Introduction to Phonetics and Phonology

Chapter 1.

Definitions

Phonetics;

> The branch of linguistics that deals with the ‘’study of the characteristics of human sound-making, especially of those sounds used in speech’’.
>
> Or
>
> Phonetics is a branch of linguistics that studies the sounds of human speech, or—in the case of sign languages—the equivalent aspects of sign.

Note: ***Sign languages*** *(also known as signed languages) are languages that use the visual-manual modality to convey meaning. Deaf people use sign language.*

Phonetics is concerned with the physical properties of speech sounds or signs (phones): their physiological production, acoustic properties, auditory perception, and neurophysiological status.

In the case of oral languages, phonetics has three basic areas of study:

Articulatory phonetics: the study of the organs of speech and their use in producing speech sounds by the speaker.

Acoustic phonetics: the study of the physical transmission of speech sounds from the speaker to the listener.

Auditory phonetics: the study of the reception and perception of speech sounds by the listener.

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Phonology

- The branch of linguistics that deals with the study of sound system of languages, and of the general or universal properties displayed by these systems.

Or

- Phonology is a branch of linguistics concerned with the systematic organization of sounds in languages.

Phonology deals with how speech sounds are organized into systems for each individual language: for example, how the sounds can be combined, the relations between them and how they affect each other.

Take the word 'Tlip' which is considered wrong phonologically, which is the systematic organization of speech sounds, in native English because English doesn't have words beginning with 'Tl…' though 'tlip' can be articulated, that's Phonetics.

Note: Phonology is often distinguished from phonetics. While phonetics concerns the physical production, acoustic transmission and perception of the sounds of speech, phonology describes the way sounds function within a given language or across languages to encode meaning. For many linguists, phonetics belongs to *descriptive linguistics*, and phonology to *theoretical linguistics.*

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Phoneme

> A phoneme can be defined as: ''a member of a set of abstract units which together form the sound system of a given language and through which contrasts of meaning are produced.''

Speech is a continuous flow of sound with interruptions only when necessary to take in air to breathe, or to organize our thoughts. The first task when analyzing speech is to divide up this continuous flow into smaller chunks that are easier to deal with. We call this process ***segmentation***, and the resulting smaller sound units are termed ***segments*** (these correspond very roughly to vowels and consonants). If English speakers are asked how many speech sounds there are in man, they will almost certainly say 'three', and will state them to be [m], [æ] and [n].

Segments do not operate in isolation but combine to form words. In man, the segments [m], [æ] and [n] have no meaning of their own and only become meaningful if they form part of a word. In all languages, there are certain variations in sound which are significant because they can change the meanings of words. For example, if we take the word man, and replace the first

sound by [p], we get a new word pan. Two words of this kind distinguished by a single sound are called a ***minimal pair***.

Let's take this process further. In addition to pan, we could also produce, for example, ban, tan, ran, etc. A set of words distinguished in this way is termed a ***minimal set.***

Instead of changing the initial consonant, we can change the vowel, e.g. mean, moan, men, mine, moon, which provides us with another minimal set. We can also change the final consonant, giving yet a third minimal set: man, mat, mad. Through such processes, we can eventually determine those speech sounds which are phonologically significant in a given language. *The contrastive units of sound which can be used to change meaning are termed phonemes.* We can therefore say that the word man consists of the three phonemes /m/, /æ/ and /n/.

- We shall place phonemic symbols between slant brackets / /.
- There are 44 phonemes in English language consisting of 20 vowels and 24 consonants.

But not every small difference that can be heard between one sound and another is enough to change the meaning of words. There is a certain degree of variation in each phoneme which is sometimes very easy to hear and can be quite striking. English /t/ is a good example. It can range from a sound made by the tip of the tongue pressed against the teeth-ridge to types of articulation involving a 'catch in the throat' (technically termed a glottal stop). Compare /t/ in tea (tongue-tip t) and /t/ in button (usually made with a glottal stop).

Each phoneme is therefore really composed of a number of different sounds which are interpreted as one meaningful unit by a native speaker of the language. This range is termed ***allophonic variation***, and the variants themselves are called **allophones.**

Although each phoneme includes a range of variation, the allophones of any single phoneme generally have considerable phonetic similarity in both acoustic and articulatory terms; that is to say, the allophones of any given phoneme:

- usually sound fairly similar to each other
- are usually (although not invariably) articulated in a somewhat similar way.

(IMPORTANT NOTE; This is not to be confused with the letter itself; Phonemes are only the sounds made. It's important to understand that Phonemes can be made of more than one letter.

Take the word "dog" for example. There are three Phonemes involved: the "d" sound, a short "aw" sound, and a "g" sound. The word "hope" is a three Phoneme word, too: the "h" sound, the long "oo" sound, and the "p" sound. And for something a little more difficult, the word "school" has four Phonemes: the "s" sound, a "k" sound, a long "uu" sound, and an "l" sound.)

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Vowel

There are two complementary definitions of vowel, one phonetic and the other phonological.

- In phonetics, *a speech sound produced by a relatively open configuration of vocal-tract, so that there is no audible friction, such as [a] or [i].*

- In phonology, *a unit of the sound system which typically occupies the nucleus of a syllable, as in /kat/ and /si:t/.*
  [[A **syllable** is a unit of organization for a sequence of speech sounds. It is typically made up of a syllable nucleus (most often a vowel) with optional initial and final margins (typically, consonants) for example, the word ignite is composed of two syllables: *ig* and *nite*. Syllables are often considered the phonological "building blocks" of words.]]

