



**M.A. (ENGLISH) PART-I
SEMESTER-I**

**COURSE-IV (OPTION-i)
ENGLISH PHONETICS
AND PHONOLOGY**

UNIT - I

**Department of Distance Education
Punjabi University, Patiala**

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ENGLISH PHONETICS AND PHONOLOGY

LESSON NOS. :

1.1 :	ENGLISH PHONETICS AND PHONOLOGY
(i)	English Phonetics and Phonology
(ii)	Vowels and Consonants
(iii)	Classification of Vowels
(iv)	Cardinal Vowel Scale
(v)	Short Vowels
1.2 :	Long Vowels
(i)	Long Vowels
(ii)	Diphthongs
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1.3 :	Voicing and Consonants
(i)	The Larynx
(ii)	Respiration and Voicing
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1.5 :	(i) Production of Fricatives and Affricates
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1.6 :	(i) Nasals
	(ii) The Consonant - I
	(iii) The Consonant - r
	(iv) The Consonants - j and w.

Note:- The students can download syllabus from departmental website www.dccpbi.com

ENGLISH PHONETICS AND PHONOLOGY

1. ENGLISH PHONETICS AND PHONOLOGY.
2. Consonants and Vowels.
3. Classification of Vowels.
4. Primary Cardinal Vowel Scale.
5. Short Vowels.

These lessons pertain to **Section A** of the syllabus. The prescribed text for this section is **English Phonetics and Phonology (2000)** by Peter Roach, 3rd ed., published by Cambridge University Press.

Before I proceed further, it is important for you to know what does the study of Phonetics and Phonology stand for?

Phonetics is the scientific study of speech sounds or it can be put it in this way that **Phonetics** lays down **a general theory about speech sounds** and their study as they are used in a language, is called **Phonology**.

Another term with which the student needs to be conversant with is **phoneme**. A **phoneme** may be defined as the smallest, contrastive, linguistic unit which may bring about a change of meaning e.g. **pin**, **pen**, **pet**, **bet**. If I replace **i** with **e** in the first case or if I replace **p** with **b**, in the second case, the meaning will change. We often use special symbols for phonemes.

The student is advised to go through these symbols, and International Phonetic Alphabet carefully before proceeding any further with these lessons.

LIST OF SYMBOLS

1. **Symbols for phonemes**

ɪ	as in 'pit' pɪt	i+	as in 'key' ki:
e	as in 'pet' pɛt	ɑ+	as in 'car' kɑ:
æ	as in 'pat' pæt	ɔ+	as in 'core' kɔ:
ʌ	as in 'putt' pʌt	u+	as in 'coo' ku:
ɒ	as in 'pot' pɒt	ɜ+	as in 'cur' kɜ:
ʊ	as in 'put' pʊt		
ə	as in 'about, upper'		
	əbaʊt, ʌpə		

eɪ	as in 'bay'	beɪ	əʊ	as in 'go'	gəʊ
aɪ	as in 'buy'	baɪ	aʊ	as in 'cow'	kaʊ
ɔɪ	as in 'boy'	bɔɪ			
ɪə	as in 'peer'	piə			
eə	as in 'pear'	peə			
ʊə	as in 'poor'	pʊə			
p	as in 'pea'	piː	b	as in 'bee'	biː
t	as in 'toe'	təʊ	d	as in 'doe'	dəʊ
k	as in 'cap'	kæp	g	as in 'gap'	gæp
f	as in 'fat'	fæt	v	as in 'vat'	væt
θ	as in 'thing'	θɪŋ	ð	as in 'this'	ðɪs
s	as in 'sip'	sɪp	z	as in 'zip'	zɪp
ʃ	as in 'ship'	ʃɪp	ʒ	as in 'measure'	meʒə
h	as in 'hat'	hæt	l	as in 'led'	led
m	as in 'map'	mæp	r	as in 'red'	red
n	as in 'nap'	næp	j	as in 'yet'	jet
ŋ	as in 'hang'	hæŋ	w	as in 'wet'	wet
tʃ	as in 'chin'	tʃɪn	dʒ	as in 'Jam'	dʒæm

The student is advised to learn these symbols thoroughly because for Phonetic Transcription, you have to use these symbols only.

2. **Non-phonemic symbols**

i	as in 'react', 'happy'	riækt, hæpi
u	as in 'to each'	tu i+tʃ
ʔ	glottal stop	
h	aspiration, as in 'pin'	p^hɪn
ɫ	syllabic consonant, as in 'button'	bʌtɫn
ɪ̥	shortened vowel, as in 'miss'	mis
.	syllable division, as in 'differ'	dɪf.ə

3. **Stress and intonation**

	tone-unit boundary
	pause
ˈ	primary stress, as in 'open' 'əʊpən
ˌ	secondary stress, as in 'ice cream', ˌaɪs'kri:m
Tones:	fall
	˩ rise
	˨˨ fall-rise
	˨˨˩ rise-fall

- level
- stressed syllable in head, high pitch, as in 'please do
- stressed syllable in head, low pitch, as in ,please do
- stressed syllable in tail, as in ,my • turn
- ↑ extra pitch height, as in ↑, my -turn

Chart of the International Phonetic Alphabet (revised 1993, updated 1996)

CONSONANTS (PULMONIC)

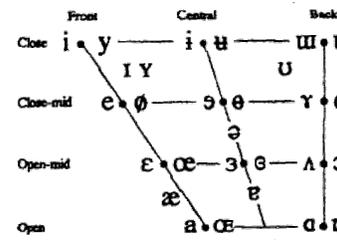
	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			ʀ					ʀ		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

Clicks	Voiced implosives	Ejectives
ʘ Bilabial	ɓ Bilabial	ʼ Examples:
Ʉ Dental	ɗ Dental/alveolar	ɓ Bilabial
ʘ (Post)alveolar	ɗ Dental/alveolar	ɗ Dental/alveolar
ɘ Palatoalveolar	ɠ Velar	ɠ Velar
ʘ Alveolar lateral	ʄ Uvular	ɣ Alveolar fricative

VOWELS



Where symbols appear in pairs, the one to the right represents a rounded vowel.

OTHER SYMBOLS

ʌ Voiceless labial-velar fricative	ç ʝ Alveolo-palatal fricatives
ʋ Voiced labial-velar approximant	ɺ Alveolar lateral flap
ɥ Voiced labial-palatal approximant	ʎ Supralaryngeal [not X]
ħ Voiceless epiglottal fricative	
ʕ Voiced epiglottal fricative	Africases and double articulations can be represented by two symbols joined by a tie bar if necessary.
ʔ Epiglottal plosive	

kp ts

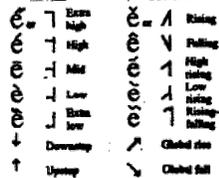
DIACRITICS Diacritics may be placed above a symbol with a descender, e.g. ɲ̥

Voiceless	̥	Breathy voiced	̤	Dental	̪
Voiced	̚	Creaky voiced	̰	Alveolar	̬
Aspirated	̚	Ligandbilabial	̙	Laminal	̭
More rounded	̙	Labiodental	̙	Nasalized	̃
Less rounded	̙	Palatoalveolar	̙	Nasal release	̚
Advanced	̟	Velarized	̙	Lateral release	̚
Retracted	̠	Pharyngealized	̙	No audible release	̚
Centralized	̞	Velarized or pharyngealized	̙		
Mid-centralized	̝	Raised	̙		
Syllabic	̚	Lowered	̙		
Non-syllabic	̚	Advanced Tongue Root	̙		
Rhoticity	̙	Retracted Tongue Root	̙		

SUPRASEGMENTALS

- ˈ Primary stress
- ˌ Secondary stress
- ː Long
- ˑ Half-long
- ˑ Extra-short
- ˑ Minor (foot) group
- ˑ Major (intonation) group
- ˑ Syllable break
- ˑ Linking (absence of a break)

TONES AND WORD ACCENTS CONTOUR



Dear Student,

The question arises, why do we need to learn English pronunciation. You may have observed that English spellings are highly confusing. The letters of English alphabets at times give no clue to the pronunciation. Take for example:

Put	pʊt	Cheese	s z
but	bʌt	Chemistry	kemistri

Note the difference in sound even though the letter is the same.

Another reason to learn English Pronunciation in terms of Phonemes or in accordance with the International Phonetic Alphabet is that English is a global language. It is to be learnt to be pronounced in a way that a minimum general intelligibility level is obtained.

The ENGLISH PHONETICS AND PHONOLOGY :

It is important to note that all speech sounds are produced with the **flow of air**.

All of us know that when we breathe, the air goes to the chest. Some complex modifications are made to the air-stream by the muscles in the chest and larynx when it flows from chest to mouth.

After passing through the larynx, the air goes through the vocal tract.

The student may look up at **Fig -1** given below to get familiar with the different parts of the vocal tract. These different parts are called **Articulators**.

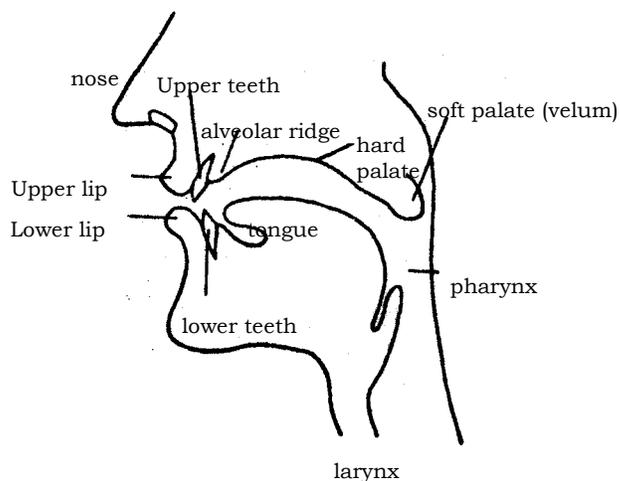


Fig. 1 The articulators

There are **seven Primary Articulators** in the vocal tract.

The Pharynx :

The Pharynx is a tube which begins just above the larynx. At top end, it is divided in two parts. One part is the back of the mouth and the other part marks the beginning of the way through the nasal cavity. The back of the pharynx can be seen in the mirror when you open your mouth.

The Velum or The Soft Palate:

It is through the velum or soft palate that the air is allowed to pass through the nose and the mouth. When we speak the soft palate is raised and in that position, the air cannot escape through the nose e.g. **t, d** as in **tin, din**.

We can touch the velar area with our tongue. When the tongue touches the lower side of the velum, the sound produced is called the velar sound e.g. **k, g** as in **kite, gain**.

When the soft palate is lowered the air escapes through the nose and the sound produced is the nasal/nasalled sound e.g. **m, n, ŋ** as in **man, net, ring**.

The hard palate:

The hard palate is also called the "*roof of the mouth*". It can be felt with your tongue.

The alveolar ridge:

The alveolar ridge is between the top front teeth and the hard palate. When the tongue touches this area the sounds produced are called alveolar sounds e.g. **t, d** as in **tin, din**. One can feel its shape by rotating the tongue inside the mouth.

The tongue:

The tongue is a very important articulator. It moves in all directions in the mouth and can acquire different shapes. For understanding and convenience, we can divide tongue into different parts e.g. **tip, blade, front, back** and **root**. (See **figure 2** for the different shapes of the tongue:

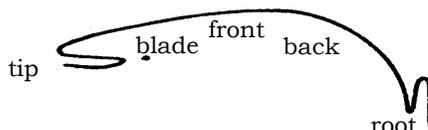
**The teeth:**

Fig. 2 sub-divisions of the tongue

Many speech sounds are produced when the tongue comes in contact with the upper side teeth ridge. Sounds made with the tongue touching the front teeth are called **Dental**.

The lips:

Lips can take different shapes while a sound is being produced e.g. when we produce sounds like, **p, b** the lips as in **pin, bin**, are tightly pressed and in sounds like **f, v**, as in **fan, van**, lips come in contact with teeth, and in a sound like **u**, as in **shoe**, lips are rounded. Sounds in which lips are in contact with each other are called bilabial, while those where lips come in contact with teeth are called labio-dental.

Dear Student,

Besides these, seven articulators **larynx, jaws**, and **nose/nasal cavity** are important parts of our speech mechanism or vocal apparatus.

Vowel and Consonant :

There are two distinct groups of sounds which are known as vowels and consonants.

Vowels:

Vowels have been commonly defined as sounds in which there is no obstruction to the flow of air from the larynx to the lips e.g. **ah**.

Consonants:

Consonants have been defined as sounds in which it is difficult for the air to flow out of the mouth without obstruction e.g. **s** and **d** as in **sip**, **dip**.

But this definition has some limitations as in some cases, the decision is not so easy to make, e.g. sounds at the beginning of the words **hay** and **way** do not really obstruct the flow of air. They sound like vowels but are put in the category of consonants.

Moreover, different languages have different ways of dividing their sounds into vowels and consonants e.g. take the word **red**, the sound at the beginning of this word is classified as a consonantal sound in English language, but in some other languages, it comes under the category of vowel sound.

So, to define vowel and consonant in relation to the manner of production is not very tenable.

It is possible to establish these two distinct categories of sounds (vowels and consonants) in another way.

