

Chapter I: Segmental Phonology

1.1.Learning Goals and Objectives

- Distinguish between phonetics and phonology
- Know branches of phonetics and phonology
- Differentiate between consonants and vowels in all word-positions
- Distinguish phonemes and allophones
- Discuss the main allophonic variations of the English vowels and consonants
- Articulate sound segments in different phonetics contexts
- Be familiar with English pronunciation

Lecture 1: Introduction to Phonetics and Phonology

Phonetics and Phonology:

There are two disciplines in linguistics which deal with sound, namely *phonetics* and *phonology*. Phonetics provides objective ways of describing and analyzing the range of sounds humans use in their languages. Phonology is interested in the sound patterns of particular languages, and in what speakers and hearers need to know, and children need to learn, to be speakers of those languages.

Phonetics:

In the introduction to his book “*A practical introduction to phonetics*”, Catford (1988) simply defined **Phonetics** as “the systematic study of human speech-sounds. It provides means of describing and classifying virtually all the sounds that can be produced by human vocal tracts” (p. 01). To classify the sounds of a particular human language, Phonetics makes use of the International Phonetics Alphabet (IPA), which is a phonetic notation system that was first created by the International Phonetic Association in 1886. In this course, IPA is used to represent all of the speech sounds in the English language and its two most prominent varieties: The Received Pronunciation (RP) and the General American (GA).

Phonology:

Phonology is a branch of linguistics which studies all the aspects of speech sounds in languages or in a language with reference to their distribution, patterning and tacit rules governing pronunciation i.e., it is concerned with discovering the principles that govern the way that sounds are combined and organised in languages to determine which phonemes are used and how they pattern. In other words, phonology attempts to account for how speech sounds are combined, organized and convey meaning in a particular language(s).

The relationship between phonetics and phonology is a complex one, but we might initially approach phonology as narrowed-down phonetics. Quite small babies, in the babbling phase, produce the whole range of possible human sounds, including some which they never hear from parents or siblings: a baby in an English-speaking environment will spontaneously make consonants which are not found in any European language, but are to be found closest to home in an African language. However, that child will then narrow down her range of sounds from the full human complement to only those found in the language (s) she is hearing and learning, and will claim, when later trying to learn at school another language with a different sound inventory, that she cannot possibly produce unfamiliar sounds she made perfectly naturally when only a few months old.

Branches of Phonetics:

The field of phonetics is traditionally divided into three sub-disciplines, namely: articulatory phonetics, acoustic phonetics, and perceptual phonetics.

There are three areas of study within phonetics : **articulatory phonetics**, which is the study of how speech sounds are made, or ‘articulated’, it describes in detail how the speech organs, also called vocal organs or articulators in the vocal tract are used in order to produce, or articulate speech sounds, **acoustic phonetics**, which deals with the physical properties of speech as sounds and waves ‘in the air’, i.e. the way in which the air vibrates as sounds pass from speaker to listener, and **auditory** (or perceptual) **phonetics**, which deals with the perception, ‘via the ear’, of speech

sounds by the listener i.e. how the sounds are transmitted from the ear to the brain, and how they are processed.

Branches of Phonology:

Phonology can be divided into two branches: (1) segmental phonology and (2) suprasegmental phonology. (1) **Segmental phonology** is based on the segmentation of language into individual speech sounds provided by phonetics. Unlike phonetics, however, **segmental phonology** is not interested in the production, the physical properties, or the perception of these sounds, but in the function and possible combinations of sounds within the sound system. (2) **Suprasegmental phonology**, also called prosody, is concerned with those features of pronunciation that cannot be segmented because they extend over more than one segment, or sound.

The three phases of phonetics and the different spheres of phonetics and phonology are illustrated by the speech chain in Figure 1.

