Introduction to The Study of Language

DEENG514

Edited by:
Dr. Ajoy Batta

LOVELY PROFESSIONAL UNIVERSITY

LOVELY PROFESSIONAL UNIVERSITY

Introduction to The Study of Language

Edited By
Dr. Ajoy Batta

CONTENTS

Unit 1:	**Language and Phonetics** *Dr. Gurpal Singh Rana, Lovely Professional University*	1
Unit 2:	**Language and Phonetics-II** *Dr. Gurpal Singh Rana, Lovely Professional University*	13
Unit 3:	**The Production of Speech Sounds-I** *Dr. Gurpal Singh Rana, Lovely Professional University*	24
Unit 4:	**The Production of Speech Sounds-II** *Dr. Gurpal Singh Rana, Lovely Professional University*	37
Unit 5:	**Vowels-I** *Dr. Gurpal Singh Rana, Lovely Professional University*	48
Unit 6:	**Vowels-II** *Dr. Gurpal Singh Rana, Lovely Professional University*	66
Unit 7:	**Consonants - Place of Articulation** *Dr. Gurpal Singh Rana, Lovely Professional University*	85
Unit 8:	**Consonants- Manner of Articulation** *Dr. Gurpal Singh Rana, Lovely Professional University*	103
Unit 9:	**Phonemes** *Dr. Gurpal Singh Rana, Lovely Professional University*	121
Unit 10:	**Phonology** *Dr.Gurpal Singh Rana, Lovely Professional University*	153
Unit 11:	**Syllable** *Dr. Gurpal Singh Rana, Lovely Professional University*	178
Unit 12:	**Stress** *Dr. Gurpal Singh Rana, Lovely Professional University*	190
Unit 13:	**Intonation** *Dr. Gurpal Singh Rana, Lovely Professional University*	201
Unit 14:	**Aspects of Connected Speech** *Dr. Gurpal Singh Rana, Lovely Professional University*	216

Unit 01: Language and Phonetics

CONTENTS

Objectives

Introduction

1.1 Basic Terminologies of Language

1.2 First Language

1.3 Second Language

1.4 Branches of Phonetics

1.5 Famous phoneticians

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- grasp foundational concepts related to language assimilation
- formulate an opinion on theoretical principles of first and second language
- grasp foundational concepts related to phonetics
- formulate an informed idea about various dimensions of phonetics

Introduction

The first two segments of the unit focus on twin concept of first and second language. A first language is the mother tongue or native language of a person while a second language is a language a person learns in order to communicate with the native speaker of that language. The first language is like an instinct which is triggered by birth and developed with the experience of being exposed to it.

The next two segments of the unit focus on the concept of phonetics and some of the most popular phoneticians of all times. Phonetics is a branch of linguistics that studies how humans produce and perceive sounds and is divided into three sub-disciplines: how humans plan and execute movements to produce speech (articulatory phonetics), how various movements affect the properties of the resulting sound and its transmission (acoustic phonetics), or how humans convert sound waves to linguistic information for comprehension purposes (auditory phonetics).

Caution: Take care of correct pronunciation

a priori is pronounced as /ˌeɪprʌɪˈɔːrʌɪ, or /ɑːprɪˈɔːri/

a posteriori is pronounced as /eɪpɒˌstɛrɪˈɔːrʌɪ,/ /ɑːpɒˌstɛrɪˈɔːriː/

1.1 Basic Terminologies of Language

Innateness hypothesis: Hilary Putnam coined this expression indicating acquisition of human language which follows a priori model meaning indicating that human beings possess language knowledge right from the birth.

Native Language: A native language user is somebody who acquires a specific language as part of his/her childhood development which is usually the language of the parents. The entire process of language assimilation happens naturally in the native environment and quite noticeably, it also serves as the basis for sociolinguistic identity allowing performance of everyday functions of life.

Non-native Language: A non-native user is somebody who learns a language as part of his/her selective indulgence which is usually the predominant common language in a selective ecosystem like professional set up or academic institutions.

Interlanguage: Interlanguage is the state of in-betweenness depicting a type of language or linguistic system used by second and foreign-language learners who are in the process of learning a target language. In other words, it represents those evolutionary ways a non-native speaker acquires, comprehends, and uses linguistic patterns or speech acts in second language.

Language Acquisition: Language acquisition is a process or set of processes by which one gains knowledge of one's first language subconsciously/unconsciously as part of randomly occurring phenomenon in natural conditions thus equipping a user with an instinctive skill to use language.

Language Learning: Language learning is a process or set of processes by which one gains knowledge of one's second/third language consciously as part of structured conditions thus equipping a user with an acquired skill to use language.

Levels of language: Concept of levels of language can be understand through various aspects of core linguistics like Phonetics (dealing in phonemes); Phonology (dealing in syllable, allophones, phonotactics, stress, intonation, prosody, diacritics); Morphology (dealing in morphemes: free and bound, word categories, word formations like coinage, borrowing, compounding, blending, clipping, backformation, conversion, acronyms, affixes, inflection, derivation); Syntax (dealing in word order, generative grammar, surface structures, deep structures); Semantics (dealing in literal meaning, synonym, antonym, hyponym, homonym, homophones, homograph, polysemy, collocation, colligation); Pragmatics (dealing in contextual meaning, co-text, kinds of ambiguities).

Received Pronunciation (RP): Received Pronunciation is a neutral accent of English which traditionally has had high social status and is also known by many synonymous terms: Standard British English; BBC English; Oxford English; language of the courts; Queen's English and the language used by news broadcasters across the world.

1.2 First Language

First Language is a term used in linguistics referring to someone for whom a particular language is a mother-tongue. The implication is that this native language- having been acquired naturally during childhood- is the one about which a speaker will have the most reliable intuitions, and whose judgements about the way the language is used can therefore be trusted. It represents a hard-wired phenomenon as emphasized by many prominent linguists like Noam Chomsky, Eric Lenneberg, and Steven Pinker. The journey of first language acquisition follows a natural order hypothesis where one picks up language slowly and steadily along with physical as well mental growth of user where it serves range of functionalities.

Notes on characteristics of First Language

- represents a hard-wired phenomenon- Noam Chomsky, Eric Lenneberg, Steven Pinker
- follows natural order hypothesis
- primes focus on functionality of language

1.3 Second Language

Second Language is a term used in linguistics referring to someone for whom a particular language is neither a mother-tongue nor a native language but is learned later usually as a foreign language. In other words, a language that is not the language that you learned first (as a child) but which you learn because it is used (often for official purposes) in your country.

In linguistic terminology, a second language is any language that a person uses other than a first or native language. Contemporary linguists and educators commonly use the term L1 to refer to a first or native language, and the term L2 to refer to a second language or a foreign language that's being studied. The second language, in some case, can also be the dominant one like for example English in many parts of the world.

Notes on characteristics of Second Language

- represent a necessity-driven phenomenon
- follows instructor/course driven path
- primes focus on forms of language

1.4 Branches of Phonetics

Phonetics has three main branches:

- Articulatory phonetics studies the production of speech sounds by the human vocal tract.
- Auditory phonetics studies the perception of speech sounds by the human perceptual system
- Acoustic phonetics studies the physical properties of speech sounds.

Articulatory phonetics

The field of articulatory phonetics is a subfield of phonetics that studies articulation and ways that humans produce speech and individuals dealing in the field explain how humans produce speech sounds via the interaction of different physiological structures. Generally, articulatory phonetics is concerned with the transformation of aerodynamic energy into acoustic energy through speech.

Respiratory sounds can be produced simply by expelling air from the lungs. However, to vary the sound quality in a way useful for speaking, two speech organs normally move towards each other to contact each other to create an obstruction that shapes the air in a particular fashion. The point of maximum obstruction is called the place of articulation, and the way the obstruction forms is the manner of articulation.

The main structures that are important in the production of speech are the lungs and the respiratory system, together with the vocal organs. The airstream from the lungs passes between the vocal cords, which are two small muscular folds located in the larynx at the top of the windpipe. The space between the vocal cords is known as the glottis. If the vocal cords are apart, as they are normally when breathing out, the air from the lungs will have a relatively free passage into the pharynx and the mouth. But if the vocal cords are adjusted so that there is a narrow passage between them, the airstream will cause them to be sucked together. As soon as they are together there will be no flow of air, and the pressure below them will be built up until they are blown apart again. The flow of air between them will then cause them to be sucked together again, and the vibratory cycle will continue. Sounds produced when the vocal cords are vibrating are said to be voiced, as opposed to those in which the vocal cords are apart, which are said to be voiceless.

We will deal with more classificatory explanation in the later chapter when we focus on how consonant and vowels sounds are produced.

Notes on characteristics of articulatory phonetics

- deals in production of sounds

- brings human anatomy into focus
- primes on the idea of Phonemes dealing with consonant & vowel sounds
- underlines importance of IPA- International Phonetic Alphabet

Example

For example, when making a p sound, the lips come together tightly, blocking the air momentarily and causing a buildup of air pressure. The lips then release suddenly, causing a burst of sound. The place of articulation of this sound is therefore called bilabial, and the manner is called stop or also known as a plosive.

Acoustic phonetics

The field of acoustic phonetics is a subfield of phonetics that studies acoustic aspects of speech sounds such as the amplitude of a waveform, its duration, its fundamental frequency, or frequency domain features such as the frequency spectrum, or even combined spectrum-temporal features and the relationship of these properties to other branches of phonetics, and to abstract linguistic concepts such as phonemes, phrases, or utterances.

The study of acoustic phonetics was greatly enhanced in the late 19th century by the invention of the Edison phonograph which allowed the speech signal to be recorded and then later processed and analyzed. By replaying the same speech signal from the phonograph several times, filtering it each time with a different band-pass filter, a spectrogram of the speech utterance could be built up. Further advances in acoustic phonetics were made possible by the development of the telephone industry. During World War II, work at the Bell Telephone Laboratories greatly facilitated the systematic study of the spectral properties of periodic and aperiodic speech sounds, vocal tract resonances and vowel formants, voice quality, prosody, etc.

Notes on characteristics of acoustic phonetics

- deals in transmission of sounds
- manifest through experimental phonetics and instrumental phonetics
- examples are wave form model and spectrographic model
- acoustic analysis presents physical properties of sound: fundamental frequency, duration, amplitude, intensity, formant frequency, jitter, shimmer, pauses etc.;
- example of an acoustic software is Praat which can do multiple tasks: annotation, description, classification, measurement, publication quality graphics etc.

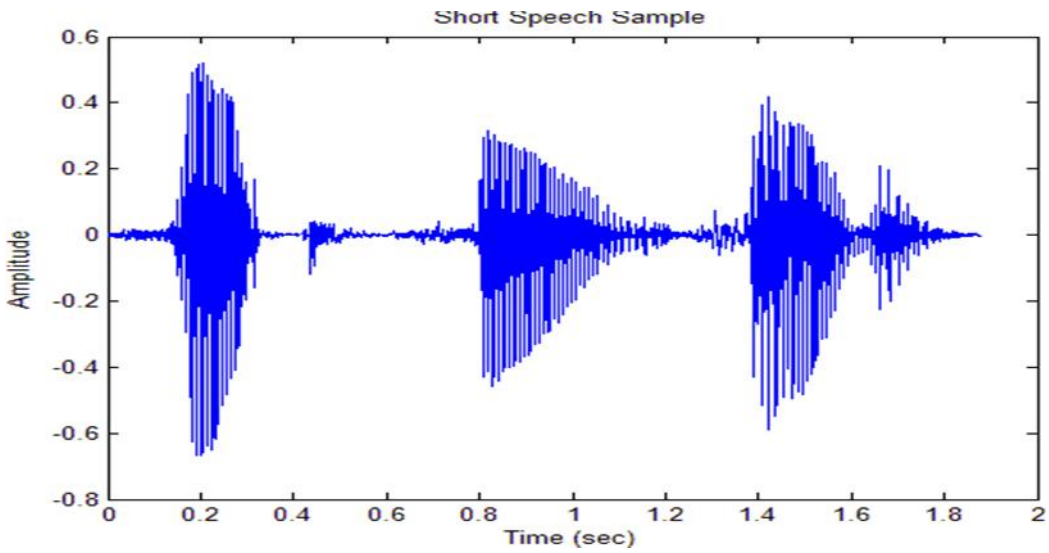


Fig 1.1 Speech waveform model

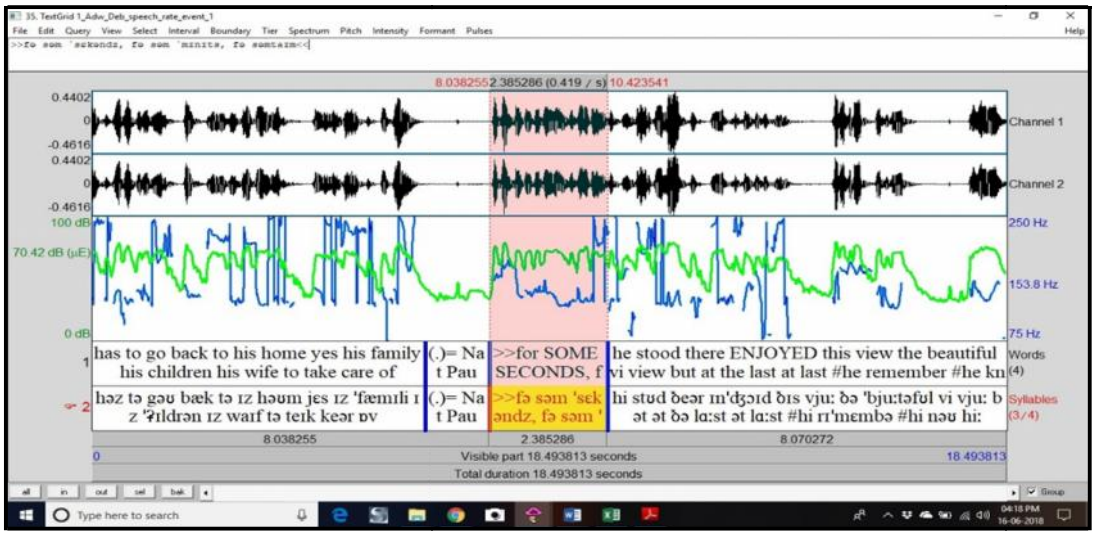


Fig 1.2 Speech spectrogram model

Auditory phonetics

Auditory phonetics is the branch of phonetics concerned with the hearing of speech sounds and with speech perception. It thus entails the study of the relationships between speech stimuli and a listener's responses to such stimuli as mediated by mechanisms of the peripheral and central auditory systems, including certain areas of the brain.

If articulatory phonetics studies the way in which speech sounds are produced, auditory phonetics focuses on the perception of sounds or the way in which sounds are heard and interpreted. Thus, we may say that while articulatory phonetics is mainly concerned with the speaker, auditory phonetics deals with the other important participant in verbal communication, the listener. It is again, obviously, a field of linguistic study which has to rely heavily on biology and more specifically on anatomy and physiology.

Notes on characteristics of auditory phonetics

- deals in perception of sounds
- focuses on hearing mechanics
- considers psychological and neurological response
- underlines understanding of the functionality of three segments of ear: outer, middle, & inner ear
- emphasizes interconnectedness of auditory nerves and brain

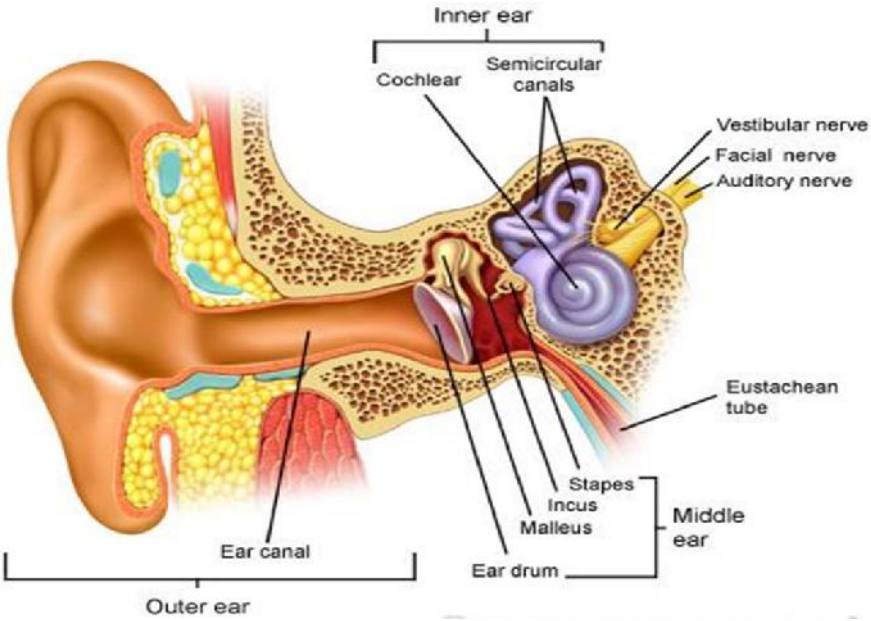


Fig 1.3 Human ear anatomy

1.5 Famous phoneticians

- Henry Sweet (1845-1912)- *A Handbook of Phonetics*
- Daniel Jones (1881-1967) One of the founders of IPA Phoneme; Received Pronunciation; Cardinal Vowel diagram; *English Pronouncing Dictionary* by Cambridge
- J. C. Catford (1917-2009) Anthropomorphic Capabilities of sound;
- Peter Ladefoged (1925-2006); Articulatory & Acoustics "The Sounds of the World's Languages";
- John C. Wells (1939-) English Pronouncing Dictionary by Longman;
- Peter Roach (1943-) "English Phonetics and Phonology";
- John Laver (1938-2020) "Principles of Phonetics"

Henry Sweet:

Henry Sweet (15 September 1845 – 30 April 1912) was an English philologist, phonetician and grammarian. As a philologist, he specialized in the Germanic languages, particularly Old English and Old Norse. In addition, Sweet published works on larger issues of phonetics and grammar in language and the teaching of languages. Many of his ideas have remained influential, and a number of his works continue to be in print, being used as course texts at colleges and universities.

In his *Handbook of Phonetics* (1877) he writes in the preface: "If our present wretched system of studying modern languages is ever to be reformed, it must be on the basis of a preliminary training in general phonetics, which would at the same time lay the foundation for a thorough practical study of the pronunciation and elocution of our own language—subjects which are totally ignored in our present scheme of education." In this work, Sweet's life-long fundamental belief in living phonetics as the basis of all philological or linguistic study is brought out.

Daniel Jones:

Daniel Jones (12 September 1881 – 4 December 1967) was a London-born British phonetician who was head of the Department of Phonetics at University College, London.In 1918, Jones wrote the *An Outline of English Phonetics* that provided truly

comprehensive description of British Received Pronunciation, and the first such description of the standard pronunciation of any language.

The year 1917 was a landmark for Jones in many ways as he became the first linguist in the western world to use the term *phoneme* in its current sense, employing the word in his article "The phonetic structure of the Sechuana Language". Jones also produced the first edition of his famous *English Pronouncing Dictionary* where that popular cardinal vowel diagram made a first appearance.

J. C. Catford:

John Cunnison "Ian" Catford (26 March 1917 – 6 October 2009) was a Scottish linguist and phonetician of worldwide renown. Catford founded the School of Applied Linguistics at the University of Edinburgh, as well as another department in the same university that undertook the mapping of different English dialects throughout Scotland. His expertise – which included formal phonetics, the aerodynamic and physiological production of speech, phonetic peculiarities in speech, and an astounding ability to reproduce words, and even speeches, backwards.

Peter Ladefoged:

Peter Nielsen Ladefoged (17 September 1925 – 24 January 2006) was a British linguist and phonetician who was Professor of Phonetics at University of California, Los Angeles. His book *A Course in Phonetics* is a common introductory text in phonetics, and *The Sounds of the World's Languages* is widely regarded as a standard phonetics reference.

The Sounds of the World's Languages is a book by Peter Ladefoged and Ian Maddieson which documents a global survey of the sound patterns of natural languages while drawing not only from the authors' own fieldwork and experiments but also took into account existing literature. This prominent reference work in the field of phonetics provides an articulatory and acoustic description of vowels and consonants from more than 300 languages.

John C. Wells:

John Christopher Wells (born 11 March 1939) is a British phonetician and Esperantist. Wells is a professor emeritus at University College London, where until his retirement in 2006 he held the departmental chair in phonetics.

Wells was appointed by Longman to write its *Pronunciation Dictionary*, the first edition of which was published in 1990. The book by Wells covered a much greater scope, including American pronunciations as well as RP pronunciations and including non-RP pronunciations widespread in Great Britain which also included transcriptions of foreign words in their native languages and local pronunciations of place names in the English-speaking world.

Peter Roach:

Peter John Roach (born 30 June 1943) is a British retired phonetician. He taught at the Universities of Leeds and Reading, and is best known for his work on the pronunciation of British English. His best-known publication is *English Phonetics and Phonology* which was first published in 1983 and has got many reprints with newer editions. He has also been the principal editor of the Cambridge *English Pronouncing Dictionary* for various editions.

English Phonetics and Phonology is recognised as the most practical and comprehensive text in the field of phonetics, and the latest edition includes revised transcriptions, a wider discussion of different varieties of English and an updated treatment of intonation.

John Laver:

John David Michael Henry Laver (20 January 1938 – 6 May 2020) was a British phonetician who was an Emeritus Professor of Speech Sciences at Queen Margaret University, and served as President of the International Phonetic Association from 1991 to 1995.

Principles of Phonetics is designed for readers who wish to pursue the study of phonetics from an initial to an advanced stage which moves from a discussion of general concepts to a total of eleven chapters on phonetic classification including discussion of other issues such as the relationship between phonetics and phonology. There are illustrations from over 500 of the world's languages.

Caution: Take care of correct pronunciation

Peter Ladefoged is pronounced as /pi:tə `læ. dɪ. foʊ. ɡɪd/

Keywords

First language: Someone's first language is the language that they learned first and speak quite instinctively; used especially when someone speaks more than one language.

Second language: Someone's second language is a language which is not their native language but which they use at work or at school.

Native speaker: A native speaker is someone who learned to speak a language as part of their childhood development. A native speaker's language is usually the language their parents speak and/or the language of their country of origin.

Non-native speaker: Non-native speaker is someone who is learning a language which he/she did not learn to speak as a child.

Phonetics: Phonetics deals with the system of speech sounds of a language or group of languages which represents a systematic classification of the sounds made in spoken utterance and also looks into the practical application of this science to language study.

Summary

This unit covered ideas on concept of first and second language where First Language is a language that one acquires from birth and a Second Language is a non-native language usually learned at a later stage. In a nutshell, native languages are regarded as first languages whereas non-native languages are referred to as second languages. The next segment dealt with different types of phonetics and some of the prominent phoneticians with their popular works.

Self Assessment

1. Which one of the options define "Innateness hypothesis" quite well?

A. children are born with knowledge of the fundamental principles of grammar
B. adults are divinely blessed with knowledge of the fundamental principles of grammar
C. we are born as clean-slate with regards to knowledge of the fundamental principles of grammar
D. there remains an age around which one must acquire knowledge of the fundamental principles of grammar

2. Which one of the options define "Interlanguage" quite well?

A. faulty and skewed learning mind makes its own generalizations while having mastered a new language
B. an active and independent learning mind makes its own generalizations upon grappling with a new language
C. it is a system which allows us to legitimise stigmatisation of language learning
D. it is a phenomenon which is highly arbitrary as nobody can ever objectively assess an element of interlanguage in a learner

3. Strike out the characteristics which does not belong to the concept of First language.

A. It can be simply described as a hard-wired phenomenon
B. It does follow a natural-order hypothesis
C. It does focus primarily on form
D. It does in fact focus on functions rather than more on formulations of the language

4. Strike out the characteristics which does not belong to the concept of Second language.

A. It can be simply described as a necessity driven phenomenon
B. It does follow a path which the instructor / course decides for the learner
C. It does focus primarily on form
D. It does in fact focus on functions rather than more on formulations of the language

5. Pick one option which is not correct.

A. Acquisition follows a "functionalist" model whereas Learning pursues "formalist" one
B. Acquisition is all about being in "created" conditions whereas Learning happens in "natural" ones
C. Acquisition happens at "subconscious / unconscious" level whereas Learning occurs at "conscious" one
D. Acquisition can be termed as an "instinctive" skill whereas Learning remains an "acquired" one

6. Which one of the following cannot be categorised as one of the levels of language?

A. Phonetics
B. Semantics
C. Pragmatics
D. Human Anatomy

7. Which one of the following is not a trait of Received Pronunciation?

A. It is seen as “Accepted” or “Approved” as in “received wisdom”
B. It is something which does not have any following across the News broadcasters of the world
C. Historically speaking, it was associated with prestige & high social status
D. It can also be seen as Standard British English or BBC English or Oxford English

8. How do you define "Articulatory Phonetics" as...

A. the study of the sound waves produced by the human vocal apparatus
B. the study of how the human vocal organ produces sound
C. the examination of how speech sounds are perceived by the human ear
D. the study of sound systems and frameworks

9. How do you define "Acoustic Phonetics" as...

A. the study of the sound waves produced by the human vocal apparatus
B. the study of how the human vocal organ produces sound
C. the examination of how speech sounds are perceived by the human ear
D. the study of sound systems and frameworks

10. How do you define "Auditory Phonetics" as...

A. the study of the sound waves produced by the human vocal apparatus
B. the study of how the human vocal organ produces sound
C. the examination of how speech sounds are perceived by the human ear
D. the study of sound systems and frameworks

11.Pick one option which is not correct out of these author & work examples.

A. Henry Sweet: A Handbook of Phonetics
B. John Laver: English Idioms Dictionary
C. Daniel Jones: English Pronouncing Dictionary by Cambridge
D. Peter Ladefoged: The Sounds of the World's Languages

12.Pick one option which is not correct about the concept of First Language.

A. First Language is a term used in linguistics referring to someone for whom a particular language is a mother-tongue.
B. First Language is a term used in linguistics referring to someone for whom a particular language is neither a mother-tongue nor a native language.
C. It represents a hard-wired phenomenon as emphasized by many prominent linguists like Noam Chomsky, Eric Lenneberg, and Steven Pinker.
D. The journey of first language acquisition follows a natural order hypothesis.

13.Pick one option which is not correct about the concept of Second Language.

A. Second language is any language that a person uses other than a first or native language.
B. It is also referred to as L1
C. It is also referred to as L2
D. a language that is not the language that you learned first (as a child) but which you learn because it is used (often for official purposes) in your country.

14.Pick one option which is not correct about Auditory phonetics.

A. Auditory phonetics is the branch of phonetics concerned with the hearing of speech sounds and with speech perception.
B. This subfield of phonetics studies articulation and ways that humans produce speech.
C. It is a field of linguistic study which has to rely heavily on biology and more specifically on anatomy and physiology.
D. It entails the study of the relationships between speech stimuli and a listener's responses to them.

15. Pick one option which is not correct about Acoustic phonetics.

A. The study of acoustic phonetics was greatly enhanced in the late 19th century by the invention of the Edison phonograph.
B. The main structures that are studied under acoustics are the lungs and the respiratory system, together with the vocal organs.
C. Invention of the Edison phonograph allowed the speech signal to be recorded and then later processed and analyzed.
D. Bell Laboratories facilitated systematic study of the spectral properties of periodic and aperiodic speech sounds.

Answers for Self Assessment

1.	A	2.	B	3.	C	4.	D	5.	B
6.	D	7.	B	8.	A	9.	A	10.	C
11.	B	12.	B	13.	B	14.	B	15.	B

Review Questions

1. Explain the difference between first and second language while illustrating with relevant examples.

2. Write an essay on a topic: Human language is a wonderful way to communicate your ideas to the world at large.

3. Explain the difference between native and non-native speakers of a given language while illustrating with relevant examples.

4. Write an essay on a topic: Imagine if humans were not blessed with a language, how different the world would be?

5. Make your own choice of any two important phoneticians and prepare a detailed essay on his/her accomplishments.

Further Readings

Sweet, Henry. *A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform.* Cambridge University Press, 2013.

Jones, Daniel. *An English Pronouncing Dictionary.* Cambridge University

Press, 2011.

Ladefoged, Peter, and Ian Maddieson. *The Sounds of the World's Languages*. Blackwell Publishers, 1996.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Web Links

http://www.differencebetween.net/language/difference-between-first-language-and-second-language/

https://utesinternationallounge.com/mother-tongue-first-language-native-language-or-dominant-language/

https://www.thoughtco.com/native-language-l1-term-1691336#:~:text=In%20most%20cases%2C%20the%20term,first%20language%2C%20or%20arterial%20language.

https://www.egyankosh.ac.in/bitstream/123456789/21005/1/Unit-1.pdf

https://www.britannica.com/science/phonetics

https://www.theclassroom.com/types-phonetics-8526304.html

Unit 02: Language and Phonetics-II

CONTENTS

Objectives

Introduction

2.1 Basic Terminologies of Language

2.2 Articulatory Phonetics

2.3 Acoustic Phonetics

2.4 Auditory Phonetics

2.5 Difference between Phonetics and Phonology

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- formulate an independent opinion on utility of phonetic awareness
- formulate an independent opinion differentiating between phonetics & phonology
- acquaint with role of Neutralised Accent in a clear speech
- grasp a basic idea about Mother Tongue Influence
- understand basic ideas on distinctive features & phonemes
- raise awareness about the idea of syllables & suprasegmental phonemes

Introduction

The first two segments of the unit focus on conceptual trio ofArticulatory Phonetics, Acoustic Phonetics, and Auditory Phonetics.

The next segment of the unit focuses on identifying differences between conceptual duo of phonetics and phonology

Caution: Take care of correct pronunciation

phonetic is pronounced as /fə’nɛtɪk/ or /fəʊˈnɛtɪk/

proprioceptive /ˌprəʊprɪə(ʊ)ˈsɛptɪv/

symbols and sounds as /ˈsɪmb(ə)l/; /saʊndz/

phonology as /fəˈnɒlədʒi/

consonants- /ˈkɒns(ə)nənts/

vowels as /ˈvaʊəlz/

2.1 Basic Terminologies of Language

Accent Neutralisation: It is also known as accent modification or accent reduction which underlines a systematic approach for learning or adopting a new speech accent. It is the process of learning the sound system (or phonology) and melodic intonation of a language so the non-native speaker can communicate with clarity.

This may result into any of the following: Accent reduction also known as scaling down, Accent modification also known as readjustment, or Accent improvement also known as scaling up. This will open up a range of benefits, such as: job opportunities in service industry like customer care, banks etc.; all kinds of professions in general; academic profession in particular; raises comprehensibility quotient and also wider social acceptance.

This neutralised accent can be realized through multiple techniques or practices, such as: practicing high-frequency words; record oneself and comparing with standardized examplesafterwards; reading aloud as much as possible; frequently consulting phonetic transcription for confirmation; self-learning through experts content on YouTube or any study material; and customized application like OrAI which acts as an on-demand speech coach using AI algorithms.

Mother Tongue Influence (MTI): It means the impact of the usage of our mother tongue or native language or first language on the second language, for example influence of Hindi over Indian speakers of English. In other words, MTI surfaces out quite often thus indicating ethnicity or regionality or nationality of someone the way he/she uses the dialects that interferes with English speaking.

This will open up a range of benefits, such as: professional enunciation, and saves from regional bias apart from benefit Indians working at Business Process Outsourcing companies which deal with overseas clients.

Distinctive Features: In linguistics, a distinctive feature is the most basic unit of phonological structure that may be analyzed in phonological theory which are grouped into categories according to the natural classes of segments they describe: features of manner of articulation, place of articulation and voicing-devoicing characteristics. Theoreticians like Nikolai Trubetzkoy, Roman Jakobson,Noam Chomsky, and Morris Halle are the main propounders of this sub-atomic level classification on the basis of articulatory and acoustic characteristics. Distinctive features are expressed in a binary representation mode where [+] denotes the presence of a feature, and [−] indicates its absence.

These feature categories in turn are further specified on the basis of the phonetic properties of the segments in question.We can find distinctive features between two words by finding the minimal pair between them. The minimal pair are when two words sound the same, but they are different in definition because the pair has different phonemes from each other.

Phonemes: In linguistics, phoneme stands for the smallest unit of speech distinguishing one word from another, as the element /p/ in *tap*, which separates that word from *tab*, *tag*, and *tan*. A phoneme may have more than one variant, called an allophone, which functions as a single sound; for example, the /p/ of *pat*, *spit*, and s*top* differ slightly phonetically, but that contextual differencehas no significance in English.

Syllables: In linguistics, syllable is a unit of organization for a sequence of speech sounds which is typically made up of a vowel nucleus with optional initial and final margins occupied by consonants. Syllables are often considered the phonological building blocks of words, for example: the word linguistics is made up of three syllables: ling, guis, tics or IPA wise /lɪŋ. ˈɡwɪs. tɪks/.

An ideal example of syllable can be like this where each of the elements is present: C-V-C; Onset-Nucleus-Coda or Onset-Rhyme. A syllable does have its own maximum phonological Structure – $C^{0-3}VC^{0-4}$few more examples to explain the concept are as follows: /fəʊ. nə. ˈlɒ. dʒɪ. k(ə)l/= CV. CV. CV. CV. CVC/ˈstrʌk. tʃə/= CCCVC. CVC

Suprasegmental Phonemes: In linguistics, suprasegmental phonemes are also known as prosodic feature of speech. The field of phonology lists speech features such as intonation- pitch variations, prosodic stress markings, placement of pauses, speech rate variations, or word length variationsthat are added over clusters of consonants and vowels. In fact, these features are not limited to single sounds but often extend over syllables, words, or phrases. Suprasegmental phonemes can be understood through various meaningful insights into their characteristics, like offering musical accompaniment to speech, providing flavor to the speech, reflecting inflections

and modulations in delivery, representing overarching presence over phonemes through means of superimposition.

2.2 Articulatory Phonetics

The field of articulatory phonetics is a subfield of phonetics that studies physical apparatus used to produce speech sounds and the physical and cognitive factors that determine what are possible speech sounds and sound patterns. Given the common understanding that speech articulation is an integrated part of a communication system that also includes speech perception, articulatory phonetics is usually treated within a broader context of the full speech chain, which additionally includes speech aerodynamics, speech acoustics, and speech perception.

In other words, the field of articulatory phonetics is concerned primarily with the question of how speech is realized through movements of body structures. While articulatory phoneticians have often described speech sounds using terms that refer to an inventory of body parts such as tongue, lips, alveolar, palatal, velum, etc. but still a core challenge of articulatory phonetics is to understand how such structures function and interact to produce speech sounds.

This subfield establishes itself as focusing on description of speech sounds of the world's languages in terms of their articulations, that is, the movements and/or positions of the vocal organs (articulators). The most influential system of articulatory description and transcription of speech sounds has been that of the International Phonetic Association (IPA), which aims to provide a phonetic symbol for every phoneme for every language. In the IPA tradition, speech is characterized as sequences of separate speech segments (consonants and vowels), and each sound is defined as a combination of articulatory phonetic properties. Several laboratory techniques are used to obtain knowledge about the articulations of speech sounds, which in turn is used in modeling of speech production itself, and of articulatory-acoustic relations.

Physiologically speaking, all the sounds we make when we speak are the result of muscles contracting. The muscles in the chest that we use for breathing produce the flow of air that is needed for almost all speech sounds; muscles in the larynx produce many different modifications in the flow of air from the chest to the mouth. After passing through the larynx, the air goes through what we call the vocal tract, which ends at the mouth and nostrils. Here the air from the lungs escapes into the atmosphere. We have a large and complex set of muscles that can produce changes in the shape of the vocal tract, and in order to learn how the sounds of speech are produced it is necessary to become familiar with the different parts of the vocal tract. These different parts are called articulators, and the study of them is called articulatory phonetics.

Notes on characteristics of articulatory phonetics

- makes an autonomous learner of correct pronunciation
- provides scientific-technical intervention for improved pronunciation
- raises proprioceptive awareness
- offers remedial intervention- /s-z; ʃ-ʒ; θ-ð; IƏ-eƏ; Əʊ-ɔː/
- enlist symbols for sounds IPA- /ˈsɪmb(ə)l/; /saʊndz/
- assists in overcoming Mother Tongue Influence (MTI)
- helps in exhibiting neutralised accent

2.3 Acoustic Phonetics

The field of acoustic phonetics is a subfield of phonetics that studies the physical parameters of speech sounds and its transmission. It is the most technical of all disciplines concerned with the study of verbal communication and one of the fundamental questions acoustic phonetics answers is the question of: What is sound and its characteristics?

Several types of events in the world produce the sensation of sounds. Just think of door slamming, violins, wind, and human voices. All these examples involve, when you think about it, movement of some sort. Now, these movements cause pressure fluctuations in the surrounding air or some other medium. This is important keep in mind because sound can travel not only through air; but also through water, wood, metal, or any other material. In fact, the only place in which sound cannot travel is a vacuum. When pressure fluctuations or in other words, vibrations, reach our eardrum, they cause it to move, and our auditory system translates these movements into neural impulses which we further experience as sound. Thus, sound is produced when pressure fluctuations impinge upon the eardrum.

Sound can travel across relatively long distances and different frequencies can move more easily and faster through certain substances than others. Approaching a concert, for example, you may well hear the thumping of the bass drum before all else. This is because a sound produced at one place, say a loudspeaker, sets up a sound wave that travels through the acoustic medium. A sound wave is travelling pressure fluctuation that propagates through any medium that is elastic enough to allow molecules to crowd together and move apart.

There are four main properties of a sound wave which one must be aware about before analysing speech sounds: wavelength, period, amplitude, and frequency.

The wavelength is the distance between crests of a waveform. That means that the wavelength is the horizontal length of one cycle of the wave.

The period of a wave is the time required for one complete cycle of the wave to pass by a point. So, the period is the amount of time it takes for a wave to travel a distance of one wavelength.

The amplitude of a sound is represented by the height of the wave. When there is a loud sound, the wave is high and the amplitude is large. Conversely, a smaller amplitude represents a softer sound. A decibel is a scientific unit that measures the intensity of sounds. The softest sound that a human can hear is the zero point. When the sound is twice as loud, the decibel level goes up by six. Humans speak normally at 60 decibels.

The frequency of a wave is the number of cycles that pass a set point in a second, and is measured in Hertz (Hz). Frequency is intimately connected to pitch, although they are not exactly synonymous; the A above middle C is a vibration at a rate of 440 Hz. Lower frequency vibrations are perceived as being lower in pitch, and higher frequencies seem higher in pitch.

How the brain interprets the frequency of an emitted sound is called the pitch. We already know that the number of sound waves passing a point per second is the frequency. The faster the vibrations the emitted sound makes (or the higher the frequency), the higher the pitch. Therefore, when the frequency is low, the sound is lower.

These terms and concepts will be useful while going for further studies on experimental phonetics or acoustic analysis of speech.

Notes on characteristics of acoustic phonetics

- representsphysical properties of speech
- performs an objective study
- provides visual representation through voiceprint
- allows applications where one can manipulate, annotate, synthesis, measure speech
- provides an alternative pronunciation teaching tool

2.4 Auditory Phonetics

The field of auditory phonetics is a subfield of phonetics that studiesreception and perceptual response to speech sounds, as mediated by the ear, auditory nerve, and brain. It investigates the process that referred to the perception of how human speech. The beginning for this analysis of human speech is a study about our hearing system, that is the anatomy and physiology of our ear, brain, nerves, or even our entire body that are related to the hearing system.

But, as we know, our hearing system can't react to all forms of action. Because it can only react to the sound wave, so we need to know what we feel, how we interpret and understand it, and also how we communicate back for it, this complex field is called speech perception.

In other words, auditory phonetics is concerned with how speech sounds are heard and perceived by listeners. Unlike the other subfields of phonetics, this discipline deals with the listener in the communicative exchange rather than the speaker. Auditory phonetics examines the physical aspects of the ear including its functions and anatomy in addition to the cognitive abilities of the brain to interpret neural signals and decode the message.

In a broader perspective, if articulatory phonetics studies the way in which speech sounds are produced, auditory phonetics focuses on the perception of sounds or the way in which sounds are

heard and interpreted. Thus, we may say that while articulatory phonetics is mainly concerned with the speaker, auditory phonetics deals with the other important participant in verbal communication, the listener.

It is again, obviously, a field of linguistic study which has to rely heavily on biology and more specifically on anatomy and physiology. In auditory phonetics, we are dealing with two distinct operations which are closely interrelated and influence each other: on the one hand we can talk about audition proper, that is the perception of sounds by our auditory apparatus and the transforming of the information into a neural sign and its sending to the brain; and on the other hand, we can talk about the analysis of this information by the brain which eventually leads to the decoding of the message thus resulting in understanding of the verbal message.

As a beginner however, it will be sufficient for the reader to get a basic idea of how our auditory system and the general hearing process work. Keeping it very simple, we can state, that any sound coming from any sourcespreads as a sound wave, causing the molecules on its way to crowd together and move apart again or in other words, to vibrate. When these vibrating air molecules reach our ear, they cause the eardrum in the middle ear to vibratetoo and this vibration is then carried on from the eardrum to the three little bones: mallet, incus and stirrup.

From the stirrup, the vibration is carried on to the inner ear, and into the cochlea, a little coil-like organ filled with liquid. Inside the cochlea there are two membranes: the vestibular membrane and the basilar membrane. It is the latter that plays a central role in the act of audition, because this is, where the auditory receptor cells are located.

Depending on the frequency of the sound coming in, a different part with different receptor cells of the basilar membrane is stimulated. Thus, low-frequency gravesounds will make the membrane vibrate at the less stiff upper end, while high-frequency acutesounds will cause the lower and stiffer end of the membrane to vibrate. The cells on the basilar membrane convert these vibrations into neural signals that are transmitted via the auditory nerves to the central receptor and controller of the entire process, the brain, where we identify the incoming sound as actual sound with a specific pitch.

Notes on characteristics of auditory phonetics

- brings human hearing mechanism into focus
- primes on the idea of
- offers avenues for subjective study
- raises aural awareness

2.5 Difference between Phonetics and Phonology

Phonetics and phonology are two subfields of linguistics which study the sounds in language. Since both these fields are related to the production of sound, there remains a need to enlist differences between phonetics and phonology. The main difference between phonetics and phonology is that phonetics is the study of speech sounds whereas phonology is the study of sounds, especially different patterns of sounds in different languages.

The tabular representation should be able to make clarity on the issue:

Phonetics	Phonology
Deals in study of production, transmission & perception of sounds	Deals in sound structures & patterns
Primarily covers study of sounds in isolation focusing individuality of sound	Covers sounds in clusters focusing on interrelationship of sounds
Primes on physicality of sounds	Primes on abstractness of sounds as an outcome of cognitive process

Ear hears phonetics	Brain decodes phonology
Pivots on segmental dimensions of sound	Pivots on sub-segmental &supra-segmental dimension of sound
Mainly deals in topics of phonemes: Consonants & Vowels as part of articulatory phonetics	Mainly deals in topics: Distinctive features, Syllables, Allophones, Supra-segmental phonemes, Accent etc.
Centers around audibility of sounds	Centers around meanings of sound patterns
Phonetic symbols: IPA transcription	IPA transcription, Diacritics, & markings (Superscript or Subscript)– Aspiration [h], Length [:], Voiceless [̥], Labialization [ʷ], Nasalised [~], Dental [̪], Unreleased Consonant [¬].
Example: Minimal Pair- pat & bat; pet & put Minimal Set- pat, bat, rat, cat, sat, fat	Example: Word set- Hello Sentence set- HE MIGHT LEAVE FOR MUMBAI TOMORROW.
Sounds are contrastive	Contrastive & Non-contrastive
Falls under the area of descriptive linguistics	Falls under the area of theoretical linguistics
Primarily deals with identification of sounds	Primarily deals with interpretation of sounds
Remains restrictive in scope	Covers a broad base
Sausurrean concept of Parole is dealt phonetically	Sausurrean concept of Langue is dealt phonologically
Chomskian concept of Performance is dealt phonetically	Chomskian concept of Competence is dealt phonologically
Largely works at universal level	Largely works at language specific level

To sum up, we may say that Phonetics is the study of how human beings pronounce speech sounds; on the other hand, Phonology is the study of significant speech sounds.

Keywords

Accent Neutralisation:It is the process of identifying and understanding the subtle differences that occur when non-native speakers of a particular language use another language.

Mother Tongue Influence: It refers to the influence of the native language of the learner on her/his acquisition of the targetlanguage.

Articulatory Phonetics: It is the branch of phonetics concerned with the production of speech sounds.

Auditory Phonetics: It is the branch of phonetics concerned with the perception of speech sounds by humans

Acoustic Phonetics:It is the branch of phonetics concerned with the acoustic properties of human speech.

Distinctive Features:These are set of phonetic characteristics that, when variously grouped together, distinguish one phoneme from another.

Phoneme:It is the basic distinctive units of speech sound by which morphemes, words, and sentences are represented.

Syllable:It is an uninterrupted segment of speech consisting of a vowel sound, a diphthong, or a syllabic consonant, with or without preceding or following consonant sounds.

Summary

This unit covered ideas on concept of different branches of phonetics comprised of threesubfields according to the production (articulatory), transmission. (acoustic) and perception (auditive) of sounds.

The next segment dealt with difference between phonetics and phonology. In brief, phonetics studies physical properties of human speech, such as how basic sounds are physically produced, their acoustics, and how they are perceived. On the other hand, phonology deals with language sounds in abstract, grammatical terms. It often focuses on the systems of phonemes in particular languages and describes how they work while also dealing at syllable or even sentence-level.

Self Assessment

1. Which one of the following is not a benefit of Neutralised Accent speech?

A. Raises efficacy in service industry while dealing with customer
B. Assists one to do better in academic profession
C. Automatically raises comprehensibility quotient
D. Makes people discard your company

2. Which one of the following is not a technique to achieve Neutralised Accent?

a. Practicing high-frequency words
b. Record yourself and compare
c. Avoiding all kinds of software applications
d. Read aloud

3. Which one of the following is not the areas of emphasis of "Articulatory Phonetics"?

A. To propagate Mother Tongue Influence (MTI)
B. To make an autonomous learner of correct pronunciation

C. To provide Scientific / Technical intervention for improved pronunciation
D. To raise proprioceptive awareness

4. Which one of the following is not the areas of emphasis of "Acoustic Phonetics”?

A. To understand physical properties of speech
B. To make an objective study of speech
C. To provide visual representation of speech using software
D. To teach how to perceive sounds

5. Which one of the following is not the areas of emphasis of "Auditory Phonetics”?

A. to study how sound waves are produced by the human vocal apparatus
B. to make you understand how speech sounds are perceived by the human ear
C. to make a subjective study of speech
D. to raise aural awareness about sound systems and frameworks

6. Which one of the following is a characteristic of "Articulatory Phonetics"?

A. primarily deals with the question of how speech is realized through movements of body structures
B. studies physical parameters of speech sounds and its transmission
C. deals with sound and its characteristics
D. studies reception and perceptual response to speech sounds, as mediated by the ear, auditory nerve, and brain

7. Which one of the following is a characteristic of "Acoustic Phonetics”?

A. primarily deals with the question of how speech is realized through movements of body structures
B. studies reception and perceptual response to speech sounds, as mediated by the ear, auditory nerve, and brain
C. deals with how speech sounds are heard and perceived by listeners
D. studies physical parameters of speech sounds and its transmission

8. Which one of the following is a characteristic of "Auditory Phonetics”?

A. deals with how speech sounds are heard and perceived by listeners
B. primarily deals with the question of how speech is realized through movements of body structures
C. studies physical parameters of speech sounds and its transmission
D. deals with sound and its characteristics

9. Which one of the following is not correct about Distinctive Features?

A. They represent a sub-atomic level classification
B. They originate from Articulatory & Acoustic characteristics
C. They are represented in binary symbols of [+] & [−]
D. They are also known as suprasegmental phonemes

10. Which one of the following is not correct about Phonemes?

A. Total number of consonant phonemes: 24
B. Total number of vowel phonemes: 20
C. Total number of voiceless vowel phonemes: 08
D. Total number of diphthongs: 08

11. Count the number of syllables in the phrase: "proprioceptive language learning"

[Hint: prəʊprɪəʊˈsɛptɪv læŋgwɪʤˈlɜːnɪŋ]

A. Nine
B. Ten
C. Eleven
D. Twelve

12. Which one of the following is not a correct representation of "Syllable"?

A. Onset, Nucleus, Coda
B. Onset, Rhyme
C. Onset, Rhythm
D. C-V-C

13. Which one of the following is not a valid point of difference between Phonetics & Phonology?

A. Phonetics is about abstraction of sound structures vs. Phonology studies articulation of sounds
B. Phonology is the study of production, transmission & perception of sounds vs. Phonology studies sound structures & patterns
C. Ear hears phonetics vs. Brain decodes phonology
D. Phonetics is segmental vs. Phonology covers sub-segmental & supra-segmental dimensions of speech

14. Which one of the following is not a valid point of difference between Phonetics & Phonology?

A. Phonetics covers sounds in clusters focusing on interrelationship of sounds vs. Phonology covers study of sounds in isolation focusing individuality of sound
B. Phonetics primes on physicality of sounds vs. Phonology primes on abstractness of sounds as an outcome of cognitive process
C. Phonetics pivots on segmental dimensions of sound vs. Phonology pivots on sub-segmental & supra-segmental dimension of sound
D. Phonetics mainly deals in topics of phonemes, like consonants & vowels vs. Phonology mainly deals in topics, like distinctive features, syllables, allophones, supra-segmental phonemes, accent etc.

15. Which one of the following is not a valid point of difference between Phonetics & Phonology?

A. Phonetics deals with sounds which can be non-contrastive in meaning vs. Phonology deals with contrastive sounds

B. Phonetics falls under the area of descriptive linguistics vs. Phonology falls under the area of theoretical linguistics

C. Phonetics deals with identification of sounds vs. Phonology deals with interpretation of sounds

D. Phonetics is restrictive in scope vs. Phonology covers a broad base

Answers for Self Assessment

1.	D	2.	C	3.	A	4.	D	5.	A
6.	A	7.	D	8.	A	9.	D	10.	C
11.	A	12.	C	13.	A	14.	C	15.	B

Review Questions

1. Explain the benefits of having a neutralized accentthrough illustrations of relevant examples.

2. Write an essay on a topic: How One Can Clear Mother Tongue Influence?

3. Explain any two important characteristics of each phonetics branches.

4. Write an essay on a topic: Innovative Tools Teaching Articulatory phonetics

5. Make your own choice of any three points describing in details the difference between phonetics and phonology.

Further Readings

Catford, J. C. *A Practical Introduction to Phonetics.* Clarendon Press, 1988.

Davenport, M. and Stephen J. Hannahs. *Introducing Phonetics and Phonology*. Routledge, 2013.

Ladefoged, P. and Keith Johnson. *A Course in Phonetics*. Cengage Learning, 2014.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Stevens, K. N. *Acoustic Phonetics*. MIT Press, 2000.

Web Links

https://www.academia.edu/12375492/Accent_Neutralization

https://www.bbc.com/worklife/article/20190506-this-technology-could-help-you-lose-your-accent

https://www.urbanpro.com/a/tips-speaking-english-neutral-accent-correct-pronunciations

https://linguistics.stackexchange.com/questions/180/whats-the-difference-between-phonetics-and-phonology

http://www.differencebetween.info/difference-between-phonetics-and-phonology

https://www.academia.edu/10165716/Difference_between_Phonetics_and_Phonology

https://www.youtube.com/watch?v=DnBxhoHnG8I

https://www.youtube.com/watch?v=De4iMKxSpgY

https://www.youtube.com/watch?v=ulcmQoDaZ_g

Unit 03: The Production of Speech Sounds-I

CONTENTS

Objectives

Introduction

3.1 Basic Terminologies

3.2 Articulators above Larynx

3.3 Pictorial Representation of Speech Sounds

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with the concepts of source filter theory and airstream mechanism in understanding physicality of speech making
- grasp a basic idea about proprioceptive language learning and resonating chamber's role
- formulate an in-depth awareness on the role & importance of speech articulators

Introduction

The focus of the unit lies on creating an informed understanding about all the human speech articulators above larynx.

Caution: Take care of correct pronunciation

egressiveis pronounced as /ɪˈgrɛsɪv/

proprioceptionis pronounced as /ˌproʊprioʊˈsɛpʃən/

velum is pronounced as /ˈviːləm/

glottis is pronounced as /ˈglɒtɪs/

pharynx /ˈfærɪŋks/

3.1 Basic Terminologies

Source Filter Theory: The source-filter theory describes speech production as a two-stage process involving generation of a sound sourcewhich is thenfiltered by the resonant properties of the vocal tract. An easy example to understand is that of a flute where

source remains the pushed air into the flute by the flutist and simultaneously pressing different holes act like the filter of varying shapes.

Most of the filtering of a source spectrum is carried out by that part of the vocal tract anterior to the sound source. In the case of a glottal source, the filter is the entire supra-glottal vocal tract. The vocal tract filter always includes some part of the oral cavity and can also, optionally, include the nasal cavity wheresound sources can be either periodic or aperiodic.

The term *filter* in source filter theory is that which can selectively permit few things to pass through and block others. For example, a piece of filter paper used in chemistry blocks the passage of solid particles larger than a certain size and permits smaller particles and liquids to pass through unhindered. An acoustic filter selectively attenuates certain frequencies and allows other frequencies to pass through relatively unattenuated.

Airstream Mechanism: An airstream mechanism is a body of air which is used for speech production. A simple analogy can be of a syringe fitted with plunger where it functions as an initiator with which one can draw in or put out fluid from the syringe.

There are three types of Airstream Mechanism: Pulmonic, Glottalic and Velaric. Each airstream mechanism involves both egressive and ingressive action.An egressive action involves the pushing out of air, while the ingressive action involves the sucking in of air.

In case of pulmonic airstream mechanism, the initiator is the lungs and its associated muscles, including the diaphragm.The diaphragm is muscle band that separates the chest cavity from the stomach.It interacts with the intercostal muscles to cause an expansion or contraction of the chest cavity, and allows air to flow in from the higher-pressure region of the atmosphere.A contraction produces higher pressure in the chest cavity and results in an outflow of air.The Pulmonic egressive is a body of air expelled from the lungs. It is generally used for talking and singing.All English sounds are produced using the Pulmonic egressive airstream mechanism, and all sounds produced with the lungs as the initiator are called Pulmonic sounds.The Pulmonic ingressive airstream mechanism is hardly used in sound production.It is in non-linguistic acts such as yawning, or most kinds of snoring.

In case of glottalic airstream mechanism,the closed glottis is the initiator.If the closed glottis is moved upwards, air is compressed in the mouth above the glottal closure causing an outward movement of air.This outward movement of air known as the glottalic egressive airstream mechanism and the sounds produced are called Ejectives.On the other hand, if the closed glottis is moved downwards, the body of air that is built above the closed glottis is drawn in when the glottis eventually opens.The inward movement of air is known as the glottalic ingressive airstream mechanism and the sounds produced are called implosives.

In case of velaric airstream mechanism,the back of the tongue gets in firm contact with the velum also known as the soft palate.The initiator of this airstream mechanism is the closure formed by raising the root of the tongue against the velum which is used to pushed out air from the mouth or to suck in air.When air is pushed out, we refer to this type as a velaric egressive airstream mechanism which in fact does not produce any human speech sound.On the other hand, the velaric ingressive airstream mechanism is used for the production of click sounds.

Proprioceptive Language Learning: The proprioceptive language learning methodis a technique which emphasizes simultaneous development of cognitive, motor, neurological, and auditory functions for a comprehensive language learning process. Therefore, this method is as concerned with the training of the motor and neurological functions of speech as it is with cognitive functions while further emphasizing that training of each part of the speech process must be simultaneous. The proprioceptive method, therefore, emphasizes spoken language training, and is primarily used by those wanting to perfect their speaking ability in a target language.

Proprioception, as a concept, is a distinct sensory attribute that provides feedback solely on the internal status of the body which indicates whether the body is moving as a result of expended effort as well as the spatial orientation of various parts of the body in relation to each other. Proprioception speech therapy underlines the sense within the organism itself which detects or controls the movement and location of the articulators

which are used to create speech. Physiologically speaking, human articulators- the mouth, vocal cords, diaphragm, and lungs incorporate thousands of nerve sensors which the brain uses to control the movement and position of these organs.

Resonating Chambers: The voice like all acoustic instruments such as the guitar, trumpet, piano, or violin has its own special chambers for resonating the tone. Once the sound is produced by the vibrating vocal cords, it vibrates in and through the open resonating ducts and chambers. Since the vocal tract is often associated with different regions of the body, different resonance chambers might be referred to as: Oral, Nasal, Oro-nasal, Oro-labial, and Pharyngeal.

This vocal resonancemay be defined as the process by which the basic product of phonation is enhanced in timbre and/or intensity by the air-filled cavities through which it passes on its way to the outside air. There are various terms related to resonation such as: resonance, amplification, filtering, enrichment, enlargement, improvement, intensification, and prolongation. Despite these many terms, the purpose of resonation remains one only and that is to enable speaker to be heard in a given speech situation.

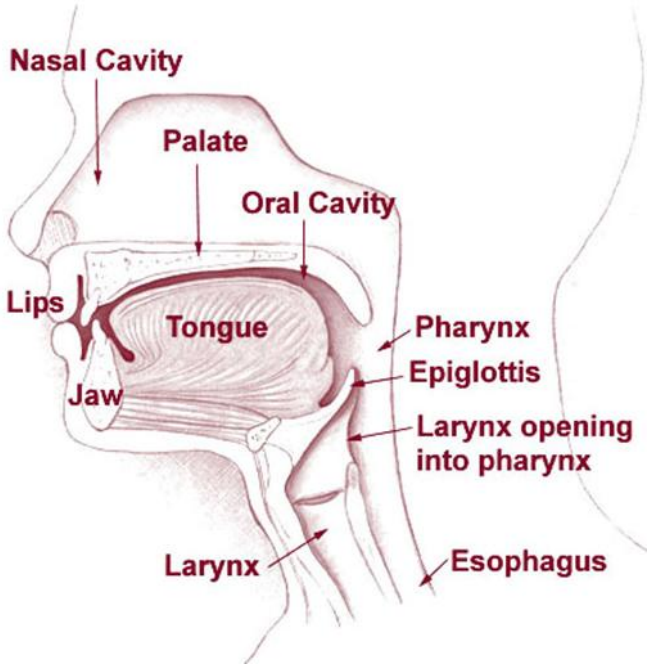


Fig. 3.1 Cavities acting as resonating chambers

3.2 Articulators above Larynx

Basic understanding of human anatomy and the field of articulatory phonetics provide us informed ideas about various articulators and their roles. The starting concept can be the term articulation which means a configuration of the vocal tract (the larynx and the pharyngeal, oral, and nasal cavities) resulting from the positioning of the various organs of the vocal tract relative to other parts of the vocal. This configuration modifies an airstream to produce the sounds of speech. The main articulators are the tongue, the upper lip, the lower lip, the upper teeth, the upper gum ridge (alveolar ridge), the hard palate, the velum (soft palate), the uvula (free-hanging end of the soft palate), the pharyngeal wall, and the glottis (space between the vocal cords).

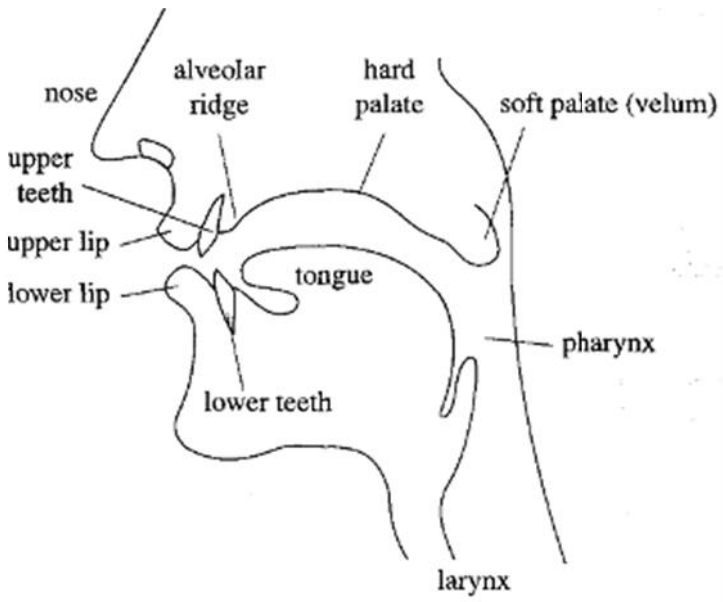


Fig. 3.2 Sagittal section view of speech articulators

All the sounds we make when we speak are the result of muscles contracting. The muscles in the chest that we use for breathing produce the flow of air that is needed for almost all speech sounds; muscles in the larynx produce many different modifications in the flow of air from the chest to the mouth. After passing through the larynx, the air goes through what we call the vocal tract, which ends at the mouth and nostrils. Here the air from the lungs escapes into the atmosphere. We have a large and complex set of muscles that can produce changes in the shape of the vocal tract, and in order to learn how the sounds of speech are produced it is necessary to become familiar with the different parts of the vocal tract. These different parts are called articulators, and the study of them is called articulatory phonetics.