Let us take the example of English words beginning with the sound **h**. What sounds can follow this sound? The list can be **hen**, **house**, **hit**, **hat**, **hot**, **heat**, etc. We observe that none of the sounds which follow **h** are consonants, so we infer that **h** can be followed by a vowel sound only.

Now take the example of the sounds **b + i = bi**. What sounds can follow these two sounds? - **bid**, **bit**, **bill**, **bin**, **big**, etc. There are hardly any cases where a vowel may follow.

So, we infer that the different contexts and positions in which particular sounds can occur is also important.

This is known as **distribution** of the sounds. Distribution of sounds is an important aspect of **Phonology**. So, it can be said that the **study of the sounds found at the beginning and end of English words has shown that two groups of sounds with quite different patterns of distribution can be identified** - and these two groups are those of **Vowel** and **Consonant**.

So, the most important difference between **vowel** and **consonant** is **not** the **way they are made**, but their **different distribution**. The distribution of vowels and consonants is different for each language.

The issue of vowel-consonant distinction has been discussed by Pike. He is of the view that the two approaches to distinction i.e. in relation to obstruction and in relation to distribution, have produced such different results that some new terms need to be used. He suggests that the sounds which do not obstruct the air flow, traditionally called **Vowels** should be called **Vocoids** and the sounds which do obstruct the air flow and are traditionally called consonants should be called **Contoids**.

However, Pike's suggestion has also been found to be flawed as |j| in **yet** and |w| in **wet** are phonetically **Vocoids** but function phonologically as consonants.

Classification of Vowels:

Vowels can be classified on the basis of:

1. The shape and position of the tongue.
2. The degree of rounding of lips.

The Shape and position of the tongue

consider the following examples:

i: as in **see** **si:** The tongue is held up close to the roof of the mouth.

æ as in **cat** |kæt| - distance between the surface of the tongue and the roof of the mouth is much greater.

So, the difference between **i:** and **æ** is a difference of **tongue height**. Accordingly **i:** can be described as a **close** vowel and **æ** can be described as an **open** vowel.

When we produce **i:** and **æ**, we notice that only the front part of the tongue is raised. So, these two sounds can be classified as **Front Vowels**.

|i:| is a front close vowel.

|æ| is a front open vowel.

Now take the example of **a:** as in **calm** |ka:m| We notice that it is the back of the tongue which is raised. If we compare it with **æ** we clearly notice that in **æ** front of the tongue is raised and in **a:** back of the tongue is raised.

So **æ** can be classified as **front** vowel and **a:** can be classified as back vowel. From these examples we infer that the sounds in the production of which the front of the tongue is raised are known as **Front vowels** and the vowels in the production of which back of the tongue is raised are classified as **Back Vowels**. See Fig. - 3

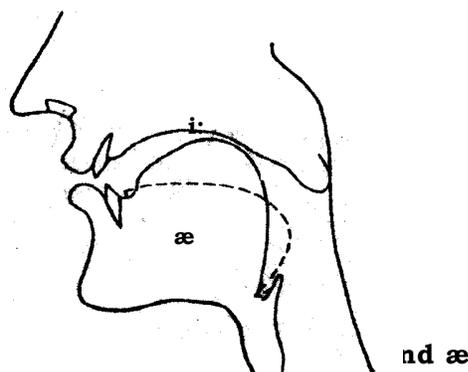


Fig.

nd æ

Now, take the example of the sound |u:| as in **too**. It is also a back vowel, but compared with **a:** it is close. So, we can see that the four vowels, **i:**, **u:** and **æ** and **a:** differ from each other. We can see the difference in the following diagram :

	Front	Back
Close	i :	u :

Open æ a :

These four positions are the extreme vowel positions for English.

Cardinal Vowel Scale:

This method of classifying a set of vowels in a close-open, front-back positions has come to be known as **Cardinal Vowel Scale**. The vowels in the primary cardinal scale are not the vowels of any particular language. These cardinal vowels are a standard reference system which tell us about the range of vowels that the human vocal apparatus can make. The **eight primary cardinal vowels** are:

i
e
a
ɔ
ɪ
o
ʊ

Traditionally, these cardinal vowels are shown on a four-sided quadrilateral figure.

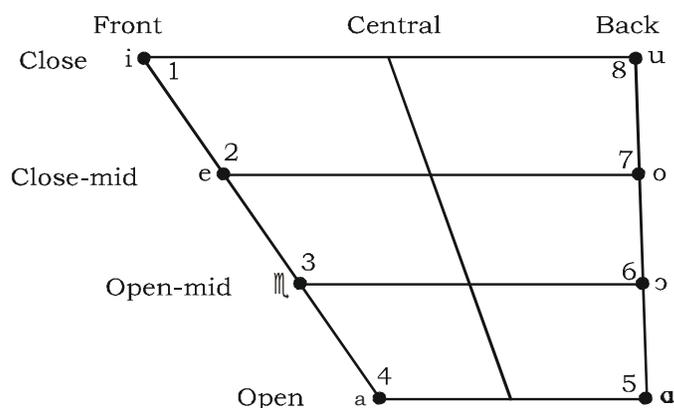


Fig. 5 Primary Cardinal Vowels

Out of these, eight Primary Cardinal Vowels, **Cardinal Vowel No. 1 (i)** is as close and as front as it is possible to make a vowel without obstructing the flow of air and **cardinal vowel No. 5 (ɑ)** is most open and back, **cardinal vowel No. 8 (u)** is fully close and back and **No. 4 (a)** is fully open and front. Once we get familiar with these extreme vowels, we then know the way to describe, classify and compare vowels.

After establishing these extreme points, the intermediate points, i.e. vowel No. **2**, **3**, **6** and **7** can be positioned.

Vowels can also be classified according to the degree of lip rounding. The three important shapes and positions of lips are:

1. **Rounded:** The corners of the lips are brought towards each other and lips pushed forward e.g. cardinal vowel No. 8 (**u**).
2. **Spread:** The corners of the lips move away from each other, as for a smile, e.g. cardinal vowel No. 1 (**i**).
3. **Neutral:** The lips are noticeably rounded or spread e.g. written **er. er** in **near, hear, hair** has neutral lip position.

English Vowels:

After discussing the general criteria for the classification of vowels, let us now examine the criteria for the classification of vowels peculiar to English language. English has a large number of vowel sounds. First of all, I shall discuss **Short Vowels**. The symbols for these **short vowels** are:

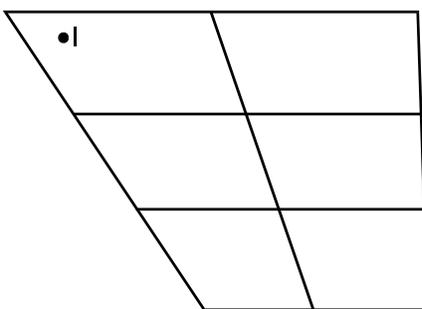
i	=	sit	sɪt
e	=	set	sɛt
æ	=	cat	kæt
ʌ	=	bus	bʌs
ɒ	=	pot	pɒt
ʊ	=	put	pʊt

Here, it is important to mention that vowels can have quite different lengths in different contexts. So you have to keep in mind that the short vowels are only relatively short.

|

As in **pit, pin, fish**

| is the close front area. As compared to cardinal vowel No. 1 (**i**), It is more open. It is nearer to the centre. The lips are slightly spread.



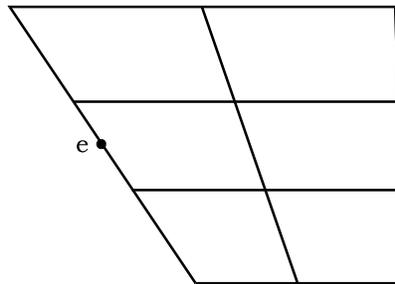
|

e

As in **bet, men, yes**

This is a front vowel between cardinal vowel No. 2 (**e**) and No. 3 (**æ**). The lips are

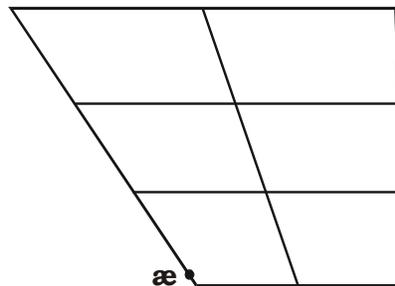
slightly spread.



æ

As in **bat, man, gas**

This vowel is front but not quite as open as cardinal vowel No. 4(a). The lips are slightly spread.

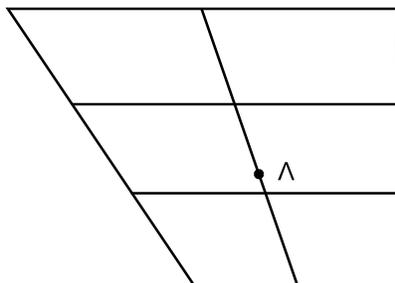


ʌ

As in **but, some, rush**

ʌ is a central vowel. The tongue-height is open.

The lip position is neutral.

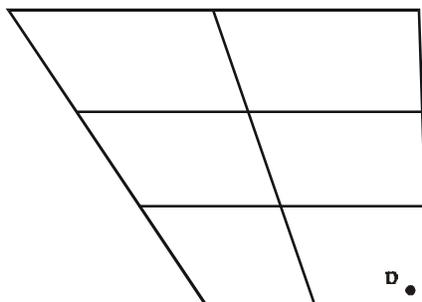


ɒ ʌ·

As in **pot, gone, cross**

This is not a completely back vowel. This is between open-mid and open in tongue height.

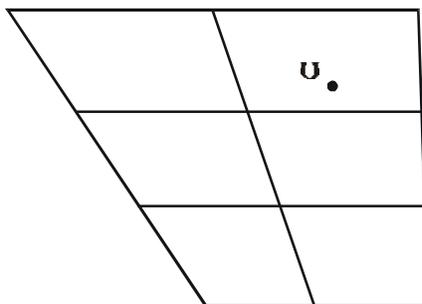
The lips are slightly rounded.



u

As in **put**, **pull**, **push**

The nearest cardinal vowel is No. 8 (**u**). But **u** is more open and nearer to central. The lips are rounded.



ə

There is one another short vowel. The phonetic symbol is **ə**. This is a central vowel and is called **Schwa**. It is a very familiar sound in English which is often heard in the first syllable of the words, e.g.:

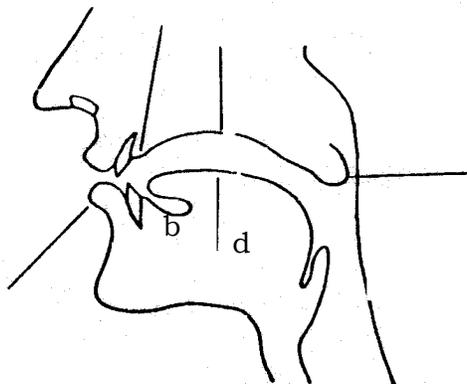
about	-	əbaʊt
oppose	-	əpəʊz
Perhaps	-	pə'hæps

I shall discuss this sound in detail later in this unit.

Suggested Questions

Note : Attempt the following questions.

Q.1. In the given diagram, various articulators are indicated by numbered arrows (a-e). Give the names for the articulators and describe their functions.



a

Q.2. Using the Descriptive labels introduced for Vowel Classification, say what the following Cardinal Vowels are:

- a) **u** b) **e** c) **a** d) **i** e) **o**

Q.3. Draw a Vowel Quadrilateral and indicate on it the correct places for the following English Vowels:

- a) **æ** b) **ʌ** c) **ɪ** d) **e**

Q.4. Write the symbols for the Vowels in the following words:

- a) bread b) rough c) foot d) hymn
e) pull f) cough g) mat h) friend.

List of suggested questions :

Q - 1 Write an extended note on English Grammar.

Q - 2 Write a detailed note on English Speech Sounds.

Q - 3 Attempt any five short notes :

- a) Formal and substantive universals;
b) Generative and transformational grammars;
c) Formal grammar;
d) Lexicon;
e) Lexical Substitution Rules (LSR)
f) Hierarchization;
g) English Phonetics;
h) English Phoneme.

LONG VOWELS

There are **five** long vowels:

i:

ɜ:

a:

ɔ:

u:

Long vowels take a length mark made of two dots : after the vowel symbol. Length marks are used to mark the **length difference**.

It is important to note that the five long vowels are different from the short vowels not only in length but also in **quality**. Compare the pairs of long and short vowels.

ɪ	i:
fill	feel
sin	seen
bid	bead
list	least
rich	reach
ship	sheep
wick	week
fit	feet
knit	neat
rid	read

ʊ	u:
could	cooed
shoot	shoe
pull	pool
full	fool
wood	wooded
good	goose

ʌ	a:
cut	cart
bun	barn
much	march
hum	harm

luck lark
dunce dance

When we compare short vowels with long vowels, we can see distinct differences in quality and length. Difference in quality depends on the differences in tongue shape and position and lip position as well as in length. For this reason, all the long vowels have symbols which are different from those of short vowels. However, long and short vowel symbols would still all be different from each other even if the length marks are omitted. Length marks are hence, used not because these are essential. These are used because these help the learner to remember the length difference. However in case of **ɜ:** and **ə** they are closely similar in quality despite the fact that **ɜ:** is a long vowel and **ə** is a short vowel.