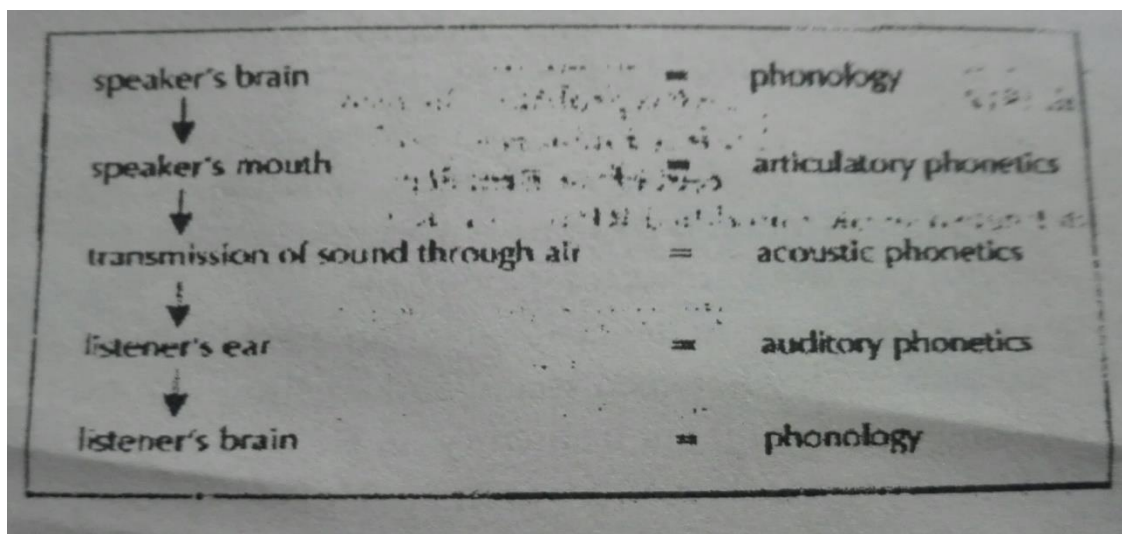


Figure 1: The Speech Chain

The Importance of Learning Phonetics and Phonology:

Because of the confusing nature of the English spelling, it is particularly important to learn to think of English pronunciation in terms of phonemes rather than letters of the alphabet. Therefore, it is important to learn the English phonetics mainly because there is not always a correspondence between the English spoken form and the written form.

Lecture 2: English Vowels

English has **44 sounds** divided into two types: **Consonant** and **vowel** sounds.

Vowels:

From a phonetic point of view, vowels are sounds in which there is no obstruction to the flow of air as it passes from the larynx to the lips. A doctor who wants to look at the back of a patient's mouth often asks them to say “ah”; making this vowel sound is the best way of presenting an unobstructed view. However, if we make a sound like s, d it can be clearly felt that we are making it difficult or impossible for the air to pass through the mouth. Most people would have no doubt that sounds like s, d should be called consonants (Roach, 2009). There are three types of English vowels, namely: *monophthongs*, *diphthongs*, and *triphthongs*. In English, these vowels are represented by the RP vowel chart. A vowel chart is a visual representation of where your tongue is while articulating a vowel.

From the phonological point of view, the vowel is the sound which has a central syllabic function (the vowel is usually the nucleus of a syllable).

Description of Vowels:

There are twelve pure vowels in RP. English vowel sounds are affected by the changing shape and position of the articulators. The different vowels can be categorised according to four features:

- 1- The position of the soft palate
- 2- The kind of opening formed by the lips. The lips can, generally, have three shapes:
 - **Rounded:** such as in the vowel /u:/ in words like ‘group’, ‘shoes’, ‘move’. The corners of the lips are brought together towards each other, with the lips pushed forward.
 - **Spread:** such as in the vowel /i:/ in words like ‘green’, ‘achieve’, ‘please’. The corners of the lips are moved away from each other, as for a smile.

- **Neutral:** such as in the vowel /ɑ:/ in words like ‘calm’, ‘heart’, ‘father’. The lips are not noticeably rounded or spread.
- 3- The part of the tongue which is mainly raised: is it the front, centre or back one? (place of articulation). Accordingly there are three sets of vowels
- **Front Vowels** or sounds in which the main raising is made by the front of the tongue toward the hard palate. The front vowels are /i:/ /ɪ /e/ /æ/.
 - **Central vowels** or sounds in which the main raising is made by the centre of the tongue toward the hard palate. The central vowels are /ɜ:/ /ʌ/ /ə/.
 - **Back vowels** or sounds in which the main raising is made by the back of the tongue toward the soft palate. The back vowels are /ʊ/ /u:/ /ɔ:/ /ɒ/ /ɑ:/.

