

AN INTRODUCTION TO THE SOUND SYSTEM

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OUTLINE

- ◉ The Organs of Speech
- ◉ The Air-stream Mechanism
- ◉ International Phonetic Alphabet
- ◉ English Sound System

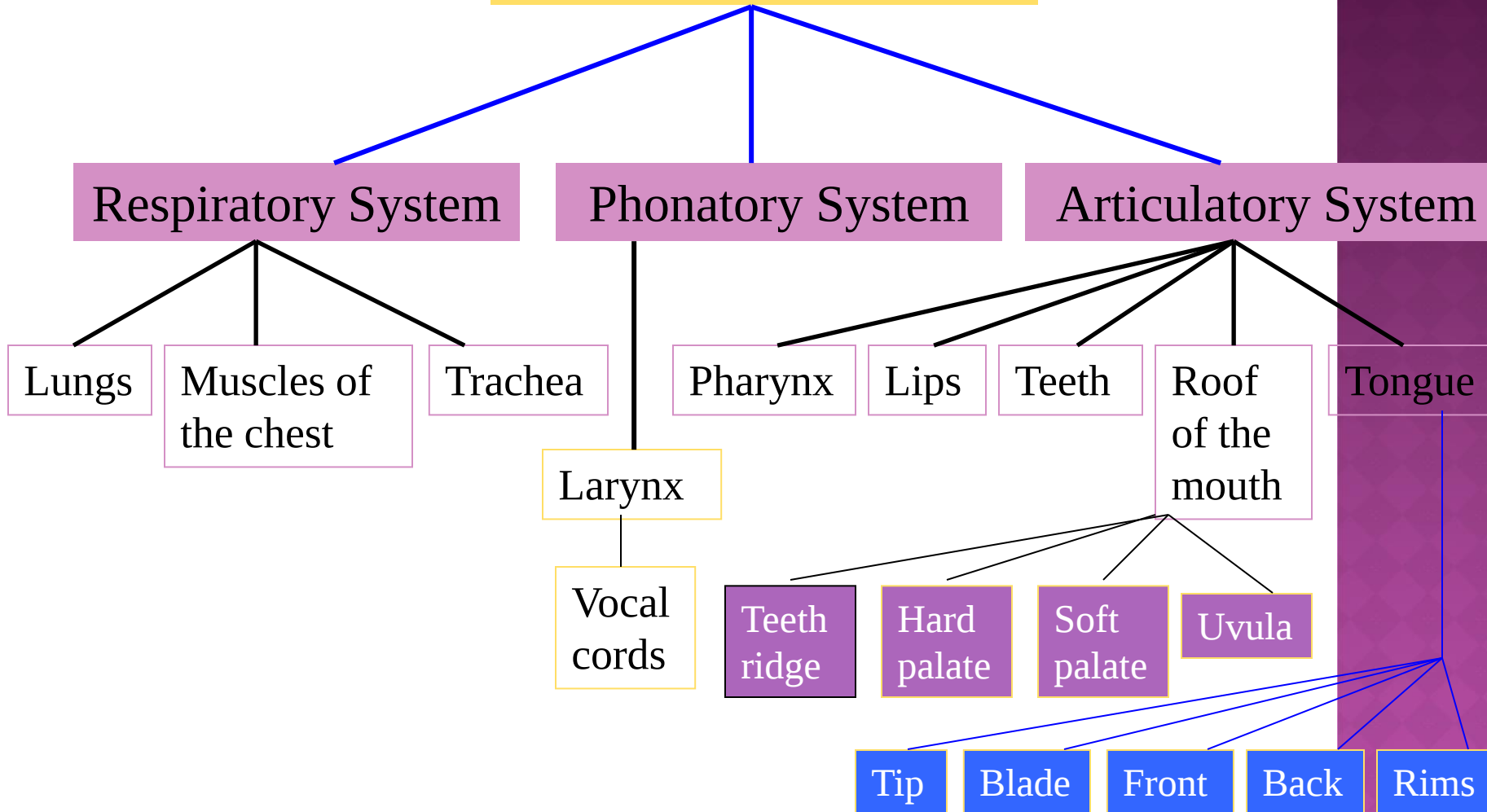
PHONETICS

- ◉ Phonetics is the study of the medium of spoken language, that is, the production, transmission and reception of the sounds of human speech.
- ◉ Spoken language is produced by the movements of the organs of speech.
- ◉ All human beings have the same organs of speech. So, theoretically speaking, every normal human being can produce any of the sounds of human speech.