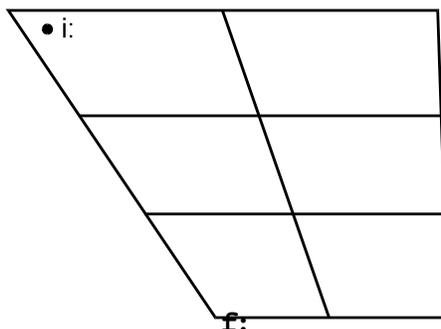
Another point to be noted is that long vowels tend to be longer than the short vowels in similar context as the length of all English vowel sounds varies very much according to their context and the presence or absence of stress. It is also important to note that in this complex of quality and quantity, quality carries the greater contrastive weight. Sometimes, the long vowels are labelled as **tense**, whereas short vowels are labelled as **lax**.

i:

As in **beat, mean, peace**

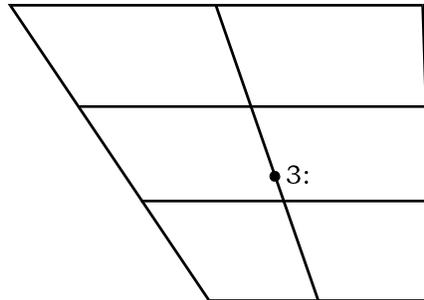
i: is nearer to cardinal vowel No. 1 [i]. It is more close and front than the short vowel **i** as in **bid, pin, fish**. **i** is more open and nearer in to the centre.

Although, the tongue shape is not much different from cardinal vowel No. 1 the lips are only slightly spread. This gives it a different vowel quality.



As in **bird, fern, purse**. The sound produced is 'er'

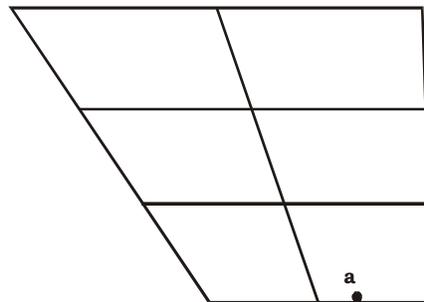
It is a central vowel. The lip position is neutral. Foreigners find it difficult to articulate this sound in an English accent.



a:

As in **card, half, pass**

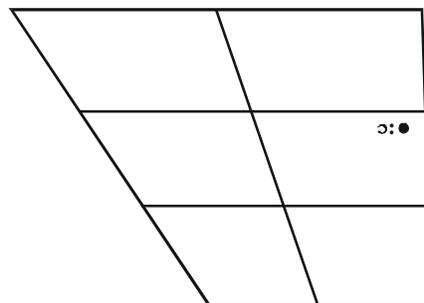
This is an open vowel. It is close to the cardinal vowel No. 5 [a] but it is not as back as the cardinal vowel. The lip position is neutral.



ɔ:

As in **board, torn, horse**

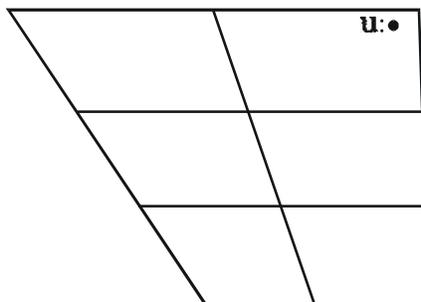
a:



The tongue height for this vowel is between cardinal vowel No 6 [ɔ] and No. 7 [o]. It is closer to [o].

This vowel is fully back and has quite strong lip rounding.

u:



As in **food, soon, lose**

The nearest cardinal vowel to this, is No. 8 [u]. But **u:** is much less back and less close. Lips are moderately rounded.

The students may note that **i:** and **u:** are often pronounced as slightly diphthongal.

Diphthongs

Diphthongs are **gliding vowels**. Diphthongs or gliding vowels are the sounds which consist of a movement or glide from one vowel towards another.

A vowel which remains constant and does not glide is called a pure vowel.

Diphthongs are all long vowels. However, the first part of a diphthong is much longer and stronger than the second part e.g. eye - |**ai**| - The glide to **i** becomes noticeable in the last part of the diphthong.

As the glide to **i** takes place the sound gets less louder, **i** then becomes shorter and quieter. So, it is important that the last part of the diphthong should be kept weaker.

Like long vowels, **diphthongs** also are longer in a given context.

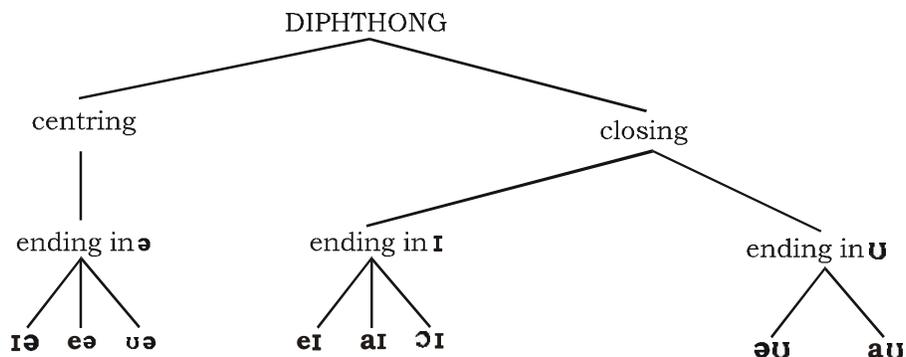
There are eight diphthongs:

iə
eə
ʊə
eɪ
aɪ
ɔɪ
əʊ
aʊ

Out of these eight diphthongs, three diphthongs glide towards **ə**, three glide towards **i** and two glide towards **ʊ**.

In the diphthongs gliding towards **i** and **ʊ**, the movement is towards the closer position and in the diphthongs gliding towards **ə** the movement is towards the centre position. So it is convenient to label them as **Closing diphthongs** and

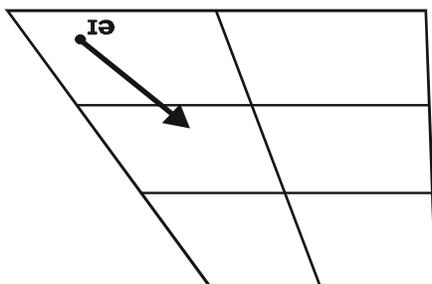
Centering diphthongs.



The Centring Diphthongs:

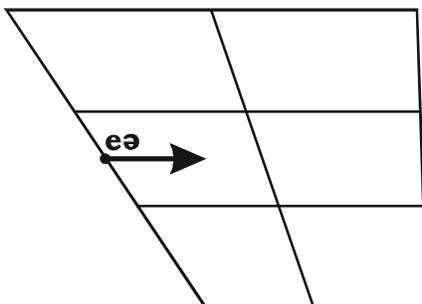
ɪə

As in **beard, Ian, fierce** . The starting point is a little closer than **ɪ** in **bit, bin**.



eə

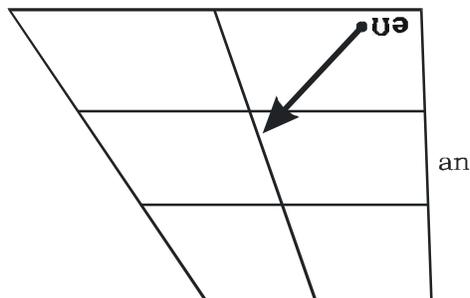
As in **aired, scarce, where** . This diphthong begins with the same vowel sound as the **e** of **get, men**.



ʊə

As in **moor, tour, poor** . This has a starting point slightly closer than an **ʊ** in **put**,

pull. This diphthong is not used as much as the other diphthongs are used. Many English Speakers use **u:** in words like **moor** and **tour**.



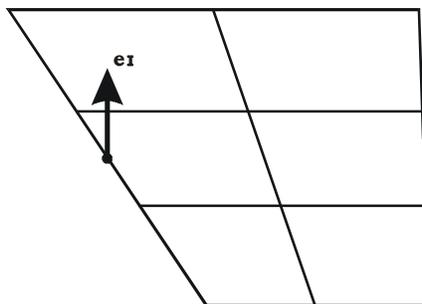
The Closing Diphthongs :

The closing diphthongs end with a glide towards a closer vowel. Even though the second part of the diphthong is weak but the glide is from a relatively open position towards a more close vowel position. Therefore these are called closing diphthongs.

Diphthongs Gliding towards i

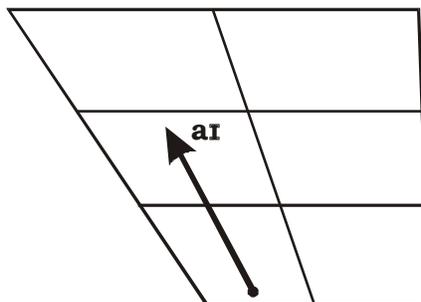
eɪ

As in **paid, pain, pace** . The starting point is the same as the **e** in **get, men**.



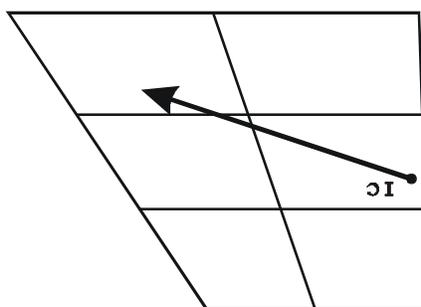
aɪ

As in **tide, time, nice**. This diphthong begins with an open vowel which is between front and back and is quite similar to the **ʌ** of the words **cut, bus, bun**.



aɪ

As in **void, loin, voice** . The first part of this diphthong has the same quality as ə: in **ought, born**.



əʊ

Diphthongs Gliding towards U

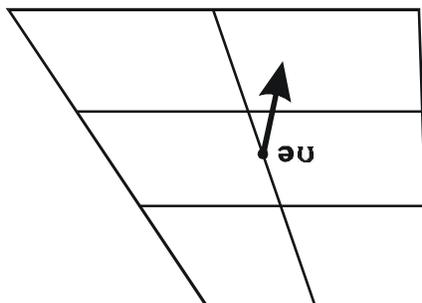
In the production of these sounds when the tongue glides towards **U**, it moves closer to the roof of the mouth and, at the same time, there is a rounding movement of lips. However, the movement is not substantial because the second part of the diphthong is weak.

əʊ

As in **load, home, most** . The vowel position for the beginning of this is the same as for the "Schwa" ə as found in the first syllable of **about**.

Before there is a glide towards **U**, the lips are slightly rounded but as **U** is realised there is a noticeable lip-rounding.

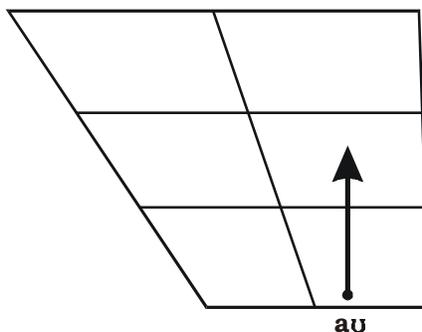
The quality of the first part of this diphthong needs to be particularly kept in mind. Sometimes, the effort to articulate ə as a back vowel makes it quite frontal, the sound then becomes (eʊ) instance of (əʊ).

**aʊ**

As in **loud, gown, house**. The diphthong begins with a vowel similar to **a:**. There is a substantial movement when there is a glide towards **ʊ**.

Lip rounding is marginal.

In English, the glide towards **ʊ** begins but is not accomplished. Hence, the tongue is raised between half-close and half-open height.

**Triphthongs**

Triphthongs are the most complex English sounds. It is difficult to pronounce and identify them.

Triphthongs as per the BBC pronunciation are difficult for foreign learners to articulate.

A triphthong is a glide from one vowel to another and then to a third, all produced rapidly and without interruption, e.g., hour - **ʌʊə**.

The pronunciation of **hour** begins with a sound which is similar in quality to **a:**. Then it glides towards the back close rounded area as represented by the symbol **ʊ**, then ends with a mid-central vowel **ə** (schwa).

Five closing diphthongs accompanied by **ə** form a triphthong, e.g.:

eɪ + ə = eɪə

aɪ + ə = aɪə

ɔɪ + ə = ɔɪə

VOICING AND CONSONANTS

The Larynx :

You have already been told that for the production of any speech sound, air-stream is essential. Complex modifications are made to the air-stream in the respiratory area. A speech sound is formed in two ways. It can be formed when there is obstruction to the air-stream or it can be formed when there is no obstruction and the air-stream flows unhindered. A speech sound gets phonation in the Phonatory area, before the articulators come in motion. **Larynx** performs an important function so far as the **Phonation** is concerned. In this lesson, I am going to discuss the functions **Larynx** performs in the production of speech.

The student may look at **figure 1** as given in lesson No. 11 at page no. 4, before proceeding further. You must have noticed that at the bottom of the figure is shown **Larynx**.

Now look at **figure 6** and try to understand the anatomy and physiology of the **Larynx**.

