Phonetics 1

Prof. Jórdán Masías

Phonetics studies the way in which speech sounds are produced (articulatory phonetics) and perceived (auditory phonetics).

Phonetics also deals with the physical properties of sounds (Acoustic Phonetics)

Articulatory Phonetics

The Organs of Speech

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The Vocal Organs in Motion

The Names of the Organs of Speech

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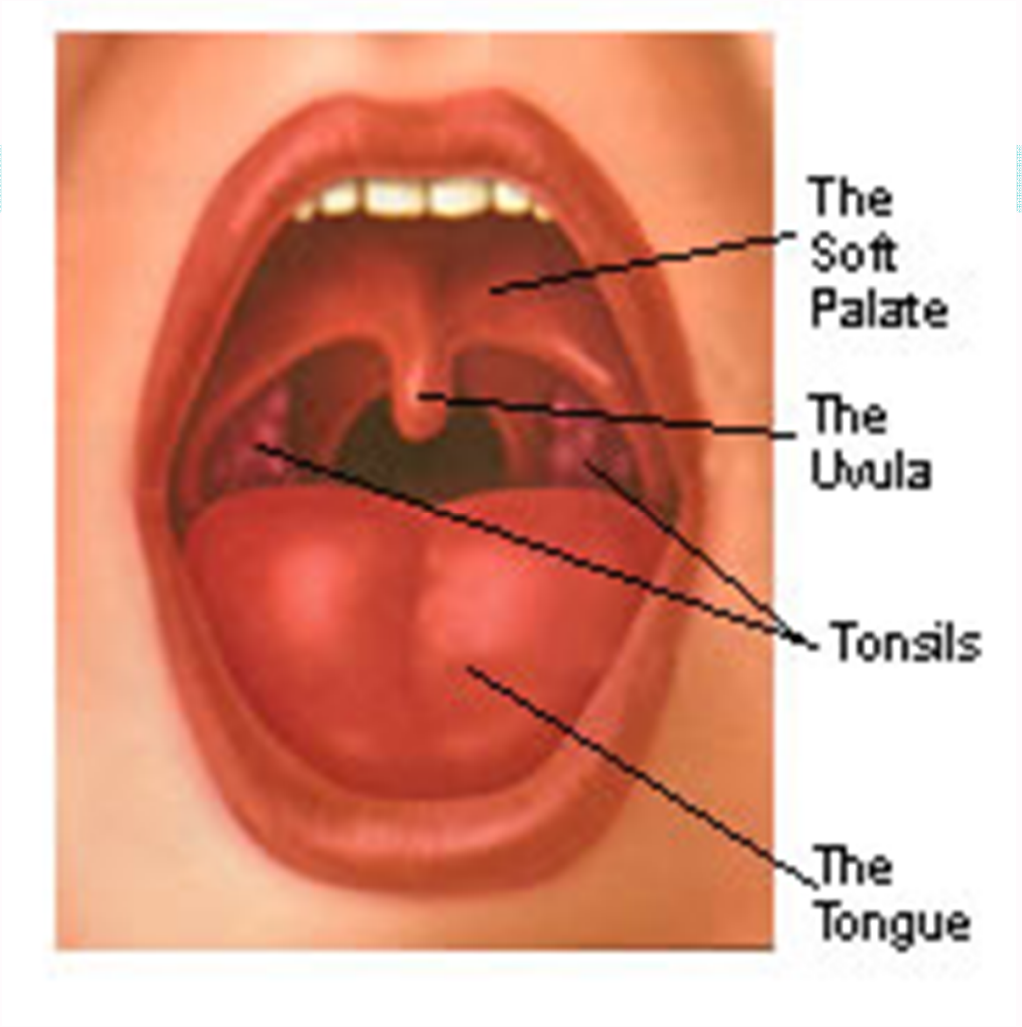
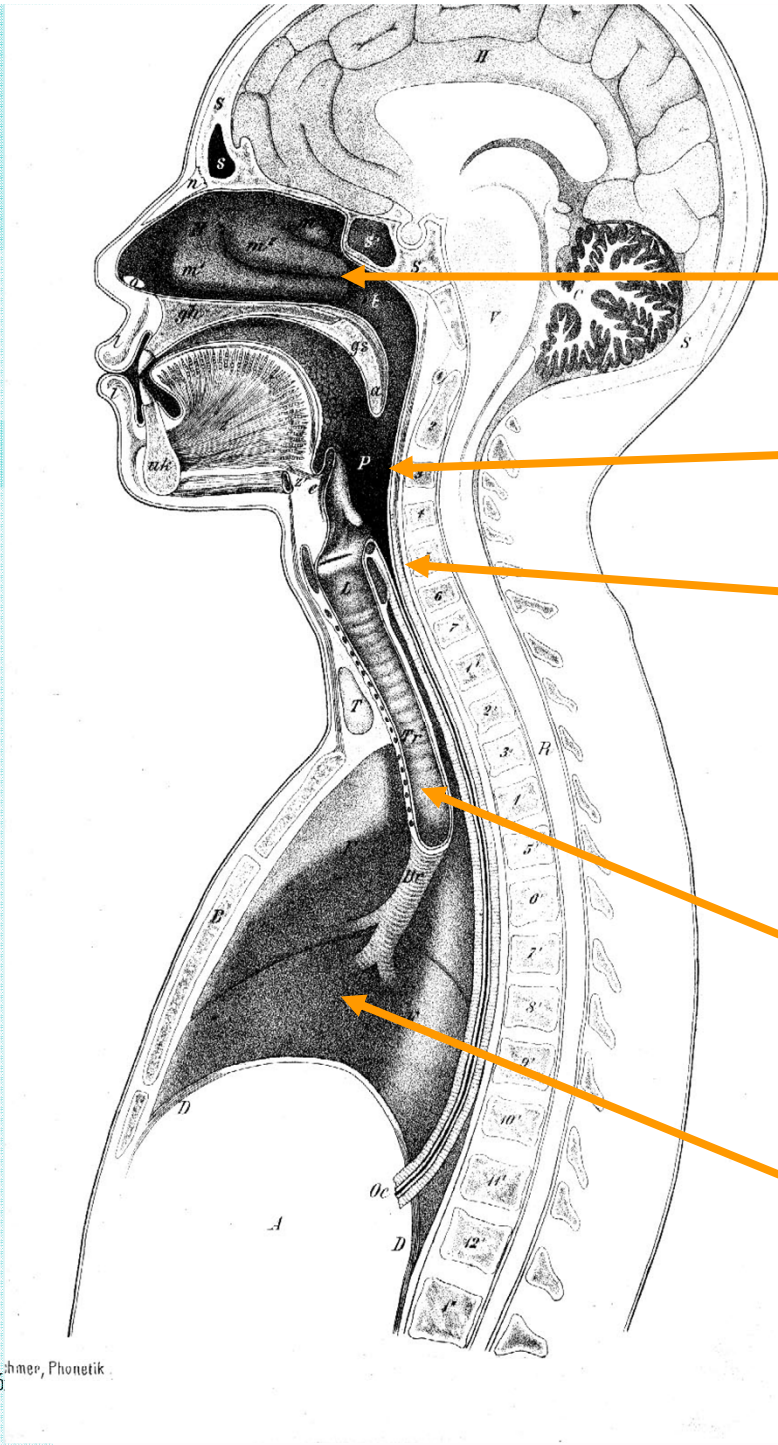
The Mouth