Cardinal Vowel Scale: Daniel Jones’ Diagram:

Daniel Jones, the late 19th century and early 20th century phonetician, introduced a diagram called the *Cardinal vowel quadrilateral* which is a four sided chart used as a reference for the description of vowels. Phoneticians are using this chart to represent the most important degrees of raising of the tongue and the parts which are mainly raised or involved in the articulation of vowels. In addition, the position and shape of the lips are also represented in the chart. They put on it the vowels corresponding to each position. There are 7 short vowels, 5 long ones and 8 diphthongs as shown in the figure below:

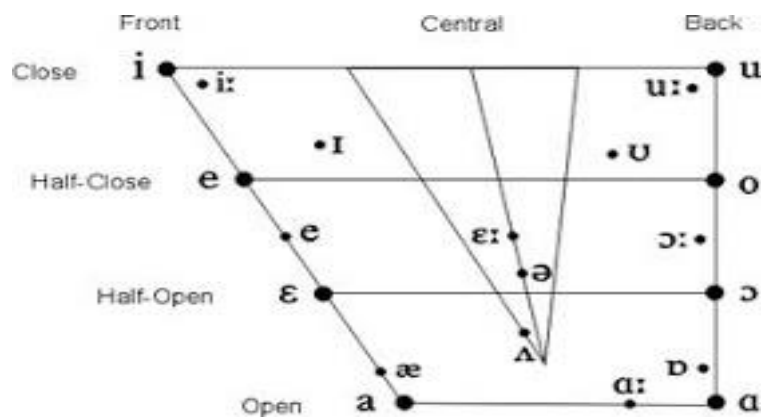


Figure 2: The Cardinal Vowels

This chart or scheme represents the Cardinal Vowels System. It accounts for the range of vowels that the human vocal apparatus can make. Therefore, when you learn the cardinal vowels, you are not learning to make English sounds only, but rather you are learning about the human ability to articulate those sounds. In addition, you are acquiring the ability to describe, classify, and compare vowels.

Category	Vowel	Examples
Front	/i:/	<i>meet, achieve, please, police, theme, key, people</i>
	/ɪ/	<i>Sit, rhythm, except, sieve, savage, minute</i>
	/e/	<i>Bed, head, said, leopard, friend</i>
	/æ/	<i>Hand, lamp, sat, hat</i>
Back	/ɒ/	<i>Put, cushion, look, wolf, could</i>
	/u:/	<i>June, soon, group, move, blue, juice, shoes,</i>
	/ʊ/	<i>Pot, gone, want, cough, knowledge,</i>
	/ɔ:/	<i>Port, war, more, court, board, floor, cause, all,</i>
	/ɑ:/	<i>Part, calm, heart, father, calm, after, class</i>
Central	/ə/	<i>about, generous, suggest, oblige, possible,</i>
	/ɜ:/	<i>Her, turn, word, learn, journey</i>
	/ʌ/	<i>Cut, one, country, blood, does</i>

4- The degree of raising of the tongue (manner of articulation). The vowels in which the tongue is held as high as possible are called **close (high)** vowels (/i:/ and /u:/). Those in which the tongue is as low as possible are called **open (low)** vowels (e.g. /ɑ:/). Those in which the tongue is placed in an intermediate position are called **mid** vowels. A further more refined distinction differentiates between two groups of mid vowels: **half-close** (e.g. /e/ /ɔ/) and **half-open** (e.g. /ɜ:/ /ʌ/) vowels.