Fig. 3.2 is a diagram that represents the sagittal section view of the human head. Let us discuss each of the articulators one by one.

The lips are important in speech. They can be pressed together (as in sounds / p/, /b/, /m/etc.), or brought into contact with the teeth (as in sounds /f/, /v/ etc.), or rounded to produce the lip-shape for vowels like /u:/, /ɔ:/. Sounds in which the both the lips are in contact with each other are called bilabial, while those with lip-to-teeth contact are called labiodental.

The teeth (upper and lower) are usually shown in Fig. 3.2 only at the front of the mouth, immediately behind the lips. This is for the sake of a simpleand easy explanation, whereas, we must remember that most speakers have teeth to the sides of their mouths and further back almost to the soft palate. The tongue is in contact with the upper side teeth for many speech sounds. Sounds made with the tongue touching the front teeth are called dental or sometimes when tip of the tongue is bitten in-between upper and lower teeth to make interdental sound.

The alveolar ridge is between the top front teeth and the hard palate. You can feel its shape with your tongue. Its surface is really much rougher than it feels, and is covered with little ridges. Sounds made with the tongue touching here (as in sounds /t/ and / d/) are called alveolar.

The hard palate is often called the roof of the mouth and one can feel its smooth curved surface with one's tongue.It forms a partition between the nasal passages and the mouth stretching from alveolar ridge onwards till the start of soft palate.

The velum or soft palateasshown Fig. 3.2 allows air to pass through the nose and through the mouth and often in speech it is raised so that air cannot escape through the nose. The other important thing about the velum is that it is one of the articulators that can be touched by the tongue. When we make the sounds /k/ and /g/ the tongue is in contact with the lower side of the velum, and these are known as velar consonants.

The pharynx is a tube which begins just above the larynx. It is about 7 cm long in women and about 8 cm in men, and at its top end it is divided into two, one part being the back of the mouth and the other being the beginning of the way through the nasal cavity. This is often referred to as crossway inside mouth.

The glottisis the opening between the vocal folds in the larynx that is generally thought of as the primary valve between the lungs and the mouth. The different states of the glottis are the positions generally considered to characterize different possible shapes of this opening, such as: open, in vibration, narrowed, and closed. English has /h/ soundmade atthe glottis.

The tongue is, of course, a very important articulator and it can be moved into many different places and different shapes. It is usual to divide the tongue into different parts, though there are no clear dividing lines within the tongue. Fig. 3.3 shows the tongue on a larger scale with these parts shown: tip (apex), blade (lamina), front, back and root (dorsum).

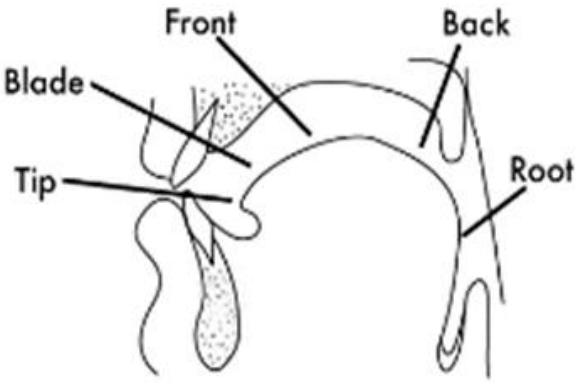


Fig. 3.3 Tongue and its parts

These articulators described above are the main ones used in speech, but there are twomore. Firstly, the larynx could also be described as an articulator which decides phonation. Secondly, the jaws are sometimes called articulators; certainly, we move the lower jaw a lot in speaking. But the jaws are not articulators in the same way as the others, because they cannot themselves make contact with other articulators. And in fact with that logic, pharynx also falls in the same category.

Notes on list of articulators above larynx

- Lips
- Teeth
- Alveolar Ridge
- Hard Palate
- Soft Palate or also known as Velum
- Pharynx
- Glottis
- Tongue

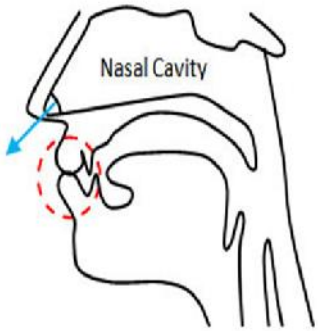
3.3 Pictorial Representation of Speech Sounds

In anatomy, the sagittal plane or longitudinal plane, is an anatomical plane which divides the body into right and left parts.For human speech purposes, the plane splitsface into two halves and one can see the interplay of different speech articulators. Here, we present few of the examples of English speech sounds in a sagittal section view.

Some of lips articulated speech sounds/p/, /b/, /m/

/p/ (pan), /b/ (boy)

/m/

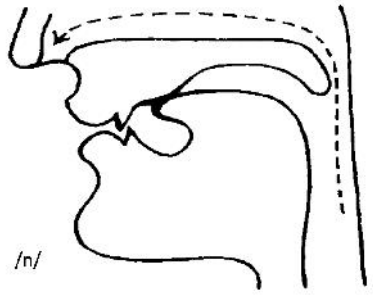


Some of teeth articulated speech sounds/θ/, /ð/

/θ/ (thick) and /ð/ (the)

Some of alveolar ridge lips articulated speech sounds/t/, /d/, /n/

/t/ (time) and /d/ (dime)

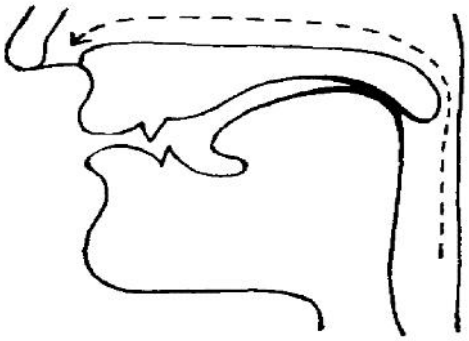


Some of hard palate articulated speech sound/j/, /ʃ/, /z/

/ j / (yes)

Some of soft palate articulated speech sounds /k/, /g/, /ŋ/

/k/ (cap) and /g/ (gap)

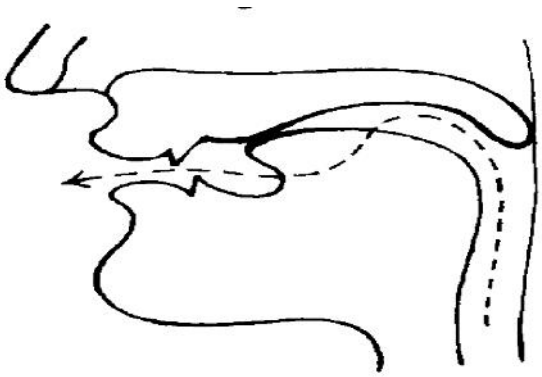


Some of tongue articulated speech sounds/θ/, /ð/, /l/, /i:/e/, /æ/, /u:/, /ʊ/, /h/

Tip- /θ/, /ð/

/θ/ (thick) and /ð/ (the)

Blade- /l/



Glottis articulated speech sound

/h/ (house)

Notes on pictorial representation of speech sounds

- lips articulated speech sounds
- teeth articulated speech sounds
- alveolar ridge lips articulated speech sounds
- hard palate articulated speech sounds
- soft palate articulated speech sounds
- tongue articulated speech sounds
- glottis articulated speech sound

Keywords

Source Filter Theory:It describes speech production as a two-stage process involving the generation of a sound source which is then filtered by the resonant properties of the vocal tract.

Proprioception: The ability to sense the position, location, orientation and movement of the body and its parts.

Resonance: It isa phenomenon in which a vibrating system or external force drives another system to oscillate with greater amplitude at specific frequencies.

Pulmonic Air Stream: The flow of air from the lungs under comparatively constant pressure, used in forming speech sounds.

Velaric Air Stream: The creation of an ingressive airstream in the mouth by use of tongue contact with the velum, used to make clicks.

Glottalic Air Stream: The movement of pharynx air by the action of the glottis. An upward movement of the closed glottis will move the air out of the mouth; a downward movement of the closed glottis will cause air to be sucked into the mouth.

Alveolar Ridge: The alveolar ridge is a small protuberance just behind the upper front teeth that can easily be felt with the tongue.

Palatal: This sound is produced with some part of the tongue near or touching the hard palate of the roof of the mouth posterior to the alveolar ridge.

Velar: This sound is produced with the back part of the tongue against the soft palate.

Pharynx: The hollow tube inside the neck that starts behind the nose and ends at the top of the trachea and esophagus.

Larynx: The hollow muscular organ forming an air passage to the lungs and holding the vocal cords in humans and other mammals also known as the voice box.

Glottis: The part of the larynx consisting of the vocal cords and the opening between them.

Summary

This unit covered basic ideas about the human vocal tract within which speech sounds are produced through coordination amongst various articulators, especially the ones present above the larynx.

Self Assessment

1. Which one of the following is correct about Source-Filter theory?

A. The word “Source” in Source-filter theory refers to “heart”, the word “filter” represents “human speech articulators” and the theory talks about interplay of all these in articulating a speech

B. The word “Source” in Source-filter theory refers to “larynx”, the word “filter” represents “Oral cavity” and the theory talks about interplay of these two elements ONLY in articulating a speech

C. The word “Source” in Source-filter theory refers to “chest”, the word “filter” represents “selected human speech articulators” and the theory talks about interplay of all these in articulating a speech

D. The word “Source” in Source-filter theory refers to “lungs”, the word “filter” represents “human speech articulators” and the theory talks about interplay of all these in articulating a speech

2. Which one of the following is not an established Airstream mechanism used for speech production?

A. Egressive Pulmonic Stream
B. Glottalic egressive Stream
C. Excretory human system
D. Velaric ingressive Stream

3. Which one of the following is not a correct representation of Proprioceptive Language Learning model?

A. Hinges on creating a sense of self-movement and body position vis-à-vis speech making
B. Describes how speech can be represented in acoustic terminology
C. Delves on the physicality of speech
D. Focuses on creating muscle memory vis-à-vis speech making

4. Which one of the following is not a speech resonating chamber?

A. Oral & Nasal
B. Oro-nasal & Oro-labial
C. Pharyngeal
D. Brain

5. Which one of the following is not an articular above the larynx?

A. Lips, Teeth, & Tongue
B. Alveolar Ridge, Hard Palate, & Pharynx
C. Thoracic cavity containing lungs
D. Soft Palate & Glottis

6. The soft palate starts right after the…

A. Tongue
B. Uvula
C. Hard palate
D. Lips

7. The velars are produced when the ……. touches the velum.

A. Tip of the tongue
B. Blade of the tongue
C. Root of the tongue
D. Back of the tongue

8. Teeth are not involved in the production of dental and labiodental consonant sounds.

A. True
B. False
C. Not known
D. Sometimes only, not always

9. One of the following is NOT one amongst the articulators above the larynx.

A. Pharynx
B. Teeth
C. Tongue
D. Lungs

10. Glottis is

A. The gap between the nasal cavity and the oral cavity
B. The gap between the vocal folds
C. The gap between the teeth
D. The gap between the soft palate and the hard palate

11. Which of the following types of airflow do most languages, including English, rely on for speech production?

A. Ingressive pulmonic
B. Egressive pulmonic
C. Glottalic
D. Phonatory

12. Which is NOT one of the four sections of the tongue?

A. Apex
B. Lamina
C. Dorsum
D. Glottal

13. Which one of the following is a hard palate articulated sound?

A. /f/
B. /v/
C. /m/
D. /j/

14. Which one of the following is a soft palate articulated sound?

A. /k/
B. /f/
C. /m/
D. /n/

15. Which one of the following is an alveolar ridge articulated sound?

A. /k/
B. /t/
C. /g/
D. /ŋ/

Answers for Self Assessment

1.	D	2.	C	3.	B	4.	D	5.	C
6.	C	7.	D	8.	B	9.	D	10.	B
11.	B	12.	D	13.	D	14.	A	15.	B

Review Questions

1. Explain the benefits of having an understanding of different speech articulators.

2. Write an essay on a topic: How proprioceptive learning can be an interesting tool for pronunciation teaching?

3. Explain any two human resonating chambers used for speech making purposes.

4. Write an essay on a topic: Role of Tongue as an Important Articulator

5. Make your own choice of explaining any three human articulators performing speech functions.

Further Readings

Catford, J. C. *A Practical Introduction to Phonetics*. Clarendon Press, 1988.

Davenport, M. and Stephen J. Hannahs. *Introducing Phonetics and Phonology*. Routledge, 2013.

Ladefoged, P. and Keith Johnson. *A Course in Phonetics*. Cengage Learning, 2014.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Stevens, K. N. *Acoustic Phonetics*. MIT Press, 2000.

Web Links

https://www.mq.edu.au/about/about-the-university/our-faculties/medicine-and-health-sciences/departments-and-centres/department-of-linguistics/our-research/phonetics-and-phonology/speech/phonetics-and-phonology

https://australianlinguistics.com/airstream-mechanisms/

https://psychology.fandom.com/wiki/Proprioceptive_language_learning_method

https://flypaper.soundfly.com/play/a-basic-guide-to-how-the-human-voice-produces-resonance/

http://www.personal.rdg.ac.uk/~llsroach/phon2/artic-basics.htm

https://ecampusontario.pressbooks.pub/essentialsoflinguistics/chapter/2-3-articulators/

http://www.fpik.bunghatta.ac.id/files/downloads/E-book/Linguistics%20for%20English%20Language%20Teaching/chapter_5-english_phonetics.pdf

Dr. Gurpal Singh Rana, Lovely Professional University

Unit 04: The Production of Speech Sounds-II

CONTENTS

Objectives

Introduction

4.1 Basic Terminologies

4.2 Voiced Sounds

4.3 Voiceless Sounds

4.4 Consonant Sounds

4.5 Vowel Sounds

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with the concept of voiced sounds through examples
- understand concept of voiceless sounds through examples
- formulate cursory awareness about vowel sounds with relatable examples
- formulate basic awareness about consonant sounds with relatable examples

Introduction

The focus of the unit lies on creating an informed understanding about all the human speech articulators above larynx.

4.1 Basic Terminologies

Phonation: The idea of phonation begins with air flowing from the lungs, setting the vocal folds into motion, and generating a glottal sound. The vocal folds are the two flaps of tissue located on the left and right side of the larynx, and the term glottis refers to the gap between the vocal folds. When the glottal sound propagates in the vocal tract, it is modified by the resonance characteristics of the vocal tract. The sound is then emitted from the oral chamber and/or nasal chamber and we hear speech sounds, or phonation. The various types of phonation, such as modal, breathy, and creaky voice are distinguished by the respective degree of glottal closure.

In continuation of ideas mentioned above, we use the term *phonation* to refer to any sound generating process in the larynx. Thus, the term phonation can cover whisper as well as voice.Cross-linguistic phonetic studies have yielded several insights into the possible states of the glottis. People can control the glottis so that they produce speech

sounds with not only regular voicing vibrations at a range of different pitches; but also harsh, soft, creaky, breathy and a variety of other phonation types. These are controllable variations in the actions of the glottis, not just personal idiosyncratic possibilities or involuntary pathological actions. What appears to be an uncontrollable pathological voice quality for one person might be a necessary part of the set of phonological contrasts for someone else. For example, some American English speakers may have a very breathy voice that is considered to be pathological, while Indian-language speakers need a similar voice quality to distinguish one word from the other in meaning.

Ladefoged suggested that a continuum of phonation types might be defined in terms of the aperture between the arytenoid cartilages, ranging from voiceless (furthest apart), through breathy voiced, to regular, modal voicing, and then on through creaky voice to glottal closure (closest together). See figure 4.1 below.

In terms of human anatomy, the larynx sits in the airway between the trachea and the pharynx. At the base of the larynx is the cricoid cartilage. Above and attached to the cricoid are the thyroid cartilage and a pair of arytenoid cartilages. Through ligaments and muscles, the thyroid can rock back and forth against the cricoid and the arytenoids can be made to swivel.The thyroid cartilage surrounds and supports the vocal folds which are two muscular tissues joined together at the front to the thyroid cartilage and separated at the back by attachment to processes on the arytenoid cartilages. Through muscular control, the arytenoids can be swiveled to draw the vocal folds together across the top of the trachea, thereby closing off the air passageway from the lungs.

The vocal folds can be changed in length and tension by movements of the arytenoid and thyroid cartilages, and the tension can also be varied by contracting the thyroarytenoid muscles that lay inside the folds. The gap between the vocal folds is called the glottis. The ventricular folds are fleshy structures above the vocal folds which do not normally take part in phonation. The given below figure 4.1 indicates two formations, one of adduced vocal folds (phonation conducive state) and other with open vocal folds (normal breathing or absence of phonation).

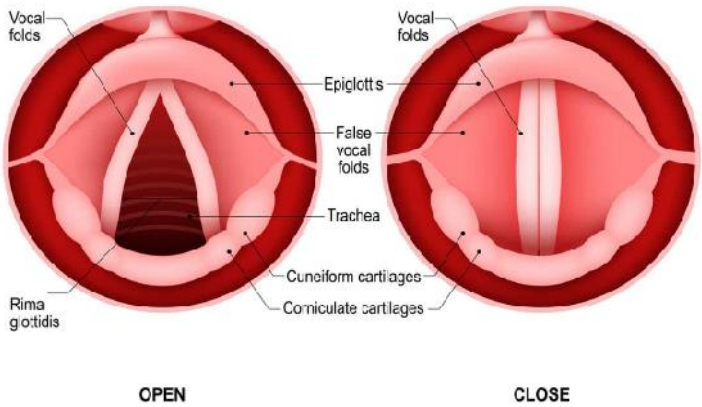


Fig. 4.1 Image explanation of phonation

Here in the figure 4.2 the sounds corresponding to downward red arrow marking indicate voiced sounds (presence of phonation) and with blue arrows indicate voiceless ones (absence of phonation).

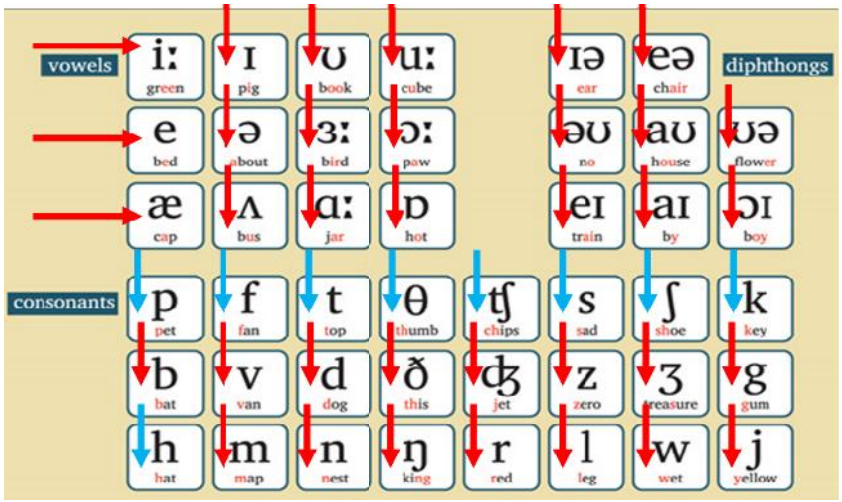


Fig. 4.2 Classification of International Phonetic Chart in phonation-non phonation sounds

International Phonetic Chart (IPA): The IPA was first published in 1888 by the Association PhonétiqueInternationale (International Phonetic Association), a group of French language teachers founded by Paul Passy. The aim of the organisation was to devise a system for transcribing the sounds of speech which was independent of any particular language and applicable to all languages.

A phonetic script for English created in 1847 by Isaac Pitman and Henry Ellis was used as a model for the IPA. It remains highly useful and few uses to list are as follows:

- It is used in dictionaries to indicate the pronunciation of words.
- It has often been used as a basis for creating new writing systems for previously unwritten languages.
- It is also used in some foreign language text books and phrase books to transcribe the sounds of languages which are written with non-Latin letters/symbols.
- It also offers a significant use for non-native speakers of English while learning to speak English.

To reiterate, IPA was developed to accurately represent the pronunciation of languages with an aim to provide a unique symbol for each distinctive sound in a language—that is, every sound, or phoneme, that serves to distinguish one word from another. Given below in the figure 4.3, we can observe all the 44 sounds represented in two broad segments of vowel and consonant sounds.

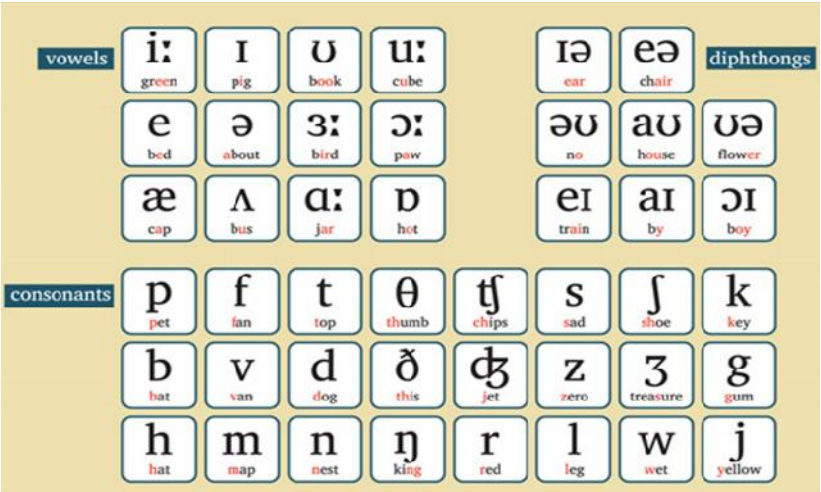


Fig. 4.3 Phonemic representation of English speech sounds

4.2 Voiced Sounds

Phoneticians divide consonants into two types: voiced and voiceless. Voiced consonants require the use of the vocal cords to produce their signature sounds; voiceless consonants do not. Both types use the breath, lips, teeth, and upper palate to further modify speech. Voiced sounds utilize the vocal cords. For clarity, you may refer to voiced sounds as vibrating sounds.

Since all vowel sounds are voiced, determining whether or not a sound is voiced is most helpful for consonant sounds.

Some examples of voiced sound include:

/b/ as is boyhood

/d/ as in duckling

/g/ as in go-to-man

/ʤ/ as in jamboree

/l/ as in lamp post

/m/ as in maple tree

/n/ as in nutshell

/r/ as in rattle

/v/ as in vaseline

/j/ as in yoyo test

/z/ as in zebra crossing

Here in the figure 4.4 the sounds corresponding to downward red arrow marking indicate voiced ones (presence of phonation) and the reader can also check the corresponding word in the box adjacent to phonemic symbol for more clarity.

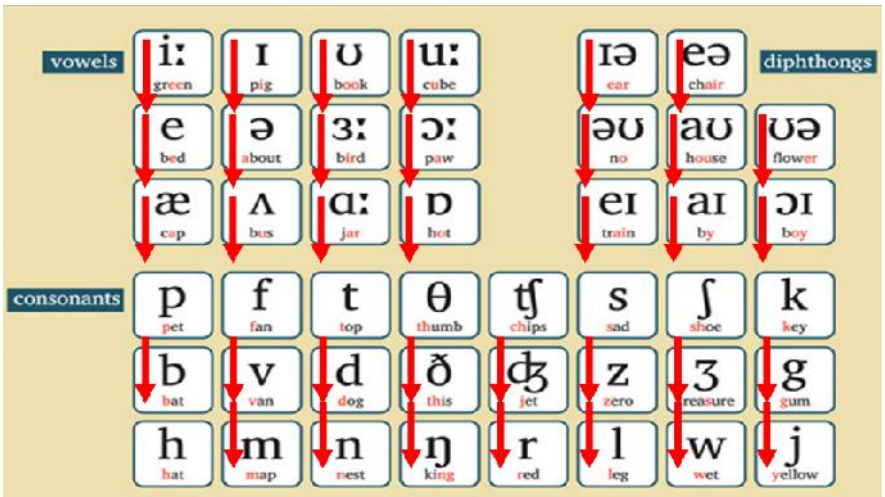


Fig. 4.4Phonemic representation of English voiced speech sounds

4.3 Voiceless Sounds

Voiceless or unvoiced or devoiced sounds are those ones in which the vocal cords are not activated. They are made by movements of the tongue or air being pushed out of the mouth in various ways. You may refer to voiceless or unvoiced sounds as quiet sounds which give no buzz in the larynx because vocal folds remain wide open.

Some examples of unvoiced sounds include:

/k/ as in cat or kite

/f/ as in foxhole

/h/ as in hattrick

/p/ as in potshot

/s/ as in sunbath

/t/ as in topsy-turvy

/ʃ/ as in shipwreck

/θ/ as in thumbnail

/ʧ/ as in chinook

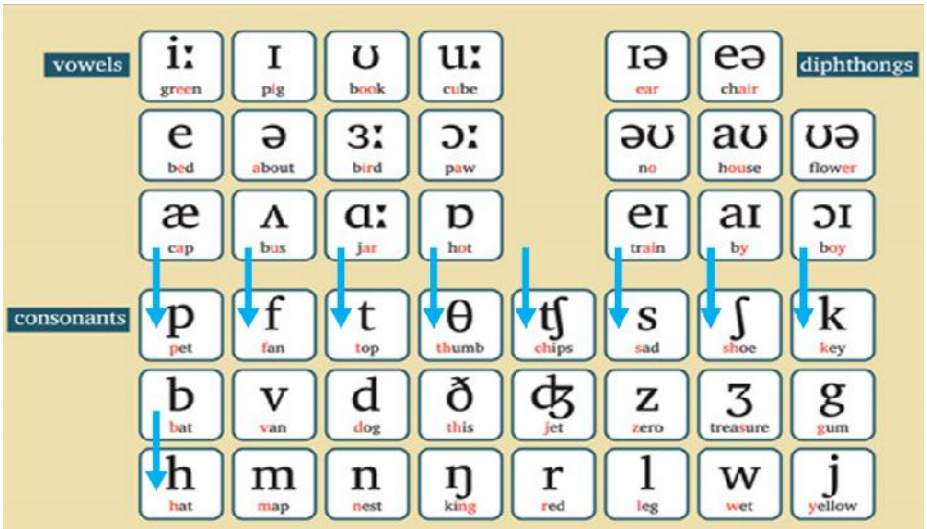


Fig. 4.5 Phonemic representation of English voiceless speech sounds

4.4 Consonant Sounds

The sound of a consonant is produced by a partial or complete obstruction of the airstream by a constriction of the speech organs. In writing, a consonant is any letter of the alphabet except A, E, I, O, U, and sometimes Y. There are 24 consonant sounds in English, some voiced (made by a vibration of the vocal cords) and some voiceless (no vibration). There are 24 consonant sounds in most English accents, conveyed by 21 lettersof the regular English alphabet

/p/ pair, cup

/b/ bad, crab

/t/ tall, hit

/d/ dark, head

/k/ cab, lack

/g/ good, tag

/f/ fine, wife

/v/ very, above

/θ/ thing, both

/ð/ this, father

/s/ saw, house

/z/ zap, goes

/ʃ/ shape, push

/3/ pleasure, beige

/h/ her, ahead

/j/ yummy, soya

/tʃ/ cherry, match

/ʤ/ judge, raj

/m/ man, team

/n/ nail, tan

/ŋ/ ring, singer

/l/ let, tall

/r/ right, scary

/w/ wet, away

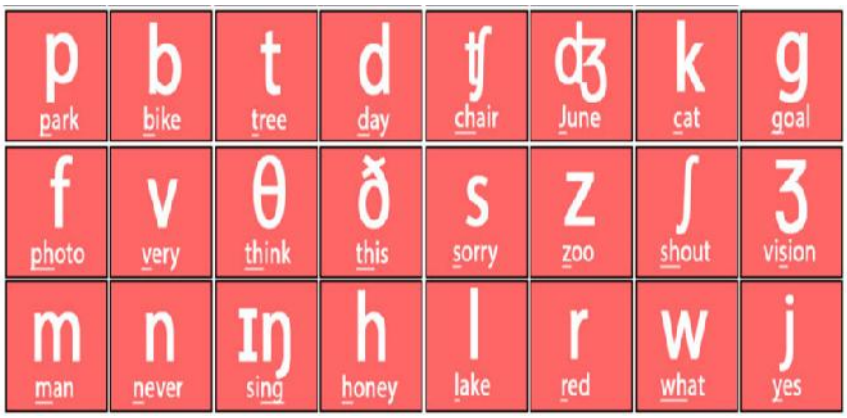


Fig. 4.6 Phonemic representation of English consonant speech sounds

4.5 Vowel Sounds

When we think about English letters, we normally think of there being 5 vowels A, E, I, O, U. However, when it comes to pronunciation, there are 20 vowel sounds further divided into monophthongs and diphthongs. When we speak, the air is pushed out through our mouth. Vowels make the sounds that come when the air leaving your mouth isn't blocked by anything (like your teeth or your tongue). They are formed by moving your lips to different shapes.Vowels comprise the principal sounds of syllables and form a major category of phonemes, the distinct sets of sounds that allow listeners to distinguish one word from another in speech.

/iː/ be, see, beach, ski, city

/ɪ/ big, busy, England, bin, myth

/e/ egg, head, any, friend, said

/æ/ apple, grab, fat, lad, brat

/ɜː/ person, nurse, bird, work, earth

/ə/ the, brother, doctor, popular, arrive

/ʌ/ sun, money, does, touch, flood

/uː/ who, food, music, you, new

/ʊ/ full, look, woman, hook, book

/ɔː/ for, door, saw, walk, warm

/ɒ/ dog, watch, because, cough

/aː/ car, father, are, aunt, heart

/ɪə/ ear, beer, here, idea, near

/eə/ hair, share, bear, their, there

/ʊə/ tour, Europe, cure, tourist, pure

/eɪ/ cake, day, train, great, they

/ɔɪ/ boy, voice, noise, toy, ploy

/aɪ/ time, fly, high, pie, eye

/əʊ/ open, coat, grow, although, toe

/aʊ/ now, house, brown, clown, down

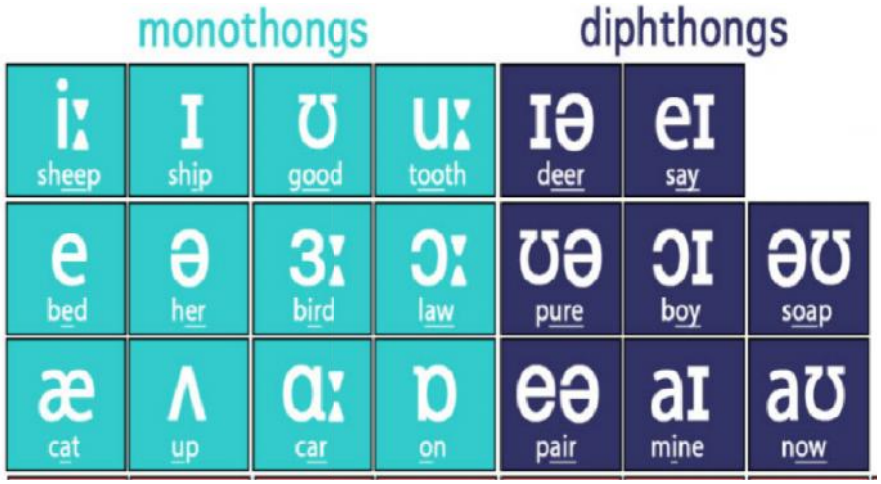


Fig. 4.7 Phonemic representation of English vowel speech sounds

Keywords

Phonation:It describes rapid, periodic opening and closing of the glottis through separation and apposition of the vocal cords that, accompanied by breath under lung pressure, constitutes a source of vocal sound.

Voiced sounds:A voiced speech sound is one that is produced with vibration of the vocal cords.

Voiceless sounds:A voiceless speech sound is one that is produced without vibration of the vocal cords.

Consonant sounds:A consonant is a sound such as /p/, / f/, /n/, /t/ etc. which you pronounce by stopping the air flowing freely through your mouth.

Vowel sounds:A vowel is a sound such as the ones represented in writing by the symbols such as /ɪ/, /iː/, /e/, /ɪə/, /eə/ etc. which are pronounced with mouth open, allowing the air to flow through it.

Monophthongs:A monophthongis a pure vowel sound, one whose articulation at both beginning and end is relatively fixed, and which does not glide up or down towards a new position of articulation.

Diphthongs:A diphthong is a gliding vowel which combines two adjacent vowel sounds thus giving rise to a new composite sound.

Summary

This unit covered basic ideas about the paired concepts of voiced-voiceless sounds and consonant-vowel sounds of English speech while starting priming with the idea of phonation.

Self Assessment

1. 1.Which one of the following is not a test of Phonation?

A. It can be felt by placing finger(s) on the larynx region
B. It can be perceived by plugging ears with hand and once can hear that buzz sound
C. It can be seen in the spectrographic analysis of the speech which shows formant frequencies
D. It is not really possible to perceive phonation in speech

2. Which one of the following does not represent articulation of English consonant sounds?

A. Quantity-Quality aspect of the sound
B. Manner of articulation
C. Place of articulation
D. Voicing-Devoicing

3. Which one is the correct full form representation of IPA?

A. International Phonological Application
B. International Phonetic Application
C. International Phonetic Alphabet
D. International Phonological Alphabet

4. Which one of the following points is not a correct statement?

A. Consonant sounds have a blend of voiced & voiceless phonemes
B. Vowel sounds have a blend of voiced & voiceless phonemes
C. Vowel sounds are all voiced phonemes
D. There are few consonant sounds which act like vowel sounds

5. Which one of the following lists contains all vowel sounds?

A. /ð/,/ə/, /p/, /r/, /ə/
B. /ʊ/, /s/, /ɛ/, /ɔ:/, /v/
C. /ɔɪ/, /ɪ/, /ɜ:/, /eə/, /ʌ/
D. /ɪ/, /ŋ/, /ə/, /z/, /w/

6. Which one of the following lists contains all voiceless consonant sounds?

A. /ð/, /ə/, /p/, /r/, /ə/
B. /t/, /d/, /h/, /l/, /v/
C. /p/, /f/, /ɜ:/, /s/, /ʌ/
D. /k/, /t/, /f/, /s/, /p/

7. Which one of the following lists contains all voiced consonant sounds?

A. /ð/, /b/, /d/, /r/, /v/

B. /ʊ/, /s/, /ɛ/, /ɔ:/, /v/
C. /ð/, /θ/, /ɜ:/, /t/, /ʌ/
D. /ɪ/, /ŋ/, /ə/, /z/, /w/

8. Which one of the following lists contains all monophthong sounds?

A. /ð/, /ə/, /p/, /r/, /ə/
B. /ʊ/, /s/, /ɛ/, /ɔ:/, /v/
C. /ɔ:/, /ɪ/, /ɜ:/, /e/, /ʌ/
D. /ɪ/, /ŋ/, /ə/, /z/, /w/

9. Which one of the following lists contains all diphthong sounds?

A. /ɔɪ/, /eə/, /eɪ/, /ʊə/, /əʊ/
B. /ʊ/, /i:/, /ɜ:/, /ɔ:/, /v/
C. /ɔɪ/, /eɪ/, /ɜ:/, /eə/, /aɪ/
D. /ɪ/, /ŋ/, /ə/, /z/, /w/

10. The English language has ……..pure vowel sounds and ……diphthongs.

A. 12, 10
B. 10, 6
C. 8, 4
D. 12, 8

11. The total number of consonant sounds in English is…..

A. 20
B. 24
C. 28
D. 26

12. The first sound of the word attack is…….

A. /ə/
B. /ʊ/
C. /ɔɪ/
D. /ɪ/

13. The first sound of the word charlatan is…….

A. /ð/
B. /s/
C. /ʃ/
D. /z/

14. The first sound of the word pneumonia is…….?

A. /p/
B. /n/
C. /j/
D. /ŋ/

15. The first sound of the word philosophy is…….?

A. /p/
B. /h/
C. /ʤ/
D. /f/

Answers for Self Assessment

1.	D	2.	A	3.	C	4.	B	5.	C
6.	D	7.	A	8.	C	9.	A	10.	D
11.	B	12.	A	13.	C	14.	B	15.	D

Review Questions

1. Explain the role of phonation for deciding voiced and voiceless sounds.

2. Write an essay on a topic: How to classify English speech sounds into two broad categories of consonants and vowels.

3. Provide five words each for any five monophthongs of your choice.

4. Provide five words each for any five diphthongs of your choice.

5. Provide five words each for any five consonant sounds of your choice.

Further Readings

Catford, J. C. *A Practical Introduction to Phonetics.* Clarendon Press, 1988.

Davenport, M. and Stephen J. Hannahs. *Introducing Phonetics and Phonology.* Routledge, 2013.

Ladefoged, P. and Keith Johnson. *A Course in Phonetics*. Cengage Learning, 2014.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Stevens, K. N. *Acoustic Phonetics*. MIT Press, 2000.

Web Links

https://www.yorku.ca/earmstro/journey/phonation.html

https://www.britannica.com/topic/speech-language/Theory-of-voice-production

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5412481/

https://www.ukessays.com/essays/english-language/voiced-and-voiceless-sounds-of-english-english-language-essay.php#:~:text=A%20voiced%20sound%20is%20one,and%20%5Bz%5D%20in%20English.

https://www.bbc.co.uk/worldservice/learningenglish/grammar/pron/features/voicing/

Unit 05: Vowels-I

CONTENTS

Objectives

Introduction

5.1 Basic Terminologies

5.2 Monophthong Sounds: Words with IPA Transcription

5.3 Diphthong Sounds: Words with IPA Transcription

5.4 Monophthong Sounds: Sagittal Section View

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with the vowel trapezium model
- acquaint with the Cardinal vowel model
- understand short vowel sounds through phonic drills
- understand long vowel sounds through phonic drills
- acquaint with the idea of Quality-Quantity aspect of vowels
- formulate proprioceptive awareness about the role of jaw, tongue, & lips in vowel sounds production

Introduction

This unit starts with laying focus on certain important terminologies related to vowel sounds before discussing in details about English monophthongs.Here, we focus on pure vowels (also known as monophthongs) as they provide a single sound while pronouncing the words. While producing these sounds, one will not be able to notice any glide or shift from one sound to another. If one observes the position of the tongue, the mouth will remain the same when these words are pronounced. There are 12 pure vowels or monophthongs in English – /iː/, /ɪ/, /ʊ/, /uː/, /e/, /ə/, /ɜː/, /ɔː/, /æ/, /ʌ/, /ɑː/ and /ɒ/.

Caution: Take care of correct pronunciation

Monophthong is pronounced as /ˈmɒnəfθɒŋ/

Diphthong is pronounced as /ˈdipθɒŋ/

5.1 Basic Terminologies

Vowel Trapezium Model:A vowel trapezium model or vowel diagram or vowel chart is a schematic arrangement of the vowels. Vertical position on the diagram denotes the

vowel closeness, with close vowels at the top of the diagram, and horizontal position denotes the vowel backness, with front vowels at the left of the diagram. Vowels are unique in that their main features do not contain differences in voicing, manner, or place of articulation. Vowels differ only in the position of the tongue when voiced. The tongue moves vertically and horizontally within the oral cavity which is also called as quality and quantity aspects of vowel production.

In the vowel diagram, convenient reference points are provided for specifying tongue position. The position of the highest point of the arch of the tongue is considered to be the point of articulation of the vowel. The vertical dimension of the vowel diagram is known as vowel height, which includes high, central (mid), or low vowels. The horizontal dimension of the vowel diagram includes tongue advancement and identifies how far forward the tongue is located in the oral cavity during production. Vowels are also categorized by the tenseness or laxness of the tongue. The schwa [ə] is in the center of the chart and is frequently referred to as the neutral vowel. Here, the vocal tract is in its neutral state and creates a near perfect tube. For other vowels, there is a necessary movement of the vocal tract and tongue away from the neutral position, either up/down or backward/forward.

The vowel systems of most languages can be represented by vowel diagrams. Usually, there is a pattern of even distribution of marks on the chart, a phenomenon that is known as vowel dispersion. English has a vowel diagram that is quadrilateral which is also called as vowel quadrilateral or vowel trapezium. Refer to fig. 5.1 and 5.2 for more comprehensive ideas about English vowel sounds.

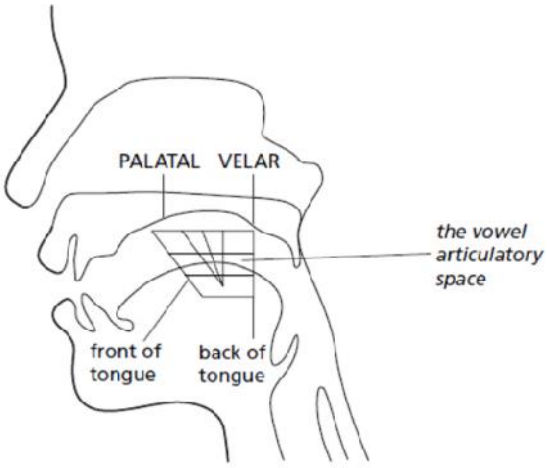


Fig. 5.1 Vowel trapezium model

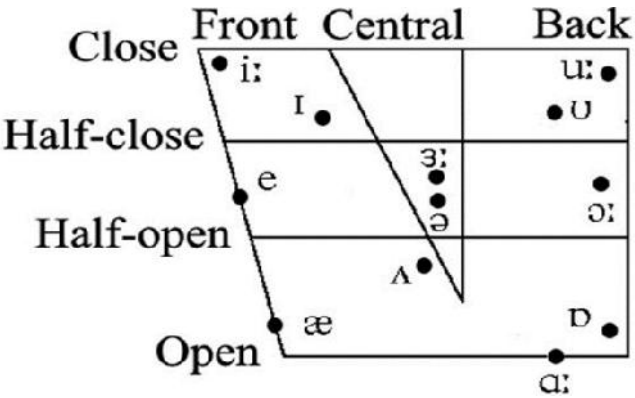


Fig. 5.2 Vowel trapezium model with phonemic marking

Aspects of vowel sounds: Vowel features describe the height of the tongue in the oral cavity (high, mid, low), the part of the tongue (front, central, back), the degree of roundness of lips (round, neutral, spread).

- high: the tongue is raised towards the hard or soft palate. This also indicates close jaw position
- mid: the tongue is partially raised towards the hard or soft palate
- low: the tongue is lowered away from the hard or soft palate. This also indicates open jaw position
- front: the blade of the tongue
- back: the body of the tongue or dorsum
- roundness: protrusion of lips
- spread lips: tense spread of lips
- neutral: lips remain in neutral relaxed position

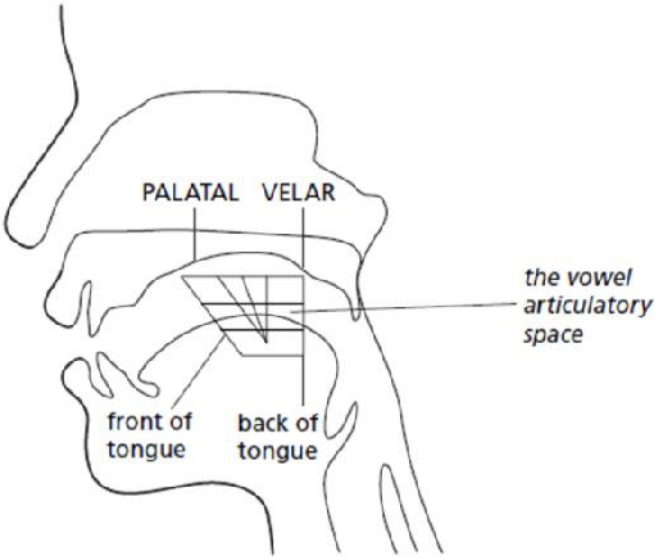


Fig. 5.3 Quality aspect of vowel sounds

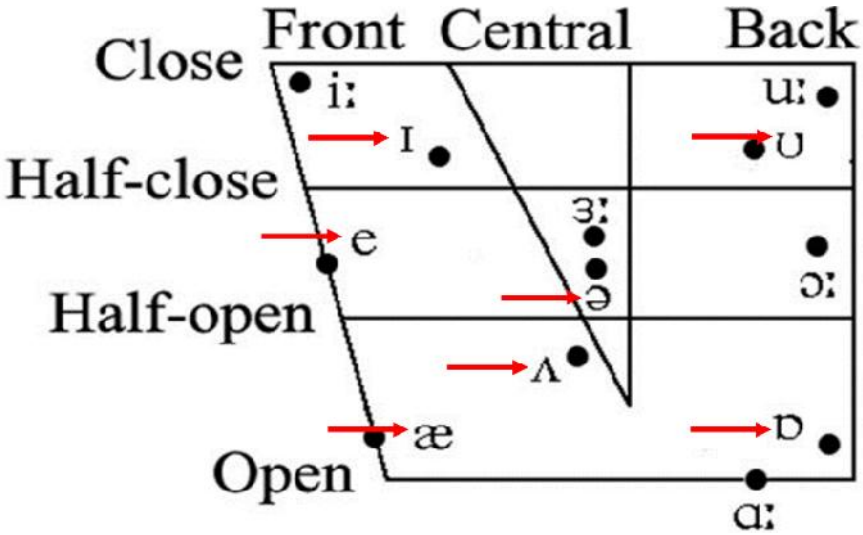


Fig. 5.4 Quantity aspect of vowel sounds

Tongue position in vowels: Tongue position refers to the horizontal tongue placement during the articulation of a vowel relative to the back of the mouth. In front vowels, such as /i:/, the tongue is positioned forward in the mouth, whereas in back vowels, such as /u:/, the tongue is positioned towards the back of the mouth.

Lip position in vowels: Lip position is reflected through different formations of lips. Roundedness refers to whether the lips are rounded or not. In case of front vowels, such as /iː/, /I/, /æ/ the lips remain spread, in case of middle vowels like /ə/, /ɜː/ the lips remain in neutral position whereas the lips get into rounded formations in back vowels like /uː/, /ɒ/.

Jaw movement in vowels: Jaw movements reflect openness and closeness of the oral cavity. Height refers to the vertical position of the tongue relative to either the roof of the mouth or the aperture of the jaw. In high vowels, such as /iː/ and /uː/, the tongue is positioned high in the mouth, whereas in low vowels, such as /æ/ and /ɒ/, the tongue is positioned low in the mouth and jaw remains open.

Daniel Jones Cardinal Vowel Diagram: Cardinal vowels are a set of reference vowels used by phoneticians in describing the sounds of languages. They are classified depending on the position of the tongue relative to the roof of the mouth, how far forward or back is the highest point of the tongue, and the position of the lips (rounded or unrounded).

A cardinal vowel is a vowel sound produced when the tongue is in an extreme position, either front or back, high or low. The current system was systematised by Daniel Jones in the early 20th century. The given speech sounds numbered from 1 to 8 represent cardinal vowel sounds as presented in the fig. 5.5 showing all those sounds position in the trapezium model along with their symbols.

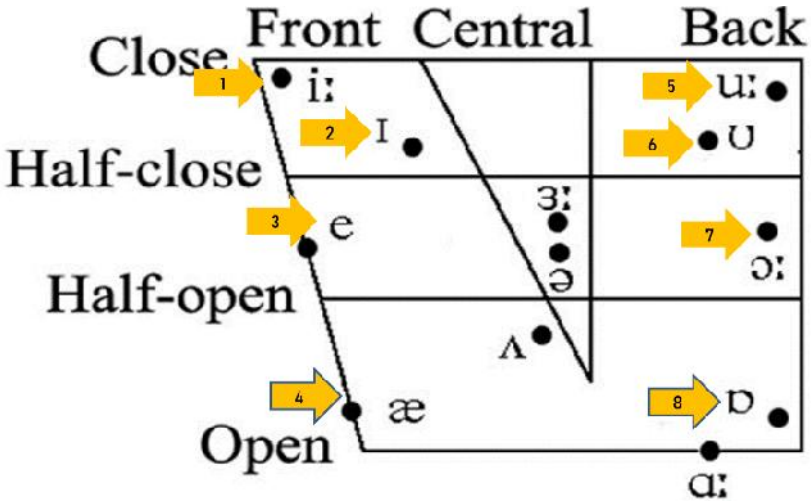


Fig. 5.5 English Cardinal vowel sounds

5.2 Monophthong Sounds: Words with IPA Transcription

A monophthong is a pure vowel sound, one whose articulation at both beginning and end is relatively fixed, and which does not glide up or down towards a new position of articulation. A vowel sound whose quality does not change over the duration of the vowel is called a pure vowel.

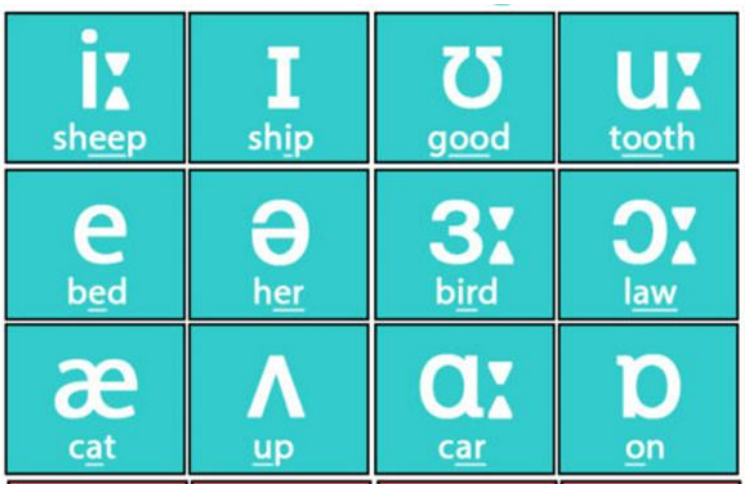


Fig. 5.6 English monophthongs with their symbols and example word

Phonic drills: Let us understand these monophthong sounds with some examples in IPA transcription forms.

Monophthong /iː/ as in

lead	/liːd/
wheat	/wiːt/
been	/biːn/
cheek	/ʧiːk/
feel	/fiːl/
reach	/riːʧ/
bead	/biːd/
leak	/liːk/
heel	/hiːl/
wheel	/wiːl/

Monophthong /ɪ/ as in

lid	/lɪd/
wit	/wɪt/
bin	/bɪn/
chick	/ʧɪk/
fill	/fɪl/
rich	/rɪʧ/
bid	/bɪd/
lick	/lɪk/
hill	/hɪl/
shrill	/ʃrɪl/

Monophthong /e/ as in

lead	/liːd/
led	/lɛd/
wet	/wɛt/
Ben	/bɛn/

check /ʧɛk/

cheque /ʧɛk/

fell /fɛl/

wretch /rɛʧ/

ten /tɛn/

bet /bɛt/

Monophthong /æ/ as in

tan /tæn/

bat /bæt/

pan /pæn/

sacks /sæks/

dad /dæd/

mash /mæʃ/

mad /mæd/

bad /bæd/

lack /læk/

flak /flæk/

Monophthong /ə/ as in

about /əˈbaʊt/

perhaps /pəˈhæps/

entertain/ ˌɛntəˈteɪn/

dinners /ˈdɪnəz/

amateur /ˈæmətə(:)/

comfortable/ˈkʌmf(ə)təbl/

ignorant /ˈɪgnərənt/

understand /ˌʌndəˈstænd/

pilot /ˈpaɪlət/

permanent /ˈpɜːmənənt/

Monophthong /ɜː/ as in

purse /pɜːs/

heard /hɜːd/

perched /pɜːʧt/

burn /bɜːn/

turn /tɜːn/

learn /lɜːn/

firm /fɜːm/

lurk /lɜːk/

jerk /ʤɜːk/

clerk /klɑːk/

Monophthong /ʌ/ as in

ton /tʌn/

but	/bʌt/
pun	/pʌn/
luck	/lʌk/
flush	/flʌʃ/
gush	/gʌʃ/
flood	/flʌd/
bud	/bʌd/
hulk	/hʌlk/
ton	/tʌn/

Monophthong /u:/ as in

food	/fu:d/
wool	/wʊl/
cooed	/ku:d/
wooed	/wu:d/
pool	/pu:l/
fool	/fu:l/
drool	/dru:l/
tool	/tu:l/
stool	/stu:l/
fuel	/fjʊəl/

Monophthong /ʊ/ as in

should	/ʃʊd/
would	/wʊd/
could	/kʊd/
look	/lʊk/
cook	/kʊk/
took	/tʊk/
pull	/pʊl/
bull	/bʊl/
good	/gʊd/
book	/bʊk/

Monophthong /ɔ:/ as in

shored	/ʃɔ:d/
cord	/kɔ:d/
ward	/wɔ:d/
Paul	/pɔ:l/
horse	/hɔ:s/
author	/ˈɔ:θə/
autumn	/ˈɔ:təm/
dawn	/dɔ:n/
lawyer	/ˈlɔ:jə/

snore /snɔ:/

Monophthong /ɑ:/ as in

lark /lɑ:k/

dark /dɑ:k/

mark /mɑ:k/

card /kɑ:d/

last /lɑ:st/

fast /fɑ:st/

barks /bɑ:ks/

harp /hɑ:p/

dwarf /dwɔ:f/

barn /bɑ:n/

Monophthong /ɒ/ as in

lock /lɒk/

flock /flɒk/

rock /rɒk/

dock /dɒk/

mock /mɒk/

lost /lɒst/

box /bɒks/

fox /fɒks/

cop /kɒp/

lock /lɒk/

Notes on monophthong sounds

- IPA Transcription chart
- Phonic drills

5.3 Diphthong Sounds: Words with IPA Transcription

A diphthong is also known as a gliding vowel which is a combination of two adjacent vowel sounds within the same syllable. Technically, a diphthong is a vowel with two different targets: that is, the tongue (and/or other articulators) moves during the pronunciation of the vowel. Diphthongs contrast with monophthongs, where the tongue or other speech organs do not move and the syllable contains only a single vowel sound. For instance, in English, the word *ah* is spoken as a monophthong /ɑ:/, while the word *ow* is spoken as a diphthong in most varieties /aʊ/.

Fig. 5.7 English diphthongs with their symbols and example word

Phonic drills: Let us understand these diphthongsounds with some examples in IPA transcription forms.

Diphthong /ɪə/ as in

deer /dɪə/

near /nɪə/

fear /fɪə/

beer /bɪə/

ear /ɪə/

clear /klɪə/

real /rɪəl/

yearly /ˈjɪəli/

really /ˈrɪəli/

fiercely /ˈfɪəsli/

Diphthong /ʊə/ as in

sure /ʃʊə/

pure /pjʊə/

allure /əˈljʊə/

puritanical /ˌpjʊərɪˈtænɪkəl/

surety /ˈʃʊərəti/

purity /ˈpjʊərɪti/

tourism /ˈtʊərɪz(ə)m/

tourist /ˈtʊərɪst/

purely /ˈpjʊəli/

poor /pʊə/

Diphthong /eə/ as in

pair	/peə/
hair	/heə/
fair	/feə/
dare	/deə/
wear	/weə/
bare	/beə/
airs	/eəz/
wary	/ˈweəri/
rarely	/ˈreəli/
hairy	/ˈheəri/

Diphthong /eɪ/ as in

puree	/ˈpjʊəreɪ/
melee	/ˈmɛleɪ/
play	/pleɪ/
say	/seɪ/
may	/meɪ/
day	/deɪ/
late	/leɪt/
paper	/ˈpeɪpə/
rake	/reɪk/
fake	/feɪk/

Diphthong /ɔɪ/ as in

toy	/tɔɪ/
boy	/bɔɪ/
ploy	/plɔɪ/
boil	/bɔɪl/
foil	/fɔɪl/
toil	/tɔɪl/
soil	/sɔɪl/
poison	/ˈpɔɪzn/
oil	/ɔɪl/
voice	/vɔɪs/

Diphthong /aɪ/ as in

Light	/laɪt/
fight	/faɪt/
bright	/braɪt/

might /maɪt/

blight /blaɪt/

frighten /ˈfraɪtn/

glide /glaɪd/

pride /praɪd/

night /naɪt/

nine /naɪn/

Diphthong /əʊ/ as in

slow /sləʊ/

flow /fləʊ/

know /nəʊ/

load /ləʊd/

goad /gəʊd/

board /bɔ:d/

row /rəʊ/

dote /dəʊt/

rote /rəʊt/

bloat /bləʊt/

Diphthong /aʊ/ as in

town /taʊn/

clown /klaʊn/

frown /fraʊn/

down /daʊn/

now how /naʊ/ /haʊ/

loud /laʊd/

row /rəʊ/

doubt /daʊt/

township /ˈtaʊnʃɪp/

gown /gaʊn/

Notes on diphthong sounds

- IPA Transcription
- Phonic drills

5.4 Monophthong Sounds: Sagittal Section View

Long monophthong vowel sounds: These are sounds which are little longer in duration than short vowels and colon marking at the end indicates the extended duration of vowel thus the name long vowel. Following figures depict sagittal section of each of these 5 long monophthong sounds.

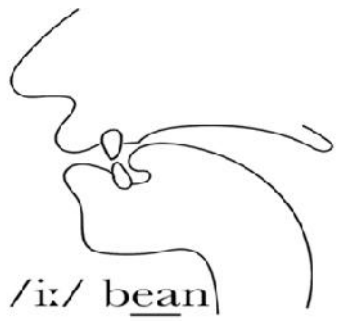


Fig. 5.8 Monophthong long vowel sound

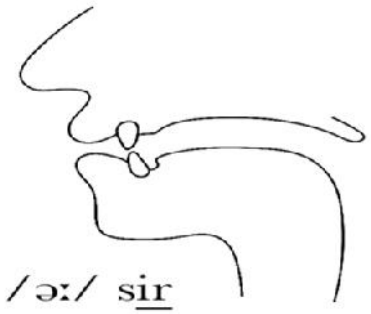


Fig. 5.9 Monophthong long vowel sound

Fig. 5.10 Monophthong long vowel sound

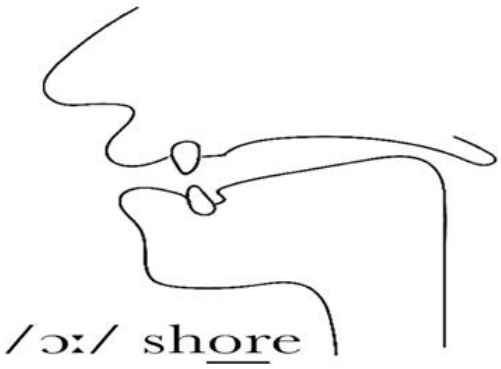


Fig. 5.11 Monophthong long vowel sound

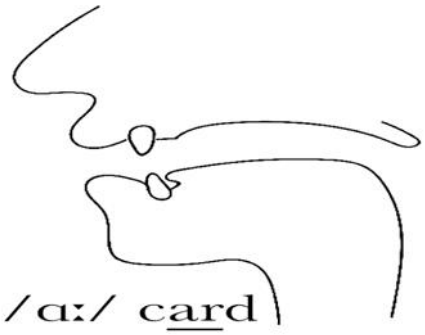


Fig. 5.12 Monophthong long vowel sound

Short monophthong vowel sounds: These are sounds which are of normal duration as compared to long vowels. Following figures depict sagittal section of each of these 7short monophthong sounds.

/ɪ/ (bit)

Fig. 5.13 Monophthong short vowel sound

/ɛ/ (bet)

Fig. 5.14 Monophthong short vowel sound

/æ/ (bat)

Fig. 5.15 Monophthong short vowel sound

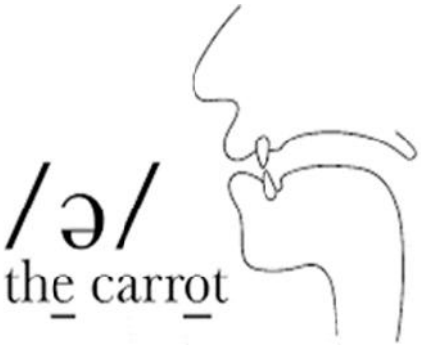


Fig. 5.16 Monophthong short vowel sound

/ʌ/ (but)

Fig. 5.17 Monophthong short vowel sound

/ʊ/ (book)

Fig. 5.18 Monophthong short vowel sound

/ɑ/ (box)

Fig. 5.19 Monophthong short vowel sound

Keywords

English vowel sounds: English speech sounds that are made with no obstruction of the vocal tract. In other words, a speech soundcreated by the relatively free passage of breath through the larynx and oral cavity, usually forming the most prominent and central sound of a syllable.

Monophthong: A single vowel articulated without change in quality throughout the course of a syllable, as the vowel of English *bed* /e/.

Diphthong:A complex speech sound or glide that begins with one vowel and gradually changes to another vowel within the same syllable, as /ai/ in *night* or /eI/ in *weight*.

Summary

This unit covered ideas on concept of monophthongs through illustrative examples and sagittal section of the articulators producing these sounds.