In English it is important to know that there is a difference between a *vowel sound* and a *letter* in the alphabet. In English there are five vowel letters (A, E, I, O, U) in the alphabet, but there are many more, as for as 13-15, vowel sounds. This means there are more vowel sounds than letters in the English alphabet.

Monophthongs;

Simple vowels are called monophthongs. In monophthong a person does not have to move his or her mouth to make, like the "oo" sound in "book."

Example; /i/ as in police, feet, eat, and silly

/ɪ/ as in it, sit, kick, and bitter

/ɛ/ as in end, bet, less, and letter

/æ/ as in at, apple, fat, and matter

Diphthongs;

The word diphthong is derived from the old Greek language. Here, *di* means two or double, while the part -*phthong* means sound or tone.

- A vowel with perceptible change of quality during a single syllable.

- Diphthongs are sounds which consist of a movement or glide from one vowel to another.

It may be represented by a single letter (*my*) or sequence of letters (*tie*); in the case of these words, the quality changes from a vowel of an [a] quality to one of an [i] quality. Phonetic symbols for diphthongs represent the beginning and the end of the vowel glide: [ai] in *my*, [ou] in *go*, etc. One element in diphthong is always more sonorous than the other: if this is the first element, the diphthong is said to be ‘falling’ or ‘descending’; if the second, it is ‘rising’ or ‘ascending’.

The total number of diphthongs is Eight.

The process of forming a diphthong is called ***Diphthongization***.

Triphthongs;

In phonetics, a triphthong (from Greek "triphthongos", literally "with three sounds," or "with three tones") can be defined as,

- A glide from one vowel to another and then to a third, all produced rapidly and without interruption.
- A monosyllabic vowel combination involving a quick but smooth movement of the articulator from one vowel quality to another that passes over a third.

While "pure" vowels, or monophthongs, are said to have one target articulator position, diphthongs have two, and triphthongs three. They can rather be difficult to pronounce, and very difficult to recognize.

Some example words of triphthongs are,

- [aʊ̯ə̯] as in *hour*
- [aɪ̯ə̯] as in *fire*
- [ɔɪ̯ə̯] as in *"loir"*

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Consonants

In articulatory phonetics, a consonant is

- *a speech sound that is articulated with complete or partial closure of the vocal tract.*

- *An articulation which involves any of the following strictures* (the degree of contact)*:*
  - *blocking the airstream completely (i.e. stops, trills and taps)*
  - *hindering the airstream sufficiently to give rise to audible friction (i.e. fricatives)*
  - *blocking the airstream, but allowing nasal escape (i.e. nasals)*
  - *blocking the airstream centrally, but allowing lateral escape (i.e. laterals)*

There are 21 consonants in English language.

Voicing

'Voice' is a term used in phonetics and phonology to characterize speech sounds (usually consonants). It is also called "voicing". Speech sounds can be described as either voiceless (also called unvoiced) or voiced.

The term, however, is used to refer to two separate concepts:

- Voicing can refer to *the articulatory process in which the vocal folds vibrate, its primary use in phonetics to describe **phones**, which are particular speech sounds*.
- It can also refer to *a classification of speech sounds that tend to be associated with vocal cord vibration but may not actually be voiced at the articulatory level*. That is the term's primary use in phonology: to describe phonemes; while in phonetics its primary use is to describe phones.

If the vocal folds vibrate, by obstructing air flow someway in the vocal tract, we will hear the sound that we call *Voicing* or *Phonation*. There are many different sorts of voicing that we can produce based on the changes made in vocal folds. Three main differences are found;

- Variation in Intensity—we produce voicing with high intensity for shouting, for example, and with low intensity for speaking quietly.
- Variation in Frequency—if the vocal folds vibrate rapidly, the voicing is at high frequency; if there are fewer vibrations per second the frequency is lower.
- Vibration in Quality—we can produce different-sounding voice qualities, such as those we might call harsh, breathy, murmured or creaky.

At the articulatory level, a voiced sound is one in which the vocal folds vibrate, and a voiceless sound is one in which they do not.

For example, voicing accounts for the difference between the pair of sounds associated with the English letters "s" and "z". If one places the fingers on the voice box (i.e. the location of the Adam's apple in the upper throat), one can feel a vibration while zzzz is pronounced but not with ssss. So the consonant letter ‘z’ is voiced while ‘s’ is unvoiced.

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Aspiration

Definition;

- Audible breath which accompanies the articulation of certain types of sounds.

A further important aspect of the release stage of plosives, particularly associated with voiceless stops, is the phenomenon known as **aspiration**. Compare the stops in the pairs ‘pie – spy’, ‘tie – sty` and ‘core – score’. For most English speakers (though not all from the North of England or from Scotland, for example), these should sound quite different. When the voiceless stop begins the word, as in the first member of each pair, there is likely to be an audible puff of air following the release. When the stop follows [s], as in the second member, there is no such puff of air (indeed, the stop may well sound more like its voiced counterpart in ‘buy`, ‘die’ and ‘gore’ respectively). Stops like those in ‘pie`, ‘tie` and ‘core`, which have this audible outrush of air, are known as aspirated stops; those in `spy`, `sty` and `score’ are known as unaspirated. Aspiration is indicated by a superscript [^{h}] following the symbol for the stop, e.g. [p^{h}], [t^{h}], [k^{h}].

Aspiration can be felt by placing a hand at the front of mouth and also a candle can be placed whose flame will flicker by aspirated consonants.

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Minimal Pair

Definition;

- A pair of words distinguished by a single phoneme,

An example, for English vowels,

- the pair "let" + "lit" can be used to demonstrate that the phones [ɛ] (in let) and [ɪ] (in lit) actually represent distinct phonemes /ɛ/ and /ɪ/.