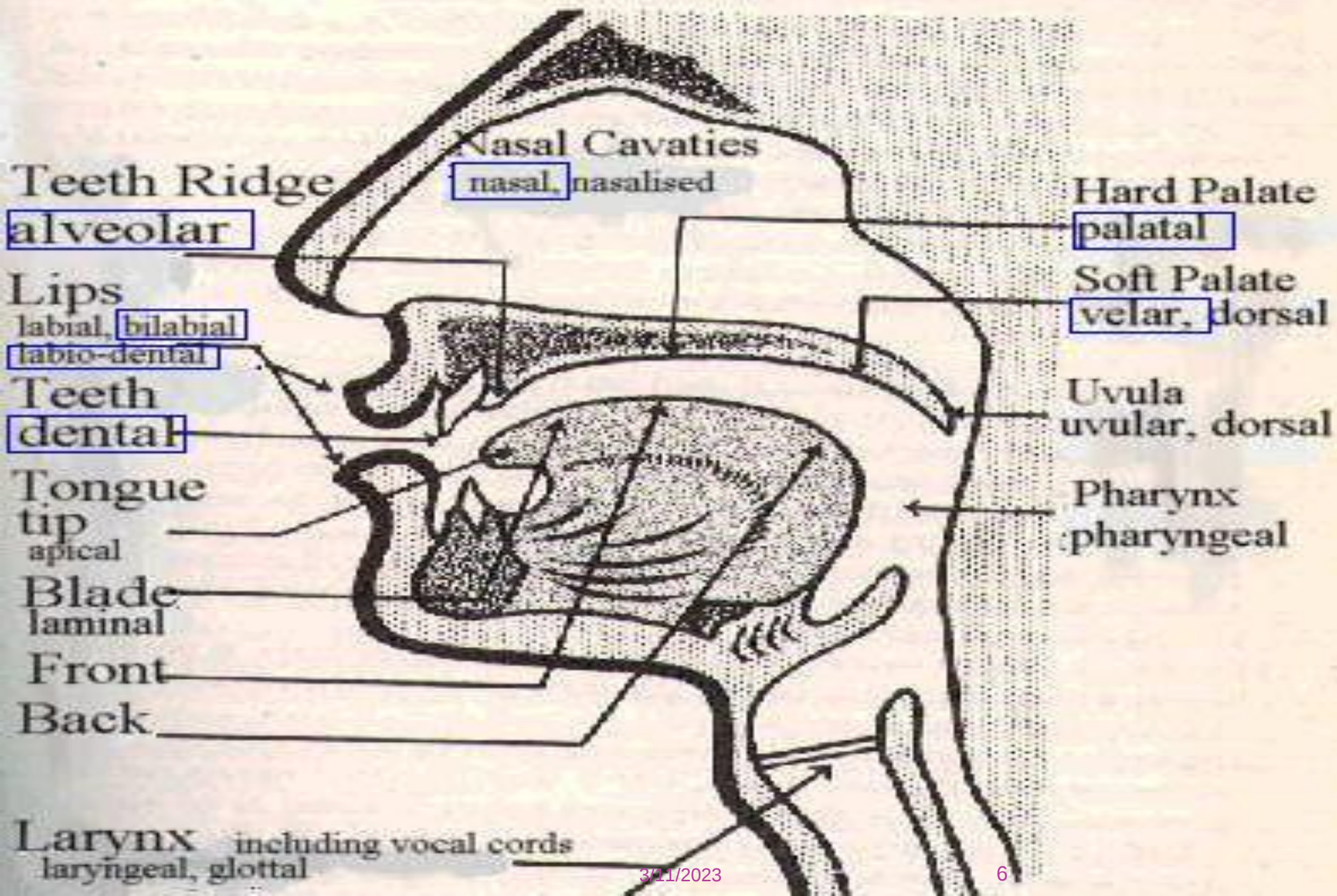
THE ORGANS OF SPEECH

- ◉ The respiratory system, consisting of the lungs, the muscles of the chest, and the wind-pipe (trachea)
- ◉ The phonatory system, formed by the larynx
- ◉ The articulatory system, consisting of the nose, the mouth (including the tongue, the teeth, the roof of the mouth, and the lips)

Organs of Speech



THE ORGANS OF SPEECH



THE LARYNX

- ◉ The air from the lungs comes through the wind pipe or trachea, at the top of which is the larynx.
- ◉ In the larynx are two vocal cords, which are like a pair of lips placed horizontally from front to back.
- ◉ They are joined in the front, but can be separated at the back, and the opening between them is called the *glottis*.

