Phonetics

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Phonetics :

Phonetics is the study of speech sounds. T. Balasubramanian writes that, "Phonetics is a branch of linguistics and it is the branch dealing with the medium of speech. It deals with the production, transmission and reception of the sounds of human speech."

It involves 44 speech sounds, speech organs involved in the production of these sounds, Air stream mechanism, stress, Intonation etc. there are 44 speech sounds in English out of which 24 are consonants and the rest are vowel sounds which are described below.

Description of Consonant Sounds:

There are 24 consonant sounds in English which are expressed through the symbols i.e.

/p/ /b/ /t/ /d/ /k/ /g/ /tʃ/ /dʒ/ /f/ /v/ /θ/ /ð/

/s/ /z/ /ʃ/ /ʒ/ /h/ /m/ /n/ /ŋ/ /l/ /r/ /j/ /w/

A consonant sound is produced with obstruction. There is no free flow of air in the production of consonant sounds. Consonant sounds of English language can be described in the following five ways.

1. Air stream Mechanism
2. Articulatory system-oral or Nasal
3. Phonetary System

4. Place of Articulation
5. Manner of Articulation

1) **Air stream Mechanism:** Air stream mechanism means the regulation of air through the respiratory system which includes lungs, windpipe, and chest muscles. These organs used in the production of speech sounds are called organs of speech. Air streams can be categorized in three parts :

i. Pulmonic Air stream
ii. Glottalic Air stream
iii. Velaric Air stream

In the *pulmonic* air stream, lung air is the initiator organ. The air is sucked in and thrown out. The *pulmonic* Air stream is used in the production of speech sounds in English and other languages. In the production of all the 44 speech sounds in English lung air comes out through mouth and nose. Hence, all the 44 speech sounds in English are *"Pulmonic Eggressive"*

2) **Oral or Nasal :** A speech sound is said to be oral if the lung air comes out through mouth. When lung air comes out through the nose, nasal sound is produced for ex.- /m/ /n/ and /ŋ/. If the lung air passes through both mouth and nose, nasalized sound is produced which in English is not found. All the other consonants and vowels except the above mentioned nasal consonants are oral. Soft palate is the organ which is responsible for a sound to be oral or nasal. When the soft palate is raised, the lung air comes out through

mouth and the sound is oral. When the soft palate is lowered, the lung air comes out through the nose and the sound is nasal.

3) **Voiced or voiceless :** Speech sounds are also governed by a speech organ known as the vocal cords. The varying positions of the vocal cords determine a consonant to be voiced or voiceless. When air passes freely through the vocal cords, there is no vibration in the cords because the vocal are wide open, and the speech sounds, thus produced are called voiceless consonants. There are nine voiceless consonants in English which are:

/p/ /t/ /k/ /tʃ/ /f/ /θ/ /s/ /ʃ/ /h/

When air does not pass through the vocal cords, glottalic Stop sound is produced because the vocal cords are neither wide open nor tightly closed but loosely held together; the cords vibrate and the sound produced is the voiced consonant. In English language, all the consonants except the nine voiceless consonants are voiced.

4) **Place of Articulation :** In this section the organs of speech are identified which are involved in the production or articulation of speech sounds. The active and passive articulators are also determined. The speech sounds produced thus are named after the articulator involved in their production. On the basis of place of articulation, Consonants can be classified as following :

a) **Bilabial** : Here the articulation is made by two lips. Lower lip is active, upper lip is passive e.g.

/p/ /b/ /m/ /w/

b) **Labio-dental** : The articulation is made by lower lip and upper teeth. Lower lip is the active articulator e.g.