Categories of Vowels:

- **Long Vowels:** the articulation of the vowel takes more time, the long vowels are

/ɑ:/ /i:/ /ɔ:/ /u:/ /ɜ:/ (The colon “:” refers to the length of the sound)

- **Short Vowels:** the articulation takes less time. The short vowels in English are /ɪ/ /e/ /æ/ /ɒ/

/ʊ/ /ʌ/ /ə/

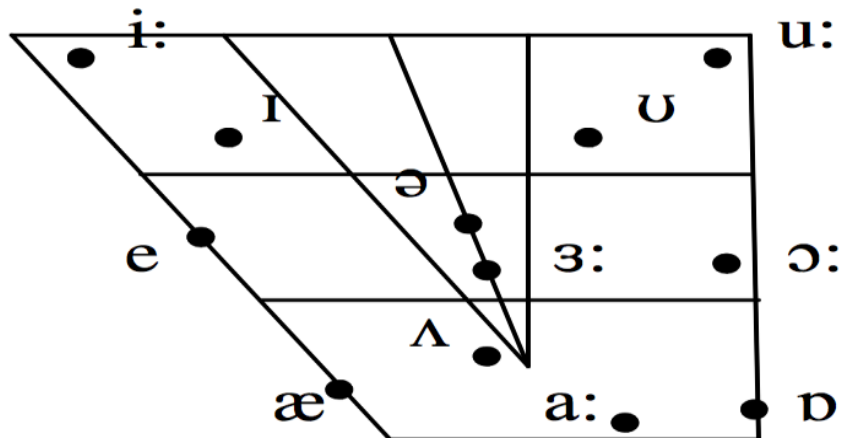


Figure 3: Pure RP Vowels

- **Mixed Vowels:** are vowels composed of two or three pure vowels, vowels composed of two pure vowels called **diphthongs** and vowels composed of three pure vowels called **triphthongs**.

- **Diphthongs:** A diphthong is a sound that is produced as a result of a glide from one vowel to another (combines two different positions in sequence. There are eight diphthongs in RP: /eɪ/ as in ‘take’, /aɪ/ as in ‘buy’, /ɔɪ/ as in ‘boy’, /ɪə/ as in ‘fear’, /eə/ as in ‘care’, /əʊ/ as in ‘go’, /ʊə/ as in ‘pure’, /aʊ/ as in ‘cow’.

Category	Diphthong	Examples
Closing	/eɪ/	<i>Late, aid, play, reign, grey, break</i>
	/aɪ/	<i>Nice, fly, die, bye, height, high, guy, eye, aisle</i>
	/ɔɪ/	<i>Boil, voice, boy, oyster, buoy</i>
	/əʊ/	<i>Old, toe, Low, road, soul, though, plateau, sew</i>
	/aʊ/	<i>sound, doubt, allow, town</i>
Centring	/ɪə/	<i>Hear, zero, here, dear, deer, idea, fierce, weird</i>
	/eə/	<i>Hair, parent, care, bear, there, their</i>
	/ʊə/	<i>Pure, moor, tour, during</i>

- **Triphthongs:** A triphthong is a speech sound produced as a result of a glide from one vowel to another and then to a third, all produced rapidly and without interruption. There are five triphthongs in RP. They are composed of the five closing diphthongs with the schwa /ə/ added on the end: /eɪə/ as in ‘player’, /aɪə/ as in ‘fire’, /ɔɪə/ as in ‘employer’, /əʊə/ as in ‘lower’, /aʊə/ as in ‘power’.

Triphthongs	Examples
/eɪə/	<i>Player, layer, greyer</i>
/aɪə/	<i>Higher, liable, drier</i>
/ɔɪə/	<i>Loyal, employer, enjoyable</i>
/əʊə/	<i>Lower, slower, mower</i>
/aʊə/	<i>Flower, vowel, sour, power</i>

Lecture 3: English Consonants

Consonants:

Consonants are sounds produced with obstruction of the air in the vocal tract. Producing a consonant involves making the vocal tract narrower at some location than it usually is. We call this narrowing a constriction. Which consonant is formed depends on where in the vocal tract the constriction is and how narrow it is. It also depends on whether the vocal folds are vibrating, whether air is flowing through the nasal or the oral cavity and whether the articulation requires much or less muscular effort. Thus, consonants can be described and classified along four major dimensions: place of articulation, manner of articulation, voicing and force of articulation. For example, the English consonant /t/ is usually described as an alveolar plosive voiceless Fortis consonant while /m/ is described as bilabial nasal voiced lenis.

➤ **Place of Articulation:** where the sounds are made or at what point and between which organs does the closure take place?

1. **Bilabials:** the lips are the primary articulators (lips brought together). They are /p/ as in 'put' and 'apply', /b/ as in 'bring' and 'oblige', /m/ as in 'many' and 'cream', /w/ as in 'worm' and 'one'.