An example for English consonants,

- is the minimal pair of "pat" + "bat".

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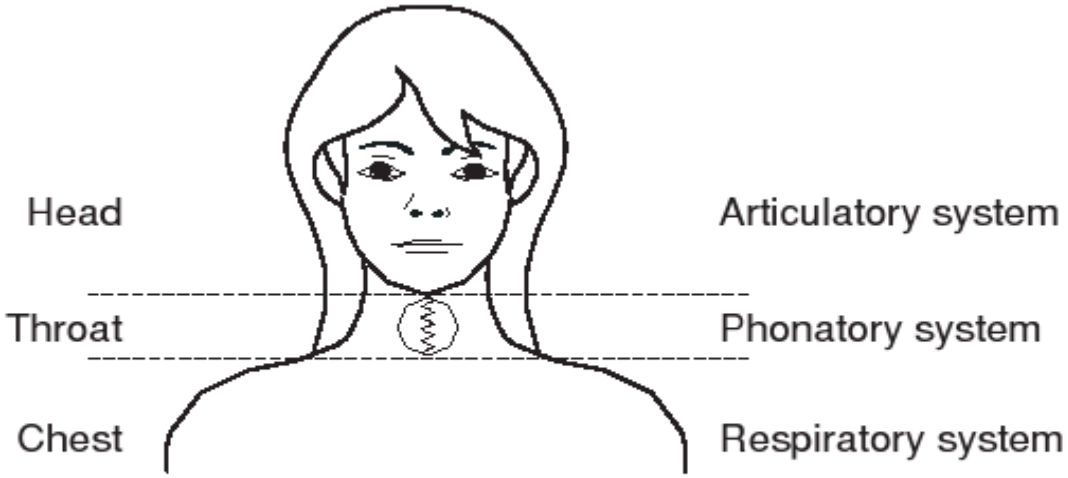
Organs of Speech

Chapter # 2

The organs of speech fall into three groupings,

Location	System
HEAD	**Articulatory system**
THROAT	**Phonatory system**
CHEST	**Respiratory system**



Divisions of the speech mechanism

The respiratory system

The respiratory system consists of the **lungs** and the **bronchial tubes** which lead to the throat. Normally, breathing in (inhalation) and breathing out (exhalation) both take a roughly equal space of time. But during speech, the lungs take in air rapidly and let it out slowly – in fact, about 1:8 in favour of exhalation. *Speech consequently can be seen as a type of controlled breathing.*

All languages use the pulmonic egressive airstream as their main form of speech production. But a few sounds are made in a different way – for instance the **click** sounds we use occasionally to show disapproval (tut-tut) or enthusiasm. Although clicks aren't part of the English phonemic system, they are nevertheless meaningful in context. We call such phenomena that function alongside speech **paralinguistic** features – gestures, facial expressions and voice quality are other examples. Nevertheless, the sounds known as clicks – made with ingressive mouth air – are actually used as phonemes in several African languages. The best known of these are Zulu and Xhosa (two very similar languages) spoken in total by about twelve million people in South Africa.

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The phonatory system

The bronchial tubes end in the windpipe – known technically as the **trachea**. At the very top of the trachea, we find the **larynx**, which can be regarded as the engine of the phonatory system. The larynx is clearly visible in grown males as a lump bobbing up and down in the neck; females have much smaller larynxes. Try feeling your larynx – easy for men but a bit more difficult for women. The **vocal folds** (also called the vocal cords) vibrate very rapidly when an air-stream is allowed to pass between them, producing what is termed **voice** – that is, a sort of 'buzz' which one can hear and feel in vowels and in some consonant sounds. The function of the larynx as a vibration source is termed **phonation**.

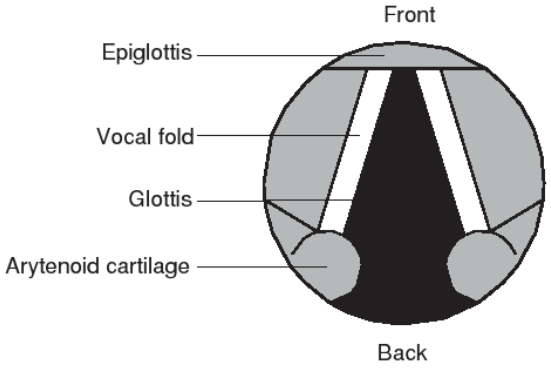
The larynx is a box-like structure composed of cartilage, and inside it, are the two vocal folds. These can be positioned by the two cartilages known as the **arytenoids** (from Greek arutaina, 'serving spoon, ladle', so called because the cartilages were thought to be spoon-like in shape). The vocal folds temporarily close off the entrance to the trachea so protecting the lungs from inhaling small food particles. If this mechanism fails, as it sometimes does, we end up choking and spluttering, complaining that the food has 'gone the wrong way'. Food normally goes down the **oesophagus**, the pipe leading to the stomach, being diverted away from the larynx by the epiglottis.

The gap between the vocal folds and/or the arytenoids is termed the **glottis.**

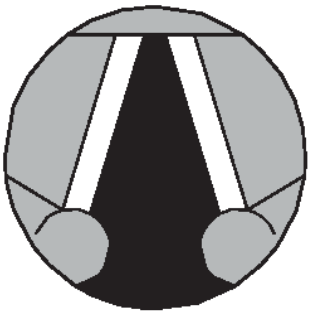
For **voiceless sounds**, the vocal folds and the arytenoid cartilages are held wide apart as in relaxed breathing. This allows the pulmonic airstream to escape freely.