/f/ /v/

c) **Dental** : This sound involves the tip of the tongue (active) and the upper front teeth (passive) as articulators. /θ/ and /ð/ are dental consonants.

d) **Alveolar** :The articulation is made by tip of the tongue (active) and teeth (alveolar) ridge (passive). /t/ /d/ /s/ /z/ /n/ /l/ /r/ are alveolar consonant.

e) **Post-Alaveolar** : Here, tongue is the active articulator while post-alveolar (hard palate) is the passive articulator. /r/ in English is the post-alveolar consonant.

f) **Palato-Alveolar** : Tip and blade of the tongue are the active articulators and the alveolar region is the passive articulator. /tʃ/ /dʒ/ /ʃ/ and /ʒ/ are palato-alveolar consonants.

g) **Velar** : Soft palate (Velam) is the passive articulator or and back part of the tongue is the active articulator, i.e. /k/ /g/ and /ŋ/.

h) **Palatal:** Here the articulation is made by the hard palate (passive) and front part of the tongue (active articulator). /j/ is palatal consonant.

i) **Glottis :** This sound is articulated in the glottis i.e. the vocal cords e.g. /h/

5) **Manner of Articulation :**

The nature of release of lung air i.e. how the lung air passes through the mouth, is studied in this section. Obstruction is caused by narrowing or closing of the articulators. The stops can be categorized on the basis of the obstruction caused by these articulators.

a) **Plosive :** In the production of plosive sound, the two articulators-oral and nasal passages are firmly closed, a complete closure is made and air is prevented from escaping through the month i.e. holding the closure and air-pressure. The air behind the oral closure is compressed and when the active articulator is removed from contact with passive one, the air escapes with an explosion i.e sudden release of air pressure. /p/ /b/ /t/ /d/ /k/ /g/ are plosives.

b) **Affricate** : The two articulators are firmly closed; the closure is held; there is a slow release of air. If the stop is not held for any appreciable time and the air is released slowly, then affricate sound can be found for ex. /ʧ/ /ʤ/

c) **Fricative** : In the production of fricative sound the two articulators come very close but there is a narrow gap between them. In other words, it can be said that the active and the passive articulators are so close to each other that passage between them is very narrow and the air passes through it with audible friction. /f/ /v/ /θ/ /ð/ /s/ /z/ /ʃ/ /ʒ/ /h/ are fricative sounds.

d) **Nasal** : It this case, the lung air passes through the nose. A nasal is produced by a stricture of complete oral closure. The soft palate is lowered and the air passes through the nose. All the nasal sounds are voiced. /m/ /n/ /ŋ/ are nasal sounds.

e) **Frictionless Continuant** : The stricture is one of open approximation. There is plenty of space between the two articulators and the air passes between them without friction, so the consonant is termed as frictionless. /r/ is frictionless continuant.

f) **Semi Vowel**:/j/ and /w/ are semi-vowels. In terms of phonology /j/ and /w/ are vowels but in terms of

Open approximation

grammar, they are consonants. So, these are called semi-vowels as well as semi-consonant.

g) **Lateral** : These are produced by a stricture of complete closure in the centre of the vocal tract, but the air passes out every one or both side of the tongue. /l/ is a lateral sound.

h) **Flap** : In the production of a flap consonant, the active articulator strikes the passive articulater once only. The tip of the tongue (active) strikes the teeth ridge (passive). For example /ɾ/ as in very.

i) **Trill** : A trill consonant is produced when the active articulator (tip of the tongue) strikes against the passive articulator (teeth ridge) a number of times. The stricture involved can be called a stricture of intermittent closure. /r/as in 'rath' is a trill consonant.

j) **Fortis and Lenis** : When we have voiceless/voiced pair, the two sounds are also distinguished by the degree of breathforce and muscular effort involved in the articulation e.g. /s/ is comparatively strong or fortis and /z/ is comparatively weaker lenis.