2. **Labio-dentals:** the lower lip articulates with the upper teeth. They are the sounds: /f/ as in 'fever' 'belief' 'enough' 'photograph', and /v/ as in 'very' 'provide'.

3. **Dentals:** The tip and rims of the tongue articulates with the upper teeth. Here we find the tongue between the teeth or just behind the upper teeth. They are the sounds /θ/ as in 'thing' 'method' 'breath' and /ð/ as in 'then' 'weather'.

4. **Alveolars:** the blade or tip of the tongue articulates with the alveolar ridge, behind the teeth.

They are the sounds /t/ /d/ /n/ /s/ /z/ /l/ /r/

/t/ as in 'tick' 'stop' 'cut'. /d/ as in 'day' 'produce' 'board'. /n/ as in 'nose' 'organise' 'moon'. /s/ as in 'some' 'glass' 'practice' 'circus'. /z/ as in 'zodiac' 'was'. /l/ as in 'lip' 'alone'. /r/ as in 'run' 'strike'.

5. **Post-alveolar:** the blade or the blade and the tip of the tongue articulate with the alveolar ridge. There is sometime an arising of the front of the tongue towards the hard palate. This is the case for the sounds /ʃ/ /ʒ/ /tʃ/ /dʒ/.
/ʃ/ as in 'sheep' 'machine' 'brush' , /ʒ/ as in 'rouge' 'measure' 'treasure'. /tʃ/ as in 'cheap' 'question' 'match'. /dʒ/ as in 'judge' 'journalist' 'George' 'danger' 'garbage'.
 6. **Palatal:** the front of the tongue articulates with the hard palate. There is no movement of the tip of the tongue. /j/ as in 'your' 'new' 'Europe' 'stupid'.
 7. **Velars:** the back of the tongue articulates with the soft palate. They are /k/ as in 'catch' 'package' 'check'. /g/ as in 'go' 'ghost' 'begin'. /ŋ/ as in 'sing' 'eating' 'twinkle'.
 8. **Glottal:** the narrowing takes place in the pharynx, at the glottis (the point between the two folds of the vocal cords). /h/ as in 'house' 'who' 'prohibit'.
- **Manner of Articulation:** the obstruction to the air made by the organs of speech may be total, intermittent (partial), or may just constitute a narrowing sufficient to cause friction. Consequently, there are six consonants identified according to their manner of articulation.
1. **Plosive:** There is a complete closer between two organs or points of articulation behind which the air builds and then is released quickly, explosively. In English, The Plosive consonant sounds are /b, p, d, t, g, k /
 2. **Affricate:** There is a complete closure at some points, but the separation of the organs is so slow that friction is the characteristic of the second element of the sound. In other words, there is a closure followed by friction. The Affricate consonant sounds are / dʒ/, /tʃ/
 3. **Nasal:** There is a complete closure or an obstruction to the air to go through the mouth because the soft palate is lowered, so the air escapes through the nose. The Nasal consonant sounds are:/m, n, ŋ/
 4. **Lateral:** The air stream is allowed through both sides of the tongue. The Lateral consonant sound is /l/

5. **Approximants:** The articulators approach each other but not sufficiently to produce a complete consonant such as a plosive or fricative. The Approximant consonant sounds are :

/w, j, r/

6. **Fricative:** The interaction between two organs leads to a so narrow closure. The result is that when the air stream passes through them a friction is produced because the air is forced through. The Fricative consonant sounds are: /f, v, z, s, ʒ, h, ð, θ, ʃ/

➤ **Voicing:** Voicing refers to the level of vibration of the vocal cords.

1. **Voiced:** A voiced consonant is produced when the vocal cords vibrate (the vocal cords are very close to each other so the air will blow them apart as it forces its way through).

