

Linguistics

DENG504



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LINGUISTICS

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SYLLABUS

Linguistics

Course Objectives:

- To introduce the student to the tools, branches, and history of Linguistics
- To improve and enhance student's pronunciation and language skills
- To improve the proficiency of the student in the correct usage of English Vocabulary.

Sr. No.	Content
1	Introduction to Linguistics: Its Aspects, Linguistics: Branches and Tools, Brief History of the Growth of Modern Linguistics: Bloomfield and Chomsky
2	Phonetics: Speech Mechanism, Places and Manners of Articulation; Classification of Speech Sounds: Vowels, Consonants- General Introduction
3	Consonants and its Phonetic Transcription, Vowels and its Phonetic Transcription, Diphthongs and its Phonetic Transcription
4	Clusters and Syllables, Phoneme: Detailed Study, Allophones: Allophonic variation in English Speech: Difference between Monophthong and Diphthong Glides; Transcription of English Speech Sounds: From words to sentences, Syllables : Mono-syllabic, Bi- syllabic and stress in English
5	Branches in Linguistics: Socio-Linguistics, Psycho-Linguistics, Educational Linguistics
6	Varieties of English Cardinal Vowel System, Connected English Speech Accent, Rhythm, Discourse, Difference in R.P. and Indian English
7	Morphology: Morph, Morpheme, Allomorph; Morphological Analysis (Identification of Morphemes and Allomorphs)
8	Word Formation: Process, Rules, Derivation and Inflection; Transformational Rules: Application-Tree Diagrams
9	Affixes: Prefixes, Suffixes, Infixes and Circumfixes; Grammar Traditional to Transformational; Transformational Generative Grammar; Transformational and Phrase Structure Rules
10	Language Teaching Analysis, Contrastive Analysis, Error Analysis: Semantic Meaning Types: Lexical, Contextual and other Semantic Practice; Synonymy,

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Unit 1: Introduction to Linguistics: Its Aspects

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Objectives

Introduction

1.1 Is Linguistics a Science?

1.2 The Scope of Linguistics

1.3 Linguistic Levels

1.4 Some Major Linguistic Concepts

1.5 Summary

1.6 Key-Words

1.7 Review Questions

1.8 Further Readings

Objectives

After studying this Unit students will be able to:

- Understand Linguistic and its Aspects.
- Discuss the Scope of Linguistics.

Introduction

The word 'Linguistics' has been derived from Latin *lingua* (tongue) and **istics** (knowledge or science). Etymologically, therefore, linguistics is the scientific study of language. But it is the study not of one particular language but of human language in general. It studies language as a universal and recognizable part of human behaviour. It attempts to describe and analyze language. The field of linguistics comprises understanding of the place of language in human life, the ways in which it is organized to fulfil the needs it serves, and the functions it performs.

So linguistics is that science which studies the origin, organisation, nature and development of language descriptively, historically, comparatively and explicitly, and formulates the general rules related to language. **Diachronic (historical) linguistics** studies the development of language through history, through time, for example, the way in which French and Italian have evolved from Latin. **Synchronic linguistics** investigates how the people speak and use language in a given speech community at a given time. In **Comparative linguistics** one is concerned with comparing two or more different languages.

Linguistics, therefore, is the science that describes and classifies languages. The linguist identifies and describes the units and patterns of the sound system, the words and morphemes, and the phrases and sentences, that is the structure of language, as completely, accurately, and economically as possible.

1.1 Is Linguistics a Science?

Linguistics is the scientific study of language. Like all other sciences linguistics has a well-defined subject matter, viz. natural languages, living or dead; it employs careful methods to observe, record and analyse the various phenomena related to its subject matter and hopes to present unprejudiced, objective and verifiable descriptions. The approach and methodology of linguistics is scientific. It is as inductive as a science could be, and is based on observations, formation of

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hypothesis, testing, verification, tentativeness and predictiveness. Like a scientist a linguist observes his data. Some of his methods of observation include simple listening, phonetic transcription, and the use of various instruments, such as oscillograph, sounds pectograph, kymograph, chromograph, mingograph, laryngoscope, endoscope, sonograph, autophonoscope, breathing flask, strobolaryngoscope, electric vocal tract, pitchmeter, intensity meter, speech stretcher, formant graphing machine, etc. Records and cassettes made in these ways help in various kinds of objective description. A linguist has his language laboratory too.

Again, like a scientist a linguist develops hypotheses, makes generalized statements and teststhem against the fact of languages. When a linguist or a phonetician makes a statement about languages, he makes it on the basis of observation. First he observes linguistic events. He finds some similarities and contrasts on the basis of which he makes sound generalizations. On the basis of these generalizations hypotheses are formulated to account for the events. These are tested by further observations, and out of them is constructed a theory of how language works. From the theory are derived methods for making statements about linguistic events. The statements link the theory to the events it is set up to account for, and they can now be evaluated by reference both to the theory and to the events: the best statements are those which make maximum use of the theory to account most fully for the facts.

The linguist also hopes to be in position to make prediction about unobserved linguistic data on the basis of those observed, and build a general theory which would explain and relate all the facts to be found in individual languages. Predictions about grammars and dictionaries can be made by him. And finally like a true scientist, he is constantly engaged in discovering more about languages, in refining his methods of investigation, and in constructing better theories. He also tries to find out linguistic universals.

Like any scientific discipline, linguistics too is not static. Viewpoints and theoretical methods in the field, change even in fundamental ways from time to time, and different aspects come to receive primary focus at different times. Linguistics has more than its share of unresolved controversies and unsolved questions, which is a part of its fascination and challenge.

Finally, the closeness of Linguistics with other natural sciences like mathematics, physics, physiology, biology, zoology, etc., is another proof of its scientific nature. 'It touches on physics through acoustics, on physiology through the structure of the human vocal organs, on zoology through the comparative study of the communicative systems of living beings.' A glance on any book on transformational-generative grammar would convince any objective onlooker how linguistics is becoming more and more scientific. Furthermore, as mentioned by R. H. Robins, linguistics in its operations and statements is guided by three canons of science:

(1) exhaustiveness, the adequate treatment of all the relevent material; (2) consistency, the absence of contradiction between different parts of the total statement, and within the limits imposed by the two preceding principles; and (3) economy, whereby, other things being equal, a shorter statement or analysis employing fewer terms is to be preferred to one that is longer or more involved. Consequently, linguistics is getting more and more technical and sophisticated every day. Yet it is not a pure science. Its position, says R. A. Hall, is between the natural and social sciences, like that of geology. To Robins it is an 'empirical science', and within the empirical sciences it is 'one of the social sciences', because its subject matter concerns human beings, and is very much different from that of natural sciences.

Nevertheless, linguistics is the scientific study of language. It may be inductive or deductive; it is, however, objective, precise, tentative and systematic; it is concerned with reportable facts, methods, and principles; it works by means of observations, hypotheses, experiments and tests, postulates, and inferences; it makes generalization and predictions; it formulates theories; its products are descriptive, verbal or algebraic statements about language.

1.2 The Scope of Linguistics

We have discussed the definition and nature of linguistics. The question that arises immediately now is: what areas and what aspects of language study is the linguist interested in? In a broad

way language is the expression of human thought, and all thought is expressed through language, hence all knowledge of the universe may fall within the scope of linguistics, and the scope may be a complex mess.

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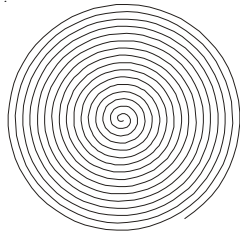


Figure 1.1

Yet linguistics being a science, has got to be a systematic discipline. So the questions: what kind of behaviour does the linguist want to investigate? or what is the scope of linguistics?—need to be answered. A linguist has to study and describe language which is an enormously complex phenomenon. He, therefore, concentrates at any one time on one of the many different, though interrelated, aspects of his subject matter. His subject matter, broadly speaking, is the data of language, or the facts of language as it is spoken and written.

A full understanding of the various components of language and their relations with the rest of the world outside language, thus, would constitute the right scope of linguistics, which can roughly be represented by the figure 1.2 borrowed from Jean Aitchison:

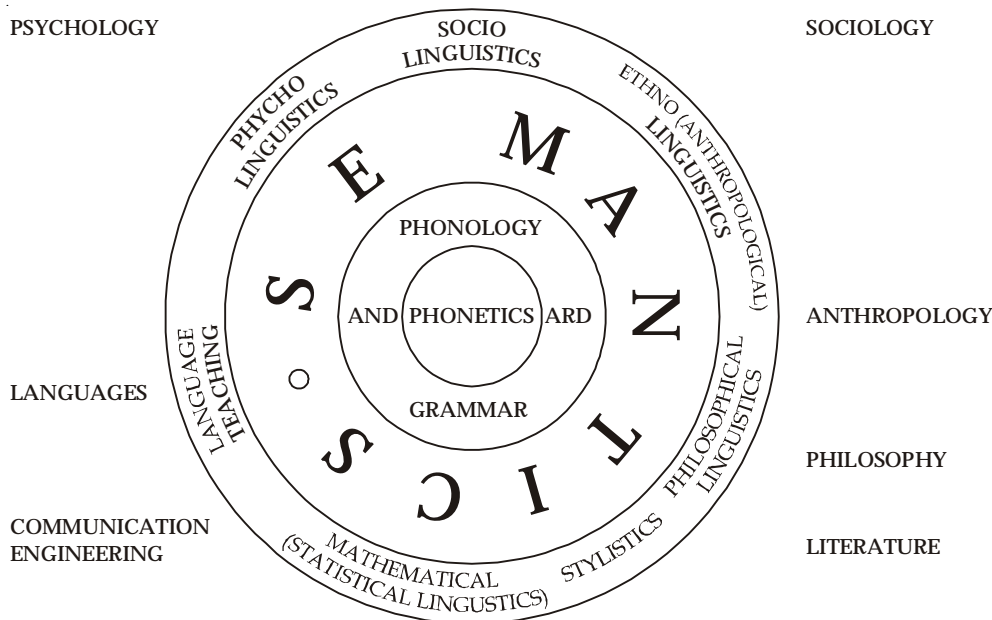


Figure 1.2

Thus general linguistics covers a wide range of topics and its boundaries are difficult to define. In the centre is **phonetics**, the study of human speech sounds. A phonetician is concerned with the

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actual physical sounds, the raw material out of which language is made. He studies the position of the tongue, teeth and vocal cords during the production of sounds, and records and analyses sound waves. Around the central core are various branches of linguistics which are being rapidly developed at the present time: such as psycholinguistics, sociolinguistics, mathematical linguistics, philosophical linguistics, anthropological linguistics, stylistics and language teaching.



Did u know?

Phonology (sound patterning), **grammar** and **semantics**, (meaning) are the bread and butter of linguistics. They are the core of linguistics.

1.3 Linguistic Levels

By 'linguistic levels' is meant the levels of language structure. There is a considerable difference among the linguisticians about the number and terminology of linguistic levels. Robert Hall (1969: 32) recommends three levels—**phonology** (phonemics—phoentics), **morphology** and **syntax**. R. H. Robins (1971: 11) mentions **phonology**, **grammar** and **semantics**. Hockett (1973: 137-138) advocates the following five levels which he calls 'subsystems':

1. **The grammatical system:** a stock of morphemes, and the arrangements in which they occur;
2. **The phonological system:** a stock of phonemes, and the assignments in which they occur;
3. **The morphophonemic system:** the code which ties together the grammatical and the phonological system;
4. **The semantic system:** which associates various morphemes, and arrangements in which morphemes can be put, with things and situations, or kinds of things and situations;
5. **The phonemic system:** the ways in which sequences of phonemes are converted into sound waves by the articulation of a speaker, and are decoded from the speech signal by a hearer.

Hockett calls the first three of the above "central" subsystems, and the last two "peripheral" subsystems.

Such a labelling of names, however, should not lead one to confusion. There are no basic differences about the structure of language. Such a classification is done by the linguist for the sake of convenience in the study of the subject-matter, i.e. language which is a complex phenomenon. All these levels are **inter-related aspects** of his subject-matter, quite often over-lapping. Any separation or classification should not be treated as rigid or opaque. A linguist has to describe human language, and human beings do not use just one level of it at a time. For our purpose, we shall follow the 1.3 figure 1.3.

Broadly speaking, there are three aspects of language activity, or three types of pattern in language, the material, the structural and the environmental leading to three separate linguistic levels—Substance, Form and Context. "The substance is the raw material of language: auditory (Phonic substance) or visual (Graphic substance). The form is the organization, the internal structure, it is grammar + lexis. The context is the relationship between form and situation, which we call meaning (Semantics). The linguistic science has to explain language at all these levels. These levels are explained below:

1. **Phonetics:** Phonetics is the study of speech processes including the anatomy, neurology and pathology of speech, the articulation, classification and perception of speech sounds. Phonetics is a pure science and need not be studied in relation to a particular language, but it has many practical applications, e.g. in phonetic transcription, language teaching, speech therapy, communications engineering. Some phoneticians consider phonetics to be outside the central core of linguistics proper, but most would include it under the heading 'linguistic science'. The linguistic aspects of phonetics, i.e., the study of sound systems of particular languages, is part, of phonology.

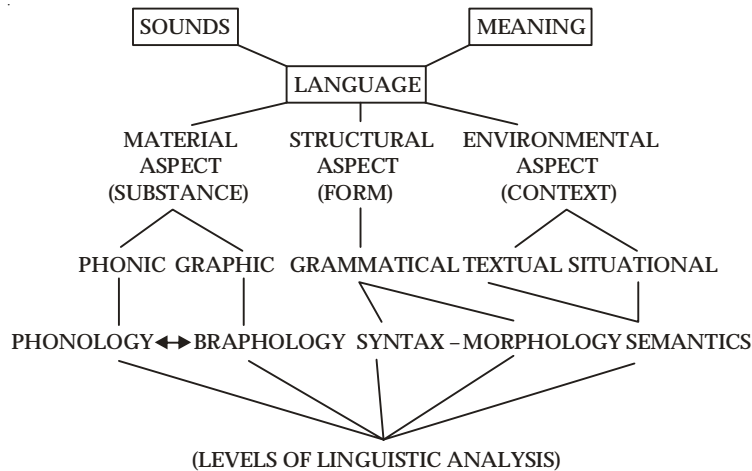


Figure 1.3

The study of phonetics can be divided into three main branches, Articulatory Phonetics, the study of the movement of the speech organs in the articulation of speech, Acoustic Phonetics, the study of the physical properties of speech sounds such as frequency and amplitude in their transmission, and Auditory Phonetics, the study of hearing and the perception of speech sounds.

Laboratory Phonetics—experimental phonetics or instrumental phonetics are general terms for phonetic studies which involve the use of mechanical and electronic apparatus. Several sophisticated instruments are used in modern times for this purpose.

Phonetic Substance—Phonetic substance, as opposed to the visual or graphic material of written language, refers to the auditory aspects or sound features of spoken language, as studied by articulatory, acoustic and auditory phonetics.

Phonology—Phonology is the study of speech sounds of a given language and their function within the sound system of that language. It covers both **phonemics** (synchronic phonology) and **diachronic phonology** (sound changes in the history of a given language). So phonology is the functional phonetics of a particular language, and is of great help in the learning of that language.

2. **Grammatical Level**—Grammatical level comprises of (a) Syntax, and (b) Morphology.

1.4 Some Major Linguistic Concepts

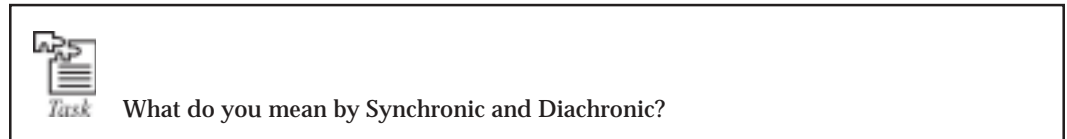
1.4.1 Synchrony and Diachrony

Synchrony is the study of a language in a given time, **diachrony** through time. **Synchronic** or **descriptive linguistics** studies a language at one period in time; it investigates the way people speak in a given speech community at a given point in time. **Diachronic** or **historical (or temporal) linguistics** studies the development of languages through time: for example, the way in which French and Italian have evolved from Latin, or Hindi from Sanskrit; it also investigates language changes. Saussure says: “synchronic linguistics will be concerned with the logical and psychological relations that bind together co-existing terms and form a system in the collective mind of speakers. Diachronic linguistics on the contrary, will study relations that bind together successive terms not perceived by the collective mind but substituted for each other without forming a system.” Synchronic linguistics deals with systems, diachronic with units. These two approaches have to be kept clearly apart and pursued separately. Saussure considered synchronic linguistics to be more important: “the first thing that strikes us when we study the facts of language is that their succession in time does not exist in so far as the speaker is concerned. He is confronted with a state. That is why the linguist who wishes to understand a state, must discard all knowledge of everything that produced it and ignore diachrony.”

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The difference between descriptive (synchronic) and historical (diachronic) linguistics can be illustrated by the following diagram of Ferdinand de Saussure, who was the first person to stress the necessity of distinguishing between the two approaches:

In the diagram, (figure 1.4), axis AB is the synchronic, static axis. It can intersect at any point with XY, the moving, diachronic axis.



Throughout the nineteenth century linguistic research was very strongly historical in character. One of the principal aims of the subject was to group languages into families on the basis of their independent developments from a common source, or to study language change. The description of particular languages was made subsidiary to this general aim, and there was little interest in the study of the language of a given community without reference to historical considerations. Saussure's distinction between the diachronic and synchronic investigation of the language is a distinction between these two opposing viewpoints. Nevertheless, valid diachronic work has to be based on good synchronic work, because no valid statements about linguistic change can be made unless good descriptions of a language do exist. Similarly a synchronic statement may well reflect certain historical developments, for example, two vowels of **reel** and **real** are described as being basically different because the historical facts show different sources of the **ee** and the **ea**.

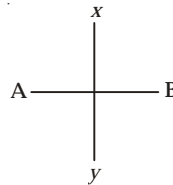


Figure 1.4

1.4.2 Language and Parole

Ferdinand de Saussure made a sharp distinction between three main terms—**le langage**, **la langue**, and **la parole**, and then concentrated on two of them. He envisaged **le langage** (human speech as a whole) to be composed of two aspects, which he called **langue** (the language system) and **parole** (the act of speaking).

Le langage

Le langage has no exact equivalent in English, it embraces the faculty of language in all its various forms and manifestations.

Le langage is the faculty of human speech present in all normal human beings due to heredity, but which requires the correct environmental stimuli for proper development. It is our faculty to talk to each other. Taken as a whole it is many-sided and heterogeneous; straddling several areas simultaneously—physical, physiological and psychological—it belongs to the individual and to society; we cannot put it into any category of human facts for we cannot discover its unity. **Langage**, thus is a universal behaviour trait—more of interest to the anthropologist or biologist than to the linguist, who commences his study with **langues** and **paroles**. To quote Saussure '**La langue est pour nous le langage moins la parole**'—Language is for us **le langage** less speech.

La Langue

Langue, according to Saussure, is the totality (the 'collective fact') of a language, deducible from an examination of the memories of all the language users. It is a storehouse, 'the sum of word-

images in the minds of individuals. It is not to be confused with human speech (**language**) of which it is only a definite part, though certainly an essential one.' It is both a social product of the faculty of speech and a collection of necessary conventions that have been adopted by a social body to permit individuals to exercise that faculty. **Langue**, therefore, is a corporate, social phenomenon. It is homogeneous whereas **language** is heterogenous. It is concrete and we can study it. It is a system of linguistic signs which are not abstract but real entities, tangible to be reduced to conventional, written symbols. Putting it loosely **langue** is grammar+vocabulary+pronunciation, system of a community. As stated by Hjelmslev, the term **langue** as used by Saussure, includes three different concepts:

1. (the language **scheme** (the pure language form defined independently of its social realization and physical manifestations);
2. the language **norm** (the material form defined by its social realization but independent of particular manifestations);
3. the language **custom** (a set of customs accepted by a particular society and defined by observable manifestations).

Ultimately, **langue** has to be related to **parole** which is the actual usage of individuals, which a community manifests in its everyday speech, the actual, concrete act of speaking on the part of an individual, the controlled or controllable psycho-physical activity. **Parole** is the set of all utterances that have actually been produced, while **langue** is the set of all possible grammatical sentences in the language. From this it follows that parole is a 'personal, dynamic, social activity, which exists at a particular time and place and in a particular situation as opposed to **langue** which, exists apart from any particular manifestation in speech.'

La Parole

Parole is the only object available for direct observation to the linguist. Utterances are instances of parole. The underlying structure in terms of which we produce them as speakers and understand them as hearers, is the **langue** in question (Hindi, Persian, Sanskrit, Chinese, etc.) and is independent of the physical medium (or **substance**) in which it is realized. A **langue**, on the other hand, is not spoken by anybody, but is a composite body of linguistic phenomena derived as it were from the personal dialects (paroles) of all native speakers. The langue is in essence a social phenomenon, having reality only as a social institution, it is, therefore, constant, supra-individualistic, and generalized; the individual speaker can neither create it nor modify it easily and ordinarily, Ullmann has tabulated the main differences between language and parole in the following manner:

Langue (language)	Parole (speech)
Code	Encoding of a message
Potential	Actualized
Social	Individual
Fixed	Free
Slow-moving	Ephemeral
Psychological	Psycho-Physical

1.4.3 Competence and Performance

Noam Chomsky's concept of competence and performance is some what similar to Saussure's concept of language and parole. Competence, according to Chomsky, is the native speaker's knowledge of his language, the system of rules he has mastered, his ability to produce and understand a vast number of new sentences. Competence is the study of the system of rules, performance is the study of actual sentences themselves, of the actual use of the language in real-life situation. So the speaker's knowledge of the structure of a language is his linguistic competence and the way in which he uses it, is his linguistic performance.

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Competence is, then, an underlying mental system, it underlies actual behaviour, linguistic ability to analyse language, detecting ambiguities, ignoring mistakes, understanding new sentences, producing entirely new sentences. Whereas competence is a set of Principles which a speaker masters, performance is what a speaker does. The former is a kind of code, the latter is an act of encoding or decoding. Competence concerns the kind of structures the person has succeeded in mastering and internalizing, whether or not he utilizes them, in practice, without interference from many of the factors that play a role in actual behaviour. "For any one concerned with intellectual processes, or with any question that goes beyond mere date arranging, it is the question of competence that is fundamental. Obviously one can find out about competence only by studying performance; but this study must be carried out in devious and clever ways, if any serious result is to be obtained." In this way, the abstract, internal grammar which enables a speaker to utter and understand an infinite number of potential utterances is a speaker's competence.

This competence is free from the interference of memory span, characteristic errors, lapses of attention, etc. "The speaker has represented in his brain a grammar that gives an ideal account of the structure of the sentences of his language, but, when actually faced with the task of speaking or understanding many other factors, acts upon his underlying linguistic competence to produce actual performance. He may be confused or have several things in mind, change his plans in midstream, etc. Since this is obviously the condition of most actual linguistic performance, a direct record—an actual corpus—is almost useless as it stands, for linguistic analysis of any but the most superficial kind."

Competence in any sphere can be identified with capacity or ability, as opposed to actual performance. Competence in linguistics is the 'linguistic ability—the ability to produce and understand indefinitely many novel sentences; it refers to the native speaker's innate creativity and productivity implicit in the normal use of language.

This distinction has caused a lot of argument in current-day linguistics. Some socio-linguists regard it as an unreal distinction which ignores the importance of studying language in its social setting. They say that many of today's grammars are based on unjustified assumptions concerning a speaker's competence rather on his performance. But the division is a useful one, if not carried to extremes. In an ideal situation, the two approaches should complement each other. Any statement concerning a speaker's competence must ultimately be based on data collected while studying his performance.

Although Chomsky's competence/performance dichotomy closely resembles Saussure's **langue/parole**, yet the main difference is that Saussure stressed the sociological implications of **langue**, while Chomsky stresses the psychological implications of competence. These distinctions are also parallel to a distinction made between **code** and **message** in communications engineering. A **code** is the pre-arranged signalling system. A **message** is an actual message sent through that system.

1.4.4 Substance and Form

Language symbols are Janus-like, they face two ways. In the Saussurean terminology, they have an external facet, the 'significant,' and a semantic facet, the 'signific' This fundamental duality has been called by some linguists 'form' and 'meaning'—or 'expression' and 'content'.