Sagittal section of the vocal tract (Techmer 1880).

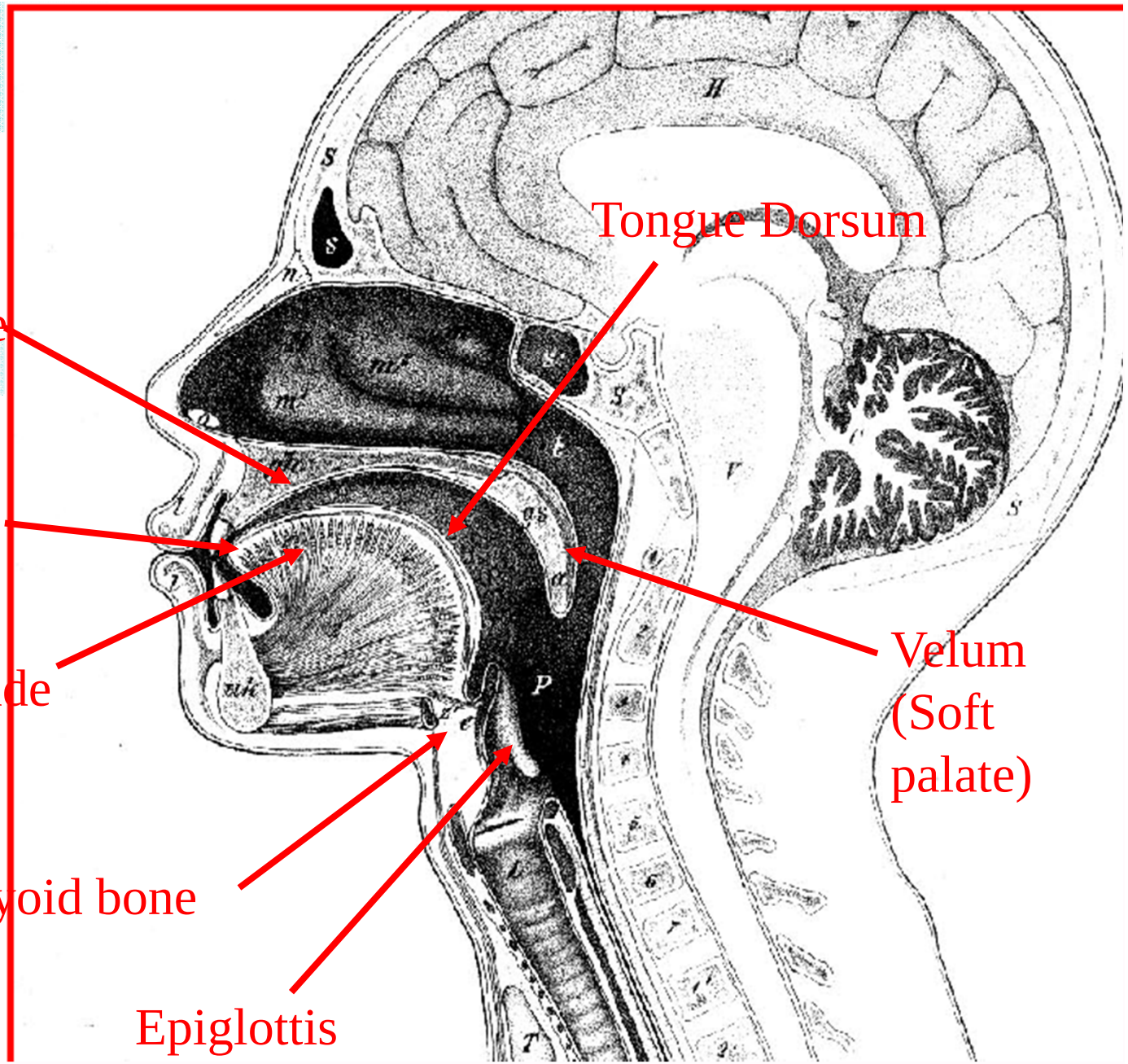
Nasal Cavity

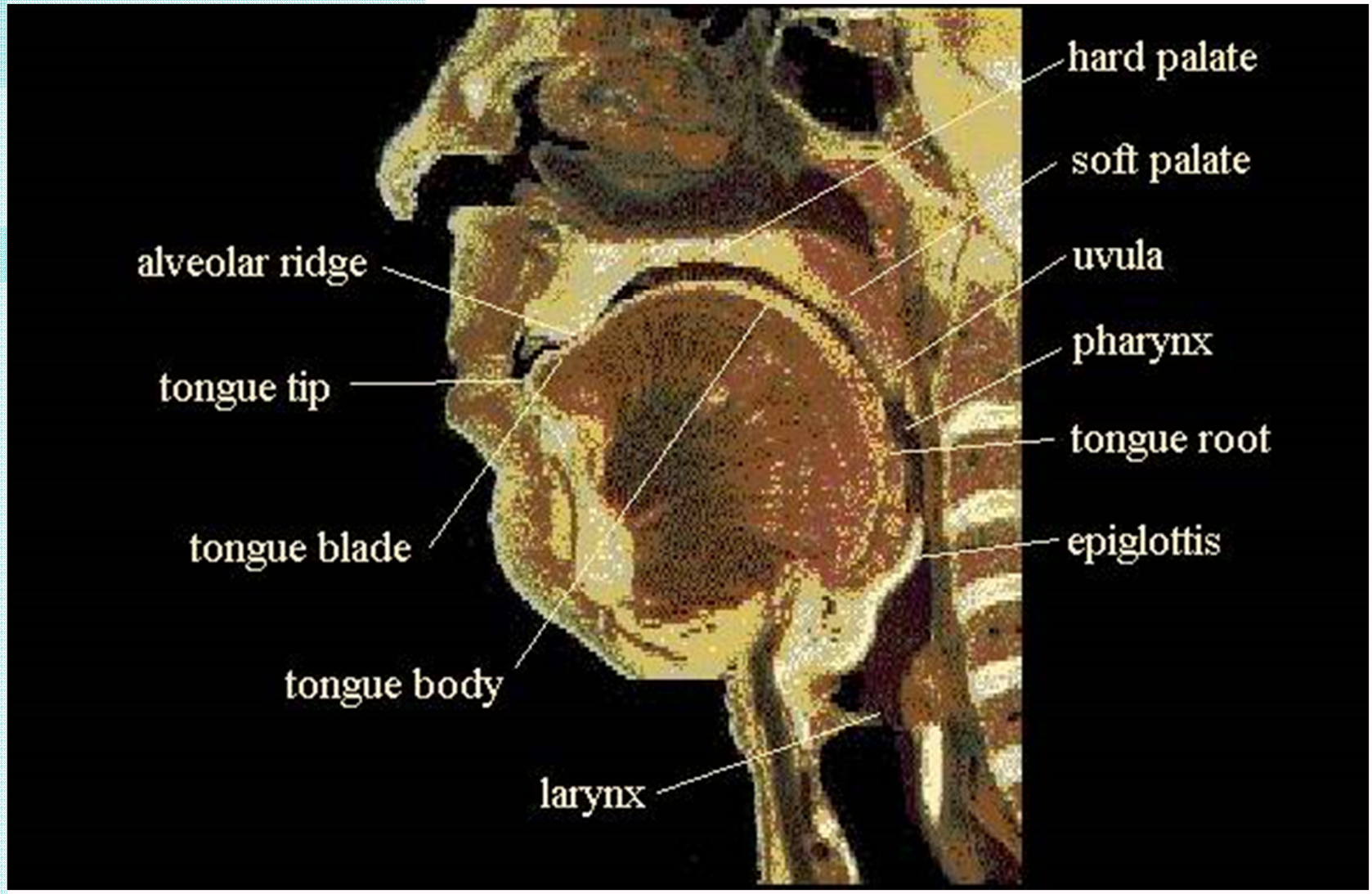
Pharynx

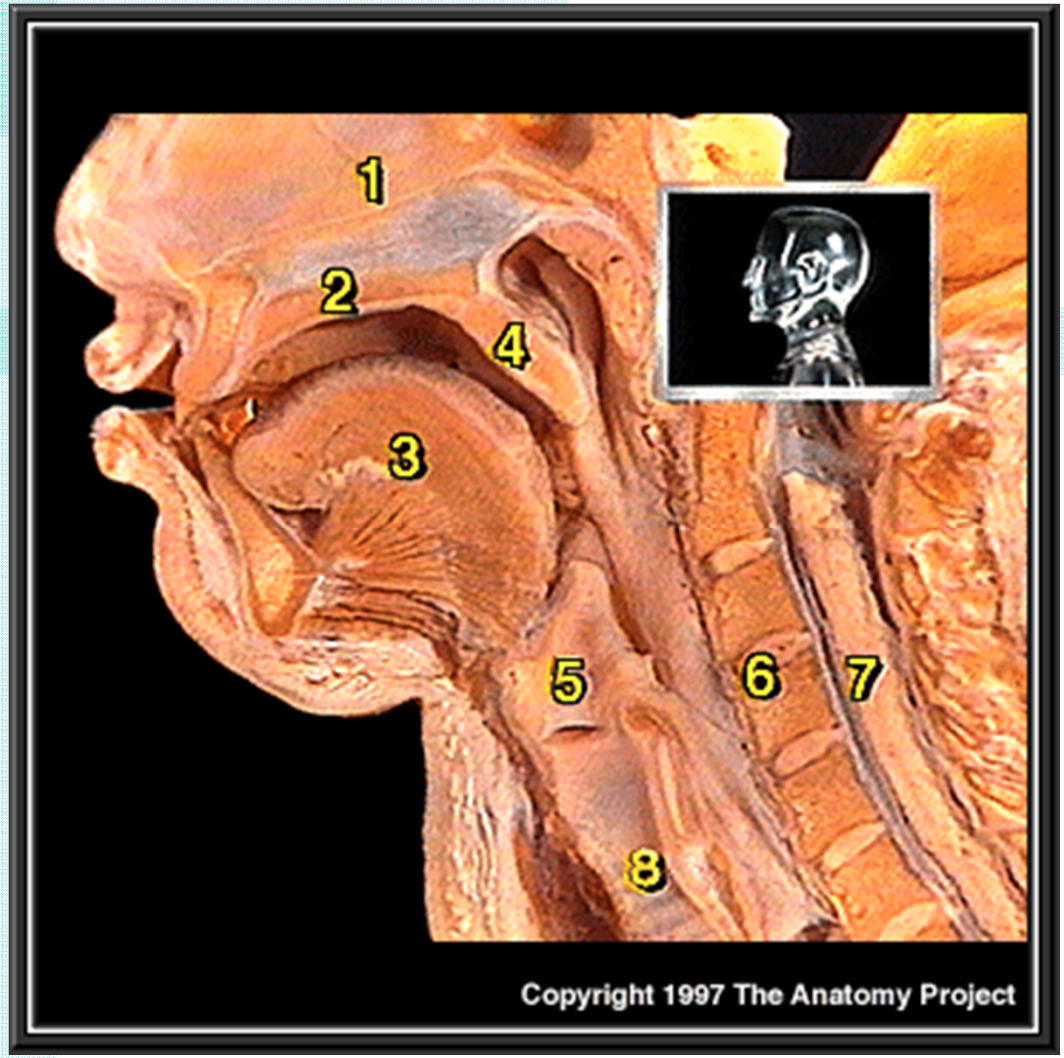
Vocal Cords (within the Larynx)

Trachea

Lungs


Tongue Dorsum
(Hard) palate
Tongue tip
(apex)
Tongue blade
(lamina)
Velum
(Soft
palate)
Hyoid bone
Epiglottis