Self Assessment

1. Which one of the following is NOT a relevant physical aspect of articulation for vowel sounds?

A. Height of tongue or open-half open-close position of Jaw
B. Front-middle-back positions of tongue
C. Degree of roundness of lips
D. Place of obstruction of the oral cavity

2. Which one of the following is not true for English vowel sounds?

A. Vowels sounds are 24 in number
B. Vowels can be categorized as Monophthong, Diphthong & Triphthong
C. Monophthong sounds are 12 in number
D. Diphthong sounds are 8 in number

3. Which one of the following has common denominator of vowel sound /i:/?

A. lid, wit, bit, hit, bid

B. lead, bead, heat, feel, wheel
C. led, wed, bed, met, set
D. hook, book, cook, look, took

4. Which one of the following has common denominator of vowel sound /u:/?

A. toy, boy, ploy, noise, joy
B. may, say, play, day, late
C. food, wool, pool, stool, wooed
D. should, would, could, look, cook

5. Which one of the following has common denominator of vowel sound /ɔɪ/?

A. lid, wit, bit, hit, bid
B. toy, boy, ploy, noise, joy
C. may, say, play, day, late
D. deer, clear, hear, fear

6. Which one of the following is correct about Cardinal Vowel diagram as pioneered by Daniel Jones?

A. These are a set of reference vowels used by phoneticians in describing the sounds of languages.
B. They are classified depending on the position of the jaw relative to the roof of the mouth, where tongue and lips have a very minimal role to play.
C. They are 12 in number
D. Some of us are instinctively tuned to produce cardinal vowels perfectly well whereas others are not no matter how much they try learning about them.

7. Which one of the following is true for English long vowel sounds?

A. These are 05 in number
B. These are 07 in number
C. They are also known as Triphthongs
D. They have semicolon denoting extended duration

8. Which one of the following has common denominator of vowel sound /ɑ:/?

A. load, toad, road, goad, ode
B. lead, bead, heat, feel, wheel
C. ask, flask, task, mask, bask
D. hook, book, cook, look, took

9. Which one of the following has common denominator of vowel sound /ɔ:/?

A. toy, boy, ploy, noise, joy
B. may, say, play, day, late
C. fall, wall, call, all, tall

D. ask, flask, task, mask, bask

10. Which one of the following has common denominator of vowel sound / ɜ:/?

A. fall, wall, call, all, tall
B. turf, burp, surf, work, turn
C. may, say, play, day, late
D. mood, food, rude, use, muse

11. Which one of the following is correct about Sagittal Speech Section?

A. is an anatomical division of face denoting speech articulators into right and left parts
B. is a phonetic representation of speech using International Phonetic Alphabet
C. is an acoustic representation of speech using spectrographic analysis
D. is a discourse analysis of speech using conversational analysis techniques

12. Which one of the following is true for English short vowel sounds?

A. These are 05 in number
B. These are 07 in number
C. They are also known as Triphthongs
D. They have colon denoting extended duration

13. Which one of the following has common denominator of vowel sound /ɪ/?

A. fed, bed, bled, hell, ten
B. lad, fan, can, man, tan
C. till, tin, skin, knit, fit
D. hook, book, cook, look, took

14. Which one of the following has common denominator of vowel sound /æ/?

A. toy, boy, ploy, noise, joy
B. fan, can, man, tan, ban
C. fall, wall, call, all, tall
D. ask, flask, task, mask, bask

15. Which one of the following has common denominator of vowel sound /ɒ/?

A. rod, broad, taught, fought, bought
B. turf, burp, surf, work, turn
C. nut, cud, bus, duck, come
D. mood, food, rude, use, muse

Answers for Self Assessment

1.	D	2.	A	3.	B	4.	C	5.	B
6.	A	7.	A	8.	C	9.	C	10.	B
11.	A	12.	B	13.	C	14.	B	15.	A

Review Questions

1. Explain the difference between monophthongs and diphthongs with relevant examples.

2. Write an essay on a topic: Idea of Cardinal Vowels Help in Understanding English Vowels.

3. Explain how vowel sounds are different in articulation from consonant sounds.

4. Write an essay on a topic: Quadrilateral Shape of Vocal Tract Helps to Understand Vowel Sounds.

5. Make your own choice of any two long and two short vowels for explanation through example words.

Further Readings

Sweet, Henry. *A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform.* Cambridge University Press, 2013.

Jones, Daniel. *An English Pronouncing Dictionary.* Cambridge University Press, 2011.

Ladefoged, Peter, and Ian Maddieson. *The Sounds of the World's Languages.* Blackwell Publishers, 1996.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Web Links

https://www.phon.ucl.ac.uk/courses/spsci/iss/week5.php

https://essentialsoflinguistics.pressbooks.com/chapter/2-8-vowels/

https://www.mimicmethod.com/ft101/vowel-height/

http://godmas1.blogspot.com/2015/05/with-help-of-vowel-of-trapezium-and.html

http://www.siff.us.es/fil/publicaciones/apuntes/teresals/apartado%204-0.pdf

https://icspeech.com/vowel-sounds.html

https://www.englishbix.com/monophthongs-pure-vowels-examples/

Unit 06: Vowels-II

CONTENTS

Objectives

Introduction

1.1 Basic Terminologies

1.2 Diphthong

1.3 Triphthong

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with the difference between Monophthongs & Diphthongs
- acquaint with the difference between Diphthongs & Triphthongs
- understand diphthongs and triphthongs through phonic drills
- formulate proprioceptive awareness about the role of jaw, tongue, & lips in vowel sounds production

Introduction

The first two segments of the unit focus on establishing differences between monophthong and diphthong on the one hand and then afterwards another set of differences between diphthong and triphthong.

Then next two segment deal in good details about explaining diphthong and triphthong with illustrative examples, sagittal section view and phonic drills.

1.1 Basic Terminologies

Difference between monophthongs and diphthongs:A simplistic statement to begin with will be, like this: A monophthong is a vowel sound represented by one symbol, and a diphthong depicts the same through two symbols. Let us go into some details.

Monophthong is simply a vowel where the word monophthong comes from the old Greek language. *Mono* means one or single, and the *-phthong* means sound or tone. The word monophthong shows that a vowel is spoken with exactly one articulatory position represented by one symbol. For example, when you say *teeth*, then while you are creating the sound of the /i:/nothing changes articulation-wise when one makes this frontal long vowel sound.

Whereas on the other hand, a Diphthong is a vowel that one has to move one's mouth into two different positions to make. Diphthong comes from the old Greek language where *Di* means two or double, while the part *-phthong* means sound or tone. It is a vowel where two different vowel qualities can be heard. For examples are:*waist, die, noise, road, house, fierce, bear, sure*. Each of these

words is a depiction of diphthong vowel presence: /eɪ/, /aɪ/, /ɔɪ/, /əʊ/, /aʊ/, /ɪə/, /eə/, /ʊə/ in the same order.

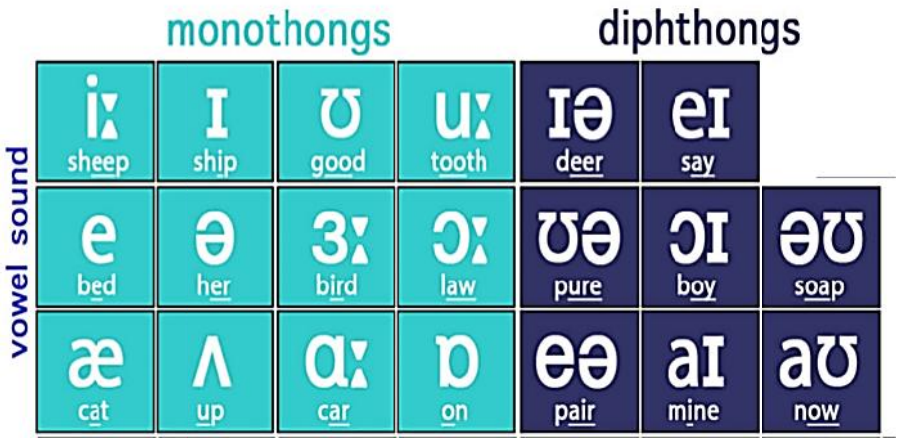


Fig. 6.1 Monophthongs vs. Diphthongs: IPA Representation

The above figure depicts a comparative representation where one can easily observe one-symbol-sound for monophthongs and two-symbol-sound for diphthongs.

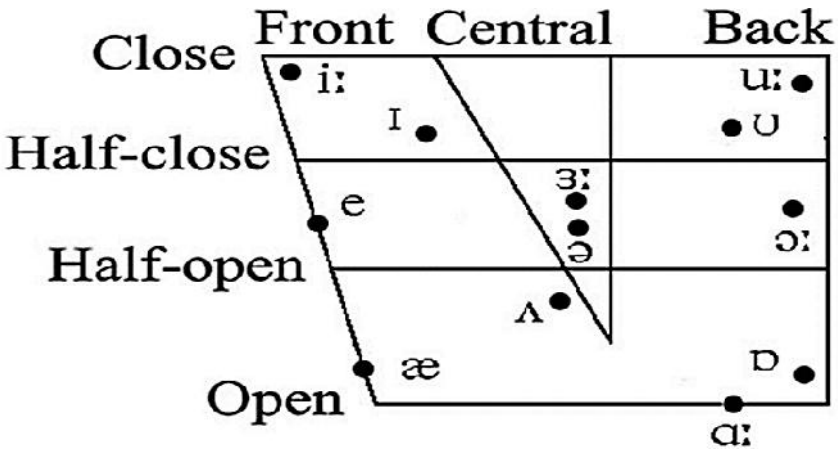


Fig. 6.2 Monophthongs: Phonemic Representation

The above figure depicts an articulatory visualization for monophthongs where entries on axis provide the aperture of mouth opening and position of tongue. Here we can add for further information, back vowel sounds offer rounding of lips as compare to stiff or spread lip position for front vowels and neutral position for mid-vowels.

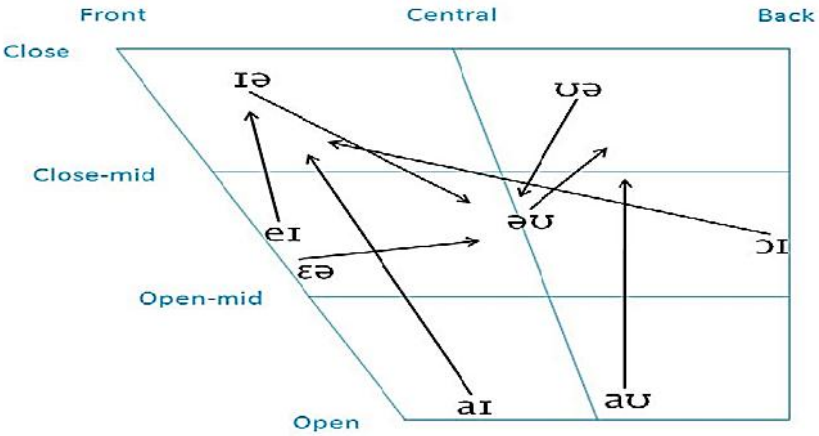


Fig. 6.3 Diphthongs: Phonemic Representation

The above figure depicts an articulatory visualization for diphthongs where entries on axis provide the aperture of mouth opening and position of tongue. Here we can add further information, the arrow signs indicate vowel glide from the starting to the ending monophthong sound. The resultant sound will be an assimilation of two sounds into one thus the name diphthong.

monophthongs			
iː sheep	ɪ ship	ʊ good	uː shoot
e bed	ə teacher	ɜː bird	ɔː door
æ cat	ʌ up	ɑː far	ɒ on

Fig. 6.4 Monophthongs: IPA Representation

The above figure depicts a chart representing monophthongs sounds with their template word for example purposes.

	eɪ wait	ɪə here
əʊ show	ɔɪ boy	ʊə tourist
aʊ cow	aɪ my	eə hair

Fig. 6.5 Diphthongs: IPA Representation

The above figure depicts a chart representing diphthongs sounds with their template word for example purposes.

Difference between diphthongs and triphthong:A simplistic statement to begin with will be, like this: A diphthong is a vowel sound represented by two symbols, and a triphthong depicts the same through three symbols. Let us go into some details.

The word diphthong means *two sounds*which is also known as a gliding vowel, because the one sound literally glides into another. Diphthongs are composed of two vowelsounds.

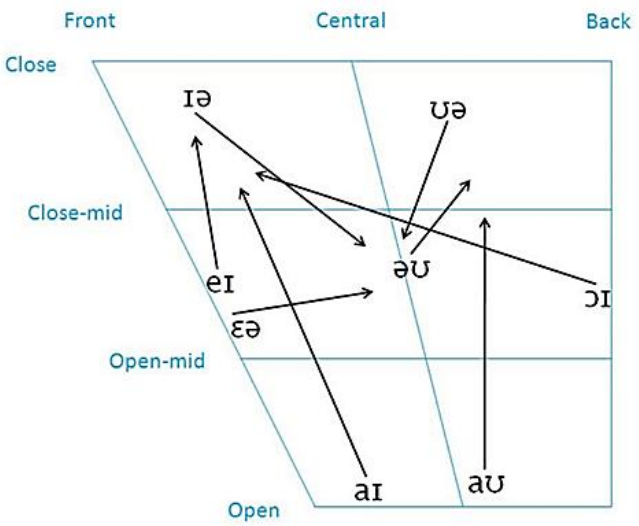


Fig. 6.6 Diphthongs: Phonemic Representation (pointing glide from one vowel sound to another)

There are eight primary diphthongs in the English language. They are:

/eɪ/ as in day, pay, say, lay

/aɪ/ as in sky, buy, cry, tie

/ɔɪ/ as in boy, toy, coy or the first syllable of soya

/ɪə/ as in beer, pier, hear

/eə/ as in bear, pair, and hair

/ʊə/ as in tour, poor or the first syllable of tourist

/əʊ/ as in oh, no, so, or phone

/aʊ/ as in all the words of "How now brown cow!"

Triphthong, as the name represents,means that the nucleus of a single syllable contains three vowel sounds that quickly glide together.

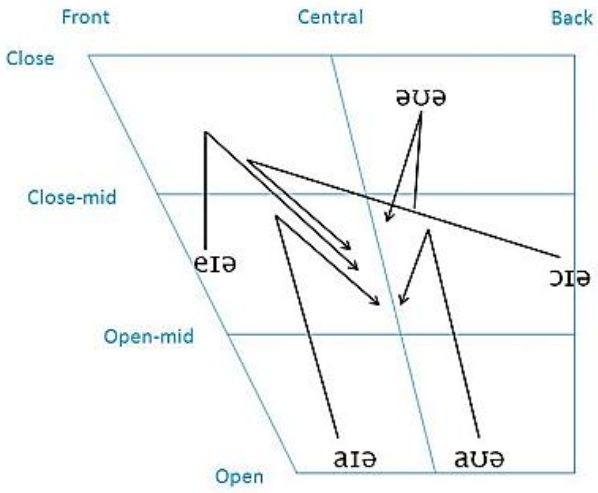


Fig. 6.7 Triphthongs: Phonemic Representation

English has five triphthongs, which are formed by the diphtongs ending in /ɪ/ and /ʊ/ + the sound /ə/. Let's see some examples:

/aʊ/ + /ə/ = [aʊə]	hour
/aɪ/ + /ə/ = [aɪə]	fire
/eɪ/ + /ə/ = [eɪə]	player

/əʊ/ + /ə/ = [əʊə] mower

/ɔɪ/ + /ə/ = [ɔɪə] employer

1.2 Diphthong

The word *diphthong* comes from the Greek and means *two voices* or *two sounds.* In phonetics, a diphthong is a vowel in which there is a noticeable sound change within the same syllable. The process of moving from one vowel sound to another is called glide, which is why another name for a diphthong is a gliding vowel but they are also known as compound vowels, complex vowels, or moving vowels. The sound change that turns a single vowel into a diphthong is called diphthongization.

/eɪ/ This diphthong creates sounds similar to *great* and is most often used with letter combinations that include ey, ay, ai and a. Example words: break, rain, weight, hate, blade etc.

/aɪ/ This diphthong creates sounds similar to *eye* and most often occurs with letter combinations that include i, igh, and y. Examples: crime, lime, night, flight, height etc.

/ɔɪ/ This creates sounds similar to *boy* and most often occurs with letter combinations that include oy and oi. Examples: oil, toy, coil, boil, noise, boy etc.

/ɪə/ This diphthong creates sounds similar to *ear* and most often occurs with letter combinations that include ee, ie and ea. Examples: beer, near, tier, clear, fear etc.

/eə/ This diphthong creates sounds similar to *air* and most often occurs with letter combinations that include ai, a, and ea. Examples: lair, stair, bear

/ʊə/This diphthong creates sounds similar to *sure* and most occurs with letter combinations that include oo, ou, u, and ue. Examples: lure, pure, tour, doer, tourist etc.

/əʊ/ This diphthong creates sounds similar to *boat* and most often occurs with letter combinations that include ow, oa and o. Examples: slow, moan, though, goal, pole etc.

/aʊ/ This diphthong creates sounds similar to *ow!* and most often occurs with letter combinations that include ou and ow. Examples: brown, hound, now, foul, sound etc.

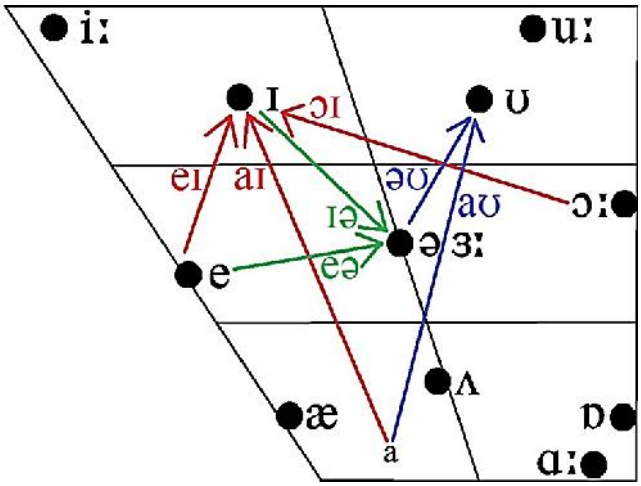


Fig. 6.8Diphthongs: Phonemic Representation-I (pointing glide from one vowel sound to another)

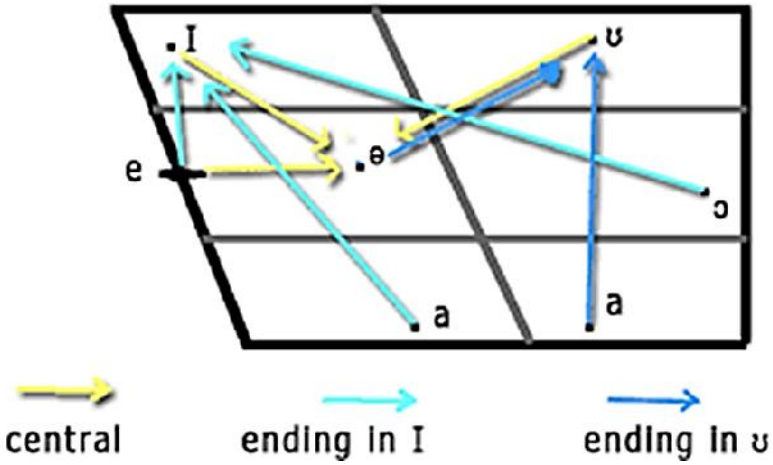


Fig. 6.9 Diphthongs: Phonemic Representation-II (pointing glide from one vowel sound to another)

Sagittal Section: Let us understand these diphthong sounds with the aid of sagittal section observation of the vocal tract which is an anatomical plane dividing the tract into right and left parts thus allowing an inside view.

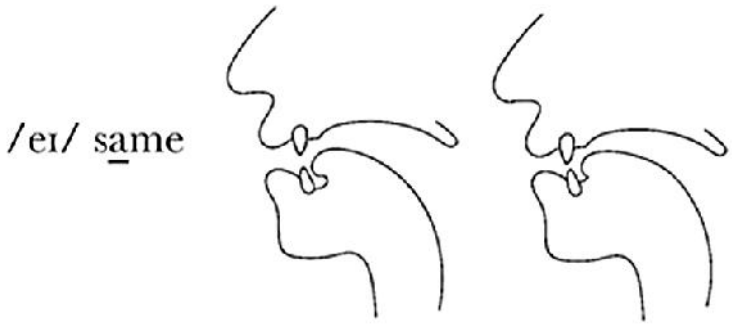


Fig. 6.10 Sagittal section view of /eɪ/

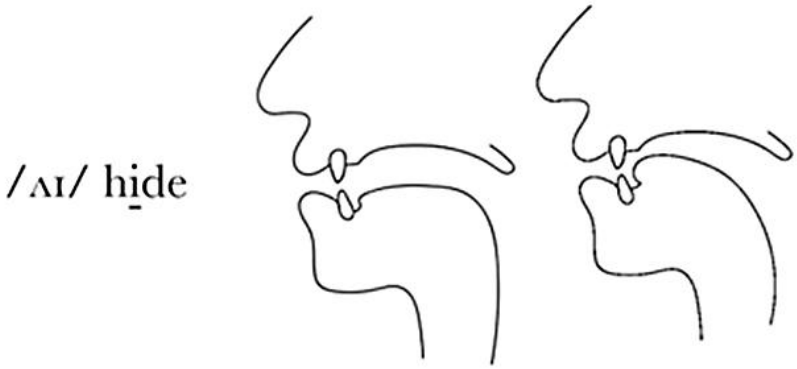


Fig. 6.110 Sagittal section view of /aɪ/

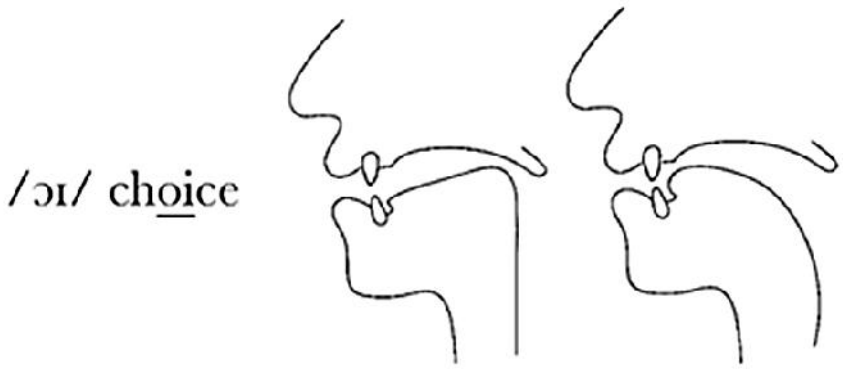


Fig. 6.12 Sagittal section view of /ɔɪ/

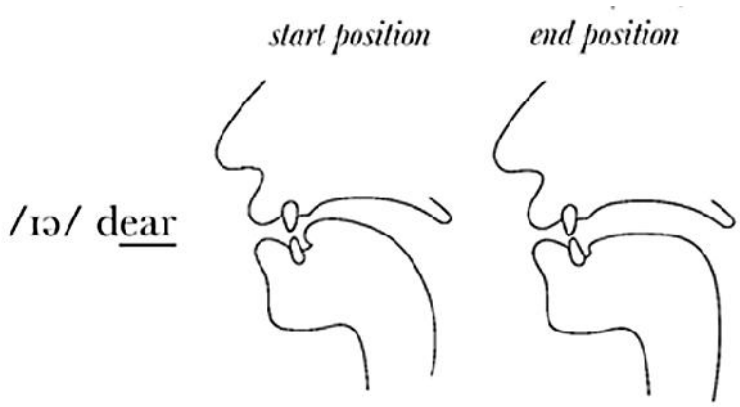


Fig. 6.13 Sagittal section view of /ɪə/

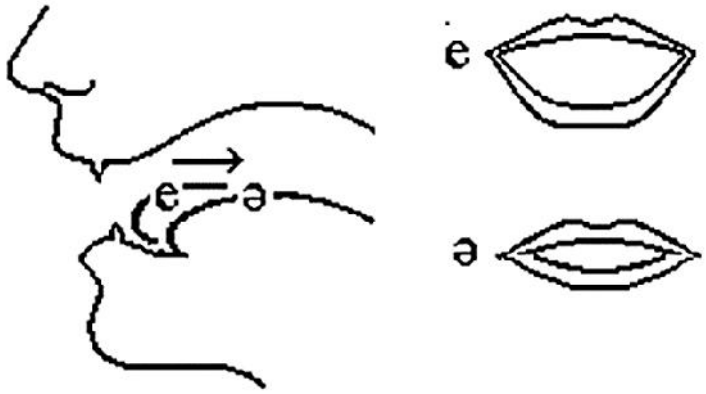


Fig. 6.14 Sagittal section view of /eə/

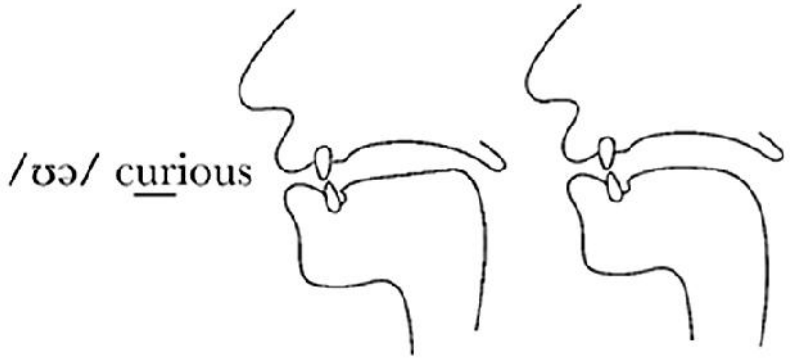


Fig. 6.15 Sagittal section view of /ʊə/

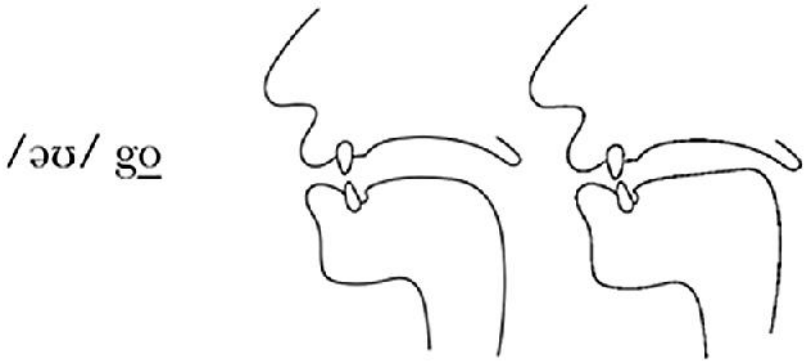


Fig. 6.16 Sagittal section view of /əʊ/

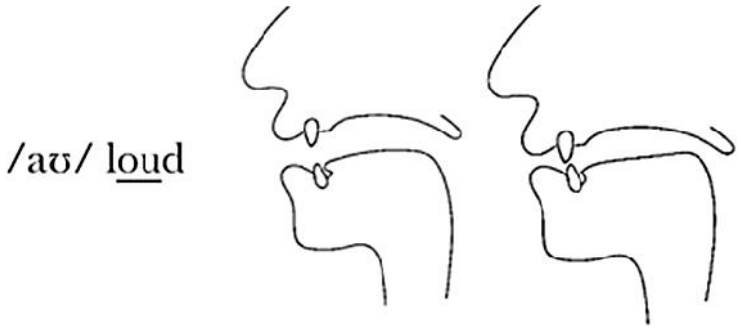


Fig. 6.17 Sagittal section view of/aʊ/

Phonic drills: Let us understand these diphthong sounds with some examples in IPA transcription forms.

Diphthongs /eɪ/ as in

super highway	/ˈsuːpəˌhaɪweɪ/
straight away	/ˈstreɪtəweɪ/
under layment	/ˌʌndəˈleɪmənt/
holiday maker	/ˈhɒlədɪˌmeɪkə/
horse players	/ˈhɔːspleɪəz/
inter playing	/ˈɪntəpleɪɪŋ/
overpayments	/ˌəʊvəˈpeɪmənts/

redisplaying	/ˌriːdɪsˈpleɪɪŋ/
day lightings	/ˈdeɪlaɪtɪŋz/
light weights	/ˈlaɪtweɪts/

Diphthongs /ʌɪ/ as in

superhighway	/ˈsuːpəˌhaɪweɪ/
light hearted	/ˈlaɪtˈhɑːtɪd/
short sighted	/ˌʃɔːtˈsaɪtɪd/
night clothes	/ˈnaɪtkləʊðz/
street lights	/ˈstriːtlaɪts/
spotlighting	/ˈspɒtlaɪtɪŋ/
searchlights	/ˈsɜːʧlaɪts/
nightwalkers	/ˈnaɪtˌwɔːkəz/
prize fighter	/ˈpraɪzˌfaɪtə/
rightfulness	/ˈraɪtfʊlnəs/

Diphthongs /ɔɪ/ as in

voyage	/ˈvɔɪ.ɪdʒ/
poisonous	/ˈpɔɪzənəs/
deployment	/dɪˈplɔɪmənt/
employment	/ɪmˈplɔɪmənt/
unemployment	/ʌn.ɪmˈplɔɪ.mənt/
appointment	/əˈpɔɪnt.mɛnt/
employee	/ˌ(ɪm)ɛmˈplɔɪiː/
disappointment	/dɪsəˈpɔɪntmənt/
boyfriend	/ˈbɔɪ.ˌfɪɛnd/
enjoyment	/ɛnˈdʒɔɪmənt/

Diphthongs /ɪə/ as in

amphitheater	/ˈæmfɪˌθɪətə/
disagreeable	/ˌdɪsəˈgrɪəbl/
unrealizable	/ʌnˈrɪəlaɪzəbl/
multinuclear	/ˌmʌltɪˈnjuːklɪə/
disappearing	/ˌdɪsəˈpɪərɪŋ/
disagreeably	/ˌdɪsəˈgrɪəbli/
appearance	/əˈpɪərəns/
realization	/ˌrɪəlaɪˈzeɪʃən/
nuclear fission	/ˈnjuːklɪə/ /ˈfɪʃən/
clearly	/ˈklɪəli/

Diphthongs /eə/ as in

declare	/dɪˈkleə/
armchair	/ˈɑːɹmtʃɛəɹ/
wheelchair	/ˈwiːltʃɛəɹ/
secretariat	/ˌsɛkɹəˈtɛəɹɪət/
proletariat	/ˌpɹoʊlɪˈtɛəɹi.ə/
precarious	/pɹəˈkɛəɹi.əs/
sectarian	/sɛkˈtɛəɹi.ən/
therein	/ˈðeəɹˈɪn/
egalitarian	/ɪˌgæl.ɪˈtɛə.ɹi.ən/
squarely	/ˈskwɛəɹ.li/

Diphthongs /ʊə/ as in

during	/ˈdjʊəɹɪŋ/
usually	/ˈjuːʒʊəli/
security	/sɪˈkjʊəɹəti/
ensure	/ɪnˈʃʊə/
usual	/ˈjuːʒʊəl/
individual	/ˌɪndɪˈvɪdʒʊəl/
visual	/ˈvɪʒʊəl/
pure	/pjʊə/
intellectual	/ˌɪntəˈlɛktʃʊəl/
spiritual	/ˈspɪɹɪtʃʊəl/

Diphthongs /əʊ/ as in

schoolfellow	/ˈskuːlˌfɛləʊ/
co-ordinators	/kəʊˈɔːdɪneɪtəz/
co-operations	/kəʊˌɒpəˈreɪʃənz/
coordination	/kəʊˌɔːdɪˈneɪʃən/
protozoology	/ˌprəʊtəʊzəʊˈɒləʤi/
homegrown	/ˈhəʊmˈgrəʊn/
home maker	/həʊm/ /ˈmeɪkə/
growth oriented	/grəʊθ/ /ˈɔːriəntɪd/
dome mosaic	/dəʊm/ /məʊˈzeɪɪk/
uploading	/ʌpˈləʊdɪŋ/

Diphthongs /aʊ/ as in

household	/ˈhaʊshəʊld/
mountain	/ˈmaʊntɪn/
foundation	/faʊnˈdeɪʃən/

outcome	/ˈaʊtkʌm/
announcement	/ʌˈnaʊs.mɛnt/
undoubtedly	/ʌnˈdaʊtɪdli/
allowance	/əˈlaʊəns/
accountability	/ə.ˌkaʊn.tə.ˈbɪl.ət.i/
outlook	/ˈaʊtlʊk/
compound	/ˈkʊmpaʊnd/

Notes on diphthongs

- Explanation
- Sagittal section view
- Phonic drills

1.3 Triphthong

A triphthong is a glide from one vowel to another and then to a third, all produced rapidly and without interruption. For example, a careful pronunciation of the word 'hour' begins with a vowel quality similar to /ɑ:/, goes on to /ʊ/ then ends in /ə/. It is called as /aʊə/.

English triphthongs are composed of five closing diphthongs with /ə/ added on the end as explained below:

The sound /eɪə/is composed of the closing diphthong /eɪ/ and the schwa /ə/; thus /eɪ/ + /ə/= /eɪə/ as in the following words: layer /leɪə/, player /pleɪə/, sayer /seɪə/.

The sound /aɪə/is composed of the closing diphthong /aɪ/ and the schwa sound /ə/; thus, /aɪ/ + /ə/= /aɪə/ as in the following words: liar /laɪə/, admire /ədmaɪə/, buyer /baɪə/, tyre /taɪə/, tier /taɪə/, tire /taɪə/, flier /flaɪə/.

The sound /ɔɪə/is composed of the closing diphthong /ɔɪ/ and the schwa sound /ə/; thus, /ɔɪ/ + /ə/=/ɔɪə/ as in the following words: employer /ɪmplɔɪə/, destroyer /dɪstrɔɪə/, enjoyable /ɪndʒɔɪəbl/, buoyant /bɔɪənt/.

The sound /əʊə / is composed of the closing diphthong /əʊ/ and the schwa sound /ə/; thus, /əʊ/ + /ə/=/əʊə/ as in the following words: goer /gəʊə/, borrower /bʊrəʊə/, lower /ləʊə/, thrower /θrəʊə/, mower /məʊə/.

The sound /aʊə / is composed of the closing diphthong /aʊ/ and the schwa sound /ə/; thus, /aʊ/ + /ə/=/aʊə/ as in the following words: hour /aʊə/, flour /flaʊə/, flower /flaʊə/, power /paʊə/

Triphthongs = Diphthongs + Monophthong

eɪ + ə	layer, mayor, player
ɑɪ + ə	admire, fire, hire
ɔɪ + ə	lawyer, royal, soya
əʊ + ə	lower, slower, mower
ɑʊ + ə	power, tower, hour

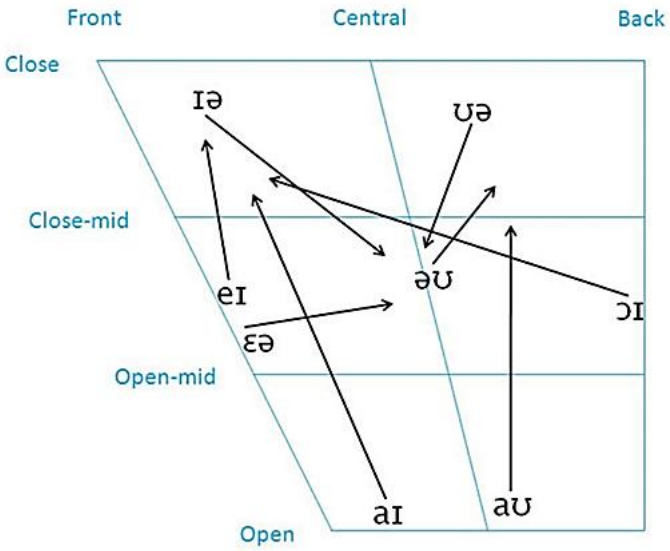


Fig. 6.18 Triphthongs: Phonemic Representation-I (pointing glide from one vowel sound to another)

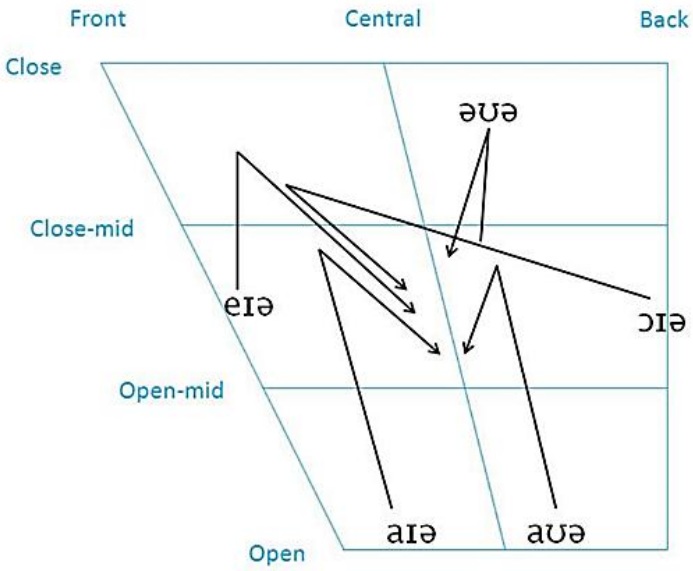


Fig. 6.19 Triphthongs: Phonemic Representation-I (pointing glide from one vowel sound to another)

Sagittal Section: Let us understand these triphthong sounds with the aid of sagittal section observation of the vocal tract which is an anatomical plane dividing the tract into right and left parts thus allowing an inside view.

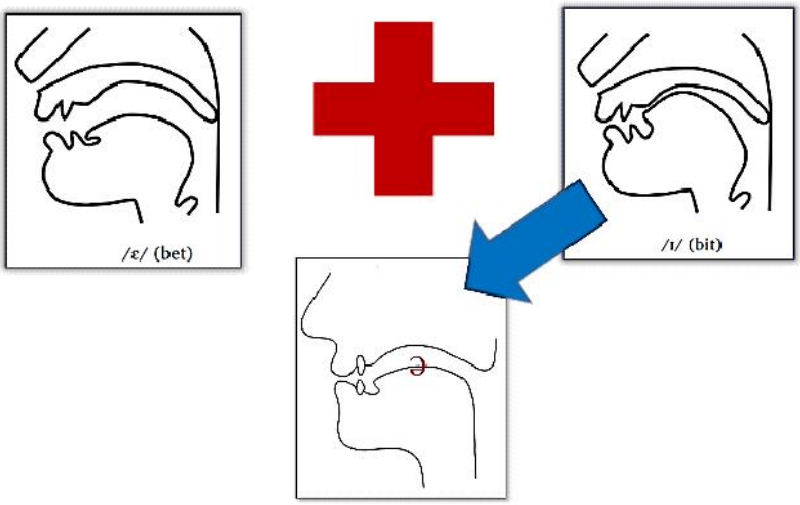


Fig. 6.20 Sagittal section view of/eɪə/

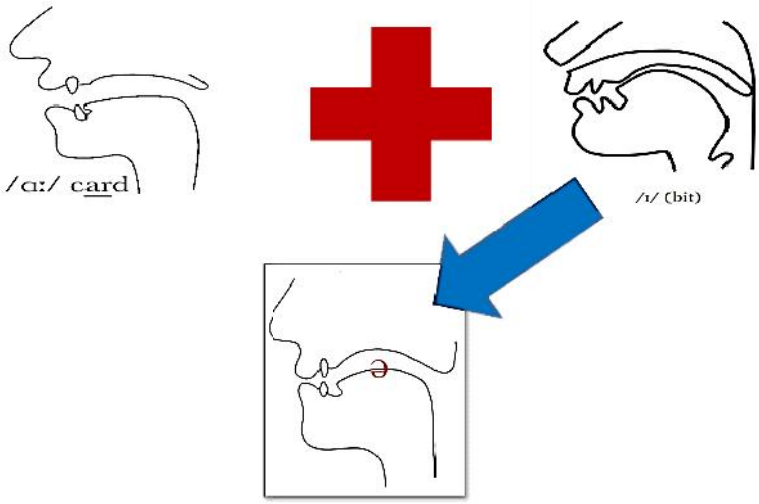


Fig. 6.21 Sagittal section view of /aɪə/

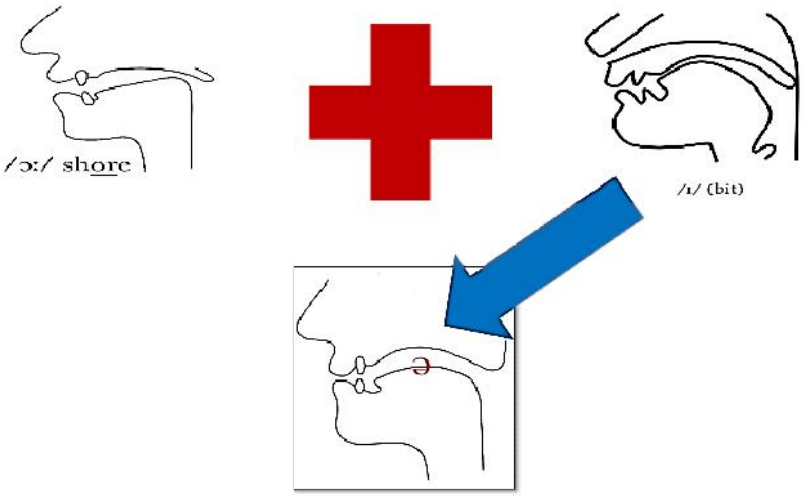


Fig. 6.22 Sagittal section view of /ɔɪə/

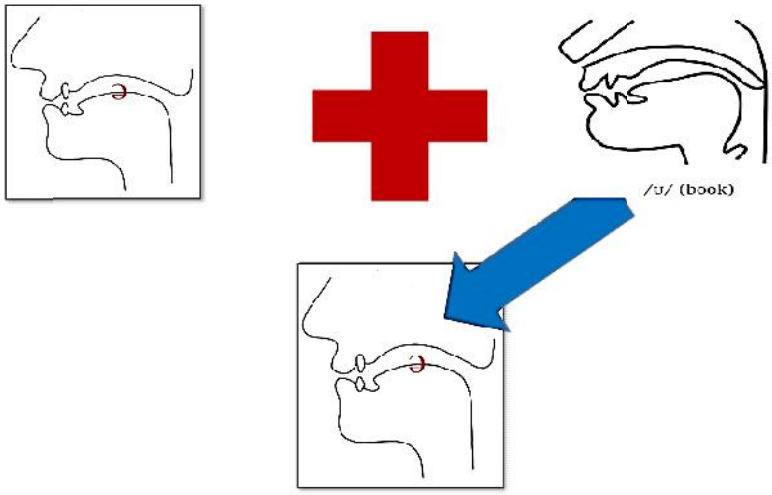


Fig. 6.23 Sagittal section view of /əʊə/

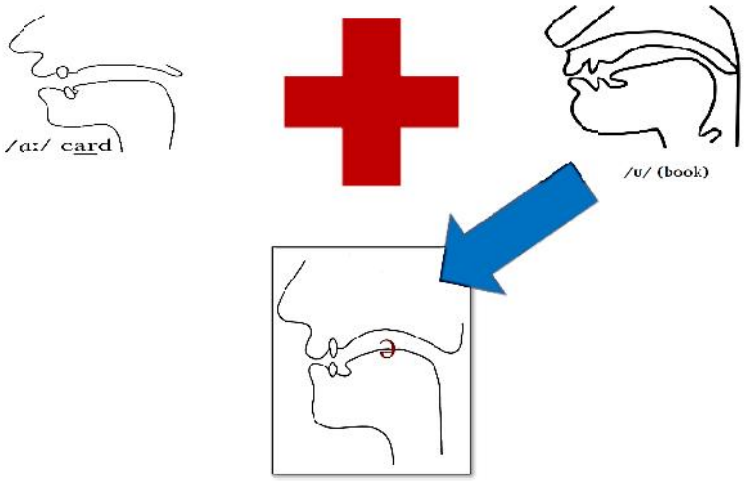


Fig. 6.24 Sagittal section view of /aʊə/

Phonic drills: Let us understand these triphthong sounds with some examples in IPA transcription forms.

Triphthong /eɪə/ as in

player	/ˈpleɪə(ɹ)/
layer	/leɪə/
betrayal	/bɪˈtɪeɪəl/
conveyor	/kənˈveɪə/
bayonet	/ˈbeɪə(ʊ)nɛt/
onomatopoeia	/ˌɒnəˌmætəˈpeɪə/
Himalayas	/ˌhɪməˈleɪəz/
declaring	/dɪˈkleərɪŋ/
sword players	/ˈsɔːdpleɪəz/
super players	/ˌsuːpəˈpleɪəz/

Triphthong /aɪə/ as in

science	/ˈsaɪəns/

entirely	/ɪnˈtaɪəli/
hierarchical	/ˌhaɪəɹˈɑːkɪkəl/
scientific	/ˌsaɪənˈtɪfɪk/
violence	/ˈvaɪələns/
liability	/laɪəˈbɪlɪti/
empire	/ˈɛmpaɪə/
inquiry	/ɪnˈkwaɪəɹi/
reliable	/ɹɪˈlaɪəbəl/
diagnostic	/daɪəˈgnɒstɪk/

Triphthong /ɔɪə/ as in

royalty	/ˈɹɔɪəlti/
annoyance	/əˈnɔɪəns/
flamboyant	/flamˈbɔɪənt/
joyous	/d͡ʒɔɪəs/
clairvoyance	/klɛɹˈvɔɪəns/
employability	/ɪmˌplɔɪəˈbɪləti/
coir	/ˈkɔɪə/
viceroyalty	/vaɪsˈɹɔɪəlti/
loir	/lɔɪəɹ/
uncoil	/ʌnˈkɔɪəl/

Triphthong /əʊə/ as in

zoological	/zəʊəˈlɒdʒɪkəl/
protozoan	/ˌpɹəʊtəˈzəʊən/
zoophyte	/ˈzəʊəfʌɪt/
blower	/ˈbləʊə/
lawn mower	/lɔːn/ /ˈməʊə/
blower	/ˈbləʊə/
flower	/ˈfləʊə/
lower	/ˈləʊə/
slower	/ˈsləʊə/
mower	/ˈməʊə/

Triphthong /aʊə/ as in

power	/ˈpaʊəɹ/
hour	/ˈaʊəɹ/
allowance	/əˈlaʊəns/
flour	/ˈflaʊə/
coward	/ˈkaʊəd/

prowess	/ˈpɹaʊəs/
dowry	/ˈdaʊəɹi/
cowardice	/ˈkaʊədɪs/
cowardly	/ˈkaʊədli/
sunflower	/ˈsʌnˌflaʊəɹ/

Notes on triphthongs

- Explanation
- Sagittal section view
- Phonic drills

Keywords

Monophthong: Asingle symbol vowel sound in which the tongue stays in one position.

Diphthong: Adouble symbol vowel sound in which the tongue glides from one vowel position to another.

Triphthong: Atriple symbol vowel sound in which the tongue glides from one vowel position to another and then one more time to another vowel position.

Summary

This unit covered further ideas on the concept of diphthong and triphthong vowel sounds. Here we first presented an understanding of difference between monophthong and diphthong, then afterwards difference between diphthong and triphthong.

Self Assessment

1. Which one of the following is correct about origin of Diphthongs?

A. is more or less a glide from one Monophthong to another
B. is a cluster of three phonemic sounds
C. is represented by a colon after the phonemic symbol
D. is sourced distinctively on its own without having any connection with Monophthongs

2. Which one of the following is true for English Diphthong sounds?

A. These are 05 in number
B. These are 08 in number
C. They are also known as one symbol sounds
D. They have colon denoting extended duration

3. Which one of the following has common denominator of vowel sound /ɪə/?

A. fair, bear, hair, dare, player
B. loud, cloud, shroud, proud, grouse
C. near, beer, fear, here, tear
D. hike, bike, sight, fight, glide

4. Which one of the following has common denominator of vowel sound /eɪ/?

A. toy, boy, ploy, noise, joy
B. face, base, trace, lace, mace
C. file, rile, mile, guile, smile
D. loud, cloud, shroud, proud, grouse

5. Which one of the following has common denominator of vowel sound /əʊ/?

A. road, goad, mode, load, toad
B. town, brown, frown, clown, foul
C. hike, bike, sight, fight, glide
D. fair, bear, hair, dare, player

6. Which one of the following has common denominator of vowel sound /aɪ/?

A. fair, bear, hair, dare, player
B. loud, cloud, shroud, proud, grouse
C. near, beer, fear, here, tear
D. mike, like, bite, fight, guide

7. Which one of the following has common denominator of vowel sound /aʊ/?

A. mound, cloud, douse, ground, browse
B. fair, bear, hair, dare, player
C. near, beer, fear, here, tear
D. hike, bike, sight, fight, glide

8. Which one of the following has common denominator of vowel sound /eə/?

A. loud, cloud, shroud, proud, grouse
B. near, beer, fear, here, tear
C. hike, bike, sight, fight, glide
D. fair, bear, hair, dare, player

9. Which one of the following has common denominator of vowel sound /ʊə/?

A. fair, bear, hair, dare, player
B. usually, security, pure, spiritual, intellectual
C. near, beer, fear, here, tear
D. hike, bike, sight, fight, glide

10. Which one of the following has common denominator of vowel sound /ɔɪ/?

A. voyage, poisonous, deploy, employ, appoint
B. loud, cloud, shroud, proud, grouse
C. near, beer, fear, here, tear
D. hike, bike, sight, fight, glide

11. Which one of the following is correct about origin of Diphthongs?

A. is more or less a two-symbol glide from one Monophthong to the other
B. is a cluster of three phonemic sounds
C. is represented by a colon after the phonemic symbol
D. is sourced distinctively on its own without having any connection with Monophthongs or Diphthongs

12. Which one of the following is true for English Diphthong sounds?

A. These are 05 in number
B. These are 08 in number
C. They are also known as two symbol sounds
D. They have colon denoting extended duration

13. Which one of the following has common denominator of vowel sound /eɪə/?

A. fair, bear, hair, dare, player
B. loud, cloud, shroud, proud, grouse
C. player, layer, slayer, declare, eclair
D. science, entirely, empire, violence, compliance

14. Which one of the following has common denominator of vowel sound /ɔɪə/?

A. toy, boy, ploy, noise, joy
B. royal, loyal, annoyance, joyous, employability
C. file, rile, mile, guile, smile
D. loud, cloud, shroud, proud, grouse

15. Which one of the following has common denominator of vowel sound /əʊə/?

A. blower, lower, zoological, cinemagoer, zoophyte
B. royal, loyal, annoyance, joyous, employability
C. hike, bike, sight, fight, glide
D. fair, bear, hair, dare, player

Answers for Self Assessment

1.	A	2.	B	3.	C	4.	B	5.	A
6.	D	7.	A	8.	D	9.	B	10.	A
11.	A	12.	B	13.	C	14.	B	15.	A

Review Questions

1. Explain the difference between monophthong and diphthong sounds while illustrating with relevant examples.

2. Write 10 words each for any three diphthong sounds of your choice. Please make sure the words are not the same as given in illustration.

3. Explain the difference between diphthong and triphthong sounds while illustrating with relevant examples.

4. Write 10 words each for any three triphthong sounds of your choice. Please make sure the words are not the same as given in illustration.

5. Explain in details how important it is to know about monophthong sounds to further learn about diphthongs and triphthongs.

Further Readings

- Sweet, Henry. A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform. Cambridge University Press, 2013.
- Jones, Daniel. An English Pronouncing Dictionary. Cambridge University Press, 2011.
- Ladefoged, Peter, and Ian Maddieson. The Sounds of the World's Languages. Blackwell Publishers, 1996.
- Roach, Peter. English Phonetics and Phonology: A Practical Course. Cambridge University Press, 2009.
- Laver, John. Principles of Phonetics. Cambridge University Press, 1994.

Web Links

https://www.thoughtco.com/diphthong-phonetics-term-1690456

https://www.englishbix.com/diphthongs-sounds-examples/

https://englopedia.com/examples-of-triphthongs-to-understand-the-concept-in-detail/

https://www.thoughtco.com/sounds-in-spelling-the-dipthongs-3111059

https://www.englishpronunciationmadrid.com/vowels/vowels/smoothing/

Unit 07: Consonants - Place of Articulation

CONTENTS

Objectives

Introduction

1.1 Basic Terminologies

1.2 Consonants

1.3 Consonant Nomenclature - Place Wise

1.4 Consonant: Sagittal Section View

1.5 Consonant: Phonic Drill

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with the concept of sagittal section and active-passive articulators
- understand consonant sounds classification on the basis of point of contact
- formulate proprioceptive awareness about obstruction points for consonant sounds

Introduction

The first segment of the unit focuses on establishing a basic idea on sagittal section view of the vocal tract. In anatomy, the sagittal plane also known as longitudinal plane is an anatomical plane which divides the body into right and left parts; and in this case to understand consonant sounds, we deal in sagittal view of the mouth/face.

Then next segments deal insignificant details with the idea of place of articulation vis-à-vis English consonants sounds.

⚠	**Caution: Take care of correct pronunciation** sagittal as /ˈsædʒɪtəl/

1.1 Basic Terminologies

Sagittal Section: In anatomy, the sagittal plane, or longitudinal plane, is an anatomical plane which divides the body into right and left parts. The plane may be in the center of the body and split it into two halves (mid-sagittal) or away from the midline and split it into unequal parts (para-sagittal).The anatomical term sagittal was coined by Gerard of Cremona.

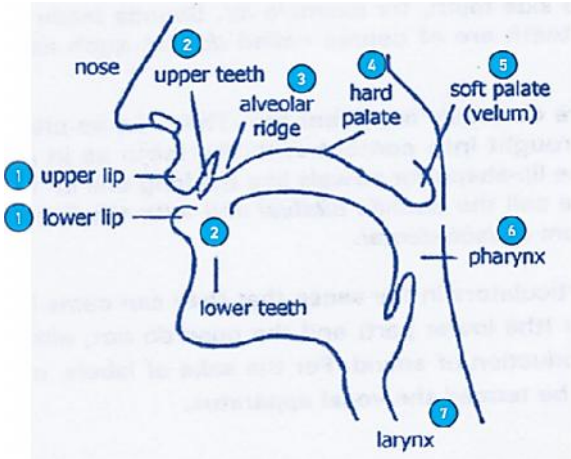


Fig. 7.1 Sagittal section explanation through image

Active Articulators:A part of the vocal tract which moves towards another (the passive articulator) to form a constriction during the articulation of a sound. Articulators which may be active are: upper lip, lower lip, tongue tip, tongue blade, tongue front, tongue back, tongue root, vocal folds.

Passive Articulators: An area of the vocal tract towards which the active articulator moves during the production of a speech sound.Following are the examples: upper teeth, alveolar ridge, hard palate, and upper jaw.

1.2 Consonants

In articulatory phonetics, a consonant is a speech sound that is articulated with complete or partial closure of the vocal tract. Examples are /p/ and /b/, pronounced with the lips; /t/ and /d/, pronounced with the front of the tongue; /k/, pronounced with the back of the tongue; /h/, pronounced in the throat; /f/, /v/, and /s/, pronounced by forcing air through a narrow channel (fricatives); and /m/ and /n/, which have air flowing through the nose (nasals). Contrasting with consonants are vowels.

English has 24 consonant sounds. Some consonants are voiced and some are voiceless. These consonants are voiced and voiceless pairs /p/ /b/, /t/ /d/, /k/ /g/, /f/ /v/, /s/ /z/, /θ/ /ð/, /ʃ/ /ʒ/, /tʃ/ /dʒ/. Other set of consonants are these independent sounds where except /h/ all else are voiced sounds: /w/, /n/, /m/, /r/, /j/, /ŋ/, /l/.

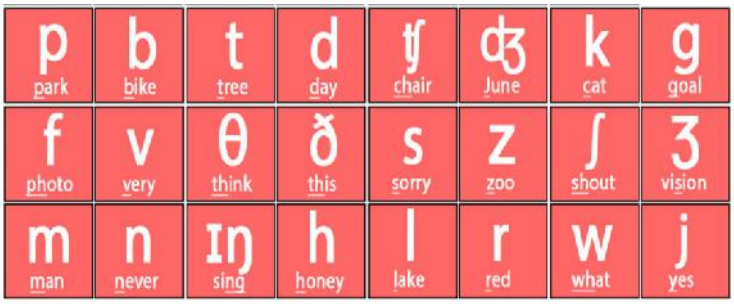


Fig. 7.2 Phonemic representation of English consonant speech sounds

Notes on consonants

- Explanation
- Phonemic representation

1.3 Consonant Nomenclature- Place Wise

In articulatory phonetics, the *place of articulation* also known as *point of articulation* of a consonant is the point of contact where an obstruction occurs in the vocal tract between an active articulator (typically some part of the tongue), and a passive location (typically some part of the roof of the mouth or other articulators).There are seven places of articulation: bilabial, labiodental, dental, alveolar, post-alveolar, palatal and velar.

The human voice produces sounds in the following manner:

- Air pressure from the lungs creates a steady flow of air through the trachea (windpipe), larynx (voice box) and pharynx (back of the throat). Therefore, the air moves out of the lungs through a coordinated action of the diaphragm, abdominal muscles, chest muscles and rib cage.
- The vocal folds in the larynx vibrate, creating fluctuations in air pressure, known as sound waves.
- Resonances in the vocal tract modify these waves according to the position and shape of the lips, jaw, tongue, soft palate, and other speech organs, creating formant regions and so different qualities of sonorant (voiced) sound.
- Mouth radiates the sound waves into the environment.
- Nasal cavity adds resonance to some sounds such as /m/ and /n/ to give nasal quality of the so-called nasal consonants.

Let us discuss each of the seven places of articulation one by one:

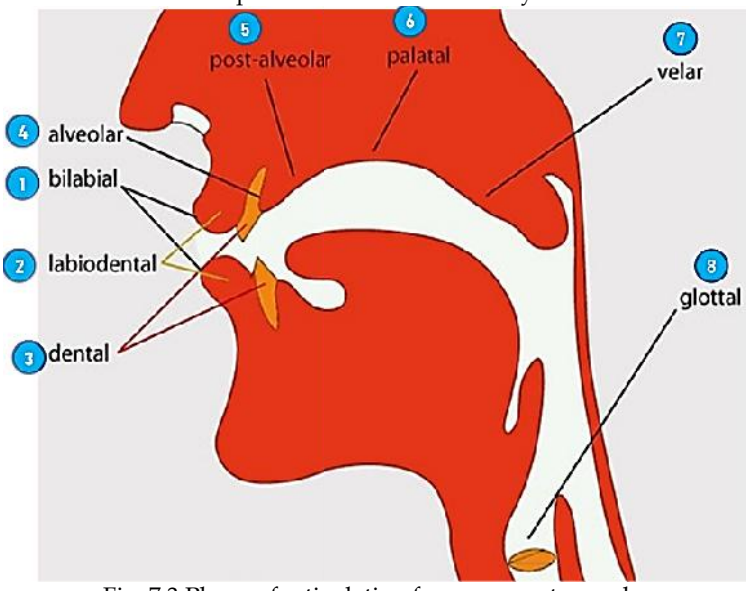


Fig. 7.3 Places of articulation for consonant sounds

Bilabial: Bilabial consonants occur when you block/constrict airflow out of the mouth by bringing your lips together.

English contains the following three bilabial consonants:

/p/ as in *purse* and *rap*

/b/ as in *back* and *cab*

/m/ as in *mad* and *dam*

Labio-Dental: Labio-dental consonants occur when you block/constrict airflow by curling your lower lip back and raising it to touch your upper row of teeth.

English contains the following two labio-dental sounds:

/f/ as in *frog* and *calf*

/v/ as in *vine* and *have*

Dental: Dental consonants occur when you block/constrict airflow by placing your slimy tongue against your upper teeth.

English contains the following two labio-dental sounds:

/θ/ as is *thick* and *bath*

/ð/ as in *the* and *rather*

Alveolar: The alveolar ridge is where your teeth meet your gums.

You create Alveolar consonants when you raise your tongue to the alveolar ridge to block or constrict airflow.

The English alveolar consonants are as follows:

/n/ as in *no* and *man*

/t/ as in *tab* and *rat*

/d/ as in *dip* and *bad*

/s/ as in *suit* and *bus*

/z/ as in *zoom* and *jazz*

/l/ as in *luck* and *fully*

Post-Alveolar: When you retract your tongue back just a bit from the alveolar ridge, the sounds change enough to be recognized as distinct consonants.

So post-alveolar consonants are those that occur when the tongue blocks or constricts airflow at the point just beyond the alveolar ridge.

The post-alveolar English consonants are as follows:

/ʃ/ as in *shot* or *brash*

/ʒ/ as in *vision* or *measure*

/tʃ/ as in *chick* or *match*

/dʒ/ as in *jam* or *badge*

Palatal: The roof of your mouth is the hard palate. You may know it as "the place that burns like hell when I eat pizza that is too hot."

You create Palatal consonants when you raise the tongue to this point and constrict airflow.

English has only one palatal consonant:

/j/ as in *yes* and *bayou*

Velar: Behind your hard palate you have the velum or soft palate. Unlike the bony hard palate in front of it, this consists of soft, mucousy tissue.

You make Velar Consonants when you raise the back of your tongue to the velum to block or restrict airflow.

English has the following velar consonants:

/ŋ/ as in *going* and *uncle*

/k/ as in *kite* and *back*

/g/ as in *good* and *bug*

/w/ as in *wet* and *howard*

Glottal: The glottis is actually two vocal folds (i.e. vocal cords). It acts as a sort of bottle cap to your windpipe.