When a carpenter tries to make a table or chair out of wood, he is trying to change raw material into finished goods. In other words, he is trying to change substance into form. Thus wood is the substance, and furniture the form. Similarly cotton is the substance, cloth the form. Likewise in language we have both substances and form. All distinct sounds produced by human speech organs and scripts produced by human hands to communicate are substances of human language. The oral substance is called the **phonic substance** and the visual substance is known as the **graphic substance**. It is with these substances that we form languages.—The organization of language is its form which is grammar + lexis.

From the points of view of expression, **The bachelor gave birth to a baby**, (a nonsense sentence), is a well-formed utterance. The content plane deals with semantics, the study of meaning. The study of expression-level is less complex than the study of content level. So the expression plane of a language is usually analysed before the content plane.

On the content level substance means the whole mass of thoughts, emotions, feelings, ideas, concept without reference to language or languages people use; and form means the abstract structure of relationships which a particular language imposes on that underlying substance. Language has, as stated above, two forms spoken and written. The substance of the spoken form of language is sounds produced by human organs of speech. Since the spoken form of language comes before its written form of language, the sounds are transferred into the shape of the visual marks on paper, or wood, or stone, or metal, and these visible marks or graphs are the substance of the written form of language. The former is the primary substance of language; the latter the secondary substance.



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Substance and form can be analysed on two planes: content plane and expression plane. On the expression plane, linguistics deals with the form or shape of linguistic elements without necessarily taking their meaning into account.

The form and substance distinction is the distinction between the system and the actual data, between the theory and the actual utterance. By form we mean the various components of language such as phonology, grammar, morphology and syntax. By substance we mean the elements that fill these components, the elements such as phonemes, morphemes, graphemes. More explicitly, for example, if nouns, phonemes, and imperatives and so on are the substances;

boy, John, /p/, /t/,/k/ and Get up are the instances of form. In other words, units of a language are its form; systems of a language are substance.

'Any meaningful utterance carried by a single intonation contour is termed a linguistic form.' The form is a network of the associations between sound and meaning. In its broadest sense, linguistic form can refer to any meaningful sequence of phonemes, from the shortest prefix or suffix to the longest sentence. The 'substance' of the content-plane is the whole mass of thoughts and emotions common to mankind independently of the language they speak. It is a kind of vague conceptual medium out of which meanings are formed in particular languages by convention.

1.4.5 Syntagmatic and Paradigmatic

The structure of a language, according to Saussure, can be segmented into two kinds of relationships—the syntagmatic and the paradigmatic. "Combinations supported by linearity are syntagms". Words become a sentence because they are chained together. So syntagmatic relationship is the combinatorial or chain relationship. For example, **We can come tomorrow** is a sentence because in this linear arrangement of words we is correlated with **can**, **can** with **come** and so on. The relationship is that of Pronoun + Auxiliary Verb + Main Verb + Temporal Adverb. This relationship is restricted to certain orders. That is why **come can tomorrow we** is not a sentence. "In the syntagm a term acquires its value because it stands in opposition to everything that precedes or follows it, or to both.". In the sentence cited above **we** is not what **can** is, **can** is not what **come** is, and **come** is not what **tomorrow** is. Each of these words differ from all others.

The paradigmatic relationships are contrastive or choice relationships. Words that have something in common, are associated in the memory, resulting in groups marked by diverse relations. For example, the English word **learning** will unconsciously call to mind a host of other words—**study**,

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knowledge, discipline, etc. All these words are related in some way. This kind of relationship is called associative or paradigmatic relationship. Here the co-ordinations are outside discourse, and are not supported by linearity. They are relations in absentia, and are vertical type relations. Their seat is in the brain; they are a part of the inner storehouse that makes up language of each speaker.”

“Whereas a syntagm immediately suggests an order of succession and fixed number of elements, terms in associative family occur neither in fixed numbers nor in a definite order. If we associate **painful, delightful, fruitful**, etc. we are unable to predict the number of words that the memory will suggest or the order in which they will appear. A particular word is like the centre of constellation; it is the point of convergence of an indefinite number of co-ordinated terms.” In a word, the paradigmatic relationship is vertical in absentia; it is a choice relationship, it operates in phonemes, words, morphemes. The syntagmatic relationship, on the other hand, is horizontal, in presentia. The dichotomy between the two can be illustrated in the following manner:

We	can	come	tomorrow	Syntagmatic relationship
He	may	go	next	P A R A D I G M A T I C ↓
She	will	ask	soon	
You	could	sleep	now	
I	would	eat	....
They	should	write	....
Boys	....	....	....
Girls	....	....	....

Self-Assessment

1. Choose the correct option:

- (i) Grammatical System is a
 - (a) stock of morphemes
 - (b) a stock of phonemes
 - (c) stock of rules
 - (d) None of these
- (ii) Phonological system is a
 - (a) stock of rules
 - (b) stock of phonemes
 - (c) stock of tones
 - (d) None of these
- (iii) The study of phonetics can be divided into parts.
 - (a) two
 - (b) three
 - (c) four
 - (d) five
- (iv) Phonology is the study of
 - (a) grammar
 - (b) accent
 - (c) speech sounds
 - (d) None of these

1.5 Summary

- Linguistics, therefore, is the science that describes and classifies languages. The linguist identifies and describes the units and patterns of the sound system, the words and morphemes, and the phrases and sentences, that is the structure of language, as completely, accurately, and economically as possible.

- The approach and methodology of linguistics is scientific. It is as inductive as a science could be, and is based on observations, formation of hypothesis, testing, verification, tentativeness and predictiveness. Like a scientist a linguist observes his data. Some of his methods of observation include simple listening, phonetic transcription, and the use of various instruments, such as oscillograph, soundspectograph, kymograph, chromograph, mingograph, laryngoscope, endoscope, sonograph, autophonoscope, breathing flask, strobolaryngoscope, electric vocal tract, pitchmeter, intensitymeter, speech stretcher, formant graphing machine, etc. Records and cassettes made in these ways help in various kinds of objective description.
- The linguist also hopes to be in position to make prediction about unobserved linguistic data on the basis of those observed, and build a general theory which would explain and relate all the facts to be found in individual languages. Predictions about grammars and dictionaries can be made by him. And finally like a true scientist, he is constantly engaged in discovering more about languages, in refining his methods of investigation, and in constructing better theories. He also tries to find out linguistic universals.
- Like any scientific discipline, linguistics too is not static. Viewpoints and theoretical methods in the field, change even in fundamental ways from time to time, and different aspects come to receive primary focus at different times. Linguistics has more than its share of unresolved controversies and unsolved questions, which is a part of its fascination and challenge.
- Finally, the closeness of Linguistics with other natural sciences like mathematics, physics, physiology, biology, zoology, etc., is another proof of its scientific nature. 'It touches on physics through acoustics, on physiology through the structure of the human vocal organs, on zoology through the comparative study of the communicative systems of living beings.' A glance on any book on transformational-generative grammar would convince any objective onlooker how linguistics is becoming more and more scientific. Furthermore, as mentioned by R. H. Robins, linguistics in its operations and statements is guided by three canons of science:
- (1) exhaustiveness, the adequate treatment of all the relevant material; (2) consistency, the absence of contradiction between different parts of the total statement, and within the limits imposed by the two preceding principles; and (3) economy, whereby, other things being equal, a shorter statement or analysis employing fewer terms is to be preferred to one that is longer or more involved. Consequently, linguistics is getting more and more technical and sophisticated every day. Yet it is not a pure science. Its position, says R. A. Hall, is between the natural and social sciences, like that of geology. To Robins it is an 'empirical science', and within the empirical sciences it is 'one of the social sciences', because its subject matter concerns human beings, and is very much different from that of natural sciences.
- Nevertheless, linguistics is the scientific study of language. It may be inductive or deductive; it is, however, objective, precise, tentative and systematic; it is concerned with reportable facts, methods, and principles; it works by means of observations, hypotheses, experiments and tests, postulates, and inferences; it makes generalization and predictions; it formulates theories; its products are descriptive, verbal or algebraic statements about language.

1.6 Key-Words

1. Synchrony : It is the study of a language in a given time.
2. Diachrony : It studies the development of languages through time.

1.7 Review Questions

1. Explain the dichotomy between
 - (i) Synchrony and Diachrony.
 - (ii) Competence and Performance.
 - (iii) Substance and Form.
 - (iv) Syntagmatic and Paradigmatic Relationships.

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2. Comment on linguistic analysis and native speaker's intuition.
3. "Language is form, not substance." Discuss giving examples from English.
4. A linguist is concerned primarily with Form or Structure and only casually with the meaning. Critically examine this statement.
5. What is the Scope of Linguistics?
6. Discuss the Linguistic Levels.

Answers: Self-Assessment

1. (i) (a) (ii) (b) (iii) (b) (iv) (c)

1.8 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English Phonetics and Phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 2: Linguistics: Branches and Tools

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Objectives

After studying this Unit students will be able to:

- Know Linguistics and its Other Branches.
- Discuss Types of Linguistics.

Introduction

Linguistics is the scientific study of human language. Linguistics can be broadly broken into three categories or subfields of study: language form, language meaning, and language in context. The earliest known activities in descriptive linguistics have been attributed to Panini around 500 BC, with his analysis of Sanskrit in *Ashtadhyayi*.

The first subfield of linguistics is the study of language structure, or grammar. This focuses on the system of rules followed by the users of a language. It includes the study of morphology (the formation and composition of words), syntax (the formation and composition of phrases and sentences from these words), and phonology (sound systems). Phonetics is a related branch of linguistics concerned with the actual properties of speech sounds and nonspeech sounds, and how they are produced and perceived.

The study of language meaning is concerned with how languages employ logical structures and real-world references to convey, process, and assign meaning, as well as to manage and resolve ambiguity. This category includes the study of semantics (how meaning is inferred from words and concepts) and pragmatics (how meaning is inferred from context).

Linguistics also looks at the broader context in which language is influenced by social, cultural, historical and political factors. This includes the study of evolutionary linguistics, which investigates into questions related to the origins and growth of languages; historical linguistics, which explores language change; sociolinguistics, which looks at the relation between linguistic variation and social structures; psycholinguistics, which explores the representation and function of language in the mind; neurolinguistics, which looks at language processing in the brain; language acquisition, on how children or adults acquire language; and discourse analysis, which involves the structure of texts and conversations.

Although linguistics is the scientific study of language, a number of other intellectual disciplines are relevant to language and intersect with it. Semiotics, for example, is the general study of signs and symbols both within language and without. Literary theorists study the use of language in

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literature. Linguistics additionally draws on and informs work from such diverse fields as acoustics, anthropology, biology, computer science, human anatomy, informatics, neuroscience, philosophy, psychology, sociology, and speech-language patholog

2.1 Branches of Linguistics

Historical Linguistics

Historical linguists study the history of specific languages as well as general characteristics of language change. One aim of historical linguistics is to classify languages in language families descending from a common ancestor, an enterprise that relies primarily on the comparative method. This involves comparison of elements in different languages to detect possible cognates in order to be able to reconstruct how different languages have changed over time. Some historical linguists, along with non-linguists interested in language change, have also employed such tools as computational phylogenetics. The study of language change is also referred to as “diachronic linguistics”, which can be distinguished from “synchronic linguistics”, the study of a given language at a given moment in time without regard to its previous stages. Historical linguistics was among the first linguistic disciplines to emerge and was the most widely practised form of linguistics in the late 19th century. However, a shift in focus to the synchronic perspective began in the early twentieth century with Saussure and became predominant in western linguistics through the work of Noam Chomsky.

Semiotics

Semiotics is the study of sign processes (semiosis), or signification and communication, signs, and symbols, both individually and grouped into sign systems, including the study of how meaning is constructed and understood. Nonetheless, semiotic disciplines closely related to linguistics are literary studies, discourse analysis, text linguistics, and philosophy of language. Semiotics, within the linguistics paradigm, is the study of the relationship between language and culture. Historically, Edward Sapir and Ferdinand De Saussure’s structuralist theories influenced the study of signs extensively until the late part of the 20th century, but later, post-modern and post-structural thought, through language philosophers including Jacques Derrida, Mikhail Bakhtin, Michel Foucault, and others, have also been a considerable influence on the discipline in the late part of the 20th century and early 21st century. These theories emphasise the role of language variation, and the idea of subjective usage, depending on external elements like social and cultural factors, rather than merely on the interplay of formal elements.



Did u know? Semioticians often do not restrict themselves to linguistic communication when studying the use of signs but extend the meaning of “sign” to cover all kinds of cultural symbols.

Language Documentation

Since the inception of the discipline of linguistics, linguists have been concerned with describing and analysing previously undocumented languages. Starting with Franz Boas in the early 1900s, this became the main focus of American linguistics until the rise of formal structural linguistics in the mid-20th century. This focus on language documentation was partly motivated by a concern to document the rapidly disappearing languages of indigenous peoples. The ethnographic dimension of the Boasian approach to language description played a role in the development of disciplines such as sociolinguistics, anthropological linguistics, and linguistic anthropology, which investigate the relations between language, culture, and society.

The emphasis on linguistic description and documentation has also gained prominence outside North America, with the documentation of rapidly dying indigenous languages becoming a primary

focus in many university programs in linguistics. Language description is a work-intensive endeavour, usually requiring years of field work in the language concerned, so as to equip the linguist to write a sufficiently accurate reference grammar. Further, the task of documentation requires the linguist to collect a substantial corpus in the language in question, consisting of texts and recordings, both sound and video, which can be stored in an accessible format within open repositories, and used for further research.

Applied Linguistics

Linguists are largely concerned with finding and describing the generalities and varieties both within particular languages and among all languages. Applied linguistics takes the results of those findings and “applies” them to other areas. Linguistic research is commonly applied to areas such as language education, lexicography, and translation. “Applied linguistics” has been argued to be something of a misnomer[who?] since applied linguists focus on making sense of and engineering solutions for real-world linguistic problems, not simply “applying” existing technical knowledge from linguistics; moreover, they commonly apply technical knowledge from multiple sources, such as sociology (e.g., conversation analysis) and anthropology.

Today, computers are widely used in many areas of applied linguistics. Speech synthesis and speech recognition use phonetic and phonemic knowledge to provide voice interfaces to computers. Applications of computational linguistics in machine translation, computer-assisted translation, and natural language processing are areas of applied linguistics that have come to the forefront. Their influence has had an effect on theories of syntax and semantics, as modeling syntactic and semantic theories on computers constraints.

Linguistic analysis is a sub-discipline of applied linguistics used by many governments to verify the claimed nationality of people seeking asylum who do not hold the necessary documentation to prove their claim. This often takes the form of an interview by personnel in an immigration department. Depending on the country, this interview is conducted either in the asylum seeker’s native language through an interpreter or in an international lingua franca like English. Australia uses the former method, while Germany employs the latter; the Netherlands uses either method depending on the languages involved. Tape recordings of the interview then undergo language analysis, which can be done either by private contractors or within a department of the government. In this analysis, linguistic features of the asylum seeker are used by analysts to make a determination about the speaker’s nationality. The reported findings of the linguistic analysis can play a critical role in the government’s decision on the refugee status of the asylum seeker.

Translation

The sub-field of translation includes the translation of written and spoken texts across mediums, from digital to print and spoken. To translate literally means to transmute the meaning from one language into another. Translators are often employed by organisations, such as travel agencies as well as governmental embassies to facilitate communication between two speakers who do not know each other’s language. Translators are also employed to work within computational linguistics setups like Google Translate for example, which is an automated, programmed facility to translate words and phrases between any two or more given languages. Translation is also conducted by publishing houses, who convert works of writing from one language to another in order to reach varied audiences.

Description and Prescription

Linguistics is descriptive; linguists describe and explain features of language without making subjective judgments on whether a particular feature is “right” or “wrong”. This is analogous to practice in other sciences: A zoologist studies the animal kingdom without making subjective judgments on whether a particular animal is better or worse than another.

Prescription, on the other hand, is an attempt to promote particular linguistic usages over others, often favouring a particular dialect or “acrolect”. This may have the aim of establishing a linguistic standard, which can aid communication over large geographical areas. It may also, however, be

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an attempt by speakers of one language or dialect to exert influence over speakers of other languages or dialects (see Linguistic imperialism). An extreme version of prescriptivism can be found among censors, who attempt to eradicate words and structures that they consider to be destructive to society.

Speech and Writing

Most contemporary linguists work under the assumption that spoken language is more fundamental than written language. This is because:

- Speech appears to be universal to all human beings capable of producing and hearing it, while there have been many cultures and speech communities that lack written communication
- Speech evolved before human beings invented writing
- People learn to speak and process spoken language more easily and much earlier than writing.

Nonetheless, linguists agree that the study of written language can be worthwhile and valuable. For research that relies on corpus linguistics and computational linguistics, written language is often much more convenient for processing large amounts of linguistic data. Large corpora of spoken language are difficult to create and hard to find, and are typically transcribed and written. In addition, linguists have turned to text-based discourse occurring in various formats of computer-mediated communication as a viable site for linguistic inquiry. The study of writing systems themselves is, in any case, considered a branch of linguistics.

2.2 Linguistics and Related Fields of Study

2.2.1 Linguistics and Anthropology

Broadly speaking, anthropology is the study of mankind and of culture. Its main subdivisions are physical anthropology and cultural anthropology. Linguistics is a branch of cultural anthropology. The chief contribution of cultural anthropology, as a whole, to the study of language has been the broadening of linguists' outlooks so that their horizons include, not only languages, but culture of many different types. It has helped in removing the misconception that one language is superior to the other, in accepting a generalization that all languages are complex and are adequate to the needs of the respective communities, and in establishing certain linguistic universals. It has also made clear to the linguist the fact that languages are not 'primitive,' although cultures may be primitive. Furthermore, a language is a language even if it has no writing system.

Modern linguistics, particularly in its early phases in the United States, received a great impetus from the attempts of anthropologists who studied the culture of "primitive" peoples. Linguists had to devise new ways and techniques of linguistic analysis to study the languages of these primitive races and tribes. As a result their methodologies and theories were enriched. They also stood benefited by the similarities and contrasts between those hitherto unknown languages and the known European languages. Another positive contribution of cultural anthropology to linguistics lies in the furnishing of data for the interpretation of meanings, on both the grammatical and the lexical levels.

On another level, linguistics has made a very valuable contribution to the methodology of social sciences, through the concept of the functional unit and the distinctive feature of behaviour, etc. Anthropology has benefited from linguistics in the field of individual and social group, learning process, correlation between heredity and linguistic structure, etc. The fact that man's dialect is the mirror of his culture, has also been beneficial to anthropologists and sociologists.

Now-a-days, the relationship between linguistics and anthropology is less close. But at the same time a new discipline called Sociolinguistics is expanding rapidly, meaning thereby that sociology and linguistics are getting closer.

2.2.2 Linguistics and Philosophy

The association between philosophy and language and linguistics and has indeed been historically very long. In fact, it were the philosophers who first of all speculated on language. Plato's *Dialogues*

have explicit reference to language, and so have the *Vedas* and the *Upanishadas* of the ancient Indians. In the field of semantics, philosophy has provided tremendous insight to the linguists. The structural linguistics ignored meaning because they thought it to be a subject of philosophy.

One of the major concerns of the Greek and Roman philosophers was to determine the nature of being and the categories into which it fell. Aristotle established three main “categories of predication,” things or “substances”, qualities, and actions. And the traditional concepts of parts of speech seem to have originated from there.

On the other level, metaphysical systems can only be communicated to others by the use of words in sentences constructed in language known to the philosopher and his readers or listeners. Philosophers had to coin numerous terms to communicate their metaphysical and mystical experience. Sanskrit philosophers went to the extent of equating the word with ‘Brahma’ (God). Some of the major features of systems of logic and metaphysics are partly determined by certain predominant features of the structure of the language used in the philosopher’s community.

Yet there are deep-rooted differences between philosophy and linguistics. The philosopher’s concern is with ‘the uses of language for certain purposes that are common to many communities’; he is not interested in the detailed differences between languages. The linguist’s concern is with ‘the details of each language for its own sake’, and he evolves and evaluates theories primarily to deal with particular languages. The linguist is particularly interested in the formal structuring of the sentences of a language; the philosopher is interested in the logical structure and the inferential possibilities of the propositions they express irrespective of the grammar of any particular language. Hence both these disciplines are getting remote from each other these days.

2.2.3 Linguistics and Psychology

Linguistics studies human language. Whether language is behaviour or a cognitive process or both, is still a controversial issue; yet it is well accepted that psychology is the study of human behaviour and human mind. Hence both linguistics and psychology are closely related.

Investigations and attempts to find out answers to certain fundamental questions like the following ones are likely to provide invaluable clues to the linguist: What is the principle of learning? How is language learned by a child? Does the learning of the mother or native tongue involve the same processes as the learning of a second or a foreign language? Is language-learning a result of stimulus-response, imitation, repetition and reinforcement, or of exposure? Can a child whose brain is injured in an accident, relearn a language? Does the loss of linguistic skills affect his other skills? What roles do memory, motivation, age and aptitude play in language learning? Surely the answers to such questions would help both the linguist and the scientist.

2.2.4 Linguistics and Geography

Linguistics and geography are also inter-related disciplines. The growth of a new discipline or branch called ‘linguistic geography’ stands as a valid evidence to prove our proposition. Geographical conditions, trees, plants, birds, animals, planes, mountains, rivers, deserts, etc. have a bearing on language. The language of the people of a thick forest with a rich store of animals may be richer in the names of trees and animals than the language of the people living in the desert. If there is little interaction between one community and another community, for example in the hilly areas, because of the obstacles created by hills and rivers, the cases of language change would be less frequent. Oceans and seas also bring a sea-change in language. The languages of India are different from the languages across the Himalayas are different from those below the Atlantic; and so are the language of other countries isolated by the oceans. The languages across the Himalayas. Languages of North India have few similarities with those of South India.

The study of the names of persons, places, temples, rivers, mountains, etc. has helped the comparative linguists in the 19th century in establishing the family-history of languages. Languages also have affected geography. Most of the states in India are framed on linguistic basis. Secession of Bangla Desh from Pakistan took place partly because of the linguistic differences. Thus, geography has been changing because of languages. All such facts are of great importance for the linguist. They help him in supporting or rejecting his hunches and in describing languages in a better way.

2.2.5 Linguistics and Literature

The relationship between linguistics and literature is like that of the hammer and the anvil. If a linguist wants to study a language like Sanskrit, he has no other source of his data but the literature of the Sanskrit language. Literary criticism and literary scholarship, together with philosophical studies, constituted a part of linguistics of Western Europe. Grammatical rules and systems of grammar were drawn up on the basis of literary works and the types of sentence structures and word forms found therein. The linguist has taken over the concepts of metres, rhymes, rhythms, stresses and intonations from literature.

As linguistics progresses in the analysis of features like stress and length, and many concomitant characteristics of utterances as yet not fully investigated or understood, in the comparison from different points of the syllable structure of language and of their words structures, and in the statement of their grammatical and colloquial patterns, linguists may expect to be able to penetrate more deeply and more delicately in making explicit the many components of language that great authors and generations of composers of oral literature have unconsciously seized on and moulded into works of literary art.

Linguists are concerned with literature because it is their business to discover wherein literary discourse differs from everyday non-literary discourse, and to investigate the role of the functors in determining the effect of literary style. A language like Sanskrit, which does not have any system of articles, is of course incapable of the particular literary effects made possible in English by the presence of the article: on the other hand, its special structural characteristics make possible its own peculiar literary effects which, say, English cannot attain. The recurrence and frequency of nasal and glottal sounds in the end positions of words in Sanskrit gives it a musical effect which is different from that of English.

The nature of language is of vital concern to the students of literature, because language is the medium in which literature is written. A creative writer is never wholly free from linguistic and cultural considerations or limitations howsoever unconscious of these he may be literally. He has to choose his structures and sounds according to the kind of aesthetic effect he wants to create. His creation is determined by the structure of the language. The structure determines what can and cannot be said in the language, just as his cultural background determines the semantic content of his work. All linguistic levels exert an influence on his creativity and on what he creates. All these factors influence his style. Word-formation can often be used as a source of particular literary effects. The Elizabethan writers were especially fond of transferring words from one form class to another, and used **happy**, **malice** or **foot** as verbs. It is linguistics which can scientifically explain the difficulties of translating a literary text, especially a poem. In return, it is the literary artist who enriches a language enormously, and refines it. It is he who also sets the direction of language-change by his distinct use and coinages and word-formations. Applying linguistics to the study of poetry and other forms of literature under the name of "Stylistics" is another testimony of the closeness between linguistics and literature. Among other fine arts, music is much closer to linguistics than any other branch of fine arts.

