

## Typology and occurrence of pharyngeals and pharyngealization around the world.

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An attempt to delimit — as far as it is known — the distribution in the languages of the world of distinctive phonological segments typically produced with a primary or secondary constriction in the pharyngeal region will be presented, as well as a suggested framework for their classification. Some of the problems in determining how widespread their distribution is arise from the frequent terminological vagueness in published descriptions of (potentially) relevant languages. Some of the reasons behind the lack of clarity and confusion of terms will be evaluated. Examples of pharyngeal and pharyngealized sounds will be illustrated, and patterns of their co-occurrence in inventories discussed.

Pharyngeal and pharyngealized consonants have been most prominently discussed and studied in varieties of Arabic (this workshop) but they occur in a considerable number of other languages. They are most familiar from other Semitic languages (e.g. Aramaic, Soqotri) and in other branches of the Afro-Asiatic language family (e.g. Somali, Dahalo, Iraqw and most varieties of Berber), as well as from languages of the Caucasus, including members of both the North-East Caucasian or Nakh-Dagestanian family (e.g. Bats, Lak, Archi) and the North-West Caucasian or Circassian family (e.g. Abkhaz, Ubykh) (Catford 1983, Kibrik & Kodzasov 1990). But pharyngeal or pharyngeal consonants are also found in languages where their occurrence may be less familiar. These include Interior Salish and Wakashan languages in the north-west of North America (Esling et al 2005) as well as in one dialect of Haida in the same general area, and in Amis and some dialects of Atayal among the Austronesian languages of Taiwan (e.g. Maddieson & Wright 1991). There are also some more ambiguous reports on their occurrence here and there elsewhere. Generally, a secondary articulation of pharyngealization is only noted in languages in which primary pharyngeal consonants occur, but a relatively high proportion of the languages concerned have both primary and secondary pharyngeal articulations.

There are also languages in which distinctively pharyngealized vowels are reported to be found, most famously in some of the Northern Khoisan (e.g. Jul'hoan) and Southern Khoisan languages (e.g. !Khoon) of Southern Africa. Pharyngealized vowels are also said to occur in a number of other languages in dispersed areas of the world, for example in Mian (Papua New Guinea), Iatê (Brazil), Hamar (Ethiopia) and Even (Russian Far East). In some of these languages (perhaps Hamar and Even, for example) labeling vowels as pharyngealized may be a way of describing one set of vowels that take part in a vowel harmony system based on tongue root position. Tongue root position contrasts are taken to be based on a departure from a normal correlation of the position of the anterior and posterior parts of the tongue body which regularly produces quite narrow apertures between the tongue root and the back wall of the pharynx during the production of low vowels (Whalen et al 1999, Jackson & McGowan 2008). ATR vowels are produced with a wider than expected aperture in this region. Vowels with a narrower than expected constriction can be labeled pharyngealized. No language appears to have both consonants with a pharyngeal articulation and pharyngealized vowels. However, for some languages such as Tsez (North-East Caucasian) the status of pharyngealization as a consonantal or vocalic phenomenon — or perhaps even as a syllable- or word-level feature — is debated.

The pharyngeal region of the vocal tract is taken to be the entire space from the superior edge of the glottis to an upper boundary around the uvula and the naso-pharyngeal port (both functional considerations and variations in individual vocal tract geometry render this boundary less precise). The length of the pharyngeal cavity is comparable to that of the oral cavity, and is even longer in some males. It is therefore not surprising that constrictions can be formed at several somewhat distinct locations along its length. X-ray and MRI studies show that constrictions in the upper, middle and lower pharynx are all possible (Hess 1998, Ladefoged & Maddieson 1996). A

presumption has been made, and built into the IPA chart, that full closures can only be made at the level of the epiglottis (Laufer & Condax 1981), but it certainly seems possible to retract the tongue root sufficiently to close the pharynx in the middle, and pharyngealized uvular stops may well have an extended tongue contact reaching lower than the level of the uvula. Fricative and approximant constrictions can certainly be made at various levels. The different locations may well account for why the reported acoustic effects of pharyngeal articulation as indexed by formant frequency measurements appear inconsistent across different languages, as well as why different diachronic paths of development have been traced.

The pharyngeal region provides less sensory and proprioceptive feedback than more anterior regions of the vocal tract. This means that descriptions of articulations in this region based on introspection and imitation have limited reliability. It can also be difficult to distinguish activity affecting structures of the larynx from gestures affecting the configuration of the pharynx (e.g. Esling 1999, Esling & Harris 2004). The lack of reliable feedback on production may account for the use of broadly inclusive categories such as ‘laryngo-pharyngeal’ (e.g. in many Russian-language publications on languages of the Caucasus) as well as for the use of such baffling transcriptions as /h’/ (proposed for a segment in the Salishan language Shuswap). The application of ever more sophisticated techniques for imaging speech production, modeling articulatory control and calculating the acoustic output of varying tract shapes is improving our understanding of the types of segments produced with a pharyngeal constriction, as this workshop will demonstrate. But the field would benefit in particular from more attention to the less well-studied languages exemplifying these sounds.

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