THE ROOF OF THE MOUTH

- The roof of the mouth can be subdivided into four parts:
 - the *teeth-ridge* or the *alveolar ridge*, *i.e.*, the hard convex surface just behind the upper front teeth
 - the *hard palate*, *i.e.*, the hard concave surface behind the teeth-ridge
 - the *soft palate*, *i.e.*, the soft portion behind the hard palate
 - the *uvula*, *i.e.*, a small fleshy structure at the end of the soft palate

CONSONANTS AND VOWELS: TWO BROAD CATEGORIES OF SOUNDS

- The description of a consonant includes the following description:
 - the nature of the air-stream mechanism
 - pulmonic / glottalic / velar , egressive / ingressive
 - the state of the glottis
 - voiced / voiceless/ whispered
 - The position of the velum or the soft palate
 - The articulators involved (i.e, the place of articulation)
 - The nature of stricture involved (i.e., the manner of articulation)

THE AIR-STREAM MECHANISM

- ◉ Three types of air-stream mechanism:
 - *pulmonic*
 - in which the lungs and the respiratory muscles set the air-stream in motion
 - *glottalic*
 - in which the larynx, with the glottis firmly closed, is moved up or down to initiate the air-stream
 - *Velaric*
 - in which the back of the tongue in firm contact with the soft palate is pushed forward or pulled back to initiate the air-stream

THE AIR-STREAM MECHANISM

- These air-streams can be:

- *Egressive*, i.e., the air is pushed out

- e.g., Sounds of English and Hindi are produced with *egressive pulmonic* air-stream.

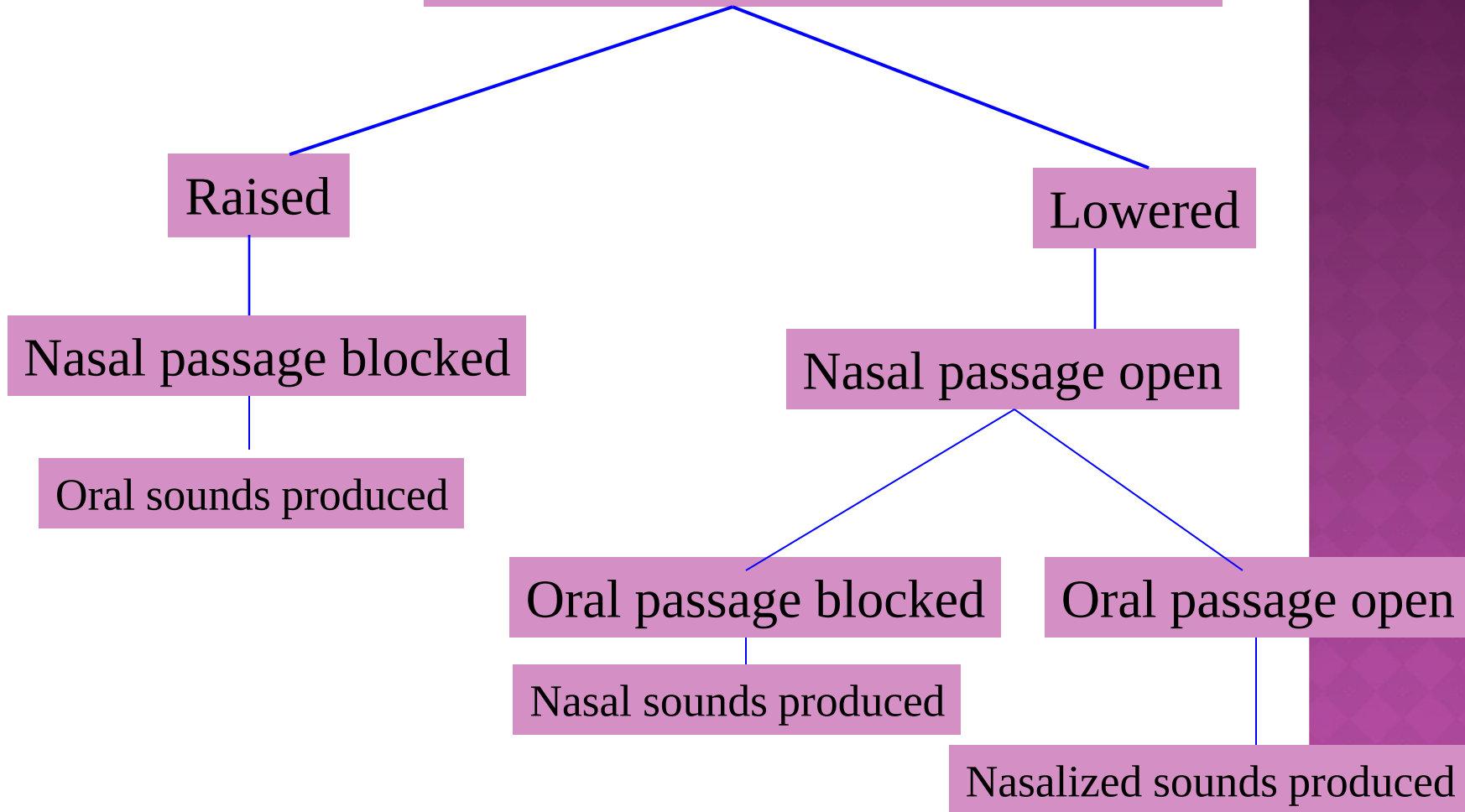
- *Ingressive*, i.e., the air is pulled in