2.2.6 Linguistics and the Natural Sciences

Linguistics touches the natural sciences such as physics, physiology and zoology. Acoustics brings linguistics near physics, the structure of the human vocal organs near physiology, and the communicative systems of living beings and their comparison near zoology. A fairly detailed knowledge offered by these sciences about how soundwaves are framed, transmitted and received, what are the organs and articulatory processes involved in the production of speech, are of immense help to the linguist. On the basis of such information he classifies sounds, and determines their characteristics. Physiology provides him knowledge about brain and the central nervous system.

A general connection between biology and zoology and linguistics lies in the relation of human language to the communicative systems of animals. Such comparative studies have helped linguists

in finding out the history of human language. Is man an ape that can do a little better? Is there any difference between human communication system and animal communication? If there is any difference, what is the nature of this difference? Do animals have brain? Answer to questions like these can be found out through collaboration between the biologist and the linguist.

Language is speech uttered out of mouth. Hence the answers to questions like—how are sounds produced? How does the wind come out of the lungs through the windpipe to the vocal cords to pass through the mouth or nasal passage? How do various speech organs such as vocal cords, soft palate, tongue, teeth, lips, etc. affect the sound?—are of primary interest and investigation for the linguist. He can find out answers to such questions from the biologist.

Science has contributed a great deal to the methodology of linguistics. It has formalized it; it has made it much more rigorous, objective and scientific. It has helped the linguist to describe language too. Yet in its methodology, linguistics is 'intermediate' between the natural and social sciences. This is because of the subject matter of linguistics which is complicated and full of many variables. Predictions of the linguist are not exactly like those of the natural scientist. Linguistics may, therefore, be compared with geology rather than with chemistry or physics in matter of approach and methodology.

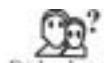
2.2.7 Linguistics and Logic and Mathematics

Like philosophers, mathematicians and logicians are also interested in finding out what the fundamental entities of language are, what operations are performed, what relations exist between such entities in a proposition, what the rules of formation and transformation of these propositions are, and how universal the validity of these proposition is. Answers to such questions and the logical structure of the sentences of a language have also been a matter of interest and investigation for linguists. Transformational-Generative grammar of Chomsky is a chemical mixture of linguistics, logic, mathematics and psychology.

Whereas logic is mainly interpretative and explanatory, linguistics is mainly descriptive. Yet mere descriptions do not help the linguist; he needs explanatory adequacy too. This he can get from logic. Similarly logic is also indebted to linguistics. It is carried on with the help of language, hence it has to keep a sharp scientific eye on the use of words and sentences.

2.2.8 Linguistics and Communications Engineering

Linguistics can help the communications engineer in understanding the linguistic nature of his material to be transmitted. The linguist can also help us to estimate the value of the different phonetic components in the sound wave which result from successive speech articulations, and their localization into different band of frequencies.



Did u know?

Communications Engineering is concerned with the transmission of speech as such by wire and radio waves, and conversion of linguistic signals into written message.

Mechanical analysis of speech by instruments such as spectograph, taperecorder, gramophone, radio, television, telephone may help a linguist a great deal. For example, Charles Fries studied American living usage by bugging telephones. All these are the gifts of communications engineering.

Invention of 'machine translation' is the work of the linguist-engineer. Further linguistic analysis, semantic, collocational, and grammatical that is involved in the process of translation, may make this machine more useful and applicable than it is in its present form.

Linguistics is a developing science these days. It is achieving a significant position in various ways. Further linguistic researches may open new avenues for the application of linguists. The speech therapist, the language teacher, the literary artist, the psychologist, the neurologist, the historian, the anthropologist, the sociologist, the geographer, the palaeographer, the missionary,

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the philosopher, the communications engineer have professional need to know something about language as opposed to simply being able to use it. For all these people, and for others who apply linguistics to their field of activity, the knowledge of linguistics is a means, but for a group of specialists, knowing about language it is an end in itself.

2.3 Types of Linguistics

Linguistics and Other Branches of Knowledge

Keeping in view the interdisciplinary relationship between Linguistics and other branches of knowledge with which it is associated, David Crystal has explained various types of linguistics, each type named after the branch of knowledge with which it is connected or on whose method and concepts it bases its conclusions. These types, as enumerated by Crystal (in his monumental work *The Cambridge Encyclopaedia of Language*, The Camb. Univ. Press, 1987.) are as follows:

1. **Anthropological Linguistics:** The study of language variation and use in relation to the cultural patterns and beliefs of the human race, as investigated using the theories and methods of anthropology.
2. **Applied Linguistics:** The application of linguistic theories, methods, and findings to the elucidation of language problems that have arisen in other domains. The term is especially used with reference to the field of foreign language learning and teaching, but it applies equally to several other fields, such as stylistics, lexicography, translation, and language planning, as well as to the clinical and educational fields below.
3. **Biological Linguistics:** The study of the biological conditions for language development and use in human beings, with reference both to the history of language in the human race and to child development.
4. **Clinical Linguistics:** The application of linguistic theories and methods to the analysis of disorders of spoken, written, or signed language.
5. **Computational Linguistics:** The study of language using the techniques and concepts of computer science, especially with reference to the problems posed by the fields of machine translation, information retrieval, and artificial intelligence.
6. **Educational Linguistics:** The application of linguistic theories and methods to the study of the teaching and learning of a language (especially a first language) in schools and other educational settings.
7. **Ethnolinguistics:** The study of language in relation to ethnic types and behaviours, especially with reference to the way social interaction proceeds.
8. **Geographical Linguistics:** The study of the regional distribution of languages and dialects, seen in relation to geographical factors in the environment.
9. **Mathematical Linguistics:** The study of the mathematical properties of language, using concepts from such fields as algebra, computer science, and statistics.
10. **Neurolinguistics:** The study of the neurological basis of language development and use in human beings, especially of the brains control over the processes of speech and understanding.
11. **Philosophical Linguistics:** The study of the role of language in the elucidation of philosophical concepts, and of the philosophical status of linguistic theories, methods, and observations.
12. **Psycholinguistics:** The study of the relationship between linguistics behaviour and the psychological processes, (e.g. memory, attention) thought to underline it.
13. **Sociolinguistics:** The study of the interaction between language and the structure and functioning of society.
14. **Statistical Linguistics:** The study of the statistical or quantitative properties of language.
15. **Theolinguistics:** The study of the languages used by biblical scholars, theologians, and others involved in the theory and practice of religious belief.

2.4 Descriptive, Historical and Comparative Linguistics

General linguistics includes a number of related subjects involved in the study of language as understood in the preceding paragraphs. General linguistics can broadly be divided into three sub-divisions **descriptive linguistics**, **historical linguistics** and **comparative linguistics**.

1. **Descriptive linguistics** is concerned with the description and analysis of the ways in which a language operates and is used by a given set of speakers at a given time. The time may be present. The time may equally well be the past, where adequate written records are available. Nor is the descriptive study of a particular language concerned with the description of other languages at the same time. Descriptive linguistics is often regarded as the major part of general linguistics, and certainly the fundamental aspect of the study of language.
2. **Historical linguistics** is the study of developments in languages in the course of time. It is the diachronic study of the language. It studies language change, and the causes and results of such changes as have occurred from time to time.
3. **Comparative linguistics** is concerned with comparing from one or more points of view two or more different languages. Comparative linguistics traces the evolution of language and, by comparing one with another, establishes the relationships between them. This comparison is generally done between the languages which are genetically related, that is, those that have developed from some common source.

Comparative and historical linguistics may be said to have begun in 1786, the date when Sir William Jones made the famous statement pointing out that Greek, Latin, Sanskrit, Celtic and Germanic appeared to have sprung from a common source. The old name for the subject was **Comparative Philology**.

Self-Assessment

1. Choose the correct options:

- (i) Linguistic have been attributed to Panini around
 (a) 500 B.C. (b) 400 B.C. (c) 450 B.C. (d) none of these
- (ii) Ethnolinguistics is the study of language relating to
 (a) ethnic types and behaviour (b) geographical factors
 (c) language development (d) none of these
- (iii) Theolinguistics is the study of language deals with
 (a) speech sounds (b) social interactions (c) religious beliefs (d) none of these
- (iv) Comparative and historical linguistics may be said to have begun in
 (a) 1785 (b) 1786 (c) 1790 (d) 1760

2.5 Summary

- Linguistics also looks at the broader context in which language is influenced by social, cultural, historical and political factors. This includes the study of evolutionary linguistics, which investigates into questions related to the origins and growth of languages; historical linguistics, which explores language change; sociolinguistics, which looks at the relation between linguistic variation and social structures; psycholinguistics, which explores the representation and function of language in the mind; neurolinguistics, which looks at language processing in the brain; language acquisition, on how children or adults acquire language; and discourse analysis, which involves the structure of texts and conversations.
- Although linguistics is the scientific study of language, a number of other intellectual disciplines are relevant to language and intersect with it. Semiotics, for example, is the

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general study of signs and symbols both within language and without. Literary theorists study the use of language in literature. Linguistics additionally draws on and informs work from such diverse fields as acoustics, anthropology, biology, computer science, human anatomy, informatics, neuroscience, philosophy, psychology, sociology, and speech-language patholog

- Historical linguists study the history of specific languages as well as general characteristics of language change. One aim of historical linguistics is to classify languages in language families descending from a common ancestor, an enterprise that relies primarily on the comparative method.
- Semiotics is the study of sign processes (semiosis), or signification and communication, signs, and symbols, both individually and grouped into sign systems, including the study of how meaning is constructed and understood.
- Since the inception of the discipline of linguistics, linguists have been concerned with describing and analysing previously undocumented languages. Starting with Franz Boas in the early 1900s, this became the main focus of American linguistics until the rise of formal structural linguistics in the mid-20th century. This focus on language documentation was partly motivated by a concern to document the rapidly disappearing languages of indigenous peoples.
- Linguists are largely concerned with finding and describing the generalities and varieties both within particular languages and among all languages. Applied linguistics takes the results of those findings and “applies” them to other areas. Linguistic research is commonly applied to areas such as language education, lexicography, and translation.
- Broadly speaking, anthropology is the study of mankind and of culture. Its main subdivisions are physical anthropology and cultural anthropology. Linguistics is a branch of cultural anthropology. The chief contribution of cultural anthropology, as a whole, to the study of language has been the broadening of linguists’ outlooks so that their horizons include, not only languages, but culture of many different types.
- The association between philosophy and language and linguistics and has indeed been historically very long. In fact, it were the philosophers who first of all speculated on language. Plato’s *Dialogues* have explicit reference to language, and so have the *Vedas* and the *Upanishadas* of the ancient Indians. In the field of semantics, philosophy has provided tremendous insight to the linguists.
- Linguistics studies human language. Whether language is behaviour or a cognitive process or both, is still a controversial issue; yet it is well accepted that psychology is the study of human behaviour and human mind. Hence both linguistics and psychology are closely related.
- Linguistics and geography are also inter-related disciplines. The growth of a new discipline or branch called ‘linguistic geography’ stands as a valid evidence to prove our proposition. Geographical conditions, trees, plants, birds, animals, planes, mountains, rivers, deserts, etc. have a bearing on language.

2.6 Key-Words

1. Clinical Linguistics : The application of linguistic theories and methods to the analysis of disorders of spoken, written, or signed language.
2. Computational Linguistics : The study of language using the techniques and concepts of computer science, especially with reference to the problems posed by the fields of machine translation, information retrieval, and artificial intelligence.
3. Educational Linguistics : The application of linguistic theories and methods to the study of the teaching and learning of a language (especially a first language) in schools and other educational settings.

2.7 Review Questions

1. What is linguistics?
2. Comment on the scope of linguistics.
3. What do you understand by the structure of language?
4. What are the main aspects of linguistics?
5. In what ways has linguistics benefited from the insights offered by scholars in other disciplines?
6. What kind of challenges and opportunities does the linguist find in carrying on his work in India?
7. What do you understand by the following:

(i) Phonology	(ii) Morphology
(iii) Syntax	(iv) Semantics
8. Describe how exposure to linguistics helps an anthropologist, a psychologist, a philosopher, a sociologist and a logician.

Answers: Self-Assessment

1. (i) (a) (ii) (a) (iii) (c) (iv) (b)

2.8 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English Phonetics and Phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 3: Brief History of the Growth of Modern Linguistics: Bloomfield to Chomsky

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Objectives

After studying this Unit students will be able to:

- Know the History of the Growth of Linguistics.
- Discuss Linguistics from Bloomfield to Chomsky.

Introduction

Linguistics is the study of language, sometimes called the science of language. {1} The subject has become a very technical, splitting into separate fields: sound (phonetics and phonology), sentence structure (syntax, structuralism, deep grammar), meaning (semantics), practical psychology (psycholinguistics) and contexts of language choice (pragmatics). {2} But originally, as practised in the nineteenth century, linguistics was philology: the history of words. {3} Philologists tried to understand how words had changed and by what principle. Why had the proto-European consonants changed in the Germanic branch: Grimm's Law? Voiceless stops went to voiceless fricatives, voiced stops to voiceless stops, and voiced aspirates to voiced stops. What social phenomenon was responsible? None could be found. Worse, such changes were not general. Lines of descent could be constructed, but words did not evolve in any Darwinian sense of simple to elaborate. One could group languages as isolating (words had a single, unchanging root), agglutinizing (root adds affixes but remains clear) and inflecting (word cannot be split into recurring

units), but attempts to show how one group developed into another broke down in hopeless disagreement.

Ferdinand de Saussure (1857-1913)

So linguistics might have ended: documenting random changes in random directions. But that was hardly a science, only a taxonomy. When therefore Ferdinand de Saussure tentatively suggested that language be seen as a game of chess, where the history of past moves is irrelevant to the players, a way though the impasse was quickly recognized. Saussure sketched some possibilities. If the word high-handed falls out of use, then synonyms like arrogant and presumptuous will extend their uses. If we drop the final f or v the results in English are not momentous (we might still recognize belie as belief from the context), but not if the final s is dropped (we should then have to find some new way of indicating plurals).

Saussure's suggestion was very notional: his ideas were put together by students from lecture notes and published posthumously in 1915. But they did prove immensely fruitful, even in such concepts as *langue* (the whole language which no one speaker entirely masters) and *parole* (an individual's use of language). Words are signs, and in linguistics we are studying the science of signs: semiology. And signs took on a value depending on words adjacent in use or meaning. English has sheep and mutton but French has only *mouton* for both uses. Above all (extending the picture of a chess game) we should understand that language was a totality of linguistic possibilities, where the "move" of each word depended on the possible moves of others.

A word (sign) was a fusion of concept (signified) and sound-image (signifier) the two being somehow linked as meaning in the mind. Both signifieds and signifiers independently played on their own chess board of possibilities — i.e. they took up positions with regard to other pieces, indeed owed their existence to them. Though championed by the Structuralists, this theory of semantics was a disastrous one, raising the problems recognized by linguistic philosophy. But that was not Saussure's fault. He was not a philosopher, but a philologist, one whose simple idea, though much anticipated by Michel Breal and perhaps Franz Boas, largely recast linguistics in its present form.



Did u know? Saussure had a theory of meaning. He envisaged language as a series of contiguous subdivisions marked off on the indefinite planes of ideas and sounds.

3.1 Traditional Grammar

The Greeks and the Indians are the first to have started speculations about language and contributed tremendously to linguistic studies. In the words of John Lyons, "Traditional grammar, like so many other of our academic traditions, goes back to Greece of the fifth century before Christ. For the Greeks 'grammar' was from the first a part of 'Philosophy'. That is to say, it was a part of their general inquiry into the nature of the world around them and of their own social institutions" (*Introduction to Theoretical Linguistics*). Bloomfield has also said that linguistics derives from the speculations of ancient and medieval philosophers.

3.1.1 'Naturalists' and 'Conventionalists'

A beginning of what is known now as 'traditional grammar' was made by the Greeks with discussions on the origin of language. The Greek philosophers debated whether language was governed by 'nature' or 'convention'.

The naturalists like Plato believed that there was by nature a correct name for everything. They pointed out that a number of words had the quality onomatopoeia, and the others had a 'natural' connection with their meaning, by reference to one or more of their constituent sounds. They maintained that every word contained a sound which was 'naturally' appropriate to its meaning.

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The conventionalists refuted this theory. They asserted that the names of things were due purely to convention and had no deep appropriateness.

This dispute is discussed at length in Plato's *Cratylus*. The importance of this controversy is that it gave rise to 'etymological' investigations. It was Plato again who first of all began grammatical analysis and distinguished between nouns and verbs.

3.1.2 'Analogists' and 'Anomalists'

The early debate between the 'naturalists' and 'conventionalists' with exclusive reference to the Greek language merged later in a more far-reaching controversy between the 'analogist' and 'anomalist' theories of language, to some extent championed respectively by Aristotle and Stoic philosophical schools. Those who maintained that language was essentially systematic and regular are generally called 'analogists', and those who took the contrary view, are referred to as 'anomalists'. The analogists emphasized the regularities of grammatical structures and word forms, and the parallels between grammatical forms, word meanings, as constituting the essence of language and the direction in which standards of correctness should be sought, and tended to take up a 'conventional' attitude towards language itself. The anomalists stressed the numerous irregular forms in grammatical paradigms, and 'anomalous' associations of plural number with singular entities, genders divorced from any sex reference, and the like, and leaned more towards the naturalist 'view of language, accepting its anomalies as they stood.' The anomalists were of the opinion that the relationship between the form of a word and its meaning was frequently 'anomalous'. The anomalists also said that language, a product of 'nature', was only partly susceptible to description in terms of analogical patterns of formation and that due attention had to be given to 'usage'.

The controversy contributed to the study of language by drawing attention to the analogies and anomalies, regularities and irregularities of the language. Both the theories contributed to the systematization of grammar. It was in the course of this controversy that the patterns of Greek grammar were first worked out and codified, subsequently to be taken over and applied to Latin by the Latin grammarians, and thence to form the basis of traditional grammatical theory and language teaching throughout Europe.

3.1.3 Alexandrian Period

The manuscripts of the authors of the past, especially of the Homeric period were edited and re-edited. While deciding between genuine and spurious works, and publishing commentaries on the texts and grammatical treatises, the scholars at Alexandria produced competent grammars of Greek in which tense, mood, case, gender and other traditional categories were fully dealt with. The most famous is the grammar of Dionysius Thrax, written in the second century B.C. Most traditional grammars of Greek are the contributions of the Alexandrian scholars.



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At the beginning of the third century B.C. in the Hellenistic era, Alexandria in the Greek colony became the centre of intense literary and immense linguistic study, because a great library was established there.

3.1.4 Greek Grammar

Grammarians dealt with many of the topics that fall within the linguistic study of language today, though they concerned themselves almost exclusively with their own language, and within it, with the dialects used in literature, particularly Homeric and Attic Greek. Phonetics, grammar and the analysis of meaning were all treated, but by far the greatest attention was paid to grammar'.

Some groundwork on Greek phonology was done: phonetic observations were made on the pronunciation values of the letters of the Greek alphabet and on the accent signs, and some theory of the syllable as the structural unit was developed. But no very penetrating observations in the field of phonetics were made.



Did u know? The period between 3rd century B.C. and 2nd century A.D. is the golden period of Greek Grammar.

Within grammar morphology held a place of pride, and word-classes (parts of speech) were established in great detail. The number went up to eight (noun, verb, pronoun, participle, adverb, preposition, conjunction, article) in the Greek grammar of Dionysius Thrax which is regarded by the scholars as the best grammar of Greek. The work of the grammatical description of Greek was carried out some three centuries later, less systematically however, by Apollonius Dyscolus (second century A. D.).

3.1.5 The Roman Period

In linguistic studies, the Romans were content largely to model themselves on Greek patterns. They copied the Greeks slavishly in all aspects of the linguistic scholarship. Grammars of Latin were fitted in a Greek framework. In dealing with the 'parts of speech' the Latin grammarians made only such minor modifications as the differences between Greek and Latin forced to their attention. They, however, encouraged the view that the parts of speech, case, number, tense, etc. were universals and necessary categories of language.

The most famous Latin grammars are those by Donatus (c. 440 A.D.) and Priscian (c. 500 A.D.) which were used as standard text books as late as the Middle Ages. The period of Latin grammatical scholarship, like the Alexandrian period, was an age of classicism. The grammars of Donatus and Priscian set out to describe not the language of their own day, but that of the 'best writers', especially Cicero and Virgil, and thus perpetuated what is called the 'classical' fallacy in the approach to linguistic description. The Roman grammars like their ancestors, the Greek Grammars, cherished the misconception that only the language of the best writers was the best language, and that the purity of the language must be maintained at all costs.

Priscian grammar is comprehensive and runs in eighteen volumes. Priscian models himself on Thrax and Apollonius.

3.1.6 The Medieval Period

Since Latin occupied an important place in the educational system during the Medieval period throughout Europe, Latin grammars went on influencing the total infrastructure of thought. Latin was not only the medium of education but also the language of diplomacy, scholarship, church, and culture. Consequently a large number of manuals were written on Latin grammar to help the foreign learners in acquiring a fairly masterly knowledge of Latin. Most of these were based on Priscian and Donatus.

In the Middle Ages, a number of scholars known collectively as the **Modistae** or **speculative grammarians**, made the most notable contribution to the study of language. Latin grammar was integrated into a comprehensive scholastic theory of language, itself forming part of a scholastic philosophical system. The grammarians of this age, inspired by the scholastic ideals of science as a search for universal and invariant causes, deliberately attempted to derive the categories of grammar from the categories of logic, epistemology and metaphysics; or rather, to derive the categories of all the four sciences from the same general principles.

The name 'Modistae' was attached to them as they produced numerous works entitled *De Modis Significandi* 'concerning the ways of signifying'. Their other name, the speculative grammarians, is from the Latin word **Speculum** 'mirror'. It arose from the assumption that language in some way

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reflects a reality which underlies the physical world of objects. Their prime concern was to find out the nature of the relationship between words and this reality. Such a belief prompted them to the search for universals in grammar, on the assumption that all grammars are basically the same and only differ superficially. (This view has been revived recently, especially by Chomsky and is one of the most controversial topics in the study of linguistics now-a-days). The speculative grammarians held that all languages have words for the same concepts and all languages manifest the same parts of speech and other general grammatical categories.

3.1.7 The Renaissance and After

The era of discovery and exploration brought new knowledge about the languages of the world. Travellers and missionaries wrote grammars and dictionaries of languages they found in America, Africa and other parts of the world. Latin, Greek, Hebrew and Arabic, however, formed the main body of interest. The Renaissance scholars thought that they were making a radical break with the scholastic tradition of the Middle Ages. Scholars like Petrarch ridiculed the language of the schoolmen for its 'barbarism', and made Cicero their model and ideal in usage, style and humanism, holding that humanism was identical to 'civilization' as opposed to 'Barbarism'. Believing that the literature of classical antiquity was the source of all civilized values, they concentrated their energies upon the collection and publication of the texts of the classical authors. Once again grammar became an aid to understanding of literature and to the writing of 'good' Latin. Erasmus himself (in 1513) published a work on Latin syntax based on Donatus. The vernacular languages of Europe also attracted the attention of the scholars. There were grammars of Irish, Icelandic, Provençal and French in the field. Yet the classical tradition continued to dominate the scene. Language still meant the language of literature.

3.1.8 The 17th Century

The ideals of 'speculative' grammar were revived in France in the seventeenth century by the teachers of Port Royal. A celebrated French grammar *Grammaire general et raisonne* written by C. Lancelot and A. Arnauld—popularly known as the Port Royal Grammar—was published in the year 1660. 'Lancelot and Arnauld seem to have anticipated some of the trends we notice in the writings of the transformational-generative school of Noam Chomsky. The Port-Royal grammarians are logicians who examined the structure of language. Their writings emphasize the universal nature of the (logical) form of sentences, of linguistic capabilities and of grammatical categories.'

Through the Renaissance, grammar continued to uphold the classical tradition. It remained the art of speaking and writing correctly; its object was to discover the relations existing between the elements of language, whether the relations be 'natural' or 'conventional;' the grammarian's task was to describe 'good usage' and prescribe rules: it was a prescriptive and authoritative grammar.