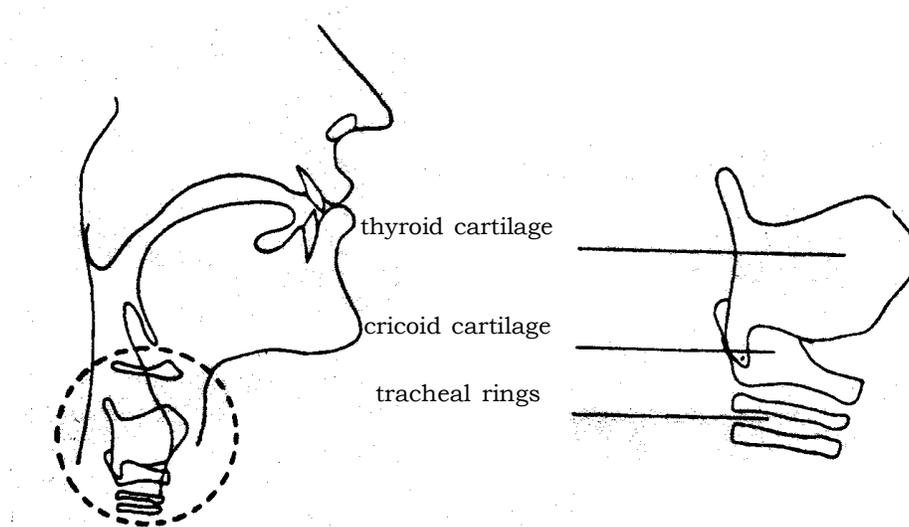


Fig. 6 The larynx

1. **Larynx** is in the neck. The front of the Larynx is known as **Adam's Apple**. The **Adam's Apple** is the protruded 'roundish' bone which is situated in an area where the chin area goes towards the neck. You can feel

- protruded bone with your fingers. The inside of the neck has two pipes known as Trachea (wind pipe) and Oesophagus (food pipe).
- Now when we breathe, the air passes through the trachea and larynx.
 - Larynx** is made of two cartilages which are known as **Arytenoid Cartilages**. These cartilages are hollow.
 - These are attached to the top of the **Trachea** (wind pipe).
 - The Arytenoid Cartilages make a kind of a box.
 - And inside the box are the **Vocal Folds** (earlier they were labelled as **Vocal Cords**), See **figure No. 7**.
 - This figure shows you the placement of **vocal folds**.

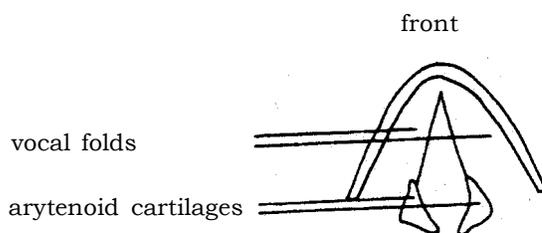


Fig. 7 The inside of the larynx seen from above

Dear Student,

You may do this exercise for more clarity. Close your mouth. Breathe through your nose. You can see that you inhale the air with the help of your two nostrils. After this the air goes to the wind pipe (situated in the inside part of the neck). From the wind pipe the air goes to the Larynx.

Now, these vocal folds, at the front, are joined together and fixed to the inside of the **Thyroid Cartilage** (see **figure 6** to know the position of **Thyroid Cartilage**).

At the back vocal folds are attached to the **Arytenoid Cartilages and the Arytenoid cartilages** are attached to the top of the **Cricoid Cartilage**. See **figure 6** to know the position of cricoid cartilage.

But an important thing to remember is that Arytenoid Cartilages move and when these cartilages move, the vocal folds move too. And when these cartilages move, the vocal folds can be apart or they can be together. The opening between these vocal folds is called **Glottis**.

And when the vocal folds are apart we say that **glottis** is **open**, and when they are closed together, we say that **glottis** is **closed**. So, in other words, we can say that **glottis** can have two positions: open and closed.

See **figure 8** to understand how Arytenoid Cartilages cause the closing and opening of the glottis.

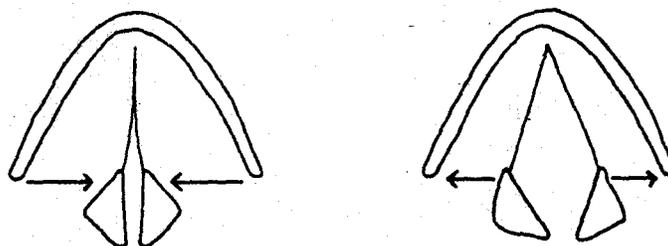


Fig. 8 Arytenoid cartilages causing closing and opening of the glottis

It is important to remember that vocal folds can assume a complex range of positions and there can occur many changes which play an important role in speech.

The different states of the Glottis and the position of the Vocal Folds are as follows:

1. **Wide Apart:** The vocal folds are wide apart in the following cases
 - (i) normal breathing,
 - (ii) when we articulate |p|, |f| and |s|
 (These three sounds are known as **Voiceless consonants**). (See figure 9-A)

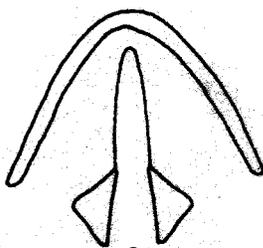
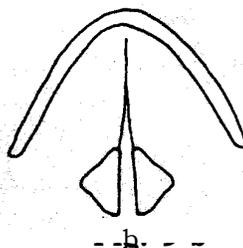


Fig. 9-A

2. **Friction (Narrow Glottis):** I have already told you that the opening and closing of the glottis is caused by the movement of the focal folds. Glottis can be in a narrowed position also (See fig. 9-B). When the glottis is narrowed, the sound acquires friction. Such sounds are called **Fricatives** e.g. |h|. |h| is a **voiceless, glottal fricative**. I shall be telling you more about fricatives later.



3. **Vibration:** The edges of vocal folds can also touch each other. In that

case when the air passes through glottis, **vibration** takes place. The process usually occurs in the respiratory area only when air is pressed up from the lungs, air pushes the vocal folds apart. Consequently, a little air escapes. As the air flows quickly, past the edges of the vocal folds, the folds are brought together again. This opening and closing occurs very swiftly and regularly and the vibration takes place (See fig. 9-C). Practice saying **ahahahahaha**. You can yourself feel how the narrowing of the glottis takes place and friction occurs, as has been discussed in point No. 2 and how the vibration occurs.

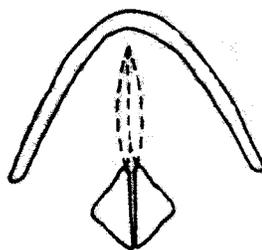


Fig. 9-C

4. **Glottal Stop (Vocal Folds tightly closed):** The vocal folds can be firmly pressed together. Air cannot pass between them. When this is the situation, the sound produced is called **Glottal Stop** or **Glottal Plosive**. The symbol **|ʔ|** is used to denote this sound. I shall tell you more about **Plosives** at a later stage. In the meantime, see figure 9-D and practice the sequence **aʔaʔaʔaʔaʔa**

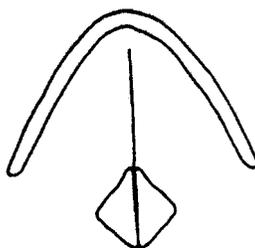


Fig. 9-D

Respiration & Voicing:

Before I discuss the given points, let me repeat that **all speech sounds are made with some movement of the air.**

The speech sound can be produced at a stage when the air is being sucked in. The sound produced, then, is an **Ingressive sound.**

The sound can be produced when the air is pushed out. The sound produced then is **Egressive** sound.

So, when the air is made to move out of the lungs, we say that there is an **Egressive Pulmonic Air Stream**.

It may be important to point out that in most of the languages of the world **egressive pulmonic air** is the most commonly found air movement.

Here, it becomes important to know about the functions of **Lungs** in the ENGLISH PHONETICS AND PHONOLOGY.

All you know that we can speak in whispers, or in normal tone or we can shout, can scream or can be soft and melodious when we sing. It is clear that we do not speak in one tone. Our stress varies, our intonation varies. This variation depends on the accumulation of air in the lungs.

The lungs are like sponges. They can absorb air. They are covered by the rib cage. You can see **fig. 10**.

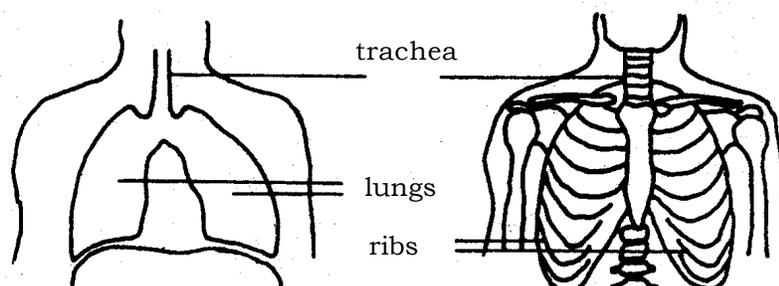


Fig. 10 The lungs and the rib cage

Now, if the rib cage is lifted upwards and outward, there is more space in the chest for the lungs to expand. Try to take a deep breath. You can feel how the chest expands and the lungs accumulate more air.

And when the rib cage is brought back to its rest position quite slowly, some of the air is expelled. **This expelled air is used for producing Speech Sounds.**

But we also know that the air stream when it passes into the lungs or flows out of the lungs, meets with some obstruction/stricture. When we breathe, we make very little sound and it is not a speech sound. It is only when some kind of obstruction or a stricture is there when a speech sound is produced.

Next point to know, is, where does this stricture/obstruction take place? We can obstruct the air flow by making one or more obstructions or strictures in the vocal tract, stricture can be made in the **Larynx** also.

When stricture is made in the **Larynx**, the vocal folds are brought very close, the air below the vocal folds is under enough pressure that it is forced out through the glottis, causing the vocal folds vibration.

And when the vocal folds vibrate, the sound will have **voicing** or **phonation**. The

voicing depends on the **sub-glottal pressure**. It is important to note that different kinds of voicing can be produced e.g. there is definitely a difference in the quality of our voice in different activities such as singing, shouting and speaking quietly. Similarly, voice can be modulated differently when narrating a story especially to young children. We tend to use different tones while narrating what is said by the giants, fairies, mice or ducks. The difference takes place with the help of Larynx. Even the changes in the vocal folds can be made longer or shorter, more tense or more relaxed or more or less strongly pressed together. Three main differences with regards to voicing can be:

1. **Variations in Intensity:** We produce voicing with high intensity for shouting and with low intensity for speaking.
2. **Variations in Frequency:** If the vocal folds vibrate rapidly, the voicing is at high frequency, if there are fewer vibrations, the frequency is lower.
3. **Variations in Quality:** We can produce different sounding voice qualities, e.g., harsh, breathy, murmured or creaky.

In the meantime, you may remember one important point that a speech sound gets **voicing** or **phonation**, in the **larynx** when the vocal folds vibrate. And the quality of the speech sound, stress and intonation depend on the intensity and frequency of the vocal folds vibration.

Plosives:

By now, we know that sounds are produced when there is some kind of obstruction/stricture to the air flow. The obstruction can be complete or it can be partial.

When there is a complete closure/obstruction/stricture between two articulators or between two points of articulators, the sound produced is called a **plosive** sound. A plosive is a consonant sound. The plosive sounds are characterised by the following qualities :

1. As already pointed out, the stricture for a plosive sound is total. This is caused by the fact that one articulator is moved against another or two articulators are moved against each other, in such a way that no air can escape from the vocal tract.
2. So, when there is complete closure and no air can escape, it is obvious that the air compresses behind the place of articulation and after this compression the air is allowed to escape.
3. It is possible that at the release stage, the air still may be under pressure. In that case, air will produce noise loud enough to be heard. The noise is known as **plosion**.
4. It is possible that during part or all of the plosive articulation, voicing may be there, that means vocal folds may be vibrating.

So, it may be said that there are four phases in the production of a plosive sound. These four phases are:

1. **Closing Phase:** At this stage, the articulator or the articulators form a stricture.
2. **Compression Phase:** The air stream is compressed behind the articulator/articulators, and is not allowed to escape.
3. **Release Phase:** The articulator/articulators move, and the air is allowed to escape.
4. **Post Release Phase:** What happens immediately after the Release Phase is known as the Post Release Phase. There may be **Plosion** at this stage.

After discussing the characteristics of **Plosives**, let me discuss English Plosives, that is Plosive consonants as these are found in English language.

There are six plosive consonants. There is also one glottal plosive |ʔ| but it is of less importance even though frequently used.

|p|
|t|
|k|
|b|
|d|
|g|

|p| |b| are **bilabial plosives**. The obstruction takes place between the two lips (See fig. 11)

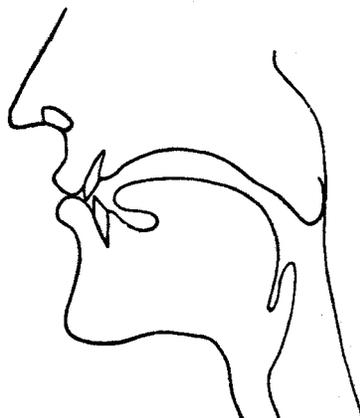


Fig. 11 Bilabial articulation

|t| |d| are **alveolar plosives**. The obstruction takes place between the blade of the tongue and the alveolar ridge, see **figure 12**.

In some languages there are Dental plosives. In Dental plosive tongue touches the front teeth. In English, there are **no Dental plosives**.