For **voice**, the vocal folds vibrate at high speed in the airstream produced by the lungs. The arytenoids are firmly closed. Vocal fold vibrations are far too fast to see with the naked eye,

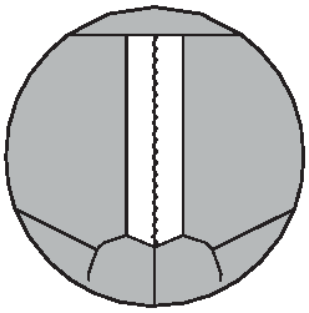
being comparable to the buzzing of an insect's wing. The vibration is constantly changing but occurs on average 130 times a second for male voices, and 230 times per second for females. Longer and larger vocal folds produce slower vibrations. The larger dimensions of the male vocal folds mean that men's voices are deeper in pitch than those of women.



Simplified model of the larynx



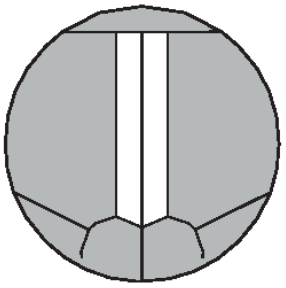
Glottal setting: voiceless



Glottal setting: voice

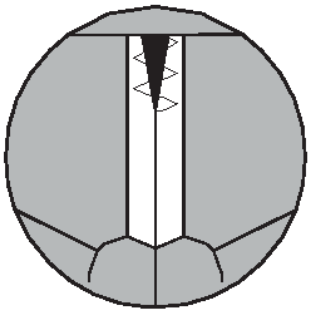
The speed of vibration is termed **frequency**. Although the relationship is complex, we can say broadly that the higher the frequency of vocal fold vibration, the higher the pitch perceived by listeners (note that frequency is a *physical measurement* whilst **pitch** refers to the *perception of the listener*). Pitch change is crucial in language, being the basis of intonation and tone.

Glottal stop is at the other extreme from voiceless (where the vocal folds are wide apart). The vocal folds and the arytenoids are close together so that the airstream coming from the lungs is momentarily stopped. On the release of the glottal closure, the blocked air rushes out with an effect rather like a weak cough, or the noise one makes when lifting a heavy weight.



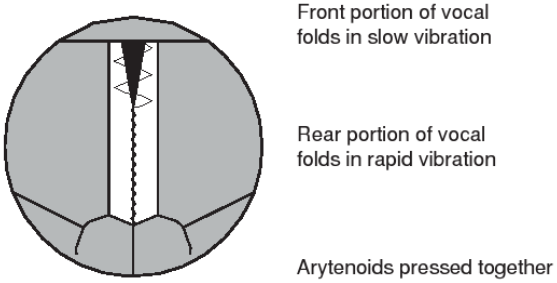
Glottal setting: glottal stop

Creak is like a succession of glottal stops, one after another, sounding rather like an old door creaking open. The arytenoids are firmly pressed together whilst the front portions of the vocal folds slowly vibrate. These vibrations (about 40 times per second) are slow enough almost to be heard individually.



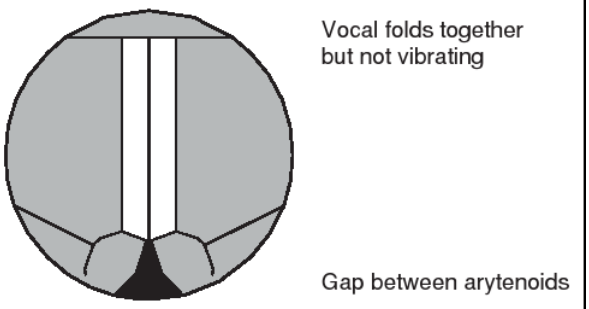
Glottal setting: creak

Creaky voice is creak combined with voice. Though apparently more complicated, creaky voice is nevertheless easier to imitate and much commoner in language.



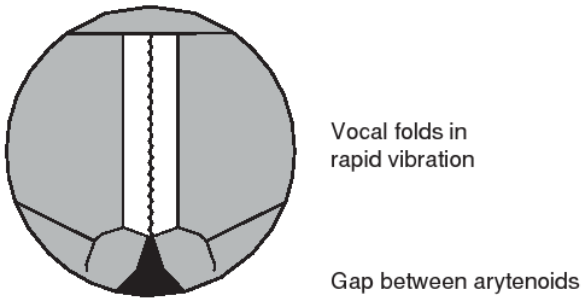
Glottal setting: creaky voice

For **whisper** the vocal folds are brought together but do not vibrate. The arytenoids are held apart leaving a gap at the rear of the larynx through which air passes at fairly high velocity.

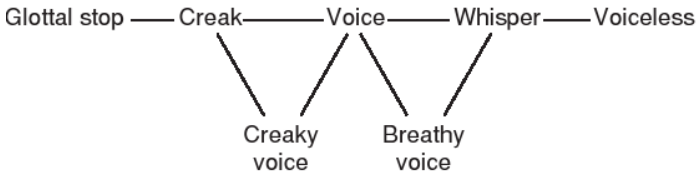


Glottal setting: whisper

A combination of voice and whisper is known as **breathy voice**. Breathy voice is skillfully used by popular singers – particularly women – as a special effect.