3.1.9 The 18th Century

The eighteenth century was a period of grammars in the classical tradition and of dictionaries. All linguistic attempts were imitative, authoritarian and prescriptive (although original work was being initiated in comparative linguistics). The major works of this period are Dr. Johnson's Dictionary, James Harris's *A Philosophical Enquiry Concerning Universal Grammar* (1751), Joseph Priestley's *The Rudiments of English Grammar* (1761), Robert Lowth's *A Short Introduction to English Grammar* (1762), Lindley Murray's *English Grammar* (1795).

3.1.10 The 19th and 20th Centuries

At the end of the eighteenth century a new and highly important stream entered European linguistic scholarship. It was from India in two forms: (1) the discovery of Sanskrit, and (2) its indisputable relationship with the major language groups of Europe. It was a period of comparative and historical linguistics. Its great contribution was to the development of articulatory phonetics. In Europe general linguistics of the modern period largely grew out of the nineteenth century comparative and historical studies, especially those dealing with American-Indian communities. Britain contributed immensely in the field of phonetics, the British tradition being reinforced by the Indian tradition. At the end of the nineteenth century A.D. and the first half of the twentieth

century, Sweet and Jones were among the pioneers of modern phonetics, and the latter contributed to a great extent to the development of the phoneme theory. Among others, we must mention Saussure, Trubetzkoy, and Meillet in Europe, Sapir, Bloomfield, Harris, and Chomsky in America, and Firth and Halliday in Britain. Linguistics now has become inter-disciplinary, extremely wide and complex and kaleidoscopic in character.

3.2 The Geneva School

The leader and pioneer of this school was Saussure who will be discussed below. In general, the supporters of this school have tried to remain whole-heartedly loyal to the teaching and spirit of Saussure. For a long time the leaders were Charles Bally and A. Sechehaye, who had assumed the responsibility of publishing the *Course*. Bally, who tackled the difficult problem of the relationship between thought and its linguistic expression, renewed the study of stylistics by defining it as the study of the effective elements of language and by devoting his attention to the deviations that individual usage (*parole*) imposes on the system (*langue*). His work is remarkable for strict logic and care. Sechehaye applied himself to constructing a grammatical method (the psychological analysis of thought) that would introduce Saussurian concepts effectively into the field of teaching. Henri Frei is known as the promoter of functional linguistics.

The major concern of the linguistics of this school was the classification and interpretation of the principles of the *Course*.

3.2.1 Ferdinand de Saussure

The credit for bringing a revolution in the field of linguistics goes to the Swiss scholar Ferdinand de Saussure. At the age of twenty, while still a student at Leipzig, he left his linguistic imprint by publishing his monumental treatise on the Proto-Indo-European vocalic system. He studied under the neogrammarians Orthoff and Leiskien, yet refuted their atomistic approach to linguistics. He attempted to frame a coherent theory of linguistic science. In his work he was influenced by Brugmann, naturalistic philologist Schleicher, Geo-linguist Gillen, Whitney, and the Kazan school of linguistics, etc.



Did u know? Saussure is the founder of modern linguistics, the father of Structural Linguistics which came to be called descriptive linguistics also.

Saussure knew many languages—Sanskrit, Greek, Latin, Swiss, French, Old German, etc. At Paris, where he taught Sanskrit for ten years from 1881 to 1891 and served as secretary of the Linguistic Society of Paris, his influence on the development of linguistics was decisive. Later on he accepted the Chair of Linguistics at the University of Geneva where he taught linguistics between 1906 and 1911.

His Course de linguistique generate, (hereafter the *Course*) was published in 1916, three years after his death, from his lecture notes by his two students—Charles Bally (1865-1947) and Albert Sechehaye (1870-1946). Although, Saussure has about 600 pages on linguistics to his credit, yet his main work is the *Course*. It is this book that marks the beginning of modern linguistics and tries to study language synchronically for its own sake.

Saussure introduced the following notions in linguistics:

1. Synchronic and diachronic
2. Language, Langue and Parole
3. Linguistic Sign
4. Linguistic Value
5. Syntagmatic and Paradigmatic.

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Saussure's Theory of Linguistic Sign

Saussure mentions, "Some people regard language, when reduced to its elements, as a naming-process only—a list of words, each corresponding to the thing that it names". This conception assumes that "ready-made ideas exist before words..., it does not tell us whether a name is vocal or psychological in nature..., finally, it lets us assume that the linking of a name and a thing is a very simple operation—an assumption that is anything but true." It is this assumption that makes him regard language as "a system of sign in which the only essential thing is the union of meanings and sound images and in which both parts of the sign are psychological".

Saussure's sign is a two-sided psychological entity whose components are concept and sound image. In other words a 'sign' is a union of **signified** (concept) and **signifier** (sound-image). To speak more neatly, a sign is a wedding union of content and expression. The linguistic sign to Saussure is the basic unit of communication; a unit within the **langue** of the community. Being a relationship, and part of **langue**, it is thus a mental construct, a 'concrete entity'. Concepts, according to him, could not exist prior to words.

The linguistic sign has two primordial characteristics—**arbitrariness** and **immunity**. For example, the signified (the concept of a dog) has different signifiers (sound-images) in different languages—'**dog**' in English, 'kutta' in Hindi, 'swan' in Sanskrit 'nai' in Kannada, 'kukka' in Telugu, 'kukkar' in Bengali, etc.

This signifier is handed over to us by convention or custom. Hence it is unchangeable or immutable. The signs are multiple in numbers; their system is quite complex and can be grasped only through reflection.

It is on the basis of the linguistic sign that Saussure recalls the study of language 'semiology' (from Greek **Semeion** 'sign'). He says, "A science that studies the life of signs within society is conceivable; it would be a part of social psychology and consequently of general psychology...Linguistics is only a part of the general science of semiology..."

Though the signs are the concrete entities of linguistics, yet they exist "only through the associating of the signifier with the signified...considered independently. Concepts like "house", "white", "see", etc. belong to psychology. They became linguistic entities only when associated with sound images; in language, a concept is a quality of its phonic substance just as a particular slice of sound is a quality of the concept'. Linguistics then works in the borderline where the elements of sound and thought combine; their combination produces a form, not a substance.

Saussure's Theory of Associative Value

Saussure attributed to each linguistic sign a 'value' which is determined by its relationship within the total vocabulary in a language. For example, in French only one word **mouton** signifies two concepts—one that of the four legged animal sheep and the other that of the cooked meat. But English has two different signs for these two: **sheep** and **mutton**. Hence the French word, **mouton**, though having the same signification as English **sheep**, has a different value. It can signify two concepts, whereas the English word signifies only one concept.

The value of each word, according to Saussure, is determined by its opposition to other words. Values in writing function only through reciprocal opposition within a fixed system which consists of a set number of letters. It is this interdependence among the values of words which transform them all into a uniform language system, and that which pertains to the content of words, pertains to their form as well. "It is not sound in themselves which give words their meaning, but phonetic differences enabling us to distinguish a given word from all others—for it is with these phonetic differences that meaning is connected."

Saussure applied his principle of values not only to the conceptual but also the material aspects of language. Just as the conceptual value of the sign is determined by its relation to all the other signs in the language, that is, by its environment, so are the sounds characterized, not, as one might think, by their own positive quality but simply by the fact that they are distinct. Language, according to Saussure, is simply the functioning of linguistic oppositions; these oppositions yield a pattern of relationships the study of which constitutes linguistics.

Each one of the units of a system is thus defined by **relations** which it maintains with the other units and by the oppositions into which it enters. Thus the idea that the data of a language have value in themselves and are objective “facts”, absolute entities susceptible of being considered in isolation, was abandoned. In reality, linguistic entities can be determined only within the system that organizes and governs them, and in terms, of each other. They have no value except as elements in a structure. It is first the system which has to be isolated and described. Thus a theory of language as a system of signs and as arrangement of units in a hierarchy was worked out by Saussure, replacing the positivist notion of the linguistic **fact** by that of **relationship**.

Saussure's Contribution

Saussure's contribution in the field of linguistics is of great significance. His name is revered and respected along with the names of Panini, Bloomfield and Chomsky. He revolutionized linguistics, made it descriptive and structural, gave it a methodology and objectivity and brought it out of the rut it had fallen in. He is, indeed, one of the greatest theoreticians of the new era of linguistics. It was he who first of all emphasized repeatedly the importance of viewing language as a living phenomenon (as against the historical view) of studying speech (as opposed to written texts), of analysing the underlying system of a language in order to demonstrate an integral structure (in place of isolated phonetic tendencies and occasional grammatical comparisons), and in placing language firmly in its social milieu (as opposed to seeing it solely as a set of physical features). The tradition of study which has grown up around Saussure, has been to extract various theoretical dichotomies from his work and to concentrate on the clarification of these.

Saussure's great service to the study of language lies in a series of rigorous distinctions and definitions which he made concerning the nature of language. Though a historical linguist in the beginning, he detached himself from the tradition of linguistics as a purely historical study.

Following Saussure, linguists discovered that language forms a system: that it is a systematic arrangement of parts; and that it is made up of formal elements put together in variable combinations, according to certain principles of structure. It was the Saussurean emphasis on syntagmatic relationship in structure which was taken as the keynote of a number of theories of language thereafter, and which underlines many other linguistic approaches to language today, though their terminology sometimes differs considerably from that found in Saussure. His *Course* established language on the plane of universal terminology. The Saussurian distinction between **langue** and **parole** was the first germ of what has developed into a new branch of linguistics, phonology, the theory of the distinctive functions of phonemes and of the structure of their relationships. When they found it, N. Trubetzkoy and R. Jakobson expressly recognized Saussure (as well as Baudouin de Courtenay) as their precursor. Even Chomsky's notion of competence and performance owes a great deal to Saussure's notion of langue and parole.

Influence of Saussure

The structuralist trend which emerged in 1928, and which was soon to assume major importance, owes its origin to Saussure. Bloomfield gave a very laudatory review of the *Course*, and said that Saussure “has given us the theoretical basis for a science of human speech.” A. Meillet and M. Grammont were profoundly influenced by him. Meillet regretted Saussure's untimely passing away without finishing the work he had begun, and said: “After more than thirty years, the ideas expressed by Ferdinand de Saussure in his early work have not exhausted their vitality” (quoted by Beneveniste). Louis Hjelmslev's ‘glossematics’ is often reminiscent of Saussure's system.

Influenced partly by Saussure and partly by Lady Welby's campaign to improve language, Ogden and Richards published a survey of opinions about meaning, called *The Meaning of Meaning* in 1923.

Saussure's studies of values were later expanded into techniques for determining not only the limit that set off a given signification, but were equally helpful in structuring the entire vocabulary into semantic units. His proposals have been found useful in present day information theory too. Linguistic-field theory was also influenced by Saussure. The Linguistic Circle of Geneva produced a considerable amount of work, particularly on the more ‘social’ aspects of Saussure's thinking.

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Other 'schools' based on the linguistic circles of Copenhagen and Prague in particular went in different directions, but owed much to Saussure's original ideas. British linguistics was also influenced by Saussurean notions, although less directly. And it is largely on account of Saussure that the idea of **structuralism** achieved the status which was to make it the major linguistic theme of the next thirty years. As mentioned by Waterman, "Saussure's influence upon subsequent linguistic theory has understandably been of major importance. Indeed, in the Western world at any rate, all hues of structuralism have come under his influence."

Saussure's fountain principle is his notion of double entity. It is the core of his doctrines. It is from this principal notion that all other notions and distinctions of the *Course* and other works of linguistics emerge. Saussure succinctly considers human speech always in terms of double entity, formed of two parts of which the one has no value without the other. Everything in the language can be defined in double terms: bears the imprint and seal of an opposing duality:

- the articulatory and the acoustical duality;
- the duality of sound and sense;
- the duality of the individual and the society;
- the duality of langue and parole;
- the duality of the material and the immaterial;
- the duality of the syntagmatic and the paradigmatic;
- the duality of sameness and opposition;
- the duality of the synchronic and the diachronic, etc., etc.

Lastly the following two statements from Benvensite will reflect Saussure's contribution:

A forerunner in doctrines which in the past fifty years have transformed the theory of language, he has opened up unforgettable vistas on the highest and most mysterious faculty of man. At the same time, in placing on the horizon of science and philosophy the notion or "sign" as a bilateral unit, he has contributed to the advent of formal thought in the sciences of society and culture and to the founding of a general semiology.

and again there is no linguist today who does not owe him something. There is not a single general theory which does not mention his name.

3.3 The Copenhagen School

The greatest contribution of this school is GLOSSEMATICS, which is often described as the study that is "de Saussure taken to his logical conclusions" since it takes seriously the dictum that language is a form, not a substance. It is an approach to language developed by L. Hjelmslev (died in 1965) and associates at the linguistic circle of Copenhagen in the mid thirties. The linguists of this school wanted to develop a theory of language applicable to all languages.

Glossematics, which aims at making linguistic science fully independent of subjective appraisal, seeks to establish a kind of algebra of language, i.e. a net work of definitions forming a system that can serve as a model for the description of particular languages.

Sidney Lamb's Stratificational grammar is written under the influence of glossematics. Chomsky too seems to have been influenced by some of the theoretical assumptions of Hjelmslev.

3.4 The Prague School (Czechoslovakia)

The Prague School of linguistics is one of the major schools of structural linguistics. This was the name given to group of scholars working in or around Prague in the late twenties and early thirties. The Linguistics Circle of Prague was founded in 1926, and published an important journal (*Travaux du Cercle Linguistique de Prague*). Much of the inspiration for his work came from Saussure, but two of its most important scholars, Roman Jakobson and Nikola Trubetzkoy, were Russians.

The Austrian psychologist Karl Buhler also was very influential. Many specifically linguistic features of their work are thus not to be found in Saussure at all.

This school stressed the necessity of studying the observable and varifiable form of language—the phonetic form of utterance; that is, a study of SOUND as it functions in language. Linguists like Trubetzkoy and Jakobson, among others, contributed to the study of sound in language. Trubetzkoy's *Principles of Phonology* (1939) and Jakobson's theory of distinctive features as the basis for analysis of sounds are the most memorable contributions of the Prague School. The theory of distinctive features, i.e. the principles of establishing meaningful contrasts between sounds, led the Polish linguist Bondonin de Courtenay to propose a new unit, the phoneme, in linguistic analysis. The Prague school developed between the two world wars. Its main interests were phonology, stylistics, language planning and historical linguistics.

The scholars of the Prague school (in particular, Vilem Mathsius) developed an approach to syntactic analysis using the Saussurean notion of functionally contrastive constituent of sentences (it is known as the theory of functional sentence perspective), and this is currently being developed in Prague (by Josef Vachek, Jan Firbas, and other scholars) as the work of 'neo' Prague school. A convenient collection of articles is *A Prague School Reader in Linguistics*, edited by J. Vachek in 1964.

Roman Jakobson, an original member of the Prague School, later moved to America, where he further developed notions of the various functions of language, and of diachronic linguistics, and played an influential role in the development of generative phonology.

The concept of **functional** approach to linguistic analysis has also attracted the attention of Andre Martinet in France. His *Elements of General Linguistics and a Functional View of Language* shows the clear influence of the Prague scholarship. But he applies the idea of language as a system of function of elements more to syntax than was the practice so far.

3.5 The British Tradition of Linguistics

Until the late nineteenth century, the British tradition of linguistics was by and large imitative and was Greek and Latin oriented. For over a hundred years, until Henry Sweet's *A New English Grammar* in 1891, Bishop Loweth dominated linguistic discussion in England. Popularization of his grammar by such copyists as Lindley Murray and Samuel Kirham led to his work being sold in millions. As a result of the popularity of such grammars, 'the nineteenth' century has been termed 'the midsummer madness of grammar'. Sweet's method was analytical rather than dogmatic or prescriptive. Then appeared the famous work of Otto Jespersen. All these attempts, however, were on traditional lines, yet they were full of fresh insights.

The greatest contribution of England, however has been in the field of phonetics. Modern linguistics in Britain has been influenced by the European comparative historical studies of the nineteenth century and the American anthropological studies of the twentieth century. But both these currents were supplemented by the strong British interest in phonetics which was the gift of English scholars who had worked on the phonetics of Sanskrit. At the end of the nineteenth and in the first half of the twentieth centuries Sweet and Jones were among the pioneers of modern phonetics, and the latter contributed to a considerable extent to the development of phoneme theory. In the field of phonetics, the work of Prof. Gimson and Prof Abercrombie is also of great significance.

Then we have the Firthian school of linguistics. In fact the term 'Firthian' refers to the followers of the linguistic principles of J. R. Firth, Professor of General Linguistics in the University of London (1945-56). These principles, as subsequently developed, were largely in the field of phonology (where his views of 'prosodic phonology' were in opposition to traditional American phonemics), and in the study of meaning, where he developed a complex view of all levels of linguistic structure simultaneously contributing to total statement of the meaning of an utterance. The 'neo-Firthian' approach to linguistics is that which is primarily associated with the work of Michael

Halliday who developed **scale and category grammar** in the early sixties. To describe language structure his theory postulates four major theoretical categories, and relates them to various scales of abstraction. The categories comprise **class** (covering concepts such as 'verb' and noun'), **unit**

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(covering concepts such as 'sentence' and 'clause'), **structure** (covering concepts such as 'subject' and 'predicate'), and **system** (covering such concepts as the set of 'personal pronouns' or 'tenses'). Scales were the model constructs which related these categories, and the linguistic features subsumed under them, to each other. For example, one scale was the means of relating the 'units'. The various units recognized (sentence, clause, group, word, and morpheme) were thought to be arranged hierarchically on a **rank** scale, and each unit was conceived of as consisting of one or more of the units below it—a sentence was considered as consisting of one or more clauses, a clause as consisting of one or more groups, a group of one or more words, and a word as one or more morphemes. Halliday later modified this theory and his modified model of grammar is known as **systemic grammar**.

3.6 The American School of Linguistics

3.6.1 William Dwight Whitney

The tradition of American linguistics may be said to have begun with William Dwight Whitney (1827-1894) who was Professor of Sanskrit at Yale College. His principal works *Language and the Study of Language* (1867) and *The Life and Growth of Language* (1874) have had wide influence both in America and in Europe. His work belongs to the comparative method of linguistics.

3.6.2 Franz Boas

It remained for European-trained Franz Boas of Columbia University to set the stage for the development of a modern linguistic science in America. *His Handbook of American Indian Languages* (1911) contains a magnificent introduction which is still regarded as a remarkably acute discussion of the problems of descriptive linguistics.

Boas was an anthropologist who had studied physical sciences and geography. He concluded that culture must be studied in relation to language and literature. He worked out his own scheme for the orderly description of languages. He called for three basic divisions in the description of languages: (1) phonetics, (2) meaning, and (3) grammatical processes of communication and modification by which these meanings must be expressed. He mentioned that "the natural unit of expression is the sentence." He defined 'word' as a "phonetic group, which, because of its permanence of form, clearness and significance and phonetic independence, is readily separable from the whole sentence." The weakest part of his definition of 'word' was the 'phonetic'. He considered the study of the grammatical categories peculiar to each language.

It was Boas who emphasized the need for the linguist to 'go into the field', to get an accurate, detailed description of the human behaviour involved.

3.6.3 Edward Sapir

In 1922 in the preface to *Language* Sapir made it clear that he intended to communicate some new insights into the nature of language. He defined language as "a purely human and non-instinctive method of communicating ideas, emotions and desires by means of a system of voluntarily produced symbols." He thus opened the way to sound-meaning relationship. Yet he maintained that language is 'primarily an auditory system of symbols,' and that it is possible to discuss 'thought without language'. He set out to study the relations between language and culture. He regarded language as a 'prepared groove' for our experiences and as a 'garment wrapped about our thought' when we try to communicate our thoughts.

3.6.4 Leonard Bloomfield

It is Bloomfield who is rightly considered to be the father of modern American linguistics. What Saussure did for Europe, Bloomfield did for America in a lesser degree. He should be credited for making linguistics an autonomous and scientific discipline. He introduced a precise and restricted 'technical vocabulary for linguistic description and initiated immediate constituent analysis.' He also provided techniques for the survey of a wide variety of linguistic problems, both synchronic and diachronic. Whereas his predecessors in America had been social scientists, he was a true

behaviourist scientist of language. The Yale School of American linguistics (Bernard Bloch, Robert A. Hall, Jr. Z.S. Harris and others) is influenced by Bloomfield. His *Language* (1933), which was a revision of an earlier work, *Introduction to the Study of Language* (1914), has been termed “the Bible of American Linguistics.”

3.6.5 Noam Chomsky

A mathematician, psychologist, sociologist, philosopher, linguist, Noam Chomsky is the most dynamic, influential and revolutionary linguist of today. He is the Panini of modern era. Like Panini he too has provided a new shape and new brevity in the description of linguistic phenomena, has brought a revolution, and like Panini he too has brought linguistics and philosophy together. He is a linguist amongst mathematicians and a philosopher among the linguists. His ‘most original, and probably his most enduring contribution to linguistics is the mathematical rigour and precision with which he formalized the properties of alternative system of grammatical description (*Lyons, Chomsky*). He has become one of the greatest masters of human thought in our age. He is now not an individual merely but a whole school of linguistics. His transformational-generative grammar has transformed the whole concept of grammar, and generated new currents of thoughtful water—hot and cold. He has suggested means of correcting weaknesses of both the traditional and descriptive grammars.

Chomsky’s notion of the grammar of a language is a refreshing departure from the tradition. His proposal is “attractive, reasonable and clearly stated.” He rejects and replaces many of the assumptions that were so popular in structuralism.

His contribution is two fold: (1) he has questioned the accepted goals towards which linguistic theory was oriented, and redefined the aims and functions of a grammar; (2) he has specified the forms this new type of grammar should take. In the 1950’s linguistics was in the doldrums, particularly in America. The whole linguistic movement has become a narrow and introverted. There had been no major change of direction in linguistics for more than twenty years. When Chomsky arrived on the scene, linguistics was ready for a revolution.

Between 1933 and 1957, linguistics had set itself to the task of perfecting “discovery procedures”: that is, finding out a set of principles which would enable a linguist to ‘discover’ or extract a grammar from a mass of data collected from an informant. Grammar had come to mean an inventory or catalogue of linguistic data. At that time grammar was a perfect, objective description of a language, and the ultimate goal of linguistics was to find rules which led to such grammars. But Chomsky rejected such notions:

A grammar of particular language is, in effect, an hypothesis about the principles of sentence formation in this language. It represents a factual claim concerning the rules that underline the data that have been collected. We judge the truth or falsity of this hypothesis by considering how well the grammar succeeds in organizing the data, how satisfying an explanation it provides for a wealth of empirical observations, how far-reaching are its generalizations, how successfully it accommodates new data.

And therefore a theory of linguistic structure is an hypothesis about linguistic universals. It asserts that the grammars of all human languages are constructed on such-and-such a specified plan. Such a theory should explicitly characterize the form of grammars (the scheme for grammatical description) and should provide a method for selecting among alternative grammars.

His generative grammar thus is ‘not a large collection of neatly organized examples, supplemented with comments about these examples and hints as to how to construct similar ones. Nor is it a discussion of efficient and compact notations (e.g. inventories of phonemes, morphemes), categories or construction types ... A generative grammar is a system of explicit rules that assign to each sequence of phones ... a structural description that contains all information about how this sequence

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of phones is represented on each of the several linguistic levels (phonological, lexicical, syntactical and semantic). Further, this grammar is a device to generate all and the only grammatical sentences of a language, is not only explicit but also precise, and is full of observational, descriptive and explanatory adequacies. It does not rely on imagination, intelligence or intuition of the speakers, but is verifiable. It is the ability of the native speaker to use, produce and understand a natural language, the ability to distinguish between grammatical and ungrammatical, between grammatical and less grammatical string, the ability to perceive ambiguity in a grammatical string, the ability to perceive when two or more strings are synonymous. It is an innate system, and may be regarded as 'a proposal concerning certain fundamental and specific skills that the child brings to language learning.' It has the following types of data with it: (a) phonemic transcription, judgements of conformity of utterance tokens, (b) judgments of well-formedness, (c) ambiguity that can be traced to structural origin, (d) judgements of sameness or difference of sentence types, (e) judgements concerning the propriety of particular classification or segmentation.