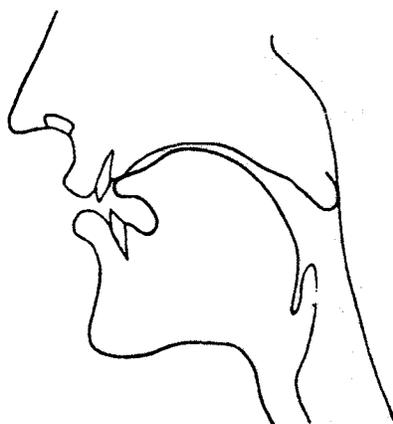


Fig. 12 Alveolar articulation

|**k**| |**g**| are **Velar** plosives. The obstruction takes place between the back of the tongue and the velar area (where the hard palate ends and the soft palate begins) (see **fig. 13**)

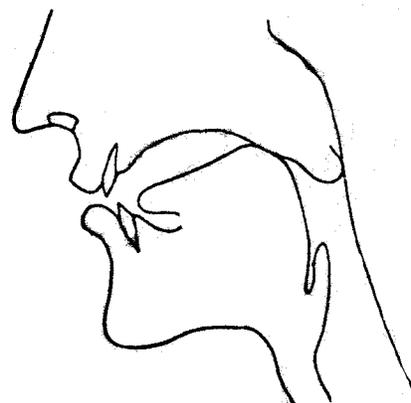


Fig. 13 Velar articulation

|**p**| |**t**| |**k**| are voiceless plosives (vocal folds do not vibrate).

|**b**| |**d**| |**g**| are sometimes fully voiced, sometimes partially voiced and sometimes voiceless.

I shall discuss this point in detail a little later.

All the six Plosives can occur in all positions i.e., in **initial position**, e.g. **pin, tin, kin, bird, dog, girl**.

In **medial position**, e.g., **spin, baby, stone, heads, sky, eggs**.

In **final position**, e.g., **ship, hub, lit, lid, talk, bag**.

Now, let us see how the plosives are pronounced in these three positions.

1. Initial Position (CV):

C stands for plosive consonant and
V stands for vowel.

The **closing phase** (i.e. when the stricture is formed), for **p, t, k** and **b, d, g** takes place silently.

In the **second phase**, i.e., the compression phase in case of **p, t, k**, there is no voicing (vocal folds do not vibrate), in case of **b, d, g**, there is little voicing. It begins just before the third phase i.e. release phase. If the sounds are articulated rapidly there may not be any voicing.

In case **b, d, g** are spoken slowly and carefully, then there is possibility of voicing in the second phase i.e. the compression phase. In that case, the sound will be fully voiced.

In the **third phase**, i.e., at the release stage, in case of **p, t, k** there is **plosion** and **aspiration**. So, it can be said that the sound in **p, t, k** is released with a burst of noise and in the post-release phase, when air escapes through the vocal folds, a sound like **h** is made.

This is called **aspiration**. Then vocal folds come together and voicing begins. Aspiration can be perceived when there is a delay between the sound of plosion and the beginning of **voicing**.

In the release stage, **b, d, g** is followed by a weak plosion. At this stage **voicing** begins. What makes **b, d, g** characteristically different sounds than **p, t, k**? **p, t, k** are aspirated and in case of **b, d, g**, there is no aspiration. That is how the ear distinguishes clearly between these sounds.

In initial position, **b, d, g** cannot be preceded by any consonant whereas **p, t, k** can be preceded by **s**, the sound is unaspirated, which can give an impression of **b, d, g** articulations. So, if a word beginning with one of **sp, st, sk**, is heard with the **s** removed an initial **b, d, g** is likely to suggest that the transcription **sb, sd, sg** could be used instead of **sp, st, sk**.

2. Medial Position (VCV): The pronunciation of **p, t, k** and **b, d, g** in medial position depends to some extent on whether the syllables preceding and following the plosive are stressed. In general, it can be said that a medial plosive may have the characteristics either of final or initial plosive.

3. Final Position (VC): Final **b, d, g** have little voicing. If voicing is there, it will be little and will be at the beginning of the second phase, i.e. compression phase, **p, t, k** are voiceless.

The **plosion** following the release of **p, t, k** and **b, d, g** is very weak and often not audible.

The most important difference between **p, t, k** and **b, d, g** is that vowels preceding **p, t, k** are much shorter. This shortening effect of **p, t, k** is characteristically noticeable when the vowel preceding **p, t, k** is a long vowel or a diphthong.

Fortis and Lenis:

Fortis and **Lenis** distinction is a very complicated one. **Fortis** and **Lenis**, the terms have come to be used because **b, d, g** are definitely not **voiced** sounds, but the **voicing** these sounds have, is of no perceptual importance. So, some phoneticians are in favour of using some other terms in place of **voiced/voiceless** sounds to characterise the sounds. They argue that **p, t, k** are produced with more force and **b, d, g** are produced with less force. So, their contention is that the **sounds which are produced with more force should be called Fortis** sounds and **sounds which are produced with less force should be called Lenis** sounds. Though it is difficult to measure the force of articulation and it has not been scientifically proved that some sounds take more force and the others take less force, yet the terms have been used to characterise the sounds. See the following table:

	Place of articulation		
	Bilabial	Alveolar	Velar
Fortis (voiceless)	p	t	k
Lenis (voiced)	b	d	g

Table can be produced for all the consonants, because all consonants obstruct the air flow in a different way. So, it is possible to classify the consonants on the basis of manner of articulation also.

Dear Student,

While summing up, I shall describe the action of the articulators and respiratory system for plosive sounds briefly. Take for example, the words **town, down**.

In |t| and |d|, the obstacle to the air-stream is formed by a closure made between the tip and rims of the tongue and the upper alveolar ridge and side teeth. Lung air is compressed behind this closure. Vocal folds are wide apart for |t| but may vibrate for all or part of the compression stage for |d| according to its situation in utterance.

The lip position for |t| and |d| will be conditioned by that of adjacent sounds. For example, if we utter a word **teeth**, the lips are spread and if we utter **tooth**, immediately after |t|, there is an anticipatory tooth rounding. The air escapes with force upon the sudden separation of alveolar closure.

The student may look up p.37 of the book **English Phonetics and Phonology** by Peter Roach for further clarification. Roach has explained the pronunciation of the word 'be' |bi:|.

Suggested Questions

Q.1. Write brief description of the actions of the **Articulators** and **Respiratory System** in the words.

(1) goat (2) ape

Q.2. **Transcribe** the following words:

(1) cough (6) guard (11) bough (16) badge

(2) divine

(3) hair

(4) ape

(5) dough

(7) bored

(8) tick

(9) bought

(10) doubt

(12) pea

(13) bring

(14) spoon

(15) tickle

(17) gross

(18) gaudy

(19) gulp

(20) spick

ENGLISH PHONETICS AND PHONOLOGY

- (I) THE PHONEME
- (II) SYMBOLS AND TRANSCRIPTION
- (III) PHONOLOGY

(I) THE PHONEME

Dear Student,

In this lesson, we will discuss certain theoretical and conceptual issues regarding phonetics and phonology. These concepts will help you to understand some very important fundamental issues. Let us start with **language** itself. Even if we do not go into a systematic definition of language, we know what function it performs in our life. It helps us to **communicate**. We can communicate by **writing** or we can communicate by **speaking**. When we write we make use of alphabets. These alphabets help us to form words. These words help us to form sentences. But these formations are not haphazard. Letters go on to form syllables, words, sentences in accordance with some scientific principles. A scientific study of language is called **Linguistics**. The study of linguistics includes **Phonology, Phonetics, Lexis, Morphology, Syntax, Semantics, Stylistics, Dialectology, Pragmatics** and so on. **Phonology** and **Phonetics** remain a very important area of study in linguistics. All of us know that we learn to speak, before we learn to write. And when we speak we make use of certain sounds. Now we need to ask ourselves what do we mean by the word **Sound**. Try to observe yourself when you speak. You notice that you produce a variety of sounds.

The human speech mechanism is capable of producing an infinite number of speech sounds. Every language makes its own selection from this vast repertoire of speech sounds. However, one fact remains indisputable that when we speak, we produce a continuous stream of sounds. On studying speech we divide this stream into small pieces, that we call **segments**. For example take a word **pat**. It has three segments p+æ+t. However, it is not always easy to identify the number of segments e.g. take a word **mine** |main|. Is ai one segment or two segments, the answer is slightly tricky. Before I make an effort to explain this to you, let me first make some more concepts clear to you.

By now, you know that there are two different kinds of sounds (or segment types) in English language – **vowels** and **consonants**. You also know that there are 44 sounds

in English language but each of these 44 sounds can be pronounced in different ways. That means the way a sound is produced can be different but the sound in its essential element remains the same. **æ** remains **æ** even if two different speakers pronounce it differently. It cannot become **e**. If we substitute **æ** with **e** the word will change. |bæd| if substituted with |e| will become |bed| and it becomes a different sound. So it goes to prove that a sound may be realised in a different way yet it may remain the same in its essential distinctness.

The point discussed here becomes more clear if we look at the similar situation related to the letters of English alphabet. We know there are 26 letters from a to z. Five letters out of these 26 letters are known as **Vowels**. These are **a, e, i, o, u**. If we try to change one letter with another the meaning will change. For example, let us try to form words with one of these five vowels placed in between consonants p and t. Words can be **pat, pet, pit, pot, put**. Each of these five words has a different meaning. The same principle applies to the sounds. If we try to make words with short vowels i, e, æ, [^]o, u, six different words are formed if we place these in between p and t. Look at the following words :

pit	pit
pet	pet
pat	pæt
putt	p [^] t
pot	p^ót
put	p t

Now we come to one primary question : what is a **Phoneme**. Take for example the English word **Cake**. It has two sounds of k. But when we pronounce it we say [k^heik]. Phonetically they are similar yet there is a distinction. What is that distinction? First K [k^h] is aspirated and the second k is unaspirated. But if we choose to pronounce it as [Keik] the meaning will not change. But take the example of cake |keik| and bake |beik|. The substitution of |b| for the sound |k| gives us a different word. Now, consider this sentence. **The boys run fast**. The **boys** can be replaced by **girls** or by **cats** or by **dogs**. These replaceable sound sequences are able to stand by themselves. They are called **words**. **Boys** or **girls** or **dogs** or **cats** can further be divided into meaningful units smaller than the word e.g. **boy + z**, **z** determines the plurality of the form. These smaller sound sequences can be interchanged meaningfully but these may or may not be capable of standing by themselves. These smaller units are known as **morphemes**. **Morphemes** may correspond with the words e.g. boy – it is a

root morpheme and can stand alone. Moreover, when we add **z**, **z** can not stand alone except in the company of a word. There is however, a lower level also at which meaningful examination is possible. The word **ran** is a morpheme but instead of saying **ran** we say **run**, we have changed an element on a lower level than the morpheme, which can change the meaning and function of a word. This basic linguistic element is known as **phoneme**. **A phoneme, therefore, is the smallest contrastive linguistic unit** which may bring about a change of meaning. The complete set of these units is called the **phonemic system of the language**.

One more technical term which needs to be defined is **Allophone**.

I have mentioned that a contrastive linguistic unit is defined as phoneme, but phonemes themselves are abstract and these abstract units can be realised in different ways just as there are different ways in which we make a mark on a piece of paper to represent a particular letter of the alphabet. Each one of us writes **a** or **b** or **p** in a different way. No two formations are alike. Similarly, no two realisations of a sound are alike. At times it does not make much difference, which of the two possible ways we choose to pronounce a sound. **The different realisations of phonemes are known as Allophones**. However, it has to be kept in mind that as in writing there are certain rules for using a capital letter or a smaller letter despite the difference in individual formations similarly there are certain rules for the realisation of sounds despite individual realisations e.g. if we pronounce the word **tea**, the sound **t** is aspirated because the principle is that in English language all voiceless plosives when they occur before stressed vowels at the beginning of syllables, have to be aspirated. But in the word **eat**, **t** is unaspirated because here the principle involved is that all voiceless plosives when they occur at the end of the syllable and are not followed by a vowel are unaspirated. The realisation of **t** in one case being aspirated and in the other case being unaspirated can be recognized as **t** by English speakers despite their differences. The point to be taken note of is that **t** in **tea** can not be made unaspirated and in **eat** as aspirated. None of these sounds can be substituted for another. We can therefore, say that these sounds occur in **predictable** and mutually exclusive positions, or environments in English. In other words they are in **complementary distribution** with one another. Such theoretically similar sounds in complementary distribution in relation to one another are called **Positional Variants** or **Allophones** of the same phoneme. Before I proceed further, let me repeat what I have so far discussed. **A phoneme is a contrastive unit of the sound of a particular language. It can be realised differently depending upon its position in words or its environment. These positionally defined realisations or variants are its allophones.**

(II) SYMBOLS AND TRANSCRIPTION

Look at the list of phonemic symbols. The number of phonemic symbols is exactly the same as the number of phonemes that exist in a language. There are 26 alphabetic letters in English language. These 26 letters have 44 phonemes. Take the example of the words **eat**. If we have to phonetically transcribe it, we shall put it like |**i:t**|. Take a word **cheese** it shall be transcribed as **i:z**-now **tʃ** is ^{tʃ}ne phoneme but consists of two letters. Similarly take a word **Jam**, it will be transcribed as |**dʒæm**|. So this means that each sound is to be identified as a phoneme and for each phoneme we have a different symbol. This transcription is known as **phonemic transcription**. The best way to learn phonemic transcription is to practise to transcribe the sounds as these are heard or else you can practise to transcribe the written texts. The principle remains that you must practise phonetic transcription if you want to learn correct pronunciation of sounds.