Inhale and then hold your breath for a few seconds while keeping your mouth open. What you are actually doing to keep the air from expelling out of your lungs by closing your glottis.

/h/ as in *hi* and *Bahamas*. Say these words and notice how you're not actually constricting or blocking airflow for this /h/ sound. You're just exhaling a little bit harder than you would for a normal vowel sound in transition to the following vowel sound.

Notes on consonants place of articulation

- Explanation
- Individual explanation of places of articulation

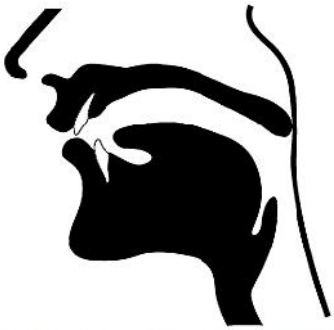
1.4 Consonant: Sagittal Section View

Sagittal section view allows an inside-view of the articulators while making a specific speech sound. It is called the sagittal plane because it goes through or is parallel to the sagittal suture, the line running along the top of the skull that marks where the left and right halves of the skull grew together. Technically, the sagittal or median plane goes right through the middle between the body's left and right halves.

Let us understand consonant sounds with the aid of sagittal section observation of the vocal tract which is an anatomical plane dividing the tract into right and left parts thus allowing an inside view.

A bilabial sound: the first sound in *pit*

Fig. 7.4 Sagittal section view of bilabial /p/, /b/, /m/

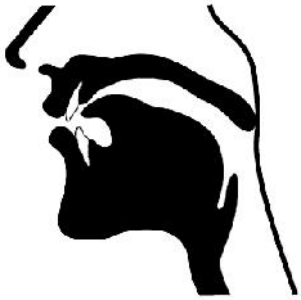


A labio-dental sound: the first sound in *fit*

Fig. 7.5 Sagittal section view of labio-dental /f/, /v/

A dental sound: the first sound in *thin*

Fig. 7.6 Sagittal section view of dental /θ/, /ð/



An alveolar sound: the first sound in *sin*

Fig. 7.7 Sagittal section view of alveolar /n/, /t/, /d/, /s/, /z/, /l/

An alveolar sound: the first sound in *sin*

Fig. 7.8 Sagittal section view of post-alveolar /ʃ/, /ʒ/, /tʃ/, /dʒ/

A palatal sound: the first sound in *yes*

Fig. 7.9 Sagittal section view of palatal /j/

A velar sound: the first sound in *coo!*

Fig. 7.10 Sagittal section view of velar /ŋ/, /k/, /g/, /w/

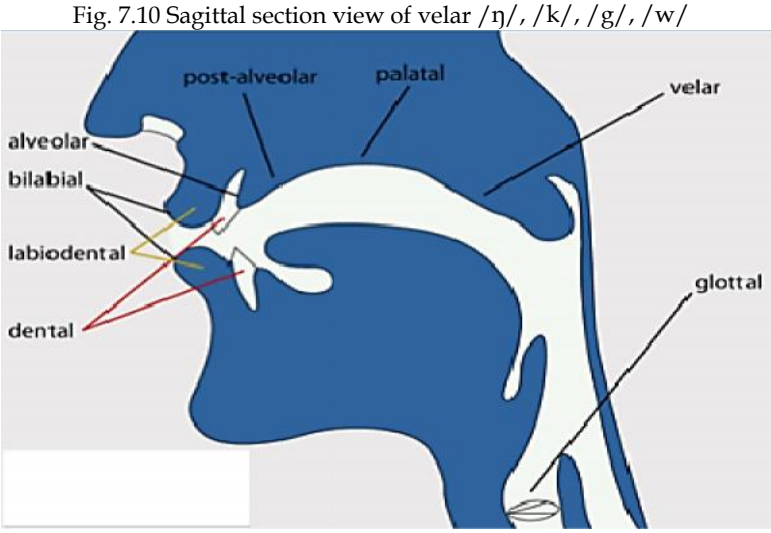


Fig. 7.11 Sagittal section view of glottal /h/

Notes on sagittal section view of vocal tract

- Explanation
- Phonic drills

1.5 Consonant: Phonic Drill

Phonic drills enhance understanding about common letter-sound relationships, including sounds for common letter patterns, so that readers can apply them in decoding unfamiliar words.

Phonic drills: Let us understand consonant sounds with some examples in IPA transcription forms.

Bilabial /p/ as in

production	/prə.ˈdʌk.ʃən/
particular	/pə.ˈtɪk.jʊ.lə/
population	/ˌpɒ.pjʊ.ˈleɪ.ʃən/
protection	/prə.ˈtɛk.ʃən/
percentage	/pə.ˈsɛn.tɪʤ/
proportion	/prə.ˈpɔː.ʃən/
profitable	/ˈprɒ.fɪ.təbl/
permission	/pə.ˈmɪ.ʃən/
prevention	/prɪ.ˈvɛn.ʃən/

personally	/ˈpɜː.snə.li/

Bilabial /b/ as in

background	/ˈbæk.graʊnd/
beneficial	/ˌbɛ.nɪ.ˈfɪ.ʃəl/
biological	/ˌbaɪ.əʊ.ˈlɒ.ʤɪ.kəl/
basketball	/ˈbɑː.s.kɪt.ˌbɔːl/
brightness	/ˈbraɪt.nəs/
biometrics	/ˌbaɪ.əʊ.ˈmɛt.rɪks/
beforehand	/bɪ.ˈfɔː.hænd/
brilliance	/ˈbrɪl.jəns/
binoculars	/bɪ.ˈnɒk.jʊ.ləz/
benevolent	/bɪ.ˈnɛ.və.lənt/

Bilabial /m/ as in

management	/ˈmæ.nɪʤ.mənt/
membership	/ˈmɛm.bəˌʃɪp/
materially	/mə.ˈtɪə.rɪə.li/
multimedia	/ˌmʌl.tɪ.ˈmiː.dɪə/
mechanical	/mɪ.ˈkæ.nɪ.kəl/
meaningful	/ˈmiː.nɪŋ.fʊl/
mainstream	/ˈmeɪn.striːm/
misleading	/mɪs.ˈliː.dɪŋ/
motivation	/ˌməʊ.tɪ.ˈveɪ.ʃən/
managerial	/ˌmæ.nə.ˈʤɪə.rɪəl/

Labio-Dental /f/as in

foundation	/faʊn.ˈdeɪ.ʃən/
frequently	/ˈfriː.kwənt.li/
functional	/ˈfʌŋk.ʃənl/
facilitate	/fə.ˈsɪ.lɪ.teɪt/
federation	/ˌfɛ.də.ˈreɪ.ʃən/
friendship	/ˈfrɛndˌʃɪp/
formidable	/ˈfɔː.mɪ.dəbl/
fellowship	/ˈfɛ.ləʊˌʃɪp/
filtration	/fɪl.ˈtreɪ.ʃən/
fraudulent	/ˈfrɔːd.jʊ.lənt/

Labio-Dental /v/ as in

virtually	/ˈvɜː.tjʊə.liː/

voluntary	/ˈvɒ.lən.tə.riː/
variation	/ˌveə.rɪ.ˈeɪ.ʃən/
valuation	/ˌvæl.jʊ.ˈeɪ.ʃən/
volunteer	/ˌvɒ.lən.ˈtɪə/
versatile	/ˈvɜː.sə.taɪl/
violation	/ˌvaɪ.ə.ˈleɪ.ʃən/
viewpoint	/ˈvjuː.pɔɪnt/
vegetable	/ˈvɛʤ.tə.b(ə)l/
visionary	/ˈvɪʒ.nə.riː/

Dental /θ/ as in

threshold	/ˈθrɛʃ.ˌhəʊld/
thickness	/ˈθɪk.nəs/
therapist	/ˈθɛ.rə.pɪst/
thumbnail	/ˈθʌm.neɪl/
threefold	/ˈθriː.fəʊld/
thrashing	/ˈθræʃ.ɪŋ/
thesaurus	/θiː.ˈsɔː.rəs/
thirtieth	/ˈθɜː.tɪəθ/
throwback	/ˈθrəʊ.bæk/
throwaway	/ˈθrəʊ.ə.weɪ/

Dental /ð/ as in

therefore	/ˈðeə.fɔː/
therefrom	/ðeə.ˈfrɒm/
therewith	/ðeə.ˈwɪθ/
thereupon	/ˈðeər.əˈpɒn/
thereby	/ˈðeə.ˈbaɪ/
thereof	/ðeər.ˈɒf/
therein	/ðeər.ˈɪn/
thereto	/ðeə.ˈtuː/
thereon	/ðeər.ˈɒn/
thyself	/ðaɪ.ˈsɛlf/

Alveolar /n/ as in

nationwide	/ˈneɪ.ʃən.waɪd/
nineteenth	/ˈnaɪn.ˈtiːŋθ/
newsletter	/ˈnjuːz.ˌlɛ.tə/
navigation	/ˌnæ.vɪ.ˈgeɪ.ʃən/
nomination	/ˌnɒ.mɪ.ˈneɪ.ʃən/

noticeable	/ˈnəʊ.tɪ.səbl/
negligence	/ˈnɛg.lɪ.ʤəns/
noteworthy	/ˈnəʊt.ˌwɜː.ði/
negligible	/ˈnɛg.lɪ.ʤəbl/
neutrality	/njuː.ˈtræ.lɪ.ti/

Alveolar /t/ as in

technology	/tɛk.ˈnɒ.lə.ʤi/
television	/ˈtɛ.lɪ.ˌvɪ.ʒən/
transition	/træn.ˈzɪ.ʃən/
tremendous	/trɪ.ˈmɛn.dəs/
tournament	/ˈtʊə.nə.mənt/
temptation	/tɛmp.ˈteɪ.ʃən/
turnaround	/ˈtɜːn.ə.ˌraʊnd/
transplant	/træns.ˈplɑːnt/
technician	/tɛk.ˈnɪ.ʃən/
transcript	/ˈtræn.skrɪpt/

Alveolar /d/ as in

department	/dɪ.ˈpɑːt.mənt/
developing	/dɪ.ˈvɛ.lə.pɪŋ/
discussion	/dɪs.ˈkʌ.ʃən/
difference	/ˈdɪf.rəns/
determined	/dɪ.ˈtɜː.mɪnd/
definition	/ˌdɛ.fɪ.ˈnɪ.ʃən/
difficulty	/ˈdɪ.fɪ.kəl.tiː/
democratic	/ˌdɛ.mə.ˈkræ.tɪk/
discipline	/ˈdɪ.sɪ.plɪn/
dependence	/dɪ.ˈpɛn.dəns/

Alveolar /s/as in

successful	/sək.ˈsɛs.fʊl/
subsidiary	/səb.ˈsɪ.diː.ə.riː/
scientific	/ˌsaɪ.ən.ˈtɪ.fɪk/
sufficient	/sə.ˈfɪ.ʃənt/
subsequent	/ˈsʌb.sɪ.kwənt/
settlement	/ˈsɛtl.mənt/
statistics	/stə.ˈtɪs.tɪks/
specialist	/ˈspɛ.ʃə.lɪst/
structural	/ˈstrʌk.ʧə.rəl/

strengthen /ˈstrɛŋ.θən/

Alveolar /z/ as in

zoological /ˌzəʊ.ə.ˈlɒ.ʤɪ.kəl/

zirconium /zɜ:.ˈkəʊ.njəm/

zookeeper /ˈzu:.ˌki:.pə/

zone /zəʊn/

zenith /ˈzɛ.nɪθ/

zodiac /ˈzəʊ.dɪ.æk/

zombie /ˈzɒm.bi:/

zipper /ˈzɪ.pə/

zigzag /ˈzɪg.zæg/

zephyr /ˈzɛ.fə/

Alveolar /l/ as in

leadership /ˈli:.də.ʃɪp/

literature /ˈlɪ.tə.rɪ.ʧə/

laboratory /lə.ˈbɒ.rə.tə.ri:/

limitation /ˌlɪ.mɪ.ˈteɪ.ʃən/

legitimate /lɪ.ˈʤɪ.tɪ.mɪt/

likelihood /ˈlaɪk.lɪ.hʊd/

liberation /ˌlɪ.bə.ˈreɪ.ʃən/

linguistic /lɪŋ.ˈgwɪs.tɪk/

lieutenant /lɛf.ˈtɛ.nənt/

legitimacy /lɪ.ˈʤɪ.tɪ.mə.si:/

Post Alveolar /ʃ/ as in

shortening /ˈʃɔ:t.nɪŋ/

shopkeeper /ˈʃɒp.ˌki:.pə/

shoestring /ˈʃu:.strɪŋ/

shortbread /ˈʃɔ:t.brɛd/

shrewdness /ˈʃru:d.nəs/

shibboleth /ˈʃɪ.bə.lɛθ/

sheepshead /ˈʃi:p.shɛd/

shamefaced /ˈʃeɪm.feɪst/

shirtwaist /ˈʃɜ:t.weɪst/

shipmaster /ˈʃɪp.ˌmɑ:s.tə/

Post Alveolar /ʒ/ as in

disclosure /dɪs.ˈkləʊ.ʒə/

unmeasured /ʌn.ˈmɛʒ.əd/

enclosures	/ɪn.ˈkləʊ.ʒəz/
embrasures	/ɪm.ˈbreɪ.ʒəz/
composures	/kəm.ˈpəʊ.ʒəz/
admeasures	/æd.ˈmɛ.ʒəz/
admeasured	/æd.ˈmɛ.ʒəd/
remeasures	/ˌriː.ˈmɛ.ʒəz/
remeasured	/ˌriː.ˈmɛ.ʒəd/
reexposure	/ˌriː.ɪks.ˈpəʊ.ʒə/

Post Alveolar /tʃ/as in

challenged	/ˈʧæ.lɪnʤd/
chancellor	/ˈʧɑː.n.sə.lə/
charitable	/ˈʧæ.rɪ.təbl/
challenger	/ˈʧæ.lɪn.ʤə/
childbirth	/ˈʧaɪld.bɜːθ/
checkpoint	/ˈʧɛk.pɔɪnt/
chairwoman	/ˈʧeə.ˌwʊ.mən/
channeling	/ˈʧæn.lɪŋ/
changeover	/ˈʧeɪnʤˌəʊ.və/
cheesecake	/ˈʧiːz.keɪk/

Post Alveolar /dʒ/as in

journalist	/ˈʤɜː.nə.lɪst/
journalism	/ˈʤɜː.nə.lɪzm/
jeopardize	/ˈʤɛ.pə.daɪz/
juggernaut	/ˈʤʌ.gə.nɔːt/
journeyman	/ˈʤɜː.nɪ.mæn/
judgmental	/ʤʌʤ.ˈmɛn.təl/
jubilation	/ˌʤuː.bɪ.ˈleɪ.ʃən/
judicature	/ˈʤuː.dɪ.kə.ʧə/
jawbreaker	/ˈʤɔː.ˌbreɪ.kə/
juvenility	/ˌʤuː.vɪ.ˈnɪ.lɪ.ti/

Palatal /j/ as in

yourselves	/jɔː.ˈsɛlvz/
yesteryear	/ˈjɛs.tə.jɪə/
yardsticks	/ˈjɑːd.stɪks/
younglings	/ˈjʌŋ.lɪŋz/
youngsters	/ˈjʌŋ.stəz/
yesterday	/ˈjɛs.tə.deɪ/

youngster	/ˈjʌŋ.stə/
yardstick	/ˈjɑː.d.stɪk/
yellowish	/ˈjɛ.ləʊ.ɪʃ/
yourself	/jɔː.ˈsɛlf/

Velar /ŋ/ as in

everything	/ˈɛv.rɪ.θɪŋ/
developing	/dɪ.ˈvɛ.lə.pɪŋ/
accounting	/ə.ˈkaʊn.tɪŋ/
concerning	/kən.ˈsɜː.nɪŋ/
underlying	/ˌʌn.dəˈlaɪ.ɪŋ/
meaningful	/ˈmiː.nɪŋ.fʊl/
compelling	/kəm.ˈpɛ.lɪŋ/
misleading	/mɪs.ˈliː.dɪŋ/
convincing	/kən.ˈvɪn.sɪŋ/
prevailing	/prɪ.ˈveɪ.lɪŋ/

Velar /k/ as in

kingfisher	/ˈkɪŋ.ˌfɪ.ʃə/
kinematics	/ˌkaɪ.nɪ.ˈmæ.tɪks/
kickboxing	/ˈkɪk.bɒk.sɪŋ/
kindliness	/ˈkaɪnd.lɪ.nəs/
kilometer	/ˈkɪ.ləʊ.ˌmiː.tə/
kingmaker	/ˈkɪŋ.ˌmeɪ.kə/
keyboard	/ˈkiː.bɔːd/
kindness	/ˈkaɪnd.nɪs/
keystone	/ˈkiː.stəʊn/
kinetics	/kaɪˈ.nɛ.tɪks/

Velar /g/ as in

government	/ˈgʌvn.mənt/
girlfriend	/ˈgɜːl.ˌfrɛnd/
greenhouse	/ˈgriːn.haʊs/
governance	/ˈgʌ.və.nəns/
goalkeeper	/ˈgəʊl.ˌkiː.pə/
graduation	/ˌgræ.ʤʊ.ˈeɪ.ʃən/
gynecology	/ˌgaɪ.nɪ.ˈkɒ.lə.ʤiː/
groundwork	/ˈgraʊnd.wɜːk/
guarantee	/ˌgæ.rən.ˈtiː/
gathering	/ˈgæ.ðə.rɪŋ/

Velar /w/ as in

widespread	/ˈwaɪd.sprɛd/
withdrawal	/wɪðˈ.drɔː.əl/
worthwhile	/ˈwɜːθ.ˈwaɪl/
wastewater	/ˈweɪst.ˌwɔː.tə/
whatsoever	/ˌwɒt.səʊ.ˈɛ.və/
wilderness	/ˈwɪl.də.nɪs/
wheelchair	/ˈwiːl.ʧeə/
wavelength	/ˈweɪv.lɛŋθ/
waterfront	/ˈwɔː.tə.frʌnt/
waterproof	/ˈwɔː.tə.pruːf/

Glottal /h/ as in

historical	/hɪs.ˈtɒ.rɪ.kəl/
horizontal	/ˌhɒ.rɪ.ˈzɒntl/
helicopter	/ˈhɛ.lɪ.kɒp.tə/
hypothesis	/haɪ.ˈpɒ.θɪ.sɪs/
hemisphere	/ˈhɛ.mɪs.fɪə/
homosexual	/ˈhəʊ.məʊ.ˈsɛk.sjʊəl/
hesitation	/ˌhɛ.zɪ.ˈteɪ.ʃən/
hereditary	/hɪ.ˈrɛ.dɪ.tə.riː/
hematology	/ˌhiː.mə.ˈtɒ.lə.dʒiː/
hysterical	/hɪs.ˈtɛ.rɪ.kəl/

Notes on consonant phonic drills

- Explanation
- Phonic drills

Keywords

Active articulator: In phonetics, the active articulator is the part of the mouth that carries out movements and whose position with respect to the passive articulator defines the place of articulation.

Passive articulator: In phonetics, the passive articulator is the part of the mouth where the moving part of the mouth is placed to produce a particular sound, contributing to defining a place of articulation.

Sagittal section of vocal tract: The sagittal or lateral plane dives the face/mouth into left and right halves and is an x-z plane.

Summary

This unit made a significant effort to develop comprehensive understanding about consonant sounds while covering place of articulation.This aspect of consonant sound articulation focuses on that specific place within the resonating cavities (larynx, oral, pharyngeal, nasal) where the articulators experience some kind of stricture or obstacle to the passing of air.

Self Assessment

1. Which one of the following is not an active articulator?

A. lower jaw

B. hard palate

C. tongue

D. soft palate

2. Which one of the following is true for English Consonant sounds?

A. These are 24 in number

B. These are20 in number

C. All consonant sounds, without exception, are represented by one unique symbol

D. There are just 2 consonant phonemes which are voiced, rest all are devoiced

3. Which one of the following phoneme sets represents a Bilabial sound?

A. /s/, /f/, /v/, /t/

B. /l/, /r/, /j/, /h/

C. /m/, /p/, /b/, /w/

D. /k/, /g/, /ʃ/, /ʤ/

4. Which one of the following phoneme sets represents a Nasal sound?

A. /θ/, /ð/, /s/, /ʃ/

B. /m/, /n/, /ŋ/

C. /z/, /k/, /h/, /g/

D. /ʒ/, /g/, /ʃ/, /ʤ/

5. Which one of the following phoneme sets represents an Alveolar sound?

A. /t/, /d/, /n/

B. /z/, /k/, /h/, /g/

C. /ʒ/, /g/, /ʃ/, /ʤ/

D. /l/, /r/, /j/, /h/

6. What is the place of articulation of the FIRST sound in the word *fashion*?

A. lips

B. alveolar ridge

C. Lips in contact with teeth

D. teeth

7. What is the place of articulation of the FIRST sound in the word *kindergarten*?

A. teeth

B. velum (soft palate)

C. glottis

D. behind the alveolar ridge

8. What is the place of articulation of the FIRST sound in the word *thought*?
A. lips
B. alveolar ridge
C. teeth
D. velum (soft palate)

9. What is the place of articulation of the LAST sound in the word *dramatist*?
A. alveolar ridge
B. interdental
C. teeth
D. velum (soft palate)

10. What is the place of articulation of the LAST sound in the word *horrible*?
A. alveolar ridge
B. lips & teeth
C. teeth
D. behind the alveolar ridge

11. What is the place of articulation of the FIRST sound in the word *people*?
A. alveolar ridge
B. lips & teeth
C. lips
D. velum (soft palate)

12. What is the place of articulation of the FIRST sound in the word *fear*?
A. lips
B. alveolar ridge
C. Labio-dental
D. teeth

13. What is the place of articulation of the LAST sound in the word *young*?
A. alveolar ridge
B. lips & teeth
C. teeth
D. velar

14. What is the place of articulation of the LAST sound in the word *farmer*?
A. lips
B. lips & teeth
C. palatal (behind the alveolar ridge)
D. teeth

15. What is the place of articulation of the FIRST sound in the word *minor*?

A. lips
B. alveolar ridge
C. teeth
D. glottis

Answers for Self Assessment

1.	B	2.	A	3.	C	4.	B	5.	A
6.	C	7.	B	8.	C	9.	A	10.	D
11.	C	12.	C	13.	D	14.	C	15.	A

Review Questions

1. Explain the difference between active and passive articulators.
2. Write 10 words with the starting sound made at lips. Please make sure the words are not the same as given in illustration.
3. Write 10 words with the starting sound made at teeth. Please make sure the words are not the same as given in illustration.
4. Write 10 words with the starting sound made at velar. Please make sure the words are not the same as given in illustration.
5. Write 10 words with the starting sound made at alveolar ridge. Please make sure the words are not the same as given in illustration.

Further Readings

- Sweet, Henry. A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform. Cambridge University Press, 2013.
- Jones, Daniel. An English Pronouncing Dictionary. Cambridge University Press, 2011.
- Ladefoged, Peter, and Ian Maddieson. The Sounds of the World's Languages. Blackwell Publishers, 1996.
- Roach, Peter. English Phonetics and Phonology: A Practical Course. Cambridge University Press, 2009.
- Laver, John. Principles of Phonetics. Cambridge University Press, 1994.

Web Links

http://smu-facweb.smu.ca/~s0949176/sammy/

http://homes.chass.utoronto.ca/~danhall/phonetics/sammy-old.html

https://www.enotes.com/homework-help/difference-between-active-articulators-passive-124047

https://www.speechactive.com/english-consonants-ipa-international-phonetic-alphabet/

https://www.mimicmethod.com/ft101/place-of-articulation/

https://home.cc.umanitoba.ca/~krussll/138/sec3/poa-big.htm

https://home.cc.umanitoba.ca/~krussll/phonetics/articulation/describing-consonants.html

Dr. Gurpal Singh Rana, Lovely Professional University

Unit 08: Consonants- Manner of Articulation

CONTENTS

Objectives

Introduction

8.1 Basic Terminologies

8.2 Consonants

8.3 Consonant Nomenclature - Manner wise

8.4 Consonant: Sagittal Section View

8.5 Consonant: Phonic Drill

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with the concept of International Phonetic Alphabet (IPA) through phonic drills
- understand consonant sounds classification on the basis of manner of articulation
- formulate proprioceptive awareness about articulators-interplay for consonant sounds

Introduction

The first segment of the unit focuses on establishing a basic idea onInternational Phonetic Alphabet (IPA), an alphabet developed in the 19th century to accurately represent the pronunciation of languages. One aim of the IPA was to provide a unique symbol for each distinctive sound in a language—that is, every sound, or phoneme, that serves to distinguish one word from another.

Then next segment deals inconsiderable detail with the idea of manner of articulation describing how various speech organs produce a given consonant sound.

8.1 Basic Terminologies

International Phonetic Alphabet: The IPA was first published in 1888 by the Association PhonétiqueInternationale (International Phonetic Association), a group of French language teachers founded by Paul Passy. The aim of the organisation was to devise a system for transcribing the sounds of speech which was independent of any particular language and applicable to all languages.A phonetic script for English created in 1847 by Isaac Pitman and Henry Ellis was used as a model for the IPA.

The IPA is designed to represent those qualities of speech that are part of lexical (and to a limited extent prosodic) sounds in oral language: phones, phonemes, intonation and the separation of words and syllables. To represent additional qualities of speech, such as tooth gnashing, lisping, and sounds made with a cleft lip and cleft palate, an extended set of symbols, the extensions to the International Phonetic Alphabet, may be used.The IPA is used by lexicographers, foreign language

students and teachers, linguists, speech–language pathologists, singers, actors, constructed language creators and translators.

Some of the prominent uses of IPA are:

- It is used in dictionaries to indicate the pronunciation of words.
- It has often been used as a basis for creating new writing systems for previously unwritten languages.
- It is also used in some foreign language text books and phrase books to transcribe the sounds of languages which are written with non-Latin alphabets. It is also used by non-native speakers of English when learning to speak English.

CONSONANTS (PULMONIC) © 2015 IPA

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		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			

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

Fig.8.1 Consonant representation in International Phonetic Alphabet prepared by Kiel in 2015

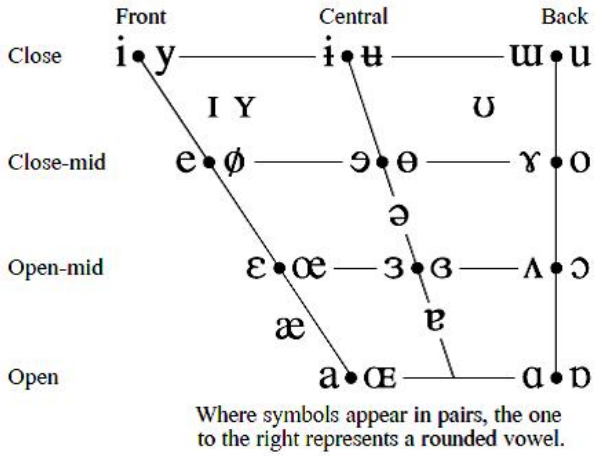


Fig.8.2 Vowel representation in International Phonetic Alphabet prepared by Kiel in 2015

ˈ	Primary stress	ˌfoʊnəˈtɪʃən
ˌ	Secondary stress	
ː	Long	eː
ˑ	Half-long	eˑ
̆	Extra-short	ĕ
|	Minor (foot) group	
‖	Major (intonation) group	
.	Syllable break	ɹi.ækt
‿	Linking (absence of a break)	

Fig.8.3 Suprasegmental representation in International Phonetic Alphabet prepared by Kiel in 2015

̥	Voiceless	n̥	d̥	̤	Breathy voiced	b̤	a̤	̪	Dental	t̪	d̪
̬	Voiced	s̬	t̬	̰	Creaky voiced	b̰	a̰	̺	Apical	t̺	d̺
ʰ	Aspirated	tʰ	dʰ	̼	Linguolabial	t̼	d̼	̻	Laminal	t̻	d̻
̹	More rounded	ɔ̹		ʷ	Labialized	tʷ	dʷ	̃	Nasalized		ẽ
̜	Less rounded	ɔ̜		ʲ	Palatalized	tʲ	dʲ	ⁿ	Nasal release		dⁿ
̟	Advanced	u̟		ˠ	Velarized	tˠ	dˠ	ˡ	Lateral release		dˡ
̠	Retracted	e̠		ˤ	Pharyngealized	tˤ	dˤ	̚	No audible release		d̚
̈	Centralized	ë		̴	Velarized or pharyngealized			ɫ			
̽	Mid-centralized	e̽		̝	Raised	e̝	(ɹ̝ = voiced alveolar fricative)				
̩	Syllabic	n̩		̞	Lowered	e̞	(β̞ = voiced bilabial approximant)				
̯	Non-syllabic	e̯		̘	Advanced Tongue Root	e̘					
̹	Rhoticity	ə̹	a̹	̙	Retracted Tongue Root	e̙					

Fig.8.4 Diacritics representation in International Phonetic Alphabet prepared by Kiel in 2015

8.2 Consonants

In articulatory phonetics, a consonant is a speech sound that is articulated with complete or partial closure of the vocal tract. Examples are /p/ and /b/, pronounced with the lips; /t/ and /d/, pronounced with the front of the tongue; /k/, pronounced with the back of the tongue; /h/, pronounced in the throat; /f/, /v/, and /s/, pronounced by forcing air through a narrow channel (fricatives); and /m/ and /n/, which have air flowing through the nose (nasals). Contrasting with consonants are vowels.

English has 24 consonant sounds. Some consonants are voiced and some are voiceless. These consonants are voiced and voiceless pairs /p/ /b/, /t/ /d/, /k/ /g/, /f/ /v/, /s/ /z/, /θ/ /ð/, /ʃ/ /ʒ/, /tʃ/ /dʒ/. Other set of consonants are these independent sounds where except /h/ all else are voiced sounds: /w/, /n/, /m/, /r/, /j/, /ŋ/, /l/.

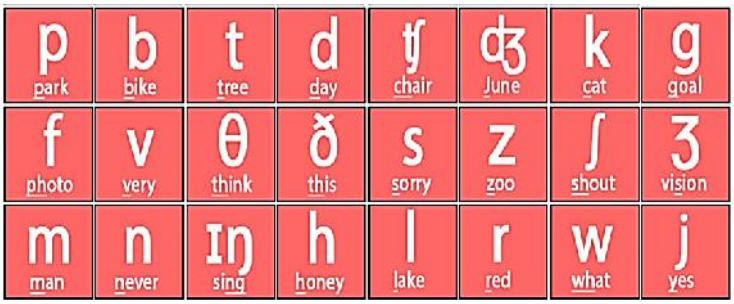


Fig. 8.5 Phonemic representation of English consonant speech sounds

Notes on consonants

- Explanation
- Phonemic representation

8.3 Consonant Nomenclature- Manner wise

In articulatory phonetics, the *manner of articulation* is the configuration and interaction of the articulators (speech organs such as the tongue, lips, and palate) when making a speech sound. One parameter of manner is stricture, that is, how closely the speech organs approach one another.The concept of manner is mainly used in the discussion of consonants, although the movement of the articulators will also greatly alter the resonant properties of the vocal tract, thereby changing the formant structure of speech sounds that is crucial for the identification of vowels.

There are sixdifferent manners of articulation: Plosives, Fricatives, Affricates, Lateral, Approximants, Nasals, and Glottalic.

Let us discuss each of the seven manner-wise articulations one by one:

Plosives or stops: In plosives, the speech organs are closed and the oral and nasal cavity completely closed blocking off the airstream. The upbuilding pressure in the oral cavity is then suddenly released. The audible puff of air that is released is called aspiration. Plosives of the English language are /p/, /t/, /k/ (voiceless) and //b/, /d/, /g/ (voiced).

Fricatives: Fricatives are created when air forces its way through a narrow gap between two articulators at a steady pace. They can be divided into two categories: slit fricatives and groove fricatives. In slit fricatives the tongue is rather flat (as in /f/, /θ/ as in thing (voiceless), /v/, /ð/ as in this (voiced)) while in groove fricatives the front of the tongue forms the eponymous groove (/s/ as in seal, /ʃ/ as in shock (voiceless), /z/ as in zero, /ʒ/ as in measure (voiced).

Affricates: Like with plosives there is a complete blockage of the airstream in the oral cavity. But in contrast to said plosives, the blocked-off airstream is not released suddenly, but rather slowly causing audible friction. Affricates can, therefore, be divided into two parts: a plosive followed by a fricative (as there is closure and friction in the same place). But note that affricates are always analyzed as only one phoneme. English affricates are /tʃ/ (voiceless) as in cheese and /dʒ/ (voiced) as in jungle.

Laterals: The tip of the tongue is pressed onto the alveolar ridge. The rims of the tongue are lowered so that the air escapes over the lowered tongue rims. The only English lateral sound is /l/ (voiced).

Approximants: The name approximants refers to the fact that the articulators involved approach each another without actually touching. There are three approximants in the English language: /j/ as in you, /w/ as in we and /r/ as in rise (all voiced). Approximants are often referred to as semi-vowels (or glides) as they represent the "twilight zone" between consonants and vowels.

Nasals: In nasal sounds the velum (soft palate) is lowered blocking off the oral cavity. Air can only escape through the nose. English nasals are /m/, /n/ and /ŋ/ as in sing, which are all voiced.

Glottal: The glottal plosive or stop /h/ is a type of consonantal sound used in many spoken languages, produced by obstructing airflow in the vocal tract or, more precisely, the glottis.

Notes on consonants place of articulation

- Explanation
- Individual explanation of manner of articulation

8.4 Consonant: Sagittal Section View

Sagittal section view allows an inside-view of the articulators while making a specific speech sound. It is called the sagittal plane because it goes through or is parallel to the sagittal suture, the line running along the top of the skull that marks where the left and right halves of the skull grew together. Technically, the sagittal or median plane goes right through the middle between the body's left and right halves.

Let us understand consonant sounds with the aid of sagittal section observation of the vocal tract which is an anatomical plane dividing the tract into right and left parts thus allowing an inside view.

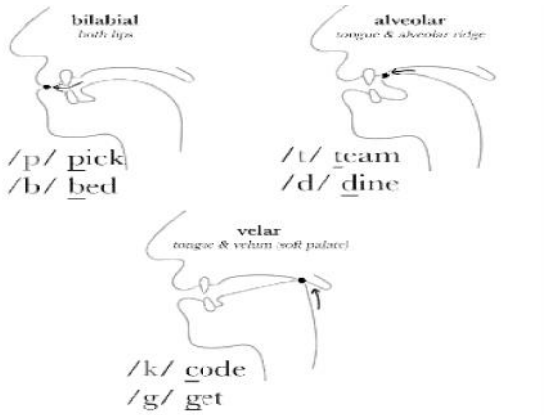


Fig. 8.6 Sagittal section view of plosives/p/, /b/, /t/, /d/. /k/, /g/

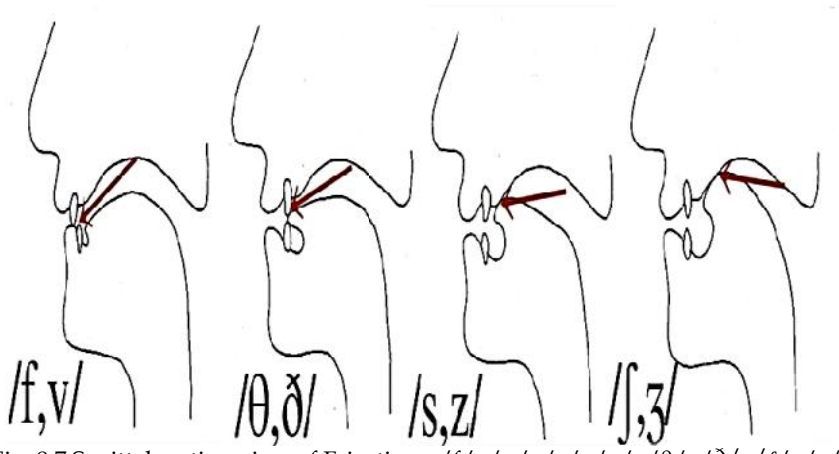


Fig. 8.7 Sagittal section view of Fricatives: /f/, /v/, /s/, /z/, /θ/, /ð/, /ʃ/, /ʒ/

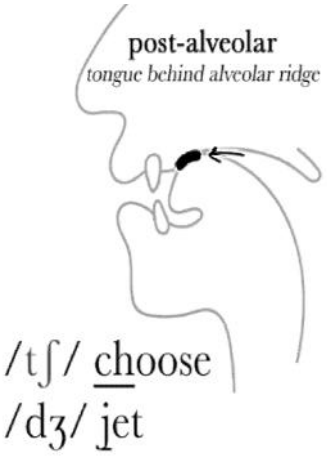


Fig. 8.8 Sagittal section view of affricates: /tʃ/, /dʒ/

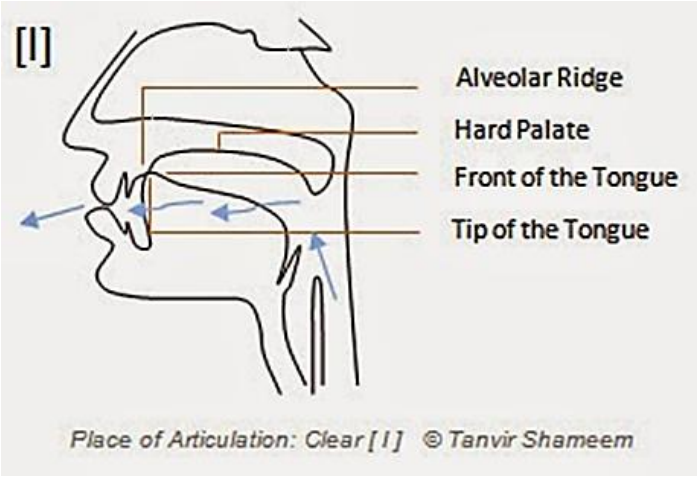


Fig. 8.9 Sagittal section view of lateral: /l/

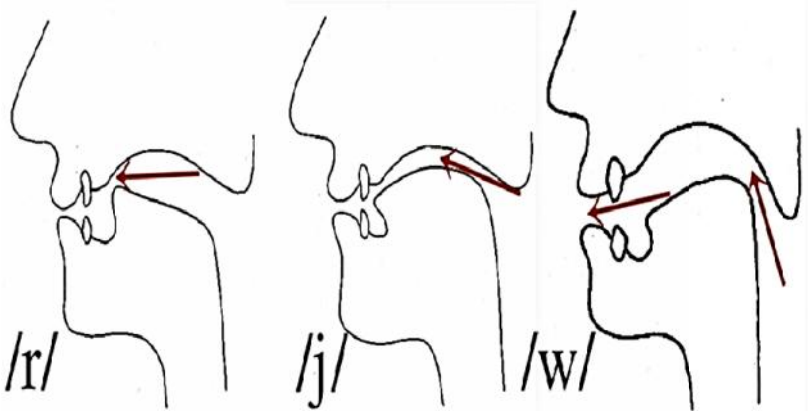


Fig. 8.10 Sagittal section view ofapproximants: /r/, /j/, /w/

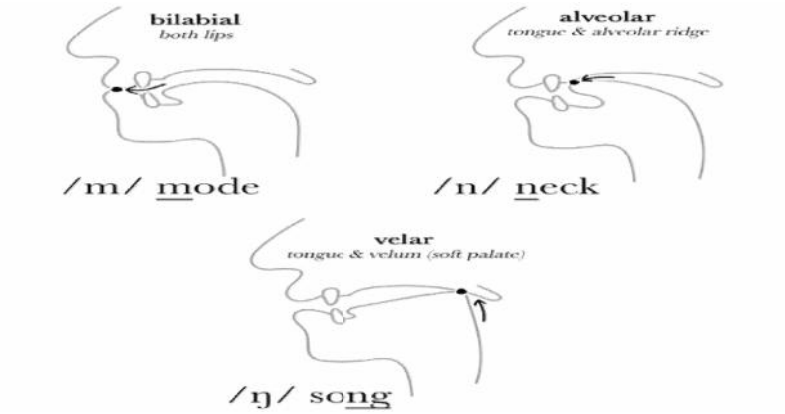


Fig. 8.11 Sagittal section view of nasals /m/, /n/, /ŋ/

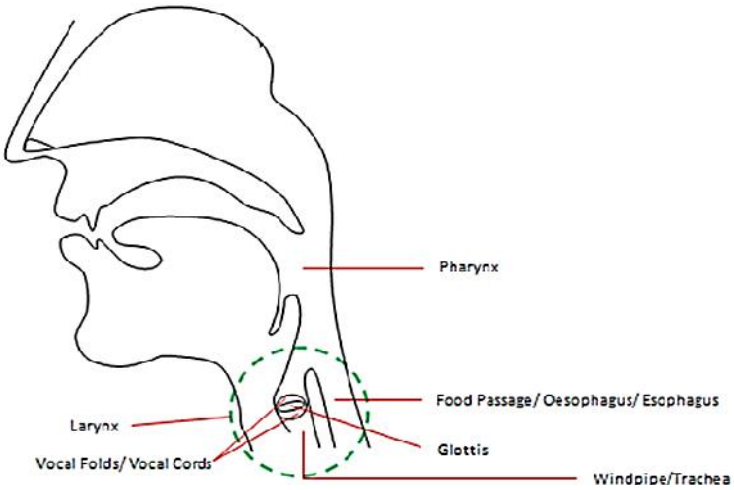


Fig. 8.12 Sagittal section view of glottal /h/

Notes on sagittal section view of vocal tract

- Explanation
- Sagittal section view of manner of articulation

8.5 Consonant: Phonic Drill

Phonic drills enhance understanding about common letter-sound relationships, including sounds for common letter patterns, so that readers can apply them in decoding unfamiliar words.

Phonic drills: Let us understand consonant sounds with some examples in IPA transcription forms.

Phonic Drill Plosives: /p/, /b/, /t/, /d/, /k/, /g/

/p/ as in

profession	/prəˈfɛʃən/
productive	/prəˈdʌktɪv/
parliament	/ˈpɑːləmənt/
perception	/pəˈsɛpʃən/
possession	/pəˈzɛʃən/
preference	/ˈprɛfərəns/
popularity	/ˌpɒpjʊˈlærɪti/
protective	/prəˈtɛktɪv/

peripheral	/pəˈrɪfərəl/
punishment	/ˈpʌnɪʃmənt/

/b/ as in

blackberry	/ˈblækbəri/
breathless	/ˈbrɛθlɪs/
brainchild	/ˈbreɪntʃaɪld/
biographer	/baɪˈɒgrəfə/
borderline	/ˈbɔːdəlaɪn/
bottleneck	/ˈbɒtlnɛk/
blistering	/ˈblɪstərɪŋ/
burdensome	/ˈbɜːdnsəm/
bipartisan	/baɪˌpɑːtɪˈzæn/
bronchitis	/brɒŋˈkaɪtɪs/

/t/ as in

transistor	/trænˈzɪstə/
turbulence	/ˈtɜːbjʊləns/
triumphant	/traɪˈʌmfənt/
triangular	/traɪˈæŋgjʊlə/
translator	/trænsˈleɪtə/
tomography	/təˈmɒgrəfi/
trajectory	/ˈtrædʒɪktəri/
topography	/təˈpɒgrəfi/
typewriter	/ˈtaɪpˌraɪtə/
toothpaste	/ˈtuːθpeɪst/

/d/ as in

disclosure	/dɪsˈkləʊʒə/
distribute	/dɪsˈtrɪbju(ː)t/
diagnostic	/ˌdaɪəgˈnɒstɪk/
depression	/dɪˈprɛʃən/
definitive	/dɪˈfɪnɪtɪv/
disability	/ˌdɪsəˈbɪlɪti/
discretion	/dɪsˈkrɛʃən/
dedication	/ˌdɛdɪˈkeɪʃən/
diplomatic	/ˌdɪpləˈmætɪk/
dictionary	/ˈdɪkʃ(ə)n(ə)ri/

/k/ as in

kilowatt	/ˈkɪləʊwɒt/
kangaroo	/ˌkæŋgəˈruː/
kilogram	/ˈkɪləʊgræm/
kingship	/ˈkɪŋʃɪp/
kerosene	/ˈkɛrəsiːn/
keepsake	/ˈkiːpseɪk/
kindling	/ˈkɪndlɪŋ/
kickback	/ˈkɪkbæk/
kilobyte	/ˈkɪləbaɪt/
kabbalah	/kəˈbɑːlə/

/g/ as in

gratitude	/ˈgrætɪtjuːd/
glamorous	/ˈglæmərəs/
greenwood	/ˈgriːnwʊd/
guerrilla	/gəˈrɪlə/
goldsmith	/ˈgəʊldsmɪθ/
guideline	/ˈgaɪdlaɪn/
grotesque	/grəʊˈtɛsk/
guarantor	/ˌgærənˈtɔː/
graveyard	/ˈgreɪvjɑːd/
grievance	/ˈgriːvəns/

Phonic Drill Fricatives: **/f/, /v/, /s/, /z/, /θ/, /ð/, /ʃ/, /ʒ/**

/f/ as in

fourteenth	/ˈfɔːˈtiːnθ/
fiberglass	/ˈfaɪbəglɑːs/
fertilizer	/ˈfɜːtɪlaɪzə/
fractional	/ˈfrækʃənl/
furnishing	/ˈfɜːnɪʃɪŋ/
freshwater	/ˈfrɛʃˌwɔːtə/
foreground	/ˈfɔːgraʊnd/
flamboyant	/flæmˈbɔɪənt/
forbidding	/fəˈbɪdɪŋ/
fraternity	/frəˈtɜːnɪti/

/v/ as in

vibration	/vaɪˈbreɪʃən/
valentine	/ˈvæləntaɪn/
vandalism	/ˈvændəlɪzm/

vengeance	/ˈvɛnʤəns/
visualize	/ˈvɪzjʊəlaɪz/
venerable	/ˈvɛnərəbl/
viscosity	/vɪsˈkɒsɪti/
videotape	/ˈvɪdɪə(ʊ)ˌteɪp/
vigilance	/ˈvɪʤɪləns/
veritable	/ˈvɛrɪtəbl/

/θ/ as in

threesome	/ˈθriːsəm/
theatrics	/θɪˈætrɪks/
thankless	/ˈθæŋ klɪs/
theocracy	/θɪˈɒkrəsi/
thinkable	/ˈθɪŋkəbl/
thighbone	/ˈθaɪbəʊn/
throughly	/ˈθruːli/
thumbtack	/ˈθʌmtæk/
thanksgiving	/ˈθæŋ ksˌgɪvɪŋ/
therapeutics	/ˌθɛrəˈpjuːtɪks/

/ð/ as in

thither	/ˈðɪðə/
themselves	/ðəmˈsɛlvz/
thereafter	/ðeərˈɑːftə/
thereunder	/ðeərˈʌndə/
thereabout	/ˈðeərəbaʊt/
therapists	/ˈθɛrəpɪsts/
therefore	/ˈðeəfɔː/
therefrom	/ðeəˈfrɒm/
therewith	/ðeəˈwɪθ/
thereupon	/ˈðeərəˈpɒn/

/s/ as in

structured	/ˈstrʌkʧəd/
supplement	/ˈsʌplɪmənt/
substitute	/ˈsʌbstɪtjuːt/
separation	/ˌsɛpəˈreɪʃən/
suggestion	/səˈʤɛsʧən/
systematic	/ˌsɪstɪˈmætɪk/
suspension	/səsˈpɛnʃən/

supervisor	/ˈsjuːpəvaɪzə/
simplicity	/sɪmˈplɪsɪti/
submission	/səbˈmɪʃən/

/z/ as in

zealot	/ˈzɛlət/
zircon	/ˈzɜːkɒn/
zinger	/ˈzɪŋə/
zapper	/ˈzæpə/
zero	/ˈzɪərəʊ/
zinc	/zɪŋk/
zoom	/zuːm/
zeal	/ziːl/
zest	/zɛst/
zany	/ˈzeɪni/

/ʃ/ as in

shellproof	/ˈʃɛlpruːf/
shrillness	/ˈʃrɪlnəs/
shrinkable	/ˈʃrɪŋkəbl/
shrinkages	/ˈʃrɪŋkɪʤɪz/
shortfall	/ˈʃɔːtˌfɔːl/
shoreline	/ˈʃɔːˌlaɪn/
shrinkage	/ˈʃrɪŋkɪʤ/
shorthand	/ˈʃɔːthænd/
shoemaker	/ˈʃuːˌmeɪkə/
shameless	/ˈʃeɪmlɪs/

/ʒ/ as in

treasurer	/ˈtrɛʒərə/
enclosure	/ɪnˈkləʊʒə/
leisurely	/ˈlɛʒəli/
composure	/kəmˈpəʊʒə/
remeasure	/ˌriːˈmɛʒə/
exposure	/ɪksˈpəʊʒə/
measured	/ˈmɛʒəd/
pleasure	/ˈplɛʒə/
treasure	/ˈtrɛʒə/
displeasure	/dɪsˈplɛʒə/
foreclosure	/fɔːˈ kləʊʒə/

Phonic Drill Affricates: /tʃ/, /dʒ/

/tʃ/ as in

chargeable	/ˈʧɑːʤəbl/
chimpanzee	/ˌʧɪmpənˈziː/
changeable	/ˈʧeɪnʤəbl/
churchyard	/ˈʧɜːʧˈjɑːd/
chatterbox	/ˈʧætəbɒks/
chalkboard	/ˈʧɔːkˌbɔːd/
chessboard	/ˈʧɛsbɔːd/
churchgoer	/ˈʧɜːʧˌgəʊə/
changeless	/ˈʧeɪnʤlɪs/
changeling	/ˈʧeɪnʤlɪŋ/

/dʒ/ as in

jackbooted	/ˈʤækbuːtɪd/
journalese	/ˌʤɜːnəˈliːz/
johnnycake	/ˈʤɒnɪkeɪk/
jackanapes	/ˈʤækəneɪps/
jubilantly	/ˈʤuːbɪlənɪtli/
jubilances	/ˈʤuːbɪlənsɪz/
jubilating	/ˈʤuːbɪleɪtɪŋ/
judicially	/ʤu(ː)ˈdɪʃəli/
judgements	/ˈʤʌʤmənts/
judiciary	/ʤu(ː)ˈdɪʃɪəri/
jewellery	/ˈʤuːəlri/
judicious	/ʤu(ː)ˈdɪʃəs/

Phonic Drill Lateral: /l/

/l/ as in

lackluster	/ˈlækˌlʌstə/
locomotive	/ˈləʊkəˌməʊtɪv/
liberalism	/ˈlɪbərəlɪzm/
lighthouse	/ˈlaɪthaʊs/
livelihood	/ˈlaɪvlɪhʊd/
liturgical	/lɪˈtɜːʤɪkəl/
legislator	/ˈlɛʤɪsleɪtə/
letterhead	/ˈlɛtəhɛd/
lymphocyte	/ˈlɪmfəʊˌsaɪt/
locomotion	/ˌləʊkəˈməʊʃən/
legitimize	/lɪˈʤɪtɪmaɪz/

locomotion	/ˌləʊkəˈməʊʃən/

Phonic Drill Approximants**: /ɹ/, /j/, /w/**

/ɹ/ as in

responsible	/rɪsˈpɒnsəbl/
recognition	/ˌrɛkəgˈnɪʃən/
residential	/ˌrɛzɪˈdɛnʃəl/
requirement	/rɪˈkwaɪəmənt/
replacement	/rɪˈpleɪsmənt/
restoration	/ˌrɛstəˈreɪʃən/
resignation	/ˌrɛzɪgˈneɪʃən/
renaissance	/rəˈneɪsəns/
reservation	/ˌrɛzəˈveɪʃən/
realization	/ˌrɪəlaɪˈzeɪʃən/
respiratory	/rɪˈspɪrət(ə)ri/
respiratory	/rɪˈspɪrət(ə)ri/

/j/ as in

yielding	/ˈjiːldɪŋ/
youthful	/ˈjuːθfʊl/
yearning	/ˈjɜːnɪŋ/
yearlong	/ˈjɪəlɒŋ/
yearbook	/ˈjɪəbʊk/
yellow	/ˈjɛləʊ/
yearly	/ˈjɪəli/
yogurt	/ˈjɒgə(ː)t/
yeoman	/ˈjəʊmən/
yuppie	/ˈjʌpi/

/w/ as in

watercraft	/ˈwɔːtəkrɑːft/
weathering	/ˈwɛðərɪŋ/
witchcraft	/ˈwɪʧkrɑːft/
wonderland	/ˈwʌndəlænd/
windscreen	/ˈwɪndskriːn/
windshield	/ˈwɪndʃiːld/
waterworks	/ˈwɔːtəwɜːks/
watertight	/ˈwɔːtətaɪt/
workaholic	/ˌwɜːkəˈhɒlɪk/
woodpecker	/ˈwʊdˌpɛkə/

Phonic Drill Nasals: /n/, /m/, /ŋ/

/n/ as in

nonfiction	/ˌnɒnˈfɪkʃən/
nutritious	/nju(:)ˈtrɪʃəs/
nucleotide	/ˈnjuːklɪətaɪd/
nonferrous	/ˈnɒnˈfɛrəs/
negotiable	/nɪˈgəʊʃiəbəl/
naturalist	/ˈnæʧrəlɪst/
neutralize	/ˈnjuːtrəlaɪz/
newsweekly	/ˈnjuːzˌwiːkli/
newsworthy	/ˈnjuːzˌwɜːði/
nutcracker	/ˈnʌtˌkrækə/

/m/ as in

mysterious	/mɪsˈtɪərɪəs/
memorandum	/ˌmɛməˈrændəm/
medication	/ˌmɛdɪˈkeɪʃən/
millennium	/mɪˈlɛnɪəm/
manageable	/ˈmænɪʤəbl/
microphone	/ˈmaɪkrəfəʊn/
manuscript	/ˈmænjʊskrɪpt/
measurable	/ˈmɛʒərəbl/
manipulate	/məˈnɪpjʊleɪt/
marketable	/ˈmɑːkɪtəbl/

/ŋ/ as in

bilingualism	/bʌɪˈlɪŋgwəlɪzəm/
linguistic	/lɪŋˈgwɪstɪk/
proceeding	/prəˈsiːdɪŋ/
increasingly	/ɪnˈkriːsɪŋli/
commanding	/kəˈmɑːndɪŋ/
staggering	/ˈstægərɪŋ/
refreshing	/rɪˈfrɛʃɪŋ/
overriding	/ˌəʊvəˈraɪdɪŋ/
depressing	/dɪˈprɛsɪŋ/
sentencing	/ˈsɛntənsɪŋ/

Phonic Drill Glottalic: /h/

/h/ as in

honourable	/ˈɒnərəbl/
harmonious	/hɑːˈməʊniəs/
horrendous	/hɒˈrɛndəs/
headmaster	/ˌhɛdˈmɑːstə/
horsepower	/ˈhɔːsˌpaʊə/
henceforth	/ˈhɛnsˈfɔːθ/
homecoming	/ˈhəʊmˌkʌmɪŋ/
hemoglobin	/ˌhiːməʊˈgləʊbɪn/
hemorrhage	/ˈhɛmərɪʤ/
highlander	/ˈhaɪləndə/

Notes on consonant phonic drills

- Explanation
- Phonic drills

Keywords

International Phonetic Alphabet (IPA): It is an alphabetdeveloped in the 19th century to accurately represent the pronunciation of languages.

Manner of articulation: It describes how the different speech organs are involved in producing a consonant sound, basically how the airflow is obstructed which remains a distinctive feature in the English language.

Summary

This unit covered ideas on the concept ofInternational Phonetic Alphabet (IPA) which is an alphabetic system of phonetic notation based primarily on the Latin script thus standardizing representation of speech sounds in written form.

The next segment covers all those respective modifications that are made to a sound,also referred to as their manner of articulation, thus describing how the different speech organs are involved in producing a consonant sound, in other words basically how the airflow is obstructed.

Self Assessment

1. Which one of the following does not fall in the nomenclature of consonant manner of articulation?

A. plosives
B. alveolar
C. affricates
D. glottal

2. Which one of the following is true for English Consonant sounds?

A. There are three components to know about consonant sounds: Manner, Place and Voice-Voiceless in articulation
B. There are two dimensions only: Quality & Quantity
C. All consonant sounds show very little or no obstruction in the egressive pulmonic airstream
D. The number of phonemes matches with the number of letters of English Alphabet

3. Which one of the following phoneme sets represents a Plosive sound?

A. /s/, /f/, /v/, /t/

B. /l/, /r/, /j/, /h/

C. /p/, /b/, /t/, /d/, /k/, /g/

D. /k/, /g/, /ʃ/, /ʤ/

4. Which one of the following phoneme sets represents a Fricative sound?

A. /θ/, /ð/, /s/, /ʃ/, /m/, /n/

B. /f/, /v/, /s/, /ʃ/

C. /z/, /k/, /h/, /g/

D. /ʒ/, /g/, /ʃ/, /ʤ/

5. Which one of the following phoneme sets represents an Approximant sound?

A. /t/, /d/, /n/, /h/

B. /z/, /k/, /h/, /g/

C. /ʒ/, /g/, /ʃ/, /ʤ/

D. /w/, /j/

6. What is the manner of articulation of the FIRST sound in the word furious?

A. plosives

B. affricate

C. fricatives

D. nasal

7. What is the manner of articulation of the FIRST sound in the word kingdom?

A. nasals

B. plosives

C. glottal

D. fricatives

8. What is the manner of articulation of the FIRST sound in the word thought?

A. plosives

B. affricates

C. fricatives

D. glottal

9. What is the manner of articulation of the LAST sound in the word dramatist?

A. plosives

B. nasal

C. fricatives

D. lateral

10. What is the manner of articulation of the LAST sound in the word horrible?
A. fricatives
B. nasals
C. plosives
D. lateral

11. What is the manner of articulation of the FIRST sound in the word people?
A. fricatives
B. lateral
C. stops
D. affricates

12. What is the manner of articulation of the FIRST sound in the word marriage?
A. fricatives
B. plosives
C. nasal
D. affricates

13. What is the manner of articulation of the LAST sound in the word watch?
A. plosives
B. nasal
C. fricatives
D. affricates

14. What is the manner of articulation of the LAST sound in the word king?
A. glottal
B. nasal
C. plosive
D. lateral

15. What is the manner of articulation of the FIRST sound in the word nomination?
A. nasal
B. glottal
C. stop
D. glottal

Answers for Self Assessment

1.	B	2.	A	3.	C	4.	B	5.	D
6.	C	7.	B	8.	C	9.	A	10.	D
11.	C	12.	C	13.	D	14.	C	15.	A

Review Questions

1. Explain the difference between fricatives and affricates.
2. Write 10 words starting with a plosive sound. Please make sure the words are not the same as given in illustration.
3. Write 10 words starting with a nasal sound. Please make sure the words are not the same as given in illustration.
4. Write 10 words starting with a lateral sound. Please make sure the words are not the same as given in illustration.
5. Write 10 words starting with a glottal sound. Please make sure the words are not the same as given in illustration.

Further Readings

- Sweet, Henry. A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform. Cambridge University Press, 2013.
- Jones, Daniel. An English Pronouncing Dictionary. Cambridge University Press, 2011.
- Ladefoged, Peter, and Ian Maddieson. The Sounds of the World's Languages. Blackwell Publishers, 1996.
- Roach, Peter. English Phonetics and Phonology: A Practical Course. Cambridge University Press, 2009.
- Laver, John. Principles of Phonetics. Cambridge University Press, 1994.

Web Links

https://www.internationalphoneticassociation.org/content/full-ipa-chart

https://omniglot.com/writing/ipa.htm

https://www.britannica.com/topic/International-Phonetic-Alphabet

http://www.ello.uos.de/field.php/PhoneticsandPhonology/MannerOfArticulation

https://www.mimicmethod.com/ft101/manner-of-articulation/

Unit 09: Phonemes

CONTENTS

Objectives

Introduction

9.1 Basic Terminologies

9.2 Concept of Phoneme

9.3 Phonetic Representation: Consonants and Vowels

9.4 Consonant Sounds: Sagittal Section View

9.5 Vowel Sounds: Sagittal Section View

9.6 Phonetic Transcription

9.7 Minimal Pairs: Vowel Sounds

9.8 Minimal Pairs: Consonant Sounds

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with the difference between Segmental and Suprasegmentalphonemes
- understand phonemic classification on multiple basis
- acquaint with different denominations of sound symbols
- understand use of IPA symbols for transcription purposes
- acquaint with conceptual utility of minimal sets & phonic drillsin context of consonant sounds
- acquaint with conceptual utility of minimal sets & phonic drillsin context of vowel sounds
- raise awareness of sound-symbol composite unit through minimal pairs

Introduction

In phonology and linguistics, a phoneme is a unit of sound that can distinguish one word from another in a particular language.For example, in most dialects of Englishthe sound patterns /sɪn/ (sin) and /sɪŋ/ (sing) are two separate words that are distinguished by the substitution of one phoneme, /n/, for another phoneme, /ŋ/. Two words like this that differ in meaning through the contrast of a single phoneme form a minimal pair.