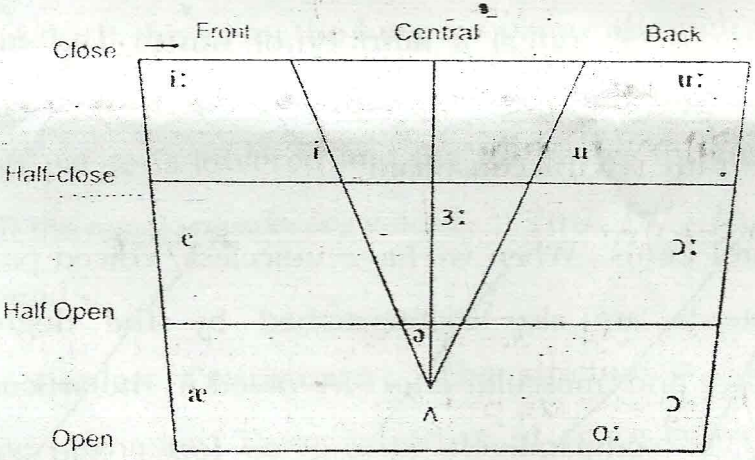
Not relevant

Description of vowel sounds

A vowel sound is produced without obstruction. There are two types of vowel sounds used in English language i.e.

- Pure Vowels or Monophthongs
- Diphthongs

1. **Pure Vowels :** There are 12 pure vowels in English which are front, central, Back, rounded, unrounded, open, Half-open, Half-close and close with the varying position of the tongue. The following diagram has been used in T.Balasubramanian's *A Text Book of English Phonetics for Indian Students.*



Thus they may be categorized in

i. Front vowels
ii. Back vowels
iii. Central vowels

a) **Front vowels :** There are four front vowels whose nature are described below :

/i:/- Front, close, unrounded. It can occur initially, medially and finally as in eat, beat and been respectively.

/i/- Centralized front unrounded vowel just above the half close position : It can occur initially, medially and finally as in it, bit and city.

/e/- Front unrounded vowel between half close and half open. It occurs initially and medially only as in any, bed. It does not occur finally.

/æ/- Front unrounded vowel just below the half open position. It occurs initially and medially as in axe and bat. It does not occur finally

b) There are five back vowels as described below :

/a:/- Back, Open, unrounded. It can occur initially, medially and finally as in art, part, Car.

/ɔ/- Back, rounded just above the open position; it occurs initially and medially as in ox and box. It does not occur finally.

/ɔ:/- Back rounded between half -open and half-close. It can occur initially medially and finally as in ought, bought and law respectively.

/u/- Back rounded just above half close. It does not occur initially, and occurs medially in words as in put, sugar. It occurs finally only in the unaccented form of the preposition 'to'.

/u:/ Back, close, rounded. It occurs initially medially and finally as in ooze, boot and two.

c) **Central vowels** : The following are the three central vowels in English.

/ʌ/- Central, Unrounded just above open. It occurs initially and medially as in 'up' and 'cup'. It does not occur finally.

/ə:/- Central unrounded vowel between half close and half-open. It occurs initially, medially and finally as in earn, learn and err.

/ə/- Central unrounded just below half open. It can occur initially, medially and finally as in 'about', 'forget' and 'tailor' respectively.

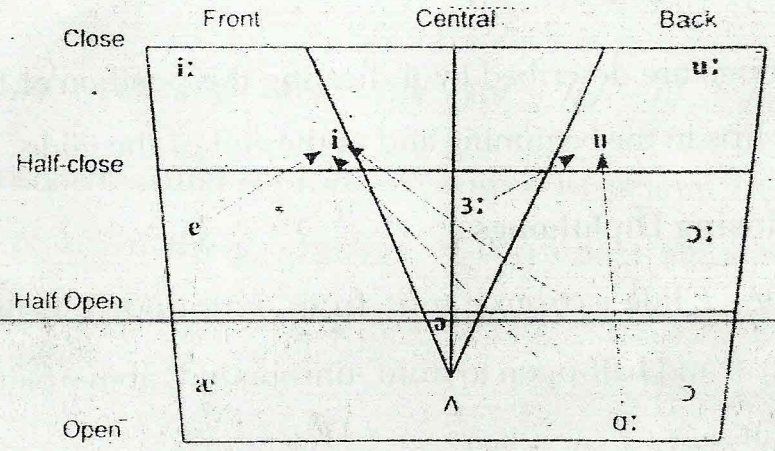
2. **Diphthong** : Diphthong is defined as a vowel glide. It consists of a deliberate glide; the organs of speech starting in the position of one vowel and immediately moving in the direction of another vowel. It, moreover, consists of a single syllable -that is the vowel glide must be performed with a single impulse of breath. Diphthongs are termed as rising if the second element is louder or more prominent than the

