

University of Sétif-2
Department of English Language
Phonetics Course (1st Year Classes)
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Lecture Three

The Production of Speech Sounds and The Speech Organs

1. The Production of Speech Sounds

1.1. The Speech Sounds

Phones are grouped into two main classes: consonants and vowels. Vowel sounds are formed by the motion of air through the mouth, throat or nose. Consonants are made by restriction or blocking of the airflow in some way, and can be voiced or unvoiced. Vowels have less obstruction, are usually voiced, and are generally louder and longer-lasting than consonants. Semivowels (such as [y] and [w]) have some of the properties of both; they are voiced like vowels, but they are short and less syllabic like consonants.

1.2. Air-stream Mechanism

All speech sounds are made with some movement of air. The **majority of sounds** used in the languages of the world are **produced** with **air** that is **pushed up** from **the lungs** through the windpipe (technically, the **trachea**) and leaves the body through the mouth and sometimes through the nose. This movement of air is called an **egressive pulmonic airstream** i.e., air going '**outwards**'. Virtually all English sounds are produced by such an egressive pulmonic air-stream mechanism. The egressive pulmonic air-stream mechanism is the only air-stream mechanism that uses lung air. If **air** is **pushed up** from the **space** between **the vocal folds**, which can be moved together or apart, known as **the glottis**. If the glottis makes the air move '**inwards**', we speak of an **ingressive glottalic air-stream** mechanism. If **air** is sucked in as a result of movements against the back part of the roof of the mouth, known as **the velum**, we speak of an **ingressive velaric air-stream** mechanism.

The air passages above the larynx are known as the vocal tract. The shape of the vocal tract is a very important factor in the production of speech.

2. The Speech Organs

2.1. Vocal Tract Anatomy

The parts of the **vocal tract** that can be used to form sounds are called **articulators**, speech organs, and their study is known as: **articulatory phonetics**.

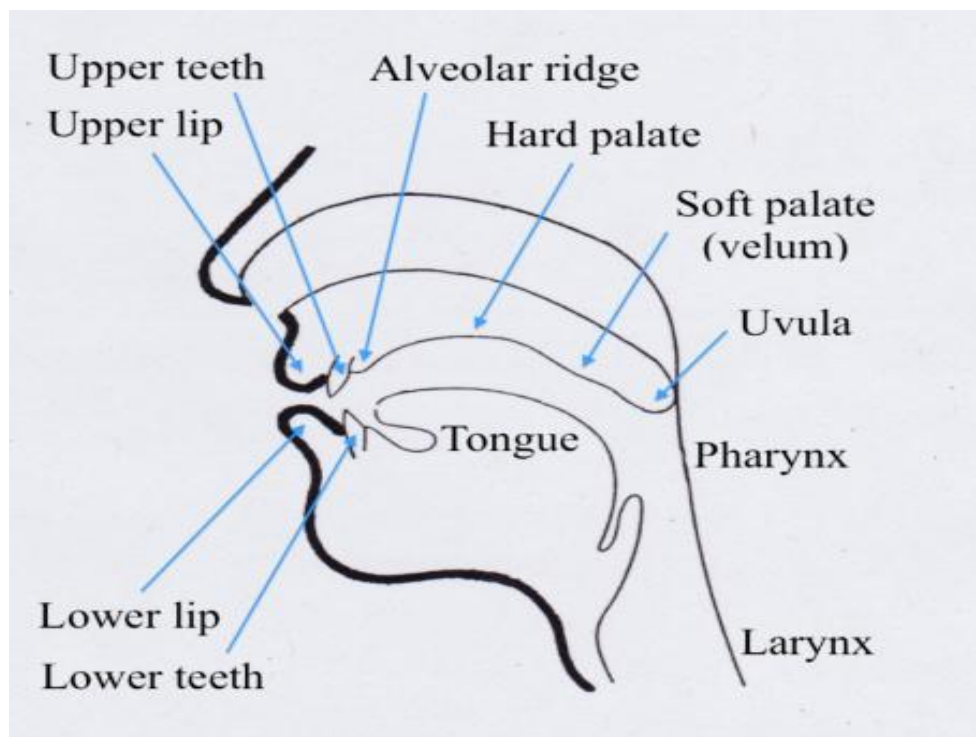


Fig.1 The main organs of speech

- **Oral cavity** = mouth
- **Nasal cavity** = nose and the passages connecting it to the throat and sinuses
- **The alveolar ridge** = the gums just behind the upper teeth.
- **The palate refers to:**
 - a. **The 'hard palate'** = the roof of the mouth.
 - b. **The 'soft palate'** = the velum that ends in the uvula.
- **Uvula:** the fleshy appendage at the back of the velum.

– **The tongue** = a mass of muscle, which we can divide into 5 major parts: the tip (the only part that is usually seen), body (blade, front, back), and root.