Phonemes that are established by the use of minimal pairs, such as tap vs tab or pat vs bat, are written between slashes: /p/, /b/. To show pronunciation, linguists use square brackets: [p^h] (indicating an aspirated p in pat). Phoneme is generally regarded as an abstraction of a set (or equivalence class) of speech sounds (phones) that are perceived as equivalent to each other in a given language. For example, the English k sounds in the words kill and skill are not identical, but

they are distributional variants of a single phoneme /k/. Speech sounds that differ but do not create a meaningful change in the word are known as allophones of the same phoneme. Allophonic variation may be conditioned, in which case a certain phoneme is realized as a certain allophone in particular phonological environments, or it may otherwise be free, and may vary by speaker or by dialect. Therefore, phonemes are often considered to constitute an abstract underlying representation for segments of words, while speech sounds make up the corresponding phonetic realization, or the surface form.

Phonemes are conventionally placed between slashes in transcription, whereas speech sounds (phones) are placed between square brackets. Thus, /pʊʃ/ represents a sequence of three phonemes, /p/, /ʊ/, /ʃ/ (the word push in Standard English), and [pʰʊʃ] represents the phonetic sequence of sounds [pʰ] (aspirated p), [ʊ], [ʃ] (the usual pronunciation of push).

The first segment of the unit focuses on establishing a basic idea on terminologies like: segmental sounds, suprasegmental sounds, grapheme, digraph, trigraph, diacritics, and tabular representation of phonemes.

Then next segment deals inconsiderable detail with the idea ofconcept of phoneme, phonemic representation of consonants-vowels, sagittal section view of consonants-vowels, phonetic transcription, and minimal pairs for consonants-vowels.

Caution: Take care of correct pronunciation

phoneme is pronounced as /ˈfoʊniːm/

grapheme is pronounced as /ˈɡræfiːm/

monophone is pronounced as /ˈmɑʊnəfəʊn/

digraph is pronounced as/ˈdʌɪɡrɑːf/

diphone is pronounced as/ˈdʌɪfəʊn/

Trigraph is pronounced as /ˈtrʌɪɡrɑːf/

9.1 Basic Terminologies

Segmental sounds: In linguistics, segmental sounds are those discrete units that can be identified, either physically or auditorily, in the stream of speech. The term is most used in phonetics and phonology to refer to the smallest elements in a language, and this usage can be synonymous with the term phone.

In spoken languages, segments will typically be grouped into consonants and vowels, but the term can be applied to any minimal unit of a linear sequence meaningful to the given field of analysis, such as a mora or a syllable in prosodic phonology, a morpheme in morphology, or a chereme in sign language analysis.

Segments are called "discrete" because they are, at least at some analytical level, separate and individual, and temporally ordered. However, segments are generally not completely discrete in speech production or perception.

Suprasegmental sounds: In speech, suprasegmental refers to a phonological property of more than one sound segment. Also called nonsegmental, the term suprasegmental, which was coined by American structuralists in the 1940s, is used to refer to functions that are "over" vowels and consonants.

Superimposed on the syllables there are other features that are known as suprasegmental. These include variations in stress (accent) and pitch (tone and intonation). Variations in length are also usually considered to be suprasegmental features, although they can affect single segments as well as whole syllables. All of the suprasegmental features are characterized by the fact that they must be described in relation to other items in the same utterance. It is the relative values of the pitch, length, or degree of stress of an item that are significant. The absolute values are never linguistically

important, although they may be of importance Para linguistically, in that they convey information about the age and sex of the speaker, his emotional state, and his attitude.

Grapheme:A grapheme is a letter or a number of letters that represent a sound (phoneme) in a word. Another way to explain it is to say that a grapheme is a letter or letters that spell a sound in a word.

Monophone: The smallest meaningful contrastive unit in a writing/sound systemConsonants (22): /p/ /b/, /t/ /d/, /k/ /g/, /f/ /v/, /s/ /z/, /θ/ /ð/, /ʃ/ /ʒ/, /h/, /w/, /n/, /m/, /r/, /j/, /ŋ/, /l/.

Vowels (12): /iː/, /ɪ/, /e/, /æ/ /ə/, /ɜː/, /ʌ/, /uː/, /ʊ/, /ɔː/, /ɒ/, /aː/

Digraph:A combination of two letters/two sounds representing one sound

Consonants (02): /ʧ/ /dʒ/

Vowels (08): /ɪə/, /eə/, /ʊə/, /eɪ/, /aɪ/, /ɔɪ/, /əʊ/, /aʊ/

Trigraph: A group of three letters / three sounds representing one sound,

Vowels (05): /eɪə/, /aɪə/, /ɔɪə/, /əʊə/, /aʊə/

Diacritics: Diacritics or Prosodic Features or sound attributesare signs, such as an accent or cedilla, which when written above or below a letter indicates a difference in pronunciation from the same letter when unmarked or differently marked.

Aspiration [h]

Length [:],

Voiceless [̥],

Rounded / labialization [ʷ],

Nasalised[ ],

Dental [̪],

Unreleased Consonant [̚].

Syllable Indicator: Primary Stress, Secondary Stress /ˌmʌl.tɪˈpleɪə/

Tabular representation: All these tabular representations give ideas about articulation of consonant and vowel sounds.

IPA Symbol	Word	Word (IPA)	Place of Articulation	Manner of Articulation	Voicing
p	pin	/pɪn/	bilabial	stop	unvoiced
b	bin	/bɪn/	bilabial	stop	voiced
t	tin	/tɪn/	alveolar	stop	unvoiced
d	din	/dɪn/	alveolar	stop	voiced
k	kin	/kɪn/	velar	stop	unvoiced
g	give	/gɪv/	velar	stop	voiced
t	chin	/ʧɪn/	alveolar	affricate	unvoiced
d	gin	/dʒɪn/	alveolar	affricate	voiced
f	fin	/fɪn/	labiodental	fricative	unvoiced
v	vim	/vɪm/	labiodental	fricative	voiced
θ	thin	/θɪn/	interdental	fricative	unvoiced
ð	this	/ðɪs/	interdental	fricative	voiced

Fig. 9.1 Tabular representation of English Consonant sounds-I

IPA Symbol	Word	Word (IPA)	Place of Articulation	Manner of Articulation	Voicing
s	sin	/sɪn/	alveolar	fricative	unvoiced
z	zing	/zɪŋ/	alveolar	fricative	voiced
ʃ	shin	/ʃɪn/	palatal	fricative	unvoiced
ʒ	measu	/ˈmɛʒə/	palatal	fricative	voiced
h	hit	/hɪt/	glottal	fricative	unvoiced
m	mock	/mɒk/	bilabial	nasal	voiced
n	knock	/nɒk/	alveolar	nasal	voiced
ŋ	thing	/θɪŋ/	velar	nasal	voiced
r	wrong	/rɒŋ/	retroflex	liquid	voiced
l	long	/lɒŋ/	lateral	liquid	voiced
w	wasp	/wɒsp/	bilabial	glide	voiced
j	yacht	/jɒt/	palatal	glide	voiced

Fig. 9.2 Tabular representation of English Consonant sounds-II

IPA Symbol	Word	Word (IPA)	Height	Front-back	Rounding
iː	peat	/piːt/	high	front	unrounded
ɪ	pit	/pɪt/	high	front	unrounded
e	pet	/pɛt/	low-mid	front	unrounded
æ	pat	/pæt/	low	front	unrounded
ə	about	/əˈbaʊt/	mid	central	neutral
ɜː	turn	/tɜːn/	mid	central	neutral
ʌ	son	/sʌn/	low	central	neutral
uː	soon	/suːn/	high	back	rounded
ʊ	full	/fʊl/	high	back	rounded
ɔː	all	/ɔːl/	mid	back	rounded
ɒ	hot	/hɒt/	low-mid	back	rounded
aː	harm	/hɑːm/	low	back	rounded

Fig. 9.3 Tabular representation of English vowel sounds-Monophthongs

IPA Symbol	Word	Word (IPA)	Start Sound	End Sound	Height	Front-back	Rounding
ɪə	ear	/ɪə/	ɪ	ə	high to middle	front to medial	unrounded to neutral
ʊə	tour	/tʊə/	ʊ	ə	high to middle	back to medial	rounded to neutral
eə	hair	/heə/	e	ə	stayed middle	front to medial	unrounded to neutral
eɪ	cake	/keɪk/	e	ɪ	middle to high	stayed front	stayed unrounded
ɔɪ	voice	/vɔɪs/	ɔ	ɪ	middle to high	back to front	rounded to unrounded
aɪ	high	/haɪ/	a	ɪ	low to high	stayed front	rounded to unrounded
əʊ	grow	/grəʊ/	ə	ʊ	middle to high	medial to back	neutral to rounded
aʊ	house	/haʊs/	a	ʊ	low to high	satyed back	stayed rounded

Fig. 9.4 Tabular representation of English vowel sounds-Diphthongs

Minimal set: It provides a list of words, more than a pair, where one sound is different while retaining rest of the sounds as same. Another version can happen vice-versa where one sound is same other remaining sounds are different.

Example minimal sets

pack, peck, pick, pock, puck	/pæk/, /pɛk/, /pɪk/, /pɒk/, /pʌk/
gnat, net, knit, not, nut	/næt/, /nɛt/, /nɪt/, /nɒt/, /nʌt/
pat, pet, pit, pot, putt	/pæt/, /pɛt/, /pɪt/, /pɒt/, /pʌt/
feat, fit, fat, fate, fought, foot	/fiːt/, /fɪt/, /fæt/, /feɪt/, /fɔːt/, /fʊt/
beat, bit, bat, bait, bought	/biːt/, /bɪt/, /bæt/, /beɪt/, /bɔːt/
heat, hit, hat, hate	/hiːt/, /hɪt/, /hæt/, /heɪt/
ban, bill, bat, bull, buy, best	/bæn/, /bɪl/, /bæt/, /bʊl/, /baɪ/, /bɛst/
pan, pill, pat, pull, pie, pest	/pæn/, /pɪl/, /pæt/, /pʊl/, /paɪ/, /pɛst/
light, long, alive, led, glamour	/laɪt/, /lɒŋ/, /əˈlaɪv/, /lɛd/, /ˈglæmə/
right, wrong, arrive, red, grammar	/raɪt/, /rɒŋ/, /əˈraɪv/, /rɛd/, /ˈgræmə/
see, sell, sip, sigh, lass, lash	/siː/, /sɛl/, /sɪp/, /saɪ/, /læs/, /læʃ/
she, shell, ship, shy, lash	/ʃiː/, /ʃɛl/, /ʃɪp/, /ʃaɪ/, /læʃ/
fin, free, Fred, frill, first	/fɪn/, /friː/, /frɛd/, /frɪl/, /fɜːst/
thin, three, thread, thrill, thirst	/θɪn/, /θriː/, /θrɛd/, /θrɪl/, /θɜːst/

9.2 Concept of Phoneme

In linguistics, Phoneme is the smallest unit of speech distinguishing one word (or word element) from another, as the element p in "tap," which separates that word from "tab," "tag," and "tan." A phoneme may have more than one variant, called an allophone, which functions as a single sound; for example, the p's of "pat," "spat," and "tap" differ slightly phonetically, but that difference, determined by context, has no significance in English. In some languages, where the variant sounds of p can change meaning, they are classified as separate phonemes—e.g., in Thai the aspirated p (pronounced with an accompanying puff of air) and unaspirated p are distinguished one from the other.

Phonemes are based on spoken language and may be recorded with special symbols, such as those of the International Phonetic Alphabet. In transcription, linguists conventionally place symbols for phonemes between slash marks: /p/. The term phoneme is usually restricted to vowels and consonants, but some linguists extend its application to cover phonologically relevant differences of pitch, stress, and rhythm. Nowadays the phoneme often has a less central place in phonological theory than it used to have, especially in American linguistics. Many linguists regard the phoneme as a set of simultaneous distinctive features rather than as an unanalyzable unit.

9.3 Phonetic Representation: Consonants and Vowels

In articulatory phonetics, phonetic representation is responsible for describing speech as a physical phenomenon. That is, it covers measurable properties of articulation, acoustics and audition.

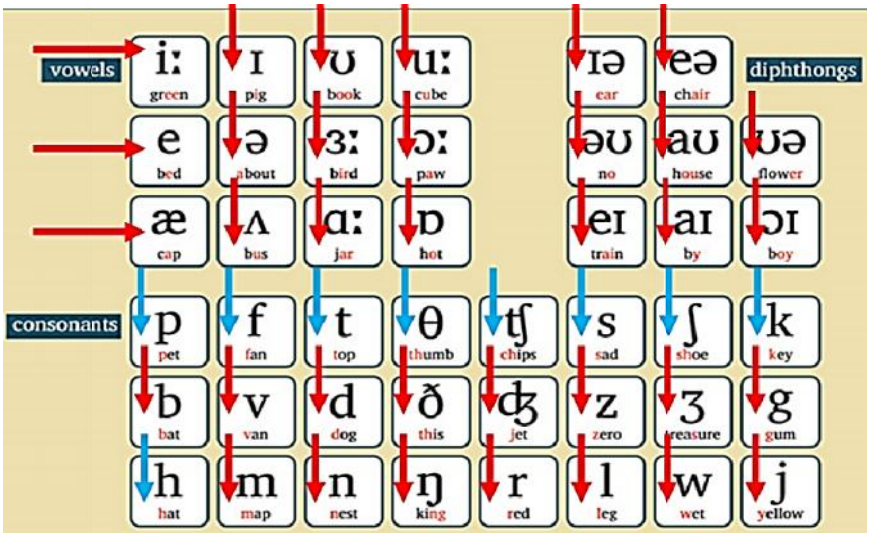


Fig. 9.5 Phonetic representation of English speech sounds with color marking: Red-voiced, Blue-voiceless

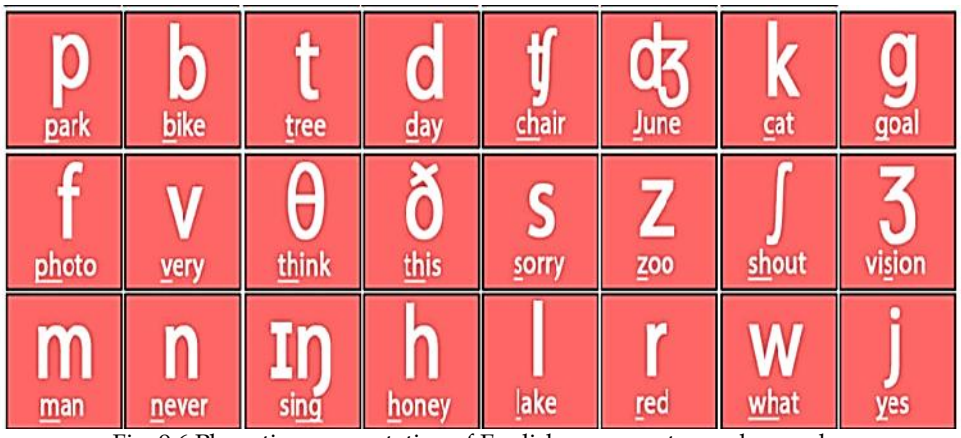


Fig. 9.6 Phonetic representation of English consonant speech sounds

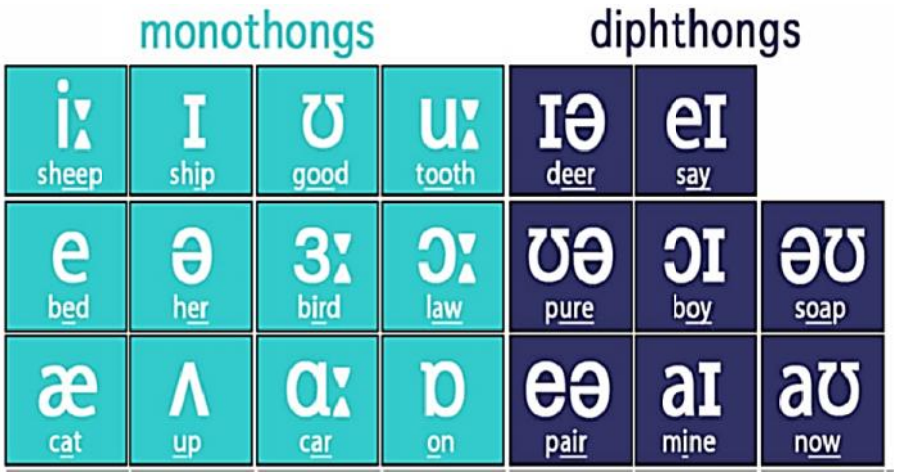


Fig. 9.7 Phonetic representation of English vowel speech sounds with different color markings: Aqua blue-monophthongs, Robin blue-diphthongs

9.4 Consonant Sounds: Sagittal Section View

Sagittal section view allows an inside-view of the articulators while making a given sound, in this case: Consonant sounds

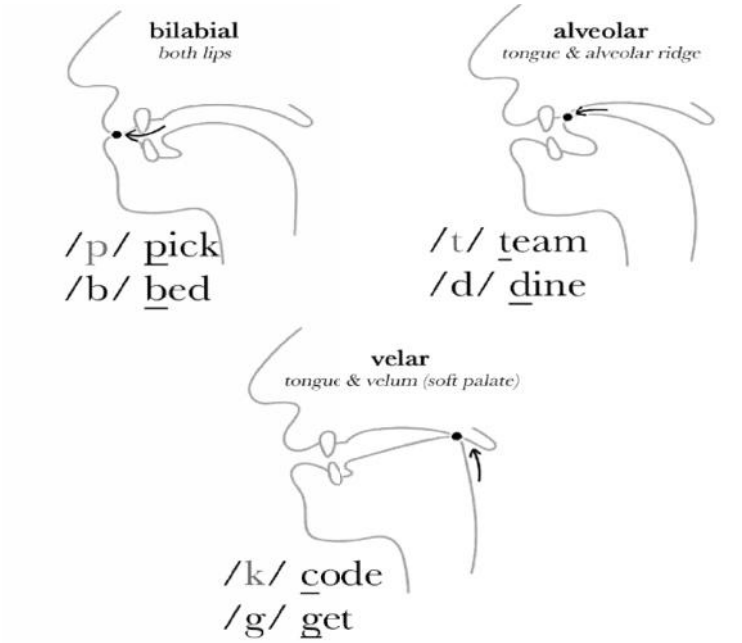


Fig. 9.8 Sagittal section view of plosives/p/, /b/, /t/, /d/. /k/, /g/

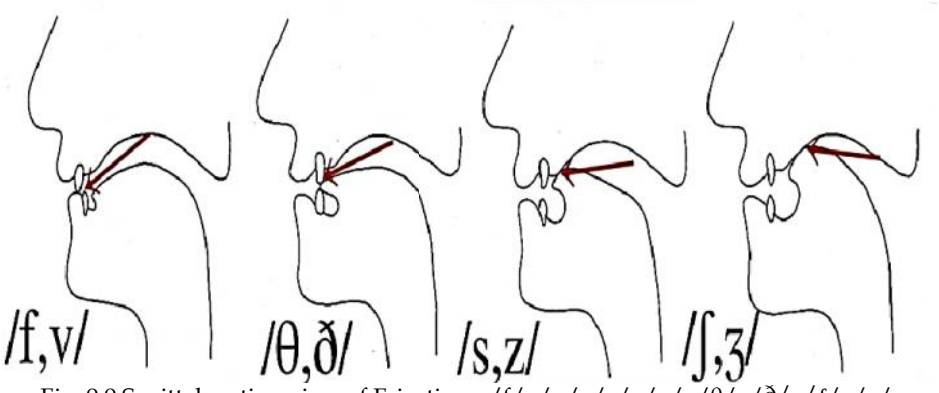


Fig. 9.9 Sagittal section view of Fricatives: /f/, /v/, /s/, /z/, /θ/, /ð/, /ʃ/, /ʒ/

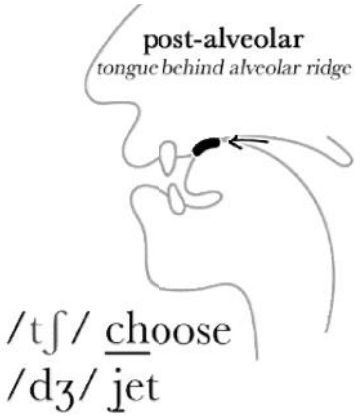


Fig. 9.10 Sagittal section view of affricates: /tʃ/, /dʒ/

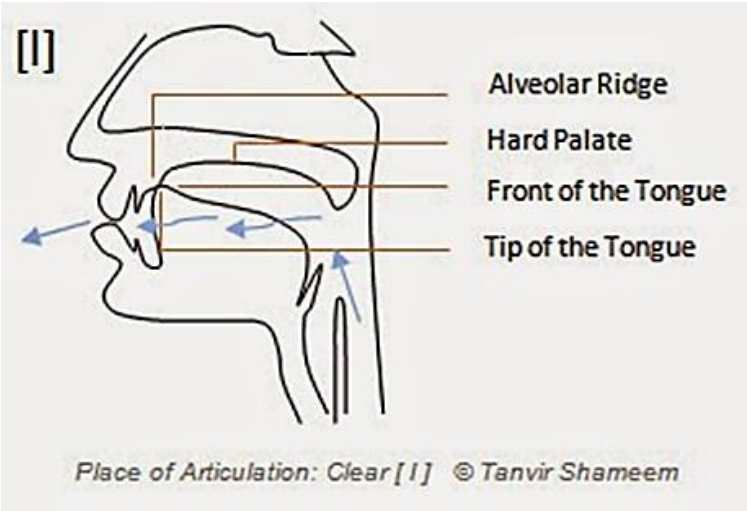


Fig. 9.11Sagittal section view of lateral: /l/

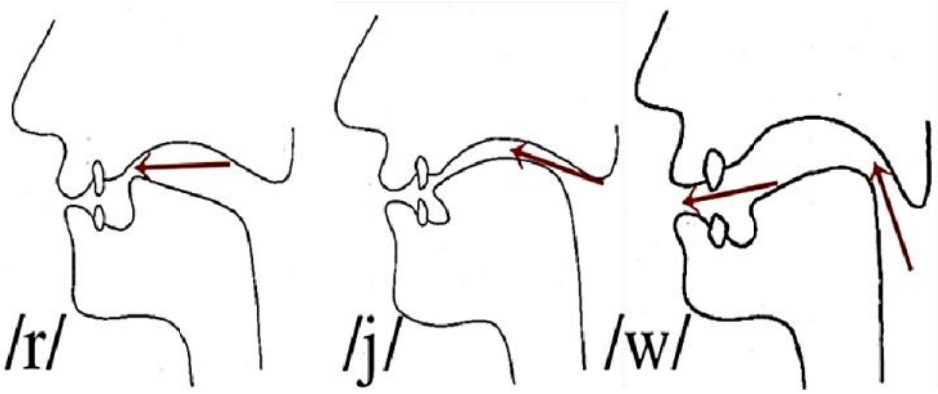


Fig. 9.12Sagittal section view ofapproximants: /r/, /j/, /w/

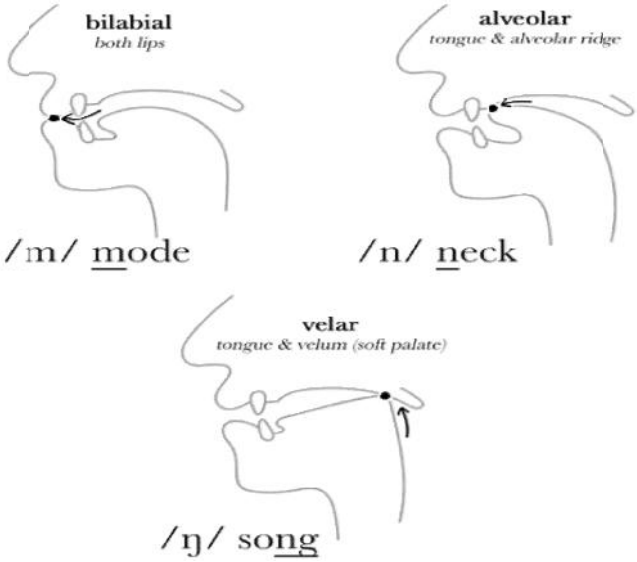


Fig. 9.13Sagittal section view of nasals /m/, /n/, /ŋ/

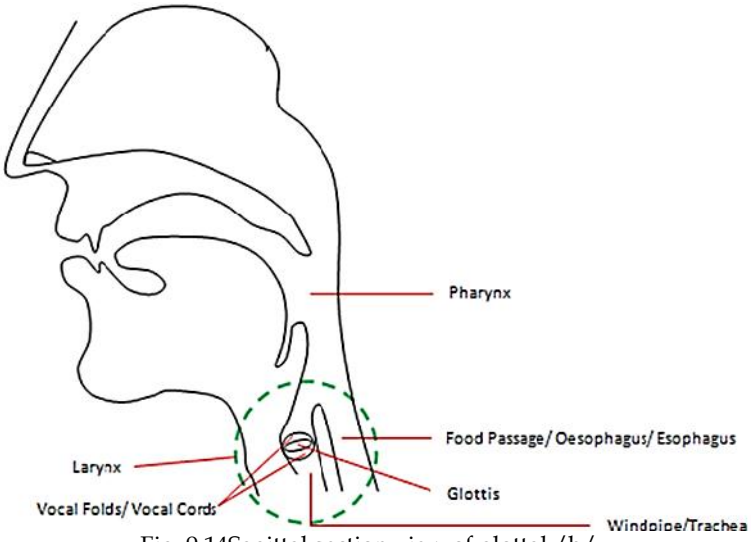


Fig. 9.14Sagittal section view of glottal /h/

Notes on sagittal section view of consonant sounds

- Brief explanation
- Sagittal section view of consonant sounds

9.5 Vowel Sounds: Sagittal Section View

Sagittal section view allows an inside-view of the articulators while making a given sound, in this case: Vowel sounds

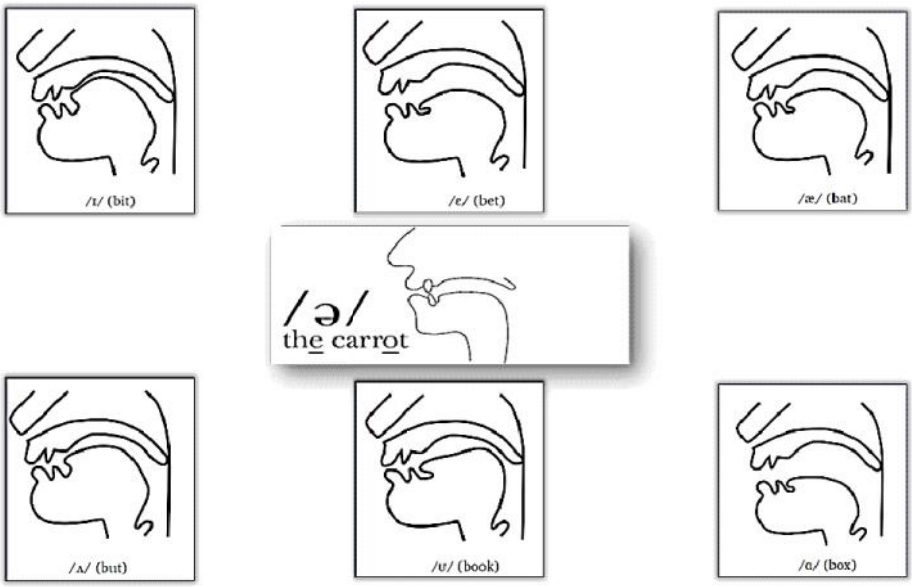


Fig. 9.15Sagittal section view of short vowels

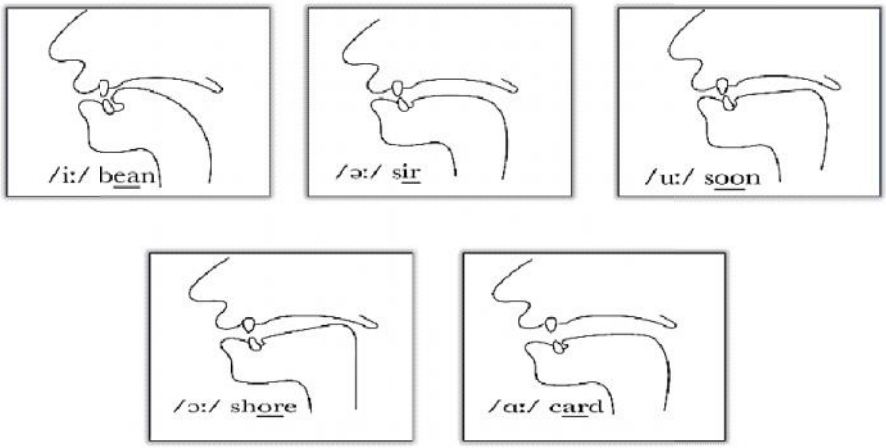


Fig. 9.16Sagittal section view of long vowels

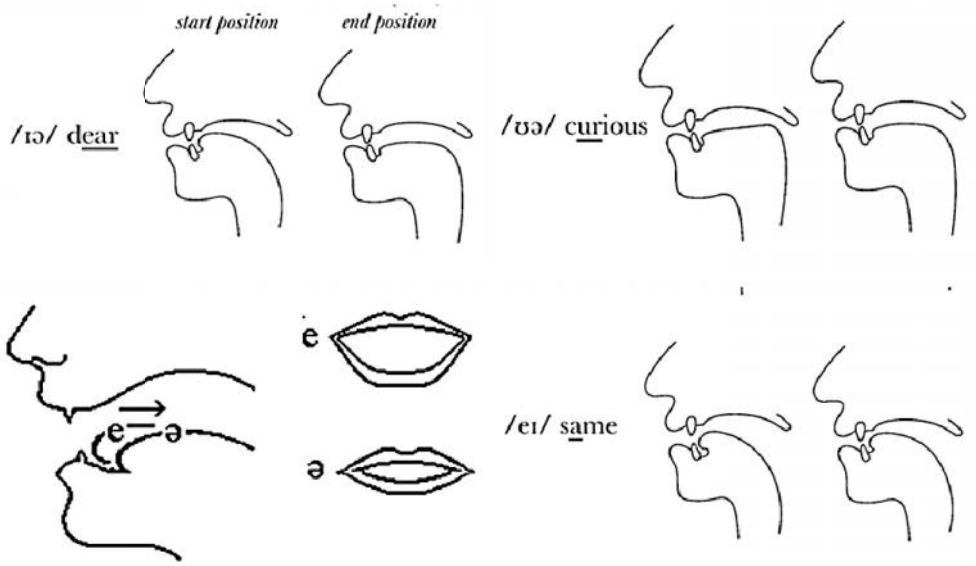


Fig. 9.17Sagittal section view of diphthongs-I

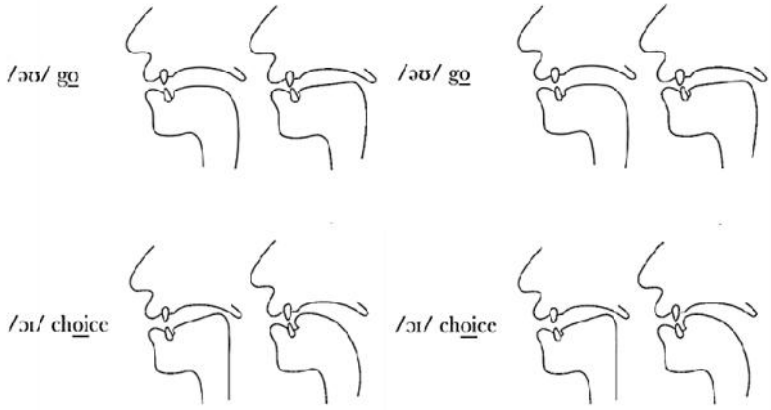


Fig. 9.18Sagittal section view of diphthongs-II

Notes on sagittal section view of vowel sounds

- Brief explanation
- Sagittal section view of vowel sounds

9.6 Phonetic Transcription

Phonetic transcription (also known as phonetic script or phonetic notation) is the visual representation of speech sounds (or phones) by means of symbols. The most common type of phonetic transcription uses a phonetic alphabet, such as the International Phonetic Alphabet.

For most languages, phonetic transcription makes it possible to show pronunciation with something much nearer to a one-to-one relationship between sound and symbol than is possible with the language's orthography. Phonetic transcription allows one to step outside orthography, examine differences in pronunciation between dialects within a given language and identify changes in pronunciation that may take place over time.

The International Phonetic	/ðiˌɪn.tɜː.ˈnæʃ.ə.nəl fəʊ.ˈne.tɪk
Alphabet (IPA) is an	ˈæl.fə.bɪt (aɪ-piː-eɪ) ɪz ən
alphabetic system of phonetic	ˌæl.fə.ˈbe.tɪk ˈsɪs.tɪm ɒf
notation based primarily on	fəʊˈne.tɪk nəʊ.ˈteɪ.ʃən beɪst
the Latin script. It was devised	ˈpraɪ.mə.rɪ.liː ɒn ðə ˈlæ.tɪn skrɪpt.
by the International Phonetic	ɪt wɒz dɪ.ˈvaɪzd baɪ ði
Association in the late 19th	ˌɪntɜːˈnæ.ʃə.nəl fəʊ.ˈne.tɪk
century as a standardized	ə.ˌsəʊ.sɪ.ˈeɪ.ʃən ɪn ðə leɪt 19th
representation of speech	ˈsɛn.tʃʊ.riː əz eɪ ˈstæn.də.daɪzd
sounds in written form.	ˌrep.rɪ.zɛnˈteɪ.ʃən ɒf spiːtʃ saʊndz
	ɪn ˈrɪtn fɔːm/

Fig. 9.19Sample demonstration of IPA transcription –I

The IPA is used by	/ðiː aɪ-piː-eɪ ɪz juːzd baɪ
lexicographers, foreign	ˌlɛk.sɪˈkɒg.rə.fəz, ˈfɒ.rɪn
language students and	ˈlæŋg.wɪʤ ˈstjuː.dənts ænd
teachers, linguists,	ˈtiː.ʧəz, ˈlɪŋg.wɪsts, spiːʧ.-
speech-language	ˈlæŋg.wɪʤ pə.ˈθɒ.lə.ʤɪsts,
pathologists, singers,	ˈsɪŋ.əz, ˈæk.təz,
actors, constructed	kən.ˈstrʌk.tɪd ˈlæŋg.wɪʤ
language creators and	kriː.ˈeɪ.təz ænd
translators.	træns.ˈleɪ.təz/

Fig. 9.20Sample demonstration of IPA transcription –II

The IPA is designed to represent those qualities of speech that are part of lexical (and to a limited extent prosodic) sounds in oral language: phones, phonemes, intonation and the separation of words and syllables.	/ðiː aɪ-piː-eɪ ɪz dɪˈzaɪnd təʊ ˌrɛp.rɪˈzɛnt ðəʊz ˈkwɒ.lɪ.tiːz ɒf spiːʧ ðæt ɑː pɑːt ɒf ˈlɛk.sɪ.kəl (ænd tʊ ə ˈlɪ.mɪ.tɪd ɪksˈtɛnt prəˈsɒ.dɪk) saʊndz ɪn ˈɔː.rəl ˈlæŋ.wɪʤ: fəʊnz, ˈfəʊ.niːmz, ˌɪntəʊˈneɪ.ʃən ænd ðə ˌsɛ.pəˈreɪ.ʃən ɒf wɜːdz ænd ˈsɪ.lə.bəlz/

Fig. 9.21 Sample demonstration of IPA transcription -III

Notes on phonetic transcription

- Explanation
- Illustrative example

9.7 Minimal Pairs: Vowel Sounds

A minimal pair is two words that vary by only a single sound, usually meaning sounds that may confuse English learners, like the /f/ and /v/ in fan and van, or the /e/ and /ɪ/ in desk and disk.

Example minimal pairs

Minimal pair /ɪ/ and /iː/	sit seat
Minimal pair /e/ and /ɪ/	desk disk
Minimal pair /e/ and /eɪ/	wet wait
Minimal pair /æ/ and /ʌ/	bat but
Minimal pair /əʊ/ and /ɔː/	so saw
Minimal pair /ɒ/ and /əʊ/	not note
Minimal pair /æ/ and /e/	bad bed
Minimal pair /ɑː/ and /ɜː/	fast first
Minimal pair /æ/ and /ɑː/	had hard
Minimal pair /ɒ/ and /ɔː/	cot caught
Minimal Pair /əʊ/ and /aʊ/	know now

Minimal pair /ɪ/ and /iː/ as in

bin - bean	/bɪn/ - /biːn/
chip - cheap	/ʧɪp/ - /ʧiːp/
it - eat	/ɪt/ - /iːt/
sit - seat	/sɪt/ - /siːt/
did - deed	/dɪd/ - /diːd/
fill - feel	/fɪl/ - /fiːl/
fit - feet	/fɪt/ - /fiːt/

grin - green /grɪn/ - /griːn/

hit - heat /hɪt/ - /hiːt/

is - ease /ɪz/ - /iːz/

Minimal pair /e/ and /ɪ/ as in

dead - did /dɛd/ - /dɪd/

desk - disk /dɛsk/ - /dɪsk/

belt - built /bɛlt/ - /bɪlt/

fell - fill /fɛl/ - /fɪl/

head - hid /hɛd/ - /hɪd/

left - lift /lɛft/ - /lɪft/

mess - miss /mɛs/ - /mɪs/

bed - bid /bɛd/ - /bɪd/

beg – big /bɛg/ - /bɪg/

bell - bill /bɛl/ - /bɪl/

Minimal pair /e/ and /eɪ/ as in

wet - wait /wɛt/ - /weɪt/

bed - bade /bɛd/ - /beɪd/

bread - braid /brɛd/ - /breɪd/

fell - fail /fɛl/ - /feɪl/

get - gate /gɛt/ - /geɪt/

L - ale /ɛl/ - /eɪl/

let - late /lɛt/ - /leɪt/

M - aim /ɛm/ - /eɪm/

pen - pain /pɛn/ - /peɪn/

rest - raced /rɛst/ - /reɪst/

Minimal pair /æ/ and /ʌ/ as in

bat - but /bæt/ - /bʌt/

batter - butter /ˈbætə/ - /ˈbʌtə/

cap - cup /ˈkæp/ - /kʌp/

cat - cut /kæt/ - /kʌt/

match - much /mætʃ/ - /mʌtʃ/

bad - bud /bæd/ - /bʌd/

began - begun /bɪˈgæn/ - /bɪˈgʌn/

drank - drunk /dræŋk/ - /drʌŋk/

fan - fun /fæn/ - /fʌn/

hat - hut /hæt/ - /hʌt/

Minimal pair /əʊ/ and /ɔː/ as in

bowl - ball	/bəʊl/ - /bɔ:l/
O - or	/əʊ/ - /ɔ:/
so - saw	/səʊ/ - /sɔ:/
boat - bought	/bəʊt/ - /bɔ:t/
drone - drawn	/drəʊn/ - /drɔ:n/
folk - fork	/fəʊk/ - /fɔ:k/
know - nor	/nəʊ/ - /nɔ:/
oat - ought	/əʊt/ - /ɔ:t/
note - nought	/nəʊt/ - /nɔ:t/
coke - cork	/kəʊk/ - /kɔ:k/

Minimal pair /ɒ/ and /əʊ/ as in

not - note	/nɒt/ - /nəʊt/
want - won't	/wɒnt/ - /wəʊnt/
got - goat	/gɒt/ - /gəʊt/
hop - hope	/hɒp/ - /həʊp/
on - own	/ɒn/ - /əʊn/
cost - coast	/kɒst/ - /kəʊst/
non - known	/nɒn/ - /nəʊn/
rod - road	/rɒd/ - /rəʊd/
rot - wrote	/rɒt/ - /rəʊt/
sop - soap	/sɒp/ - /səʊp/

Minimal pair /æ/ and /e/ as in

bad - bed	/bæd/ - /bɛd/
man - men	/mæn/ - /mɛn/
and - end	/ænd/ - /ɛnd/
axe - X	/æks/ - /ɛks/
bag - beg	/bæg/ - /bɛg/
had - head	/hæd/ - /hɛd/
jam - gem	/ʤæm/ - /ʤɛm/
pan - pen	/pæn/ - /pɛn/
pat - pet	/pæt/ - /pɛt/
sad - said	/sæd/ - /sɛd/

Minimal pair /ɑ:/ and /ɜ:/ as in

fast - first	/fɑ:st/ - /fɜ:st/
bath - berth	/bɑ:θ/ - /bɜ:θ/
hard - heard	/hɑ:d/ - /hɜ:d/
heart - hurt	/hɑ:t/ - /hɜ:t/

pass - purse /pɑːs/ - /pɜːs/

bath - birth /bɑːθ/ - /bɜːθ/

bard - bird /bɑːd/ - /bɜːd/

card - curd /kɑːd/ - /kɜːd/

far - fur /fɑː/ - /fɜː/

farm firm /fɑːm/ /fɜːm/

Minimal pair /æ/ and /ɑː/ as in

back - bark /bæk/ - /bɑːk/

had - hard /hæd/ - /hɑːd/

hat - heart /hæt/ - /hɑːt/

jazz - jars /ʤæz/ - /ʤɑːrz/

bad - bard /bæd/ - /bɑːd/

ban - barn /bæn/ - /bɑːn/

cad - card /kæd/ - /kɑːd/

ham - harm /hæm/ - /hɑːm/

match - March /mæʧ/ - /mɑːʧ/

pack - park /pæk/ - /pɑːk/

Minimal pair /ɒ/ and /ɔː/ as in

bod - bored /bɒd/ - /bɔːd/

cot - caught /kɒt/ - /kɔːt/

fox - forks /fɒks/ - /fɔːks/

tock - talk tock - /tɔːk/

tot - taught /tɒt/ - /tɔːt/

was - wars /wɒz/ - /wɔːz/

what - wart /wɒt/ - /wɔːt/

bot - bought /bɒt/ - /bɔːt/

chock - chalk /ʧɒk/ - /ʧɔːk/

cock - cork /kɒk/ - /kɔːk/

Minimal Pair /əʊ/ and /aʊ/ as in

hose - house /həʊz/ - /haʊs/

know - now /nəʊ/ - /naʊ/

oat - out /əʊt/ - /aʊt/

tone - town /təʊn/ - /taʊn/

known - noun /nəʊn/ - /naʊn/

load - loud /ləʊd/ - /laʊd/

phoned - found /fəʊnd/ - /faʊnd/

road - rowed /rəʊd/ - /rəʊd/

vole - vowel /vəʊl/ - /ˈvaʊəl/

wrote - rout /rəʊt/ - /raʊt/

Notes on vowel minimal pairs

- Brief explanation
- Phonic drills of vowel sounds

9.8 Minimal Pairs: Consonant Sounds

Minimal pairs are two words that are pronounced almost in the same way, but they have one sound that makes them different. The sound can be a vowel or a consonant.These pairs have nothing to do with spelling or meaning. The words sound similar but they do not mean the same thing. Their definitions have nothing to do with each other.

They might be spelled very differently, but the actual sounds (called phonemes) will be quite similar. Or, the two words in a minimal pair might be spelled very similarly, with just one different letter.

Example minimal pairs

Minimal Pair /b/ and /v/	berry very
Minimal Pair /b/ and /p/	buy pie
Minimal Pair /n/ and /ŋ/	thin thing
Minimal Pair /l/ and /r/	alive arrive
Minimal Pair /ʧ/ and /t/	catch cat
Minimal Pair /s/ and /ʃ/	sea she
Minimal Pair /f/ and /v/	fan van
Minimal Pair /f/ and /h/	fat hat
Minimal Pair /f/ and /θ/	free three
Minimal Pair /s/ and /θ/	sink think
Minimal Pair /ð/ and /z/	with whizz
Minimal Pair /ʤ/ and /z/	page pays
Minimal Pair /d/ and /ʤ/	bad badge
Minimal Pair /f/ and /p/	coffee copy
Minimal Pair /kw/ and /k/	quick kick
Minimal Pair /tʃ/ and /dʒ/	cheese jeep
Minimal Pair /tʃ/ and /ʃ/	chair share
Minimal Pair /d/ and /ð/	day they
Minimal Pair /t/ and /θ/	tree three
Minimal Pair initial /f/ and /p/	fast past
Minimal Pair initial /k/ and /g/	came game
Minimal Pair initial /t/ and /d/	two do
Minimal Pair initial /v/ and /w/	vow wow
Minimal Pair initial /g/ and /w/	gate weight
Minimal Pair initial /h/ and /r/	hat rat

Minimal Pair initial /r/ and /w/ rich which

Minimal Pair initial /ʤ/ and /j/ jaw your

Minimal Pair initial /w/ and no /w/ where air*

Minimal Pair initial /h/ and no /h/ hate eight*

Minimal Pair final /k/ and /g/ back bag

Minimal Pair final /m/ and /n/ am an

Minimal Pair final /t/ and /d/ hat had

Minimal Pair final /s/ and /z/ bus buzz

Minimal Pair final /n/ and /ŋ/ thin thing

Minimal Pair final /ŋk/ and /ŋ/ think thing

Minimal Pair final /dʒ/ and /dʒi/ edge edgy*

Minimal Pair final /tʃ/ and /tʃi/ catch catchy*

Minimal Pair /b/ and /v/ as in

bowels – vowels /ˈbaʊəlz/ - /ˈvaʊəlz/

gibbon - given /ˈgɪbən/ - /ˈgɪvn/

bale - veil /beɪl/ - /veɪl/

bent - vent /bɛnt/ - /vɛnt/

bury - very /ˈbɛri/ - /ˈvɛri/

bow - vow /baʊ/ - /vaʊ/

bane - vein /beɪn/ - /veɪn/

bat - vat /bæt/ - /væt/

beer - veer /bɪə/ - /vɪə/

bid - vid /bɪd/ - vid

Minimal Pair /b/ and /p/ as in

blade - played /bleɪd/ - /pleɪd/

bland - planned /blænd/ - /plænd/

blank - plank /blæŋk/ - /plæŋk/

blaze - plays /bleɪz/ - /pleɪz/

bored - pawed /bɔːd/ - /pɔːd/

braise - prays /breɪz/ - /preɪz/

bride - pride /braɪd/ - /praɪd/

bull - pull /bʊl/ - /pʊl/

but - putt /bʌt/ - /pʌt/

butter - putter /ˈbʌtə/ - /ˈpʌtə/

Minimal Pair /n/ and /ŋ/ as in

done - dung /dʌn/ - /dʌŋ/

fan - fang /fæn/ - /fæŋ/

gone - gong	/gɒn/ - /gɒŋ/
kin - king	/kɪn/ - /kɪŋ/
ran - rang	/ræn/ - /ræŋ/
ton - tongue	/tʌn/ - /tʌŋ/
ban - bang	/bæn/ - /bæŋ/
banned - banged	/bænd/ - /bæŋd/
pan - pang	/pæn/ - /pæŋ/
pin - ping	/pɪn/ - /pɪŋ/

Minimal Pair /l/ and /r/ as in

belly - berry	/ˈbɛli/ - /ˈbɛri/
blight - bright	/blaɪt/ - /braɪt/
blues - bruise	/bluːz/ - /bruːz/
blush - brush	/blʌʃ/ - /brʌʃ/
fleas - freeze	/fliːz/ - /friːz/
late - rate	/leɪt/ - /reɪt/
lather - rather	/ˈlɑːðə/ - /ˈrɑːðə/
lay - ray	/leɪ/ - /reɪ/
lead - red	/liːd/ - /rɛd/
leech - reach	/liːʧ/ - /riːʧ/

Minimal Pair /ʧ/ and /t/ as in

beech - beet	/biːʧ/ - /biːt/
bitchy - bitty	/ˈbɪʧi/ - /ˈbɪti/
bleach - bleat	/bliːʧ/ - /bliːt/
blotch - blot	/blɒʧ/ - /blɒt/
botch - bot	/bɒʧ/ - /bɒt/
catchy - catty	/ˈkæʧi/ - /ˈkæti/
char – tar	/ʧɑː/ - /tɑː/
chide - tide	/ʧaɪd/ - /taɪd/
chirps - turps	/ʧɜːps/ - /tɜːps/
chit - tit	/ʧɪt/ - /tɪt/

Minimal Pair /s/ and /ʃ/ as in

crass - crash	/kræs/ - /kræʃ/
crust - crushed	/krʌst/ - /krʌʃt/
mass - mash	/mæs/ - /mæʃ/
mess - mesh	/mɛs/ - /mɛʃ/
sack - shack	/sæk/ - /ʃæk/
said - shed	/sɛd/ - /ʃɛd/

sake - shake /seɪk/ - /ʃeɪk/

sale - shale /seɪl/ - /ʃeɪl/

same - shame /seɪm/ - /ʃeɪm/

sank - shank /sæŋk/ - /ʃæŋk/

Minimal Pair /f/ and /v/ as in

belief - believe /bɪˈliːf/ - /bɪˈliːv/

fail - veil /feɪl/ - /veɪl/

fear - veer /fɪə/ - /vɪə/

feel - veal /fiːl/ - /viːl/

fender - vendor /ˈfɛndə/ - /ˈvɛndɔː/

grief - grieve /griːf/ - /griːv/

staff - starve /stɑːf/ - /stɑːv/

surf - serve /sɜːf/ - /sɜːv/

calf - carve /kɑːf/ - /kɑːv/

chaff - chav /ʧɑːf/ - chav

Minimal Pair /f/ and /h/ as in

faced - haste /feɪst/ - /heɪst/

fad - had /fæd/ - /hæd/

fare - hare /feə/ - /heə/

feed - he'd /fiːd/ - /hiːd/

fell - hell /fɛl/ - /hɛl/

fence - hence /fɛns/ - /hɛns/

few - hew /fjuː/ - /hjuː/

foal - whole /fəʊl/ - /həʊl/

foam - home /fəʊm/ - /həʊm/

fog - hog /fɒg/ - /hɒg/

Minimal Pair /f/ and /θ/ as in

fief - thief /fiːf/ - /θiːf/

firm - Therm /fɜːm/ - /θɜːm/

fort - thought /fɔːt/ - /θɔːt/

frill - thrill /frɪl/ - /θrɪl/

furred - third /fɜːd/ - /θɜːd/

duff - doth /dʌf/ - /dʌθ/

fang - thang /fæŋ/ - /θæŋ/

fawn - thorn /fɔːn/ - /θɔːn/

fore - thaw /fɔː/ - /θɔː/

fret - threat /frɛt/ - /θrɛt/

Minimal Pair /s/ and /θ/ as in

gross - growth	/grəʊs/ - /grəʊθ/
kiss - kith	/kɪs/ - /kɪθ/
Norse - North	/nɔːs/ - /nɔːθ/
race - wraith	/reɪs/ - /reɪθ/
seam - theme	/siːm/ - /θiːm/
sigh - thigh	/saɪ/ - /θaɪ/
sin - thin	/sɪn/ - /θɪn/
sore - thaw	/sɔː/ - /θɔː/
sought - thought	/sɔːt/ - /θɔːt/
sum - thumb	/sʌm/ - /θʌm/

Minimal Pair /ð/ and /z/ as in

teethe - teas	/tiːð/ - /tiːz/
teething - teasing	/ˈtiːðɪŋ/ - /ˈtiːzɪŋ/
bathe -bays	/beɪð/ -/beɪz/
breathe - breeze	/briːð/ - /briːz/
lithe - lies	/laɪð/ - /laɪz/
loathe - lows	/ləʊð/ - /ləʊz/
scythe - size	/saɪð/ - /saɪz/
seethe - seas	/siːð/ - /siːz/
bathe - baize	/beɪð/ - /beɪz/
lathe - laze	/leɪð/ - /leɪz/

Minimal Pair /ʤ/ and /z/ as in

binge - bins	/bɪnʤ/ - /bɪnz/
marge - Mars	/mɑːʤ/ - /mɑːz/
rage - raise	/reɪʤ/ - /reɪz/
rage - rays	/reɪʤ/ - /reɪz/
siege - seize	/siːʤ/ - /siːz/
strange - strains	/streɪnʤ/ - /streɪnz/
tinge - tins	/tɪnʤ/ - /tɪnz/
budge - buzz	/bʌʤ/ - /bʌz/
fudge - fuzz	/fʌʤ/ - /fʌz/
gauge - gaze	/geɪʤ/ - /geɪz/

Minimal Pair /d/ and /ʤ/ as in

charred - charge	/ʧɑːd/ - /ʧɑːʤ/
dale - jail	/deɪl/ - /ʤeɪl/

damn - jam	/dæm/ - /ʤæm/
day - jay	/deɪ/ - /ʤeɪ/
deans - jeans	/diːnz/ - /ʤiːnz/
dig - jig	/dɪg/ - /ʤɪg/
din - gin	/dɪn/ - /ʤɪn/
dunk - junk	/dʌŋk/ - /ʤʌŋk/
led - ledge	/lɛd/ - /lɛʤ/
mid - midge	/mɪd/ - /mɪʤ/

Minimal Pair /f/ and /p/ as in

drift - dripped	/drɪft/ - /drɪpt/
gaff - gap	/gæf/ - /gæp/
loaf - lope	/ləʊf/ - /ləʊp/
loft - lopped	/lɒft/ - /lɒpt/
naff - nap	naff - /næp/
reef - reap	/riːf/ - /riːp/
croft - cropped	/krɒft/ - /krɒpt/
grift - gripped	grift - /grɪpt/
hoof - hoop	/huːf/ - /huːp/
puff - pup	/pʌf/ - /pʌp/

Minimal Pair /kw/ and /k/ as in

quad - cod	/kwɒd/ - /kɒd/
quaff - cough	/kwɑːf/ - /kɒf/
qualm - calm	/kwɑːm/ - /kɑːm/
quid - kid	/kwɪd/ - /kɪd/
quilt - kilt	/kwɪlt/ - /kɪlt/
quote - coat	/kwəʊt/ - /kəʊt/
squat - Scot	/skwɒt/ - /skɒt/
squid - skid	/skwɪd/ - /skɪd/
quack - cack	/kwæk/ - cack
quail - kale	/kweɪl/ - /keɪl/

Minimal Pair /tʃ/ and /dʒ/ as in

char - jar	/ʧɑː/ - /ʤɑː/
cheer - jeer	/ʧɪə/ - /ʤɪə/
chest - jest	/ʧɛst/ - /ʤɛst/
chin - gin	/ʧɪn/ - /ʤɪn/
choke - joke	/ʧəʊk/ - /ʤəʊk/
chore - jaw	/ʧɔː/ - /ʤɔː/

chug - jug	/ʧʌg/ - /ʤʌg/
chunk - junk	/ʧʌŋk/ - /ʤʌŋk/
batch - badge	/bæʧ/ - /bæʤ/
botch - bodge	/bɒʧ/ - bodge

Minimal Pair /tʃ/ and /ʃ/ as in

cheek - chic	/ʧi:k/ - /ʃi:k/
cheers - shears	/ʧɪəz/ - /ʃɪəz/
chilled - shield	/ʧɪld/ - /ʃi:ld/
chin - shin	/ʧɪn/ - /ʃɪn/
chock - shock	/ʧɒk/ - /ʃɒk/
chore - shore	/ʧɔ:/ - /ʃɔ:/
hatch - hash	/hæʧ/ - /hæʃ/
itch - ish	/ɪʧ/ - ish
witch - wish	/wɪʧ/ - /wɪʃ/
batch - bash	/bæʧ/ - /bæʃ/

Minimal Pair /d/ and /ð/ as in

breed - breathe	/bri:d/ - /bri:ð/
dare - there	/deə/ - /ðeə/
dough - though	/dəʊ/ - /ðəʊ/
dawn - thorn	/dɔ:n/ - /θɔ:n/
die - thy	/daɪ/ - /ðaɪ/
load - loathe	/ləʊd/ - /ləʊð/
side - scythe	/saɪd/ - /saɪð/
sued - soothe	/sju:d/ - /su:ð/
udder - other	/ˈʌdə/ - /ˈʌðə/
bade - bathe	/beɪd/ - /beɪð/

Minimal Pair /t/ and /θ/ as in

boot - booth	/bu:t/ - /bu:ð/
clot - cloth	/klɒt/ - /klɒθ/
dirt - dearth	/dɜ:t/ - /dɜ:θ/
fate - faith	/feɪt/ - /feɪθ/
kit - kith	/kɪt/ - /kɪθ/
Thai - thigh	/taɪ/ - /θaɪ/
till - thrill	/tɪl/ - /θrɪl/
torn - thorn	/tɔ:n/ - /θɔ:n/
trash - thrash	/træʃ/ - /θræʃ/
tread - thread	/trɛd/ - /θrɛd/

Minimal Pair initial /f/ and /p/ as in

faced - paste /feɪst/ - /peɪst/

fang - pang /fæŋ/ - /pæŋ/

feed - peed /fi:d/ - /pi:d/

fend - penned /fɛnd/ - /pɛnd/

finch - pinch /fɪnʧ/ - /pɪnʧ/

flack - plaque /flæk/ - /plɑ:k/

flank - plank /flæŋk/ - /plæŋk/

fled - pled /flɛd/ - /plɛd/

flee - plea /fli:/ - /pli:/

fleet - pleat /fli:t/ - /pli:t/

Minimal Pair initial /k/ and /g/ as in

cramps - gramps /kræmps/ - gramps

crate - grate /kreɪt/ - /greɪt/

craven - graven /ˈkreɪvən/ - /ˈgreɪvən/

craze - graze /kreɪz/ - /greɪz/

cripes - gripes /krɪps/ - /graɪps/

crowned - ground/kraʊnd/ - /graʊnd/

crumble - grumble/ˈkrʌmbl/ - /ˈgrʌmbl/

cuff - guff /kʌf/ - /gʌf/

cull - gull /kʌl/ - /gʌl/

cunning - gunning/ˈkʌnɪŋ/ - /ˈgʌnɪŋ/

Minimal Pair initial /t/ and /d/ as in

tine - dine /taɪn/ - /daɪn/

tint - dint /tɪnt/ - /dɪnt/

titch - ditch titch - /dɪʧ/

tock - dock tock - /dɒk/

tosh - dosh /tɒʃ/ - dosh

toss - doss /tɒs/ - /dɒs/

tote - dote /təʊt/ - /dəʊt/

tresses - dresses /ˈtrɛsɪz/ - /ˈdrɛsɪz/

tub - dub /tʌb/ - /dʌb/

tummy - dummy /ˈtʌmi/ - /ˈdʌmi/

Minimal Pair initial /v/ and /w/ as in

verse - worse /vɜ:s/ - /wɜ:s/

Vick - wick Vick - /wɪk/

vile - while /vaɪl/ - /waɪl/

vine - wine /vaɪn/ - /waɪn/

vow - wow /vaʊ/ - /waʊ/

vie - why /vaɪ/ - /waɪ/

vine - whine /vaɪn/ - /waɪn/

volley - wally /ˈvɒli/ - /ˈwɔːli/

vein - wane /veɪn/ - /weɪn/

versed - worst /vɜːst/ - /wɜːst/

Minimal Pair initial /g/ and /w/ as in

guys - wise /gaɪz/ - /waɪz/

gag - wag /gæg/ - /wæg/

gain - wane /geɪn/ - /weɪn/

gale - wail /geɪl/ - /weɪl/

gave - waive /geɪv/ - /weɪv/

gawk - walk /gɔːk/ - /wɔːk/

gelding - welding /ˈgɛldɪŋ/ - /ˈwɛldɪŋ/

gimp - wimp /gɪmp/ - /wɪmp/

gotcha - wotcha /ˈgɒʧə/ - wotcha

gourd - ward /gʊəd/ - /wɔːd/

Minimal Pair initial /h/ and /r/ as in

hack - rack /hæk/ - /ræk/

haft - raft /hɑːft/ - /rɑːft/

hag - rag /hæg/ - /ræg/

hake - rake /heɪk/ - /reɪk/

hank - rank /hæŋk/ - /ræŋk/

hook - rook /hʊk/ - /rʊk/

hoot - root /huːt/ - /ruːt/

hub - rub /hʌb/ - /rʌb/

hump - rump /hʌmp/ - /rʌmp/

husk - rusk /hʌsk/ - /rʌsk/

Minimal Pair initial /r/ and /w/ as in

raid - wade /reɪd/ - /weɪd/

rail - wail /reɪl/ - /weɪl/

rake - wake /reɪk/ - /weɪk/

ram - wham /ræm/ - /wæm/

reek - week /riːk/ - /wiːk/

rend - wend /rɛnd/ - /wɛnd/

rick - wick /rɪk/ - /wɪk/

riff - whiff /rɪf/ - /wɪf/

roared - ward /rɔːd/ - /wɔːd/

rod - wad /rɒd/ - /wɒd/

Minimal Pair initial /ʤ/ and /j/ in as

juice - use /ʤuːs/ - /juːz/

gel - yell /ʤɛl/ - /jɛl/

gin - yin /ʤɪn/ - /jɪn/

jack - yak /ʤæk/ - /jæk/

Jews - use /ʤuːz/ - /juːz/

jack - yack /ʤæk/ - yack

jaw - yaw /ʤɔː/ - /jɔː/

jaw - yore /ʤɔː/ - /jɔː/

jetty - yeti /ˈʤɛti/ - /ˈjɛti/

joke - yolk /ʤəʊk/ - /jəʊk/

Minimal Pair initial /w/ and no /w/ as in

waste - aced /weɪst/ - /eɪst/

wax - axe /wæks/ - /æks/

wear - heir /weə/ - /eə/

weir - ear /wɪə/ - /ɪə/

wend - end /wɛnd/ - /ɛnd/

wise - eyes /waɪz/ - /aɪz/

word - erred /wɜːd/ - /ɜːd/

waft - oft /wɑːft/ - /ɒft/

wail - ale /weɪl/ - /eɪl/

ward - oared /wɔːd/ - /ɔːd/

Minimal Pair initial /h/ and no /h/ as in

hone - own /həʊn/ - /əʊn/

hop - op /hɒp/ - op

hacks - axe /hæks/ - /æks/

haze - As /heɪz/ - /æz/

hitch - itch /hɪʧ/ - /ɪʧ/

hoakie - oaky hoakie - /ˈəʊki/

hose - Os /həʊz/ - /ɒs/

hurl - Earl /hɜːl/ - /ɜːl/

hark - ark /hɑːk/ - /ɑːk/

haste - aced /heɪst/ - /eɪst/

Minimal Pair final /k/ and /g/ as in

beck - beg	/bɛk/ - /bɛg/
berk - berg	berk - /bɜːg/
chuck - chug	/ʧʌk/ - /ʧʌg/
cock - cog	/kɒk/ - /kɒg/
flock - flog	/flɒk/ - /flɒg/
hack - hag	/hæk/ - /hæg/
hock - hog	/hɒk/ - /hɒg/
snuck - snug	/snʌk/ - /snʌg/
stack - stag	/stæk/ - /stæg/
tuck - tug	/tʌk/ - /tʌg/

Minimal Pair final /m/ and /n/ as in

beam - bean	/biːm/ - /biːn/
blame - blain	/bleɪm/ - blain
deem - dean	/diːm/ - /diːn/
dim - din	/dɪm/ - /dɪn/
dumb - dun	/dʌm/ - /dʌn/
gleam - glean	/gliːm/ - /gliːn/
teem - teen	/tiːm/ - /tiːn/
tomb - toon	/tuːm/ - /tuːn/
thyme - tine	/taɪm/ - /taɪn/
term - tern	/tɜːm/ - /tɜːn/

Minimal Pair final /t/ and /d/ as in

blurt - blurred	/blɜːt/ - /blɜːd/
clot - clod	/klɒt/ - /klɒd/
faint - feigned	/feɪnt/ - /feɪnd/
goat - goad	/gəʊt/ - /gəʊd/
grit - grid	/grɪt/ - /grɪd/
pert - purred	/pɜːt/ - /pɜːd/
plaint - planed	/pleɪnt/ - /pleɪnd/
pleat - plead	/pliːt/ - /pliːd/
punt - punned	/pʌnt/ - /pʌnd/
scant - scanned	/skænt/ - /skænd/

Minimal Pair final /s/ and /z/ as in

brace - brays	/breɪs/ - /breɪz/
fess - fez fess - /fɛz/	

gorse - gores	gorse - /gɔːz/
gross - grows	/grəʊs/ - /grəʊz/
hearse - hers	/hɜːs/ - /hɜːz/
lease - lees	/liːs/ - /liːz/
mace - maze	/meɪs/ - /meɪz/
pass - pars	/pɑːs/ - /pɑːz/
plaice - plays	/pleɪs/ - /pleɪz/
sluice - slews	/sluːs/ - /sluːz/

Minimal Pair final /n/ and /ŋ/ as in

ban - bang	/bæn/ - /bæŋ/
hun - hung	/hʌn/ - /hʌŋ/
pan - pang	/pæn/ - /pæŋ/
tan - tang	/tæn/ - /tæŋ/
chin - ching	/ʧɪn/ - /ʧɪŋ/
clan - clang	/klæn/ - /klæŋ/
din - ding	/dɪn/ - /dɪŋ/
don - dong	/dɒn/ - /dɒŋ/
dun - dung	/dʌn/ - /dʌŋ/
stun - stung	/stʌn/ - /stʌŋ/

Minimal Pair final /ŋk/ and /ŋ/ as in

bank - bang	/bæŋk/ - /bæŋ/
brink - bring	/brɪŋk/ - /brɪŋ/
hank - hang	/hæŋk/ - /hæŋ/
pink - ping	/pɪŋk/ - /pɪŋ/
rink - ring	/rɪŋk/ - /rɪŋ/
blink - bling	/blɪŋk/ - /blɪŋ/
dunk - dung	/dʌŋk/ - /dʌŋ/
monk - mung	/mʌŋk/ - mung
sank - sang	/sæŋk/ - /sæŋ/
thank - thang	/θæŋk/ - /θæŋ/

Minimal Pair final /dʒ/ and /dʒi/ as in

budge - budgie	/bʌdʒ/ - /ˈbʌdʒi/
dodge - dodgy	/dɒdʒ/ - /ˈdɒdʒi/
fudge - fudgy	/fʌdʒ/ - fudgy
grunge - grungy	/grʌndʒ/ - /ˈgrʌndʒi/
barge - bargy	/bɑːdʒ/ - bargy
bilge - bilgy	/bɪldʒ/ - bilgy

bulge - bulgy /bʌldʒ/ - /ˈbʌldʒi/

dinge - dingy dinge - /ˈdɪndʒi/

dirge - dirgy /dɜːdʒ/ - dirgy

kludge - kludgy kludge - kludgy

Minimal Pair final /tʃ/ and /tʃi/ as in

kitsch - kitschy kitsch - kitschy

patch - patchy /pætʃ/ - /ˈpætʃi/

punch - punchy /pʌntʃ/ - punchy

preach - preachy /priːtʃ/ - /ˈpriːtʃi/

scratch - scratchy /skrætʃ/ - /ˈskrætʃi/

blotch - blotchy /blɒtʃ/ - /ˈblɒtʃi/

glitch - glitchy /glɪtʃ/ - glitchy

grouch - grouchy /graʊtʃ/ - /ˈgraʊtʃi/

hooch - hoochie /huːtʃ/ - hoochie

paunch – paunchy/pɔːntʃ/ - /ˈpɔːntʃi/

Notes on consonant minimal pairs

- Brief explanation
- Phonic drills of consonant sounds

Keywords

Segmental sounds:Phonemes consisting of sound segments; hence, the vowel, consonant, and semivowel sounds of a language.