Glottal setting: breathy voice

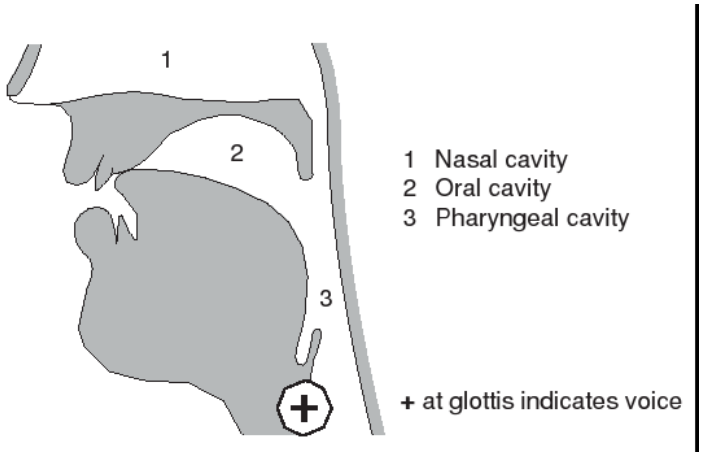


Chain relationship of glottal settings

The Articulatory System

The articulatory system is contained in the head and throat above the larynx – termed the **supra-glottal vocal tract** (from Latin supra = 'above', hence 'above the glottis'), usually abbreviated simply to 'vocal tract'. We can distinguish three resonating cavities:

- **Throat (or pharynx)** pharyngeal cavity
- **Mouth** oral cavity
- **Nose** nasal cavity



Pharyngeal, nasal and **oral cavities**

The pharynx is located directly above the larynx. At the upper end, the passageway splits in two – one portion leading to the nasal cavity (the space inside the nose) and the other to the oral cavity (the space inside the mouth). The position of the soft palate determines whether the airstream is directed into one or the other.

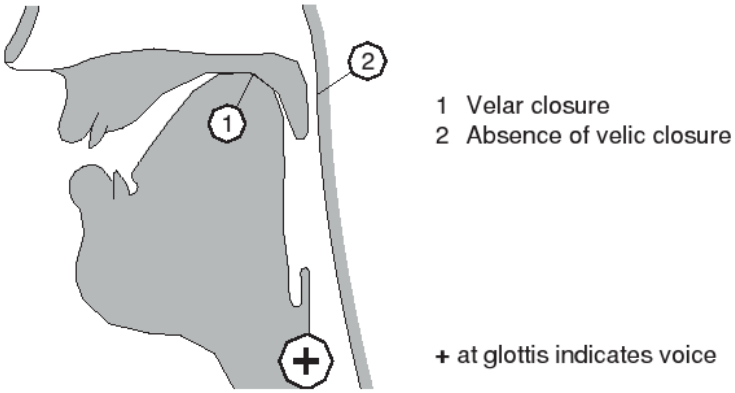
The function of the soft palate or **velum** can be likened to that of a railway points mechanism. It switches the airstream to flow out in one of two ways:

1) through the mouth (soft palate raised, giving a **velic closure**), without passing through the nose. or
2) through the nose (soft palate lowered, hence no velic closure).

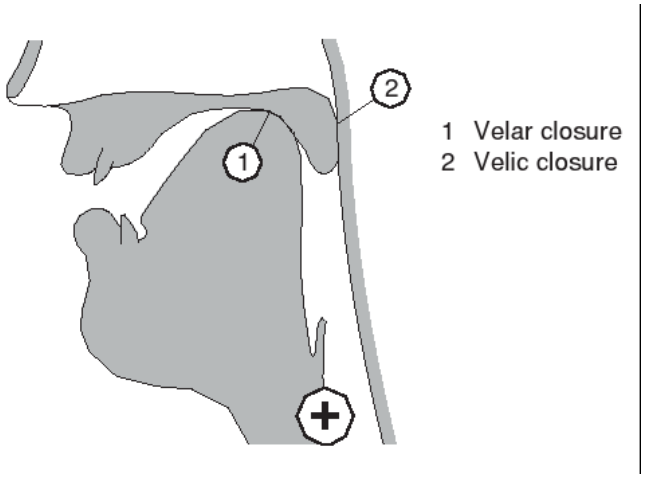
In the case of (1), there is no nasal resonance and the sound is termed **oral** or **non-nasal**. In the case of (2), nasal resonance is added, and the sound is termed **nasal**.

In all languages, most speech sounds are non-nasal. But nearly all languages have **nasal consonants**, e.g. English /m n /. Some languages (e.g. French, Portuguese, Polish,Yoruba) also have **nasal vowels,** such as the vowels in the French phrase *un bon vin blanc*.

Note also that consonants made by the back of the tongue forming a closure with the soft palate, e.g. English /k g f/, are made with what is termed a **velar closure**. It's important to distinguish between **velar closure** (an articulation formed with the back of the tongue raised towards the soft palate) and **velic closure** (where the soft palate itself is raised).



Articulation of /f/ showing velar closure but absence of velic closure.



Articulation of /g/ showing both velar closure and velic closure.

In speech much of the action takes place in the oral cavity. We'll start at the lips to begin our description and then work backwards.

Lips (Latin labia; adj. labial; bilabial = 'two lips')

The two lips can close to block the airstream, as for **bilabial** /p b m/ in English.

The lower lip can also be held close to the upper teeth, as for /f v/ (e.g. fan, van). Such lip–teeth articulations are termed **labio-dental**.

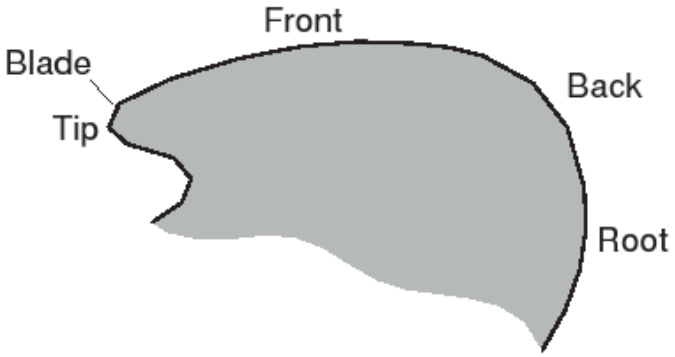
For vowels, the lips may be *rounded* (as in the English thought vowel), *neutra*l (as in English palm) or *spread* (as in English fleece). Consonants may also be lip-rounded; English /w/ has strongly rounded lips, and for most speakers, /r/ is also rounded. The lips can also be protruded – often even made 'trumpet-shaped', as for English /t n tt dn/, e.g. ship, measure, aitch, bridge.