But the variety of sounds a human vocal tract is capable of producing is immense. Therefore, the phoneticians make use of a larger set of symbols for an accurate description of sounds. **The International Phonetic Association** has devised a system which is known as **International Phonetic Alphabet**. The **IPA** has tried as far as possible to keep the Roman style symbols, although it is inevitable that these symbols have to be supplemented with **diacritics**. The IPA's present practice on symbolisation is given in the **Handbook of the IPA** (IPA 1999). The International Phonetic Alphabet has symbols to represent all the sounds that exist in the languages of the world. Look at the chart being set along with this lesson. The chart includes cardinal vowel values as well as some diacritics marks. These diacritics indicate the change or modification of a sound as represented by a particular phonetic symbol e.g. if we put two dots above cardinal vowel No. 4(2) – the symbol would be [ä] which is nearer to central area than the front area. This method of showing minute and subtle variations in sound realisations with the help of symbols and diacritics or phonetic symbols is known as Phonetic transcription. So, we can say that **Phonemic transcription** gives us limited and little information about a sound as compared to broad and detailed information which is made possible by the **phonetic transcription**. Phonetic symbols are used when it is necessary to give an accurate label to an allophone of some English phoneme. When symbols are used to represent precise phonetic values and not just the phonemes, the square brackets [] are used. You may remember that [] brackets are used in case of cardinal values. Now, so far as, phonetic symbols are concerned, you will see that different set of symbols are used in different books. There is difference of opinion among phoneticians about the kind of symbols to be used to characterise sounds. Some writers prefer to use a set of symbols which require the minimum number of special

or non-standard symbols e.g. they prefer to use **a** as used in **car** instead of **æ** while there are others who believe symbols should be as close as possible to the quality of a particular sound. Therefore they argue that it is appropriate to use **æ** instead of **a** in **car**. There are also disagreements about the most important characteristics of a sound that a symbol should indicate, e.g. vowels of the words **bit** and **beat**. **i** in **bit** is short and in **beat** it is long. The difference is in the length marks **bit** | **bit** | **beat** | **bi:t** | .

However, some other phoneticians believe that length (or quantity) difference is not very important. It is the quality difference which is more important. Therefore, they transcribe **bit** as **bit** and **beat** as | **bit** | . Another point of view is that quality and quantity are both important and should both be indicated. So they transcribe **bit** as | **bit** | and **beat** as | **bi:t** | . Since the symbol is different in shape and length marks, both quality and quantity are indicated.

(III) PHONOLOGY

First question to be answered is what is **Phonology**?

Phonology is the study of phonemes and of their inter-relationships as they function in a language. In other words, we study the abstract side of the sounds of language such as the concrete phonetic characteristics — articulatory, auditory and the acoustics. In the study of phonology, the concrete phonetic level is often separated from the more abstract **phonological level**, which analyses the patterning of sounds in language and includes the functional phonemic behaviour of these sounds for distinctive purposes. It also helps to study the combinatory possibilities of the phonemes — prosodic features such as pitch, stress and length etc. also are studied. From the above discussion, it can be inferred that for a full understanding of the use of sounds in English language the study of both phonetics and phonology is essential.

LIST OF SYMBOLS

1. *Symbols for phonemes :*

i	as in 'pit' pɪt	i:	as in 'key' ki:
e	as in 'pet' pɛt	ɑ:	as in 'car' kɑ:
æ	as in 'pat' pæt	ɔ:	as in 'core' kɔ:
ʌ	as in 'putt' pʌt	u:	as in 'coo' ku:
ɒ	as in 'pot' pɒt	ɜ:	as in 'cur' kɜ:
ʊ	as in 'put' pʊt		
ə	as in 'about, upper' əbaʊt, ʌpə		
eɪ	as in 'bay' beɪ	əʊ	as in 'go' gəʊ
aɪ	as in 'buy' baɪ	aʊ	as in 'cow' kəʊ
ɔɪ	as in 'boy' bɔɪ		
ɪə	as in 'peer' piə		
eə	as in 'pear' peə		
ʊə	as in 'poor' pʊə		
p	as in 'pea' pi:	b	as in 'bee' bi:
t	as in 'toe' təʊ	d	as in 'doe' dəʊ
k	as in 'cap' kæp	g	as in 'gap' gæp
f	as in 'fat' fæt	v	as in 'vat' væt
θ	as in 'thing' θɪŋ	ð	as in 'this' ðɪs
s	as in 'sip' sɪp	z	as in 'zip' zɪp
ʃ	as in 'ship' ʃɪp	ʒ	as in 'measure' meʒə
h	as in 'hat' hæt		
m	as in 'map' mæp	l	as in 'led' led

LIST OF SYMBOLS :

n	as in 'nap' næp	r	as in 'red' red
ŋ	as in 'hang' hæŋ	j	as in 'yet' jet
		w	as in 'wet' wet
tʃ	as in 'chin' tʃɪn	dʒ	as in 'gin' dʒɪn

2. Non-phonemic symbols

i	as in 'react', 'happy' riækt, hæpi
u	as in 'to each' tu i:tʃ
ʔ	glottal stop
h	aspiration, as in 'pin' pʰɪn
ˌ	syllabic consonant, as in 'button' bʌtʌnˌ
ː	shortened vowel, as in 'miss' mɪs
˙	syllable division, as in 'differ' dɪf.ə

3. Stress and intonation

 	tone-unit boundary
 	pause
'	primary stress, as in 'open' 'əʊpən
ˌ	secondary stress, as in 'ice cream' ˌaɪs'kri:m

Tones: **˘** fall**˙** rise**˘˙** fall-rise**˙˘** rise-fall**ˉ** level**'** stressed syllable in head, high pitch, as in 'please **ˌ**do**ˌ** stressed syllable in head, low pitch, as in **ˌ**please **ˌ**do**˙** stressed syllable in tail, as in **˙**my **˙**turn**↑** extra pitch height, as in **↑**my **˙**turn

Chart of the International Phonetic Alphabet (revised 1993, updated 1996)

CONSONANTS (PULMONIC) :

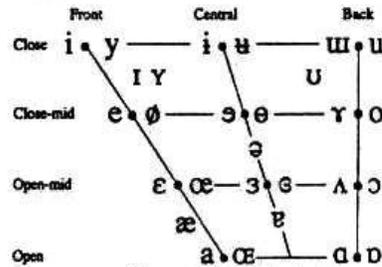
	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			ʀ					ʀ		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC) :

	Clicks	Voiced implosives	Ejectives
⦿	Bilabial	ɓ Bilabial	ʼ Examples:
	Dental	ɗ Dental/alveolar	p' Bilabial
!	(Post)alveolar	ɟ Palatal	t' Dental/alveolar
≠	Palatal/velar	ɡ Velar	k' Velar
	Alveolar lateral	ɠ Uvular	s' Alveolar fricative

VOWELS :



Where symbols appear in pairs, the one to the right represents a rounded vowel.

OTHER SYMBOLS :

- ʌ Voiceless labial-velar fricative
- ʷ Voiced labial-velar approximant
- ɥ Voiced labial-palatal approximant
- ħ Voiceless epiglottal fricative
- ʕ Voiced epiglottal fricative
- ʡ Epiglottal plosive
- ɕ ʑ Alveolo-palatal fricatives
- ɺ Alveolar lateral flap
- ɺɥ Simultaneous ʃ and ʎ
- ɥɥ Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary.

kp ts

SUPRASEGMENTALS :

- ˈ Primary stress
- ˌ Secondary stress
- ː Long
- ˑ Half-long
- ˚ Extra-short
- ˘ Minor (foot) group
- ˙ Major (intonation) group
- Syllable break
- ◌◌◌◌ Linking (absence of a break)

DIACRITICS Diacritics may be placed above a symbol with a descender, e.g. I^h]

ˀ Voiceless	ᵿ ɖ	ˁ Breathy voiced	ᵿ ɖ	ˁ Dental	ᵿ ɖ
ˁ Voiced	ᵿ ɖ	ˁ Creamy voiced	ᵿ ɖ	ˁ Apical	ᵿ ɖ
ˁ Aspirated	ᵿ ^h ɖ ^h	ˁ Linguallabial	ᵿ ɖ	ˁ Laminal	ᵿ ɖ
ˁ More rounded	ɔ̞	ˁ Labialized	ᵿ ^w ɖ ^w	ˁ Nasalized	ẽ
ˁ Less rounded	ɔ̟	ˁ Palatalized	ᵿ ^j ɖ ^j	ˁ Nasal release	ᵿ ⁿ
ˁ Advanced	ɯ	ˁ Velarized	ᵿ ^ɣ ɖ ^ɣ	ˁ Lateral release	ᵿ ^l
ˁ Retracted	ɤ	ˁ Pharyngealized	ᵿ ^ɣ ɖ ^ɣ	ˁ No audible release	ᵿ [̚]
ˁ Centralized	ẽ	ˁ Velarized or pharyngealized	ᵿ		
ˁ Mid-centralized	ẽ	ˁ Raised	ɛ̟ (ɹ = voiced alveolar fricative)		
ˁ Syllabic	ᵿ	ˁ Lowered	ɛ̞ (β = voiced bilabial approximant)		
ˁ Non-syllabic	ɛ̟	ˁ Advanced Tongue Root	ɛ̟		
ˁ Rhoticity	ɛ̟ ɛ̟	ˁ Retracted Tongue Root	ɛ̟		

TONES AND WORD ACCENTS

LEVEL	CONTOUR
˥ or ˧	˥ or ˧
˥ High	˥ or ˧
˥ High	˥ or ˧
˥ Mid	˥ or ˧
˥ Low	˥ or ˧
˥ Extra low	˥ or ˧
˥ Downstep	˥ or ˧
˥ Upstep	˥ or ˧

SUGGESTED QUESTIONS :

Q. I. How is Phonetic Transcription useful?

Q. II. Phonemically transcribe the following words :

- | | |
|-----------------|-----------------|
| 1. cough | 22. dungeon |
| 2. carry | 23. drought |
| 3. coin | 24. donkey |
| 4. comb | 25. delicate |
| 5. caress | 26. delinquent |
| 6. confidence | 27. demograph |
| 7. conscience | 28. demagogue |
| 8. cooperate | 29. dementia |
| 9. cyst | 30. demonical |
| 10. symbol | 31. donation |
| 11. chorus | 32. doughty |
| 12. choreograph | 33. expurgate |
| 13. creche | 34. extensive |
| 14. crease | 35. eyewash |
| 15. dumb | 36. extinguish |
| 16. duffer | 37. extirpation |
| 17. dwarf | 38. extrude |
| 18. dynamo | 39. expunge |
| 19. dubious | 40. exquisite |
| 20. dross | 41. exuvial |
| 21. dangerous | 42. exultant |

ENGLISH PHONETICS AND PHONOLOGY

(I) **Production of Fricatives and Affricates**

(II) **The Fricatives of English**

(III) **The Affricates**

(IV) **Fortis Consonants**

(I) **Production of Fricatives and Affricates**

Dear Student,

In lesson No. 3, you were told about six plosive sounds of English language. Plosives are the sounds produced with complete closure. There are **three stages** in the articulation of a plosive sound. **First** there is closure of air, 2. **then** there is compression of air and 3. **then** there is release of air. At the release stage there is plosion. On the other hand, in the production of a fricative sound air escapes through a small passage and there is a hissing sound. Take the example of a sound **s** as in **sip**. You can yourself observe that when we try to release air there is a hissing sound. Second thing which we observe is that this sound can be prolonged **sssss.....**. We can continue to make this sound as long as there is enough air in the lungs. Now compare two sounds **p** and **s** in case of **p** the air is compressed between the two lips. When you are about to form the sound **p**, when you release air you can feel air coming out with plosion and the sound ends there, it cannot be continued. But in case of **s**, the hissing sound can be continued. So what do we come to know? We come to know that fricatives are **Continuants**. They are characterised as **Continuant Consonants**.

The Fricatives of English : The following are the fricative phonemes in English language :

f

v

θ

ð

s

z

ʃ

ʒ

h

Now, let us take the first pair of fricatives **F and V**.

f as in **f**an, sa**f**er, hal**f**

v as in **v**an sa**v**er, ha**v**e

The example shows that **f** and **v** can occur in all the three positions : **initial medial** and **final**. In the production **f** and **v** the lower lip gets in contact with the upper teeth. See **figure 14-a** :

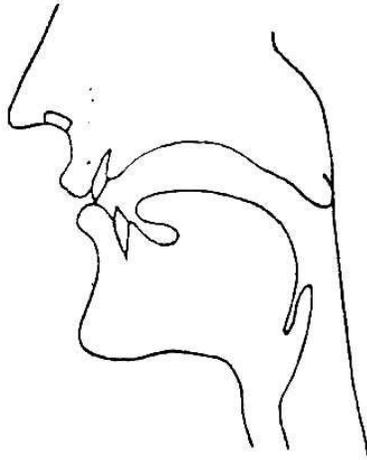


Fig. 14a : Labio-dental fricative

Also notice that the fricative noise is not very strong. In case of **v** it is scarcely audible. **f** and **v** are **labio-dental** fricatives.