2. **Voiceless:** A voiceless consonant is produced when the vocal cords do not vibrate (the vocal cords are wide apart, so the air escapes unimpeded)

Consonants are in two categories **voiced** and **voiceless** as shown in the table below:

Voiced Consonant Sounds	Voiceless Consonant Sounds
/b/, /v/, /ð/, d/, /z/, /ʒ/, /dʒ/, /g/, /m/, /n/, /ŋ/, /l/, /w/, /j/, /r/.	/p/, /f/, /θ/, /t/, /s/, /ʃ/, /tʃ/, /k/, /h/

The following IPA chart contains the consonant phonemes of the English language:

		MANNER	VOICING	PLACE						
				Bilabial	Labiodental	Interdental	Alveolar	Palatal	Velar	Glottal
Obstruent	Stop	Voiceless	p			t		k	ʔ	
		Voiced	b			d		g		
	Fricative	Voiceless		f	θ	s	ʃ		h	
		Voiced		v	ð	z	ʒ			
	Affricate	Voiceless					tʃ			
		Voiced					dʒ			
Sonorant	Nasal	Voiced	m			n		ŋ		
	Liquid	Lateral	Voiced				l			
		Rhotic	Voiced					r (ɹ)		
		Glide	Voiced	w				j	(w)	

Chart 1: Consonants Phonemes

International Phonetics Alphabet:

Most of the IPA symbols in the table above are the same letters we use in spelling these words, but there are a few differences. One difference between spelling and phonetic usage occurs with the letter *c*, which is sometimes used to represent a /k/ sound, as in *cup* or *back*, and others to represent an /s/ sound, as in *receive*. Moreover, the phoneme /ŋ/ is used mainly to represent (ing) and other cases such as: king /kɪŋ/, trying /traɪŋ/, think /θɪŋk/, hang /hæŋ/.

Lecture 4: Allophonic Variation: Useful Phonological Notions

Phoneme:

A phoneme is the smallest meaningless unit of a language system or the **smallest segment** of sound which can distinguish one word from another i.e. it is the smallest contrastive unit in the sound system of a language and it is usually represented between slashes / . . . /. There are **44 phonemes** in English.

We know that there are two phonemes /b/ and /p/ in English because they are the only basis of the contrast in meaning between the forms *big* and *pig*. For example, the word *dog* changes to *fog* if you change the phoneme /d/ to /f/. These pair of words, which differ by only *one phoneme*, are known as **minimal pairs**.

Minimal Pairs:

A minimal pair is a pair of words of the same language that have different meanings and which differ in only ONE sound. Since the difference between the two sounds is meaningful, the words must be stored differently in memory. Thus, the difference in sounds is significant, and so the two sounds must both be phonemes.

Example 1: /lɪp/ and /tɪp/

- These two words are different words of English. However, they differ only in their initial sound. Therefore, the [l] [t] difference is significant for English speakers. Consequently, both [l] and [t] are stored in the memory. Thus, English includes the phonemes /l/ and /t/.

Example 2: /bæg/ and /beg/

- These two words are distinct words of English. Therefore, the speech sounds [æ] [e] are significant to the mind. Thus, English includes the phonemes /e/ and /æ/.

Allophones:

A phoneme is realised as one or more phones in different environments. These phones are called allophones. Thus, an allophone is a phonetic variant of a phoneme in a particular language which do not contribute to distinctions of meaning. For example, /p/ in **peak** is aspirated [p^h i:k] and /p/ in **speak** is unaspirated [spi:k]. [p] [p^h] are allophones of the English phoneme /p/ because the ‘p’ sound in *peak* is slightly different from the ‘p’ sound *speak*. You can discover this difference when you repeat the two words loudly several times putting your hand in front of your mouth.

Therefore, an allophone is any realization of a phoneme or a sound which counts as an alternative way of saying a phoneme in a particular language. In other words, it is a non-distinctive phonetic variant of a phoneme in a particular language. This variant is enclosed between square brackets and is usually context-based. For example, the words *port* and *sport* contain the phoneme /p /, but the /p / in *port* is realised in a slightly different manner from the /p / in *sport* (aspirated [p^h] vs [p]). These two variants are allophones of the phoneme / p /.

Languages differ in terms of the inventory of their phonemes. While aspirated and unaspirated /p/ are allophones of the same phoneme (they are not distinctive: it is impossible in English to oppose an aspirated [p^h] to a non-aspirated one in the same phonetic context to distinguish meanings) in English, they are considered as different phonemes in Hindi (a word with aspirated /p / has a meaning and the same word with unaspirated /p / has a different meaning). Thus, while aspiration is not contrastive in English, it is in Hindi.