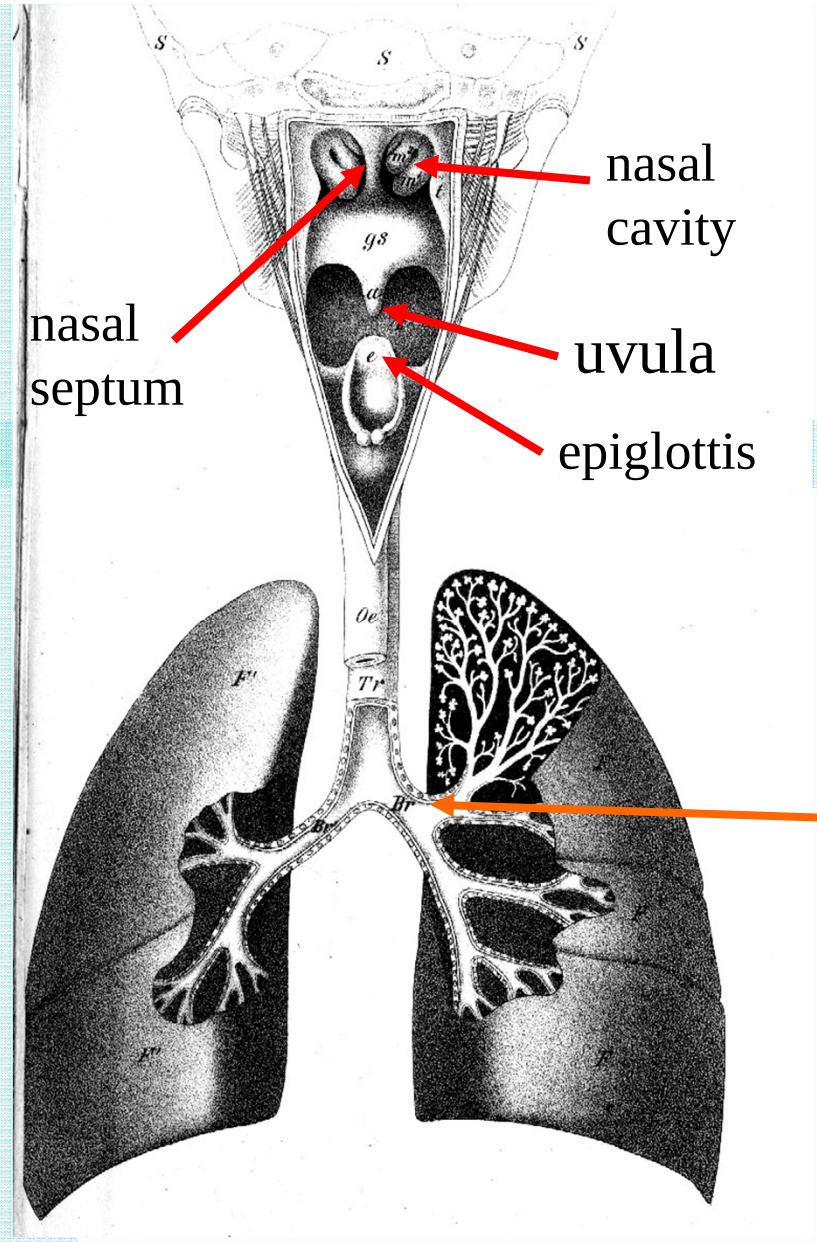

hard palate
soft palate
alveolar ridge
uvula
pharynx
tongue tip
tongue root
tongue blade
epiglottis
tongue body
larynx



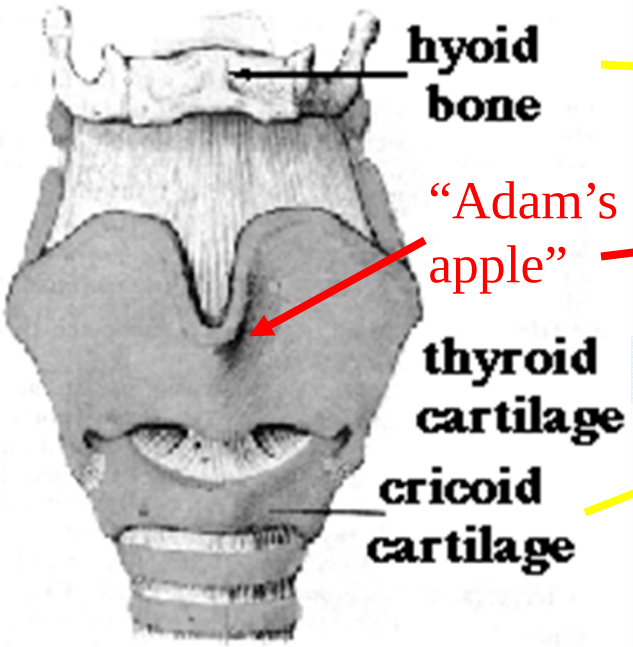
The soft palate (velum) is a “veil” of tissue with several muscles attached to it so that it can be elevated and lowered. It is thus a valve regulating the passage of air (and for speech, sound) into nasal cavity.

In neonates the velum and epiglottis overlap, as they do in the adults of many mammalian species.

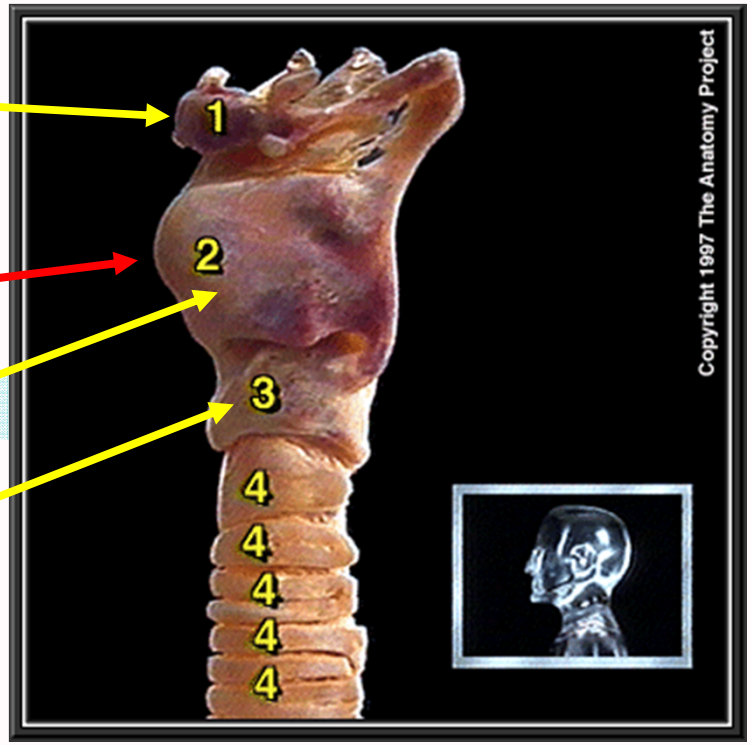
http://anatomy.uams.edu/htmlpages/anatomyhtml/atlas_html/rsa3p1.html