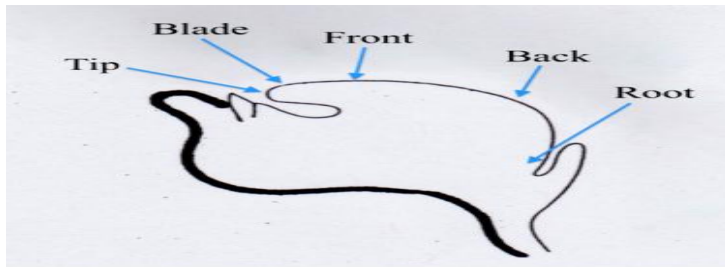


Fig.2 Sub-divisions of the tongue

– **Vocal Cords** = vocal folds which are two folds of muscle and connective tissue located behind the Adam's apple in the larynx. They are opened and closed during the production of speech.

– **Glottis** = the opening or the space between the vocal cords.

– **Pharynx** = tubular part of the throat above the larynx i.e., the back of throat or what is also known as: **pharyngeal cavity**.

– **The Larynx** = a valve, encased in cartilage (the 'Adam's apple / voice box' more prominent in males), at the top of the trachea and the source of voicing.

- **The lips** = they can assume various shapes

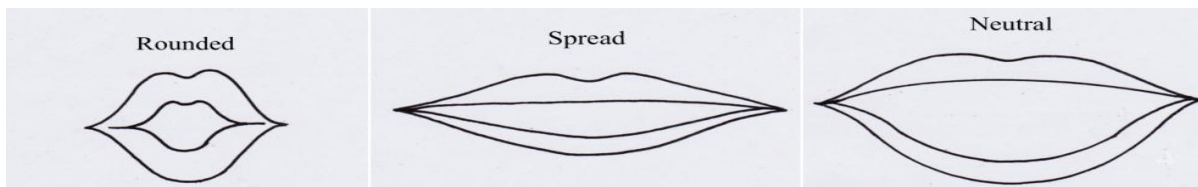


Fig.3 Shapes of the lips

- **The teeth** = upper and lower

2.2. Passive Vs. Active Articulators

The **most important** and **flexible** of all the organs of speech is the **tongue**, which is situated in the **oral cavity** and makes the greatest contribution to the articulation process. The tongue comes into contact with several other articulators, which are either flexible and mobile or are stable and immobile. The palate is a smooth curved surface in the upper part of the mouth and consists of two parts: the hard palate and the soft palate or velum (with its pendent uvula). The hard palate is a stable articulator and is essential for the production of several consonants when

in contact with the tongue. The soft palate and uvula are flexible and take place in the oro-nasal process of sound production. The lips (upper and lower) are quite mobile and may be shut or held apart to give a shape to the oral cavity. The upper teeth and alveolar ridge (located behind the upper teeth) are stable (immobile) articulators, while the lower teeth and lower jaw are mobile. **Many organs** of speech are **located** in the **upper part** of the **oral cavity**, a region deemed the roof of the mouth.

Accordingly, there are **numerous organs of articulation** or articulators are **involved** either **actively** or **passively** in the production of speech. **Active (flexible)** organs of speech (because they can be moved into contact with other articulators) are: **the lungs**, **the vocal folds** (vocal cords), **the tongue**, **the soft palate** (velum), **the uvula**, **the lips**, **the lower jaw**, and **the lower teeth**. **Passive (stable)** organs of speech (because they are stable (immobile) in sound production and their most important function is to act as the place of an articulatory stricture) are: **the upper teeth**, **the alveolar ridge**, **the hard palate**, **the pharynx**, **the larynx**, and **the vocal tract**.

These *flexible* and *stable* articulators are summarized in the table below as follows:

Table 1. Active and Passive Organs of Speech

Active (flexible) organs of speech (because they can be moved into contact with other articulators)	
the lungs the vocal folds the tongue the soft palate (velum) the uvula	the upper lip the lower lip the lower jaw the lower teeth
Passive (stable) organs of speech (because they are stable (immobile) in sound production and their most important function is to act as the place of an articulatory stricture)	
the upper teeth the alveolar ridge the hard palate	the pharynx the larynx the vocal tract

2.3. Common Vs. Scientific Terms of Articulators

the *speech organs* with their *adjectives*, usually based on the Latin/Greek names, that are used to describe the *speech sounds* made with each part are stated in this table.

Table 2. Common and Scientific Names of Speech Organs

Common name	Scientific name	Adjective
lips	labia	labial
teeth	–	dental
alveolar ridge	–	alveolar
(hard) palate	–	palatal
soft palate	velum	velar
uvula	–	uvular
upper throat	pharynx	pharyngeal
voice box	larynx	laryngeal
tongue tip	apex	apical
tongue blade	lamina	laminal
tongue body	dorsum (back)	dorsal
tongue root	–	radical
air box	lungs	–