Appendix 2. The metaperistaltic line of phonemes

Derivation of the linear series

The order in the sequence of phoneme anchors in this peristaltic progression in Chart A is derived by extending lines radially from a point of origin to intersect first a) the phonemic germinal anchors in the lingual envelope fields, and later b) the projection field. The point of origin is the phonatory anchor, which in the active speech mode is the phonatory antagonist of the anchors of articulation and which is located in the tongue base with its hyolaryngeal connection. See fig. 1.

The sequence thus extracted corresponds to a peristaltic wave pattern that can be traveled in either direction by simply gliding through this series of phonemes along the speech tract in the designated order.

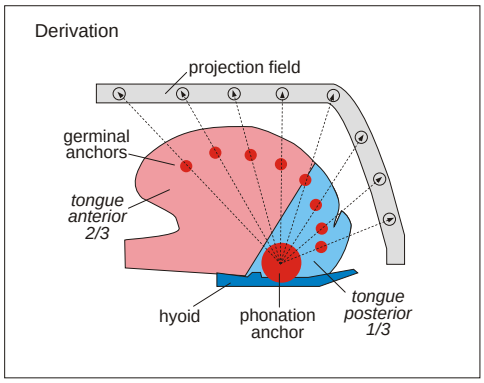


fig. 1

Proprioception of the peristaltic line

It can also be noted that the phonemes /h/, /n/, and /m/ are not the same ones passed in each region, but are increasingly more backed positional versions of each as one moves down the tract.

The fact that this line is in fact continuous is available to perception and it is so not only in terms of lingual anchors, but also as fully articulated phonemes. If one, starting by generating the /p/ germinal anchor, proceeds to the next anchor, /f/, and continues passing through the remaining anchors, it is found that gliding through any consecutive anchors or phonemes follows built-in alternating close-open peristaltic sequencing, and is an efficient and relatively effortless action. In contrast, gliding among the same phonemes in an arbitrary order is relatively inefficient, and always introduces significant constrictive glotto-laryngeal tensions. Similar behavior is occurs in phonemic mergers, cf. Appendix 3: *Phoneme production through mergers*/Observing mergers.

If we plot only the stops and the largest apertures, i.e., the RSP (respiratory) phonemes, the series is reduced to a basic, on-off peristaltic sequence. See fig. 2.

Note: Each respiratory consonant occurs in three forms—as discreet front, central and back positional variants. See fig. 3.

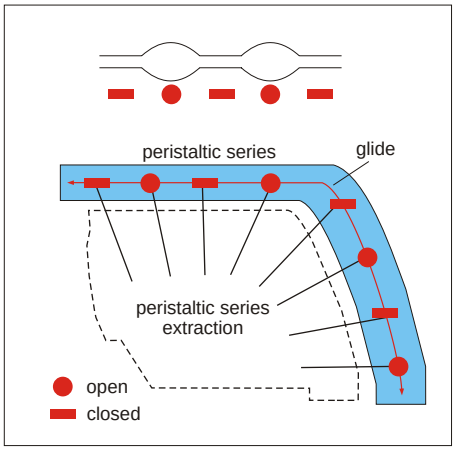


fig. 2

h^F = front /h/ anchor

m^C = central /m/ anchor

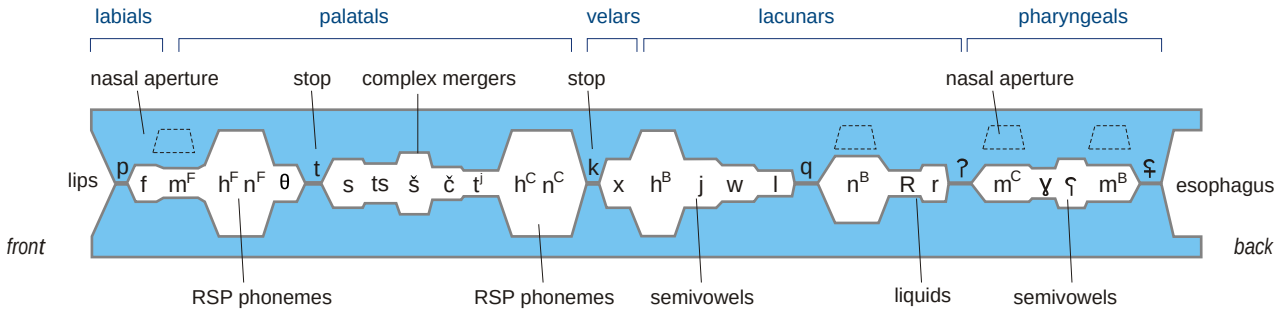
n^b = back /n/ anchor

fig. 3

Diagram 1. The metaperistaltic line of phonemes

In diagrams 1, 2 and 3 the speech tract is mapped as a continuous linear sequence of varying consonantal cross-sections ranging in size. The full closures are the stops, the largest apertures are the respiratory phonemes and the intermediates dimensions belong to the remaining (diatonic) consonants. Only voiceless phonemes are shown. Notes to these diagrams are on the next page.