- e.g., Sindhi has some sounds produced with an *ingressive* glottalic air-stream.

THE STATE OF THE GLOTTIS

- ◉ When we breath in and out, the glottis is open. That is, the vocal cords are drawn wide apart producing ***voiceless sounds***.
- ◉ If the vocal cords are held loosely together, the pressure of the air coming from the lungs makes them vibrate; that is, they open and close regularly many times a second. Sounds produced in this way are called ***voiced sounds***.

State of the soft palate



THE ARTICULATORS

- ◉ The organs of speech above the glottis are the articulators involved in the production of consonants:
 - Active articulator
 - the lower lip and the tongue
 - Passive articulator
 - the upper lip, the upper teeth, the roof of the mouth and the back wall of the throat (or Pharynx).
- ◉ In the production of a consonant, the active articulator is moved towards the passive articulator.

THE NATURE OF STRICTURE INVOLVED-I

- that is, the different ways in which the passage of air is restricted in the production of consonants
 - **Complete closure**
 - The active and the passive articulators making a firm contact with each other, thus preventing the passage of air between them. E.g., /p/, /b/
 - **Complete oral closure**
 - The active and passive articulators make a firm contact with each other, thus preventing the passage of air between them, but the soft palate is lowered, thereby allowing the air to escape through the nose. E.g., /m/, /n/

THE NATURE OF STRICTURE INVOLVED-II

- **Intermittent closure**
 - The air passes between the active and passive articulators intermittently. It involves the vibration of the active articulator against the passive. [Scottish r]
- **Flap**
 - For some consonants the active articulator strikes against the passive articulator once only. /r/ in very
- **Close approximation**
 - The two articulators are brought very close to each other so that the space between them is very narrow. E.g., /f/, /v/, etc.

THE NATURE OF STRICTURE INVOLVED-III

- **Partial closure**
 - There may be a contact of the articulators in the centre of the vocal tract but the air may pass through the sides. e.g., /l/
- **Open approximation**
 - The two articulators are brought close to each other but the space between them is wide enough for the air to escape without friction. E.g., all vowels and the English /j/ and /w/ as in *yes*, *west*.

THE PLACE OF ARTICULATION - I

- **The place of articulation simply means the active and passive articulators involved in the production of a particular consonant.**
- **A few are:**
 - **Bilabial** : The two lips are the articulators. E.g., /p/, /b/, /m/
 - **Labio-dental**: The lower lip is the active articulator and the upper teeth are the passive articulators. E.g., /f/, /v/
 - **Dental**: the tip of the tongue is the active articulator and the upper front teeth are the passive articulators.