Chomsky's basic assumptions and ideas may be summarized in the following way:

1. The speaker of a language should be the source of all linguistic study.
2. A fundamental distinction should be made between competence and performance.
3. Linguistic theory should be mentalistic.
4. By grammar is meant a finite grammar which generates an infinite number of sentences.
5. The grammar of a language is not a classification of some examples, nor an inventory of various units or items. If it were to be a model of the natural processes that go on in the mind of the speaker and the hearer, it must explain the cognitive process. This can be done only by establishing relationships between sentences and parts of sentences.
6. A grammatical theory should state linguistic goals clearly and explicitly; it should have observational, descriptive and explanatory adequacy. At the same time it should establish linguistic universals too. 'The statements in the grammars of earlier linguists amounted to more or less observations and hints about scattered phenomenon. Chomsky's grammar, on the other hand, has a method and a goal, and is explicit. It is a unified, coherent, constituent system related to other systems and in this sense, is revolutionary. It is more than a notational gimmick; it is a philosophy.'
7. Linguistics, psychology and philosophy are interrelated.
8. There are linguistic universals and linguists should ascertain the universals and essential properties of languages.
9. There must be a universal grammar of all natural languages, and all languages must be described in terms of these similar principles.
10. Human beings are born with an innate capacity to learn language and man is unique among all animals in possession of speech. Successive generations seem to acquire it without special training from parents. In this sense, language exists, and what really 'happens' is only the external manifestation of the innate capacity.
11. Human beings possess an innate system that generates infinite utterances. This system enables them to accept some sentences as grammatically acceptable and reject some as grammatically unacceptable.
12. The sentence, rather than sound, is the natural and proper place to begin work on grammar, and that language, however, is a relationship between sound and meaning,

3.6.6 Others

Now-a-days America is farther ahead than any other country in the world in the field of linguistics. Among the structuralists, the works of Harris, Bloch, Trager, Smith, Wells, Hockett, etc. deserve a special mention. Among the transformational generative grammarians the work of Katz and Fodor and that of Fillmore is becoming the centre of attraction and attention now-a-days.

3.7 Recognition of Indian Contribution by the West

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'It was in India', says Bloomfield, 'that arose a baby of knowledge which was destined to revolutionize European ideas about language.' It was the Indian grammar that 'presented to European eyes, for the first time, a complete and accurate description of a language, based not upon theory but open observation.' Indian linguistic studies are the oldest and most valuable. Whereas the ancient Greek and Roman linguistic studies were speculative and philosophical, the Indians were the first to have initiated descriptive and analytic studies of language based on observation. What Bloomfield, Chomsky, Fillmore, Firth and Halliday have suggested in the twentieth century, had been suggested by Panini, Patanjali, Katayana and Bharthari many centuries ago in India. During 2500 years history of human thought, none have excelled the Indians in the field of linguistic study.

Indians were the first to classify the sounds, to emphasize and establish the role of vocal organs in the production of speech, to say that the sentence was the basic unit of language, to remark that language without meaning was like the dry wood which needed fire to burn, and to establish and specify linguistic universals. It were the Indians again who gave a philosophical basis to grammar, and said that language existed in a speech community, in culture. Our theories of semantics and our advances in the field of etymology and morphology are the best in the world, and everyone in the east and the west owes to us something or the other in the field of phonetics. Our ancestors established the excellent standards of economy and precision in the description of linguistic phenomenon. As stated by Bloomfield again, we were the first in the history of human thought who 'worked out a systematic arrangement of grammar and lexicon.'

In a sense, modern linguistics began in 1786 with the discovery of Sanskrit by William Jones who declared:

The Sanskrit language, whatever be its antiquity, is of wonderful structure, more perfect than Greek, more copious than Latin, and more completely refined than either.

No one can deny the truth that Comparative Philology was born the day when Sanskrit was opened to the eyes of the Western world. The enthusiasm that stirred the hearts of those first pioneers into the realm of India's sacred language and India's ancient lore still throbs in the veins of their followers today and will quicken the pulse-beat of inspired workers for generations to come.

J.R. Firth, a distinguished linguist of England, has aptly said: Without the Indian grammarians and phoneticians whom he (Sir William Jones) introduced and recommended to us, it is difficult to imagine our nineteenth century school of phonetics.

Similarly W. S. Allen remarks:

In their recognition of the voicing process, the Indian phoneticians make one of their greatest single contributions.

and

Only in the latter part of the nineteenth century, under the influence of Indian teaching, does the recognition of the voicing process make headway.

In the words of R. H. Robins,

The Indian tradition of linguistic scholarship, devoted to the Sanskrit language, was of a very high order, and its influence on Western linguistics was profound, and is by no means over. Unlike the Greek and Latin grammarians and their medieval successors, Indian linguists exhibited great interest and masterly competence in the phonetic analysis and descriptions of their speech; and the development of the phonetic and phonological levels of linguistic analysis in the last hundred years or so owes a great deal to their work.

Robins further observes:

The work of the Indian linguistic scholars is distinguished historically by two features, the excellence of their phonetic description of Sanskrit, both as regards its accuracy and the systematic terms in which they stated it, and their ability to carry formal analysis below the word in terms corresponding to the modern morpheme.

3.8 The Vedas, Brahmins and Aranayakas

Sanskrit linguistics formally must have begun the day the Indian 'rishis' and 'munis' began to understand and interpret clearly the Vedic speech. The ancient Indians first turned to the study of their language for religious reasons to ensure that no corruption or modification should creep into the sacred texts of the Vedas when they were sung or recited.

The germs of this interest may be traced in the *Rigveda*, which dedicates two entire hymns to speech (X. 71 and X.125). It mentions three stages in the development of language: (1) inarticulate speech, (2) primitive articulate speech, and (3) language proper. The inarticulate speech was the hissing of serpents, or the humming of insects, the notes of birds, and the sounds made by other animals. The primitive articulations of speech were first employed by men in imparting names to objects, thus leading to the third stage, that is, language proper, which "was created by the wise, as men cleanse cornflour in a cribble" (X. 17,1.). There is another well-known hymn in the *Rigveda* (IV, 58,3) in which speech, according to Patanjali's interpretation (cf. the introduction to his *Mahabhasya*), is compared to a bull the sounds of which are attributed to three human organs—'the lungs, the throat, and the head.'

Aitareya Brahmana attributes speech to Indra, and compares it to the ocean, on account of its inexhaustible nature. Enough evidence in the Vedic literature is available to prove that the study of linguistics and phonetics had reached a considerably advanced stage between 1000 and 800 B.C. The taste grew during the period of the *Aitareya, Aranyakas*, which describes various sounds in terms of different objects in nature. It compares the consonants to the nights, and vowels to the days (II, 2,1), presumably owing to the superior perceptibility of the latter in normal speech. Furthermore, the consonants are compared to the body, the voice to the soul, and fricatives to the breath (II, 2, 1). At another place in the *Aitareya Aranyakas*, the plosives are said to be a form of the earth, the fricatives of the atmosphere, and the vowels of the firmament (III, 2, 5). Yet in another passage, the fricatives are compared to breath, plosives to the bones, vowels to the marrow, and semi-vowels to flesh and blood.

'Samhita' was interpreted as the interval between two syllables, the interval by which the accent or the quantity of two syllables was distinguished. The Samhita-text of the Vedic hymns was reduced to the *Pada*-form. In this period of the study of the *pada*-text rules of phonetic combination (*sandhi*), of accent, and of the formations of compounds, *samasa* were studied elaborately. The father of *Pada*-text was Shakalya. In the *Pada*-text, *mantras* were divided into *pada* and *shabd*.

3.9 The Pratisakhya

The *Pratisakhya*s are the first treatises on phonetics and formal grammar. They provide a scientific classification of Sanskrit sounds and the *ganas* (the lists of words remarkable for grammaticality in any way). These *Pratisakhya*s are: the *Rig Pratisakhya* on the *Rigveda*, the *Tetariya Pratisakhya* on the *Krishna-Yajurveda*, the *Vijasney-Pratisakhya* on the *Shukla-Yajurveda*, the *Rig-Tantra-Vyakarnha* on the *Sam-Veda*, and the *Atharva-Pratisakhya* on the *Atharva-Veda*.

'Siksha' implied "general phonetics" while 'Pratisakhya' signified "applied phonetics." It was the grammatical form of words which constituted the basis for the phonetic observations of the *Rig Pratisakhya*. The object of the treatise is to describe the characteristic features of the four parts of speech—the noun, the verb, the affix, and the particle. One main feature of the *Pratisakhya* was their treatment not of a language of 'priests who had to be drilled into a proper recital of the sacred texts' (as supposed by some Western scholars), but of a living language used and spoken by the people those days.

No definite historical dates of these *Pratisakhya*s are available. By and large, scholars say that they belong to 800-500 B.C., some others put them between 500 and 150 B.C. Nevertheless, they seem to be older than Panini.

3.10 Yaska's Nirukta

The oldest linguistic treatise preserved in India is the *Nirukta* (Explanation) of Yaska (fifth century B.C.). It offers brief explanations of the Rigvedic words which had already become obscure. Though the writers of the Brahmanas had already established themselves as etymologists, yet Yaska was the first methodical and scientifically minded etymologist. He hinted at the idea to be developed by later grammarians that words were ultimately to be traced to a limited number of roots. He considered the words listed in the *Nighantu*.

3.11 Panini

Panini in his work has mentioned the names of some grammarians. They were Aipishali, Kashyap, Gargya, Chakravarman, Galav, Shaktayan, Senak, Sphotyan and Bhardwaj. They were his predecessors and contemporaries. But it was Panini who struck out a new and original path. The whole of his work depends on the *Sivasutras* where the *Praytcharas* (the terminology he is going to adopt) are set forth. By his masterly analysis he arrived at the fundamental conception of roots—which are a set of monosyllabic constants, each a concept, and each expressing an action (*kriya*). He divided the parts of speech into three (*suvanta*, *tingat* and *avyaya*), and recognized the sentences as the basic unit of language. His *Asthadhayi* is the first formal grammar in the history of letters. It is not speculative or philosophical like the grammars of the Greeks and the Romans. It is descriptive and analytic, and treats phonology and morphology in great detail. It makes very brief statements about linguistic phenomena; most of them are designated by arbitrary sounds or complexes of sounds used as code-words. The underlying philosophy of the Paniniya system are the assumptions such as *dhatu* ('base', literally 'constituent'), *krit* (primary, 'demonstrative' literally 'making'), and *taddhita* ('secondary determinative' literally 'put to that'), etc.

Panini is the best known of the Indian linguists. His date is not certain, but around 500 B.C. or later has been suggested in the light of the evidence available. His grammar has been called by Bloomfield 'One of the greatest monuments of human intelligence.' Its main characteristic is its startling economy and brevity. It avoids repetition. It describes, with the minutest detail, every inflection, derivation, and composition, and every syntactic usage of Sanskrit. 'Panini is also to be credited with the device of zero in linguistic description, by which part of an apparently irregular set of morphological forms can, by posting an analytic entity without actual exponents as an element of their structure, be brought into line with the regular forms.

The influence of Panini's grammar upon Sanskrit was immense and long-lived. First of all *Asthadhayi* was a great and historical achievement of a great analysing mind, unparalleled and unique in the history of mankind, and, as such, it deserved great recognition. Secondly, whatever was analysed by him had already in his own days acquired a peculiarly sacred character in the minds of the people. Thus a religious authority was added to Panini to determine what was 'right' and what was 'wrong'. So besides being an analytic and descriptive account of the Sanskrit language, Panini's grammar became prescriptive too.

3.12 Katyayana

In the post-Panini era the first name that strikes the historian of linguistics, is that of Katyayana. There is a controversy about his time. Some scholars regard him as the senior of Panini. He was the leader of the Aindra school of Sanskrit grammar. The name 'Aindra grammarians' seems to imply that school was of a later date than Panini. But the terminology and the methods of this school are decidedly of a more primitive and less developed type than those of Panini. But at the same time it should not be forgotten that we find many of the technical terms of Panini even as early as in the works of Yaska. Perhaps 'the Aindra school is post-Paninian in date though pre-Paninian in substance.'

As the language had changed by the time of Katyayana, he felt the necessity of changing the grammar too. He set about amending Panini and took only those *sutras* which he thought required

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such treatment. He wrote *Virttikas*, and his grammar is full of descriptive adequacy and is also remarkable for its explanatory value.

3.13 Patanjali

In the words of Gray, 'With Patanjali (2nd Century B.C.) Indian linguistic science reached its definite form, for all later Indian treatises on the subject are little more than further commentaries on his work. The system thus established is extremely detailed as to phonology (including accent) and morphology; syntax it scarcely touches; etymologies are very frequent, in obvious words usually with success, but in obscure words frequently almost ludicrous; and these etymological attempts naturally lead to semantic explanations.' It is believed that his work *Mahabhasya* should have been written in 2nd Century B.C. His is a work written in defence of Panini, and it interprets elaborately the sutras of Panini. He also attacks Katyayana rather severely. But the main contribution of Patanjali lies in the treatment of the principles of grammar enunciated by him.

3.14 After Patanjali

After Patanjali the tradition of Sanskrit linguistics declines. No greater name than those of Panini, Katyayana and Patanjali, who are 'the trinity of Sanskrit grammar', appear on the scene. After them emerge the interpreters such as Jayaditya and Vaman (7th century A.D.). Bharthari's *Vakyapadiya*, however, is more important as it tries to interpret language from a philosophical point of view. It is a comprehensive syntactical study. Jayaditya and Vaman are only the commentators on Panini's work. The work known as *Vrittisutra* and popularly called the *Kasika* is the joint work of Jayaditya of Kashmir and Vaman. It is a running commentary on the *Astadhyayi* in a lucid style with a great deal of examples. It also supplies the names of many other writers now forgotten.

By this time Sanskrit had become a 'classic', practically a 'dead', language and had ceased to be popular idiom. Furthermore, the Moslem invasions put an end to learning and promotion of thought in India. And after that no significant work of great magnitude is available except that of Hemchandra (A.D. 1088-1172).



Did u know? Kaiyyata's *Pradipa* on the *Manabhasya* marks the end of an epoch in the history of Paniniya grammar.

Hemchandra was a holy Jain monk, and his grammar *Sabdanusasana*, with the object of saying, "in the shortest possible manner not only all that his predecessors had said upon the subject, but everything that could be said," could not be very successful as it had a sectarian basis. Nevertheless, his grammar deals exclusively with the Prakrits of his day and should be remembered as a work of a great writer whose fame and religious sanctity was of high order.

Grammar during the Middle Ages in India was studied under various *Sampradayas* (schools) such as Chandre-sampradaya, Jainendra-sampradaya, Shaktayan-sampradayasa, Hem-sampradaya, Katantra-sampradaya, Sarswat-sampradaya, Vopdeva and his sampradaya, Kramdishwar and Jaunar sampradaya, Saupadya sampradaya, and so on.

Self-Assessment

1. Choose the correct options:

- (i) The golden period of Greek grammar is
- (a) between 3rd century B.C. and 2nd century A.D.
- (b) between 4th century B.C. and 3rd century A.D.
- (c) between 1st and 2nd century B.C. (d) None of these

- (ii) The most famous latin grammars, which were used as standard textbook as late as Middle Ages, written by
- | | |
|-------------|----------------------|
| (a) Donatus | (b) Priscian |
| (c) Virgil | (d) Both (a) and (b) |
- (iii) The linguistic circle of Prague was founded in
- | | |
|----------|-------------------|
| (a) 1915 | (b) 1920 |
| (c) 1926 | (d) None of these |
- (iv) The tradition of American linguistic may be said to have begun with
- | | |
|------------------|---------------------------|
| (a) Franz Beas | (b) William Dwight Whitey |
| (c) Edward Sapir | (d) None of these. |

3.15 Summary

- Linguistics is the study of language, sometimes called the science of language. {1} The subject has become a very technical, splitting into separate fields: sound (phonetics and phonology), sentence structure (syntax, structuralism, deep grammar), meaning (semantics), practical psychology (psycholinguistics) and contexts of language choice (pragmatics). {2} But originally, as practised in the nineteenth century, linguistics was philology: the history of words. {3} Philologists tried to understand how words had changed and by what principle. Why had the proto-European consonants changed in the Germanic branch: Grimm’s Law? Voiceless stops went to voiceless fricatives, voiced stops to voiceless stops, and voiced aspirates to voiced stops.
- The Greeks and the Indians are the first to have started speculations about language and contributed tremendously to linguistic studies. In the words of John Lyons, “Traditional grammar, like so many other of our academic traditions, goes back to Greece of the fifth century before Christ. For the Greeks ‘grammar’ was from the first a part of ‘Philosophy’.
- A beginning of what is known now as ‘traditional grammar’ was made by the Greeks with discussions on the origin of language. The Greek philosophers debated whether language was governed by ‘nature’ or ‘convention’.
- At the beginning of the third century B.C. in the Hellenistic era, Alexandria in the Greek colony became the centre of intense literary and immense linguistic study, because a great library was established there. The manuscripts of the authors of the past, especially of the Homeric period were edited and re-edited.
- In linguistic studies, the Romans were content largely to model themselves on Greek patterns. They copied the Greeks slavishly in all aspects of the linguistic scholarship. Grammars of Latin were fitted in a Greek framework. In dealing with the ‘parts of speech’ the Latin grammarians made only such minor modifications as the differences between Greek and Latin forced to their attention. They, however, encouraged the view that the parts of speech, case, number, tense, etc. were universals and necessary categories of language.
- The leader and pioneer of this school was Saussure who will be discussed below. In general, the supporters of this school have tried to remain whole-heartedly loyal to the teaching and spirit of Saussure. For a long time the leaders were Charles Bally and A. Sechehaye, who had assumed the responsibility of publishing the *Course*.
- A mathematician, psychologist, sociologist, philosopher, linguist, Noam Chomsky is the most dynamic, influential and revolutionary linguist of today. He is the Panini of modern

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era. Like Panini he too has provided a new shape and new brevity in the description of linguistic phenomena, has brought a revolution, and like Panini he too has brought linguistics and philosophy together. He is a linguist amongst mathematicians and a philosopher among the linguists.

- The *Pratisakhya*s are the first treatises on phonetics and formal grammar. They provide a scientific classification of Sanskrit sounds and the *ganas* (the lists of words remarkable for grammaticality in any way). These *Pratisakhya*s are: the *Rig Pratisakhya* on the *Rigveda*, the *Tetariya Pratisakhya* on the *Krishna-Yajurveda*, the *Vijasney-Pratisakhya* on the *Shukla-Yajurveda*, the *Rig-Tantra-Vyakarnha* on the *Sam-Veda*, and the *Atharva-Partisakhya* on the *Atharva-Veda*.
- The oldest linguistic treatise preserved in India is the *Nirukta* (Explanation) of Yaska (fifth century B.C.).
- Panini in his work has mentioned the names of some grammarians. They were Aipishali, Kashyap, Gargya, Chakravarman, Galav, Shaktayan, Senak, Sphotyan and Bhardwaj. They were his predecessors and contemporaries.
- After Patanjali the tradition of Sanskrit linguistics declines. No greater name than those of Panini, Katyayana and Patanjali, who are 'the trinity of Sanskrit grammar', appear on the scene. After them emerge the interpreters such as Jayaditya and Vaman (7th century A.D.). Bharthari's *Vakyapadiya*, however, is more important as it tries to interpret language from a philosophical point of view. It is a comprehensive syntactical study.

3.16 Key-Words

1. Semantics : Semantics is the branch of linguistics that deals with the meanings of words and sentences.
2. Word-classes : A word-classes is a group of words that have the same basic behaviour, for example nouns, adjectives or verbs (Parts of speech).

3.17 Review Questions

1. Write briefly about the study of linguistics in ancient India.
2. Is Chomsky's grammar a revival of Panini in that it attempts to say in the minimum of *sutras* (formulae) the maximum about language?
3. Comment briefly on the contribution of Panini, Katyayana and Patanjali to linguistic studies.
4. Summarise the views of some western linguistics about linguistic studies in India.

Answers: Self-Assessment

1. (i) (a) (ii) (d) (iii) (c) (iv) (b)

3.18 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 4: Phonetics: Speech Mechanisms-Places and Manners of Articulation

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4.1 Definition of Phonetics

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Objectives

After studying this Unit students will be able to:

- Understand Speech Mechanisms.
- Know Places and Manners of Articulation.

Introduction

Phonetics is a branch of linguistics that comprises the study of the sounds of human speech, or—in the case of sign languages—the equivalent aspects of sign. It is concerned with the physical properties of speech sounds or signs (phones): their physiological production, acoustic properties, auditory perception, and neurophysiological status. Phonology, on the other hand, is concerned with the abstract, grammatical characterization of systems of sounds or signs.

The field of phonetics is a multiple layered subject of linguistics that focuses on speech. In the case of oral languages there are three basic areas of study:

Articulatory phonetics: the study of the production of speech sounds by the articulatory and vocal tract by the speaker
Acoustic phonetics: the study of the physical transmission of speech sounds from the speaker to the listener

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

These areas are inter-connected through the common mechanism of sound, such as wavelength (pitch), amplitude, and harmonics.

4.1 Definition of Phonetics

Phonetics is the scientific study of the production, transmission and reception of speech sounds. It studies the medium of spoken language. Touching upon physiology and physics, phonetics is now a pure science that studies speech processes, including the anatomy, neurology and pathology of speech, as well as the articulation, description, classification, production and perception of speech sounds. It looks at speech from three distinct but interdependent viewpoints: it studies the speech organs, which produce sounds of language; it studies waves, the physical form in which sounds are transmitted through the air from one person to another; and it studies the way in which human beings perceive sounds through the medium of the ear.

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Phonetics studies the defining characteristics of all human vocal noise, and concentrates its attention on those sounds which occur in the languages of the world. In other words, phoneticians try to study how the various organs of speech—the lungs, the larynx, the soft palate, the tongue and the lip—function in the production of speech. They also attempt to offer articulatory descriptions of various sounds by describing the air-stream-mechanism and the phonatory and articulatory processes involved. Acoustic phoneticians examine the physical nature of sounds and analyse the speech waves with the help of various instruments.

4.2 History of Phonetics

The ancient Hindu Rishis who composed the *Vedas*, must have been in the know of phonetics. The *Vedas* were to be chanted and pronounced very accurately. To mispronounce a Vedic **mantra** or **richa** was regarded as a sin of the first order. Even the classification and arrangement of sounds and their formation in **varnas** in Sanskrit give an evidence of a sound phonetic base of this language. In the works of Panini (400 B.C.?), Patanjali (2nd Century A.D.), etc., we can have some concrete and outstanding evidence of the ancient phonetics of India. At about the same time the Greeks and the Romans had also made language and speech the subject of serious study.

Early Studies

Besides the Indians, the Greeks, the Romans, the Egyptians, and the Arabs also took interest in speech around the seventh century A.D.

The Sixteenth Century

Some of the first writers whose work was concerned with the relation between the sounds of English and those of another language were John Palgrave (*Lesclarcissement de la langue Francoyse*, 1530), William Salesbury (*Dictionary in English and Welshe*, 1547), Thomas Smith (*De rectaet emendata linguae anglicae scriptone* 1568), John Hart (*Orthographie*, 1569), John Wallis (*Grammatical Linguae Anglicane*, 1563). Special mention must be made of Hart and Wallis. Besides making out his case for spelling reform and proposing a revised system, Hart took a keen interest in the description of the organs of speech, defined vowels and consonants and noted the aspiration of voiceless plosives. Wallis intended his *Grammar* to help foreigners to learn English more easily and also to enable his countrymen to understand more thoroughly the true nature of their language. A work of wider scope than Wallis' is Bishop John Wilkins' work who wrote *Essay toward a Real Character and a Philosophical Language* (1668). Wilkins also describes the functions of the speech organs, and offers a general classification of the sounds articulated by them. He offers suggestions for a phonetic alphabet.

The Seventeenth Century

Among the seventeenth-century phoneticians, the most important name is that of Christopher Cooper. His work on English pronunciation was first published in 1685 *Grammatica linguae Anicanae*, with an English edition appearing in 1687 (*The English Teacher, or The Discovery of the Art of Teaching and Learning the English Tongue*). Cooper wanted to describe, and prescribe rules for, the pronunciation of English for 'Gentlemen, Ladies, Merchants, Tradesmen, Schools and Strangers'. His aim was to describe English as it existed and not to reform its spelling.

