

Articulatory Phonetics

The Vocal Organs

- the respiratory system pushes air out of the lungs > the windpipe (= trachea) > the larynx > the vocal tract
- the vocal tract: the vocal cords > the oral tract within the mouth and pharynx > the nasal tract within the nose
- **articulators** = the parts of the vocal tract used to form sounds
 - the upper lip and the upper teeth
 - the alveolar ridge
 - the hard palate
 - the soft palate (= velum)
 - the uvula
 - the tongue: the tip, the blade, the front (beneath the hard palate), the centre, the back (beneath the soft palate), the root (opposite the back wall of the pharynx; the epiglottis attached to its lower part)
- two-dimensional diagrams of the vocal organs (= a mid-sagittal view)

The Phonetic Description of Speech

- the stages of a speech sound: the production stage, the transmission s., the reception s.
- consonant sounds: most easily described mainly in terms of their articulation
- vowel sounds: described mainly in terms of their auditory impressions
- phonological definition: consonants as those segments occurring at the edges of syllables, vowels as segments occurring at the centre of syllables
- x /j, w, r/: consonants phonologically, vowels phonetically (the approximants [j, w] pronounced as short versions of vowels in the [i, u] regions) => **semi-vowels**

The Articulation of Consonants

- factors describing the articulation of consonant sounds
 - (a) source of the airstream (lungs for pulmonic articulation x elsewhere for non-pulmonic a.)
 - (b) direction of the airstream (outwards for egressive articulation [all E sounds] x inwards for ingressive a.)
 - (c) state of the vocal cords (close together and vibrating for voiced sounds x apart for voiceless s.)
 - (d) state of the soft palate (raised for oral sounds x lowered for nasal s.)
 - (e) place of articulation
 - (f) manner of a.
 - (g) + central or lateral a.
- [z] in 'easy': pulmonic, egressive, voiced, oral, alveolar, fricative, central (= 'voiced alveolar fricative', the oth. points assumed unless indicated otherwise)
- the **oro-nasal process**: the velum separates the nasal tract from the oral tract
 - (a) when raised against the back wall of the pharynx = a velic closure
 - (b) when lowered + an obstruction in the mouth created = a nasal consonant
- classification of speech sounds accord. to their noise component
 - (a) **obstruents** = their production causes noise (stops, fricatives, affricates)
 - (b) **sonorants** = no noise (voiced nasals, approximants, and vowels)

Place of Articulation

- (a) **labial** articulations (the lips)
 - bilabial: the two lips ([p, b, m] in 'pie, buy, my')
 - labiodental: the lower lip and the upper front teeth ([f, v] in 'fee, vie')
- (b) **coronal** a. (the tongue tip or blade)
 - dental: the tongue tip and the upper front teeth ([θ, ð] in 'think, then'); + interdental: the tongue protrudes btw the teeth
 - alveolar: the tongue tip or blade and the alveolar ridge ([t, d, n, s, z, l] in 'tie, die, nigh, sigh, zeal, lie')
 - post-alveolar: the tongue tip and the back of the alveolar ridge ([ʃ] in 'red')
 - retroflex: the tongue tip and the part of the hard palate immediately behind the alveolar ridge ([ɻ] in 'rye, row, raw'), not used by many speakers at all
 - palato-alveolar: the tongue blade and the back of the alveolar ridge ([ʃ, ʒ, tʃ, dʒ] in 'sheep, measure, cheap,

jump')

(c) **dorsal** a. (the back of the tongue)

- palatal: the front of the tongue and the hard palate ([j] in 'you'); coronal or dorsal a.
- velar: the back of the tongue and the soft palate ([k, g, ŋ] in 'hack, hag, hang')
- glottal: an obstruction or a narrowing causing friction but not vibration ([h] in 'house')
- a secondary place of articulation in addition to the primary: e.g. the raising of the back of the tongue twd the velum in addition to the alveolar contact in the velarized [ɫ]

Manner of Articulation

(a) complete closure

- **stop**, or, plosive [p, b, t, d, k, g, m, n, ŋ]
- = complete closure of the articulators preventing the airflow to escape through the mouth
- oral stop = 'stop': the velum raised, the nasal tract blocked off ('pie, buy' [bilabial closure]; 'tie, dye' [alveolar c.]; 'key, guy' [velar c.])
- nasal s. = 'nasal': the velum lowered, the nasal tract free ('my' [bilabial closure], 'nigh' [alveolar c.], 'sang' [velar c.])
- **affricate** [tʃ, dʒ]
- = a stop immediately followed by a fricative ('cheap, judge')

(b) intermittent closure

- **trill**, or, roll [r]
- = a series of rapid intermittent closures made by a flexible organ on a firmer surface
- e.g. the trill of the tongue tip against the alveolar ridge (Scott. E: 'rye, raw')
- **tap**, or, flap [ɾ]
- = a single tap of made by a flexible organ on a firmer surface
- e.g. the tap of the tongue against the alveolar ridge (GA: 'letter')

(c) partial closure

- **lateral** (= lateral approximant) [l]
- = incomplete closure btw one or both sides of the tongue and the roof of the mouth ('lie' [alveolar lateral])

(d) narrowing

- **fricative** [f, v, θ, ð, s, z, ʃ, ʒ, x, h]
- = close approximation producing a turbulent airflow ('fee, vie' [labiodental]; 'thigh, thy' [dental]; 'sigh, zoo' [alveolar]; 'shy' [palato-alveolar])
- sibilants: the higher-pitched fricatives with a more obvious hiss ('sigh, shy')

(e) narrowing without friction

- **approximant** [j, w]
- = approximation producing no turbulent airflow ('yacht' [the front of the tongue + the palatal area], 'we' [lips + the velar area])

The Articulation of Vowels

- factors describing the articulation of vowel sounds
 - (a) the position of the soft palate
 - raised for oral vowels x lowered for nasalized v.
 - (b) the degree of spreading or rounding of the lips
 - **rounded** vowels [æ, ɔ, ɒ, ɔ̃, u, ʊ] x **unrounded** v. [i, ɪ, e, ε, ɜ, a, ʌ, ɑ, ə]
 - (c) the height of the body of the tongue
 - **high** vowels [i, ɪ] in 'heed, food' x **mid-high** v. [ɪ, ʊ] in 'hid, good' x **mid-low** v. [ε] in 'head' x **low** v. [æ, ɑ] in 'had, father'
 - (d) the front-back position of the tongue
 - **front** vowels [i, ɪ, e, ε, a, æ] x **back** v. [ɔ, ʊ, o, u]
 - (e) relatively pure vs. gliding vowels
 - relatively **pure** vowels: unchanging, e.g. the vowel in 'learn'
 - **gliding** vowels: diphthongal, e.g. the vowel in 'line'