THE PLACE OF ARTICULATION - II

- ◉ **Alveolar:** The tip or blade of the tongue is the active articulator and the teeth-ridge is the passive articulator.
- ◉ **Post-alveolar:** The tip of the tongue is the active articulator and the back of the teeth-ridge is the passive articulator.
- ◉ **Retroflex:** the tip of the tongue is the active articulator, and it is curled back. The back of the teeth-ridge or the hard palate is the passive articulator.

THE PLACE OF ARTICULATION - III

- ◉ **Palato-alveolar:** The tip, blade, and front of the tongue are the active articulators and the teeth-ridge and hard palate are the passive articulators.
- ◉ **Palatal:** The front of the tongue is the active articulator and the hard palate is the passive articulator.
- ◉ **Velar.** The back of the tongue is the active articulator and the soft palate is the passive articulator. E.g. /k/, /g/

THE PLACE OF ARTICULATION - IV

- ◉ Uvular: The rear part of the back of the tongue is the active articulator and the uvula is the passive articulator. There are no uvular sounds in English.
- ◉ Glottal: Produced at the glottis. E.g., [h]

THE MANNER OF ARTICULATION - I

- According to the manner of articulation consonants are usually classified as follows:
 - **Plosive:** In the production of a plosive, there is a simultaneous oral and nasal closure. The air behind the oral closure is compressed and when the active articulator is removed suddenly from contact with the passive one, the air escapes with an explosion.
 - **Nasal:** A nasal is produced by a stricture of complete oral closure, but in this case there is no closure of nasal passage. The soft palate is lowered and the air passes through the nose.

THE MANNER OF ARTICULATION - II

- **Trill** (rolled consonant) The active articulator taps several times against the passive articulator (i.e., stricture of intermittent closure). E.g., [r] in *horse*.
- **Flap**: For a flap the active articulator strikes against the passive articulator once only. E.g., [r] in *very*.
- **Lateral** : A lateral consonant is produced by a stricture of closure in the centre of the vocal tract , but the air has a free passage on the sides. E.g., /l/.

THE MANNER OF ARTICULATION - III

- ◉ **Fricative:** In the production of a fricative consonant the articulator is one of close approximation. The active articulator is brought so close to the passive articulator that the passage between them is very narrow and the air passes through it with audible friction. E.g., /f/, /v/
- ◉ **Frictionless continuant:** [r] in red
- ◉ **Semi-vowel:** /j/, /w/

VOWELS - I

- ◉ The stricture involved in the production of vowels is *open approximation*.
- ◉ The active articulators: the front, the back, the centre of the tongue
- ◉ The passive articulators: the hard palate, the soft palate, the meeting point of the hard and soft palates
- ◉ The active articulator is raised towards the passive articulator in such a way that there is a sufficient gap between the two for the air to escape through the mouth without any friction.

VOWELS - II

- ◉ A vowel is described using a three-term label:
 - part of the tongue raised (front, centre, back)
 - the height to which the tongue is raised (close, half-close, half-open, open)
 - the position of the lips (unrounded or rounded)

- ◉ *Cf. vowel chart in Figure 2*

VOWELS - III

- ◉ Monophthong: A vowel that does not change its quality (also called *pure vowels*)
- ◉ Diphthongs: There are some vowels, the quality of which is not constant, but changes from one vowel to another.

PHONETIC TRANSCRIPTION

- ◉ In English there is no one-to-one correspondence between spelling and pronunciation.
- ◉ To overcome this problem a need had been felt to evolve an alphabet in which words of any language could be written unambiguously.
- ◉ One such alphabet that is used extensively by phoneticians all over the world is the ***International Phonetic Alphabet***, devised by International Phonetic Association.
- ◉ It is claimed to have symbols to represent all the sounds that exist in the natural languages of the world.
- ◉ It is used to transcribe words of any natural language.
- ◉ It is based primarily on Roman Alphabet and a set of diacritics.

THE ENGLISH SOUND SYSTEM

- ◎ English has 44 sounds
 - 24 Consonants
 - 20 Vowels
 - 12 simple vowels or pure vowels/ Monophthongs
 - 8 diphthongs

THE END

THANK YOU