The Eighteenth Century

The work done in the seventeenth century was continued in the eighteenth, but it lost its original spirit. The Eighteenth-century writers were deeply interested in the production of dictionaries to stabilize and standardize the language. The Dictionaries of Samuel Johnson (1755), Thomas Sheridan (1780), and John Walker (1791), are noteworthy contributions of this age. Some of the scholars in this age confused phonetics with rhetoric. And it was not until the nineteenth century that a clear distinction was made between the aesthetic judgments and the phonetic analysis.

The Nineteenth Century

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Since the Renaissance the elocutionists, language teachers, spelling reformers, shorthand inventors, auxiliary language enthusiasts, and missionaries have taken interest in phonetics. But it was at the beginning of the nineteenth century that phonetics received a real boost with the discovery of the ancient Indian phoneticians mentioned in the preceding paragraphs. In 1867 Alexander Melville Bell set out to classify all the sounds capable of being articulated by the human speech organs and to allot a systematic and related series of symbols to the sounds. By the end of the nineteenth century the developments in physiology and acoustics, and the accompanying progress in instrumentation (as demonstrated by Alexander Bell's system of *Visible Speech*), had stimulated a considerable amount of experimental research into all branches of phonetics. Also in the late nineteenth century scholars like Henry Sweet attempted at producing a phonetic alphabet; and the international phonetic Alphabet, which is still the system in general use, came to be formulated in 1889.



Did u know? In England Alexander J. Ellis (1814-90) presented to English children as well as to foreigners, an alphabet (*Phonotype*, 1847). He also developed other types of alphabet notably *Glossic* and *Palaeotype*.

The Twentieth Century

In the present century phonetics has developed immensely into various branches and is mature enough to claim an independent status as a discipline. Already some linguists have talked about **linguistic** sciences— by which they mean phonetics and linguistics, the former dealing with the general properties of human sound making the latter with those properties which are of importance in the system of a particular language. The focus of interest in this century has been to find out accurate and precise ways of the modern age. Spectrographs, oscillographs, sound-monitoring machines, tape-recorders, and a number of other electronic **devices** developed by communications engineering have been greatly helpful in studying sounds. The aim of phonetics now-a-days is not to provide a notation: it is to analyse speech into its basic units, which may thereafter be transcribed in some way. Hence the phonetic description is primary: a notation secondary. The contribution of Daniel Jones, Abercrombie, Gimson in Britain and of Roman Jakobson, Morris Halle, Chomsky, Trager and Smith in the United States, besides a host of European and Russian scholars, to the study of speech-sounds is of considerable significance.

4.3 Branches of Phonetics

The study of phonetics can be divided into three main branches: Acoustic, Auditory and Articulatory.

4.3.1 Acoustic Phonetics

Acoustic phoneticians analyse the speech waves with the help of instruments; they attempt to describe the physical properties of the stream of sound that issues forth from the mouth of a speaker.

It is in the field of acoustic phonetics that the most striking developments have taken place since the Second World War. Complex sound waves produced in speech can be analysed into their component frequencies and relative amplitudes. Considerable progress has also been made in *speech-synthesis*. Acoustic analysis has confirmed (if confirmation was needed) that speech is not made up of a sequence of discrete sounds. The articulatory features of rounding of voice, of nasality, of obstruction and of friction can also be identified acoustically. Acoustic phonetics has achieved a good deal of success in matters of the study of the sound of vowels, but regarding consonants it has not reached final conclusions.

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Acoustic phonetics is the study of the physical properties of speech sounds such as frequency and amplitude in their transmission.

4.3.2 Auditory Phonetics

Auditory phonetics is the study of hearing and the perception of speech sounds. It studies different auditory impressions of quality, pitch and loudness of sounds. The auditory classification of speech-sounds has not yet been carried to a decisive phase. At the present time, phonetics can be regarded as being made up of two main branches: articulatory and acoustic phonetics.

In a book like this, it would not be of any significant use to go into the details of acoustic and auditory phonetics. The results of acoustic and auditory phonetics need very minute observations and great scientific and technical expertise, and are often puzzling. These branches use instruments which cannot be used easily outside a laboratory, and cannot be transported successfully from one place to another. Hence the easiest approach to observations about speech is the traditional and most common approach of articulatory phonetics, and we shall be dealing with it in great detail.

4.3.3 Articulatory Phonetics

Articulatory phonetics recognizes that speech is produced by some kind of sound-making apparatus inside the human body, and that specific sounds may be related to specific movement of the apparatus. Hence it is the study of movement of the speech organs in the articulation of speech. Speech is produced by the movements of the organs of speech—lungs, larynx, soft palate, tongue, teeth and lips. The knowledge of the organs of speech, their relation to each other, and the way in which they are used while speaking, provides a sound basis for the classification of sounds of human languages.

4.4 Speech Mechanisms

4.4.1 A Speech Operation

The transmission in sound of the simplest concept in the mind is the result of a complicated chain of events. Any speech operation depends on a chain of speech acts. An effective act of speech is an exceedingly complex operation involving a number of operations. The first stage is psychological, the second is physiological and the third is physical. First of all a concept is formulated in the speaker's brain, and human nervous system transmits this linguistic message to the so-called organs of speech, articulatory or physiological. The organs of speech are thus activated and their movements create disturbances in the air; and these sound waves are received by the listener's ears. And at the listener's end, first of all the ears receive the linguistic codification; his nervous system passes this linguistic message to the brain, where the linguistic interpretation of the message takes place.

The linguistic message conveyed to the organs of speech by the nervous system activates the lungs, larynx and the cavities above in such a way that they perform a series of movements to produce a particular pattern of sound. For the production of speech we need an *air-stream mechanism*. (For the sounds of English we make use of an egressive pulmonic air-stream, that is, the air pushed out of the lungs through the mouth or nose or both. Generally all speech-sounds are made by an egressive pulmonic air stream of outgoing breath, although in a few languages (such as Hottenetot), there are speech-sounds, often called "clicks" which are made on ingressive (in going) air.

In this way the speech-sound is produced by the articulatory movements in the chest, throat, mouth and nose. The articulatory apparatus as shown in **Figure No. 4.1** (see next page), has four areas: (1) the larynx containing the vocal cords, (2) the oral cavity (mouth), (3) the pharyngeal cavity (throat): and, (4) the nasal cavity (nose). The airstream coming from the lungs may be

modified in any of these areas in a variety of ways. Such modification results from some kind of interference with the movement of the air stream. The most important roles are played by the vocal cords, soft palate, tongue, lips, teeth and nose.

Now we shall discuss the role of each speech organ in the production of speech:

1. The Diaphragm and Lungs: The diaphragm is situated in the human body below the lungs and controls the expansion and contraction of the lungs in breathing. It is involved in the production of chest-pulses on which the division of syllables is based. The lungs serve as a source for air, which passes upward through the wind-pipe and larynx consisting of the vocal cords on the mouth or both, and comes outwards. The source of energy for the production of speech is generally the air-stream coming out of the lungs. It is certainly so in the case of all sounds used in Punjabi, Hindi, and English.

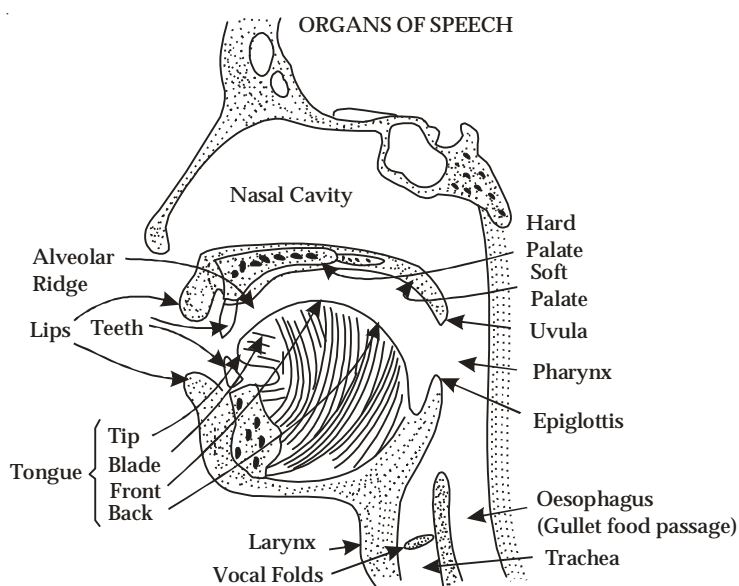


Figure 4.1

2. The Larynx and Vocal Cords: The larynx is the little box that is popularly called the Adam's apple. It is a casing, formed of cartilage and muscle, a bony box like structure in the front of the throat, situated in the upper part of the wind-pipe or the trachea, containing a valve like opening consisting of two membranous tissues, the **vocal cords**. The vocal cords are **like** a pair of lips placed horizontally from front to back. They are joined in the front, but can be separated at the back, and the opening between them is called glottis. When we breathe in and out, the glottis is open. This is the position of production of the breathed or voiceless sounds. For example /f, θ, s, h/ as in the English words /fan, think, sell, hell.

The glottis may be held tightly closed to produce a glottal stop or glottal catch (such as the speakers of English make between the two *oh*'s of "oh-oh" when said in surprise or reproof). The glottis may be held open in such a way that, when the air is passed through with sufficient energy, there is audible glottal friction as in /h/.

The major role of the vocal cords is that of a vibrator in the production of *voice*, or *phonation*. If the vocal cords are held loosely together, the pressure of the air coming from the lungs makes them vibrate: that is, they open and close regularly many times a second. This vibration of the vocal cords produces a musical note called *voice*, and sounds produced in this way are called *voiced-sounds*. For example, all vowel sounds and the consonants /v, z, m, n, / as in English words *valley, zero, mad, nail* are voiced.

Notes

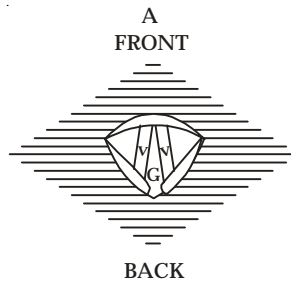


Figure 4.2

The vocal cords are open

G = Glottis

V = Vocal cords

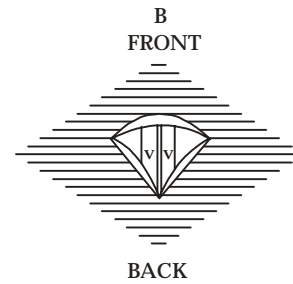


Figure 4.3

The vocal cords are closed

The number of times the vocal cords open and close in one second is known as the *frequency* of vibration, and this determines the *pitch* of the voice. Whereas tension of the vocal cords determines the *pitch*, the force with which air is passed out from the lungs, determines the *volume* of a sound.

3. **The Soft Palate:** The roof of the mouth, as shown in Figure 4.1 has three parts: the hard convex surface just behind the upper front teeth called the alveolar or teeth ridge; the hard concave surface behind it called the hard palate; and the soft palate at the back, with the uvula at its end.

The soft palate, also called the *uvula*, can be moved up to block the passage into the nose. The air from the lung then has to come out through the mouth only, and the sounds produced in this way are called *oral* sounds. All English sounds except /*m, n, ŋ*/ are oral sounds. If the soft palate is lowered and the passage through the mouth is closed, the air from the lungs comes out through the nose only. Sounds produced in this manner are called **nasal** sounds. For Example. /*m, n, ŋ*/ in English words **man**, **nun**, and **song**.

4. **The Tongue:** Of all the movable organs within the mouth, the tongue is by far the most fleshy, and is capable of assuming a great variety of positions in the articulation of both vowels and consonants. The tongue, for the convenience of description (as shown in figure 4.1) has four parts: the tip, the blade, the front and the back. It is the position of the tongue which is largely responsible for the difference in the sounds of various vowels. The extreme end of the tongue is called the **tip**. The part of the tongue opposite the alveolar ridge is called the blade, the part opposite the hard palate is called the front, and the part opposite the uvula is called the **back**.
5. **The Lips:** The position of lips affects very considerably the shape of the total cavity. They may be shut or held apart in various ways. When they are held lightly shut, they form a complete obstruction to produce bilabial stops, e.g. /*p, b*/. If the lips are held apart, the positions they may assume can be summarized in the following manner:
- (i) held sufficiently so close together as to allow friction in sound; ʃ sounds, for example, /the initial consonant/ in Hindi words **bhagwan**, **bhai**, **bhanja**.
 - (ii) held sufficiently far apart so that no friction is heard, yet in a **spread position**, as in the vowel in **see**.
 - (iii) held in a **neutral position**, that is, a relaxed position with a medium lowering of the lower jaw as in the vowel of **get**.
 - (iv) held in an **open position**: that is, a position in which lips are held relatively wide apart without any marked rounding, as in the vowel in **car**, **part**.
 - (v) held in a close **rounded position** as in the vowel of **do**.
 - (vi) held in an **open rounded position** as in the vowel of **got**.

4.4.2 The Active and the Passive Articulators

In the production of speech sounds we make use of two kinds of articulators, the active articulators and the passive articulators. The active articulators are the lower lip and the tongue; these are articulators that make contacts with the passive articulators. The passive articulators are the upper lip, the upper teeth, the roof of the mouth (divisible for the sake of convenience into the teeth-ridge, the hard-palate and the soft palate), and the back wall of the throat or pharynx. The passive articulators are called passive because they do not move to touch other articulators. On the other hand, the active articulators are called active because they remain active and come in contact with the passive articulators in the production of speech-sounds.

Self-Assessment

1. Fill in the blanks:

- (i) Among the seventeenth century phoneticians, the most important name is that of
- (ii) Alexander J. Ellis developed other types of alphabet notably glossic and
- (iii) The study of phonetics can be divided into acoustic, auditory and
- (iv) The larynx is the little box that is popularly called the

4.5 Summary

- Phonetics is a branch of linguistics that comprises the study of the sounds of human speech, or—in the case of sign languages—the equivalent aspects of sign. It is concerned with the physical properties of speech sounds or signs (phones): their physiological production, acoustic properties, auditory perception, and neurophysiological status. Phonology, on the other hand, is concerned with the abstract, grammatical characterization of systems of sounds or signs.
- Phonetics is the scientific study of the production, transmission and reception of speech sounds. It studies the medium of spoken language. Touching upon physiology and physics, phonetics is now a pure science that studies speech processes, including the anatomy, neurology and pathology of speech, as well as the articulation, description, classification, production and perception of speech sounds. It looks at speech from three distinct but interdependent viewpoints: it studies the speech organs, which produce sounds of language; it studies waves, the physical form in which sounds are transmitted through the air from one person to another; and it studies the way in which human beings perceive sounds through the medium of the ear.
- The ancient Hindu Rishis who composed the *Vedas*, must have been in the know of phonetics. The *Vedas* were to be chanted and pronounced very accurately. To mispronounce a Vedic **mantra** or **richa** was regarded as a sin of the first order. Even the classification and arrangement of sounds and their formation in **varnas** in Sanskrit give an evidence of a sound phonetic base of this language. In the works of Panini (400 B.C.), Patanjali (2nd Century A.D.), etc., we can have some concrete and outstanding evidence of the ancient phonetics of India. At about the same time the Greeks and the Romans had also made language and speech the subject of serious study.
- The transmission in sound of the simplest concept in the mind is the result of a complicated chain of events. Any speech operation depends on a chain of speech acts. An effective act of speech is an exceedingly complex operation involving a number of operations. The first stage is psychological, the second is physiological and the third is physical. First of all a concept is formulated in the speaker's brain, and human nervous system transmits this linguistic message to the so-called organs of speech, articulatory or physiological. The organs of speech are thus activated and their movements create disturbances in the air; and these sound waves are received by the listener's ears. And at the listener's end, first of all the ears receive the linguistic codification; his nervous system passes this linguistic message to the brain, where the linguistic interpretation of the message takes place.

4.6 Key-Words

1. Articulatory phonetics : The study of the production of speech sounds by the articulatory and vocal tract by the speaker.
2. Acoustic phonetics : The study of the physical transmission of speech sounds from the speaker to the listener.
3. Auditory phonetics : The study of the reception and perception of speech sounds by the listener. These areas are inter connected through the common mechanism of sound, such as wavelength (pitch), amplitude, and harmonics.

4.7 Review Questions

1. Define Phonetics.
2. Discuss the history of Phonetics.
3. What do you mean by speech mechanisms? Discuss various types of speech mechanisms.

Answers: Self-Assessment

1. (i) Christopher Copper (ii) Palaeotype (iii) Articulatory
(iv) Adam's apple

4.8 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 5: Classification of Speech Sounds: Vowels, Consonants-General Introduction

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5.5 Summary

5.6 Key-Words

5.7 Review Questions

5.8 Further Readings

Objectives

After studying this Unit students will be able to:

- Understand Classification of Speech Sounds.
- Discuss Vowels and Consonants.

Introduction

An ideal description of speech sounds should include information concerning the production, transmission, and reception stages of sounds, i.e., it should describe a sound in terms of the movements of the organs of speech, the nature of the sound which is produced and the features perceived by a listener. But such a description would be lengthy, complex and cumbersome, and may provide information much of which may be irrelevant to particular purpose. In an introductory unit like this, no acoustic information about speech sounds is included. The approach here is based on the articulatory or auditory criteria, or combination of both. Whereas sounds known as 'consonants' are described mainly in terms of their articulation, but in the description of 'vowel'-sounds the auditory impressions will dominate. Furthermore, in our phonetic analysis the syllable has been considered the basic unit, the theory being that each movement of the respiratory muscles, called a chest-pulse, produces a syllable, and "nothing less than a syllable can be produced."

5.1 Vowel and Consonant

The words vowel and consonant are very familiar ones, but when we study the sounds of speech scientifically we find that it is not easy to define exactly what they mean. The most common view is that vowels are sounds in which there is no obstruction to the flow of air as it passes from the larynx to the lips. A doctor who wants to look at the back of a patient's mouth often asks them to say "ah"; making this vowel sound is the best way of presenting an unobstructed view. But if we make a sound like s, d it can be clearly felt that we are making it difficult or impossible for the air to pass through the mouth. Most people would have no doubt that sounds like s, d should be called consonants. However, there are many cases where the decision is not so easy to make. One problem is that some English sounds that we think of as consonants, such as the sounds at the beginning of the words 'hay' and 'way', do not really obstruct the flow of air more than some

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vowels do. Another problem is that different languages have different ways of dividing their sounds into vowels and consonants; for example, the usual sound produced at the beginning of the word 'red' is felt to be a consonant by most English speakers, but in some other languages (e.g. Mandarin Chinese) the same sound is treated as one of the vowels.

5.1.1 Syllable, Vowel and Consonant

The units or sections into which words are divided while pronouncing them, are called syllables. The **Syllable** is a unit of pronunciation consisting of a vowel alone or of a vowel with one or more consonants. A vowel is the **nucleus** and consonant a **marginal element** in the syllable, that is, a consonant either at the beginning or at the end of a syllable. A consonant at the end of a syllable is called an **arresting** consonant, and at the beginning of a syllable is called **releasing** consonant. The marginal elements are not obligatory. These may occur either before the nucleus or after the nucleus, or some before and after the nucleus. The word **pick** consists of one syllable which consists of two marginal elements /p/ a releasing consonant and /k/ an arresting consonant and of a nucleus /i/, which is a vowel. It is also possible to have a cluster of two or three consonants before and/or after the nucleus. For example, in **school**/ sku: l/, we have the cluster of two consonants /s/ and /k/ which is the first marginal element. Some syllables are made up of the nucleus alone e.g. 'eye' or T /ai/. Usually it is a vowel, for example /i:/ in seat/si:t/, which forms a nucleus in a syllable; but in words of more than one syllable in English the nucleus can also be a consonant, e.g. /n/ and /l/ in the second syllable of **button** and **apple**.

It is also possible to explain the syllable in terms of the pulmonic air-stream mechanism. In the production of speech, the air from the lungs does not come out in a continuous stream at a constant pressure. The muscles of the chest push the air out in small puffs at the rate of approximately five times a second, and each puff of air produces a syllable. Each movement of the muscles of the chest is known as a chest-pulse. In order to produce a stressed syllable a re-inforced chest-pulse is used. The English words **president** has three syllables /prez-i-dent/, and the first syllable is stressed. And it is on the arrangement of stressed and unstressed syllables and the way they follow one another that the rhythm of a language depends.

The structure of a syllable can be represented by the formula CVC, C standing for consonant and V for vowel. Examples of some common structures of syllables used in English are cited below:

The Structure of the Syllable	The Exemplification of the Structure	The Nucleus
V	I or eye/ai/	/ai/
CVC	pack, back, lack, sack, that	/æ/
CV	die/dye/dai/	/ai/
VC	[in/in/ eat/i: t/ add/æd/	/i/ /i:/ /æ/
VCC	[ink/iŋk/ eagle/i: gl/	/i/ /i:/
CVCC	fox foks/	/ɔ/
CCVC	school/sku: l/	/u:/
CCCVC	[street/stri: t/ straight/streti/	i/ /ei/
CCVCC	crisp/krisp/	/i/
CVCCC	masks/ma:sk/	/a:/

It is on the basis of the number of syllables that the words are classified into monosyllabic, disyllabic and polysyllabic words. We have also seen that English permit initial consonant clusters of more than one C element in words such as **sky**/skai/ (CCV), and of three consonants in words such as **script**/skript (CCCVCC). English also permits consonant clusters in the final position. **Looks**/luks/CVCC) has a cluster of two consonants; **sixth**/siks θs / (CVCCC) has a consonant cluster of three consonants, and **sixths**/siks θs / (CVCCCC) has a cluster of four consonants in the final position. In the monosyllabic word **comb**—koum/, the structure of the syllable is CVC, because the final /b/ is silent and therefore it does not exist in the structure of the syllable. Sometimes two syllables in a word may be fused into one by suppressing a vowel sound in pronunciation, e.g. wa—t (e) ry, lit (e) ral. This process is known as **Elision or Slurring**.

5.1.2 Consonants

Definition: The word consonant has been derived from the Greek word **consonautem** which means the sound produced with the help of some other sound (vowel). Both the ancient Greeks and Indians defined the consonant as a sound produced with the help of a vowel. But such a definition is faulty and incomplete. First, there are sibilant consonants such as /s, ʃ, z, dz / and some laterals and nasals which can be pronounced without the help of any vowel. Secondly, there are some languages which have words without any vowel. For example, an African language Ibo has words as /η / and /g η /. Similarly, **strc prst skrz krk** ('Don't put a finger in your mouth') is a sentence in the Czech language which has no vowel at all. Hence a consonant has been defined by most modern phoneticians and linguists as a sound which is produced by a stoppage or partial stoppage of the breath, that is to say, in the production of a consonant the movement of air from the lungs is partially or fully obstructed as a result of narrowing or a complete closure of the air passage.

5.1.3 Contoids and Vocoids

The classification of sounds into vowels and consonants is customary irrespective of phonetic, phonological, or orthographic references. The current classification following Pike divides the sounds into **vocoids** (vowel sounds), **contoids** (consonant sounds), and **semi-vocoids** or **semi-contoids** (for example /w/ and /j/ in English). The terms contoids and vocoids refer to **phonetic form** only, without any reference to phonological function. A **vocoid**, according to Pike, is a segment formed with an open approximation of the articulators, with or without a velic closure, and with central passage or air stream. All other segments are **contoids**. The terms **vowel** and **consonant** are then reserved for phonological function. /w/ and /j/ are vocoids phonetically, that is, they are produced as the vocoids (vowel sounds) are produced, but they do not form the nucleus of a syllable in English; hence their function is like that of other consonants. In other words, these are the sounds which in form are like vowels but in their function they are like consonants. Hence these are called **nonsyllabic vocoids**. /n/ and /l/ are phonetically contoids (since in the production of /n/ there is a stricture of complete oral closure and in the production of /l/ there is a stricture of complete closure in the centre and the air passes through the sides only), but when they form syllabic nuclei, they are called **syllabic contoids**, e.g. **in bottle** and **button**.

