] closed		
/g/	[ɠ] voiced	[ɠ] voiced	[kʷ] closed		
/tʼ/	[tʰ]~[tʰ̣] closed~narrow	[tʰ]~[tʰ̣]~[ɗʰ] closed~narrow~voiced	[tʰ] closed		[emphatic]
/kʼ/	[kʰ] closed	[kʰ]~[kʰ̣]~[ɠʰ] closed~narrow~voiced	[kʰ] closed		

Table 1. Mehri stops: realizations, glottal states, laryngeal and emphatic features. [ɓ]=prevoicing

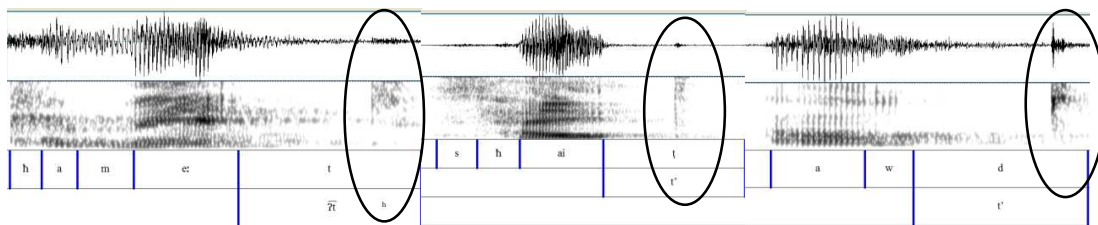


Figure 1. Prepausal /t/(left, aspirated), /tʰ/ (centre, ejective), /d/ (right, ejective).

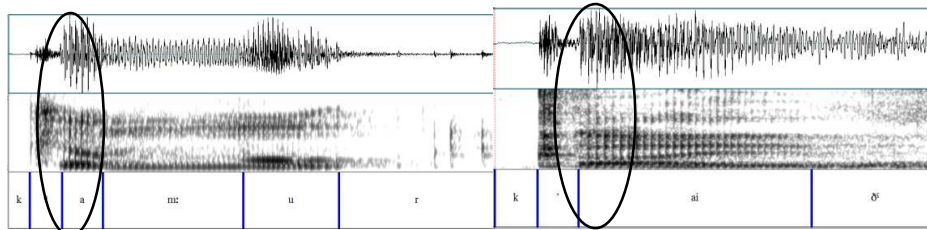


Figure 2. VOTs for /k/=42ms (left, aspirated), and /kʰ/=43ms (right, ejective).

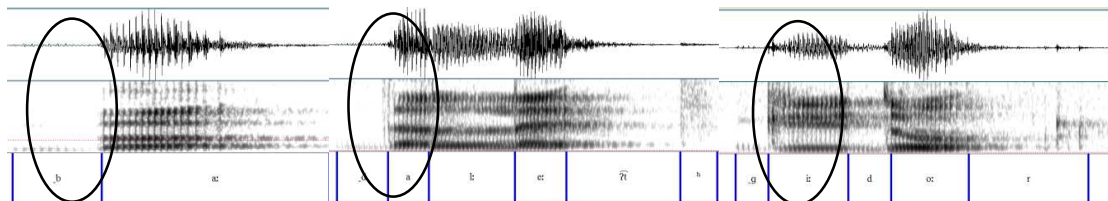


Figure 3. Negative VOTs (prevoicing) in initial /b/ (left), /d/ (centre), and /g/ (right).

References

- Gallager, G. 2011. Auditory features in phonology—the case for [longVOT]. *The Linguistic Review* 28, 281–233.
- Iverson, G.K. & Salmons, J.C. 2006. On the typology of final laryngeal neutralization: Evolutionary phonology and laryngeal realism. *Theoretical Linguistics* 32, 205–216.
- Mielke, J. 2008. *The emergence of distinctive features*. Cambridge: Cambridge University Press.