Teeth (Latin dentes; adj. dental)

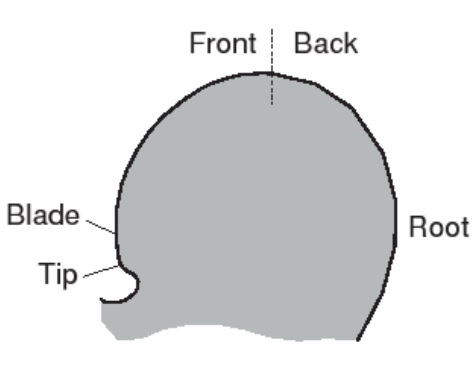
The term dental normally implies a sound made by the tongue-tip against or close to the front teeth, e.g. English [θ] voiceless (*thin*) [ð] voiced (*then*).

Alveolar ridge (from Latin alveolus 'small hollow', referring to the tooth sockets)

Now let's deal with the roof of the mouth. The term **alveolar** implies that the tongue-tip or blade is in contact or near-contact with the upper alveolar ridge (also termed the 'teeth ridge'), i.e. the ridge immediately behind the front teeth. A large number of the English consonants are alveolar articulations, e.g. /t d s z n/.



Divisions of the tongue



Tongue body raised, with tip and blade lowered, as for vowel articulation.

Hard palate (from Latin palatum; adj. palatal)

The term 'palatal' means that the central portion of the tongue articulates with the hard palate, e.g. [j].

Note that when applied to the description of sounds 'palatal' is only used for those involving the hard palate.

Soft palate or **velum** (**from Latin velum 'veil'; adj. velar**)

Sounds made with the back of the tongue against the soft palate are called velar. Note that /k g f/ are all velar consonants and have a *velar closure*, but only /k g/ have a *velic closure*.

Uvula (from Latin uvula 'little grape'; adj. uvular)

The velum ends in a lump of flesh called the **uvula**. It is quite possible to see this organ (which does indeed look something like a little pink grape!) and to make it vibrate, so producing a **uvular trill** [R].

Tongue (Latin lingua; adj. lingual)

We'll now examine one of the most complex of the organs of speech – the tongue. The body of the tongue, consisting almost entirely of muscle, is very flexible and capable of assuming a wide variety of different shapes. Although it has no natural anatomical divisions, it is necessary for phonetic analysis to distinguish its various portions:

tip, blade, front, back and root.

The tip of the tongue is a very sensitive organ of touch – much more sensitive, in fact, than the finger tips – but this sensitivity diminishes as we move towards the back of the tongue.

The term 'front' is used for what at first looks as if it should be called the middle of the tongue.

Two other important facts about the tongue:

1. The sides of the tongue can be lowered for lateral sounds, e.g. [l].
2. The tongue can be depressed making a groove down the mid-line. This is very important for the sounds [s] and [z].

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Phonemes

Chapter No.3

Consonants

Consonants are usually referred to by brief descriptive labels stating *energy, place of articulation* and *manner of articulation*.

1) Place of articulation

Place of articulation tells us *where* the sound is produced.

Some consonants have two places of articulation resulting in what is termed a *double articulation*. An example is English /w/ which is articulated at the lips (bilabial) and at the velum (velar) and hence is termed *labial-velar*.

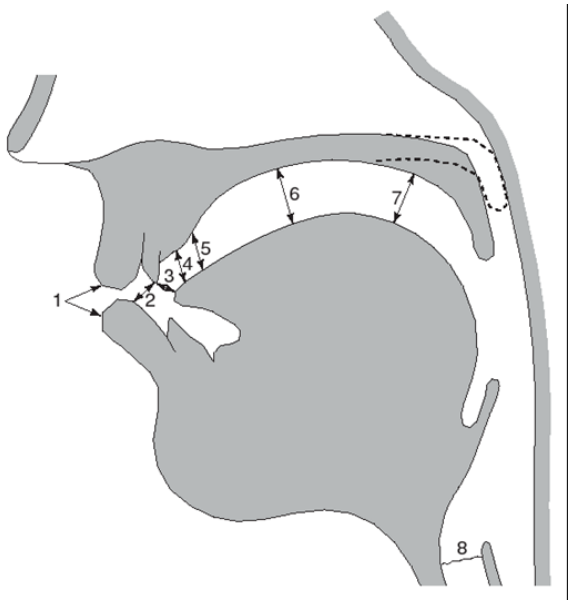
Say these words and relate the consonants in bold to their places of articulation: ***p**ub* (bilabial), ***f**ive* (labio-dental), ***th**is ba**th*** (dental), ***s**ide* (alveolar), ***r**arer* (post-alveolar), ***ch**ange* (palato-alveolar), ***y**ou* (palatal), ***k**ing* (velar), ***h**ow* (glottal).