θ and ð

θ as in **th**umb, **eth**er, **breath**

ð as in **th**us, fa**th**er, **breath**e

From these examples, we can make out that **θ** and **ð** occur in all the three positions : **initial, medial** and **final**.

In the production of **θ** and **ð**, the tongue is placed **behind** the teeth.

The tip of the tongue touches the inside of the lower front teeth, and

The blade of the tongue touches the inside of the upper teeth. See **figure 14-b**:

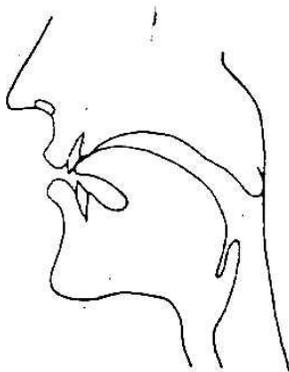


Fig. 14b : Dental fricative

The air escapes through the gaps between the tongue and the teeth.

The fricative noise is weak. These two fricatives are **Dental Fricatives**.

The dental fricative θ shows little friction. There is an opinion among some specialists that θ can be considered a weak (lenis) dental plosive. I will not like my students to get confused on this theoretical issue. It is better that the student while practising fricatives θ and δ practise them in a manner described above. Be cautious that you do not place the tongue between the teeth. You may find it little difficult to manoeuvre the tip of the tongue and the blade of the tongue simultaneously touching the front lower teeth and the upper teeth. However, with a little practice you can cultivate the habit of producing fricatives in the right manner.

s, z

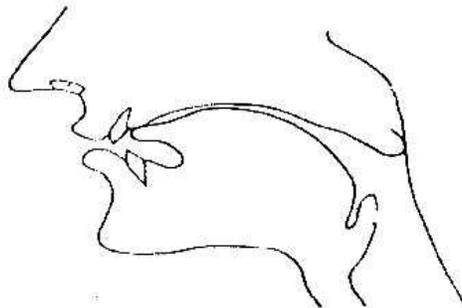
s as in **sip**, **facing**, **rice**

z as in **zip**, **phasing**, **rise**

s and **z** occur in all the three positions : **initial**, **medial** and **final**.

s and **z** are produced exactly like plosive sounds **t** and **d**.

The tongue blade is pressed against the alveolar ridge. See **fig. 14-C** :

**Fig. 14-C : Alveolar articulation**

However there is difference between **s** and **z** and **t** and **d**. In case of **t** and **d**, at the release stage, there is plosion but in case of **s** and **z** the air escapes through a narrow passage along the centre of the tongue and the sound produced is comparatively intense.

\int and **z** are, alveolar fricatives

\int ʒ

\int as in **ship**, **Russia** and **Irish**

ʒ as in **measure** and **garage**

The example shows that \int occurs in all the three positions : initial, medial and final. It is a commonly distributed phoneme. However ʒ has a rare initial and final

occurrence. Most of the words which begin with ʒ have recently come into the language from French. The most common occurrence of ʒ is in medial position as in **measure meʒə, usual-ju:ʒuəl**.

ʃ and ʒ are **post-alveolar** fricatives. When we produce ʃ and ʒ the tongue comes in contact with an area slightly further than the area of contact in case of **s** and **z**.

Try to first produce **s** and then **z**. Similarly first produce **s** and then ʒ.

When we produce **s** the air escapes through a passage along the centre of the tongue. In case of ʃ also, the air escapes through a passage along the centre of the tongue but this passage is a little wider.

In case of ʃ and ʒ, most of the BBC speakers have rounded lips.

Besides, the four pairs of fricative phonemes **f, v, - ð, s z** and ʃ ʒ, we have one **glottal** fricative phoneme |h| **h** as a **head**, **ahead**, **playhouse**.

h is a glottal consonant.

The friction takes place between the vocal folds. Try to produce **h** sound. You can feel that the vocal folds move from wide apart position to a close position. But the sound **h** is not produced in isolation. When it is produced in the context of different sounds, many different things happen. For example try to pronounce **hit, hat, hot, hut**. In each case **h** is followed by a vowel sound **i, æ, ʊ, ʌ**. Now what do we observe? We observe that, the tongue jaw and lip positions for the each vowel sound are all produced simultaneously with the **h** consonant. This means the glottal fricative |h| has the quality of the vowel which follows it. In case of **hit**, **h** has the quality of **i** in case of **hat**, it has the quality of **æ** and in case of **hut** it has the quality of **ʌ** and so on and so forth.

So this further means that **h** is phonetically a **voiceless vowel** even though phonologically it is a consonant which is usually found before a vowel. When it is pronounced it takes the quality of the voiced sound that follows it. This is an important point. The student must try to understand what has been explained here in terms of phonetic and phonological status of a sound.

Another important point which the student has to keep in mind is that when **h** occurs between the voiced sounds, it is pronounced with voicing.

We have just seen that in words like **hit, hut, hat, hot**, **h** is voiceless.

But in words such as **a head - hed, greenhouse-gri:nhəʊs, boathook -bəʊθhʊk**, **h** is pronounced with voicing. But this voicing is not the normal voicing of vowels but it is voicing which is weak and has a slightly fricative sound, which may be labelled as **breathy voice**.

If the students try to observe the English speakers pronouncing **her, he, him, his, have, has, had** they will observe that **h** is omitted in these words. Not with standing

this fact, English speakers are sensitive above **h** sound and if **h** gets missing, it is taken to be a faulty pronunciation.

Dear student,

I have explained nine fricative sounds so far. In terms of place of articulation they can be labelled as follows :

	PLACE OF ARTICULATION				
	Labio-dental	Dental	Alveolar	Post-alveolar	Glottal
Fortis (Voiceless)	t	θ	s	ʃ	h
Lenis (voiced)	v	ð	z	ʒ	

Now, you must have noticed that in each pair of phonemes

t, v, θ, ð, s, z, ʃ, ʒ - one sound is a fortis sound and the other is a lenis sound. 'h' is one sound which is labelled as a glottal fricative. So it can not be labelled as a fortis or a lenis sound. I have already explained to you in Lesson No. 13 the qualities of a fortis sound and a lenis sound.

In the case of fricatives, fortis fricatives are articulated with greater force and their friction noise is louder and therefore voiceless.

As in case of fortis plosives **p, t, k**, the fortis fricatives **f, θ, s**, have the effect of shortening a preceding vowel. Take for example these two words :

ice - aɪs

eyes - aɪz

aɪ in **Ice** is shorter than **aɪ** in eyes.

In the case of lenis fricatives you have to remember that in initial and final positions there is very little or no voicing. But when the lenis fricatives **v, ð, z, ʒ**, occur between voiced sound, they may be voiced.

Dear Student,

Before I move on to discuss next category of sounds which are labelled as Affricates I shall introduce you to two more variations of the glottal fricative sound **h**. These two variations have phonetic symbols **w** and **M**.

Take the example of words : **which, why, whip, whole**. All these words begin with 'wh'. Now these words which begin with 'wh' have two variations of articulation. BBC speakers pronounce the initial sound of these words as we pronounce the sound **w**. But there are others who pronounce the initial sound as a **voiceless fricative** but the lip, tongue and the jaw position is the same as for the sound **w**. So this means in one case **w** sound can be made voiced.

Look at the following pair of words :

witch	wits	which	mitʃ
wail	weil	whale	meɪ
wye	wai	why	maɪ
wear	weɪ	where	meɪ

Now, what do we see from this example? We observe that when the sound **w** is substituted by **m**, it becomes a different word with a different meaning.

Does it mean that **m** is a different phoneme? However, majority of specialists on this subject argue that the sound **m** is not a separate phoneme but a different realisation of **w** which may be said to combine **h**. So **m** as it occurs in **which** is a realisation of a sequence of two phonemes **h** and **w**.

However, there are others who argue that there is no theoretical justification in treating voiceless fricative **w** as a combination of **h** and **w**.

Even Peter Roach **argues**, "whether the question of this sound is approached phonetically or phonologically there is no **h** sound in the "voiceless ".

Now, let me explain one more sound. Look at the following words :

huge, human, hue. Each of these words has a letter h. And the phoneme **h** is, we know a glottal fricative. But when we pronounce **huge, human, huge**, we observe that in these words **h** is not pronounced as a glottal fricative but as a voiceless palatal fricative. The phonetic symbol used for this sound is **ç**. Usually this sound is treated as a combination of h and j. Now j is a consonantal phoneme. It is the sound which can be found in the beginning of the word **yes, yet**. If we take **h** sound in **huge** as a combination of h+j, then it is the same case as h+w, which will mean that this is a separate phoneme, which will further mean that we have extra phonemes **m** and **s**. But this is not a fact. The list of phonetic phonemes for English sounds do not list these two phonemes as two separate sounds. Even though **huge** is transcribed as **hju:dʒ**, and which is substituted with **mits** or which is transcribed as **mits**, it is done so because it is a common practice and it is convenient also, the assumption being that a phonemic analysis does not necessarily have to be exactly in line with phonetic facts.

Affricates : tʃ, dʒ

tʃ, dʒ- the two affricates are **post alveolar phonemes**.

tʃ is fortis and is slightly aspirated in the positions where p + k are aspirated. When **tʃ** is final in the syllable like other fortis consonants it has the effect of shortening a preceding vowel.

tʃ is articulated with rounded lips.

dʒ is lenis and the **voicing characteristics** are same as for other lenis

consonants. **dʒ** is articulated like **tʃ** with rounded lips.

Fortis Consonants :

Dear student,

I have already explained in lesson No. 13 how the sounds are paired in terms of force of energy required in articulation. If a sound is articulated with stronger force the sound is known to be fortis and if it requires less muscular energy it is a lenis sound. Except glottal fricative **h** all other consonant pairs are distinguished according to the muscular energy required. There are few more points which need to be explained about fortis consonants. These are as follows :

(i) Shortening of the preceding vowel : In lesson No. 13, it was mentioned that in case of a syllable-where there is a fortis consonant in the final position, there is a shortening of a preceding vowel. The effect is most noticeable in the case of long vowels and diphthongs. The effect on short vowels also can be noticed but it is here very prominent.

Now, I am going to explain, how a syllable ending with **l, m, n, j** is affected if it is followed by a fortis consonant. Take for example the words :

belt - **belt**
 bump - **bʌmp**
 bent - **bent**
 bank - **bæŋk**

Here in these words, we observe that the sound preceded is not a vowel but a consonant. But the effect **is the same as** on a vowel. **l m n n** are considerably shortened when followed by fortis consonant **t, p, k**.

Now see what happens when fortis consonants are found in the initial position e.g. take the words :

play - plei
 tray - trei
 quick - kwik

Now **p, t, k** are fortis consonants and in these words **p** is followed by **l**, **t** is followed by **r** and **k** is followed by **w**.

I told you in lesson no. 13 that when **p, t, k** are in the initial position in a syllable and then are followed by a vowel they are aspirated. This means that the beginning of a vowel is voiceless. Now we see what happens when **p t k** are followed by consonants such as **l, γ, j, w, l, γ, j, w** are voiced continuous continuant consonants. When fortis consonants **p t k** are followed by voiced continuant consonants **l, γ, j, w**, the result is the same. They lose their voicing.

In words **plei trei kwik**, **i, γ, w** are devoiced because they are followed by fortis consonants but in words like **lay, ray, wick** the sound **l, γ, w** are voiced.

Now, I am going to discuss the conditions in which the glottalisation of a consonant articulation takes place.

Now, we know that voiceless consonants are usually articulated with open glottis. However, in case of fricatives, it is always the case because air flow is essential for successful production. For example try to articulate **f,θ, s,s**. In all these glottis is open, vocal folds are separated. But in case of voiceless plosives such as **p, t, k**, it is possible to produce the consonant with completely closed glottis. This means that there is a glottalisation of **p, t, k**. Similarly, **tʃ** which is a voiceless affricate can be produced with closed glottis. However, it has to be kept in mind that glottalisation takes place only in certain contexts. Whenever the glottalisation of a voiceless consonant occurs it is shown by the symbol?

Now let me give you some examples where the glottalisation takes place.

The most commonly found glottalisation is that of voiceless affricate **ts** when it occurs at the end of a stressed syllable. Study the following examples :

	With glottalisation	Without glottalisation
nature	neiʔtsb	neitʃE
catching	kæʔtsiŋ	kætʃiŋ
riches	riʔtsiz	ritʃiz

In the case of voiceless plosives **p, t, k** this glottalisation is not very regular. However, if the plosive is followed by another consonant or a pause, glottalisation takes place. For example :

	With glottalisation	Without glottalisation
actor	æʔktʰ	aektE
petrol	peʔtrbl	petrEɪ
mat	mæʔt	mæt
football	fuʔtb] :l	futb] :l

The student may keep in mind that this kind of pronunciation is more widely being used by BBC speakers.

SUGGESTED QUESTIONS :

Q. I. Transcribe the following words phonemically :

- | | |
|------------|--------------|
| (1) fishes | (5) achieves |
| (2) shaver | (6) others |
| (3) sixth | (7) measure |
| (4) these | (8) ahead |

Q. II. Describe the movements of articulators in the following words :

- (1) fishes
- (2) ahead.

