

Description of English Vowels and Consonants ORGANS OF SPEECH

Any manifestation of language by means of speech is the result of a highly complicated series of events. The communication in sound of such a simple concept as "It's raining" involves a number of activities on the part of the speaker. In the first place, the formulation of the concept will take place at a linguistic level, i.e., in the brain; the first stage may therefore be called **psychological**. The nervous system transmits this message to the so called 'organs of speech' and these in turn behave in a conventional manner, which will have the effect of producing a particular pattern of sound; the second important stage is articulatory or **physiological**. The movement of our organs of speech will create disturbances in the air, or whatever the medium may be through which we are talking; these varying air pressures may be investigated and they constitute the third stage, the **physical** or **acoustic**.

Only a restricted region of the body is involved in articulation. Some of the motions of speech are visible from outside — those of the jaw and lips, sometimes of the tongue, sometimes of the tongue. The other parts involved are inside the body which can be detected by sensing the position of tongue and throat. The so called **organs of speech** consists of all the movable parts in the oral cavity (mouth), the nasal cavity, the pharynx (throat), and the lungs, together with the

with the muscles that move these parts. Collectively this part is the speech tract.

THE LUNGS

The most usual source of energy for our vocal activity is provided by an air stream expelled from the lungs. In most speech, the lungs are neither quiescent nor loosely exhaling, but are actively pushing air outwards. The force of the pushing varies rhythmically, in a way which correlates with the successive units we call **syllables** in English. Rarely, a bit of speech is produced during the intake of air. Some speakers of English do this commonly with an assenting "grunt", something like 'yeah'.

THE LARYNX

The air-stream provided by the lungs undergoes important modifications in the upper stages of the respiratory tract before it acquires the quality of a speech sound. First of all, in the trachea or wind-pipe, it passes through the larynx, containing the so-called vocal cords. In using the vocal cords for speech, the human being has adapted and elaborated upon this original open-or-shut function in the following ways:-

*
Diagram of
Organs of
Speech:

The larynx
is a cartilaginous
formed of cartilage
and muscle
situated in upper
part of trachea.
It is commonly
known as
Adam's apple

Diagram

(a) The vocal cords in their relaxed position, leave a passage so wide that air can pass through almost noiselessly. Speech sounds produced with the cords in this position are voiceless. English (b) at the beginning of a word like heap, hand, nose.

b At the opposite extreme the glottis may be held tightly closed, with the lung air pent up below it. This 'glottal stop' (?) frequently occurs in English, e.g. when it precedes the energetic articulation of a vowel or when it reinforces or even replaces p, t, k. In English, we often begin an emphatic exclamation such as ouch! (with a glottal catch, though ~~the~~ phonemically the utterance) begins with a vowel (law^{*}!).

(c) The vocal cords can be stretched taut, with little space between them, but so held that the passing air stream forces itself through and sets the cords into vibration, like a ~~reed~~ reed. This vibration is voice or voicing, and speech sounds which involve voicing are voiced. In English, the vowel phonemes are all regularly voiced, as are the consonant phonemes ^(voiced) /b, d, g, v, ʒ, z, m, n, l, r, w, j, ɹ/; the remaining consonant phonemes, /p, t, k, f, θ, s, ʃ, h/, are usually voiceless, though /t/ is sometimes voiced in some occurrences (matter, batter etc). By varying the tension on the vocal cords during voicing, and the force of the passing stream of air, one can vary the pitch and the volume. The vocal cords can produce certain further effects. In murmur, the cords are in vibration, but in addition the passing air stream is set into local turbulence. A very quiet whisper may result merely from *

THE PHARYNX → As in the larynx, a complete closure

*holding the glottis in the voiceless position as for /h/.

can be made in the lower pharyngeal region, by drawing the root of the tongue back against the back wall of the passage. This produces a 'pharyngeal catch'. Instead of complete closure, a small passageway can be left, so that the passing air stream is set into local turbulence producing a pharyngeal spirant, which can be either voiceless or voiced. It is a characteristic of some kinds of English pronunciation that certain vowels are articulated with a strong pharyngeal contraction; in addition, a constriction may be made between the lower rear part of the tongue and the wall of the pharynx so that friction, with or without voice, is produced, such fricative sounds being a feature of a number of languages.