Suprasegmental sounds: Phonemes or features of speech, as pitch, stress, and juncture, that may extend over and modify series of segmental phonemes.

Phoneme:A phoneme is a unit of sound in speech. A phoneme doesn't have any inherent meaning by itself, but when you put phonemes together, they can make words.

Phonetic representation: It is responsible for describing speech as a physical phenomenon. That is, it covers measurable properties of articulation, acoustics and audition. Intellectual imperialists have sometimes taken the view that either phonology or phonetics is the whole story with respect to language sound structure

Summary

This unit covered many ideas around the concept of phoneme: First the twin-concept ofsegmental-suprasegmental. Segments consist of vowels and consonants while suprasegmental features are speech attributes that accompany consonants and vowels but which are not limited to single sounds and often extend over syllables, words, or phrases.

The next segment covers in details the idea of phoneme through phonemic representation of consonants-vowels, sagittal section view of consonants-vowels, phonetic transcription, and minimal pairs for consonants-vowels.

Self Assessment

1. Which one of the following does not fall in the definition of Suprasegmental Phonemes?
A. also known as prosody which primes on speech attributes
B. in fact, this should be seen as sum total of vowel & consonant sounds
C. represent superimposition of emotions into speech
D. can also be seen as speech markers

2. Which one of the following is not correct about the Concept of Phoneme?
A. All phonemic symbols are arbitrary and have no link with letters of English Alphabet
B. There are total of 44 phonemes in English language
C. Phonemes can be broadly classified into Consonants & Vowels
D. Phoneme is an atomic level representation of language

3. Which one of the following phoneme sets represents consonant sounds only?
A. /s/, /f/, /v/, /t/, /iː/, /ʊ/
B. /l/, /r/, /æ/, /ɒ/, /j/, /h/
C. /p/, /f/, /m/, /n/, /ŋ/, /g/
D. /k/, /g/, /ɔː/, /uː/, /ʃ/, /ʤ/

4. Which one of the following phoneme sets represents Monophthong sounds only?
A. /θ/, /ð/, / æ/, /ʃ/, /uː/, /ɔː/
B. /iː/, /ɪ/, /ə/, /ʌ/, /ɔː/, /ɑː/
C. /eɪ/, /uː/, /h/, /l/, /æ/, /ɑː/
D. /ʒ/, /g/, /ʃ/, /ʤ/, /uː/, /iː/

5. Which one of the following phoneme sets represents Diphthong sounds only?
A. /eɪ/, /əʊ/, /ʊə/, /tʃ/, /ʤ/
B. /əʊ/, /ʊə/, /ɔɪ/, /æ/, /ʤ/
C. /tʃ/, / eɪ/, /ʊə/, /ɔɪ/, /ʤ/
D. / eɪ/, /ʊə/, /ɔɪ/, /əʊ/, /ɪə/

6. Which one of the following does not fall in the category of a minimal pair example?
A. Test, Best
B. Teeth, Tool
C. Bed, Led
D. Brought, Bright

7. Which one of the following does not fall in the category of a minimal set example?
A. pack, pick, pock / tack, tick, tock
B. beat, bat, bait, bite / meat, mat, mate, might
C. heat, hit, hat / seat, sit, sat
D. patting, petty, picture, pot, putt / batting, Betty, cinema, boat, butt

8. Which one of the following is not a characteristic / advantage of phonic drills?
A. Creating a muscle memory for a given sound
B. Practicing enunciation with focus on clarity
C. Focus on one unique sound present in cluster of sounds represented by words of either minimal pair or minimal set
D. Drills where physical ability / strength of an individual is tested

9. Which one of the following phoneme sets represents minimal pair of /ɪ/ and /i:/?
A. tin - teen
B. son-seen
C. pen-pin
D. bin-ban

10. Which one of the following phoneme sets represents minimal pair of /e/ and /eɪ/?
A. set - sight
B. bet - bait
C. late - loot
D. net - night

11. Which one of the following does not fall in the category of available symbol varieties to represent phonemes?
A. Monophone
B. Tetraphone
C. Diphone
D. Triphone

12. Which one of the following is not a valid diacritic representation?
A. Laughter [tsk tsk]
B. Aspiration [h],
C. Length [:],
D. Voiceless [̥]

13. Which one of the following is not a valid diacritic representation?
A. Nasalised [~]
B. Dental [̪]
C. Unreleased Consonant [̚]
D. Cry [boo-o-boo]

14. Which one of the following does not fall in the category of a minimal pair example?
A. Shred, Dread
B. Taught, Tight
C. Bedrock, Bedlam

D. Panner, Banner

15. Which one of the following does not fall in the category of a minimal set example?

A. light, long, alive, led, glamour / right, wrong, arrive, red, grammar

B. see, sell, sip, sigh, lass, lash / she, shell, ship, shy, lash

C. fin, free, Fred, frill, first / thin, three, thread, thrill, thirst

D. banner, billboard, batting, bulwark, buy, best / pandemic, billing, bowling, bolster, pie chart, pest control

Answers for Self Assessment

1.	B	2.	A	3.	C	4.	B	5.	D
6.	B	7.	D	8.	D	9.	A	10.	B
11.	B	12.	A	13.	D	14.	C	15.	D

Review Questions

1. Explain the difference segmental and suprasegmental sounds.
2. Write 05 words each containing following consonant sounds: /p/ /b/, /t/ /d/, /k/ /g/
3. Write 05 words each containing following consonant sounds: /f/ /v/, /s/ /z/, /θ/ /ð/, /ʃ/ /ʒ/.
4. Write 05 words each containing following consonant sounds: /h/, /w/, /n/, /m/, /r/, /j/, /ŋ/, /l/
5. Write 05 words each containing following vowel sounds: /ɪə/, /eə/, /ʊə/, /eɪ/, /aɪ/, /ɔɪ/, /əʊ/, /aʊ/.

Further Readings

- Sweet, Henry. A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform. Cambridge University Press, 2013.
- Jones, Daniel. An English Pronouncing Dictionary. Cambridge University Press, 2011.
- Ladefoged, Peter, and Ian Maddieson. The Sounds of the World's Languages. Blackwell Publishers, 1996.
- Roach, Peter. English Phonetics and Phonology: A Practical Course. Cambridge University Press, 2009.
- Laver, John. Principles of Phonetics. Cambridge University Press, 1994.

Web Links

https://www.britannica.com/topic/suprasegmental

https://www.thoughtco.com/suprasegmental-speech-1692008

https://www.phonicbooks.co.uk/2011/09/03/what-is-a-

grapheme/#:~:text=A%20grapheme%20is%20a%20letter,a%20sound%20in%20a%20word.

https://www.britannica.com/topic/phoneme

https://english-at-home.com/pronunciation-minimum-pairs/

https://www.englishclub.com/pronunciation/minimal-pairs.htm

https://www.fluentu.com/blog/english/minimal-pairs/

https://englishpost.org/pronunciation-list-minimal-pairs/

Unit 10: Phonology

CONTENTS

Objectives

Introduction

10.1 Prominent Theorists' Major Works and Basic Terminologies

10.2 Generative Phonology

10.3 Metrical Phonology

10.4 Auto Segmental Phonology

10.5 Lexical Phonology

10.6 Suprasegmental or Prosodic Phonology

10.7 Optimality Theory

10.8 Innateness Hypothesis vs. Constructivism and Behaviorism

10.9 First language vs. Second Language

10.10 Language Acquisition vs. Language Learning

10.11 Allophones

10.12 Allophones- Regular verb endings

10.13 Allophones- Plural endings

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with prominent theorists and their popular works
- raise awareness about broad theoretical framework of phonology
- formulate an autonomous idea of the architecture and working of language systems
- acquaint with cursory differences between phonetics & phonology
- acquaint with distinctive linkage of voicing-devoicing to allophones
- formulate an instinct to pronounce correct verb-endings through phonic drills
- raise awareness about allophonic variation as a utilitarian concept
- formulate an instinct to pronounce correct plural-endings through phonic drills
- raise awareness about various phonological rules

Introduction

The first segment of the unit focuses on establishing an enhanced understanding about prominent theoreticians and their ideas apart from explaining basic terminologies.

Then next segment deals in considerable length on various phonological theories and the idea of allophonic variations.

Caution: Take care of correct pronunciation

Halle is pronounced as /ˈhæli/

Liberman is pronounced as/ˈlɪbərmən/

allophone is pronounced as /ˈæləfoʊn/

10.1 Prominent Theorists' Major Works and Basic Terminologies

Avram Noam Chomsky: Chomskyis an American linguist, philosopher, cognitive scientist, historical essayist,social critic, and political activist. Sometimes called "the father of modern linguistics", Chomsky is also a major figure in analytic philosophy and one of the founders of the field of cognitive science. He is a Laureate Professor of Linguistics at the University of Arizona and an Institute Professor Emeritus at the Massachusetts Institute of Technology (MIT), and is the author of more than 150 books on topics such as linguistics, war, politics, and mass media. He created or co-created the universal grammar theory, the generative grammar theory, the Chomsky hierarchy, and the minimalist program. Chomsky also played a pivotal role in the decline of linguistic behaviorism, and was particularly critical of the work of B. F. Skinner.

Morris Halle: Halle was a Latvian-born Jewish American linguist who was an Institute Professor, and later professor emeritus, of linguistics at the Massachusetts Institute of Technology. The father of "modern phonology", he was best known for his pioneering work in generative phonology, having written *On Accent and Juncture in English* in 1956 with Noam Chomsky and Fred Lukoff and *The Sound Pattern of English* in 1968 with Chomsky. He also co-authored, with Samuel Jay Keyser, the earliest theory of generative metrics.

The Sound Pattern of English: The Sound Pattern of English, also referred to as SPE, is a 1968 work on phonology by Noam Chomsky and Morris Halle. In spite of its title, it presents not only a view of the phonology of English, but also contains discussions of a large variety of phonological phenomena of many other languages. The index lists about 100 such languages thus has been very influential in both the field of phonology and also in the analysis of the English language. Chomsky and Halle present a view of phonology as a linguistic subsystem, separate from other components of the grammar, that transforms an underlying phonemic sequence according to rules and produces as its output the phonetic form that is uttered by a speaker. The theory fits with the rest of Chomsky's early theories of language in the sense that it is transformational; as such it serves as a landmark in Chomsky's theories by adding a clearly articulated theory of phonology to his previous work which focused on syntax.

Mark Yoffe Liberman: Liberman is an American linguist who has a dual appointment at the University of Pennsylvania, as Trustee Professor of Phonetics in the Department of Linguistics, and as a professor in the Department of Computer and Information Sciences. He is the founder and director of the Linguistic Data Consortium. Liberman is the Faculty Director of Ware College House at the University of Pennsylvania.

Alan Sanford Prince: AlanPrince is a Board of Governors Professor Emeritus of Linguistics at Rutgers University-New Brunswick. Prince, along with Paul Smolensky, developed Optimality Theory, which was originally applied to phonology, but has been extended to other areas of linguistics such as syntax and semantics also.

John Anton Goldsmith: John Goldsmith is the Edward Carson Waller Distinguished Service Professor at the University of Chicago, with appointments in linguistics and computer science.Goldsmith's research ranges from phonology to computational linguistics. His Ph.D thesis introduced autosegmental phonology, which regards phonological phenomena as a collection of parallel tiers with individual segments representing certain features of speech.

Autosegmental Phonology, John Goldsmith PhD thesis: It is a framework of phonological analysis proposed by John Goldsmith in his PhD thesis in 1976 at the Massachusetts Institute of Technology (MIT).

As a theory of phonological representation, autosegmental phonology developed a formal account of ideas that had been sketched in earlier work by several linguists, notably Bernard Bloch (1948), Charles Hockett (1955) and J. R. Firth (1948). According to such a view, phonological representations consist of more than one linear sequence of segments; each linear sequence constitutes a separate tier. The co-registration of elements (or autosegments) on one tier with those on another is represented by association lines. There is a close relationship between analysis of segments into distinctive features and an autosegmental analysis; each feature in a language appears on exactly one tier.

René Paul Victor Kiparsky: Paul Kiparsky is a Finnish professor of linguistics at Stanford University. For two decades, from 1965 to 1984, he taught at MIT, and since 1984 he has taught at Stanford University, where he is Bass Professor in the School of Humanities and Sciences. His PhD thesis *Phonological Change*and his subsequent work on historical linguistics helped form the modern generative view of this area. He is the founder of Lexical Phonology and Morphology (LPM) and a noted Pāṇini scholar. He made fundamental contributions to the generative theory of poetic meter and morphosyntax.

Marina Nespor: Nespor is a professor of linguistics at the Scuola Internazionale Superiore di StudiAvanzati in Triesteand senior researcher in the ERC PASCAL Project, a project investigating language acquisition and the nature of the biological endowment that allows humans to learn language. Much of Dr. Nespor's research focuses on the interaction of phonology and syntax: what the prosodic structure of an utterance communicates about its grammatical structure. She has served on the editorial boards of several scientific journals, including Lingua, The Linguistic Review, and Linguistics.

The 1986 book *Prosodic Phonology* by Marina Nespor and Irene Vogel is considered a classic work within its subfield.It introduced an analysis of prosodic structure, including elements such as meter, syllable structure, and stress patterns, within a framework of generative grammar. Using evidence from many different languages, the book investigates ways in which syntax and phonology affect one another, and how these in turn affect language perception.

Irene B. Vogel: Vogelis an American linguist, specializing in phonology. She is a professor in the University of Delaware Linguistics and Cognitive Science Department, best known for her work on the phonology-syntax interface.

Vogel's work has centered on prosody and the interface between prosody and morpho-syntax. Her widely cited 1986 book with Marina Nespor, *Prosodic Phonology*, is considered a foundational work in the field of the phonology-syntax interface. Using data drawn from many different languages, the book investigates ways in which syntax and phonology affect one another, and it proposes a cross-linguistic correspondence between prosodic domains and syntactic constituents within the framework of generative grammar.

Paul Smolensky: Smolensky is Krieger-Eisenhower Professor of Cognitive Science at the Johns Hopkins University and a Partner Researcher at Microsoft Research, Redmond Washington.Along with Alan Prince, in 1993 he developed *Optimality Theory*, a grammar formalism providing a formal theory of cross-linguistic typology or Universal Grammar within linguistics.

Among his other important contributions is the notion of local conjunction of linguistic constraints, in which two constraints combine into a single stronger constraint that is violated only when both of its conjuncts are violated within the same specified local domain. Local conjunction has been applied to the analysis of various "super-additive" effects in Optimality Theory.

Difference between phonetics and phonology: Phonetics and phonology are two subfields of linguistics which studies the sounds in language. Since both these fields are related to the production of sound, many people do not understand the difference between phonetics and phonology. The main difference between phonetics and phonology is that phonetics is the study of speech sounds whereas phonology is the study of sounds, especially different patterns of sounds in different languages.

Adding further, phonetics relates to the sounds of language; while phonology studies how those sounds are put together to create meaning. Phonemes, or units of sound that are used in all languages to create words, are the focus of the study of phonetics. Phonology studies the rules in any given language that govern how those phonemes are combined to create meaningful words. Phonetics and phonology study two different aspects of sound, but the concepts are dependent on each other in the creation of language.

Each unit of sound, regardless of language, is called a phoneme. Phonetics attempts to understand how each one of these phonemes is physically formed and produced by humans. These units can be categorized by how they are produced and whether they are voiced or voiceless. This aspect of phonetics is commonly used by linguists as well as speech specialists to understand how humans create speech sounds and why speech problems sometimes occur.

The phonetic alphabet is a collection of symbols meant to represent the actual sound ofeach phoneme as it is pronounced in different situations. For example, a consonant may have two different symbols because it has two different ways of being pronounced depending on the word it is used in. These phonetic symbols are commonly found in dictionaries as a guide to how to correctly pronounce unfamiliar words. Each symbol can represent one letter or a group of letters that combine to make one sound.

Phonology is the study of how phonemes are put together and how they create meaning for the speaker of any given language. Some phonemes may have slightly different meanings or uses in two different languages, and phonology is an attempt to understand these changes in meaning. In addition, historical or diachronic phonology studies how the phonemes of a word can change over time and how this affects word meaning. Phonology also examines the patterns of how phonemes are used in a language. For example, some of these units are only used in the middle or at the end of a word but never at the beginning.

Voiced-Voiceless Classification: Phoneticians divide consonants into two types: voiced and voiceless. Voiced consonants require the use of the vocal cords to produce their signature sounds; voiceless consonants do not. Both types use the breath, lips, teeth, and upper palate to further modify speech. This guide presents the differences between voiced and voiceless consonants and gives you some tips for using them.

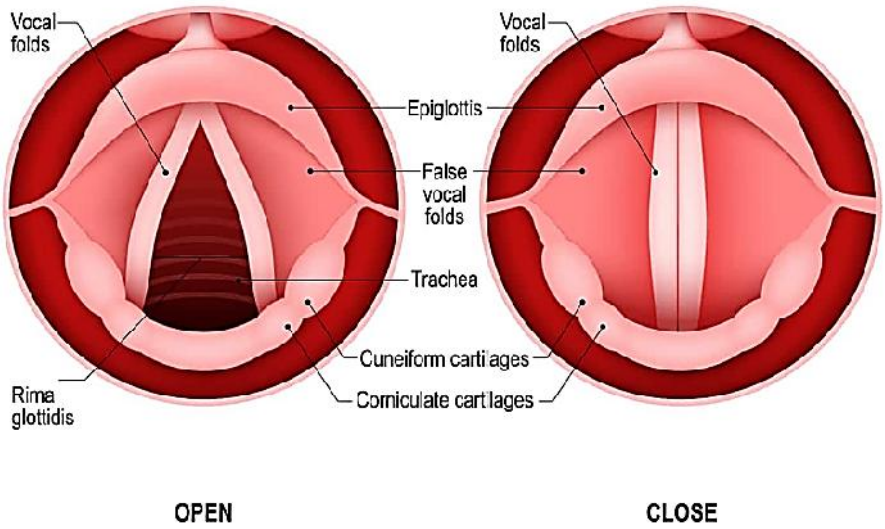


Fig. 10.1 Pictorial representation of phonation process

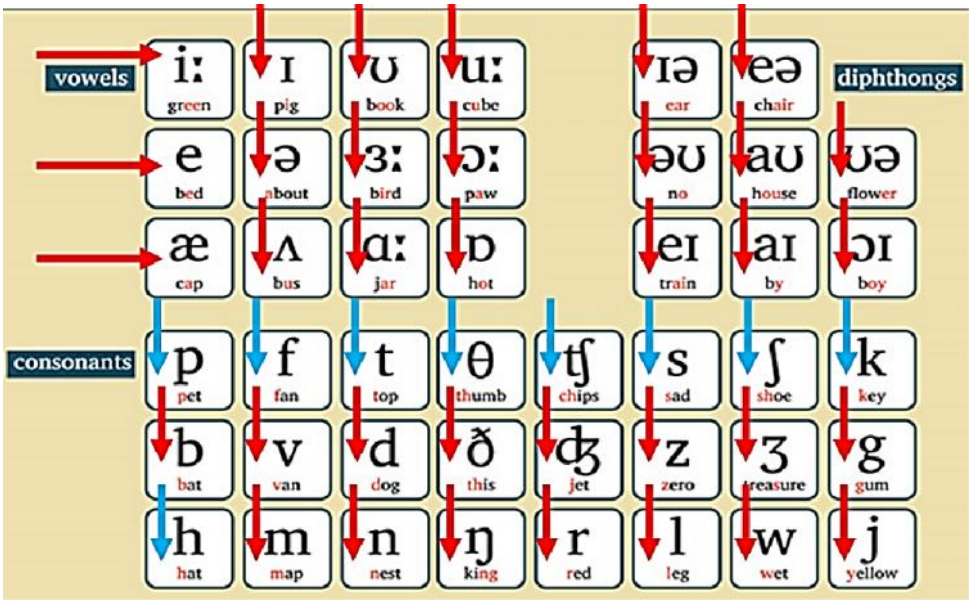


Fig. 10.2 Phonemic classification of IPA chart on the basis of voiced-voiceless sounds

10.2 Generative Phonology

Noam Chomsky and Morris Halle founded the *Generative School of Phonology* in the late 1950's. Its basic premises are that phonological structure reflects the linguistic competence of the individual native speaker to compute a phonetic representation for the potentially infinite number of sentences generated by the syntactic component of the grammar and that this competence can be investigated in a serious scientific fashion. The generative point of view has become dominant in the field of linguistics and has had varying degrees of influence on other cognitive sciences. This entry surveys the development of the generative approach over three fifteen-year segments and concludes with current research trajectories.

We have considered so far two different levels of abstraction in representing the sound structure of a language: a phonetic level of representation which includes aspects of pronunciation which are at least shared by a community/dialect group, and which above all includes the variability due to context effects; and a phonemic level of representation which is formed from a finite number of phonemic units and which factors out the contextual influences.

Their emphasis in the Sound Pattern of English is to eliminate redundancy from phonological analyses. We already do this to a certain extent, of course, in representing words using the phonemic rather than a phonetic representation: that is, there are some aspects of pronunciation that are redundant (e.g. aspiration of oral stops in English) and so we factor out this redundancy and subsequently fill it in by rule. We therefore of course also necessarily end up with a considerably more abstract sound representation of the word (e.g. /pɪn/ rather than [pʰɪn]) i.e. one which is one stage further removed than a phonetic transcription from the actual details of the production of speech and how the vocal organs are coordinated.

The early work of Chomsky and Halle both embraces and rejects various aspects of the two major schools of American Structural Linguistics inaugurated by Edward Sapir(1884-1942) and Leonard Bloomfield (1887-1949). Sapir's *Item and Process* model posits an abstract Phonological Representation that is converted to a Phonetic Representation by processes that delete, add, and change sounds. Sapir stressed the psychological reality of the representations and processes but did not attempt to formalize them. The Bloomfieldian School adopted an *Item and Arrangement* model with emphasis on explicit procedures of analysis.

Paul Kiparsky (1968, 1971) pointed to the excessive abstractness of many analyses adhering to the generative method, raising the question of how a learner could arrive at

such rules and representations in the absence of knowledge of their historical antecedents. He suggested that abstract representations are motivated by alternations and that grammars change to states in which the underlying representations can be induced by rules that state generalizations over the surface phonetic representation.

Finally, while the syllable was mentioned throughout SPE's analysis of English, the notion had no formal status in the theory. Various researchers suggested that syllables could be represented by boundary symbols analogous to word junctures in order to express the frequent conjunction of preconsonantal and word-final position. Adapting insights of Kenneth Pike and Jerzy Kurylowicz, Elizabeth Selkirk (1982) proposed that the syllable is a constituent with internal structure of onset and rhyme that organizes the individual phonemes.

Characteristics:

- pictorial representation [focus on picture first]
- SPE- extant starting work
- linear model
- binary attributes (+/-)
- linguistic subsystem
- transformational
- contested phoneme as the starting point of linguistic analysis
- faulty notion of syllabic feature

Illustrative example

Distinctive Features

/p / described as a bundle of features

•[-Vocalic]	•[- Low]	•[- Continuant]
•[+Consonantal]	•[- Back]	•[+Tense]
•[-Sonorant]	•[- Rounded]	•[- Voiced]
•[-Coronal]	•[- Distributed]	•[-Strident]
•[+Anterior]	•[- Nasal]	
•[-High]	•[- Lateral]	

Fig. 10.3 Illustrative example of tabulating distinctive features of a phoneme

Notes on Generative Phonology

- Characteristics
- Illustrative example

10.3 Metrical Phonology

Metrical phonology is a theory of stress or linguistic prominence and its innovative feature is that the prominence of a unit is defined relative to other units in the same phrase. For example, in the most common pronunciation of the phrase *doctors use penicillin* (if said out-of-the-blue), the syllable '-ci-' is the strongest or most stressed syllable in the phrase, but the syllable 'doc-' is more stressed than the syllable '-tors'. Previously, generative phonologists and the American Structuralists represented prosodic prominence as a feature that applied to individual phonemes (segments) or

syllables. This feature could take on multiple values to indicate various levels of stress. Stress was assigned using the cyclic reapplication of rules to words and phrases.

Metrical phonology holds that stress is separate from pitch accent and has phonetic effects on the realization of syllables beyond their intonation, including effects on their duration and amplitude. The perceived stress of a syllable results from its position in the metrical tree and metrical grid for the phrase it appears in.

Linguistic prominence in metrical phonology is partially determined by the relations between nodes in a branching tree, in which one node is Strong (S) and the other node or nodes are Weak (W). The labels Strong and Weak have no inherent phonetic realization, and only have meaning relative to the rest of the labels in the tree. A Strong node is stronger than its Weak sister node. The most prominent syllable in a phrase is the one that does not have any Weak nodes above it. This syllable is called the Designated Terminal Element.

Metrical phonology offers a number of advantages over a system representing stress as a feature that applies to individual segments or syllables, without reference to the other syllables in a phrase. Creators of traditional feature systems posited the stress feature, which differed from other phonological features in several key ways. For instance, the feature stress had an arbitrary number of values or levels, rather than two or some justified number more than two. In addition, the non-primary stress values in these systems were only defined relative to the primary stress value, and did not have local acoustic or articulatory effects. By not treating stress as a feature of an individual segment, metrical phonology avoids the inexplicable differences between the stress feature and other phonological features.

Characteristics

- pictorial representation [focus on picture first]
- non-linear metrical tree model
- theory of stress or salience or linguistic prominence
- contrary to SPE
- nodes of weak and strong labels
- stress seen as relational to constituents
- Designated Terminal Element- strong nodes all the way up

Illustrative example

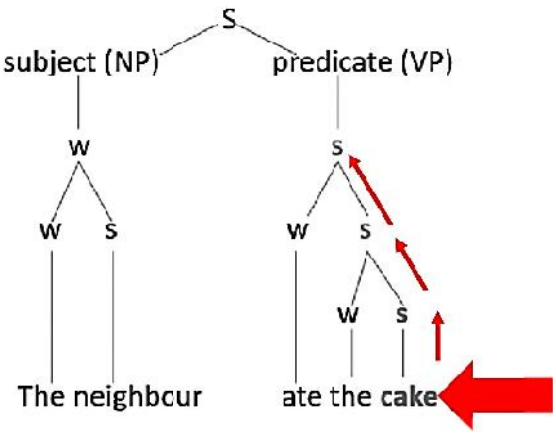


Fig. 10.3 Illustrative example for metrical phonology

Notes on Metrical Phonology

- Characteristics

- Illustrative example

10.4 Auto Segmental Phonology

Auto segmental phonology is a framework of phonological analysis proposed by John Goldsmith in his PhD thesis in 1976 at the Massachusetts Institute of Technology (MIT).As a theory of phonological representation, auto segmental phonology developed a formal account of ideas that had been sketched in earlier work by several linguists, notably Bernard Bloch (1948), Charles Hockett (1955) and J. R. Firth (1948). According to such a view, phonological representations consist of more than one linear sequence of segments; each linear sequence constitutes a separate tier. The co-registration of elements (or auto segments) on one tier with those on another is represented by association lines. There is a close relationship between analysis of segments into distinctive features and an auto segmental analysis; each feature in a language appears on exactly one tier.

The working hypothesis of auto segmental analysis is that a large part of phonological generalizations can be interpreted as a restructuring or reorganization of the auto segments in a representation. Clear examples of the usefulness of auto segmental analysis came in early work from the detailed study of African tone languages, as well as the study of vowel and nasal harmony systems. A few years later, John McCarthy proposed an important development by showing that the derivation of words from consonantal roots in Arabic could be analyzed auto segmentally.

Functional groupings: There are situations in which the rule applies not to a particular value of a feature, but to whatever value the feature has. In these situations, it is necessary to include the presence of the feature, but not to specify its value. This can be done by including a placeholder feature composed of ellipses, with an indication of the type of feature.

Tiers: The auto segmental formalism deals with several separate linear sequences; because of this, a phonological representation is depicted on several distinct tiers. Each of these tiers shows a different language feature.

Segmental tier: The auto segmental tier (also "skeletal tier") contains the features that define the segments articulated in the phonological representation. The descriptions given in the previous section deal with the segmental tier. In the segmental tier, features are assigned to segments.

Timing tier: The timing tier contains timing units that define the lengths of segments in the phonological representation.

Stress tier: The stress tier contains the features that show the distribution of stress in the phonological representation. The features in the stress tier are [+/– stress] and [+/– main], and they are assigned to the stress-bearing units of the language (syllables or moras).

Tone tier: The tone tier contains the features that show the distribution of tones in the phonological representation. The features in the tone tier are [+/– high pitch] and [+/– low pitch], and they are assigned to the tone-bearing units of the language (syllables or moras).

Well-formedness Condition: As a theory of the dynamic of phonological representations, auto segmental phonology includes a *Well-formedness Condition* on association linesplus an instruction as to what to do in case of a violation of the said condition: add or delete the minimum number of association lines in order to maximally satisfy it. Many of the most interesting predictions of the auto segmental model derive from the automatic effects of the Well-formedness Condition and their independence of language-particular rules.

Characteristics:

- pictorial representation [focus on picture first]
- Autosegmentals- tier elements linked by association lines
- non-linear tier model

- segmental tier or skeletal
    - timing tier
    - stress tier
    - tone tier
- well-formedness condition- obeyance to grammatical principles

Illustrative example:

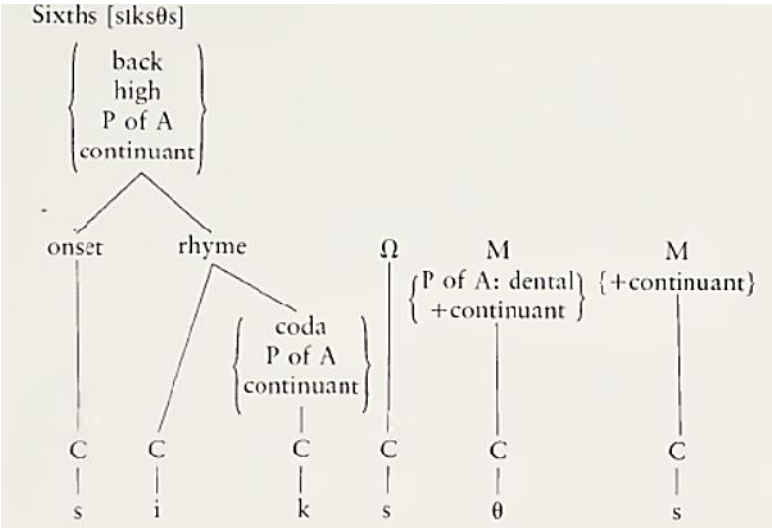


Fig. 10.4 Illustrative example for auto-segmental phonology

Notes on Auto-Segmental Phonology

- Characteristics
- Illustrative example

10.5 Lexical Phonology

Lexical phonology is an approach to phonology that accounts for the interactions of morphology and phonology in the word building process.The lexicon plays a central, productive role in the theory. It consists of ordered levels, which are the domain for certain phonological or morphological processes.

The theory of lexical phonology is one part of the study of linguistics which passes through several conceptions since the 1950s. Lexical phonology was developed in the early 1980s by K. P. Mohanan and P. Kiparsky and is the one most similar to classical generative phonology. In the theory of lexical phonology, the lexicon is given a key role and that represents a significant departure from classical models.

The theory of lexical phonology is a major contemporary theory of phonology developed in the early 1980s by K. P. Mohanan, Paul Kiparsky and Steven Strauss. This theory is the one most similar to classical generative phonology.With the emphasis on morphophonology, it is a theory in which morphological and phonological rules are brought together within a single framework. It is an approach to phonology that accounts for the interactions of morphology and phonology in the word building process and the approach is based on the insight that much of the phonology operates together with the word formation rules in a cyclic fashion to define the class of lexical items in a language. Word formation rules relate to the formation of words. These rules combine morphemes to form new words and are also called morphological rules.

The lexicon plays a central, productive role in the theory of lexical phonology. It consists of ordered levels, which are the domain for certain phonological or morphological processes. In addition, the lexicon is a term whose scope varies enormously from one

theory to another. The lexicon is that aspect of language or of a linguist's account of a language that is centred on individual words or units. The term lexicon means simply *dictionary*, but in linguistic meaning the lexicon also represents information about pronunciation, meaning, morphological and syntactic properties so that it could be called a 'mental lexicon'. In lexical phonology, the lexicon is seen as being more than just an appendix to the grammar, containing unpredictable idiosyncratic phonological, grammatical, semantic and lexical information about morphemes and lexical items.

Characteristics:

- pictorial representation
- similar to Generative phonology
- concept of mental lexicon >> lexical
- assemblage of Morphological + phonological rules
- completeness of word meaning
- meaning, word category tree, Pronunciation, Spelling, Collocation, Phrase, Sentence

Illustrative example:

Underlying phonemic representation	/ t ɛ m p ɛ s t /
Stress rule	ɛ́
Schwa rule	ə
Aspiration rule	t^h
Nasalization rule	ɛ̃
Unreleasing	t̚
Surface phonetic realization	[t^h ɛ̃ m p ə s t̚]

Fig. 10.5 Illustrative example for lexical phonology

Notes on Lexical Phonology

- Characteristics
- Illustrative example

10.6 Suprasegmental or Prosodic Phonology

In linguistics, prosody refers to intonation, rhythm and vocal stress in speech.These suprasegmentals, also known as prosodicfeatures, are phonetic features that are not properties of a single segment, but a syllable or higher unit, such as stress, length, tone and intonation.

Tone:A contrastive pitch of syllables which conveys different meanings of a word.In languages such as Mandarin, the pronunciation of two words may be the same except the pitch difference.

e.g.[ma] pronounced with a high-level tone means "mother", and with a high falling tone means "scold".

In Cantonese, [ma] produced with a high-level tone means "mother" too, but with a low-mid to mid rising tone means "a horse".

Intonation: The use of varying pitch to convey meaning.If the same utterances are produced with different intonation, the meaning conveyed will be different

e.g.in English, the utterance 'It is a cat' will be regarded as a statement when there is a fall in pitch, and the same utterance will be regarded as a question if the pitch rises.

Stress:A stressed syllable is one with relatively greater length, loudness, and/or higher pitch in which extra respiratory energy.In languages such as English, stress may involve linguistic function and cause differences in syntactic category such as noun or verb.

Where speech sounds such as vowels and consonants function mainly to provide an indication of the identity of words and variety/dialect being spoken, suprasegmental features can indicate syntax, turn-taking in interactions, types of utterances and also attitudes and feelings.

One function of suprasegmental features is to divide speech into chunks variously known as information units, tone units, tone groups, intonational phrases or word groups.This may be done in various ways, but its communicative function is evident in how prosody brings different meanings in otherwise identical utterances.

To sum up, suprasegmental information, also known as prosody, is that sound information that's above the level of the segment. It consists of pitch, loudness, and length. Many languages use prosody to provide discourse-level information, and some languages also use prosody to change word meanings.

Characteristics

- non-linear model
- suprasegmental phonology
- autosegment to suprasegment
- combination of duration, speed, pitch, and loudness

Illustrative example

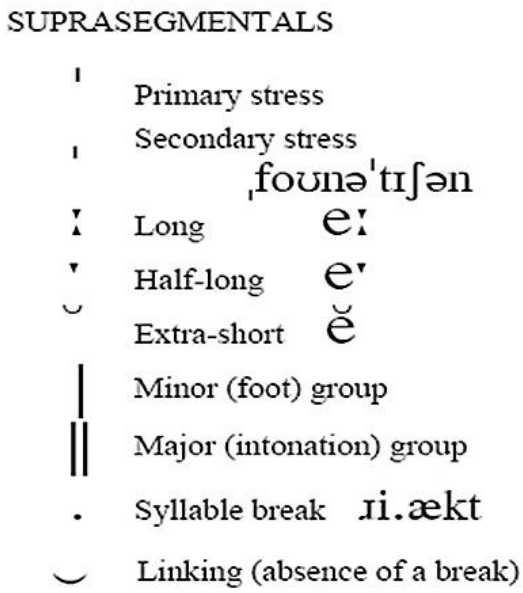


Fig. 10.6 Illustrative example for prosodic phonology-I

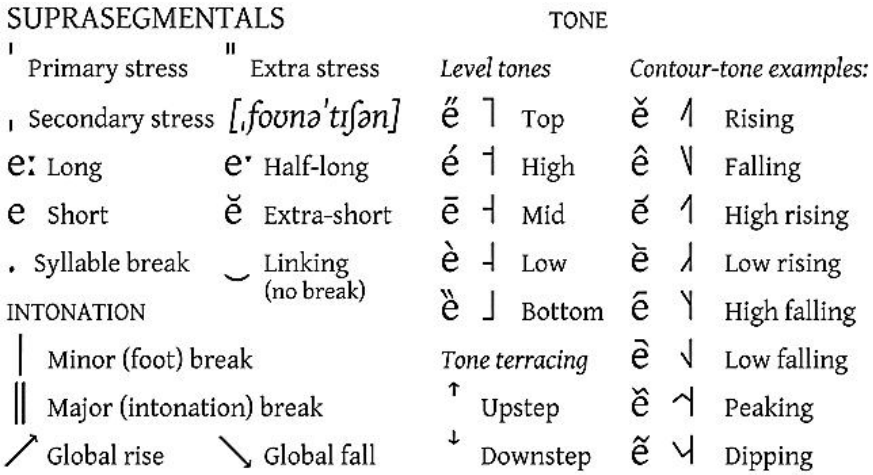


Fig. 10.7 Illustrative example for prosodic phonology-II

Notes on Suprasegmental Phonology

- Characteristics
- Illustrative example

10.7 Optimality Theory

In linguistics, Optimality Theory is a linguistic model proposing that the observed forms of language arise from the optimal satisfaction of conflicting constraints. OT differs from other approaches to phonological analysis, such as auto segmental phonology and linear phonology (SPE), which typically use rules rather than constraints. OT models grammars as systems that provide mappings from inputs to outputs; typically, the inputs are conceived of as underlying representations, and the outputs as their surface realizations. It is an approach within the larger framework of generative grammar.

In linguistics, Optimality Theory has its origin in a talk given by Alan Prince and Paul Smolensky in 1991 which was later developed in a book manuscript by the same authors in 1993.In linguistics, the theory that surface forms of language reflect resolutions of conflicts between competing constraints.

Optimality Theory was introduced in the 1990s by linguists Alan Prince and Paul Smolensky. Though originally developed from generative phonology, the principles of Optimality Theory have also been applied in studies of syntax, morphology, pragmatics, language change, and other areas.

Optimality Theory also has roots in neural network research. It arose in part as an alternative to the connectionist theory of Harmonic Grammar, developed in 1990 by Géraldine Legendre, Yoshiro Miyata and Paul Smolensky.

Characteristics

- pictorial representation
- investigates universal principles
- optimal satisfaction of conflicting constraints as provided by rules
- neural model of brain processing unit
- input-output model
    - example- allophonic variations [pluralization & regular verb endings]

Illustrative example

Input: /buk+z/	MAX-IO	DEP-IO	AGREE (voice)	IDENT-IO (voice)
a.bukiz		*!		
☞b. buks				*
c.bukz			*!	
d. buk	*!			

Fig. 10.8 Illustrative example for optimality theory

Notes on Optimality Theory

- Characteristics
- Illustrative example

10.8 Innateness Hypothesis vs. Constructivism and Behaviorism

Let us explain these three terms one by one.

In linguistics, the innateness hypothesis is a hypothesis which holds that humans are born with at least some knowledge of linguistic structure. On this hypothesis, language acquisition involves filling in the details of an innate blueprint rather than being an entirely inductive process. The hypothesis is one of the cornerstones of generative grammar and related approaches in linguistics. Arguments in favour include the poverty of the stimulus, the universality of language acquisition, as well as experimental studies on learning and learnability. However, these arguments have been criticized, and the hypothesis is widely rejected in other traditions such as usage-based linguistics. The term was coined by Hilary Putnam in reference to the views of Noam Chomsky.

Constructivism relies on the idea that individuals create an understanding and interpretation of lessons based on their prior experience and knowledge. The theory also asserts that all knowledge and learning exists solely inside the mind. The constructivist psychologies theorize about and investigate how human beings create systems for meaningfully understanding their worlds and experiences. In education, constructivist approaches emphasise active engagement of learners with the conceptual content through staregies such as talking (not just listening), writing (not just reading), interaction, problem-solving and other *active* approaches.

Behaviorism is a learning theory that treats individual learning as non-existent. It instead focuses on "the observation of the environment and responding to it" as the basis of education. In other words, behaviourism is a philosophy based on the proposition that all things which organisms do — including acting, thinking and feeling—can and should be regarded as behaviors. In education, behaviourist approaches emphasise changing behaviour through rewarding correct performance.

10.9 First language vs. Second Language

Let us explain these two terms one by one

First language is a language that one acquires from birth and a second language is a non-native language usually learned at a later stage. In a nutshell, native languages are regarded as first languages whereas non-native languages are referred to as second languages. This article looks into the difference between the first and second language.

A first language is a language that babies acquire from birth until about 7 or 8 years old. They can keep learning the language even after those years to master all the idiomatic expressions, sentence structures, and many more areas. Kids learn the language naturally

and effortlessly by listening to their parents communicating with it to them, or even listen to other kids conversing with it.

First language is often assigned the letter L2 by linguistic professionals. But because kids acquire it naturally does not mean they should not learn it. Their learning can be reinforced in the classroom to emphasize the knowledge of grammar rules, idiomatic expressions, metaphors, syntax, and many more concepts.

A second language is a language usually learned at a later stage. It is a non-native language. There is no limit of second languages that one can learn. One can acquire many languages often abbreviated as L2, L3, and L4… A second language is non-native, and it is challenging to be fluent in it. Those who are proficient in a second language are often referred to as "near-native" speakers.

A second language can be any language as long as it is not a mother tongue or native tongue. The process of learning this is active and demands lots of efforts to familiarize yourself with grammar rules, sentence structure, pronunciation, vocabulary and many more concepts. In countries where English is not a native language, for instance, school kids are often taught English as a compulsory second language so they can integrate with others in the corporate world.

Let's explore the differences:

- A first language is the mother tongue or native language of a person while a second language is a language a person learns in order to communicate with the native speaker of that language.
- The first language is like an instinct which is triggered by birth and developed with the experience of being exposed to it. A second language is a personal choice of a person.
- There is no other alternative to a first language. A person cannot decide his/her first language. It comes to him/her as an inheritance/legacy/birthright. On the other hand, a second language is always fixed by the person. There are many alternatives to a second language. A person/community can choose a second language among other languages.
- The acquiring process of the first language is very rapid while the learning process of the second language can vary from language to language and from person to person, but can never be as rapid as the first language acquisition.
- The first language is 'acquired' and the second language is 'learned'. The difference between these two words describes the qualities of the two languages. 'Acquire' means "to come into possession or ownership of" which indicates that the first language is like a dynamic and abstract property which comes into possession of a person. On the other hand, 'learn' means "to gain knowledge or skill by study, instruction, or experience" which indicates that there is nothing passive in second language learning.
- A first language is completely acquired with 100% proficiency within 6 years from the birth. However, a second language can never be learned as efficiently as a first language; though good competence can be achieved in the second language, the process is slow.
- The first language acquisition is always natural and there is no need for instruction in acquiring it. But a second language learning is not natural and it needs continuous guidance and instruction.
- The first language acquisition begins with telegraphic speech. The term 'telegraphic speech' deriving from the word 'telegram' was coined by Roger Brown, an American psycholinguist, in 1963. It refers to the two-word a child can

utter when s/he is 18 to 24 months of age. Examples of telegraphic speech: Mom see, Dad go, No ball, Daddy walk, Mommy milk, etc. On the other hand, the second language acquisition begins with a full sentence. A child cannot start learning the second language without being fully efficient in the first language.

- The first language is a natural part of a person's everyday life. But the second language is a new aspect of the person's life if s/he chooses it to be.
- The first language does not require any conscious effort; the acquisition process of the first language is subconscious. The second language requires constant conscious effort so that the learners can internalize the structures of the second language.

10.10 Language Acquisition vs. Language Learning

Let us explain these two terms one by one

Language Acquisition is the manner of learning a language by immersion. It provides the student with the practical knowledge of the language. Whereas, language learning focuses on providing theoretical knowledge of a language.

Language is the primary form of communication that humans use. However, language is not something that is taught to children. A child will pick up his/her native language just by being around other people, mainly their families. This is called language acquisition. The child acquires the language without any conscious thought or study.In fact, by the time a child is five years old, he/she can express ideas clearly and almost perfectly from the point of view of language and grammar. This is despite any formal studying of the language.

Language learning, on the other hand, is a structured learning of a language. This is the process that most people follow when trying to learn another language. Here the student is made to study lists of vocabulary, as well as sentence structure and grammar. This is the most common method used in schools and language learning centers.Language learning is generally considered to be a slower process than language acquisition. There are people who study a language for years without mastering it. The main difference between Language Acquisition and Language Learning is that Language Acquisition is the manner of learning a language by immersion. It provides the student with the practical knowledge of the language, for example, the student might not known the grammar rule but is still able to immaculately converse with a native.

Whereas, language learning focuses on providing theoretical knowledge of a language. In this case, the student might know all the proper grammar rules and the correct ways of sentence structuring, but might still lack the confidence to have a conversation with a native.Hence, as stated by Stephen Krashen, students who are taught in a formal, structured way will "learn" the language but never fully acquire it.

10.11 Allophones

In phonology, an allophone is one of a set of multiple possible spoken sounds, or phones, or signs used to pronounce a single phoneme in a particular language. For example, in English, [t] (as in stop /*stɒp*/ and the aspirated form [tʰ] as in *top*/ˈtʰɒp/) are allophones for the phoneme /t/, while these two are considered to be different phonemes in some languages such as Thai and Hindi.

Aspiration:

Voiceless plosive /p, t, k/ at the beginning of the first or a stressed syllable in a word

- pop - paper - poppy – plum /pɒp/ - /ˈpeɪpə/ - /ˈpɒpiː/ - /plʌm/
- top - tape - trophy - trump /tɒp/ - /teɪp/ - /ˈtrəʊfiː/ - /trʌmp/
- call - cape - coffee - crumbs /kɔːl/ - /keɪp/ - /ˈkɒfiː/ - /krʌmz/

Nasal plosion

Plosives /p, t, k, b, d, g/ have nasal plosion when followed by a nasal, whether within a word or across a word boundary.

Variations of /l/

- clear (palatized lilly – black, /ˈlɪli:/ - /blæk/)
- dark (velarised milk – mill, /mɪlk/ - /mɪl/)

Variations of /r/: trill and tap

Variations of /r/ pronunciation:

/r/ is pronounced when followed by any vowel sound

- red - ramp - run /rɛd/ - /ræmp/ - /rʌn/
- market - start – turnip [no vowel sound to follow] /ˈmɑ:kɪt/-/stɑ:t/- ˈtɜ:nɪp/

Regular Verb endings

Plural noun endings

10.12 Allophones- Regular verb endings

Past tense verbs with an -ed ending are pronounced in three different ways:

- [t]
- [d]
- [Id]

Verbs ending in voiceless sounds [p, k, θ, f, s, ʃ, tʃ] cause the "-ed" ending to be pronounced as the voiceless [t]

[p] "The small kid popped a balloon in the air." /pɒpt/

[k] "They talked a lot while attending an online class" /tɔ:kt/

[θ] "She frothed a cup of milk" /frɒθt/

[f] "He laughed at the director of movie." /lɑ:ft/

[s] "She kissed a little crying child." /kɪst/

[ʃ] "She brushed it off with a broad smile." /brʌʃt/

[tʃ] "I reached around one hour late for the meeting." /ri:ʧt/

Verbs ending in the voiced sounds [b, g, ð, v, z, ʒ, dʒ, m, n, ŋ, r, l] cause the "-ed" ending to be pronounced as a voiced [d].

[b] "The wind ball bobbed up and down in the bath tub." /bɒbd/

[g] "He begged her to stay for a longer while." /bɛgd/

[ð] "She breathed loudly to get doctor's attention." /bri:ðd/

[v] "They loved the idea of going for a picnic." /lʌvd/

[z] "Party workers raised their expectations for the election results to be announced shortly." /reɪzd/

[dʒ] "They bridged the gap with much hardwork." /brɪʤd/

[m] "I claimed it was mine." /kleɪmd/

[n] "They banned new members from attending the annual meeting." /bænd/

[ŋ] "She accidently banged her head into the chair." /bæŋd/

[r] "He cleared it up for rest of the team members." /klɪəd/

[l] "I rolled up the paper in order to put it in the pocket." /rəʊld/

Verbs ending in the sounds [t] or [d] will cause the "-ed" ending of a verb to be pronounced as the syllable [əd] or [ɪd].

[t] "I visited the Empire State Building last year." /ˈvɪzɪtɪd/

[t] "She edited the research paper in a very short time period." /ˈɛdɪtɪd/

[d] "We ended game early because of heavy rain." /ˈɛndɪd/

[d] "He breaded the chicken." /ˈbrɛdɪd/

Allophonic Verb endings:

Accept - Accepted	/əkˈsɛpt/ - /əkˈsɛptɪd/
Achieve - Achieved	/əˈʧiːv/ - /əˈʧiːvd/
Add - Added	/æd/ - /ˈædɪd/
Back - Backed	/bæk/ - /bækt/
Bake - Baked	/beɪk/ - /beɪkt/
Balance - Balanced	/ˈbæləns/ - /ˈbæləns/
Calculate - Calculated	/ˈkælkjʊleɪt/ - /ˈkælkjʊleɪtɪd/
Call - Called	/kɔːl/ - /kɔːld/
Camp - Camped	/kæmp/ - /kæmpt/
Damage - Damaged	/ˈdæmɪʤ/ - /ˈdæmɪʤd/
Dance - Danced	/dɑːns/ - /dɑːnst/
Dare - Dared	/deə/ - /deəd/
Earn - Earned	/ɜːn/ - /ɜːnd/
Educate - Educated	/ˈɛdjuː(ˑ)keɪt/ - /ˈɛdjuː(ˑ)keɪtɪd/
Embarrass - Embarrassed	/ɪmˈbærəs/ - /ɪmˈbærəst/
Face - Faced	/feɪs/ - /feɪst/
Fade - Faded	/feɪd/ - /ˈfeɪdɪd/
Fail - Failed	/feɪl/ - /feɪld/
Glow - Glowed	/gləʊ/ - /gləʊd/
Glue - Glued	/gluː/ - /gluːd/
Grab - Grabbed	/græb/ - /græbd/
Hand - Handed	/hænd/ - /ˈhændɪd/
Handle - Handled	/ˈhændl/ - /ˈhændld/
Hang - Hanged	/hæŋ/ - /hæŋd/
Imagine - Imagined	/ɪˈmæʤɪn/ - /ɪˈmæʤɪnd/
Impress - Impressed	/ˈɪmprɛs/ - /ɪmˈprɛst/
Improve - Improved	/ɪmˈpruːv/ - /ɪmˈpruːvd/
Jail - Jailed	/ʤeɪl/ - /ʤeɪld/
Jam - Jammed	/ʤæm/ - /ʤæmd/
Jog - Jogged	/ʤɒg/ - /ʤɒgd/
Kill - Killed	/kɪl/ - /kɪld/

Knit - Knitted	/nɪt/ - /ˈnɪtɪd/
Knock - Knocked	/nɒk/ - /nɒkt/
Last - Lasted	/lɑːst/ - /ˈlɑːstɪd/
Laugh - Laughed	/lɑːf/ - /lɑːft/
Launch - Launched	/lɔːntʃ/ - /lɔːntʃt/
Marry - Married	/ˈmæriː/ - /ˈmæriːd/
Match - Matched	/mætʃ/ - /mætʃt/
Mate - Mated	/meɪt/ - /ˈmeɪtɪd/
Need - Needed	/niːd/ - /ˈniːdɪd/
Nest - Nested	/nɛst/ - /ˈnɛstɪd/
Nod - Nodded	/nɒd/ - /ˈnɒdɪd/
Obey - Obeyed	/əˈbeɪ/ - /əˈbeɪd/
Object - Objected	/ˈɒbdʒɪkt/ - /əbˈdʒɛktɪd/
Offer - Offered	/ˈɒfə/ - /ˈɒfəd/
Paint - Painted	/peɪnt/ - /ˈpeɪntɪd/
Park - Parked	/pɑːk/ - /pɑːkt/
Peck - Pecked	/pɛk/ - /pɛkt/
Question - Questioned	/ˈkwɛstʃən/ - /ˈkwɛstʃənd/
Queue - Queued	/kjuː/ - /kjuːd/
Race - Raced	/reɪs/ - /reɪst/
Radiate - Radiated	/ˈreɪdɪeɪt/ - /ˈreɪdɪeɪtɪd/
Rain - Rained	/reɪn/ - /reɪnd/
Sail - Sailed	/seɪl/ - /seɪld/
Satisfy - Satisfied	/ˈsætɪsfaɪ/ - /ˈsætɪsfaɪd/
Save - Saved	/seɪv/ - /seɪvd/
Tap - Tapped	/tæp/ - /tæpt/
Taste - Tasted	/teɪst/ - /ˈteɪstɪd/
Tease - Teased	/tiːz/ - /tiːzd/
Unfasten- Unfastened	/ʌnˈfɑːsn/- /ʌnˈfɑːsnd/
Unite - United	/juːˈnaɪt/ - /jʊˈnaɪtɪd/
Unlock - Unlocked	/ʌnˈlɒk/ - /ʌnˈlɒkt/
Vanish - Vanished	/ˈvænɪʃ/ - /ˈvænɪʃt/
Visit - Visited	/ˈvɪzɪt/ - /ˈvɪzɪtɪd/
Wail - Wailed	/weɪl/ - /weɪld/
Wait - Waited	/weɪt/ - /ˈweɪtɪd/
Worry - Worried	/ˈwʌriː/ - /ˈwʌriːd/
X-Ray - X-Rayed	/ˈɛksˈreɪ/ - /ˈɛksˈreɪd/
Yawn - Yawned	/jɔːn/ - /jɔːnd/
Yell - Yelled	/jɛl/ - /jɛld/
Zip - Zipped	/zɪp/ - /zɪpt/

Zoom - Zoomed /zuːm/ - /zuːmd/

10.13 Allophones- Plural endings

Plural nouns with -s or -es endings are pronounced in three different ways:

- [s]
- [z]
- [ɪz]
- [s] final sound

If the noun ends in an unvoiced consonant sound: /f/, /k/, /p/, /t/, /θ/ pronounce "s" as /s/

[z] final sound

When it ends in a voiced consonant sound, /b/, /d/, /v/, /g/, /l/, /m/, /n/, /ŋ/, /r/ or with any of the 20 vowel sounds pronounce "s" as /z/.

[ɪz] final sound- mix of Fricatives & Affricates

If it ends with /s/, /z/, /ʃ/, /ʒ/, /tʃ/, /dʒ/ sounds pronounce "s" or "-es" as /ɪz/.