Consonant labels for English

Consonant	*Energy*	*Place*	*Manner*
p	fortis	bilabial	plosive
t		alveolar	
k		velar	
b	lenis	bilabial	plosive
d		alveolar	
g		velar	
tʃ	fortis	palato-alveolar	affricate
dʒ	lenis		
f	fortis	labio-dental	fricative
θ		dental	
s		alveolar	
ʃ		palato-alveolar	
h		glottal	

v	lenis	labio-dental	fricative
ð		dental	
z		alveolar	
ʒ		palato-alveolar	
w		labial-velar	(central) approximant
r		post-alveolar	
j		palatal	
l		alveolar	lateral (approximant)
m		bilabial	nasal
n		alveolar	
ŋ		velar	

English consonants: places of articulation



1 **Bilabial** (lower lip ↔ upper lip)
2 **Labio-dental** (lower lip ↔ upper front teeth)
3 **Dental** (tip of tongue ↔ rear of upper front teeth)
4 **Alveolar** (tip/blade of tongue ↔ alveolar ridge)
5 **Palato-alveolar** (blade/front of tongue ↔ rear of alveolar ridge/front of hard palate)
6 **Palatal** (front of tongue ↔ hard palate)
7 **Velar** (back of tongue ↔ velum)
8 **Glottal** (glottis)

2) Manner of articulation

Manner of articulation tells us how the sound is produced. All articulations involve a **stricture**, i.e. a narrowing of the vocal tract which affects the airstream.

Manner of articulation – stricture types

Nature of stricture	*Effect of stricture*
Complete closure	Forms obstruction which blocks airstream
Close approximation	Forms narrowing giving rise to friction
Open approximation	Forms no obstruction but changes shape of vocal tract, thus altering nature of resonance

Complete closure

Stops

Stop consonants have a stricture of complete closure in the vocal tract which blocks (i.e. stops) the airstream, hence the term stop. The soft palate is raised so that there's no escape of air through the nose. The compressed air can then be released in one of two ways:

- The articulators part quickly, releasing the air with explosive force (termed plosion). Sounds made in this way are termed **plosives**, e.g. English /p t k b d g/.
- The articulators part relatively slowly, producing homorganic friction, i.e. friction at the same point of articulation. Sounds made in this way are termed **affricates**, e.g. English /tʃ dʒ/ in *Church* and *Judge.*

Nasals

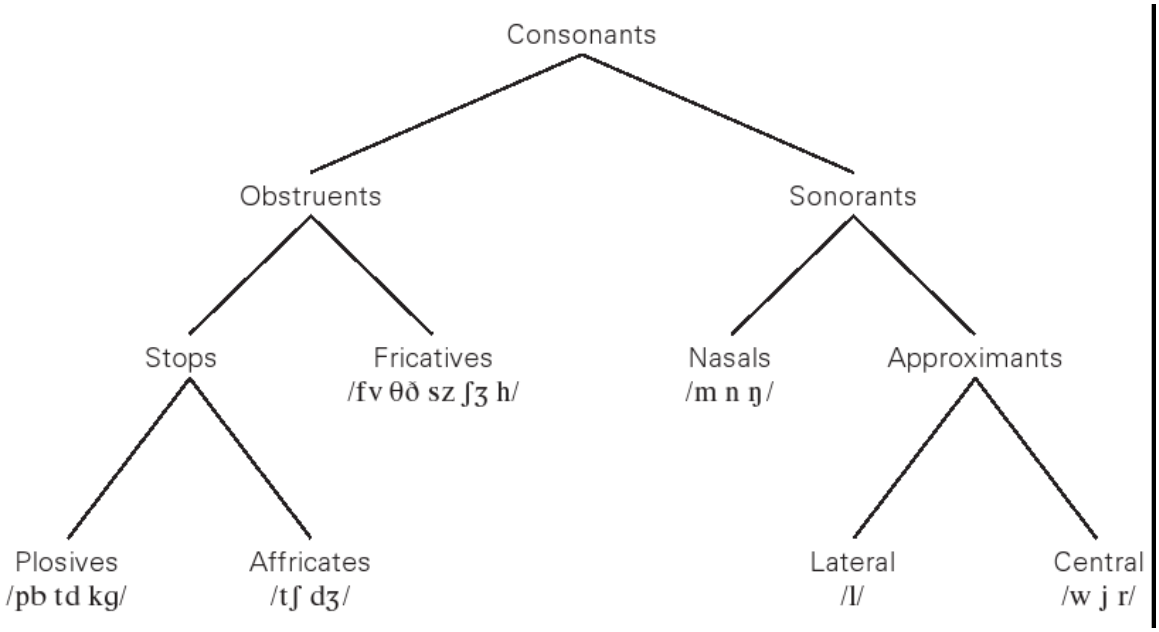
Like stops, **nasals** have a stricture of complete closure in the oral cavity, but the soft palate is lowered allowing the airstream to escape through the nose, e.g. English /m n f/.

Close approximation

Fricatives

The articulators are close to each other but don't make a complete closure. The airstream passes through a narrowing, producing audible hiss-like friction, as in English /f v s z h/.

A useful term to cover both stops and fricatives is **obstruents**. All other consonant sounds, and also vowels, are classed as **sonorants**.



Overview of English consonant system

Open approximation

(Central) approximants

Approximants have a stricture of open approximation. The space between the articulators is wide enough to allow the airstream through with no audible friction, as in English /w j r/.

(Lateral) approximant

Lateral consonants are made with the center of the tongue forming a closure with the roof of the mouth but the sides lowered. Typically, the airstream escapes without friction and consequently this sound is termed a lateral approximant. This is true for most allophones of English /l/.

3) Energy of articulation (fortis/lenis contrast)

The third possible distinction is **energy of articulation**.