View of Speech Organs viewed from behind (coronal section)

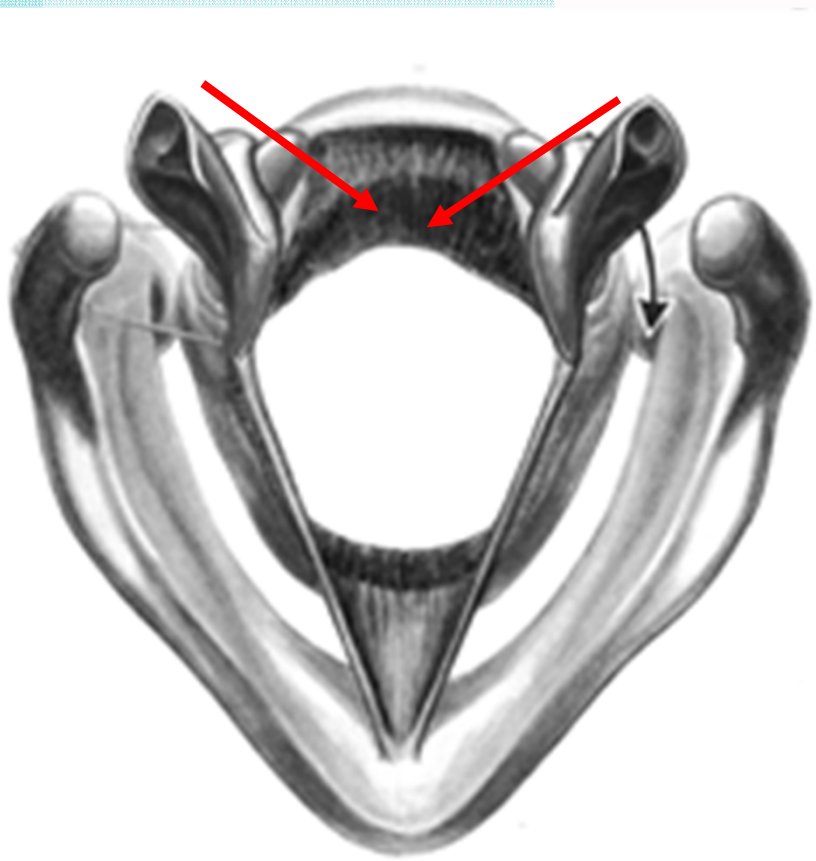


Larynx: front view



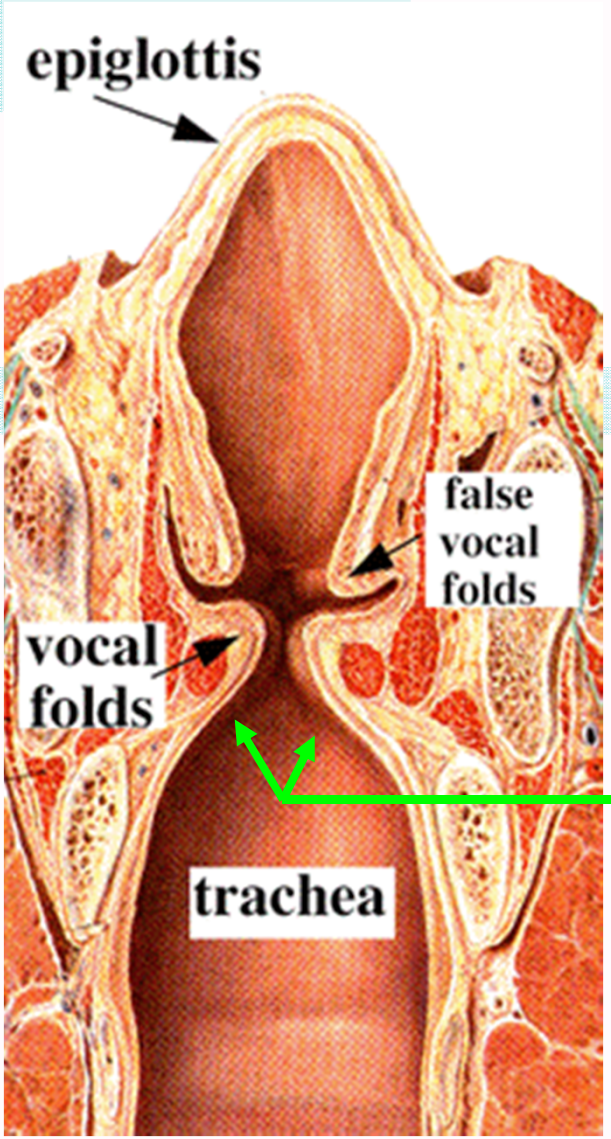
Larynx: oblique side view

back



front

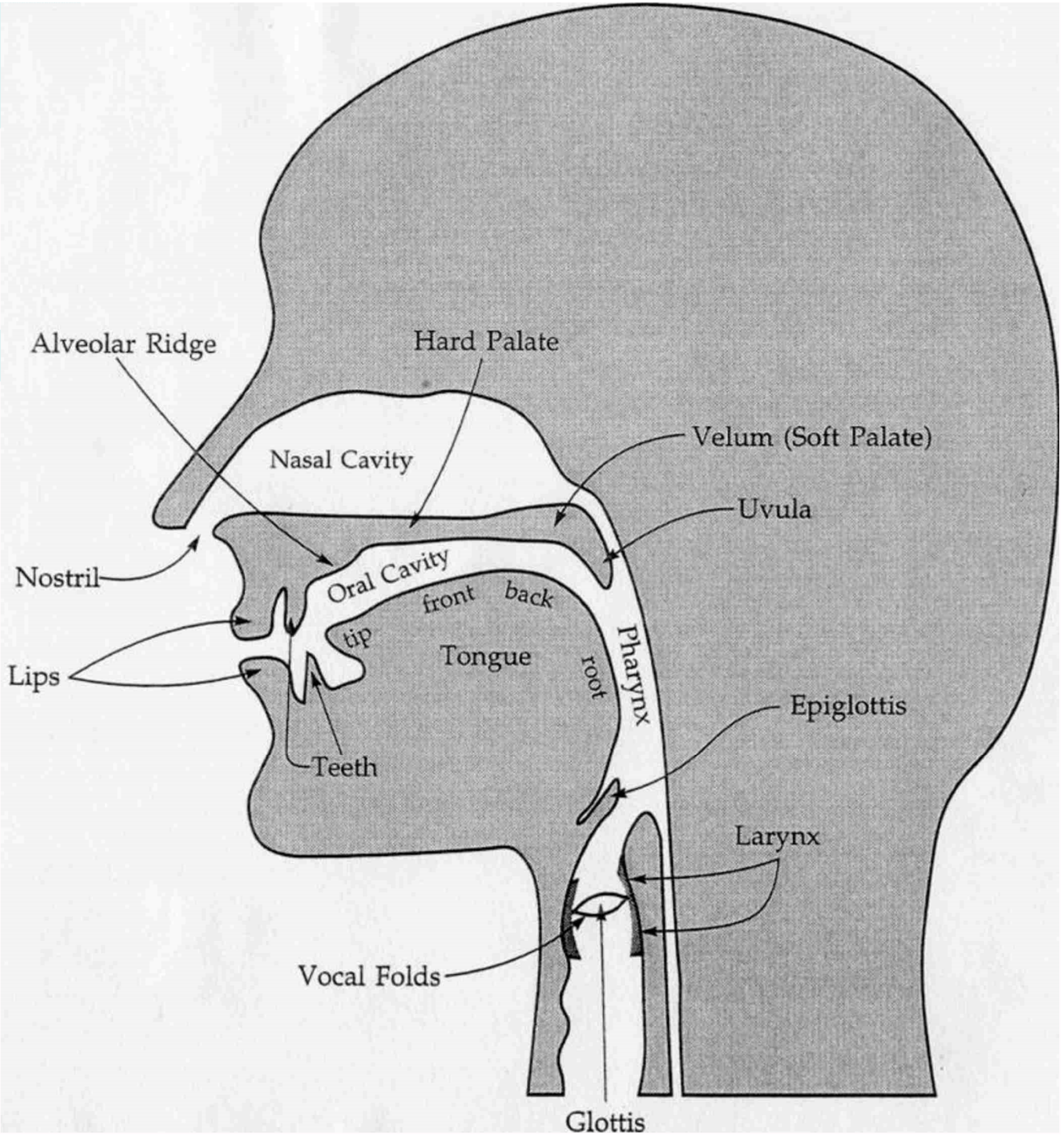
Vocal cords (without overlaying muscles and tissue) seen from above. The cords are attached to the inside of the thyroid cartilage at the front and to the moveable arytenoid cartilages at the back. The cords may be brought toward the midline when the arytenoid cartilage “rock” inward (red arrows).