Alphabetic arrangements:

adult - adults /ˈædʌlt/ - /ˈædʌlts/

animal - animals /ˈænɪməl/ - /ˈænɪməlz/

answer - answers /ˈɑːnsə/ - /ˈɑːnsəz/

bag - bags /bæg/ - /bægz/

ball - balls /bɔːl/ - /bɔːlz/

bike - bikes /baɪk/ - /baɪks/

candy - candies /ˈkændi/ - /ˈkændiz/

captain - captains /ˈkæptɪn/ - /ˈkæptɪnz/

car - cars/kɑː/ - /kɑːz/

day - days /deɪ/ - /deɪz/

doctor - doctors /ˈdɒktə/ - /ˈdɒktəz/

dog - dogs /dɒg/ - /dɒgz/

egg - eggs /ɛg/ - /ɛgz/

election - elections /ɪˈlɛkʃən/ - /ɪˈlɛkʃənz/

elephant - elephants /ˈɛlɪfənt/ - /ˈɛlɪfənts/

farm - farms /fɑːm/ - /fɑːmz/

father - fathers /ˈfɑːðə/ - /ˈfɑːðəz/

field - fields /fiːld/ - /fiːldz/

garden - gardens /ˈgɑːdn/ - /ˈgɑːdnz/

girl - girls /gɜːl/ - /gɜːlz/

grade - grades /greɪd/ - /greɪdz/

grandfather - grandfathers /ˈgrænˌfɑːðə/ - /ˈgrændˌfɑːðəz/

grandmother - grandmothers /ˈgrænˌmʌðə/ - /ˈgrænˌmʌðəz/

hand - hands /hænd/ - /hændz/

handle - handles /ˈhændl/ - /ˈhændlz/

hat - hats /hæt/ - /hæts/

invention - inventions /ɪnˈvɛnʃən/ - /ɪnˈvɛnʃənz/

job - jobs/ʤɒb/ - /ʤɒbz/

kettle - kettles /ˈkɛtl/ - /ˈkɛtlz/

kilometer - kilometers /ˈkɪləʊˌmiːtə/ - /ˈkɪləʊˌmiːtəz/

kitchen - kitchens /ˈkɪʧɪn/ - /ˈkɪʧɪnz/

lake - lakes /leɪk/ - /leɪks/

lawn - lawns /lɔːn/ - /lɔːnz/

light - lights /laɪt/ - /laɪts/

month - months /mʌnθ/ - /mʌnθs/

mother - mothers /ˈmʌðə/ - /ˈmʌðəz/

noun - nouns /naʊn/ - /naʊnz/

ocean - oceans /ˈəʊʃən/ - /ˈəʊʃənz/

onion - onions /ˈʌnjən/ - /ˈʌnjənz/

orange - oranges /ˈɒrɪnʤ/ - /ˈɒrɪnʤɪz/

page - pages /peɪʤ/ - /ˈpeɪʤɪz/

painting - paintings /ˈpeɪntɪŋ/ - /ˈpeɪntɪŋz/

park - parks /pɑːk/ - /pɑːks/

ring - rings /rɪŋ/ - /rɪŋz/

river - rivers /ˈrɪvə/ - /ˈrɪvəz/

road - roads /rəʊd/ - /rəʊdz/

room - rooms /ruːm/ - /ruːmz/

salary - salaries /ˈsæləri/ - /ˈsæləriz/

scooter - scooters /ˈskuːtə/ - /ˈskuːtəz/

second - seconds /ˈsɛkənd/ - /ˈsɛkəndz/

straw - straws /strɔː/ - /strɔːz/

toilet - toilettes /ˈtɔɪlɪt/ - /twɑːˈlɛts/

tomato - tomatoes/təˈmɑːtəʊ/ - /təˈmɑːtəʊz/

toothbrush - toothbrushes /ˈtuːθbrʌʃ/ - /ˈtuːθbrʌʃɪz/

village - villages /ˈvɪlɪʤ/ - /ˈvɪlɪʤɪz/

walk - walks /wɔːk/ - /wɔːks/

wall - walls /wɔːl/ - /wɔːlz/

window - windows /ˈwɪndəʊ/ - /ˈwɪndəʊz/

yard - yards /jɑːd/ - /jɑːdz/

year - years /jɪə/ - /jɪəz/

Keywords

Generative phonology: It is a component of generative grammar that assigns the correct phonetic representations to utterances in such a way as to reflect a native speaker's internalized grammar.

Metrical phonology: It is a phonological theory concerned with organizing segments into groups of relative prominence. Segments are organized into syllables, syllables into metrical feet, feet into phonological words, and words into larger units.This organization is represented formally by metrical trees and grids.

Auto-segmental phonology: It is a non-linear approach to phonology that allows phonological processes, such as tone and vowel harmony, to be independent of and extend beyond individual consonants and vowels. As a result, the phonological processes may influence more than one vowel or consonant at a time.

Optimality theory: The basic idea behind an Optimality Theoretic approach to child language acquisition is that children begin with one constraint ranking and adjust the hierarchy as they develop, resulting in what should be an adult grammar.

Difference between phonetics and phonology: Phonetics studies the production of sounds, and phonology studies the combination of sounds. Phonetics can be used to explore the sounds that are used in any language, but phonology looks at only one language at a time. Both depend on each other because without the production of sounds there would be no words, but without the rules to put them together, sounds would have no meaning. They work together in important ways, but both cover their own specific part of language production.

Difference between voice-voiceless sounds: Voiced sounds are those that make our vocal chordsvibrate when they are produced. Voiceless sounds are produced from air passing through the mouth at different points.

Summary

This unit covered many ideas around the field of phonology while developing better understanding about prominent theoreticians and their ideas apart from explaining basic terminologies.

Then next segment deals in with the phonological concept of allophonic variations while providing illustrative examples.

Self Assessment

1. Which one of the following was not discussed in the book The Sound Pattern of English?

A. linear model of sound features
B. + / - signs showing presence or absence of a feature
C. famous musical bands of 1980s
D. generative phonology

2. Which one of the following is not a right match?

A. Liberman & Prince – Intonational system of English
B. Paul Kiparsky – concept of mental lexicon
C. Nespor, Marina & Irene Vogel – non-linear model
D. Auto Segmental Phonology – Ferdinand De Saussure

3. Which one of the following is NOT a characteristic / advantage of Generative Phonology?

A. Binary attributes of presence or absence of features
B. Pictorial representation
C. focuses on transmission of sounds
D. transformational in nature

4. Which one of the following is NOT a characteristic / advantage of Metrical Phonology?

A. innateness hypothesis
B. nodes of weak-strong labels
C. presence of stress as relational
D. stress as tool of prominence

5. Which one of the following is NOT a characteristic / advantage of Suprasegmental Phonology?

A. non-linear model
B. input-output model
C. focus on speech duration, speed, pitch & loudness
D. focus on auto-segments and suprasegments

6. Which one of the following is NOT a characteristic of Aspiration?

A. exhalation of a puff of air
B. words starting with these phonemes /p/, /t/, /k/ will have plosion
C. always happens at the first sound of a word (of particular phonemes)
D. always happens at the last sound of a word (of particular phonemes)

7. Which one of the following is NOT a characteristic of Assimilation?

A. happens to provide easy articulation
B. happens quite often in a carefully articulated speech
C. happens quite regularly in a connected speech
D. sound change happens to become similar to the neighboring sound

8. Which one of the following is NOT a characteristic of Elison / Deletion?

A. happens to provide easy articulation
B. omission of a sound happens
C. happens quite regularly in a connected speech
D. happens quite often in a citation form

9. Which one of the following is NOT a characteristic of Insertion / Epenthesis?

A. happens quite often in enunciation of an isolated word or a phrase
B. happens to provide ease of articulation
C. insertion of a sound happens
D. happens quite regularly in a connected speech

10. Which one of the following is NOT a characteristic of Dissimilation?

A. similar consonants in a word are dropped
B. economizing articulation effort
C. quite noticeable pronouncing an isolated word or a phrase
D. similar vowels in a word are dropped

11. Which one of the following is a list of phonemic sounds where phonation happens?

Hint: Identify voiced category of sounds

A. /p/, /t/, /k/
B. /h/, /f/, /s/
C. /m/, /ð/ /ʒ/
D. /ʃ/, /ʧ/, /θ/

12. Which one of the following is a list of phonemic sounds where phonation does not happen?

Hint: Identify voiceless category of sounds?

A. /m/, /n/, /z/
B. /iː/, /uː/, /æ/
C. /eɪ/, /ɔɪ/, /aɪ/
D. /p/, /s/, /f/

13. Which one of the following is NOT a /s/ ending of a plural noun?

A. week - weeks
B. name - names
C. shape - shapes
D. shirt - shirts

14. Which one of the following is NOT a /z/ ending of a plural noun?

A. product - products
B. whale - whales
C. second - seconds
D. bomb - bombs

15. Which one of the following is NOT a /ɪz/ ending of a plural noun?

A. branch - branches
B. plate - plates
C. orange - oranges
D. house - houses

Answers for Self Assessment

1.	C	2.	D	3.	C	4.	A	5.	B
6.	D	7.	B	8.	D	9.	A	10.	C
11.	C	12.	D	13.	B	14.	D	15.	B

Review Questions

1. Explain the difference between phonetics and phonology.

2. Explain any two phonological theories of your choice.

3. Write 05 examples showing allophonic variations of aspirated and non-aspirated instances.

4. Write 05 examples showing allophonic variations of plural endings.

5. Write 05 examples showing allophonic variations of verb endings.

Further Readings

Sweet, Henry. *A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform.* Cambridge University Press, 2013.

Jones, Daniel. *An English Pronouncing Dictionary.* Cambridge University Press, 2011.

Ladefoged, Peter, and Ian Maddieson. *The Sounds of the World's Languages*. Blackwell Publishers, 1996.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Web Links

https://silo.tips/download/generative-phonology#

https://glossary.sil.org/term/lexical-phonology

https://www.grin.com/document/79441

http://roa.rutgers.edu/files/330-0699/roa-330-myers-3.pdf

https://www.phon.ucl.ac.uk/courses/plin0065/week8.php

https://ecampusontario.pressbooks.pub/essentialsoflinguistics/chapter/3-8-suprasegmentals/

https://en.everybodywiki.com/International_Phonetic_Alphabet

https://englishfinders.com/difference-between-phonetics-and-phonology/

https://pediaa.com/difference-between-phonetics-and-phonology/

https://www.languagehumanities.org/what-is-the-difference-between-phonetics-and-phonology.htm

https://www.thoughtco.com/voiced-and-voiceless-consonants-1212092#:~:text=Voiced%20consonants%20require%20the%20use,palate%20to%20further%20modify%20speech.

https://fairborndigital.us/2021/09/23/the-three-learning-schemas-behaviorism-cognitivism-constructivism/

http://www.differencebetween.net/language/difference-between-first-language-and-second-language/#:~:text=First%20language%20is%20a%20language,referred%20to%20as%20second%20languages.

https://www.basic-concept.com/c/difference-between-first-language-second-language

http://www.differencebetween.info/difference-between-language-acquisition-and-language-learning

Unit 11: Syllable

CONTENTS

Objectives

Introduction

11.1 Basic Terminologies

11.2 Syllable: Meaning

11.3 Syllable: Mono-syllabic

11.4 Syllable: Disyllabic

11.5 Syllable: Tri-syllabic

11.6 Syllable: Poly-syllabic

11.7 Syllable: Strong and Weak Types

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with distinctive linkage of vowel sounds for identifying syllable count
- raise awareness about the concept and types of syllabic formations
- formulate an instinct to observe presence & count of syllables
- acquaint with the idea of diacritics and corresponding symbolic representation
- raise awareness about the concept strong and weak syllabic formations
- formulate an instinct not only to transcribe word into syllables but also to make distinction into strong-weak

Introduction

The first segment of the unit focuses on establishing an enhanced understanding about monophthongs, diphthongs, diacritics while explaining basic terminologies.

Then next segment deals in considerable length on various syllable type in terms of number of syllables and its types.

11.1 Basic Terminologies

Monophthongs:A monophthong is a single vowel sound.The word monophthong comes from the Greek "mono", which means "one", and "-phthong", which means "tone" or "sound". So monophthong means "one sound" or "single sound".

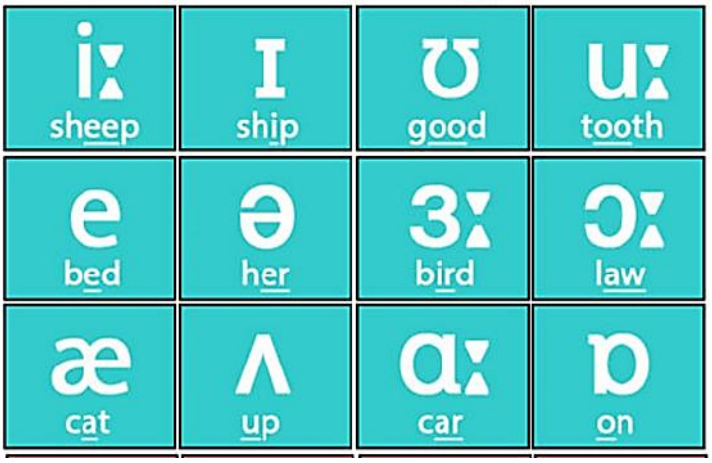


Fig. 11.1 Phonemic representation of vowel sounds: monophthongs

Diphthongs: In phonetics, a gliding vowel in the articulation of which there is a continuous transition from one position to another. Diphthongs are to be contrasted in this respect with so-called pure vowels—i.e., unchanging, or steady state, vowels. Though they are single speech sounds, diphthongs are usually represented, in a phonetic transcription of speech, by means of a pair of characters indicating the initial and final configurations of the vocal tract. Many of the vowel sounds in most dialects of English are diphthongs: e.g., the vowels of "out" and "ice," represented as [au] and [ai], respectively.

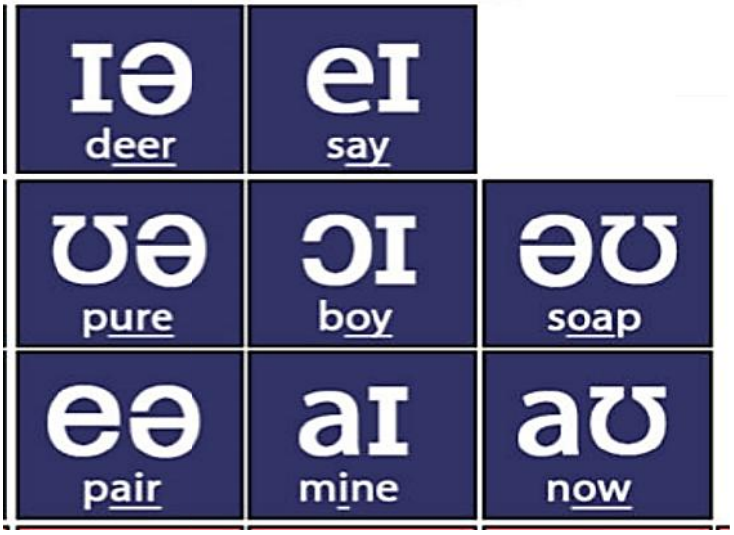


Fig. 11.2 Phonemic representation of vowel sounds: diphthongs

Diacritics: Diacritics are marks placed above or below (or sometimes next to) a letter in a word to indicate a particular pronunciation—in regard to accent, tone, or stress—as well as meaning, especially when a homograph exists without the marked letter or letters.

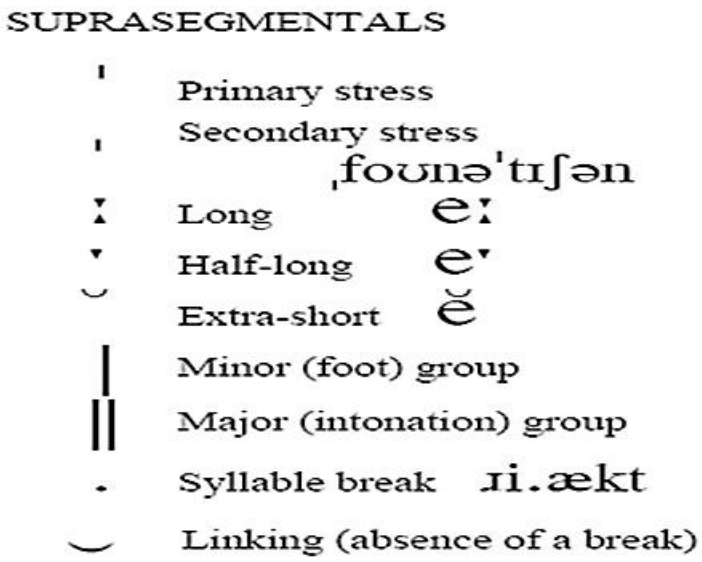


Fig. 11.3Representation of diacritics-I

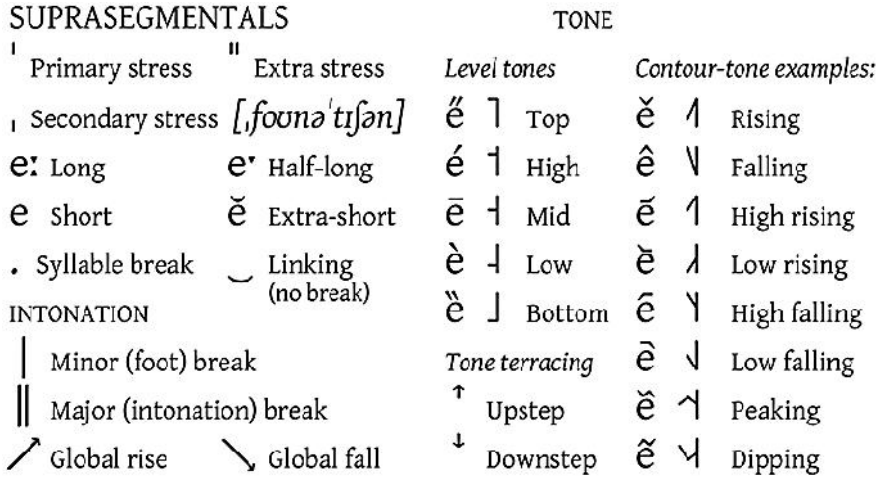


Fig. 11.4 Representation of diacritics-II

11.2 Syllable: Meaning

A syllable is one or more letters representing a unit of spoken language consisting of a single uninterrupted sound. Adjective: syllabic.A syllable is made up of either a single vowel sound (as in the pronunciation of oh) or a combination of vowel and consonant(s) (as in no and not).A syllable that stands alone is called a monosyllable. A word containing two or more syllables is called a polysyllable.The word syllable comes from the Greek, "combine"

Syllable, a segment of speech that consists of a vowel, with or without one or more accompanying consonant sounds immediately preceding or following—for example, a, I, out, too, cap, snap, check. A syllabic consonant, such as the final n sound in button and widen, also constitutes a syllable. Closed (checked) syllables are those that end in a consonant; open (free) syllables end in a vowel.

Phonetically syllables "are usually described as consisting of a centre which has little or no obstruction to airflow and which sounds comparatively loud; before and after that centre (…) there will be greater obstruction to airflow and/or less loud sound" (Roach, 2000: 70). In the monosyllable (one-syllable word) cat /kæt/, the vowel /æ/ is the

"centre" at which little obstruction takes place, whereas we have complete obstruction to the airflow for the surrounding plosives /k/ and /t/.

Laver (1994: 114) defines the phonological syllable as "a complex unit made up of nuclear and marginal elements". Nuclear elements are the vowels or syllabic segments; marginal elements are the consonants or non-syllabic segments. In the syllable paint /peɪnt/, the diphthong /eɪ/ is the nuclear element, while initial consonant /p/ and the final cluster /nt/ are marginal elements.

Characteristics:

- building blocks of words
- unit of organizing patterned phoneme sequence
- deconstructing word into CVC phonological units
- No. of vowels sounds = No. of syllables
- important first step for stress marking
- phonotactics constraints
- word coinage through blending [smoke + fog= Smog] /sməʊk/ + /fɒg/= /smɒg/
- decodes rhythm-rhyme poetry connection
- C{0-3}V{1}C{0-4}
    - consonant(s)-vowel-consonant(s)
    - onset-rhyme
    - onset-nucleus-coda

Pictorial representation:

The bulk of present-day phonological theory agrees that the syllable has constituent or hierarchical, rather than linear, structure.

The syllable (conventionally marked as small Greek sigma: σ) has two immediate constituents (it "branches" into two elements, to put it in another way) – the Onset (O), which includes any consonants that precede the nuclear element (the vowel), and the Rhyme (R), which subsumes the nuclear element (the vowel) as well as any marginal elements (consonants) that might follow it. The Rhyme, in turn, further branches into Peak (P), also known as Nucleus (N), and Coda (Co). The Peak (Nucleus), as the designation suggests, represents the "nuclear" or most sonorous element in a syllable. The Coda includes all consonants that follow the Peak in a syllable. Syllable structure may be represented graphically by means of a "tree diagram". The first example we shall take is cat /kæt/.

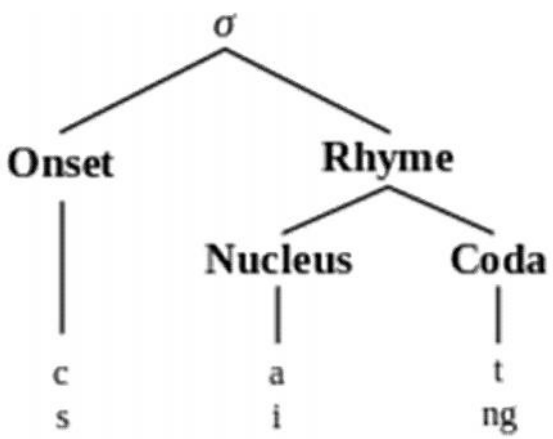


Fig. 11.5 Illustrative example of a syllable structure

Notes on Syllable

- Definition
- Characteristics
- Illustrative example

11.3 Syllable: Mono-syllabic

In linguistics, a monosyllable is a word or utterance of only one syllable. It is most commonly studied in the fields of phonology and morphology and it has no semantic content. The word has originated from the Greek language.

"Yes", "no", "jump", "buy", "heat", "sure", and "and" are examples of monosyllables. Some of the longest monosyllabic words in the English language, all containing nine letters each, are "screeched," "schlepped," "scratched," "scrounged," "scrunched," "stretched," "straights," and "strengths."

Illustrative examples:

oft - raid - sword	/ɒft/ - /reɪd/ - /sɔːd/
few - slew - tongue	/fjuː/ - /sluː/ - /tʌŋ/
red - head - cause	/rɛd/ - /hɛd/ - /kɔːz/
Sun - soul - blame	/sʌn/ - /səʊl/ - /bleɪm/
act - week - break	/ækt/ - /wiːk/ - /breɪk/
one - base - count	/wʌn/ - /beɪs/ - /kaʊnt/
bus - yard - knees	/bʌs/ - /jɑːd/ - /niːz/
bid - cord - month	/bɪd/ - /kɔːd/ - /mʌnθ/
cat - step - steel	/kæt/ - /stɛp/ - /stiːl/
act - week - wrong	/ækt/ - /wiːk/ - /rɒŋ/
bid - dumb - worse	/bɪd/ - /dʌm/ - /wɜːs/
bus - life - mourn	/bʌs/ - /laɪf/ - /mɔːn/
cat - plot - dumb	/kæt/ - /plɒt/ - /dʌm/
cord - fear – glove	/kɔːd/ - /fɪə/ - /glʌv/
one - head - snake	/wʌn/ - /hɛd/ - /sneɪk/
red - door - bomb	/rɛd/ - /dɔː/ - /bɒm/
base - heat - sweep	/beɪs/ - /hiːt/ - /swiːp/
high - vile - spoke	/haɪ/ - /vaɪl/ - /spəʊk/
love - sack - crown	/lʌv/ - /sæk/ - /kraʊn/
rage - high - scene	/reɪʤ/ - /haɪ/ - /siːn/

11.4 Syllable: Disyllabic

Disyllabic is a word or metrical foot consisting of two syllables.

Illustrative examples:

abbey - argue - career	/ˈæbi/ - /ˈɑːgjuː/ - /kəˈrɪə/

abuse - arouse - carry	/əˈbjuːs/ - /əˈraʊz/ - /ˈkæri/
access - budget - ceiling	/ˈæksɛs/ - /ˈbʌdʒɪt/ - /ˈsiːlɪŋ/
achieve - bulky - challenge	/əˈʧiːv/ - /ˈbʌlki/ - /ˈʧælɪndʒ/
Acre - bureau - conform	/ˈeɪkə/ - /bjʊəˈrəʊ/ - /kənˈfɔːm/
acute - bushy - Congress	/əˈkjuːt/ - /ˈbʊʃi/ - /ˈkɒŋgrɛs/
adjust - butter - consist	/əˈʤʌst/ - /ˈbʌtə/ - /kənˈsɪst/
adopt - cable - consult	/əˈdɒpt/ - /ˈkeɪbl/ - /kənˈsʌlt/
advice - cancel - contain	/ədˈvaɪs/ - /ˈkænsəl/ - /kənˈteɪn/
affect - captain - context	/əˈfɛkt/ - /ˈkæptɪn/ - /ˈkɒntɛkst/
agree - cuddly - fragment	/əˈgriː/ - /ˈkʌdli/ - /ˈfrægmənt/
airport - cupboard - friendly	/ˈeəpɔːt/ - /ˈkʌbəd/ - /ˈfrɛndli/
album - custom - frilly	/ˈælbəm/ - /ˈkʌstəm/ - /ˈfrɪli/
allow - divide - fulfil	/əˈlaʊ/ - /dɪˈvaɪd/ - /fʊlˈfɪl/
alter - dizzy - funny	/ˈɔːltə/ - /ˈdɪzi/ - /ˈfʌni/
ample - dodgy - future	/ˈæmpl/ - /ˈdɒʤi/ - /ˈfjuːʧə/
Angle - doorway - garden	/ˈæŋgl/ - /ˈdɔːweɪ/ - /ˈgɑːdn/
answer - Dowdy - gender	/ˈɑːnsə/ - /ˈdaʊdi/ - /ˈʤɛndə/
apple - dozy - ghastly	/ˈæpl/ - /ˈdəʊzi/ - /ˈgɑːstli/
approach - draughty - gloomy	/əˈprəʊʧ/ - /ˈdrɑːfti/ - /ˈgluːmi/

11.5 Syllable: Tri-syllabic

Tri-syllabic is a word or metrical foot consisting of three syllables.

Illustrative examples*:*

abandon - auditor - nursery	/əˈbændən/ - /ˈɔːdɪtə/ - /ˈnɜːsəri/
acceptance - awareness - observer	/əkˈsɛptəns/ - /əˈweənəs/ - /əbˈzɜːvə/
achievement - beginning - offender	/əˈʧiːvmənt/ - /bɪˈgɪnɪŋ/ - /əˈfɛndə/
addition - boundary - opening	/əˈdɪʃ(ə)n/ - /ˈbaʊndəri/ - /ˈəʊpnɪŋ/
advantage - calculate - opinion	/ədˈvɑːntɪʤ/ - /ˈkælkjʊleɪt/ - /əˈpɪnjən/
adviser - Capital - organism	/ədˈvaɪzə/ - /ˈkæpɪtl/ - /ˈɔːgənɪzm/
agency - catalogue - overcome	/ˈeɪʤənsi/ - /ˈkætəlɒg/ - /ˌəʊvəˈkʌm/
alcohol - century - oxygen	/ˈælkəhɒl/ - /ˈsɛnʧʊri/ - /ˈɒksɪʤən/
allowance - character - particle	/əˈlaʊəns/ - /ˈkærɪktə/ - /ˈpɑːtɪkl/
amendment - chocolate - penalty	/əˈmɛndmənt/ - /ˈʧɒkəlɪt/ - /ˈpɛnlti/
animal - dismissal - engagement	/ˈænɪməl/ - /dɪsˈmɪsəl/ - /ɪnˈgeɪʤmənt/
appearance - distinction - enterprise	/əˈpɪərəns/ - /dɪsˈtɪŋkʃən/ - /ˈɛntəpraɪz/
appointment - dividend - entity	/əˈpɔɪntmənt/ - /ˈdɪvɪdɛnd/ - /ˈɛntɪti/
architect - dominate - episode	/ˈɑːkɪtɛkt/ - /ˈdɒmɪneɪt/ - /ˈɛpɪsəʊd/
arrangement - editor - equity	/əˈreɪnʤmənt/ - /ˈɛdɪtə/ - /ˈɛkwɪti/
assemble - element - evidence	/əˈsɛmbl/ - /ˈɛlɪmənt/ - /ˈɛvɪdəns/
assignment - emotion - exception	/əˈsaɪnmənt/ - /ɪˈməʊʃən/ - /ɪkˈsɛpʃən/

Assumption - emphasize - execute	/əˈsʌmpʃ(ə)n/ - /ˈɛmfəsaɪz/ - /ˈɛksɪkjuːt/
attendance - employment - existence	/əˈtɛndəns/ - /ɪmˈplɔɪmənt/ - /ɪgˈzɪstəns/
attraction - encourage - explosion	/əˈtrækʃ(ə)n/ - /ɪnˈkʌrɪʤ/ - /ɪksˈpləʊʒən/

11.6 Syllable: Poly-syllabic

Poly-syllabic is a word or metrical foot consisting of more than two syllables.

Illustrative examples:

ability - preparation	/əˈbɪlɪti/ - /ˌprɛpəˈreɪʃən/
accumulate - professional	/əˈkjuːmjʊleɪt/ - /prəˈfɛʃənl/
activity - psychology	/ækˈtɪvɪti/ - /saɪˈkɒləʤi/
agriculture - reality	/ˈægrɪkʌlʧə/ - /ri(:)ˈælɪti/
alternative - redundancy	/ɔːlˈtɜːnətɪv/ - /rɪˈdʌndənsi/
anticipate - relationship	/ænˈtɪsɪpeɪt/ - /rɪˈleɪʃənʃɪp/
appreciate - resolution	/əˈpriːʃieɪt/ - /ˌrɛzəˈluːʃən/
authority - satisfaction	/ɔːˈθɒrɪti/ - /ˌsætɪsˈfækʃən/
capacity - separation	/kəˈpæsɪti/ - /ˌsɛpəˈreɪʃən/
category - society	/ˈkætɪgəri/ - /səˈsaɪəti/
certificate - definition	/səˈtɪfɪkɪt/ - /ˌdɛfɪˈnɪʃən/
characterize - democracy	/ˈkærɪktəraɪz/ - /dɪˈmɒkrəsi/
commissioner - development	/kəˈmɪʃnə/ - /dɪˈvɛləpmənt/
comparison - difficulty	/kəmˈpærɪsn/ - /ˈdɪfɪkəlti/
competitor - disappointment	/kəmˈpɛtɪtə/ - /ˌdɪsəˈpɔɪntmənt/
concentration - economy	/ˌkɒnsənˈtreɪʃən/ - /i(:)ˈkɒnəmi/
constituent - eliminate	/kənˈstɪtjʊənt/ - /ɪˈlɪmɪneɪt/
contribution - entertainment	/ˌkɒntrɪˈbjuːʃən/ - /ˌɛntəˈteɪnmənt/
corporation - equivalent	/ˌkɔːpəˈreɪʃən/ - /ɪˈkwɪvələnt/
criterion - evolution	/kraɪˈtɪərɪən/ - /ˌiːvəˈluːʃən/

11.7 Syllable: Strong and Weak Types

Strong and weak types of syllable areone of the most noticeable features of English pronunciation where some of its syllables are strong while many others are weak.

When we compare weak syllables with strong syllables, we find the vowel in a weak syllable tends to be shorter, of lower intensity (loudness) and different in quality. For example, in the word 'data' delta the second syllable, which is weak, is shorter than the first, is less loud and has a vowel that cannot occur in strong syllables. In a word like 'bottle' the weak second syllable contains no vowel at all, but consists entirely of the consonant . We call this a syllabic consonant.

There are other ways of characterising strong and weak syllables. We could describe them partly in terms of stress (by saying, for example, that strong syllables are stressed and weak syllables unstressed) but, until we describe what "stress" means, such a description would not be very useful.

The most important thing to note at present is that any strong syllable will have as its peak one of the vowel phonemes (or possibly a triphthong) , but not a, i, u. If the vowel is

one of then the strong syllable will always have a coda as well.Weak syllables, on the other hand, as they are defined here, can only have one of a very small number of possible peaks. At the end of a word, we may have a weak syllable ending with a vowel.

Illustrative examples:

alphabetical - cardiopulmonary	/ˌæl.fə.ˈbɛ.tɪ.kəl/ - /ˌkɑː.dɪ.əʊ.ˈpʌl.mə.nə.riː/
apologetic - communication	/ə.ˌpɒ.lə.ˈdʒɛ.tɪk/ - /kə.ˌmjuː.nɪ.ˈkeɪ.ʃən/
atherosclerosis - complementarity	/ˌæ.θə.rəʊs.klɪə.ˈrəʊ.sɪs/ - /ˌkɒm.plɪ.mən.ˈtæ.rɪ.tiː/
auditorium - condominium	/ˌɔː.dɪ.ˈtɔː.rɪəm/ - /ˈkɒn.də.ˈmɪ.nɪəm/
cafeteria - congratulations	/ˌkæ.fɪ.ˈtɪə.rɪə/ - /kən.ˌgræ.tjʊ.ˈleɪ.ʃənz/
California - conservationist	/ˌkæ.lə.ˈfɔː.niə/ - /ˌkɒn.sə(ː).ˈveɪ.ʃə.nɪst/
contemporaneous - discontinuation	/kən.ˌtɛm.pə.ˈreɪ.niəs/ - /ˌdɪs.kən.tɪn.jʊ.ˈeɪ.ʃən/
cooperation - disobedient	/kəʊ.ˌɒp.ə.ˈreɪ.ʃən/ - /ˌdɪs.ə.ˈbiː.diː.ənt/
crystallography - disorganization	/ˌkrɪs.tə.ˈlɒg.rə.fiː/ - /dɪs.ˌɔː.gə.naɪ.ˈzeɪ.ʃən/
curiosity - dissatisfaction	/ˌkjʊə.rɪ.ˈɒ.sɪ.tiː/ - /dɪs.ˌsæ.tɪs.ˈfæk.ʃən/
denominator - electromagnetic	/dɪ.ˈnɒ.mɪ.neɪ.tə/ - /ɪ.ˌlɛk.trəʊ.mæg.ˈnɛ.tɪk/
desertification - elementary	/dɪ.ˌzɜː.tɪ.fɪ.ˈkeɪ.ʃən/ - /ˌɛ.lɪ.ˈmɛn.tə.riː/
detoxification - conspiratorial	/dɪ.tɒks.fɪ.keɪ.ʃən/ - /kən.ˌspɪ.rə.ˈtɔː.rɪəl/
differentiation - excommunication	/ˌdɪ.fə.rɛn.ʃɪ.ˈeɪ.ʃən/ - /ˈɛks.kə.ˌmjuː.nɪ.ˈkeɪ.ʃən/
disadvantageous - experimentation	/ˌdɪsædvɑːnˈteɪdʒəs/ - /ɛksˌpɛrɪmɛnˈteɪʃən/
disagreeable - extracurricular	/ˌdɪs.ə.ˈgrɪə.bəl/ - /ˌɛk.strə.kə.ˈrɪk.jʊ.lə/
discouragement - conglomeration	/dɪs.ˈkʌ.rɪdʒ.mənt/ - /kən.ˌglɒ.mə.ˈreɪ.ʃən/
farsightedness - encephalopathy	/ˈfɑː.ˈsaɪ.tɪd.nəs/ - /ɛn.ˌsɛ.fə.ˈlɒ.pə.θiː/
gastroenteritis - instrumentality	/ˈgæs.trəʊ.ˌɛn.tə.ˈraɪ.tɪs/ - /ˌɪn.strʊ.mɛn.ˈtæ.lɪ.tiː/
hippopotamus - interchangeable	/ˌhɪ.pə.ˈpɒ.tə.məs/ - /ˌɪn.tə(ː).ˈʧeɪn.ʤə.bəl/
hospitalization - intercollegiate	/ˌhɒs.pɪ.tə.laɪ.ˈzeɪ.ʃən/ - /ˌɪn.tə(ː).kə.ˈlɪ.ʤɪ.eɪt/
immediately - laboratory	/ɪ.ˈmiː.diət.liː/ - /lə.ˈbɒ.rə.tə.riː/
impressionable - unidirectional	/ɪm.ˈprɛ.ʃə.nə.bəl/ - /ˌjuː.nɪ.dɪ.ˈrɛk.ʃə.nəl/
incommensurable - impenetrability	/ˌɪn.kə.ˈmɛn.ʃə.rə.bəl/ - /ɪm.ˌpɛ.nɪ.trə.ˈbɪ.lɪ.tiː/
incompatibility - magnifying glass	/ˌɪn.kəm.ˌpæ.tə.ˈbɪ.lɪ.tiː/ - /ˈmæg.nɪ.faɪ.ɪŋ.glɑːs/
incompatibility - unpronounceable	/ˌɪn.kəm.ˌpæ.tə.ˈbɪ.lɪ.tiː/ - /ˌʌn.prə.ˈnaʊn.sə.bəl/
inconsequential - mathematical	/ɪn.ˌkɒn.sɪ.ˈkwɛn.ʃəl/ - /ˌmæ.θɪ.ˈmæ.tɪ.kəl/
interchangeable - unobjectionable	/ˌɪn.tə(ː).ˈʧeɪn.ʤə.bəl/ - /ˌʌn.əb.ˈʤɛk.ʃə.nə.bəl/
multifunctional - personification	/ˌmʌl.tɪ.ˈfʌŋk.ʃə.nəl/ - /pɜː.ˌsɒ.nɪ.fɪ.ˈkeɪ.ʃən/
notwithstanding - planetarium	/ˌnɒt.wɪθ.ˈstæn.dɪŋ/ - /ˌplæ.nɪ.ˈteə.rɪəm/
ophthalmologist - polyunsaturated	/ˌɒf.θæl.ˈmɒ.lə.ʤɪst/ - /pɒ.liː.ʌn.ˈsæ.ʧʊ.ˌreɪ.tɪd
organization - potato salad	/ˌɔː.gə.naɪ.ˈzeɪ.ʃən/ - /pə.ˈteɪ.təʊ.sæ.ləd/
overpopulation - counterbalance	/ˌəʊ.və.ˌpɒ.pjʊ.ˈleɪ.ʃən/ - /ˈkaʊn.tə.ˌbæ.ləns/
parliamentarian - professionalism	/ˌpɑː.lə.mɛn.ˈteə.rɪən/ - /prə.ˈfɛʃ.nə.lɪ.zəm/
psychotherapist - unforgettable	/ˌsaɪ.kəʊ.ˈθɛ.rə.pɪst/ - /ˌʌn.fə.ˈgɛ.tə.bəl/
psychotherapist - unforgettable	/ˌsaɪ.kəʊ.ˈθɛ.rə.pɪst/ - /ˌʌn.fə.ˈgɛ.tə.bəl/

rationalization - university	/ˌræʃ.nə.laɪ.ˈzeɪ.ʃən/ - /ˌjuː.nɪ.ˈvɜː.sɪ.tiː/
reapportionment - unquestionable	/ˌriː.ə.ˈpɔː.ʃən.mənt/ - /ʌn.ˈkwɛs.ʧə.nə.bəl/
refrigerator - unsophisticated	/rɪ.ˈfrɪ.ʤə.reɪ.tə/ - /ˌʌn.sə.ˈfɪs.tɪ.keɪ.tɪd/
saltwater taffy - unsportsmanlike	/ˈsɔːlt.ˌwɔː.tə.ˈtæ.fiː/ - /ʌn.ˈspɔːts.mən.laɪk/
slaughterhouse - claustrophobia	/ˈslɔː.tə.haʊs/ - /ˌklɒs.trə.ˈfəʊ.bɪə/
South America - unsubstantiated	/saʊθ.ə.ˈmɛ.rɪ.kə/ - /ˌʌn.səb.ˈstæn.ʃɪ.eɪ.tɪd/
straightforward - vegetarian	/streɪt.ˈfɔː.wəd/ - /ˌvɛ.ʤɪ.ˈteə.rɪən/
superannuation - utilitarianism	/ˌsjuː.pə.ˌræ.njʊ.ˈeɪ.ʃən/ - /ˌjuː.tɪ.lɪ.ˈteə.rɪə.nɪ.zəm/
thermodynamics - macroeconomics	/ˌθɜː.məʊ.daɪ.ˈnæ.mɪks/ - /ˌmæk.rəʊ.ˌiː.kə.ˈnɒ.mɪks/
transfiguration - veterinarian	/ˌtræns.fɪ.gjʊ.ˈreɪ.ʃən/ - /ˌvɛ.tə.rɪ.ˈneə.rɪən/
unacknowledged - unconscionable	/ˌʌn.ək.ˈnɒ.lɪʤd/ - /ʌn.ˈkɒn.ʃə.nə.bəl/
unchallengeable - flibbertigibbet	/ʌn.ˈʧæ.lɪn.ʤə.bəl/ - /ˈflɪ.bə.tɪ.ˈʤɪ.bɪt/
unprofessional - insignificance	/ˌʌn.prə.ˈfɛ.ʃə.nəl/ - /ˌɪn.sɪg.ˈnɪ.fɪ.kəns/
unquestionable - disciplinarian	/ʌnˈkwɛsʧənəbl/ - /ˌdɪsɪplɪˈneərɪən/
unrecognizable - polysaccharide	/ʌnˈrɛkəgnaɪzəbl/ - polysaccharide
unsubstantiated - unexceptionable	/ˌʌnsəbˈstænʃɪeɪtɪd/ - /ˌʌnɪkˈsɛpʃnəbl/

Keywords

Syllable: It is a unit of pronunciation having one vowel sound, with or without surrounding consonants, forming the whole or a part of a word; for example, there are two syllables in *water* and three in *inferno*.

Mono-syllabic: A word that contains only one syllable:"Jump", "buy", and "heat" are mono-syllabic.

Bi-syllabic: A word that contains two syllables:"Jumper", "buyer", and "heating" are bi-syllabic.

Tri-syllabic: A word that contains three syllables:"Dramatic", "playable", and "dishonest" are tri-syllabic.

Weak syllable: The syllable is weak when it has the short vowel /ə/ (Schwa).

Strong syllable: In phonology, a heavy or strong syllable is considered to be with a branching rhyme, i.e. one that has a long vowel or diphthong nucleus or a vowel followed by a coda.

Summary

This unit covered many ideas around the field of phonology while developing better understanding about prominent theoreticians and their ideas apart from explaining basic terminologies.

Then next segment deals in with the phonological concept of syllable types in terms of number and strength.

Self Assessment

1. Which one of the following is NOT a characteristic of Syllable?

A. Basic building blocks of a word
B. To count number of syllables, count the number of vowel sounds
C. There is a CVC phonological rules to decode syllable

D. To count number of syllables, count the number of vowel letters

2. Which one of the following is NOT a Mono-syllabic word?

A. door
B. snake
C. easy
D. sweep

3. Which one of the following is NOT a Bi-syllabic word?

A. Happen
B. provide
C. easy
D. similar

4. Which one of the following is NOT a Tri-syllabic word?

A. enunciation
B. isolate
C. article
D. insertion

5. Which one of the following is a five-syllable word?

A. economically
B. communication
C. characteristically
D. noticeable

6. Which one of the following is a four-syllable word?

A. Discouragement
B. Conglomeration
C. Immediately
D. Impressionable

7. Which one of the following is a five-syllable word?

A. Gastroenteritis
B. Instrumentality
C. Farsighted
D. Alphabetical

8. Which one of the following is a five-syllable word?

A. Unpronounceable
B. Incompatibility

C. Incommensurable
D. Impenetrability

9. Which one of the following is a six-syllable word?

A. Multifunctional
B. Polyunsaturated
C. Macroeconomics
D. Veterinarian

10. Which one of the following is a six-syllable word?

A. Unacknowledged
B. Unsubstantiated
C. Unconscionable
D. Questionable

11. Which one of the following is NOT a Suprasegmental feature?

A. Primary & secondary stress
B. Schwa sound
C. Intonation: Fall, Rise, rise-Fall, Fall-Rise
D. Long and short sound

12. Which one of the following is NOT a Four-syllable word?

A. following
B. experiment
C. uneasily
D. disagreeable

13. Which one of the following is NOT a Five-syllable word?

A. hippopotamus
B. disadvantageous
C. denominator
D. electromagnetic

14. Which one of the following is NOT a Six-syllable word?

A. hospitalization
B. incompatibility
C. incommensurable
D. personification

15. Which one of the following is a Seven-syllable word?

A. ophthalmologist

B. polyunsaturated
C. parliamentarian
D. characteristics

Answers for Self Assessment

1.	D	2.	C	3.	D	4.	A	5.	B
6.	C	7.	D	8.	A	9.	C	10.	B
11.	B	12.	A	13.	D	14.	B	15.	C

Review Questions

1. Explain the idea of syllable with appropriate word examples.

2. Explain the difference between weak and strong syllables with examples.

3. Write 10 examples of mono-syllabic words.

4.Write 10 examples of di-syllabic words.

5.Write 10 examples of tri-syllabic words.

Further Readings

Sweet, Henry. *A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform.* Cambridge University Press, 2013.

Jones, Daniel. *An English Pronouncing Dictionary.* Cambridge University Press, 2011.

Ladefoged, Peter, and Ian Maddieson. *The Sounds of the World's Languages*. Blackwell Publishers, 1996.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Web Links

https://www.studysmarter.de/en/explanations/english/phonetics-phonology-and-prosodics/monophthong/

https://www.verbling.com/articles/post/understanding-vowels-syllables-monophtho

https://www.britannica.com/topic/vowel#ref75339

https://www.britannica.com/topic/syllable

https://www.personal.rdg.ac.uk/~llsroach/phon2/mitko/syllable.htm

https://www.ck12.org/section/strong-and-weak-vowel-sounds-%3a%3aof%3a%3a-teacher-03-lesson-1-24-%3a%3aof%3a%3a-basic-speller-teacher-materials/

Unit 12: Stress

CONTENTS

Objectives

Introduction

12.1 Basic Terminologies

12.2 Stress: Word Level

12.3 Stress: Sentence Level

12.4 Stress: Word-category Change

12.5 Nature of Stress: Production Perspective

12.6 Nature of Stress: Perception Perspective

12.7 Nature of Stress: Nomenclature

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with the idea of salience and different ways to achieve it
- raise awareness about stress at word & sentence level
- formulate a clear idea about distinctive role of stress inducing word-category change
- acquaint with the idea of prosodic phoneme in terms of meaning, function, & description
- raise awareness about the nature of stress

Introduction

The first segment of the unit focuses on establishing an enhanced understanding about the idea of salience and prosodic phoneme as part of explaining basic terminologies.

Then next segment deals in considerable length on various dimensions of stress in speech: word level, sentence level, change in word-category etc.

12.1 Basic Terminologies

Idea of salience in speech: The term salience can be described as stress or prominence or increased sub-glottalic pressure and the same can be achieved through any of these means: pitch variation, loudness variation, speech rate variation, placement of pauses, word length variation, prosodic stress marking etc.

Prosodic phoneme: It can be seen as musical accompaniment which adds a flavor to the speech while embedding inflections & modulations in delivery. Interestingly, it does not

possess any inherent meanings but the overarching presence over phonemes add nuances of meaning thus acting as meaning additives.It's the contrast between all these different levels of loudness, duration, and pitch that creates the rhythm of English.

12.2 Stress: Word Level

In English, the individual sounds of a word (i.e. syllables) aren't pronounced with the same weight. One syllable receives more emphasis than the others.For example, there are three syllables in the word "beautiful" /BEAU-ti-ful/ and the word stress falls on the first one /BEAU/.

There are 3 levels of stress in English: primary, secondary, and completely unstressed syllables.Some syllables are louder and longer, some syllables are shorter and quieter, and some syllables are in-between.Every syllable contains a vowel and the American pronunciation of vowels requires a change in pitch. The amount that the pitch changes also varies with the syllable stress.

Illustrative examples:

alphabetical – cardiopulmonary	/ˌæl.fə.ˈbɛ.tɪ.kəl/ - /ˌkɑː.dɪ.əʊ.ˈpʌl.mə.nə.riː/
apologetic - communication	/ə.ˌpɒ.lə.ˈʤɛ.tɪk/ - /kə.ˌmjuː.nɪ.ˈkeɪ.ʃən/
atherosclerosis - complementarity	/ˌæ.θə.rəʊs.klɪə.ˈrəʊ.sɪs/ - /ˌkɒm.plɪ.mən.ˈtæ.rɪ.tiː/
auditorium - condominium	/ˌɔː.dɪ.ˈtɔː.rɪəm/ - /ˈkɒn.də.ˈmɪ.nɪəm/
cafeteria - congratulations	/ˌkæ.fɪ.ˈtɪə.rɪə/ - /kən.ˌgræ.tjʊ.ˈleɪ.ʃənz/
curiosity - dissatisfaction	/ˌkjʊə.rɪ.ˈɒ.sɪ.tiː/ - /dɪs.ˌsæ.tɪs.ˈfæk.ʃən/
denominator - electromagnetic	/dɪ.ˈnɒ.mɪ.neɪ.tə/ - /ɪ.ˌlɛk.trəʊ.mæg.ˈnɛ.tɪk/
desertification - elementary	/dɪ.ˌzɜː.tɪ.fɪ.ˈkeɪ.ʃən/ - /ˌɛ.lɪ.ˈmɛn.tə.riː/
detoxification - conspiratorial	/dɪ.tɒks.fɪ.keɪ.ʃən/ - /kən.ˌspɪ.rə.ˈtɔː.rɪəl/
differentiation - excommunication	/ˌdɪ.fə.rɛn.ʃɪ.ˈeɪ.ʃən/ - /ˈɛks.kə.ˌmjuː.nɪ.ˈkeɪ.ʃən/

Notes on stress at word level

- Explanation
- Illustrative example

12.3 Stress: Sentence Level

Sentence stress is the pattern of stressed and unstressed words across a sentence. Normally this emphasis is on words that carry important information, although this can change significantly, depending on the specific meaning the speaker wants to communicate.

> Example: 'She bought a new car' probably has main stress on 'car' and secondary stress on 'bought'.

The way stress moves in order to change the message is an extremely important part of pronunciation. For example, in the sentence above main stress could move onto 'she', 'bought' or 'new' and change the meaning considerably.

Illustrative example 1:

I didn't take the test yesterday.	(Somebody else did.)
I DIDN'T take the test yesterday.	(I did not take it.)

I didn't TAKE the test yesterday.	(I did something else with it.)
I didn't take THE test yesterday.	(I took one of several. or I didn't take the specific test that would have been implied.)
I didn't take the TEST yesterday.	(I took something else.)
I didn't take the test YESTERDAY.	(I took it some other day.)

Illustrative example 2:

I don't think she would write it.	(I don't think that, but someone else does.)
I DON'T think she will listen to him.	(It is not true that I think that.)
I don't THINK she will listen to him.	(I don't think that, in fact I know that.)
I don't think SHE will listen to him.	(someone other than her will listen)
I don't think she WILL listen to him.	(shewill not be willing or agreeable to listening to him.)
I don't think she will LISTEN to him.	(Instead of listening, she might talk)
I don't think she will listen to HIM.	(she'll listen to someone else)

Notes on stress at sentence level

- Explanation
- Illustrative example-I
- Illustrative example- II

12.4 Stress: Word-category Change

English orthography is often ambiguous. For example, the word "read" can be pronounced either /riːd/ ("reed") or as /rɛd/ ("red") depending on whether it refers to the present or the past tense.

There is a large class of such words characterized by ambiguity in stress placements. When a word can be stressed on two different syllables, stress placement determines the part of speech of the word (e.g. whether it is a verb or a noun). As a rule of thumb, if the stress is on the second syllable, the word is usually a verb.

Here's a fairly exhaustive list of such words, with pronunciation given in the international phonetic alphabetin which stress is indicated by a small vertical line, similar to an apostrophe.

Illustrative examples:

increase

Noun: INcrease "There's been an increase in the number of students."

Verb: inCREASE "Numbers are increasing."

decrease

Noun: DEcrease "We've seen a decrease in the bird population."

Verb: deCREASE "Numbers are decreasing every year."

import

Noun: IMport "This is a cheap import."

Verb: imPORT "They import their oil from the UK."

export

Noun: EXport "Oil is one of their biggest exports."

Verb: exPORT "We need to export more."

discount

Noun: DIScount "Is there a discount on this?"

Verb: disCOUNT "They discounted the theories."

refund

Noun: REfund "I'd like a refund please."

Verb: reFUND "We'll refund you 50%."

permit

Noun: PERmit "Do you need a permit to fish here?"

Verb: perMIT "They won't permit her to leave the country."

conflict

Noun: CONflict "They're reporting armed conflict in the area."

Verb: conFLICT "His opinion conflicted with hers."

contest

Noun: CONtest "She entered a beauty contest."

Verb: conTEST "They contested the results."

insult

Noun: INsult "Your offer is so low it's an insult."

Verb: inSULT "Don't insult me!"

protest

Noun: PROtest "There's a student protest today."

Verb: proTEST "They're protesting against cuts."

rebel

Noun: REbel "He was a rebel when he was younger."

Verb: reBEL "He rebelled against authority."

rewrite

Noun: REwrite "That's a rewrite of an old song."

Verb: reWRITE "She rewrote her story."

update

Noun: UPdate "We've got some updates for you."

Verb: upDATE "We're updating our files."

upgrade

Noun: UPgrade "They got an upgrade on the flight."

Verb: upGRADE "It's time to upgrade our computer."

invite

Noun: INvite "I received an invite to her party."

Verb: inVITE "They invited us to their house."

misprint

Noun: MISprint "There's a misprint in the book."

Verb: misPRINT "He misprinted the word."

insert

Noun: INsert "Put a couple of inserts in this text."

Verb: inSERT "He inserted a few words into her paragraph."

survey

Noun: SURvey "Let's do a customer survey to find out."

Verb: surVEY "They surveyed over 1000 people."

contrast

Noun: CONtrast "There's a big contrast between you two."

Verb: conTRAST "He contrasted the two pictures."

detail

Noun: DEtail "It's just a minor detail."

Verb: deTAIL "The story details their struggle with poverty."

escort

Noun: EScort "You'll need an escort to get through security."

Verb: esCORT "He escorted her out of the door."

perfume

Noun: PERfume "He bought her a bottle of perfume for her birthday."

Verb: perFUME "The roses perfumed the room."

reject

Noun: REject "This is one of the rejects from the factory."

Verb: reJECT "He rejected her advice."

upset

Noun: UPset "The victory was an upset in the championships."

Verb: upSET "He upset her with his cruel remarks."

compound

Noun: COMpound "They lived in a compound."

Verb: comPOUND "Current policy is just compounding problems."

contract

Noun: CONtract "Have you signed the contract?"

Verb: conTRACT "The economy is contracting."

conduct

Noun: CONduct "The conduct of the student was unacceptable."

Verb: conDUCT "They're conducting an enquiry."

object

Noun: OBject "He treats her like an object."

Verb: obJECT "She objected to the proposals."

subject

Noun: SUBject "What subjects do you study?"

Verb: subJECT "She was subjected to harsh criticism."

present

Noun: PREsent "He gave her a present."

Verb: preSENT "He's going to present his findings."

project

Noun: PROject "They're working on a project."

Verb: proJECT "He projects himself well."

refuse

Noun: REfuse "The refuse collectors are on strike."

Verb: reFUSE "He refused permission."

desert

Noun: DEsert "They went travelling in the Sahara desert."

Verb: deSERT "The soldiers deserted their post."

12.5 Nature of Stress: Production Perspective

Characteristics:

- phonetically speaking, extra subglottal pressure
- physiologically speaking, greater breath effort & muscular energy
- segmenting of speech in cluster of words

12.6 Nature of Stress: Perception Perspective

Characteristics:

- phonologically speaking, clearer enunciation
- marker of salience
- accompaniment of significant cues
- ease of comprehension

12.7 Nature of Stress: Nomenclature

In phonetics, stress is the degree of emphasis given a sound or syllable in speech, also called lexical stress or word stress. Unlike some other languages, English has variable (or flexible) stress. This means that stress patterns can help distinguish the meanings of two words or phrases that otherwise appear to be the same.

For example, in the phrase "every white house," the words white and house receive roughly equal stress; however, when we refer to the official home of the American president, "the White House," the word White is usually stressed more heavily than House.

These variations in stress account for the complexity of the English language, especially to those learning it as a second language. However, in all languages stress is used to make words more understandable on the word level and is especially apparent in the pronunciation of individual words and their parts.

Primary &Secondary stress:

Primary stress- Superscript; raised vertical line [ˈ]

- /ˈprʌɪ.mə.riː/
- /ˈsɛ.kən.də.riː/

Secondary stress- Subscript; lowered vertical line [ˌ]

- /ɪˌnɒ.kjʊ.ˈleɪ.ʃən/
- /ˌnjuː.mɪz.ˈmæ.tɪk/

Lexical stress:

Noun: CONflict "They're reporting armed conflict in the area."

Verb: conFLICT "His opinion conflicted with hers."

Syntactic stress:

The way Biden administration handles this Afghan-CONFLICT really decides the future prospect of peace in the region.

Word stress:

Let's see what future HOLDS for this war-ravaged country.

Prosodic stress:

And of course, Indian government is closely watching THIS SIMMERING CONFLICT which has endangered Indian interests in the entire Afghanistan.

Keywords

Stress: In phonetics, stress is the degree of emphasis given a sound or syllable in speech, also called lexical stress or word stress.

Prosody: Prosody — the rhythm, stress, and intonation of speech — provides important information beyond a sentence's literal word meaning.

Salience: Salience, a concept little analyzed in linguistics/pragmatics, is defined here as that quality which determines how semantic material is distributed within a sentence or discourse, in terms of the relative emphasis which is placed on its various parts.

Summary

This unit covered many ideas around the field of phonology while developing better understanding about how to achieve salience or attribute prominence in the speech.

Then next segment deals in with the phonological concept of stress and its various manifestation.

Self Assessment

1. Which one of the following is NOT a way to achieve SALIENCE in speech?

A. Prosodic stress
B. Smiling face
C. Loudness variation
D. Word length variation

2. Which one of the following is NOT a characteristic of SALIENCE?

A. Exhibiting a swag in a speech
B. Reflecting prominence at a given portion of speech

C. Attributing significance of meaning to a given portion of speech
D. Laying focus on a given portion of speech

3. Which one of the following is NOT an example of a word having two forms: a noun as well as verb?

A. ENGlish-engLISH
B. EXport-exPORT
C. CREdit-creDIT
D. REfund-reFUND

4. Which one of the following is NOT an example of a word having two forms: a noun as well as verb?

A. COmmand-coMMAND
B. CRIcket-criCKET
C. PERmit-perMIT
D. CONflict-conFLICT

5. Which one of the following is NOT an example of a word having two forms: a noun as well as verb?

A. INsult-inSULT
B. GRANdeur-granDEUR
C. PROtest-proTEST
D. REwrite-reWRITE

6. Which one of the following is NOT a characteristic of PROSODIC PHONEME?

A. Superimposition over phonemes
B. Provides a musical accompaniment
C. Adding flavor to the speech
D. Brings a complete change in the meaning

7. Which one of the following is NOT a functionality component of PROSODIC PHONEME?

A. Reflecting societal status of the individual
B. Marking salience in speech
C. Making meaningful interventions
D. Getting emotions embedded in the speech

8. Which one of the following is NOT a characteristic of production perspective of stress?

A. greater breath effort
B. extra subglottal pressure
C. eyelid movements in speech
D. greater articulatory muscular energy

9. Which one of the following is NOT a characteristic of perception perspective of stress?

A. Hints clearer enunciation
B. Identifying gender of the speaker
C. Indicates accompaniment of significant cues
D. Provides ease of comprehension

10. Which one of the following is NOT a correct statement with regards to nomenclature of stress?

A. Primary stress- Superscript; raised vertical line [ˈ]
B. Primary and Secondary stress are not distinct from each other
C. Secondary stress- Subscript; lowered vertical line [ˌ]
D. REwrite-reWRITE [in first case RE and in second WRITE are stressed syllables]

11. Which one of the following is NOT a characteristic of CONNECTED SPEECH?

A. Citation form remains different from contiguous speech
B. Neighborhood of the word affects each other
C. Remains same as words in isolation all the time
D. Happens in order to economize articulatory effort

12. Which one of the following is NOT a component of SYLLABLE?

A. Rhyme
B. Onset
C. Nucleus
D. Code

13. Which one of the following is NOT a proper word stress rule?

A. For three-syllable words ending with the suffixes -er or -ly, the stress is placed on the first syllable
B. In most two syllable nouns and adjectives, the first syllable takes on the stress
C. In most two syllable verbs and prepositions, the stress is on the second syllable
D. Most of the stress rules are all arbitrary

14. Which one of the following is NOT a proper word stress rule?

A. Stress rules depend on the nativity of the speaker
B. The stress is going to be on the syllable right before the suffix. This applies to words of all syllable lengths
C. Words that use the suffix -ade, -ee, -ese, -eer, -que, -ette, or -oon have the primary stress actually placed on the suffix
D. Stress on the second syllable from the end of the word with words ending in -ic, -sion, and -tion

15. Which one of the following is NOT a proper word stress rule?

A. Stress on the third from end syllable with words that end in -cy, -ty
B. Stress rules depend on the context of the speech
C. Stress on the third from end syllable with words that end in -phy, -gy
D. Stress on the third from end syllable with words that end in -al

Answers for Self Assessment

1.	B	2.	A	3.	A	4.	B	5.	B
6.	D	7.	A	8.	C	9.	B	10.	B
11.	C	12.	D	13.	D	14.	A	15.	B

Review Questions

1. Explain those different ways through which we can realise salience in speech.
2. Explain any two phonological rules of your choice.
3. Write 05 examples showing stress at word level.
4. Write 02examples showing stress at sentence level.
5. Write 05examples showing meaning change through stress placement in a word.