Diagram1. Full (voiceless) phoneme line



key:

ʔ glottal stop
ʕ 'ayin
ɣ 'ghayn
ʢ epiglottal stop

superscript
F = front
C = central
B = back

1. The nasal apertures of m and n are indicated with dashed lines.

2. In each semi-open region, namely that of the complex merged consonants, semivowels and liquids there can be gradations of closures.
Cf. ts š č tʲ j w l

Note: /j/ is velo-palatal only with respect to lingual articulatory contact. Its lingual anchor belongs with /w/ and /l/, in the lacunar area.

Note: the pharyngeal semivowel ayin /ʕ/ is designated as a stop in fig. 2. Actually this phoneme has a consonantal form as well, cf. Arabic initial and intervocalic version.
The pharyngeal tract lacks the manipulative abilities of the oro-lingual tract and is limited in its phoneme generation potentials. Cf. the lacunar tract, where for similar reasons no stops are produced.

Notes on the diagrams:

Diagram 1. This is a full mapping of the basic voiceless phonemes across the entire tract. The stops are gates/closures/constrictions while the other phonemes occur as chambers/apertures/expansions of various diameters. The topmost line indicates phoneme classification according to dorsal articulative contact. The /m/ apertures are both oral and nasal. The RSP phonemes are full expansions, and the diatonic consonants are decreased grades of expansion.

Diagram 2.

If the diatonics are omitted the stops and RSP phonemes present as a clear peristaltic sequence of alternating constrictions and expansions.

Diagram 2. The basic peristaltic tract sequence of stops and respiratory phoneme expansions

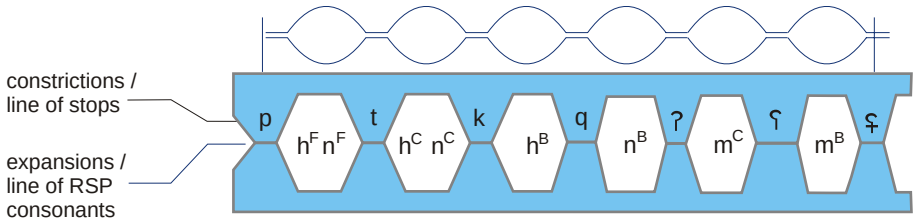


Diagram 3.

When mapping shows the tract with gates as well as expansions with their adjoining graduated (reduced diameter) local regions, then the metaperistaltic format of the entire phoneme line becomes visible.

Note: the tract space of the respiratory anchor m is in part diverted to the nasal pharynx, and is indicated with dashed lines. A degree of left to right symmetry relation is observable in figure 4.

Diagram 3. Tract mapped as stops and only two grades of expansion

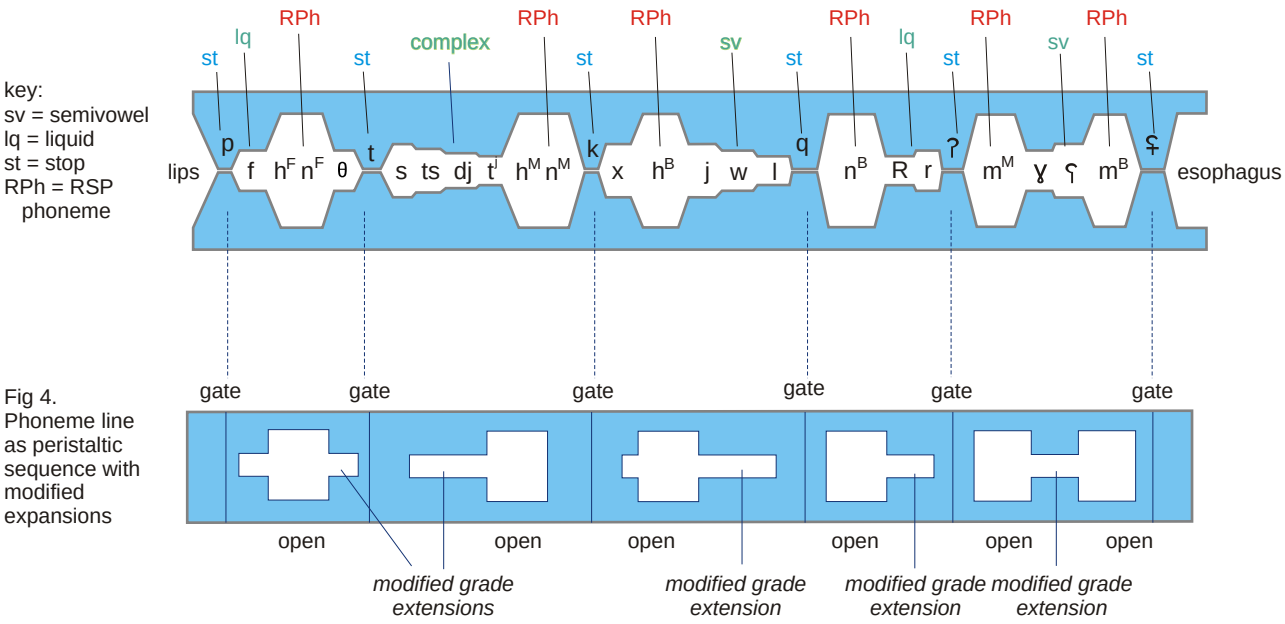


Fig 4. Phoneme line as peristaltic sequence with modified expansions

Note: a) in this diagram /ʕ/ (ayin) is shown in its semivocalic variant form.

b) the nasal and oral apertures for both positional variats of m and n are represented as a single expansion.