In the light of the above discussion, a *phoneme* can be defined as a family of similar sounds which a language treats as being “the same”. Members of the family are called its allophones, which are variations from a norm (the phoneme). Thus, [p] and [p^h] are allophones of the phoneme /p/.

Types of Transcriptions: two types of transcriptions can be differentiated: phonemic and phonetic.

- **Phonemic Transcription:** showing the pronunciation of words using a simple set of symbols representing phonemes. It is a transcription usually found in the dictionary which is enclosed between slashes. For example: girl /gɜ:l/ think /θɪŋk/. Thus, it refers to the pronunciation of words as they exist in our minds. It captures only enough aspects of a pronunciation to show how a word differs from other words in the language and ignores as many details as possible.
- **Phonetic Transcription:** it is a transcription with more details about the pronunciation of words i.e., it represents the utterance in terms of phones or allophones and so, it is enclosed between square brackets. It refers to the pronunciation of words as they are actually pronounced by our organs of speech. It encodes more information about the exact pronunciation of sounds. In other words, it captures as many aspects of a specific pronunciation as possible and ignores as few details as possible. In this kind of transcription allophones are represented. For example: proposal [prə`pʰəʊzl] the allophone [pʰ] is **aspirated** and [ɪ] is **dark** and **syllabic**.

The Environment:

Usually, an allophone is produced when one of the phonemes features changes under the influence of the context in which the phoneme appears. This context is also known as the **environment**. An environment or a context is all the parts of the utterance that directly surround a given sound. The environment of a sound may be adjacent sounds, or a break in the sound such as at the beginning of a syllable, word or phrase.

- In the word [pæt], [p_t] is the environment for the sound [æ].
- In the word [pen], [pe_#] is the environment for the sound [n]. (“#” represents the end of a word)
- In the word [kæt], [#_æt] is the environment of the sound [k].

Lecture 5: Allophonic Variation: Consonants

In this lesson, we will discuss two examples of aspects of speech that speakers produce unconsciously. Phonology tries to describe, explain and provide rules for most of those aspects.

Different allophones of consonants are realised as a result of changes that occur on phonemes. The most important ones are aspiration, (de)voicing, variations in place of articulation, variations in manner of articulation and glottal replacement/glottal reinforcement.

Aspiration:

Aspiration is one of the changes that may occur on a phoneme. In other words, it is a feature that characterizes one of the allophones of a given phoneme. Put simply, aspiration is the presence of a puff of air at the end of a sound. For example, the voiceless plosive /p/ can be aspirated [p^h], (the [h] means aspirated) i.e., pronounced with a /h/ sound. You can see aspiration by putting your fingers in front of your lips and notice the difference in breathiness as you produce pairs like:

Pin [p^hɪn] and Spin [spɪn]

Pie [p^haɪ] and Spy [spaɪ]

In English, word initial voiceless plosives (or stops) /p,t,k/ are aspirated whereas non-word initial voiceless plosives are not aspirated.

Piece [p^hi:s] and Speed [spi:d]

Tea [t^hi:] and eat [i:t]

Cat [k^hæt] and Fat [fæt]

Variations in Place of Articulation:

Some allophones are realised when the place of articulation of the phonemes changes under the influence of the context in which the phoneme appears. The most common variations in place of articulation occur within words and even at word boundaries. They include the following cases:

- **Dentalization:**

When the alveolar consonants / t, d, n, l / occur before the dental fricatives / θ / and / ð /, they are articulated as dentals. Dentalization is symbolised by [̣] under the symbol of the phoneme. Examples of dentalisation in words include *Tenth, Health, wealth, Eighth, width*.

- **Retraction / advancement:**

When the alveolar consonants / t, d / precede /r /, they are retracted (pronounced with a post-alveolar articulation). Retraction is indicated by adding the minus mark [-] under the symbol of the phoneme.

Examples:

Compare /t /in *tea* and *tree*

Compare /d /in *do* and *drew*

The velar plosives /k, g / are advanced before front vowels and retracted before back vowels. The minus mark [-] and the plus mark [+] under the symbol of the phoneme are used to symbolise retraction and advancement, respectively.