Two Kinds of Contoids and Vocoids

In English, there can be syllabic vocoids, non-syllabic vocoids, syllabic contoids and non-syllabic contoids. **Syllabic vocoids** are all vowel sounds; they function as syllable nuclei. Phonetically the vocoids are vowels and their phonological function is that of a syllabic vocoid. The first-segment in the word **inn**/in/ is a syllabic vocoid. **Non-syllabic vocoids** are the sounds which are phonetically vocoids (are produced like vowels), but phonologically are contoids (function like ordinary contoids and do not form a nucleus in a syllable, and represent the C element in the syllable.) The first segment in **wet**/wet,/ is a non-syllabic vocoids. So is the first segment in /**yet**/jet/ a non-syllabic

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vocoid. **Syllabic contoids** are the sounds which are phonetically contoids (are produced like consonants), but their phonological function is that of syllabic nucleus, that is, they represent the V element in the structure of a syllable. /l/ in **apple** and **battle** and /n/ in **button** are syllabic contoids. **Non-syllabic contoids** (also called consonants) are the sounds that phonetically are contoids and phonologically represent the C (marginal) element in the structure of a syllable.

5.1.4 Description of Consonants

A description of consonantal sounds, according to A.C. Gimson, must provide answers to the following questions:

1. Is the air-stream set in motion by the lungs or by some other means? (pulmonic or non-pulmonic).
2. Is the air-stream forced outwards or sucked inwards? (egressive or ingressive)
3. Do the vocal cords vibrate or not? (voiced or voiceless).
4. Is the soft palate raised or lowered? Or, does the air pass through the oral cavity (mouth) or the nasal cavity (nose)?
5. At what point or points and between what organs does the closure or narrowing take place? (Place of articulation).
6. What is the type of closure or narrowing at the point of articulation? (Manner of articulation).

Thus the description of a consonant will include five kinds of information: (1) the nature of the air-stream mechanism; (2) the state of the glottis; (3) the position of soft palate (velum); (4) the articulators involved; and (5) the nature of the 'stricture'.

1. **The Nature of the Air-stream Mechanism:** Most speech sounds and all normal English sounds are made with an egressive pulmonic air-stream, e.g., the air pushed out of the lungs.
2. **The State of Glottis:** A consonant may be voiced or voice-less, depending upon whether the vocal cords remain wide apart (voice-less) or in a state of vibration (voiced).
3. **The Position of the Soft Palate:** While describing consonants we have to mention whether they are oral sounds (produced with soft palate raised, thus blocking the nasal passage of air) or nasal sounds (produced with the soft palate lowered).
4. **The Articulators Involved:** In the description of consonants, we have also to discuss the various articulators involved. The articulators are active (the lower lip and the tongue) and passive (the upper lip, the upper teeth, the roof of the mouth divided into the teeth-ridge, the hard palate, and the soft palate, and the back wall of the throat pharynx). In the production of a consonant the active articulator is moved towards the passive articulator. The chief points of articulation are bilabial, labiodental, dental, alveolar, post-alveolar, palato-alveolar, retroflex, palatal, velar, uvular, and glottal. In the case of some consonantal sounds, there can be a secondary place of articulation in addition to the primary. Thus, in the so-called **dark** /l/, in addition to the partial alveolar contact, there is an essential raising of the back of the tongue towards the velum (velarization); or, again some post-alveolar articulator of 'r' (r) as in **red** are accompanied by slight lip-rounding (labialization). We can classify consonants according to the place of articulation.
5. **The Nature of Stricture:** By the nature of stricture we mean the manner of articulation. This stricture of obstruction made by the organs may be total, intermittent, partial, or may merely constitute a narrowing sufficient to cause friction.

When the stricture is that of a complete closure, the active and passive articulators make a firm contact with each other, and prevent the passage of air between them. For instance, in the production of /p/ as in **pin** and /b/ as in **bin**, the lips make a total closure.

The stricture may be such that air passes between the active and passive articulators intermittently. Such a stricture is called intermittent closure, and involves the vibration of the active articulator against the passive. The Scottish /r/ as in **rat** is an example. The intermittent closure may be of such a short duration that the active articulator strikes against the passive articulator once only. The English /r/ in the word **very** is an example; the tip of the tongue (active articulator) makes one tap against the teeth-ridge (passive articulator).

In the partial stricture, the air passes between the active and passive articulators continuously, but with some difficulty. The sounds thus produced are clear /l/ and dark /l/ in **late**, and **hill**, the **clear** and the **dark** 'l' respectively.

And lastly, the stricture may be such that the air, while passing between the active and passive articulators, produces audible friction. /f, v, θ, ð, s, z, ʃ, ʒ, h/ in English are examples of this kind of stricture. Or the air may pass without friction. Examples are /w/ in **wet**, /j/ in **yes** and flap /r/ as in **butter**. A stricture which involves audible friction, can be called a stricture of close approximation, whereas one which involves no such friction can be called a stricture of open approximation.

If we are to describe some of the consonant sounds in terms of the points discussed in the preceding paragraphs, we shall do that in the following manner (we shall not make any reference to the air-stream mechanism since we have already mentioned that all English sounds are made with a pulmonic egressive air-stream):

1. /p/ in the English word **pack**.
 - (i) The vocal cords are held apart and the sound is voiceless.
 - (ii) The soft palate is raised and the nasal passage is closed.
 - (iii) The active articulator is the lower lip.
 - (iv) The passive articulator is the upper lip.
 - (v) There is a stricture of complete closure.
2. /b/ in the English word **back**.
 - (i) The vocal cords vibrate, and the sound produced is voiced.
 - (ii) The soft palate is raised and the nasal passage is closed.
 - (iii) The active articulator is the lower lip.
 - (iv) The passive articulator is the upper lip.
 - (v) There is a stricture of complete closure.
3. /g/ in the English word **god**.
 - (i) The vocal cords vibrate, and the sound produced is voiced.
 - (ii) The soft palate is raised and the nasal passage is closed.
 - (iii) The active articulator is the back of the tongue.
 - (iv) The passive articulator is the soft palate.
 - (v) There is a stricture of complete closure; the back of the tongue makes a complete closure with the soft palate.
4. /t/ in the English words **cat**.
 - (i) The vocal cords are wide apart, and the sound is voiceless.
 - (ii) The soft palate is raised and the nasal passage is closed.
 - (iii) The active articulator is the tip of the tongue.
 - (iv) The passive articulator is the teeth ridge.
 - (v) There is a stricture of complete closure. The tip of the tongue makes a firm contact with the teeth ridge.

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5. /m/ in the English word **man**.
 - (i) The vocal cords vibrate and the sound is voiced.
 - (ii) The soft palate is lowered and the air passes through the nose.
 - (iii) The active articulator is the lower lip.
 - (iv) The passive articulator is the upper lip.
 - (v) There is a stricture of complete oral closure.
6. /v/ in the English word **van**.
 - (i) The vocal cords vibrate and the sound is voiced.
 - (ii) The soft palate is raised and the nasal passage is closed.
 - (iii) The active articulator is the lower lip.
 - (iv) The passive articulators are the upper front teeth.
 - (v) The stricture is one of close approximation. (The lower lip is brought very near the upper front teeth. The air passes between them with audible friction.)
7. /j/ in the English word **yet**.
 - (i) The vocal cords vibrate and the sound is voiced.
 - (ii) The soft palate is raised.
 - (iii) The active articulator is the front of the tongue.
 - (iv) The passive articulator is the hard palate.
 - (v) There is a stricture of open approximation. The front of the tongue is brought near the hard palate but the space between them is sufficient for the air to pass without any audible friction.

Hence the kind of stricture involved in the articulation of various sounds is as follows:

1. plosive: complete closure,
2. affricate: complete closure and slow release,
3. nasal: complete oral closure,
4. fricative: close approximation,
5. lateral: complete closure in the centre of the vocal tract and the air passes along the side (s) of the tongue,
6. vowel: open approximation,
7. semi-vowel: open approximation,
8. frictionless continuant: open approximation.

5.1.5 Classification of Consonants

Consonantal sounds are classified on the basis of (i) voicing, (ii) place of articulation, and (iii) manner of articulation.

1. **Voicing:** On the basis of voicing, sound can be classified into voiced and voiceless sounds. The voiced sounds in English are /b, d, g, v, ð, z, dz, m, n, ŋ, l, r, w, j/. The voiced sounds in Hindi are /ग, घ, ज, झ, ङ, ढ, द, धा, ब, भ, य, र, ल, व, म, न, and other nasalized consonants and all vowels.

All the vocoids and semi-vowels are voiced sounds, whereas among the consonants some are voiced and some voiceless. If the vocal cards vibrate when a sound is produced, it is said to be voiced.

2. **The Place of Articulation:** Consonants are divided as given in the following table on the basis of the articulatory points at which the articulators actually touch, or are at their closest.

5.1.6 The Classification of English Consonants according to the Place of Articulation

Notes

Classification	Articulators	Examples from English
Bilabial	Upper lip and lower lip	/p b m w/
Dental	Teeth and tip of tongue	/θ ð /
Labio-dental	Lower lip and upper teeth	/f v/
Alveolar	alveolar (teeth) ridge and tip and blade of tongue	/t d s z r l n/
Post-alveolar	Hard palate and tip of tongue	/r/
Palato-aveloar	Hard palate – alveolar and tip, blade and front of tongue	/ʃ/z/ ʒ /dz/
Palatal	Hard palate and front of tongue	/j/
Velar	Soft palate and back of tongue	/k g ŋ /
Glottal	Glottis (vocal cords)	/h/

This table includes the classification of all the consonants of English. To exemplify the classification of the consonants in Hindi we can present this table in the following way:

5.1.7 The Classification of Hindi Consonants according to the Place of Articulation

	Articulators	Examples from Hindi
Velar	Soft palate and back of tongue	{क ख ग घ ङ}
Palatal	Hard palate and tip and front of tongue	{च छ ज झ ञ अ य ञ्}
Retroflex (Cerebral or cacuminal)	Hard palate and tip of tongue curled back	{ट ठ ड ढ ण र}
Dental	Teeth and tip of tongue	{त थ द धा न}
Labio-dental	Lower lip and upper teeth	{व}
Bilabial	Two lips	{प फ ब भ म}
Alveolar	Alveolar ridge and lip and blade of tongue	{र ल स}
Glottal (laryngeal)	Glottis (vocal cords)	{ह}
Uvular	Uvula and root of	{क, ख, ग,}

5.1.8 The Manner of Articulation

According to the manner of articulation, which describes the type of obstruction caused by the narrowing or closure of the articulators, the consonants can be divided into stops, affricates, fricatives, nasals, rolls, laterals, and semi-vowels or frictionless continuants. We shall discuss these one by one.

1. **Stop:** In the production of a stop, the oral and nasal passages are closed simultaneously. The active and passive articulators come in contact with each other forming a stricture of complete closure and preventing the air from escaping through the mouth. The soft palate is raised and thus the nasal passage is also blocked. (This is also known as velic closure). The air behind the oral closure is compressed, and when the active articulator is removed from contact with passive one, the air escapes with an explosion. Stops are also known as mutes, explosives, plosives or occlusives, /p/ in **pat** and /b/ in **bat** are the examples of stops.
2. **Affricate:** If the stop is not held for any appreciable time and released slowly, we get an affricate rather than a plosive, e.g. /tʃ/ in **chair** and /dz/ in **jail**.
3. **Nasal:** In a nasal contoid, the breath stream is interrupted at some point in the oral cavity or at the lips, while being allowed to enter the nose and create resonance there. Thus a nasal is produced by a stricture of complete oral closure. The soft palate is lowered and the air passes through the nose. All nasal sounds are voiced. Examples /m, n, v/ in English.
4. **Trill (or Rolled Consonants):** In the production of a trill, the active articulator taps several times against the passive articulator. The stricture involved can be called a stricture of intermittent closure. Scottish /r/, for example in **red**, in which the tip of the tongue strikes against the teeth ridge a number of times, is called a trilled consonant. In Hindi words like **Ram/** ra: m/ and **rath /r ə θ /** we have this variety of /r/.
5. **Flap:** For a flap the active articulator strikes the passive articulation once only. For example the /r/ in the English word **very**, in which the tip of the tongue strikes against teeth ridge only once.
6. **Lateral:** Laterals are produced by a stricture of complete closure in the centre of the vocal tract, but the air passes out every one or both side of the tongue. For example, /l/ in **late**.
7. **Fricative:** In the production of a fricative consonant the stricture is one of close approximation. The active articulator and the passive articulator are so close to each other that passage between them is very narrow and the air passes through it with audible friction. Examples are /f/ in **face**, /v/ in **vain** /θ/ in **think**, /ð/ in **them**, /s/ in **sail**, /z/ in **zero**, /ʃ/ in **ship**, /ʒ/ in **measure**, /h/ in **hat**.
8. **Frictionless Continuant:** In the production of a frictionless continuant the stricture is that of open approximation. For example in the production of /r/ in **red, read, real, ready**, the active articulator (tip of the tongue) is brought just behind the passive articulator (alveolar ridge) so that there is plenty of space between the two articulators, and the air passes between them without friction; and hence the term "frictionless continuant." Hindi "v" as in **vah** is a frictionless continuant. Gimson includes the English /r/ in words like **red** and **read** among the frictionless continuants, but the English (r) also occurs as a fricative as in **try, cry, ray, pray, grow, very, sorry**. Jones includes it in the list of fricatives and Gimson in the list of frictionless continuants.
9. **Semi-vowel:** A semi-vowel is a vowel glide functioning as a consonant i.e., as the C element in syllable structure. In terms of articulation semi-vowels are like vowels, but they don't behave like vowels. Semi-vowels are never stable; they can never be pronounced by themselves. They are sounds in transition. Examples are /j/ in **yet** and /w/ in **wet**. These are also called semiconsonants too.
10. **Fortis and Lenis:** When we have voiceless/voiced pair, the two sounds are also distinguished by the degree of breath force and muscular effort involved in the articulations, e.g.s is comparatively strong or **fortis**, and z is comparatively weaker **lenis**.

We summarize the classification of the consonants in English on the basis of the manner of articulation in the following table.

Name of the Class	Structure Involved	Examples	Notes
Stop	Complete closure	/p b t d k g/	
Affricate	Closure, then slow separation	/tʃ dʒ/	
fricative	Narrowing, resulting audible friction	/f v θ ð s z /ʃ ʒ/	
Nasal	Complete closure in mouth, air escapes through nose	/m n ŋ/	
Rolled	Rapid intermittent closure	/r/	
Lateral	Closure in the centre of mouth, air escapes over the sides of tongue	/l/	
Frictionless	Slight narrowing, not enough to cause friction	/r/	
Continuant	Slight narrowing, not enough to cause friction.	/w j/	
Semi-vowels/ Semi-consonants			

Given on the next page are some figures (from Gleason's book) showing the manner of articulation of some English consonant sounds.

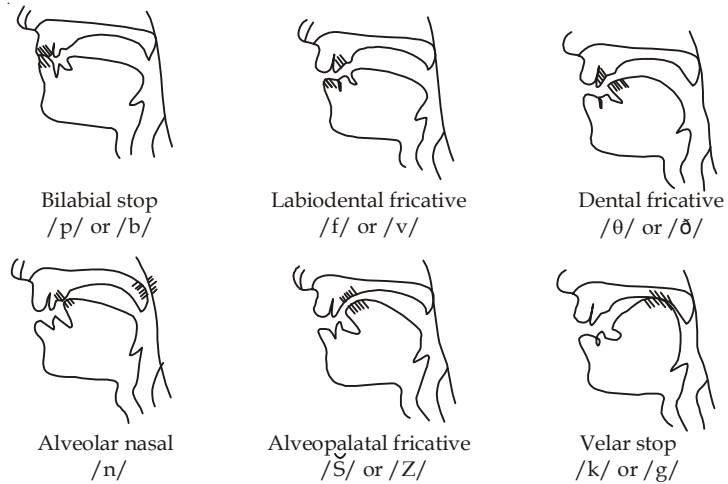
5.1.9 Identification of Consonants

We can describe and identify a consonant briefly by using a three-term label, indicating (i) whether the sound is voiceless or voiced, (ii) the place of articulation; and (iii) the manner of articulation. For example, /p/ in **pant** can be described as a voiceless, bilabial stop (or plosive), /b/ in **bet** as a voiced, bilabial stop, /m/ in **mango** as voiced bilabial nasal, /ŋ/ in **hand** as a voiced velar nasal, /z/ in **zoo** as a voiced alveolar fricative, /tʃ/ in **chair** as a voiceless palato-alveolar affricate; /f/ in **fan** as a voiceless labio-dental fricative, and so on so forth. We should have described the consonants of English in these terms while dealing with the phonology of English, but we list them below to facilitate study:

The consonants are represented on a two-dimensional grid. The grid takes account of three features of each sound; (i) whether the sound is **voiced** or **voiceless**; (ii) **the point of articulation**; and (iii) **the manner of articulation**. In the grid of points of articulation are set out horizontally and the types of manner of articulation are arranged vertically.

	LOWER ARTICULATOR	UPPER ARTICULATOR
Bilabial	(lower) lip	upper lip
Labiodental	(lower) lip	(upper) teeth
Dental	tip of tongue	(upper) teeth
Alveolar	tip of tongue	upper gums
Alveopalatal	front of tongue	far front of palate
Velar	back of tongue	velum (soft palate)
Glottal	the two vocal cords	

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ENGLISH ARTICULATIONS

5.2 Vowels

Vowels may be defined with an open approximation without any obstruction, partial or complete, in the air passage. They are referred to as vocoids in phonetics. They can be described in terms of three variables:

1. height of tongue
2. part of the tongue which is raised or lowered
3. lip-rounding.

		BILABIAL	LABIO-DENTAL	DENTAL	ALVEOLAR	ALVEO-PALATAL	VELAR	GLOTTAL
CONSONANTS	STOPS : VOICELESS	P					K	
	VOICED	b					g	
	AFFRICATES : VOICELESS					tf		
	VOICED					d ₃		
	FRICATIVES : VOICELESS		f	θ	s			h
	VOICED		v	ð	z			
	LATERAL : VOICED				l			
NASAL : VOICED	m			ŋ		ŋ		
SEMIVOWELS : VOICED	w			r	j			

CLASSIFICATION OF ENGLISH CONSONANTS

So vocoids are normally classified according to these three criteria: tongue-height (**high, mid, low, or close, half-open and open**); tongue advancement (**front, central, back**); and lip-rounding (**rounded and unrounded**).

In order to describe the vowels, we usually draw three points in the horizontal axes: front, central and back, referring to the part of the tongue which is the highest. So we have

1. **front vowels**, during the production of which the front of the tongue is raised towards the hard palate. For example, /i, i:, e:, a/ in Hindi, and /i, i:, e, æ / in English as in **sit, seat, set**, and **sat** respectively.
2. **back vowels**, during the production of which the back of the tongue is raised towards the soft palate. For example /o:, u, u:/ in Hindi, and / a:, ɔ:, ɔ:, u, u:/ in English as in **cart, cot, caught, book** and **tool** respectively.
3. **central vowels**, during the production of which the central part of the tongue (the part between the front and the back) is raised. For example, /ə/ in Hindi, and /ə, ə:, ʌ / in English as in **about, earth** and **but** respectively.

On the vertical axis we usually draw four points: close, half-close, half-open, and open. They are also referred to as high, high mid, mid (middle), low mid, and low by some phoneticians, especially the American phoneticians. On the basis of the vertical axes we have the following types of the vowels.

A **close** vowel is one for which the tongue is as close to the roof of mouth as possible. For example, /i:/ in **sea** and /u:/ in **zoo**.

An **open** vowel is one which is produced with the tongue as low as possible and the jaws are wide open. For example, /a:/ in **card** and /ɔ:/ in **hot**.

The two intermediate points—half-close and half-open—are obtained by dividing the distance between the two extreme positions into three equal points. These are customarily represented in the following manner.

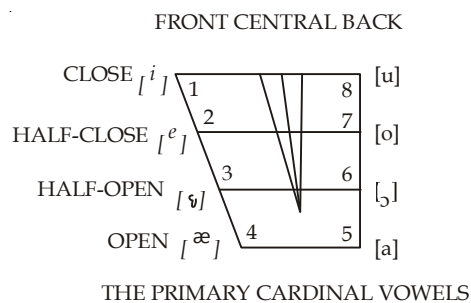


Figure 5.1

The above figure represents the Primary Cardinal Vowels on the horizontal and vertical lines suggested by Daniel Jones. These cardinal vowels do not exist in any language in this form, but are phonetic hypotheses meant to facilitate the description of vowels.

As regards lip-rounding, in British R.P., ... front and central vowels are automatically unrounded and back vowels (except /a:/) are automatically rounded. So this distinction is omitted by some phoneticians, but some others still maintain it.

We can describe a vowel by using a three-term label, indicating the height, the direction (advancement) of the tongue, and the position of the lips. For example.

1. /a:/ in the English word **arm**, back, open, unrounded vowel.
2. /ɔ:/ in the English word **hot**, back open, rounded vowel.
3. /i:/ in the English word **need**, front, close, unrounded vowel.
4. /u/ in the English word, **tooth**, back, close, rounded vowel.

Notes

To describe the vowel sound we mention whether it is open or close, half-close or half-open, front or back or central long or short, whether the tongue is tense or lax while the vowel is being pronounced, and whether lips are spread, neutral, open rounded, or close rounded. All English vowels are voiced. So, for every vowel, we must state that it is voiced.

5.3 Diphthongs

From the point of view of their quality, vowel sounds are of two types: monophthong and diphthong. Monophthongs are pure vowels and diphthongs are gliding vowels. 'A vowel that does not change in quality' may be called a monophthong; and a vowel sound with a continually changing quality may be called a diphthong.

A pure vowel is one for which the organs of speech remain in a given position for an appreciable period of time. A diphthong is a vowel sound consisting of a **deliberate**, i.e. **intentional glide**, the organs of speech starting in the position of one vowel and immediately moving in the direction of another vowel. A diphthong, moreover, consists of a single syllable – that is, the vowel-glide must be performed **with a single impulse of the breath**; if there is more than one impulse of breath, the ear perceives two separate syllables.

A diphthong, thus, always occupies one syllable. If two adjacent vowels form the nuclei of two successive syllables, they are not a diphthong. For example the vowels in **bay**, **boy**, and **buy** are diphthongs, but the vowels in **doing** are two different vowels since they belong to two different syllables.

One end of the diphthong is generally more prominent than the other. Diphthongs are termed 'decrescendo' or FALLING if the first element is louder or more prominent than the second, and 'crescendo' or RISING if the second element is louder or more prominent than the first. All the English diphthongs are falling diphthongs, because in them the first element is louder or more prominent than the second element.

Diphthongs are represented in phonetic transcription by a sequence of two letters, the first showing the position of the organs of speech at the beginning of the glide, the second their position at the end. In the case of the 'closing' diphthongs the second letter indicates the point **toward which** glide (movement) is made.

In English, for example, there are two kinds of diphthongs: the closing diphthongs and the centring diphthongs. The closing diphthongs in English are:

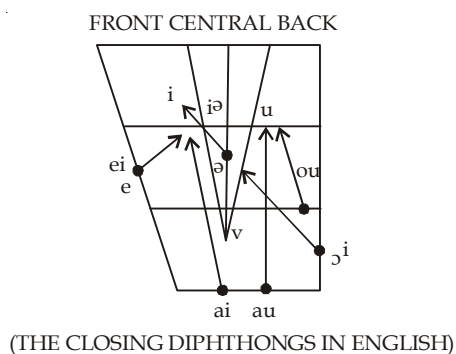


Figure 5.2

/ei/ as in /bei/ (bay)

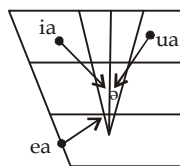
/ou/ as in /bout/ (boat)

/ai/ as in /bai/ (buy)

/au/ as in /bau/ (bough)

/ɔi/ as in /bɔi/ (boy)

FRONT CENTRAL BACK



(THE CENTRING DIPHTHONGS IN ENGLISH)

Figure 5.3

The centring diphthongs in English are:

/iə/ as in /piə/ (pear)

/eə/ as in /peə/ (pair)

/uə/ as in /puə/ (poor)

5.3.1 Description of Diphthongs

Diphthongs are described by indicating the position of the tongue and the lips in the beginning and at the end of the glide. For example, /ai/ in the English word **buy** can be described as a glide or movement from front, open, unrounded to front, half-close, unrounded. The descriptions of the diphthongs of R.P. are given below:

- /ou/ as in **boat** : closing diphthong, beginning at a central position below half-close and moving in the direction of /u/. The lips are neutral in the beginning and rounded towards the end.
- /ei/ as in **pay** : closing diphthong, beginning at a slightly below half-close position and moving towards R.P. /i/. The lips are spread.
- /ai/ as in **buy** : closing diphthong glides from the front open position towards /i/. The lips change from a neutral to a loosely spread position.
- /ɔi/ as in **boy** : closing diphthong, the glide begins near the back half-open position and moves in the direction of /i/. The lips are open-rounded at the beginning and neutral at the end.
- /au/ as in **how** : closing diphthong, glides from /a/ towards /u/. The lips are neutral in the beginning and weakly rounded in the end.
- /iə/ as in **peer** : centring diphthong, the glide begins at /i/ and moves towards /ə/. The lips are neutral.
- /eə/ as in **air** : centring diphthong, the glide begins between half-close and half-open position and moves towards /ə/. The lips are neutral.
- /uə/ as in **poor** : the centring diphthong, the glide begins at /u/ and moves to /ə/. The lips are weakly rounded at the beginning and neutral at the end.