first. On the other hand, Diphthongs are termed as falling diphthongs, if the first element is louder or more prominent than the second. All the diphthongs in English are falling diphthongs because the first element is move prominent than the second.

There are two kinds of diphthongs in English

- The closing diphthongs and
- The centering diphthongs

a) **The closing diphthongs :** In closing diphthongs the tongue moves towards the close position. There are five closing diphthong i.e. /aɪ/ as in buy ; /aʊ/ as in 'bow' ; /eɪ/as in 'bay'; /əʊ/ as in 'boat' /ɔɪ/as in 'boy'. The following table presents closing diphthongs.

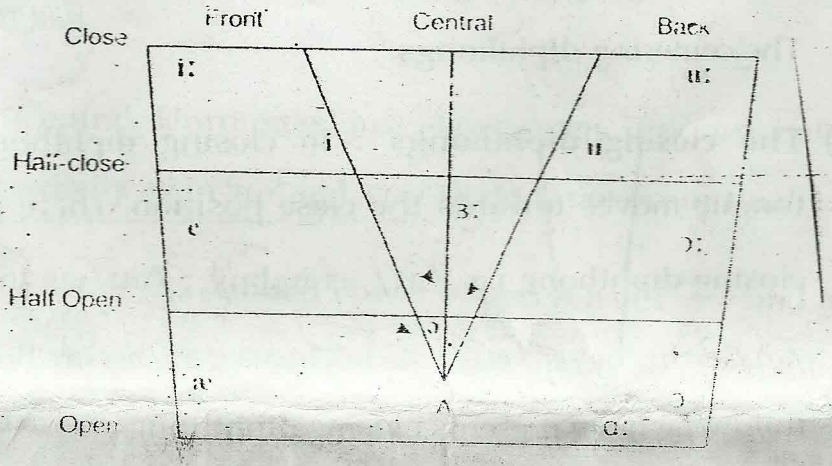


b) **Centering Diphthongs** : In the centering diphthongs, the tongue moves towards the centre. There are three centering diphthongs.

/ɪə/ as in pear

/eə/ as in pair

/ʊə/ as in poor



Description of Diphthongs

Diphthongs are described by indicating the position of the tongue and the lips in the beginning and at the end of the glide.

1) **Closing Diphthongs :**

/eɪ/- Glide is from e to i: front, unrounded, between half-close and half-open to front, unrounded, above half close e.g. bay /beɪ/ ; day /deɪ/

/əʊ/- Glide is from ɔ: to u, Central, unrounded between half-close and half-open to Back, rounded, above half-close. e.g. boat- /bəʊt; coat /kəʊt/

/aɪ/- Glide is from a to I. front, unrounded open to front unrounded and above half close e.g. cry /kraɪ/

/ɔɪ/- The glide is from back, rounded, between open and half-open to a centralized front unrounded vowel just above the half-close position. e.g. boil /bɔɪl/

/aʊ/- The glide is from back, open, unrounded back, above half-close, rounded eg. house /haʊs/

2) **Centering Diphthongs :**

/ɪə/- The glide starts from a front unrounded vowel above the half close position and moves in the direction of central, unrounded vowel between half close and half-open. e.g. clear; /klɪə/

/ʊə/- The glide is from back, rounded, above half close to central, unrounded, between half close and half-open. eg 'poor' /pʊə/

/eə/- The glide is from front, unrounded half-open to central, unrounded, between half close and half-open e.g. chair /tʃeə/