The escape of air from the pharynx may be effected in one of ^{the} three ways:

a) The soft palate may be lowered, as in normal breathing, in which case the air may ^{escape} through the nose and the mouth [v] as in van, man.

b) The soft palate may be lowered so that a nasal outlet is afforded to the air stream, but a complete obstruction is made at some point in the ~~mouth~~ mouth, with the result that, although air enters all or part of the mouth cavity, no oral escape is possible. A purely nasal escape of this sort occurs

in such nasal consonants as [m, n, ŋ] in the English words 'ram', 'ran', 'rang'.

- c. The soft palate may be held in its raised position, eliminating the action of the nasopharynx, so that the air escape is solely through the mouth.

THE VELIC AND NASAL CHAMBER

The velic is the entrance from the upper part of the pharynx into the nasal cavity. which functions in speech, and its motions are strictly limited; it is either closed, so that air cannot pass between pharynx and nasal cavity, or open. Sounds produced with the velic open are called **nasal** or **nasalized**; those produced with the velic closed are called **nonnasal** or **oral**. In English, the consonant phonemes [m, n, ŋ] are always nasal, and differ only in this way from [b, d, g] which are always oral. These all are voiced.

THE ORAL CAVITY

It is within the oral cavity that the greatest variety of articulatory motion occurs. It is convenient to divide the whole range of articulatory motions in the mouth very roughly into two classes; those which have vowel-like or **vocoid** effects, and those which have consonant-like **contoid** effects. A **vocoid** is a sound in which resonances or colorings of one sort or another seem to be of primary importance. A **contoid**, on the other hand, is a sound involving clearly audible turbulence of the air-stream at one point or another in the vocal tract, or else a complete interruption of the air-stream.

Although all the cavities play an essential part in the production of speech sounds, most attention has traditionally been paid to the behaviour of the cavity formed by the mouth. The shape of the mouth determines finally the quality of the majority of our speech sounds. The only boundaries of this oral chamber which may be regarded as ~~the~~ relatively fixed are, in the front, the teeth; in the upper part, the hard palate; and in the rear, the pharyngeal wall. The remaining organs are movable: the lips, the various parts of tongue, and the soft palate with its pendent uvula. The lower jaw, too, is capable of very considerable movement; its movement will control the gap between the upper and lower teeth. Of the movable parts, the lips, whenever ^{the} nasal passage is shut off, constitute the final orifice of the mouth cavity. They may be shut or held apart in various ways:† The tongue is by far more flexible and is capable of assuming a great variety of positions in the articulation of both vowels and consonants.

†: Position of lips

If the lips are held apart, the positions they may assume ~~are~~ six positions:

- (i), held sufficiently close together to allow friction sound, the voiced variety [β] as sometimes wrongly used by foreigners speakers of English as in 'word'

- (ii) held sufficiently far apart for no friction is heard, yet in a spread position, as in the vowel see.
- (iii) held in a neutral position, that is, relaxed position with a medium lowering of the lower jaw as in the vowel of get.
- (iv) held in open position; that is, a position in which lips are held relatively wide apart without any marked rounding, as in the ~~was~~ vowel in 'car', 'part'.
- (v) held in a close rounded position as in the vowel 'do'.
- (vi) held in an open rounded position^{as} in the vowel of 'got'.

Position of Tongue

Generally in the articulation of vowels, the tongue-tip remains low behind the lower teeth.

The body of the tongue may, however, be 'bunched up' in diff. ways,

- (a) the front may be the highest part as ~~when~~ in the vowel of he.
- (b) The back may be most prominent as in the case of the vowel who.
- (c) The whole surface may be relatively low & flat as in the case of the vowel 'ah'.



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Open.



Closed.



Voiced



Whisper

FOUR POSITIONS OF VOCAL CORDS