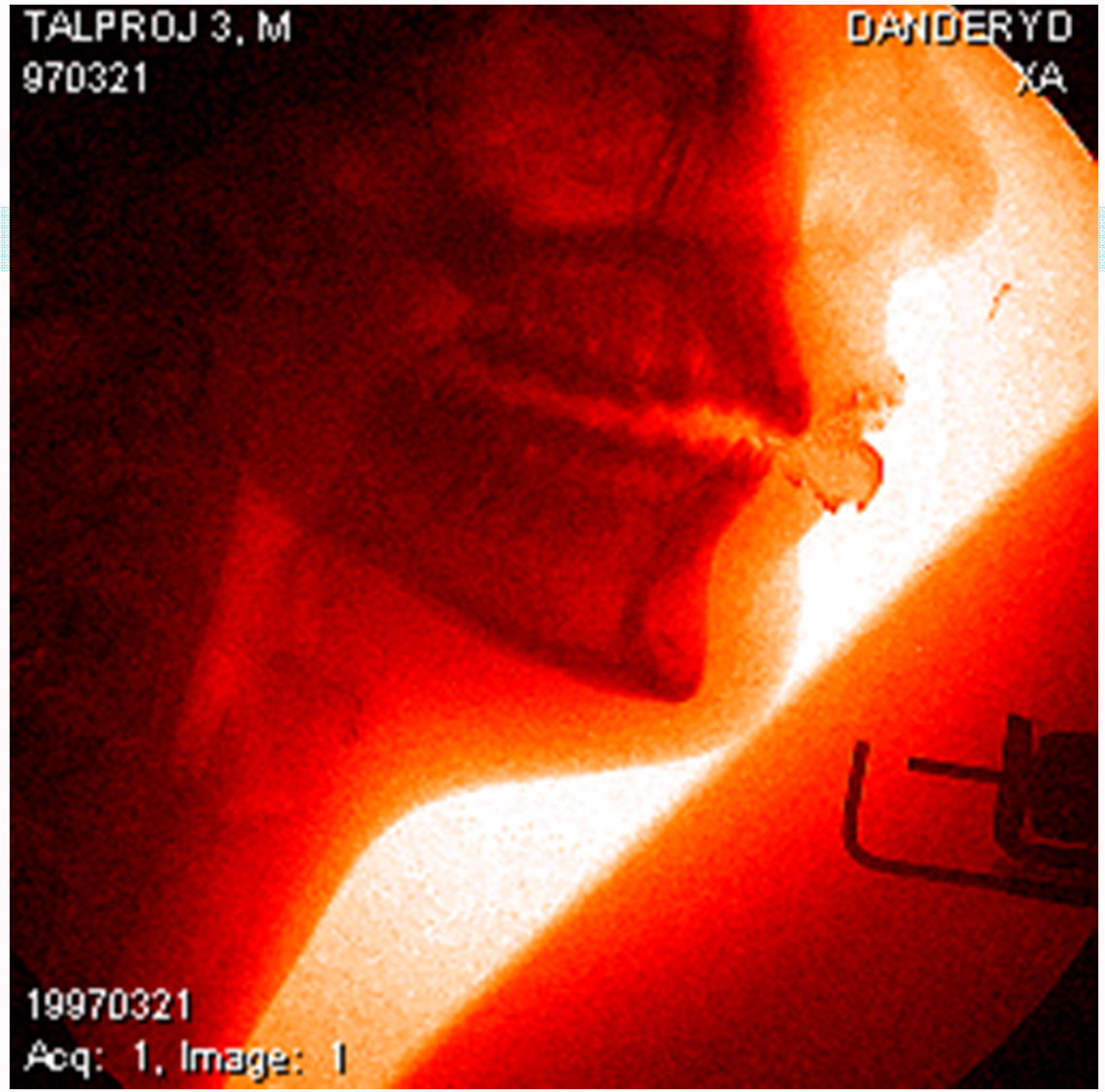
Coronal slice through the larynx; rear portion removed, leaving front portion. (Viewed from behind.)

[Aside: conus elasticus, mentioned in an earlier slide, is here.]

Diagram of the Vocal Tract



The Vocal Organs in Motion



Descriptions for Different Organs of Speech

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In Phonetics, the terms velum, pharynx, larynx, and dorsum are used as often or more often than the simpler names.

1. ALVEOLAR RIDGE

A short distance behind the upper teeth is a change in the angle of the roof of the mouth. (In some people it's quite abrupt, in others very slight.) This is the alveolar ridge. Sounds which involve the area between the upper teeth and this ridge are called alveolars.

2. (HARD) PALATE

The hard portion of the roof of the mouth. The term "palate" by itself usually refers to the hard palate.

3. SOFT PALATE/VELUM
The soft portion of the roof of the mouth, lying behind the hard palate. The tongue hits the velum in the sounds [k], [g], and [ŋ]. The velum can also move: if it lowers, it creates an opening that allows air to flow out through the nose; if it stays raised, the opening is blocked, and no air can flow through the nose.

4. UVULA
The small, dangly thing at the back of the soft palate. The uvula vibrates during the r sound in many French dialects.

5. PHARYNX
The cavity between the root of the tongue and the walls of the upper throat.

6. TONGUE BLADE

The flat surface of the tongue just behind the tip.

7. TONGUE BODY/DORSUM

The main part of the tongue, lying below the hard and soft palate. The body, specifically the back part of the body (hence "dorsum", Latin for "back"), moves to make vowels and many consonants.

8. TONGUE ROOT

The lowest part of the tongue in the throat.

9. EPIGLOTTIS

The fold of tissue below the root of the tongue. The epiglottis helps cover the larynx during swallowing, making sure (usually!) that food goes into the stomach and not the lungs. A few languages use the epiglottis in making sounds. English is fortunately not one of them.

10. VOCAL FOLDS/VOCAL CORDS

Folds of tissue stretched across the airway to the lungs. They can vibrate against each other, providing much of the sound during speech.

11. GLOTTIS

The opening between the vocal cords. During a glottal stop, the vocal cords are held together and there is no opening between them.

12. LARYNX

The structure that holds and manipulates the vocal cords. The "Adam's apple" in males is the bump formed by the front part of the larynx