Further Readings

Sweet, Henry. *A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform.* Cambridge University Press, 2013.

Jones, Daniel. *An English Pronouncing Dictionary.* Cambridge University Press, 2011.

Ladefoged, Peter, and Ian Maddieson. *The Sounds of the World's Languages*. Blackwell Publishers, 1996.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Web Links

https://www.theaccentchannel.com/blog/3-levels-of-syllable-stress-in-english

https://www.fluentu.com/blog/english/english-word-stress/

https://www.really-learn-english.com/word-stress.html

https://www.whatiselt.com/single-post/2017/09/08/what-is-sentence-stress

https://jakubmarian.com/english-words-that-change-meaning-depending-on-the-stress-position/

https://www.engvid.com/english-resource/35-words-stress-changes-meaning/

Unit 13: Intonation

CONTENTS

Objectives

Introduction

1.1 Basic Terminologies

1.2 Intonation: Meaning

1.3 Intonation: Utilitarian Examples

1.4 Intonation: Tips to Understand & Practice

1.5 Intonation: Functions

1.6 Intonation: Types

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with basic foundational differences between Tone & Intonation
- raise awareness about intonation as a suprasegmental speech phenomenon
- acquaint with basic foundational terminologies of acoustics in order to understand intonation
- raise awareness about functional utility of intonation
- acquaint with basic foundational differences between content words & functional words
- raise awareness about various levels of intonation as suprasegmental speech phenomenon
- formulate an instinct towards possessing native-like competence with the aid & understanding about the idea of intonation

Introduction

The first segment of the unit focuses on establishing an enhanced understanding about intonation by explaining basic terminologies, like: difference between tone & intonation, difference between content & function words, various acoustics terms, and acoustic software functionality.

Then next segment deals in considerable length on various phonological perspective on intonation: meaning, function, types, and utility.

Caution: Take care of correct pronunciation

Praatis pronounced as/prɑːt/

1.1 Basic Terminologies

Tone versus Intonation: Tone refers to the emotion and attitude one puts behind their words. In contrast, intonation refers to the fluctuation of one's voice as they speak. Tone is how you feel and the feeling you put in your words. Intonation is how you use your voice to direct your sentence's flow to convey a message.

Characteristics of tone:

- affects lexical change
- word phenomenon
- "phonemic" in functionality
- primarily a one-type phenomenon
- examples: Thai, Japanese, Swedish, Cantonese, & Mandarin

Characteristics of intonation:

- no meaning changes; tool for accentuation / prominence / salience
- word(s), phrase, & sentence phenomenon
- "allophonic" in functionality
- multiple types: rising, falling, rise-fall, fall-rise, neutral
- examples: French, German, Spanish & English

Fundamental Frequency: The fundamental frequency or F0 is the frequency at which vocal chords vibrate in voiced sounds. This frequency can be identified in the sound produced, which presents quasi-periodicity, the pitch period being the fundamental period of the signal (the inverse of the fundamental frequency). Pitch is more often used to refer to how the fundamental frequency is perceived.

- number of times the vocal cords vibrate in one second
- measured in 'cycles per second' (cps) or Hertz (Hz)
- F0 or F naught
- Average for women- 220 Hz & Men- 120 Hz

Pitch: Pitch is quantified as a frequency, but pitch is not a purely objective physical property; it is a subjective psychoacoustical attribute of sound.

- perception of rate of vocal fold vibration
- greater the F0, greater the pitch

Pitch variations: Pitch variation, which refers to one's ability to vary fundamental frequency (F0) within or between syllables when speaking in order to express emotions and attitude

Praat: It is a free computer software package for speech analysis in phonetics. It was designed, and continues to be developed, by Paul Boersma and David Weenink of the University of Amsterdam. It can run on a wide range of operating systems, including various versions of Unix, Linux, Mac and Microsoft Windows. The program supports speech synthesis, including articulatory synthesis. There are list of functionalities it can perform:

- Pictorial representation
- Annotation
- Description
- Classification

- Measurement
- Publication quality graphics

Fig. 13.1 Pictorial representation of Praat output graphics

Content words vs. Functional words: Content words give us the essential info while function words are used to connect those words together. Content words are typically nouns, verbs, adjectives, and adverbs.

Content / Operative words

- carry the meaning of a sentence
- conjure an image in the listener's mind
    - Verbs
    - Nouns
    - Adjectives
    - Adverbs

Functional / Inoperative words

- largely responsible for the syntax, or structure, of sentences
- don't carry the key meaning of the thought
- pronounced with very little emphasis
- vowel can be reduced to the weak form of the schwa ə
    - Articles
    - Prepositions
    - Conjunctions
    - Pronouns (Although they are often the subject of a sentence)
    - Auxiliary verbs
    - The verb to be in all its forms
    - The first word of infinitives, as in "to look" (The word "to" is reduced to the weak form.)

1.2 Intonation: Meaning

In linguistics, intonation is variation in spoken pitch when used, not for distinguishing words as sememes (also known as tone); but rather, for a range of other functions such as indicating the attitudes and emotions of the speaker, signaling the difference between statements and questions, and between different types of questions, focusing attention on important elements of the spoken message and also helping to regulate conversational interaction.

Although intonation is primarily a matter of pitch variation, it is important to be aware that functions attributed to intonation such as the expression of attitudes and emotions, or highlighting aspects of grammatical structure, almost always involve concomitant variation in other prosodic features. David Crystal for example says that "intonation is not a single system of contours and levels, but the product of the interaction of features from different prosodic systems – tone, pitch-range, loudness, rhythmicality and tempo in particular."

Phonetically speaking, intonation is the melodic pattern of an utterance. It conveys differences of expressive meaning (e.g., surprise, anger, or delight), and it can also serve a grammatical function.Intonation is primarily a matter of variation in the pitch of the voice. In such languages as English, it is often accompanied by stress and rhythm to produce meaning. Tone is also a form of pitch modulation, but the term describes the use of pitch to differentiate words and grammatical categories.

In many languages, including English, intonation distinguishes one type of phrase or sentence from another. The different intonations a person can use to say, "The cup of water is over there" demonstrate this grammatical function: when a person begins with a medium pitch and ends with a lower one (falling intonation), this sentence is a simple assertion, but when a person uses a rising intonation (high final pitch), it is a question.

Characteristics:

- purposeful pitch variation
- expresses attitudes & emotions
- mood indicator
- interlinkage of stress & intonation
- surges & dives
- (↘) indicates a fall & an upward arrow (↗) a rise in intonation
- much more than an "aesthetical" intervention

Illustrative example:

propositional variable instances of "Hello"

"Hello"- neutral greeting

"Hello"- greeting to a known acquaintance

"Hello"- greeting to a friend meeting after a long time

"Hello"- greeting a toddler

Notes on meaning of intonation

- Meaning
- Characteristics
- Illustrative example

1.3 Intonation: Utilitarian Examples

Using the right intonation can actually change the meaning of your words. Think of your voice as a musical instrument. As you speak, your voice gets louder and softer, places emphasis on certain parts, and goes up and down the notes.

Utilitarian examples:

- Seeking answers
- Providing information
- Presenting itemized list
- Emoting feelings
- Stressing importance
- Contrasting
- Tag questions

Seeking answers:

Yes or No questions- rising intonation

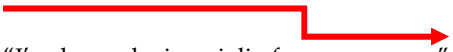
"Are you going to university tomorrow?"

Open ended questions: falling intonation

"Why are you going to school tomorrow? It's Saturday!"

Providing information:

stating facts or information- falling intonation



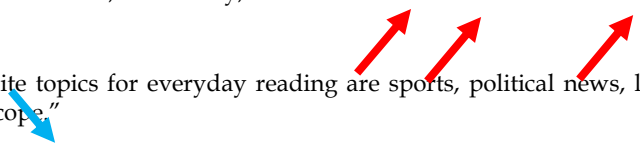
"I've been playing violin for seven years."

"I am working as a Professor in a reputed university"

Presenting itemized list:

list of items: rising intonation until the final item, which uses a falling intonation.

"I still love chocolate, strawberry, butter scotch and cashew ice cream."



"My favorite topics for everyday reading are sports, political news, latest technologies, and horoscope."

Emoting feelings:

High-energy emotions like happiness, excitement, fright and annoyance: rising intonation

"I can't believe he gave you a ride home!"

Boredom, sarcasm and disinterest: falling intonation

"I find this lecture so sleepy."

Stressing importance:

emphasizing specific words in a sentence: rising intonation

"I hope you got the RED scarf."

"I hope you got the red SCARF."

Contrasting:

stress on contrasting things: rising intonation

"I thought he liked DOGS but he actually likes CATS."

point out things that seem one way, but are another way.

"You should exercise EVERYDAY, but I know you don't have the TIME."

Tag questions:

questions at the end of a sentence requiring clarification or opinion: rising intonation

"It's a beautiful day, isn't it?"

"Haven't u got vaccinated yet, Have you?"

Notes on utility of intonation

- Explanation
- Illustrative examples

1.4 Intonation: Tips to Understand &Practice

Here is the list of important tips to know more about intonation and its functionalities:

Record and listen your own voice:

- moment of self analysis
- external perspective
- visualise areas of improvement

Shadowing speech:

- natural process of imitation
- Source for comparison
- Self realization for areas of improvement

Marking a script before reading:

- plan to perfection,
- implant context to words, phrases, & sentences
- easily see where to intonate

- easily see specific intonation

Exaggerated intonation:

- make emotions superfluous
- self realization about role of intonation in emotion expressing
- try using in real life situation

Learn Praat:

- visual representation of speech
- real time analysis
- self correction on objective basis

1.5 Intonation: Functions

All vocal languages use pitch pragmatically in intonation—for instance for emphasis, to convey surprise or irony, or to pose a question. Many writers have attempted to produce a list of distinct functions of intonation. And some of the prominent names that of W.R. Lee, who proposed ten. J.C. Wells and E. Couper-Kuhlen both put forward six functions.

Characteristics:

- Broad perspective
  - pragmatic utility
  - component of suprasegmental phonemes
- Categorical classification (basis of functions)
  - Grammatical
  - Attitudinal
  - Accentual / Emphatical
  - Discursive
  - Psychological
  - Indexical

Grammatical:

- divides up an utterance into its constituents of phrases and clauses
  - The constant increase in crude oil prices | has led to continuous rise in | petrol as well as diesel prices | in India |
- type of phrase division
  - The constant increase in crude oil prices [noun phrase] has led to continuous rise in [verb phrase] petrol as well as diesel prices [noun phrase] in India [prepositional phrase]
- subject-predicate division
  - The increase in crude oil prices [subject] has led to hike in petrol & diesel prices [predicate]
- Affirmative vs. Interrogative sentences
  - Neymar Jr. is the best footballer of the world. [falling intonation; confirmation as a fact]
  - Neymar Jr. is the best footballer of the world? [rising intonation; raising a doubt]

- Exclamatory vs. Interrogative sentences
    - Wow! Neymar's goal was the best one of the tournament. [falling intonation; confirmation as a fact]
    - Neymar's goal was the best one of the tournament? [rising intonation; raising a doubt]

Attitudinal:

- reflect the attitude of the emotional state of the speaker
- grammar itself fails to express attitudes
- intonation signals politeness, assertiveness, anger, pain, amazement etc
    - Where are you from? (falling tone; regular question seeking information)
    - Where are you from? (rising tone; expresses politeness & friendliness)
    - Thank you (falling tone; genuine expression of gratitude)
    - Thank you (rising tone; casual expression of gratitude)

Accentual / Emphatical:

- marks the emphasis with shifting tonic syllable
- draws attention towards most important aspect of an utterance
    - Harish goes shopping to city center every Saturday evening.
        - [unaccented neutral reading of a sentence]
    - Harish goes shopping to city center EVERY Saturday evening.
        - [can be an answer to a question: How often does Harish go for shopping on Saturday's]
    - Harish goes shopping to CITY CENTER every Saturday evening.
        - [can be an answer to a question: Where does Harish go for shopping on Saturdays every time?]
- Harish goes shopping to city center every SATURDAY evening.
    - [can be an answer to a question: When does Harish go for shopping every time?]
- HARISH goes shopping to city center every Saturday evening.
    - [can be an answer to a question: Who often goes for shopping on Saturday's]
- Harish goes SHOPPING to city center every Saturday evening.
    - [can be an answer to a question: For what purpose Harish often goes on Saturday's]

Discursive:

- large text gets purposedly divided
- intonation in word clusters brings cohesion
- intonation attributes salience

Psychological:

- organizes speech in easy-to-understand meaning making units
- organization helps in memorization for speaker as well as audience

For example:

- Intonation helps us to organize speech into units that are easy to perceive, memorize and perform. We can all repeat an arbitrary string of three, four or five members, but not a string of ten – unless we split them into two units of five. This is why we need tonality, a component of intonation.
- Intonation helps us to organize speech| into units| that are easy to perceive,| memorize| and perform.| We can all repeat| an arbitrary string of three,| four| or five members,| but not a string of ten| – unless we split them| into two units of five.| This is why we need tonality|, a component of intonation. |

Indexical:

- Intonation too acts like other pronunciation features
- act as a marker of personal or social identity
- for example: what makes mothers sound like mothers,
    - lovers sound like lovers,
    - teachers sound like teachers,
    - politicians like politicians

Illustrative example:

propositional variable instances of "Thank you"

"Thank you"- minimal acknowledgment of gratitude

"Thank you"- showing maximum acknowledgement of gratitude to a known acquaintance

"Thank you"- showing a measured gratitude to your senior or a boss

"Thank you"- showing an exaggerated gratitude to a toddler

Notes on Generative Phonology

- Characteristics
- Different categories
- Illustrative example

1.6 Intonation: Types

The rise and fall of the vocal sound or tone in speech is intonation. With the accurate use of intonation, speaking and listening would become more effective, to-the-point and foolproof. Intonation does not require specific practice but learning to speak any language fluently would result in automatic accuracy. These are the following types:

- Falling (↘)
- Rising (↗)
- Rise-Fall (↗↘)

- Fall-Rise (↘↗)
- Neutral ( )

Falling Intonation:

- used in statements, commands, wh-questions (information questions), confirmatory question tags and exclamations
- Statements
    - I am very pleased to meet ↘you.
    - Her mother will be back in an ↘hour.
    - She has not record lectures ↘anymore.
    - Dad is making plans to buy a ↘new property in Chandigarh.
    - IMD has made published an inclement weather ↘forecast.
    - Cloudy weather is expected at the end of the ↘week.
    - We should work together more ↘often
    - I am taking along my kids for a walk in the ↘park.
- Commands
    - Fill in your name in capital letters ↘here.
    - You just show me what you've ↘written.
    - Leave it on the ↘desk.
    - Take that offensive message ↘ down.
    - Throw that garbage ↘out.
    - Put all your library books on the ↘table.
    - Take your hands out of your ↘pockets.
- Wh- questions (requesting information)
    - questions beginning with 'who', 'what', 'why', 'where', 'when', 'which', and 'how'
    - What country do you ↘come from?
    - Where do you ↘work?
    - Which of the music do you ↘prefer?
- Questions Tags
    - merely ask for confirmation or invite agreement- falling tone at the end
    - He thinks he's so clever, doesn't ↘he?
    - She's such a nuisance, isn't ↘she?

- lowering voice at the end of a sentence.

Statements: My name is Dr. Gurpal Singh Rana.

Questions: What's do you teach in a university?

Rising Intonation:

- invites the speaker to continue talking.
- used with yes/no questions, and question tags that are real questions.
- Yes/no Questions
    - Do you like your new ↗English teacher?
    - Have you finished the ↗ task already?

- May I borrow your ↗Collins dictionary?
- Do you have any ↗sports magazines?
- Do you sell and purchase ↗commercial plots?

- raising the pitch of your voice at the end of a sentence
- Yes / No questions: Are you interested in studying linguistics?
- Sudden expressions: Excuse me? | Really?

Rise-fall intonation:

- for choices, lists, unfinished thoughts and conditional sentences.
  - Choices (alternative questions.)
    - Are you having ↗soup or ↘salad?
    - Is Joe Biden leaving on ↗Thursday or ↘Friday?
    - Does he speak ↗English or ↘French?
    - Is your name ↗Elizabeth or ↘Lizabeth?
- non-final intonation sentences, the pitch rises and falls within the sentence
- used with unfinished thoughts, introductory phrases, series of words and also while expressing choices:
- Unfinished thoughts: She bought the magazine, but she didn't read it.
- Introductory Phrases: As far as I'm concerned, she was not suitable for that position.
- Series of words: I like playing football, tennis, basketball and volleyball.
- Expressing choices: Do you want to stay home or go to the movies?

Fall-rise intonation:

- voice falls and rises usually within one word
- shows that the speaker is not certain of the answer they are giving to a question,
- palpable reluctance in reply (as opposed to a falling tone used when there is no hesitation).
- also used in polite requests or suggestions.
- Hesitation/reluctance:
- So you'd be willing to confirm that? ...Well ... I ↘sup↗pose so ...
- You didn't see him on Monday? I don't quite ↘re↗member ...
- Politeness-Doubt-Uncertainty: (You are not sure what the answer might be.)
  - Perhaps we could ↘vis↗it the place?
  - Should we ↘cop↗y the list?
  - Do you think it's ↘al↗lowed?

- Wavering intonation is used when we express specific emotions or attitudes within a word.
- Expressing surprise, anger, sarcasm, hesitation, fear, amazement, among others.
  - He did this? (curious)
  - He did this? (very surprised)

Keywords

Tone: Tone is the use of pitch in language to distinguish lexical or grammatical meaning – that is, to distinguish or to inflect words.

Intonation: Intonation is primarily a matter of variation in the pitch of the voice. In such languages as English, it is often accompanied by stress and rhythm to produce meaning.

Fundamental Frequency: The fundamental frequency of a speech signal, often denoted by F0 or F0, refers to the approximate frequency of the (quasi-)periodic structure of voiced speech signals. The oscillation originates from the vocal folds, which oscillate in the airflow when appropriately tensed.

Pitch: Pitch is an auditory sensation in which a listener assigns musical tones to relative positions on a musical scale based primarily on their perception of the frequency of vibration.

Summary

This unit covered many ideas around the field of phonology while developing better understanding about basic terminologies in order to know more deeply about intonation.

Then next segment deals in directly with the phonological concept of intonation in some significant details while providing illustrative examples.

Self Assessment

1. Which one of the following is NOT a common characteristic between TONE and INTONATION?

A. Representation of fundamental frequency remains a common point

B. Fluctuation in pitch happens in both the terms

C. Both the terms are same and there is no difference at all

D. Both the terms are suprasegmental in nature

2. Which one of the following is NOT a differentiating characteristic between TONE and INTONATION?

A. English is a tonal language

B. Tone implies lexical change whereas intonation does not bring meaning change

C. Tone remains localized to a word whereas intonation spreads over phrases, clauses and even sentences

D. Tone predominantly a one-type of phenomenon whereas intonation offers multiple types

3. Which one of the following is NOT a meaning of INTONATION?

A. Reflects surges and dives in the speech

B. Indicates purposeful pitch variation
C. Acts as a mood indicator in an utterance
D. Reflects an arbitrary individual style which varies from person to person

4. Which one of the following is NOT a correct example of a given intonation TYPE?

A. For Yes or No questions, we often use rising intonation
B. Speaker can use discretionary powers to use different kinds of intonation types as there are no fixed indicators
C. While stating facts or information, we often use falling intonation
D. While providing list of items, we often use rise-fall intonation

5. Which one of the following is NOT a correct example of a given intonation TYPE?

A. While expressing high-energy emotions, we normally use rising intonation
B. Application of intonation types are highly arbitrary
C. In order to emphasize specific words in a sentence, we normally use rising intonation
D. While placing a stress on the two contrasting things, we normally use rising intonation

6. Which one of the following is NOT a characteristic of FUNDAMENTAL FREQUENCY?

A. Representation of number of times the vocal cords vibrate in one second
B. Frequency of tongue movement
C. Measured in 'cycles per second' (cps) or Hertz (Hz)
D. Two common denominations are F0 or F naught

7. Which one of the following is NOT an application/function of PRAAT software?

A. It is a speech recording hardware
B. Allows speech annotation
C. Offers ways to make diverse set of measurements
D. Generates publication quality graphics

8. Which one of the following is NOT a function of INTONATION?

A. Reflects an arbitrary individual style
B. Indicates purposeful pitch variation
C. Acts as a mood indicator in an utterance
D. Reflects surges and dives in the speech

9. Which one of the following is NOT a categorical classification of intonation on the basis of its FUNCTION?

A. Grammatical
B. Philosophical

C. Psychological
D. Emphatical

10. Which one of the following is NOT a categorical classification of intonation on the basis of its FUNCTION?

A. Attitudinal
B. Biological
C. Accentual
D. Discursive

11. Which one of the following is NOT a type of CONTENT / OPERATIVE word?

A. Verb
B. Preposition
C. Noun
D. Adverbs

12. Which one of the following is NOT a correct description of a given intonation TYPE?

A. Rising intonation can be used arbitrarily, as you like
B. Falling intonation: lowering voice at the end of a sentence
C. Rising intonation: raising the pitch of your voice at the end of a sentence
D. Rise-fall intonation: non-final intonation sentences, the pitch rises and falls within the sentence

13. Which one of the following is NOT a correct description of a given intonation TYPE?

A. Rise-fall intonation: use where ever you are comfortable
B. Rise-fall intonation: non-final intonation sentences
C. Rise-fall intonation: Unfinished thoughts
D. Rise-fall intonation: Introductory Phrases

14. Which one of the following is NOT a correct description of a given intonation TYPE?

A. Rise-fall intonation: Series of words
B. Fall-rise intonation: use whenever you feel like
C. Rise-fall intonation: Expressing choices
D. Fall-rise intonation: Expressing surprise, anger, sarcasm, hesitation, fear, amazement etc.

15. Which one of the following is NOT a correct description of a given intonation TYPE?

A. Falling intonation is used in statements, commands, wh-questions (information questions), confirmatory question tags and exclamations

B. Rising intonation is used with yes/no questions, and question tags that are real questions
C. Neutral intonation expresses feelings of excitement and anger
D. Fall-rise intonation is used to when the speaker is not certain of the answer

Answers for Self Assessment

1.	C	2.	A	3.	D	4.	B	5.	B
6.	B	7.	A	8.	A	9.	B	10.	B
11.	B	12.	A	13.	A	14.	B	15.	C

Review Questions

1. Explain interesting ways to improve awareness about intonation and its utility.
2. Explain any two functions of intonation with relevant examples.
3. Write 05 examples sentences showing rising intonation.
4. Write 05 examples sentences showing falling intonation.
5. Write 05 examples sentences showing rise-fall intonation.

Further Readings

Sweet, Henry. *A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform.* Cambridge University Press, 2013.

Jones, Daniel. *An English Pronouncing Dictionary.* Cambridge University Press, 2011.

Ladefoged, Peter, and Ian Maddieson. *The Sounds of the World's Languages*. Blackwell Publishers, 1996.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Web Links

http://www.differencebetween.net/science/difference-between-tone-and-intonation/

https://www.theedadvocate.org/difference-between-tone-and-intonation/#:~:text=Tone%20refers%20to%20the%20emotion,flow%20to%20convey%20a%20message.

https://wiki.aalto.fi/pages/viewpage.action?pageId=149890776#:~:text=The%20fundamental%20frequency%20of%20a,the%20airflow%20when%20appropriately%20tensed.

https://dictionary.cambridge.org/grammar/british-grammar/intonation

https://englishwithnab.com/intonation-how-stressing-the-words-can-change-the-meaning-of-what-you-say/

Unit 14: Aspects of Connected Speech

CONTENTS

Objectives

Introduction

1.1 Basic Terminologies

1.2 Rhythm

1.3 Assimilation

1.4 Elision

1.5 Linking

Keywords

Summary

Self Assessment

Answers for Self Assessment

Review Questions

Further Readings

Objectives

After studying this unit, the students will be able to

- acquaint with idea of syllable & stress for foundational understanding about speech rhythm
- raise awareness about stress-timed & syllable-timed languages
- acquaint with the idea of place and manner of articulation for consonant sounds
- raise awareness about assimilation as a connected speech phenomenon
- acquaint with the differential idea of citation and contextual forms of words
- raise awareness about elision as a connected speech phenomenon
- acquaint with the idea of connected speech and corresponding sound changes
- raise awareness about linking as a spoken aspect of language
- formulate an instinct to start possessing native-like competence keeping in mind aspects of connected speech

Introduction

The first segment of the unit focuses on establishing a basic idea on terminologies, like: stress-timed & syllable-timed language, manner & place of articulation, and the concept of connected speech.

Then next segment deals with the idea of connected speech at a comprehensive level where detailed commentary is provided on following topics: rhythm, assimilation, elision and linking.

Caution: Take care of correct pronunciation

isochronous is pronounced as /ʌɪˈsɒkrənəs

1.1 Basic Terminologies

Stress-timed language:A stress-timed language is a language where the stressed syllables are said at approximately regular intervals, and unstressed syllables shorten to fit this rhythm. Stress-timed languages can be compared with syllable-timed ones, where each syllable takes roughly the same amount of time.

Example: English and German are examples of stress-timed languages, while Spanish and Cantonese are syllable-timed.

Syllable-timed language:A syllable-timed language is a language whose syllables take approximately equal amounts of time to pronounce. It can be compared with a stress-timed language, where there is approximately the same amount of time between stressed syllables. Learners whose first language can be described as syllable-timed often have problems recognising and then producing features of English such as contractions, main and secondary stress, and elision.

Example: French is described as a syllable-timed language, English as a stress-timed one.

Places of Articulation: The locations on the mouth, where the articulators are placed, are the 'places of articulation'. Example: The two lips (the articulators) meet to form the bilabial sounds of /b/ and /p/.There are seven places of articulation: bilabial, labiodental, dental, alveolar, post-alveolar, palatal and velar.

Manner of articulation: In articulatory phonetics, the manner of articulation is the configuration and interaction of the articulators (speech organs such as the tongue, lips, and palate) when making a speech sound. One parameter of manner is stricture, that is, how closely the speech organs approach one another. There are six manners of articulation: Stop, Fricative, Affricate, Nasal, Liquid, and Glide.

Connected speech: Connected speech is spoken language in a continuous sequence, as in normal conversation. It is also called connected discourse. There is often a significant difference between the way words are pronounced in isolation and the way they are pronounced in the context of connected speech.

1.2 Rhythm

Rhythm is a perceived regularity of prominent units in speech. These regularities may be stated in terms of patterns of stressed v. unstressed syllables or syllable length (long v. short) or pitch (high v. low), or placement of pauses, or any combination of these variables.

Rhythm refers to a pattern of sounds and maintaining a rhythm in a speech makes the speech sound naturaland fluent. It is produced by stressed and unstressed words in a sentence. Using only the stressedwords in a sentence may make a speech sound dull and artificial. The listener may also not understand theintended emphasis or meaning in the speech.

Just as stress, speed is another very important factor in the fluency of English. When we speak, we do notspeak words in isolation but group them and speak without any pauses between them. To achieve goodrhythm in speaking we should know which words to be stressed and which are not to be stressed in asentence.

Characteristics:

- isochronous /ʌɪˈsɒkrənəs/ speech phenomenon
- a measured speech movement
- musicality in speech
- temporal arrangement of phonemes, syllables, words, and phrases
- allotment of similar temporal space for clusters
- periodicity in syllabic occurrence; 3-8 syllables/sec
- distinctive repetition of a pattern: articulatory periodicity
- instinctive ability: acquisition more than learning

- systematic congruity between segmental & suprasegmental elements
- timed occurrence of stressed syllables (English language)

Conceptual example:

Unmarked speech

English is a very rhythmical language, so that a learner who can maintain the rhythm of the language is more likely to sound both natural and fluent. The two components of the system which have the greatest influence on rhythm are sentence stress and the various features of connected speech; that itself means, what happens to words when we put them in an utterance.

Marked speech

English is a very rhythmical language,| so that a learner| who can maintain the rhythm of the language| is more likely to sound both natural and fluent.| The two components of the system| which have the greatest influence on rhythm| are sentence stress and the various features of connected speech;| that itself means,| what happens to words| when we put them in an utterance. |

Importance:

- detection of word boundaries
- listener's ease of comprehension
- perceptibly notice salience
- follow cues for corresponding indications
- makes speech polysemous
- embedment of contextual meaning

Teaching rhythm:

- Create a more immersive language environment in the classroom
- Encourage learners to observe carefully the delivery of language
- Educate them about the functionality of prosody
- Integrate rhythm with syntactical construction
- Use gestures to mark rhythmic segments
- Practice marking written speech before enunciation

Notes on rhythm

- Meaning
- Characteristics
- Conceptual example
- Importance
- Teaching rhythm

1.3 Assimilation

Assimilation is a general term in phonetics for the process by which a speech sound becomes similar or identical to a neighboring sound. In the opposite process, dissimilation, sounds become less similar to one another. The term "assimilation" comes from the Latin meaning, "make similar to."

Assimilation is the influence of a sound on a neighboring sound so that the two become similar or the same. For example, the Latin prefix in- 'not, non-, un-' appears in English as il-, im-. and ir- in the words illegal, immoral, impossible (both m and p are bilabial consonants), and irresponsible as well as the unassimilated original form in- in indecent

and incompetent. Although the assimilation of the n of in- to the following consonant in the preceding examples was inherited from Latin, English examples that would be considered native are also plentiful. In rapid speech native speakers of English tend to pronounce ten bucks as though it were written tembucks, and in anticipation of the voiceless in son the final consonant of his in his son is not as fully voiced as the s in his daughter, where it clearly is [z].

It occurs in normal speech but becomes more common in more rapid speech. In some cases, assimilation causes the sound spoken to differ from the normal pronunciation in isolation, such as the prefix in- of English input pronounced with phonetic [m] rather than [n]. In other cases, the change is accepted as canonical for that word or phrase, especially if it is recognized in standard spelling: implant pronounced with [m], composed historically of in + plant.

English "handbag" (canonically /ˈhændbæg/) is often pronounced /ˈhæmbæg/ in rapid speech because the [m] and [b] sounds are both bilabial consonants, and their places of articulation are similar. However, the sequence [d]-[b] has different places but similar manner of articulation (voiced stop) and is sometimes elided, which sometimes causes the canonical [n] phoneme to assimilate to [m] before the [b]. The pronunciations /ˈhænbæg/ or /ˈhændbæg/ are, however, common in normal speech.

In contrast, the word "cupboard", although it is historically a compound of "cup" /kʌp/ and "board" /bɔːrd/, is always pronounced /ˈkʌbərd/, never */ˈkʌpbɔːrd/, even in slow, highly-articulated speech.

Conceptual example:

One common type of assimilation occurs in the example below. Focus on the two words "could" and "you."

- Could you give me that book on accounting?
- "Coujoogimmethatbookonaccounting?"
- /d/ sound in "could" and the /y/ sound in "yet" combined to make a /dʒ/ sound ("Coujoo").
- assimilation in form of palatalization.

Template example:

/d/ + /j/ = /dʒ/

- Would you like to come for dinner tonight?
- /wədʒʊlaɪktəkʌmfəˈdɪnətəˈnaɪt?/

/dz/ + /j/ = /dʒ/

- Here are the music records your mother wanted.
- /hɪərəðəˈmjuːzɪkˈrɛkɔːddʒəˈmʌðəˈwɒntɪd/

/z/ + /j/ = /ʒ/

- Is your daily passenger train on schedule?
- /ɪdʒəˈdeɪliˈpæsɪnʤətreɪnɒnˈʃɛdjuːl?/

/t/ + /j/ = /tʃ/

- I'll beat you there in the evening badminton game!
- /aɪlbiːtjʊðeərɪnðiˈiːvnɪŋˈbædmɪntəngeɪm!/

/ts/ + /j/ = /tʃ/

- When she meets you, she'll certainly start loving you more.

- /wɛnʃimiːtsjuː, ʃiːlˈsɜːtnlistɑːtˈlʌvɪŋjʊmɔː/

/s/ + /j/ = /ʃ/

- You need to face your fears.
- /jʊniːdtəfeɪsjəfɪəz/

/t/ (followed by /p/, /b/ or /m/) becomes /p/

- That person. / ðæpˈpɜːsən/
- It boils. / ɪpˈbɔɪlz/
- That money. /ðæpˈmʌniː/

/t/ (followed by /k/ or /g/) becomes /k/

- Is that clear? /ðækˈklɪə/
- Put down that gun. /ðækˈgʌn/

/d/ (followed by /p/, /b/ or /m/) becomes /b/

- It could be better. /kʊb bi ˈbetə/
- You could publish it. /kʊbˈpʌblɪʃɪt/
- She could modify it. /kʊbˈmɒdɪfaɪɪt/

/d/ (followed by /k/ or /g/) becomes /g/

- You should come. /ʃʊgˈkʌm/
- He should go. /ʃʊgˈgəʊ/

/n/ (followed by /p/, /b/ or /m/) becomes /m/

- Ten percent. / tempəˈsent/
- Ten boys. /temˈbɔɪz/
- Better than me. /ˈbetəðəmˈmiː/

/n/ (followed by /k/ or /g/) becomes /ŋ/

- One king. /wʌŋˈkɪŋ/
- Then go for it! /ˈðeŋˈgəʊfərɪt/

Functions:

- natural short cut process
- native speaker-like attribute
- enhances fluency
- ease of articulatory effort
- optional not mandatory

Rules with examples:

/d/ + /j/ = /dʒ/

- Would you like to take lessons on phonology?/wədʒʊlaɪktəteɪkˈlɛsnzɒnfəʊˈnɒlədʒi?/
- Would you ever go to Shimla in winters?/wədʒʊˈɛvəgəʊtə Shimla ɪnˈwɪntəz?/
- Would you like to come in for a coffee?/wədʒʊlaɪktəkʌmɪnfərəˈkɒfi?/
- Mr. Kim wanted you to call him./Mɪstərkɪmˈwɒntɪdʒʊtəkɔːlhɪm/
- Should you call the meeting off?/ʃədʒʊkɔːlðəˈmiːtɪŋɒf?/
- When did you last visit Chandigarh?/wɛndɪdʒʊlɑːstˈvɪzɪt tʃəndɪgɜː?/

/dz/ + /j/ = /dʒ/

- Here are the accounting records your dad wanted to tally /hɪərəðiəˈkaʊntɪŋˈrɛkɔ:dzjədædˈwɒntɪdtəˈtæli:/
- His bad behavior always wounds your ego/hɪzbædbɪˈheɪvjərˈɔ:lweɪzwu:ndzjərˈɛgəʊ/
- He finds your faults all the time/hi faɪndzjəfɔ:ltsɔ:lðətaɪm/
- The musician blends your music well/ðəmju(:)ˈzɪʃənblɛndzjəˈmju:zɪkwɛl/
- He finds union very strong/hi faɪndzˈju:njənˈvɛristrɒŋ/

/z/ + /j/ = /ʒ/

- Is your son coming home tonight?/ɪzjəsʌnˈkʌmɪŋhəʊmtəˈnaɪt?/
- Does your roommate behave well with you? /dəzjəˈru:mmeɪtbɪˈheɪvwɛlwɪðju:?/
- Has your train arrived plane landed?/həzjətreɪnəˈraɪvdpleɪnˈlændɪd?/
- Has your dog eaten anything?/həzjədɒgˈi:tnˈɛnɪθɪŋ?/
- Is your exam tomorrow?/ɪzjərɪgˈzæmtəˈmɒrəʊ?/

/ts/ + /j/ = /tʃ/

- When she meets you, she'll love you/wɛnʃi: mi:tsju:, ʃi:llʌvju:/
- She always greets you nicely/ʃi: ˈɔ:lweɪzgri:tsjʊˈnaɪsli:/
- My brother always beats you in a chess game/maɪˈbrʌðərˈɔ:lweɪzbi:tsjʊɪnətʃɛsgeɪm/
- His tender age defeats you /hɪzˈtɛndəreɪdʒdɪˈfi:tsju:/
- He hits you for a four every time you ball a full toss/hi hɪtsjʊfərəfɔ:rˈɛvritaɪmjʊbɔ:ləfʊltɒs/

/s/ + /j/ = /ʃ/

- You need to face your fears/jʊni:dtəfeɪsjəfɪəz/
- Brace yourself for the occasion/breɪsjɔ:ˈsɛlffəðiəˈkeɪʒən/
- Pace yourself to the speed of your competitors/peɪsjɔ:ˈsɛlftəðəspi:dəvjəkəmˈpɛtɪtəz/
- Lace your words with kindness/leɪsjəwɜ:dzwɪðˈkaɪndnɪs/
- Grace yourself to your friend's hospitality/greɪsjɔ:ˈsɛlftəjəfrɛndzˌhɒspɪˈtælɪti:/

/t/ becomes /p/ before bilabials

- right place /raɪppleɪs/
- night party /naɪpˈpɑ:ti/
- white paper /waɪpˈpeɪpə/
- that person / ðæpˈpɜ:sən/
- it boils /ɪpˈbɔɪlz/
- that money /ðæpˈmʌni:/

/d/ becomes /b/ before bilabials

- hard path /hɑ:bpɑ:θ/
- should put /ʃəbpʊt/
- should make /ʃəbmeɪk/
- good boy /gʊbbɔɪ/
- bad match /bæbmætʃ/

/n/ becomes /m/ before bilabials

- gone past /gɒmpɑːst/
- seen Peter /siːmˈpiːtə/
- seen Bill /siːmbɪl/
- ten men /tɛmmɛn/

/t/ becomes /k/ before /k/ and /g/

- white coat /waɪkkəʊt/
- might come /maɪkkʌm/
- that girl /ðækgɜːl/
- might go /maɪkgəʊ/

/d/ (followed by /p/, /b/ or /m/) becomes /b/

- It could be better. /kʊb bi ˈbetə/
- You could publish it. /kʊbˈpʌblɪʃɪt/
- She could modify it. /kʊbˈmɒdɪfaɪɪt/

/d/ (followed by /k/ or /g/) becomes /g/

- bad cold /bægkəʊld/
- should come /ʃəgkʌm/
- bad gate /bæggeɪt/
- should go /ʃəggəʊ/
- He should go. /ʃʊgˈgəʊ/

/n/ (followed by /p/, /b/ or /m/) becomes /m/

- Ten percent. / tempəˈsent/
- Ten boys. /temˈbɔɪz/
- Better than me. /ˈbetəðəmˈmiː/

/n/ (followed by /k/ or /g/) becomes /ŋ/

- one cup /wʌŋkʌp/
- seen Catherine /siːŋˈkæθ(ə)rɪn/
- main gate /meɪŋgeɪt
- seen Giza Pyramid /siːŋˈgiːzəˈpɪrəmɪd/
- Then go for it! /ˈðeŋˈgəʊfərɪt/

/s/ becomes /ʃ/ before /ʃ/ or /j/

- nice shoes /naɪʃʃuːz/
- this shop /ðɪʃʃɒp/
- this year /ðɪʃjɪə/

/z/ becomes /ʒ/ before /ʃ/ or /j/

- those shops /ðəʊʒʃɒps/
- these sheep /ðiːʒʃiːp/
- where's yours /weəʒjɔːz/

Notes on assimilation

- Meaning

- Conceptual example
- Template example
- Functions
- Rules with examples

1.4 Elision

In linguistics, an elision or deletion is broadly defined as the omission of one or more sounds (such as a vowel, a consonant, or a whole syllable) in a word or phrase. However, it is also used to refer more narrowly to cases where two words are run together by the omission of a final sound. An example is the elision of word-final /t/ in English if it is preceded and followed by a consonant: 'first light' is often pronounced /fɜ:slaɪt/. Many other terms are used to refer to particular cases where sounds are omitted.

In phonetics and phonology, elision is the omission of a sound (a phoneme) in speech. Elision is common in casual conversation.More specifically, elision may refer to the omission of an unstressed vowel, consonant, or syllable. This omission is often indicated in print by an apostrophe.Elision of sounds can ... be seen clearly in contracted forms like isn't (is not), I'll (I shall/will), who's (who is/has), they'd (they had, they should, or they would), haven't (have not) and so on. We see from these examples that vowels or/and consonants can be elided. In the case of contractions or words like library (pronounced in rapid speech as /laibri/), the whole syllable is elided.

Conceptual example:

It is mainly /t/ and /d/ that are elided in English, particularly when they are between two other consonants. Experiment yourself with the possible omissions in these phrases:

Omission of /t/

next please	/neks pliːz/
I don't know	/aɪ dəʊ nəʊ/
post the letter	/pəʊsõ ə letə/

Omission of /d/

old man	/əʊl mæn/
you and me	/juː ən miː/
sandwich	/sænwɪtʃ/
stand there	/stænõ eə/

Template example: Elided form & Original version

- friens for "friends"
- Chrismas for "Christmas"
- sanwich for "sandwich"
- grandpa for "grandpa"
- grandma for "granma"
- granson for "grandson"
- cam-ra for "camera"
- dunno for "don't know"
- kinda for "kind of"

- choc-late for “chocolate”
- asp-rin for “aspirin”
- asma for "asthma"
- fifs for "fifths"
- glans for "glands"
- use to for "used to"
- cup a tea for "cup of tea"
- gi me that for "give me that"

IPA enabled elided words*:*

Word	**IPA before elision**	**IPA after elision**
natural	/ˈnætʃərəl/	/ˈnætʃrəl/
laboratory (BrEn)	/ləˈbɒrətəri/	/ləˈbɒrətri/
laboratory (AmEn)	/ˈlæbərətɔ:ri/	/ˈlæbrətɔ:ri/
family	/ˈfæmɪli/	/ˈfæmli/
vegetable	/ˈvɛdʒətəbəl/ /ˈvɛdʒtəbəl/	/ˈvɛtʃtəbəl/
going to	/ˈgoʊ.ɪŋtu:/	/gə nə/ (gonna)
it is, it has	/ɪtˈɪz/, /ɪtˈhæz/	/ɪts/
I have	/aɪˈhæv/	/aɪv/
is not	/ɪzˈnɒt/	/ˈɪzənt/

IPA enabled elided phrases:

Phrase	**IPA before elision**	**IPA after elision**
evening meal	/ˈi:vənɪŋmi:l/	/ˈi:vnɪŋmi:l/
history sheeter	/ˈhɪstəriˈʃi:tə/	/ˈhɪstriˈʃi:tə/
literal meaning	/ˈlɪtərəlˈmi:nɪŋ/	/ˈlɪtrəlˈmi:nɪŋ/
diamond harbor	/ˈdaɪəməndˈhɑ:bə/	/ˈdaɪməndˈhɑ:bə/
virtually speaking	/ˈvɜ:tjʊəliˈspi:kɪŋ/	/ˈvɜ:tjʊliˈspi:kɪŋ/
aspirin tablets	/ˈæspərɪnˈtæblɪts/	/ˈæsprɪnˈtæblɪts/
opera singer	/ˈɒpərəˈsɪŋə/	/ˈɒpərəˈsɪŋə/
deliberately late	/dɪˈlɪbərɪtlileɪt/	/dɪˈlɪbrɪtlileɪt/
miniature versions	/ˈmɪnɪəʧəˈvɜ:ʃənz/	/ˈmɪnəʧəˈvɜ:ʃənz/
reverence towards	/ˈrəvərənstəˈwɔ:dz/	/ˈrəvrənstəˈwɔ:dz/
mystery novels	/ˈmɪstəriˈnɒvəlz/	/ˈmɪstriˈnɒvəlz/
Barbara Springfield	/ˈbɑ:bərəˈsprɪŋˌfi:ld/	/ˈbɑ:brəˈsprɪŋˌfi:ld/
federal agency	/ˈfɛdərəlˈeɪʤənsi/	/ˈfɛdrəlˈeɪʤənsi/
laboratory equipment	/ləˈbɒrətərɪˈkwɪpmənt/	/ləˈbɒrtərɪˈkwɪpmənt/
similar characteristics	/ˈsɪmɪləˌkærɪktəˈrɪstɪks/	/ˈsɪmɪləˌkærɪktˈrɪstɪks/
practically speaking	/ˈpræktɪkəliˈspi:kɪŋ/	/ˈpræktɪkliˈspi:kɪŋ/
preferential treatment	/ˌprɛfəˈrɛnʃəlˈtri:tmənt/	/ˌprɛfˈrɛnʃəlˈtri:tmənt/

veterinarian doctor	/ˌvɛtərɪˈneərɪənˈdɒktə/	/ˌvɛtrɪˈneərɪənˈdɒktə/
respiratory syndrome	/respɪrətəriˈsɪndrəʊm/	/respɪrətriˈsɪndrəʊm/
difference in meaning	/ˈdɪfərənsɪnˈmiːnɪŋ/	/ˈdɪfrənsɪnˈmiːnɪŋ/

Notes on elision

- Meaning
- Conceptual example
- Template example: Elided form & Original version
- IPA enabled elided words
- IPA enabled elided phrases

1.5 Linking

Linking is a pronunciation technique that allows the speaker to smoothly say two or more words together. When linked together the words sound like one continuous word. Using linking sounds when speaking English can make your speech sound much more fluent and natural.

When we say a sentence in English, we join or "link" words to each other. Because of this linking, the words in a sentence do not always sound the same as when we say them individually. Linking is very important in English. If you recognize and use linking, two things will happen:

- you will understand other people more easily
- other people will understand you more easily

There are basically two main types of linking:

- consonant ⇔ vowel

We link words ending with a consonant sound to words beginning with a vowel sound

- vowel ⇔ vowel

We link words ending with a vowel sound to words beginning with a vowel sound

Function:

- liaisoning of final sound with first sound
- natural smooth joining process in rapid speech
- native speaker-like attribute
- enhances fluency
- ease of articulatory effort
- optional not mandatory

IPA enabled linked phrases/sentences*:*

Linking Consonant to Vowel:

When a word ends in a consonant and the next word begins with a vowel, connect the final consonant to the next vowel, making it sound as if the second word starts with a consonant.

linguistics is a science /lɪŋˈgwɪstɪksɪzəˈsaɪəns/

conversations in spoken language	/ˌkɒnvəˈseɪʃənzɪnˈspəʊkənˈlæŋgwɪʤ/
analysis of connected speech shows	/əˈnæləsɪsəvkəˈnɛktɪdspiːʧʃəʊz/
traditionally described as	/trəˈdɪʃnəlidɪsˈkraɪbdæz/
canonical form or isolation form	/kəˈnɒnɪkəlfɔːmɔːrˌaɪsəʊˈleɪʃənfɔːm/
words that are modified	/wɜːdzðətəˈmɒdɪfaɪd/
final consonant of one word	/ˈfaɪnlˈkɒnsənəntəvwʌnwɜːd/
lengthen the sound a bit	/ˈlɛŋθənðəsaʊndəbɪt/
when a stop is followed	/wɛnəstɒp s ˈfɒləʊd/
the release creates a puff of air	/ðərɪˈliːskri(ː)ˈeɪtsəpʌfəveə/

Linking Consonant to Same Consonant:

When the final consonant of one word is the same as the first consonant of the following word, pronounce the consonant only once. Do not pause between the sounds, but just lengthen the sound a bit or say it with a little bit more energy.

ethnic kinship between families	/ˈɛθnɪkˈkɪnʃɪpbɪˈtwiːnˈfæmɪliz/
sentence stress remains noticeable	/ˈsɛntənsstrɛsrɪˈmeɪnzˈnəʊtɪsəbl/
that takes it to a new level	/ðætteɪksɪttʊənjuːˈlɛvl/
they serve very well in difficult situations	/ðeɪsɜːvˈvɛriwɛlɪnˈdɪfɪkəltˌsɪtjʊˈeɪʃənz/
language generated through machines	/ˈlæŋgwɪʤˈʤɛnəreɪtɪdθruːməˈʃiːnz/
student's branch change application	/ˈstjuːdəntsbrɑːnʧʧeɪnʤˌæplɪˈkeɪʃ(ə)n/
phonological language systems	/ˌfəʊnəˈlɒʤɪkəlˈlæŋgwɪʤˈsɪstɪmz/
building going to be sold	/ˈbɪldɪŋˈgəʊɪŋtə bi səʊld/
words spoken nicely like never before	/wɜːdzˈspəʊkənˈnaɪslilaɪkˈnɛvəbɪˈfɔː/

Linking final stop between consonants:

When a stop is followed by another consonant, do not release the stop. The release creates a puff of air and an extra syllable. Make sure that "good time" doesn't sound like "good a time" & "help me" doesn't sound like "help a me"

leadership banking on past laurels	/ˈliːdəʃɪpˈbæŋkɪŋɒnpɑːstˈlɒrəlz/
nincompoop kind of facial expression	/ˈnɪnkəmpuːpkaɪndəvˈfeɪʃəlɪksˈprɛʃən/
recent blasts in the country's capital	/ˈriːsntblɑːstsɪnðəˈkʌntrizˈkæpɪtl/
amount deducted wrongly	/əˈmaʊntdɪˈdʌktɪdˈrɒŋli/
indirect demand has increased	/ˌɪndɪˈrɛktdɪˈmɑːndhəzɪnˈkriːst/
applied pressure on the agencies	/əˈplaɪdˈprɛʃərɒnðiˈeɪʤənsiz/
weekend popular musical chart buster	/ˈwiːkˈɛndˈpɒpjʊləˈmjuːzɪkəlʧɑːtˈbʌstə/
pitchfork popular beliefs into the debate	/ˈpɪʧfɔːkˈpɒpjʊləbɪˈliːfsˈɪntəðədɪˈbeɪt/
network problems in the area	/ˈnɛtwɜːkˈprɒbləmzɪnðiˈeərɪə/
rethink problems differently	/riːˈθɪŋkˈprɒbləmzˈdɪfrəntli/

during public holidays	/ˈdjʊərɪŋˈpʌblɪkˈhɒlədeɪz/
frog popped out from nowhere	/frɒgpɒptaʊtfrəmˈnəʊweə/

Linking of /r/ sound:

In spoken English, when a word finishing in r or re (e.g. for or are) is followed by a word starting with a vowel sound, an /r/ sound is added linking the two words (e.g. this present is for Anthony).

Here in my room, it's very quiet	/hɪərɪnmaɪruːm, ɪtsˈvɛriˈkwaɪət/
Come here, my room is very quiet	/kʌmhɪə, maɪruːm z ˈvɛriˈkwaɪət/
We're Earth beings. Where are you from?	/wɪərɜːθˈbiːɪŋz. weərəjʊfrɒm?/
We're Martians. Where are you from?	/wɪəˈmɑːʃənz. weərəjʊfrɒm?/
Are octopus native to these waters?	/ɑːrˈɒktəpəsˈneɪtɪvtəðiːzˈwɔːtəz?/
Are penguins native to these waters?	/ɑːˈpɛŋgwɪnzˈneɪtɪvtəðiːzˈwɔːtəz?/
Far away, I heard the sea's ebb and flow.	/fɑːrəˈweɪ, aɪhɜːdðəsiːzɛbəndfləʊ/
Far left, I can see a sea on the world map.	/fɑːlɛft, aɪkənsiːəsiːɒnðəwɜːldmæp/
Fear is not a number, I'm afraid.	/fɪə z nɒtəˈnʌmbə, aɪməˈfreɪd/
Fear reflects your vulnerability, I'm afraid.	/fɪərɪˈflɛktsjəˌvʌlnərəˈbɪlɪti, aɪməˈfreɪd/
Her English is excellent.	/hərˈɪŋglɪʃɪzˈɛksələnt/
Her German is absolutely awful, though!	/həˈdʒɜːmən z ˈæbsəluːtliˈɔːfʊl, ðəʊ!/
My brother lives in London.	/maɪˈbrʌðəlɪvzɪnˈlʌndən/

Notes on linking

- Meaning
- Function
- IPA enabled linked phrases/sentences

Keywords

Rhythm: In phonetics, rhythm is the sense of movement in speech, marked by the stress, timing, and quantity of syllables. In English there's a strong tendency in connected speech to make the stressed syllables occur at fairly regular intervals. This regular reoccurrence of stressed syllable is rhythm. Generally speaking, rhythm consists of intonation, syllables of stress and weak stress, pause and continuant.

Assimilation: Assimilation is a common phonological process by which one sound becomes more like a nearby sound. This can occur either within a word or between words. In rapid speech, for example, "handbag" is often pronounced [ˈhambag], and "hot potato" as [ˈhɒppəteɪtoʊ].

Elision: Elision is the omission of sounds, syllables or words in speech. This is done to make the language easier to say, and faster.

Linking: Linking is the technique for smoothly moving from one word into the next during pronunciation. Sometimes words are blended, sometimes new sounds are created, and sometimes sounds become silent when linking. Lack of linking can make an accent sound choppy.

Summary

This unit started with a cursory coverage on foundational ideas of stress-timed & syllable-timed language, manner & place of articulation, and the concept of connected speech.

The next segment covers all those four important elements of connected speech. Concept of rhythm is discussed through its multiple elements: Meaning, Characteristics, Conceptual example, Importance, and Teaching rhythm

Likewise for assimilation following sub-elements were discussed: Meaning, Conceptual example, Template example, Functions, and Rules with examples.

On the similar lines, following sub-elements of elision were discussed: Meaning, Conceptual example, Template example: Elided form & Original version, IPA enabled elided words, and IPA enabled elided phrases.

In the end, commentary on linking contained following sub-points: Meaning, Function, and IPA enabled linked phrases/sentences.

Self Assessment

1. Which one of the following is NOT a characteristic of RHYTHM?

A. Represents a monotonous speech pattern
B. Presents itself as a measured speech movement
C. Reflects musicality in speech
D. Offers an isochronous speech phenomenon

2. Which one of the following is NOT an importance of RHYTHM?

A. Loads speech with more and more meanings
B. Assists in detecting word boundaries
C. Makes difficult for listener to comprehend
D. Allows embedment of contextual meaning too

3. Which one of the following is NOT an outcome of teaching RHYTHM?

A. Creates a more immersive language environment
B. Integrates rhythm with syntactical construction
C. Encourages learners to observe carefully the delivery of language
D. Makes listener to ignore the main idea of the oral message

4. Which one of the following is NOT an outcome of teaching RHYTHM?

A. Educates learners about the functionality of prosody
B. Helps only in expressing anxiety of the speaker
C. Encourages use of gestures to mark rhythmic segments
D. Allows marking written manuscript of the speech before actual delivery

5. Which one of the following is NOT a function of ASSIMILATION?

A. Makes speech more colorful
B. Allows natural short cut process
C. Enhances fluency

D. Provides ease of articulatory effort

6. Which one of the following is NOT a rule of ASSIMILATION?

A. /d/ + /j/ = /dʒ/
B. Phonemes are merged arbitrarily
C. /dz/ + /j/ = /dʒ/
D. /t/ + /j/ = /tʃ/

7. Which one of the following is NOT a rule of ASSIMILATION?

A. /ts/ + /j/ = /tʃ/
B. /d/ (followed by /p/, /b/ or /m/) becomes /b/
C. /s/ + /j/ = /ʃ/
D. Phonemes are merged arbitrarily

8. Which one of the following is NOT an example of ELISION?

A. natural is /ˈnætʃərəl/ & elided form is /ˈnætʃrəl/
B. nice shoes elided to /naɪʃʃuːz/
C. Family is /ˈfæmɪli/ & elided form is /ˈfæmli/
D. going to is /ˈgoʊ.ɪŋtuː/ & elided form is /gənə/

9. Which one of the following is NOT an example of ELISION?

A. Ten boys elided to /temˈbɔɪz/
B. I have is /aɪˈhæv/ & elided form is /aɪv/
C. is not is /ɪzˈnɒt/ & elided form is /ˈɪzənt/
D. evening meal is /ˈiːvənɪŋmiːl/ & elided to /ˈiːvnɪŋmiːl/

10. Which one of the following is NOT a function of ELISION?

A. Enhances fluency
B. Reflects a natural sound omission
C. Makes speech more colorful
D. Provides ease of articulation

11. Which one of the following is NOT an example of ELISION?

A. camera tricks is /ˈkæmərətrɪks/ & elided form is /ˈkæmrətrɪks/
B. bad cold to /bægkəʊld/
C. aspirin tablets is /ˈæspərɪnˈtæblɪts/ & elided to /ˈæsprɪnˈtæblɪts//
D. fricative sounds is /ˈfrɪkətɪvsaʊndz/ & elided to /ˈfrɪktɪvsaʊndz/

12. Which one of the following is NOT an example of ELISION?

A. deliberately late is /dɪˈlɪbərɪtlileɪt/ & elided form is /dɪˈlɪbrɪtlileɪt/
B. bad gate to /bæggeɪt/

C. average population is /ˈævərɪʤˌpʊpjʊˈleɪʃən/ & elided form is /ˈævrɪʤˌpʊpjʊˈleɪʃən/
D. desperate attempts is /ˈdɛspərɪtəˈtɛmpts/ & elided form is /ˈdɛsprɪtəˈtɛmpts/

13. Which one of the following is NOT an example of LINKING?

A. linguistics is a science: its linked form is represented as /lɪŋˈgwɪstɪksɪzəˈsaɪəns/
B. analysis of connected speech shows: its linked form is represented as /əˈnæləsɪsəvkəˈnɛktɪdspiːʧʃəʊz/
C. Ten boys to /temˈbɔɪz/
D. final consonant of one word: its linked form is represented as /ˈfaɪnlˈkɒnsənəntəvwʌnwɜːd/

14. Which one of the following is NOT an example of LINKING?

A. bad cold to /bægkəʊld/
B. ethnic kinship between families: its linked form is represented as /ˈɛθnɪkˈkɪnʃɪpbɪˈtwiːnˈfæmɪliz/
C. language generated through machines: its linked form is represented as /ˈlæŋgwɪʤˈʤɛnəreɪtɪdθruːməˈʃiːnz/
D. building going to be sold: its linked form is represented as /ˈbɪldɪŋˈgəʊɪŋtə bi səʊld/

15. Which one of the following is NOT a function of LINKING?

A. Provides ease of articulatory effort
B. Provides natural smooth joining process in rapid speech
C. Enhances fluency
D. Makes speech more colorful

Answers for Self Assessment

1.	A	2.	C	3.	D	4.	B	5.	A
6.	B	7.	D	8.	B	9.	A	10.	C
11.	B	12.	B	13.	C	14.	A	15.	D

Review Questions

1. Explain the concept of connected speech with some everyday examples.

2. Explain the concept of rhythm as an attribute of connected speech. Also provide 10 examples illustrating your point of view.

3. Explain the concept of assimilation as an attribute of connected speech. Also provide 10 examples illustrating your point of view.

4. Explain the concept of elision as an attribute of connected speech. Also provide 10 examples illustrating your point of view.

5. Explain the concept of linking as an attribute of connected speech. Also provide 10 examples illustrating your point of view.

Further Readings

Sweet, Henry. *A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform.* Cambridge University Press, 2013.

Jones, Daniel. *An English Pronouncing Dictionary*. Cambridge University Press, 2011.

Ladefoged, Peter, and Ian Maddieson. *The Sounds of the World's Languages*. Blackwell Publishers, 1996.

Roach, Peter. *English Phonetics and Phonology: A Practical Course*. Cambridge University Press, 2009.

Laver, John. *Principles of Phonetics*. Cambridge University Press, 1994.

Web Links

https://rachelsenglish.com/english-stress-timed-language/

https://www.englishbix.com/stress-timed-and-syllable-timed-languages/

https://www.thoughtco.com/what-is-connected-speech-1689790

https://www.thoughtco.com/rhythm-phonetics-poetics-and-style-1692065

https://www.thoughtco.com/what-is-assimilation-phonetics-1689141

https://www.thoughtco.com/elision-phonetics-term-1690638

https://cementanswers.com/what-is-linking-in-linguistics/

https://pronuncian.com/introduction-to-linking#:~:text=Linking%20is%20the%20technique%20for,make%20an%20accent%20sound%20choppy.

LOVELY PROFESSIONAL UNIVERSITY
Jalandhar-Delhi G.T. Road (NH-1)
Phagwara, Punjab (India)-144411
For Enquiry: +91-1824-521360
Fax.: +91-1824-506111
Email: odl@lpu.co.in