Examples:

Compare /k / in *keep* and *car*

Compare /g/ in *geese* and *garden*

Velarization:

It is a secondary articulation of consonants by which the back of the tongue is raised toward the soft palate or velum, during the articulation of the consonant. Indeed, the tongue is drawn far up and back in the mouth toward the velum as if to pronounce a back vowel such as /u/.

The English phoneme /l/ has two allophones: the so-called **clear** [l] as in ‘leave’ [li:v], and **dark or velarized** [ɫ] as in ‘shield, heal’ [ʃi:ɫd] [hi:ɫ]

✓ We can say that /l/ is velarized when word final or before a consonant, as in ‘ball, filled’.

- ✓ We can say that /l/ is not velarized or “light” when it is before a vowel, as in ‘lamb, swelling’.

A **clear** /l/ is produced with the front of the tongue high in the mouth and the back of the tongue low. A **dark** /l/ is made with the back of the tongue raised; the center is low, so that the whole tongue has more or less the shape of a spoon.

Variations in Manner of Articulation:

A consonantal phoneme can be realised differently by changing its manner of articulation in a specific context. The most striking cases involve /r /, /j / and the plosives.

Change from frictionless to fricative:

- The /r / is articulated as a fricative after /d/ and unaspirated /t /(*dry/ stream*)
- The /j / becomes fricative (and voiceless) when it combines with /h/ (*huge*) and when preceded by the aspirated voiceless plosives (*pure, cues, tune*).

- **No release (inaudible release):**

When a plosive is followed by another plosive , the release of the first plosive cannot be heard. The diacritic for an unreleased plosive or an inaudibly released plosive is [] to the right of the plosive symbol (*Upgrade , apt, rubbed, chickpea*).

- **Nasal release:**

Nasal release means that a plosive consonant is released by allowing the air to escape through the nasal cavity in anticipation of the articulation of the nasal. This occurs when a plosive precedes a homorganic nasal (that has the same place of articulation as the plosive) or a syllabic nasal. nasal release is indicated by a superscript[n] to the right of the plosive. (*sudden, kitten, happen, madness, sad news*)

- **Lateral release:**

Lateral release means that a plosive is released in a lateral manner, i.e. by allowing the air to escape on both sides of the tongue. A Plosive is released laterally when it is followed by /l /.

(*little, badly*,). The diacritic used to indicate lateral release is a superscript[l̥] to the right of the plosive.

Lecture 6: Allophonic Variation: Vowels

Different realizations of the same vowel can vary with respect to two main features: vowel shortening (pre-fortis clipping) and nasalization.

Vowel Shortening

The length of a vowel varies according to whether it occurs in an open syllable, before a voiced consonant or before a voiceless consonant: a given vowel is longest in an open syllable, next longest in a syllable closed by a voiced consonant, and shortest in a syllable closed by a voiceless consonant. When a vowel occurs before a voiceless consonant in the same syllable, it is shortened (pronounced slightly shorter than usual). This phenomenon is referred to as pre-fortis clipping (sounds are shorter or clipped when they occur before a voiceless (fortis) consonant in the same syllable. The diacritic for pre-fortis clipping is [̣] , placed above the symbol for the clipped short vowel or diphthong ([̣ ě, ̣ ɨ , , ̣ ʊ, ̣ æ, ̣ ʌ, ̣ ěɪ, ̣ ɔɪ, ̣ aɪ, ̣ əʊ ...]) and [ˑ] instead of the colon for the clipped long vowels ([iˑ, uˑ, ɜˑ, ɑˑ, ɔˑ]).

Shortened vowels

Seed [iˑ]

Hard [ɑˑ]

Save [ɛ̣ɪ]

Height [ạ̈ɪ]

Cap [æ̣]

Lock [ɒ̣]

rough [ʌ̣]

No Shortening

seat [i:]

heart [ɑ:]

Safe [eɪ]

hide [aɪ]

cab [æ]

log [ɒ]

rub [ʌ]

It is worth mentioning that only the fortis consonants trigger pre-fortis clipping; lenis consonants do not, even if they are devoiced.