English has two classes of consonant sound: one of the /t k s/ type with *stronger* and *voiceless* articulation and another of the /b d z/ type whose articulation is *weaker* and potentially *voiced.*

The first class is termed **fortis** (Latin: ‘strong’), and the second **lenis** (Latin: ‘soft’). Consonants in English divide as follows (note that /h/ has no lenis counterpart).

Fortis	**Lenis**
p t k tʃ f θ s ʃ h	b d g dʒ v ð z ʒ

Fortis/lenis contrast in English

Fortis	*Lenis*
1 Articulation is stronger and more energetic. It has more muscular effort and greater breath force.	1 Articulation is weaker. It has less muscular effort and less breath force.
2 Articulation is voiceless.	2 Articulation may have voice.
3 Plosives /p, t, k/ when initial in a stressed syllable have strong aspiration (a brief puff of air), e.g. *pip* [pʰɪp].	3 Plosives are unaspirated, e.g. *bib* [bɪb].
4 Vowels are shortened before a final fortis consonant, e.g. *beat* [bit].	4 Vowels have full length before a final lenis consonant, e.g. *bead* [biːd].
5 Syllable-final stops often have a reinforcing glottal stop, e.g. *set down* [seʔt ˈdaʊn].	5 Syllable-final stops never have a reinforcing glottal stop, e.g. *said* [sed].

Vowels

The most generally used description of vowel sounds is based on a combination of articulatory and auditory criteria, and takes into account the following physical variables:

1. Tongue shape
2. Lip shape
3. Whether tongue and/or lip shape are held constant or undergo change (i.e. is the vowel a steady-state vowel or is it a diphthong?)
4. Position of the soft palate (nasal or non-nasal)

Finally, we have a non-physical variable which operates in a large number of languages:

5. Duration.

Tongue shape

This provides us with an important aspect of vowel description. If the upper tongue surface is *close* to the roof of the mouth (like /iː/ in FLEECE and /uː/ in GOOSE) the sounds are called **close** vowels. Vowels made with an *open* mouth cavity, with the tongue far away from the roof of the mouth (like /æ/ in TRAP and /ɑː/ in PALM), are termed **open** vowels.

We also need to know which *part* of the tongue is highest in the vowel articulation. If the *front* of the tongue is highest (as in the first type /iː/ and /ɛː/), we term the sounds **front** vowels. If the *back* of the tongue is the highest part, we have what are called **back** vowels (the second type, like /ɔː/ and /uː/).

Lip shape

Change of lip shape is also a significant factor in producing different vowel qualities. Due to lips movement vowels can be of two types;

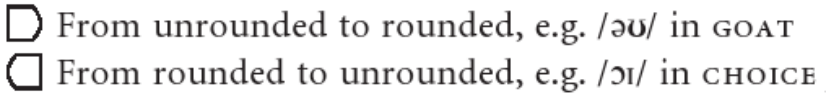
Unrounded, ▢ e.g. /eɪ/ in FACE
Rounded, ○ e.g. /oʊ/ in GOAT in many American varieties.

Steady-state vowels and diphthongs (vowel glides)

If the positions of the tongue and lips are held steady in the production of a vowel sound, we term it a **steady-state vowel**. In other books you may encounter the terms ‘pure vowel’ or ‘monophthong’. If there is an obvious change in the tongue or lip shape, we term the vowel a

diphthong. For a sound to be considered a diphthong, the change – termed a glide – must be accomplished in one movement within a single syllable without the possibility of a break.

To allow for possible change in lip shape in diphthongs, two additional lip-shape indicators are employed:



Position of the soft palate

Nasal vowels, produced with the soft palate lowered, are found in many languages all over the world including European and African languages.

Duration

Duration is merely the time taken for any sound. But measuring sounds in isolation only gives us *absolute* values. Duration is only of linguistic significance if one considers the *relative* length of sounds, i.e. the duration of each sound has to be considered in relation to that of other sounds in the language.

Many languages have a phonemic contrast of longer vs. shorter duration in vowel sounds, although very often this is combined with differences of vowel quality. This is true of English where the checked vowels like /i/ are shorter than the free vowels like /iː/.

Definitions

Chapter 4

Homophone

***Def*;**

Words which have the same pronunciation but different meanings.

Example= rode, rowed. Rose(flower), rose (past tense of rise). To, too, two etc

Homograph

Def;

Words having same spellings but different meanings.

However, some dictionaries insist that,

- the words must also sound different,
- while the Oxford English Dictionary says that the words should also be of "different origin".

Example= *hit*, the verb to strike, and *hit* the noun a blow.

Word	**Example of first meaning**	**Example of second meaning**
Lead	Gold is heavier than **lead**.	The mother duck will **lead** her ducklings around.
Close	"Will you please **close** that door!"	The tiger was now so **close** that I could smell it...
Wind	The **wind** howled through the woodlands.	**Wind** your watch.
minute	I will be there in a **minute**.	That is a very **minute** amount.

Homonym

Def;

- Words which have the same form but different meanings.
- words which sound alike or are spelled alike, but have different meanings.

A more restrictive definition sees homonyms as words that are simultaneously *homographs* (words that share the same spelling, regardless of their pronunciation) and *homophones* (words that share the same pronunciation, regardless of their spelling)– that is to say they have identical pronunciation and spelling, whilst maintaining different meanings.

Example= a river **bank**, a savings **bank**, a **bank** of switches, and a **bank** shot in the game of pool share a common spelling and pronunciation, but differ in meaning.

Bow, Bough. There, Their etc.

Homophene

Def;

Any of a set of words that sound different, but look identical on a person's lips, so that they cannot be distinguished by lipreading.

Example= fan, van.

Note. The notion of homophene has developed chiefly in relation to the study of *deaf communication.*

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