LESSON NO. 1.6

WRITER : DR. KUMKUM BAJAJ

- I. Nasals
- II. The Consonant : I
- III. The Consonant : r
- IV. The Consonants : j and w

Dear Student

In the previous lessons, you were told about the three groups of consonants known as **Plosives, Fricatives** and **Affricates**. The next group is that of **Nasals**. There are **three nasal sounds** in English language. These are **m, n, ŋ** . Besides these three nasal sounds there are four more sounds **l, r, j, w**. These four sounds can not be fitted into any of the groups mentioned. However these four sounds as well as the three nasal sounds are known as Continuant. One feature of continuant sounds is that there is no friction. One thing which **m,n, ŋ , l, r, j, w** have common is that while articulating these sounds there is no friction. Otherwise there is nothing common in these sounds and they are very different from each other.

Nasals

Dear Student,

While discussing the functions various articulators perform in the articulation of sounds, you were told that the quality of a sound depends on the position of the soft palate. Soft palate can take different positions. It can be in a raised position. And when the soft palate is raised the air can not pass through the nose so the quality of sound produced would be **oral**. But in the second position the soft palate is lowered and the air passes through the nose then the sound produced is a **nasal** sound. In case of all other consonants and vowels the soft palate is raised. But in case of nasal consonants soft palate is lowered. So in the case of nasals air can not pass through the mouth. It is prevented by a complete closure in the mouth at some point. Try to make a sound **dndndndndn** and prolong it for some time. There will be alveolar closure. Do not move your tongue and continue to produce **dndndn.....**you can feel your soft palate moving up and down. Now let us discuss the three nasal sounds **m, n, and ŋ** . In case of **m** the closure takes place between two lips. So **m** is a bilabial sound like **p** and **b**. In case of **n** the closure takes place between the blade of the tongue and the alveolar ridge. So **n** is an alveolar sound like **t** and **d**. In case of **ŋ** the tongue closes the palate. So **ŋ** is a velar sound like **k, g**. Out of the three nasal sounds **m** and **n** are simple, however **ŋ** is unusual in its phonological aspects and

creates lots of problems for foreign learners. At times it has been argued that **ŋ** is not one of the phonemes of English at all.

ŋ

I have already told you that like **k** and **g**, **ŋ** is a velar sound. **ŋ** has unusual phonological aspects. Let us look at these unusual aspects :

1. **ŋ** like **ʔ** never occurs in an initial position.
2. Take the example of the following set of words :

finger **fiŋ gə**

anger **æŋ gə**

Now 'ng' in the medial position are pronounced as **ŋg**.

Now look at the following set

singer **siŋ ə**

hanger **hæŋ ə**

Here **ng** in the medial position is pronounced as **ŋ** only.

Similarly when there is nk in the medial position **k** is always pronounced.

Now what is the difference between,

finger **singer** **fiŋgə** **siŋ ə**

anger **hanger** **æŋgə** **hæŋ ə**

The difference is in their morphological structure **singer** and **hanger** can be divided into two grammatical pieces **sing + er** and **hang +er**. So **sing** and **er** are two different morphemes. So is the case with hang + er. But **finger** and **anger** can not be divided into two pieces therefore these consist one morpheme each.

So it can be said that if **ŋ** occurs without a following **g** and

- (i) if it occurs at the end of a morpheme.
- (ii) if it occurs in middle of a morpheme.
- (iii) if it has a following **g**.

Now let us examine the words ending orthographically with spellings **ng**. Take the example of words

sing - **siŋ**

hang - **hæŋ**

song - **soŋ**

bang - **bæŋ**

long - **loŋ**

In these words the final **g** is not pronounced. The rule is that **g** is not pronounced after **ŋ** at the end of a morpheme. It should be clear that end of a word is also the end of a morpheme.

But there are few exceptions to this rule.

Let us take an adjective as an example :

long - \ŋŋ

Similarly in **longish**, the pronunciation would be without a following

g - xŋŋɪʃ

But in case of comparative and superlative degree adjective

longer - \ŋŋgə

longest - \ŋŋgə st

g following ŋ is pronounced.

Therefore, it can be said that the rule quoted above has some exception too.

Another unusual distribution of ŋ is to be found in the vowels which follow it.

Remember that ŋ never occurs after a diphthong or a long vowel. Only **i, e, æ, ɛ, o** precede this consonant i.e. ŋ

Before I proceed to explain **l, r, j, w** let me explain a few more theoretical issues concerning the velar sound ŋ.

Some Phonological theorists argue that ŋ is an allophone of n. ŋ can not be considered a separate phoneme. It is argued that English has two contrasting phonemes **m** and **n**. But if we consider the following minimal pairs, the situation is different. Study these examples :

Sin - **sin**

Sing - **siŋ**

Sinner - **sinE**

Singer - **siŋE**

ŋ occurs as a distinct separate phoneme. Therefore the traditional phoneme theory accepts ŋ as a separate phoneme.

Yet it may be useful to keep in mind the arguments which are given against ŋ being treated as a separate phoneme.

1. The first argument relates to the BBC pronunciation and some of English accents. It can be seen that ŋ occurs as an allophone of ŋ.
2. It is also argued that if ŋ is taken as a separate phoneme, its distribution is very different from **m** and **n**. Because phonologically it is restricted to syllable-final position and morphologically it is restricted to morpheme final position unless it is followed by **k** or **g**.
3. English speakers who have had no phonetic training feel that ŋ is not a 'single sound' like **m** and **n**. The fact though can not be established yet it can not be overlooked.

In midland accents ŋ is only found in front of **k** and **g** i.e.

sink - **siŋk**

singer - **siŋgə**

sing - **siŋg**

singing - **siŋiŋ**

So it follows that in the case of accent like this, i.e. can be shown that within the morpheme, the only nasal that occurs before **k** and **g** is **ŋ**. Neither **m** or **n** can occur in this environment. So within the morpheme, **ŋ** is in complementary distribution with **m** and **n**. Since **m** and **n** are already established as distinct English phonemes **ŋ** must be an allophone of **m** or **n**.

Now study the following examples to observe another exception :

1. When a morpheme final **n** is followed by a morpheme initial **k** or **g** it becomes **ŋ**. But when a morpheme final **m** is followed by morpheme initial **k** or **g**, it does not become **ŋ** e.g.

rain-coat - **reiŋkəut**
tram-car - **træmkɑ:**

But if we accept the fact that **ŋ** is not a separate phoneme, then rain-coat should be phonemically transcribed as **reinkəut**, sing should be **siŋg** and singer should be **siŋgə** and singing should be **siŋiŋ** or else we will have to accept one rule that **n** is realised as **ŋ** when it occurs in an environment in which it precedes either **k** or **g**. Now let us look at BBC pronunciations. The difference between **singer** : **siŋgə** and **finger** : **fiŋgə** is that **finger** is a simple indivisible morpheme where as **singer** is composed of two morphemes sing+er. When **ŋ** occurs without a following **k** or **g**, it is always immediately before a morpheme boundary. Consequently the sound **ŋ** and the sequence **ŋg** are in complementary distribution. But within the morpheme there is no contrast between the sequence **ŋg** and the sequence **ng**. So we can say that **ŋ** is also in complementary distribution with the sequence **ng**.

The arguments given by the contemporary phonological theorists can be summed up like :

1. English has only two nasal phonemes i.e. **m** and **n**.
2. The sound **ŋ** is an allophone of **n**.
3. The following words should be **phonemically** represented as finger: **fiŋgə**, singer : **siŋgə**, sing : **siŋg**, singing : **siŋiŋ**
4. But the Phonetic representation can be **fiŋgə**, **siŋg**, **siŋgə**, **siŋiŋ**.

Another rule applied is that **g** is deleted when it occurs after **ŋ** and before a morpheme boundary so the phonetic forms for the words will be :

sing : **siŋ**
singing : **siŋiŋ**
singer : **siŋgə**

But **finger** will be phonemically transcribed as **finger** : **fiŋgə**

One also has to keep in mind the exceptions in case of comparatives and superlatives.

l is a lateral consonant. It is a sound of **complete closure**. The closure takes place between the centre of the tongue and the **alveolar** ridge. The air escapes through the sides of the tongue. Try to produce **dl dl dl dl dl** without moving the middle of the tongue. The movement **of the sides** of the tongue can be felt. This movement is necessary for the production of a **lateral** sound.

l occurs in all the three positions i.e. initial, medial and final.

In the BBC realisation of the sound, one can notice that **l** as it occurs before the vowel sounds is different then as it occurs before the consonantal sounds. For example:

Lea : **li:**
eel : **i:l**

The sound **l** in **i:l** is known as the **dark l**. **Dark l** has a back vowel resonance — a quality similar to a [**u**] vowel. In this realisation back of the tongue is raised. The dark **l** also occurs when it precedes a consonant as in **eels : i:lz**.

The sound **l** in **li:** is known as clear **l**. It has a front vowel resonance. The front of the tongue is raised as in [**i**] vowel.

Clear or dark **l** occur in the following contexts :

Clear **l** will never occur before consonants or before a pause.

It occurs only before vowels. **Dark l** never occurs before vowels. So it can be said that clear **l** and dark **l** are the allphones of the phoneme **l** in complementary distribution. Another allophonic variation of **l** is found when it follows **p** or **k** at the beginning of the stressed syllable. Then **l** is devoiced i.e. produced without voicing found in most realisations of this phoneme.

r

r has a variety of articulation and distribution. The sound is articulated and distributed differently in different accents. One variety of pronunciation which is usually recommended is as a **Post-alveolar approximant**. It is difficult to describe an approximant but for the purposes of convenience it can be said that in the articulation of an **approximant** the articulators come close to each other but do not come close to an extent as to form a complete closure as it takes in the case of plosives, fricatives and nasals. The articulators are in some positional relationship with each other. From this angle, a vowel sound could also be described as an approximant but the term **approximant** is used only to describe the consonants.

In the realisation of **r**, the tip of the tongue approaches the alveolar area in a manner it touches for the articulation of **t** and **d**, but it never actually makes contact with any part of the roof of the mouth. Try to make a long **r** sound, you can feel that no part of the tongue is in contact with the roof of the mouth at any time. The tongue is infact usually slightly curled backwards with the tip raised. Consonants with this tongue shape are usually called **Retroflex**. Try to produce **dr dr dr dr dr** you can feel that in

case of **r** the tip of the tongue is raised and is curled back. In case of **d** it does not happen like this. However in case of **r** the 'curling back process usually carries the tip of the tongue to a position slightly further back in the mouth than for the alveolar consonants **t** and **d**, that is why **r** is known as a post-alveolar sound.

Student must note another variation of **r** also. If **r** is found at the beginning of a syllable which is preceded by **p t k**, e.g. **press, tress, cress** the sound then is voiceless and slightly fricative.

So far as the degree of lip rounding is concerned in case of **r**, one has to keep in mind that while articulating **r** lips have to be rounded but not to an extent that **r** becomes **w**.

r occurs before vowels only. Hence **r** in

red	-	red
arrive	-	raiv
hearing	-	hi riŋ

is to be pronounced. But when **r** occurs in

car	-	ka:
ever	-	evb
here	-	bi:b
	or	ə

when it occurs in

hard	-	ha:d
verse	-	vɜ:s
cares	-	ke z

r is not to be produced in BBC pronunciation. This pronunciation of **r** is known as **non-rhotic** accent. But the accents which have **r** in the final position (before a pause) and before a consonant are called **rhotic** accents. Many in America, Scotland and West of England have rhotic accent :

j and w

j as in **yet**

w as in **wet**

j is a palatal consonant and **w** is a bilabial consonant. These two sounds are **Approximants** — phonetically they are like vowels but phonologically they are like consonants. They are also known as **Semi-vowels**.

From the phonetic point of view **j** is similar to front close vowel **i:**. However **j** is very short.

w is similar to back close vowel **u**. Despite this vowel like characteristic, **j** and **w** are used like consonants. They only occur before vowel phonemes. This is typically

consonantal distribution. Indefinite article **a** is used before them as is the case in other consonants. **The** definite article is pronounced as **ðə** as it is used in all other consonants. So even though they have phonetically vowel like qualities but phonologically they have consonant like distribution.

The student must keep in mind that when **j** and **w** are preceded by **p t k** at the beginning of a syllable they are devoiced and slightly fricative. Look at the following words by way of example :

pure	-	pju ə
tune	-	tju:n
queue	-	kju:
twin	-	twin
quit	-	kwit

There are no words which begin with **pw**. It is usual to place consonants on a chart in relation to place of articulation and manner of articulation. Look at the chart. The different places of articulation are arranged from left to right and the manner of articulation are arranged from top to bottom. When there is a pair of phonemes with the same place and manner of articulation but differing in whether they are **fortis** or **Lenis** (Voiceless or Voiced), the **Fortis** consonant is placed on the left and the **Lenis** is placed on the right.

Table 1: Chart of English Consonant Phonemes

		Place of articulation							
		Bilabial	Labiodental	Dental	Alveolar	Palato-alveolar (Post-alveolar)	Palatal	Velar	Glottal
Manner of Articulation	Plosive	p b			t d				k g
	Fricative		f v	θ ð	s z	ʃ ʒ			h
	Affricate					t dʒ			
	Nasal	m			n				ŋ
	Lateral				l				
Approximant	w					r		j	