To summarise the description of vowel sound should include information about the position of the soft palate, the position of the lips, the part of the tongue raised and the degree of raising. It is difficult to judge the exact tongue position for a vowel.

A system of eight primary cardinal vowels enables us to describe any vowel sound in relation to them. These cardinal vowels are represented by the symbols [i, e, ε, a, æ, ɔ, o, u]. Some languages have nasalized vowels also. Some vowels are relatively 'pure'; others have glides and are called diphthongs. Vowels are classified according to the part of the tongue raised into front, central, and back vowels. Vowels are classified into close, half close, half-open vowels according to the height of the tongue.

5.4 Phonetic Transcription

Phonetic transcription is a device in which we use several symbols in such a way that one symbol always represents one sound. It is also known as phonetic notation, it is an 'attempt on paper, a

Notes

record of the sounds that speakers make.’ By looking at an English word in its written form one cannot be sure of its pronunciation, whereas by looking at it in phonetic transcription one can be. Most of our phonetic transcriptions are **phonemic** transcriptions, that is, each symbol represents a phoneme, a distinct sound unit in language. A pair of square brackets [] indicates a phonetic transcription. Phonemic transcriptions are enclosed within slant bars / /.

5.4.1 The Narrow and Broad Transcription

A broad phonetic transcription, that is the phonemic transcription is the transcription of the phonemes of a language, e.g., the English words **peak** and **speak** can be transcribed as /pi: k/ and /spi: k/ respectively, although there occurs the aspirated **variety** of phoneme /p/ in the first word (**peak**) and the unaspirated variety in the second. But the narrow transcription, also called **the allophonic transcription**, indicates the precise phonetic quality of each segment. In this type of transcription the aspirated variety of /p/ as in the word **peak** can be indicated by transcribing the words [p^h i: k]

5.4.2 The Usefulness of the International Phonetic Alphabet

the I P A gives us a uniform international medium of studying and transcribing the sounds of all the languages of the world. Many languages in the world have no orthographic (written) form at all. It has been made possible to study such languages with this alphabet. In other words, the I P A is ‘a precise and universal’ means (i.e. valid for all languages) of writing down the spoken forms of utterances as they are spoken without reference to their orthographic representation, grammatical status, or meaning.

As regards English, the I P A helps us in establishing and maintaining international intelligibility and uniformity in the pronunciation of English. With the help of the IPA we can easily teach the pronunciation of English or of any other language. The IPA has contributed a lot in the teaching and description of language. The teachers and learners of English can improve, and standardize their pronunciation and can overcome the confusion created by the spellings with the help of the international phonetic alphabet.

S T N A N O S N O C	(pulmonic air-stream mechanism)		Bilabial Labiodental		Dental, Alveolar, or Post-alveolar	Retroflex
		Nasal	m	ɱ	n	ɳ
		Plosive	p b		t d	t̪ d̪
		(Median) Fricative	ɸ β	f v	θ ð s z	ʂ ʐ
		(Median) Approximant		ɹ	ɻ	ɻ̌
		Lateral Fricative			ɬ ɮ	
		Lateral (Approximant)			l	ɭ
		Trill			r	
		Top or Flap			ɾ	ɽ
		Ejective	pʼ		tʼ	
O N C	(non-pulmonic air-stream)	Implosive	ɓ		ɗ	
		(Median) Click	ɔ		ɰ t	
		Lateral Click			ɰ	

DIACRITICS

◦	Voiceless $n̥ d̥$	∪ or .	Raised $e̝, e̞, e̟$
˘	Voiced $ṣ ṭ$	˘ or ,	Lowered $ẹ, e̟, e̟, e̟, e̟$
h	Aspirated t^h	+	Advanced u^+, u
..	Breathy-voiced $b̤ ɸ̤$	-or -	Retracted $i̠, i̠-t̠$
n	Dental $t̪$	..	Centralized $e̞$
-	Labialized $t̪ʷ$	~	Nasalized $ã$
,	Palatalized $t̪ʲ$	, ɹ, ɻ	r-coloured $ɑ̝$
-	Velarized or Pharyngealized $t̪ˠ$	:	Long $ɑː$
~		.	Half-long $ɑ̣$
|	Syllabic $n̩ l̩$	˘	Non-syllabic $u˘$
or	Simultaneous $sʃ$ (but see also under the heading Affricates)	,	More rounded $ɔ̞$,
		,	Less rounded y ,

OTHER SYMBOLS

ç	z	Alveolo-palatal fricatives $ʃ, ʒ$
ʃ	ʒ	Palatalized $ʃ, ʒ$
ɹ		Alveolar fricative
ɾ		trill
ɺ		Alveolar lateral flap
ɥ		Simultaneous $ʃ$ and x
ʃs		Variety of $ʃ$ resembling % etc.
ɪ	=	$ʃ$
ɔ̞	=	o
ɔ̟	=	Variety of $ə$
ə̞	=	r-coloured $ə$

Notes

Palato-alveolar	Palatal	Velar	Uvular	Labial-Palatal	Labial-Velar	Pharyngeal	Glottal
	ɲ	ŋ	ɴ				
	c ɟ	k ɡ	q ɢ		ᵏᵖ ᵑᵇ		ʔ
ʃ ʒ	ç j	x ɣ	χ ʁ		ʍ	ħ ʕ	h ɦ
	j	ɥ		ɥ	w		
ʌ							
			ʀ				
			ʀ				
	k'	g					

Front	Back	VOWELS	Front	Back
i	ɨ	Close	y	ɯ
e	ɘ	Half-close	ø	ɔ
ɛ	ɚ	Half-open	θ	ɔ̞
æ	ɐ	open	œ	ɔ̟
a	ɑ		œ	ɔ̠
Unrounded			Rounded	

Notes

STRESS, TONE (PITCH)

- ˈ stress, placed at beginning of stressed syllable:
- ˌ secondary stress: high level pitch, high tone:
- low level: 'high rising:
- , low rising: 'high falling:
- ˘ low falling: rise-fall:
- fall-rise.

AFFRICATES can be written as digraphs, as ligatures, or with slur marks; thus ts, tʃ, dʒ : ts tʃ dʒ : \widehat{ts} \widehat{fj} $\widehat{dʒ}$.

c, ɟ may occasionally be used for tʃ, dʒ

A number of phonetic transcriptions have been evolved. But the most well-known are (1) Daniel Jones' system, (2) A.C. Gimson's system, (3) George L. Trager and Henry Lee Smith's system, and (4) Charles C. Fries and Kenneth L. Pike's system. The difference between Jones' and Gimson's system is not great. In the representation of consonants, Gimson and Jones do not make any difference at all. It is only in the case of certain vowel sounds that they use different symbols.

We have followed in this book Daniel Jones' system because of its simplicity and facility in printing it. But we strongly feel that Gimson's system is more sound and comprehensive than that of Jones. Another reason of our preference to Jones is community of our Indian learners and teachers who have been using text-books, dictionaries (e.g. *The Advanced Learner's Dictionary of Current English*; *Everyman's English Pronouncing Dictionary*) etc. which follow Jones' system of phonetic transcription using the IPA symbols, although the latest editions of these dictionaries have been revised and follow Gimson. Jones and Gimson are British phoneticians. Trager and Smith and Fries are American scholars and are followed in most American books on linguistics and phonetics. Nevertheless, we recommend to our readers to follow Gimson's system of phonetic transcription, and hence reproduce below Gimson's list of phonetic symbols and signs from his book, *Introduction to the Pronunciation of English*. (By courtesy Prof. Gimson)

LIST OF PHONETIC SYMBOLS AND SIGNS

- a Cardinal Vowel no. 4 (approximately as in French *patte*); used for first element of Eng. diphthong [ai]
- æ front vowel between open and half-open (Eng. vowel in *cat*).
- a Cardinal Vowel no. 5 (approximately as in French *pas*); used for first element of Eng. diphthong [aɪ], and for Eng [a:] in *car*
- ɒ open rounded Cardinal Vowel no. 5 (Eng. vowel in *dog*)
- b voiced bilabial plosive (Eng. *b* in *labour*)
- ɸ voiced ingressive bilabial plosive
- β voiced bilabial fricative
- c voiceless palatal plosive
- ç voiceless palatal fricative
- ɔ Cardinal Vowel no. 6 (approximately as in German *Sonne*); used for Eng. [ɔ:] in *saw*, and first element of diphthong [ɔi]
- d voiced alveolar plosive (Eng. *d* in *lady*)
- ɖ voiced ingressive alveolar plosive
- ð voiced dental fricative (Eng. *th* in *other*)

		Notes
e	Cardinal Vowel no. 2 (approximately as in French <i>the</i>); used for Eng. [e] in <i>bed</i> , and first element of diphthong [ei]	
ə	unrounded central vowel (Eng. initial and final vowels in <i>another</i>)	
ɚ	retroflexed central vowel (American <i>er</i> in <i>water</i>)	
ɛ	Cardinal Vowel no. 3 (approximately as in French <i>pere</i>); used for first element of diphthong [ɛ ə]	
ɜ	unrounded central vowel (Eng. vowel in <i>bird</i>)	
f	voiceless labio-dental fricative (Eng. <i>f</i> in <i>four</i>)	
ɸ	voiced palatal plosive	
g	voiced velar plosive (Eng. <i>g</i> in <i>eager</i>)	
ɣ	voiced ingressive velar plosive.	
h	voiceless glottal fricative (Eng. <i>h</i> in <i>house</i>)	
ɦ	voiced glottal fricative (sometimes Eng. <i>h</i> in <i>behind</i>)	
i	Cardinal Vowel no. 1 (approximately as in French <i>si</i>); used for Eng [i:] in <i>see</i>	
ɪ	unrounded central close vowel	
ɨ	centralized unrounded half-close vowel. (Eng. vowel in <i>sit</i>)	
j	palatal unrounded semi-vowel (Eng. <i>y</i> in <i>you</i>)	
r	linguo-alveolar tap (sometimes <i>r</i> in Eng. <i>very</i>)	
k	voiceless velar plosive (Eng. <i>c</i> in <i>car</i>)	
l	voiced alveolar lateral continuant (Eng. <i>l</i> in <i>lay</i>)	
ɭ	voiced alveolar lateral continuant with velarization (Eng. <i>ll</i> in <i>ill</i>)	
ϕ	voiceless alveolar lateral fricative (Welsh <i>ll</i>)	
m	voiced bilabial nasal (Eng. <i>m</i> in <i>me</i>)	
ɱ	voiced labio-dental nasal (Eng. <i>m</i> in <i>comfort</i>)	
ʋ	unrounded Cardinal Vowel no. 8	
n	voiced alveolar nasal (Eng. <i>n</i> in <i>no</i>)	
ŋ	voiced velar nasal (Eng. <i>ng</i> in <i>sing</i>)	
ɲ	voiced palatal nasal (French <i>gn</i> in <i>vigne</i>)	
o	Cardinal Vowel no. 7 (approximately as in French <i>eau</i>)	
ɔ	rounded Cardinal Vowel no. 2 (approximately as in French <i>peu</i>)	
œ	open rounded Cardinal Vowel no. 3 (approximately as in French <i>peur</i>)	
θ	voiceless dental fricative (Eng. <i>th</i> in <i>thing</i>)	
p	voiceless bilabial plosive (Eng. <i>p</i> in <i>pea</i>)	
r	linguo-alveolar roll (Scottish, Italian <i>r</i>); also used for Eng. <i>r</i> in <i>red</i> voiced post-alveolar frictionless continuant (Eng. <i>r</i> in <i>red</i>)	
ɽ	voiced retroflex frictionless continuant	
R	voiced uvular roll	
ʀ	voiced uvular fricative or frictionless continuant	
s	voiceless alveolar fricative (Eng. <i>s</i> in <i>see</i>)	
ʃ	voiceless palato-alveolar fricative (Eng. <i>sh</i> in <i>she</i>)	

Notes	<p>t voiceless alveolar plosive (Eng. <i>t</i> in <i>tea</i>)</p> <p>ɿ voiceless alveolar click</p> <p>u Cardinal Vowel no. 8 (approximately as in French <i>doux</i>); used for Eng. [u:] in <i>do</i></p> <p>ʊ central rounded close vowel</p> <p>ʊ centralized rounded half-close vowel (Eng. <i>u</i> in <i>put</i>)</p> <p>v voiced labio-dental fricative (Eng. <i>v</i> in <i>ever</i>)</p> <p>ʌ unrounded Cardinal Vowel no. 6; used for Engl, vowel in <i>cup</i></p> <p>ʋ labio-dental frictionless continuant</p> <p>w labio-velar semi-vowel (Eng. <i>w</i> in <i>we</i>)</p> <p>ɱ voiceless labio-velar fricative (sometimes Eng. <i>wh</i> in <i>why</i>)</p> <p>x voiceless velar fricative (Scottish <i>ch</i> in <i>loch</i>)</p> <p>y rounded Cardinal Vowel no. 1 (approximately as in French <i>du</i>)</p> <p>ʎ voiced palatal lateral continuant (Italian <i>gl</i> in <i>egli</i>)</p> <p>ɤ unrounded Cardinal Vowel no. 7</p> <p>Y voiced velar fricative</p> <p>z voiced alveolar fricative (Eng. <i>z</i> in <i>lazy</i>)</p> <p>ʒ voiced palato-alveolar fricative (Eng. <i>s</i> in <i>measure</i>)</p> <p>ɸ voiceless bilabial fricative</p> <p>ɬ voiceless alveolar lateral click</p> <p>ʔ glottal plosive (stop)</p> <p>: indicates full length of preceding vowel</p> <p>˙ indicates half length of preceding vowel</p> <p>! main accentual stress or pitch prominence on following syllable</p> <p>ˑ secondary accentual stress on following syllable</p> <p>ˆ high unaccented pre-nuclear syllable</p> <p>ˆ high falling pitch</p> <p>ˆ, low falling pitch</p> <p>ˆ falling-rising pitch</p> <p>ˆ rising-falling pitch</p> <p>ˆ high rising pitch</p> <p>ˆ, low rising pitch</p> <p>ˑ syllable carrying secondary accent</p> <ul style="list-style-type: none"> • syllable, immediately following nucleus, carrying secondary accent based on quality/quantity ˑ syllable carrying primary (nuclear) accent ˑ unaccented syllable <p>- naslization, e.g. [õ]</p> <p>ˑ centralization, e.g. [ö]</p> <ul style="list-style-type: none"> • more open quality, e.g. [o] ˑ closer quality, e.g. [ʊ]
-------	---

◦ devoiced lenis consonant, e.g. [z̥] (above in the case of [ŋ̥, ʒ̥, ʒ̥])

| syllabic consonant, e.g. [ŋ̩] (above in the case of [ŋ])

┌ dental articulation, e.g. [t̪]

[] phonetic transcription

/ / phonemic transcription

Self-Assessment

1. Choose the correct options:

(i) Ear Training Test

Which word is it? Tick the correct answer (or write in phonemic transcription the following pairs):

- | | | | |
|-------------|----------|----------|------|
| (a) bead | bid | (b) bone | born |
| (c) callous | careless | (d) car | cur |
| (e) caught | cot | (f) foot | put |
| (g) gate | get | (h) lock | luck |
| (i) seat | sheet | (j) vest | west |

(ii) Which part of the tongue is raised in the production of the vowel sounds in the following words:

- | | | | |
|-----------------|-----------------|----------------|------------------|
| (a) <i>knee</i> | (b) <i>food</i> | (c) <i>tin</i> | (d) <i>bat</i> . |
|-----------------|-----------------|----------------|------------------|

(iii) Which part of the tongue is raised in the production of the vowel sounds in the following English words?

beam, big, bid, bag, drop, too.

(iv) Say whether the vowel sounds in the following English words are close or open: *key, art, pot, moon,*

(v) Say whether the lips are rounded or unrounded in the production of the vowel sounds in the following English words:

sea, give, pass, bed, who, hot, come, foot, pack, cut, teach, moon.

(vi) Supply the phonetic symbols for the consonant sounds italicised in the following words:

- | | | | |
|-------------------|------------------|--------------------|------------------|
| (a) pleasure | (b) <i>touch</i> | (c) <i>there</i> | (d) <i>think</i> |
| (e) <i>short.</i> | (f) <i>long</i> | (g) <i>quality</i> | (h) <i>car</i> |
| (i) please | (j) <i>jug</i> | | |

5.5 Summary

- 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; we call the part comprising the mouth the oral cavity and the part that leads to the nostrils the nasal cavity. Here the air from the lungs escapes into the atmosphere. We have a large and complex set of muscles that can produce change 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

- You will need to look at it carefully as the articulators are described, and you will find it useful to have a mirror and a good light placed so that you can look at the inside of your mouth.
 - (i) 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 oral cavity and the other being the beginning of the way through the nasal cavity. If you look in your mirror with your mouth open, you can see the back of the pharynx.
 - (ii) The soft palate or velum is seen in the diagram in a position that allows air to pass through the nose and through the mouth. Yours is probably in that the nose. The other important thing about the soft palate is that it is one of the articulators that can be touched by the tongue. When we make the sounds *k*, *g* the tongue is in contact with the lower side of the soft palate, and we call these velar consonants.
 - (iii) The hard palate is often called the “roof of the mouth”. You can feel its smooth curved surface with your tongue. A consonant made with the tongue close to the hard palate is called palatal. The sound *j* in ‘yes’ is palatal.
 - (iv) 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. You can only see these if you have a mirror small enough to go inside your mouth, such as those used by dentists.
 - (v) The lips are important in speech. They can be pressed together (when we produce the sound *p*, *b*), brought into contact with the teeth (as in *f*, *v*), or rounded to produce the lip-shape for vowels like *u*:. Sounds in which the lips are in contact with each other are called bilabial, while those with lip-to-teeth contact are called labiodental.

The articulators described above are the main ones used in speech, but there are a few other things to remember. Firstly, the larynx could also be described as an articulator—a very complex and independent one. 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. Finally, although there is practically nothing active that we can do with the nose and the nasal cavity when speaking, they are a very important part of our equipment for making sounds (which is sometimes called our vocal apparatus), particularly nasal consonants such as *m*, *n*. Again, we cannot really describe the nose and the nasal cavity as articulators in the same sense as (i) to (v) above.

- What we are doing here is looking at the different contexts and positions in which particular sounds can occur; this is the study of the distribution of the sounds, and is of great importance in phonology. Study of the sounds found at the beginning and end of English words has shown that two groups of sounds with quite different patterns of distribution can be identified, and these two groups are those of vowel and consonant. If we look at the vowel-consonant distinction in this way, we must say that the most important different distributions. It is important to remember that the distribution of vowels and consonants is different for each language.

We begin the study of English sounds in this course by looking at vowels, and it is necessary to say something about vowels in general before turning to the vowels of English. We need to know in what ways vowels differ from each other. The first matter to consider is the shape and position of the tongue. It is usual to simplify the very complex possibilities by describing just two things: firstly, the vertical distance between the upper surface of the tongue and the palate and, secondly, the part of the tongue, between front and back, which is raised highest.

Let us look at some examples:

- (i) Make a vowel like the i: in the English word 'see' and look in a mirror; if you tilt your head back slightly you will be able to see that the tongue is held up close to the roof of the mouth. Now make an æ vowel (as in the word 'cat') and notice how the distance between the surface of the tongue and the roof of the mouth is now much greater. The difference between i: and æ is a difference of tongue height, and we would describe i: as a relatively close vowel and æ as a relatively open vowel. Tongue height can be changed by moving the tongue up or down, or moving the lower jaw up or down. Usually we use some combination of the two sorts of movement.
- (ii) In making the two vowels described above, it is the front part of the tongue that is raised. We could therefore describe i: and æ as comparatively front vowels. By changing the shape of the tongue we can produce vowels in which a different part of the tongue is the highest point. A vowel in which the back of the tongue is the highest point is called a back vowel. If you make the vowel in the word 'calm', which we write phonetically as a:, you can see that the back of the tongue is raised. Compare this with æ in front of a mirror; æ is a front vowel and a: is a back vowel. The vowel in 'too' (u:) is also a comparatively back vowel, but compared with a: it is close.
- Show now we have seen how four vowels differ from each other; we can show this in a simple diagram.

	Front	Back
Close	i:	u:
Open	æ	a:

However, this diagram is rather inaccurate. Phoneticians need a very accurate way of classifying vowels, and have developed a set of vowels which are arranged in a close-open, front-back diagram similar to the one above but which are not the vowels of any particular language. These cardinal vowels are a standard reference system, and people being trained in phonetics at an advanced level have to learn to make them accurately and recognise them correctly. If you learn the cardinal vowels, you are not learning to make English sounds, but you are learning about the range of vowels that the human vocal apparatus can make, and also learning a useful way of describing, classifying and comparing vowels.

The exact shape is not really important - a square would do quite well but we will use the traditional shape. The vowels so-called primary cardinal vowels; these are the vowels that are most familiar to the speakers of most European languages, and there are other cardinal vowels are printed within square brackets [] to distinguish them clearly from English vowel sounds.

5.6 Key-Words

1. Affricate : If the stop is not held for any appreciable time and released slowly, we get an affricate rather than a plosive, e.g./tʃ/ in **chair** and /dz/ in **jail**.
2. Nasal : In a nasal contour, the breath stream is interrupted at some point in the oral cavity or at the lips, while being allowed to enter the nose and create resonance there. Thus a nasal is produced by a stricture of complete oral closure. The soft palate is lowered and the air passes through the nose. All nasal sounds are voiced. Examples /m,n,v/ in English.

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3. Trill (or Rolled Consonants) : In the production of a trill, the active articulator taps several times against the passive articulator. The stricture involved can be called a stricture of intermittent closure. Scottish /r/, for example in **red**, in which the tip of the tongue strikes against the teeth ridge a number of times, is called a trilled consonant. In Hindi words like **Ram**/ ra: m/ and **rath** /r ə θ / we have this variety of /r/.

5.7 Review Questions

1. Describe the kind of stricture involved in the articulation of: (a) a lateral consonant, (b) a plosive consonant, (c) a nasal, (d) an affricate, (e) a vowel, (f) a semi-vowel, (g) a frictionless continuant.

Or

Consonant sounds can be pronounced either by a 'complete closure made by the lips or by the tongue' or by 'a narrowing which causes friction'. The closure and the narrowing can be made either with the tongue or the lips. Pronounce the following words carefully and put the consonant sounds in the black letters into the correct places in the table.

sin, shin, fin, kin, pin, din, lin, bin, begin thin then, vent, men, sin, sins, song, measure.

Complete closure	Narrowing
Tongue	
Lips	

2. Divide the following words into syllables and mark the structure of each syllable. (Do not be misled by spelling)

e.g. phonetics /f o -ne-tiks/

cv-cv-cvcc

- | | | | |
|---------------------|------------------|------------------|------------------|
| (i) cigarette | (ii) linguistics | (iii) morphology | (iv) syntax |
| (v) grammar | (vi) butter | (vii) button | (viii) suddenly |
| (ix) responsibility | (x) college | (xi) student | (xii) remarkable |
| (xiii) calendar | (xi) translation | (xv) director. | |

3. Give the phonetic symbols for:
- (i) a voiceless dental plosive,
 - (ii) a voiced velar nasal,
 - (iii) a voiced palato-alveolar fricative
4. What is meant by (a) a front vowel and (b) a back vowel, and (c) a central vowel? Give examples from English and from your own native language.
5. What is meant by (a) a close vowel and (b) an open vowel? Give examples from English and your mother tongue.
6. Describe the vowel sounds in the following English words according to the R.P. of England and General Indian English:
- beat, bit, gate, bed, bad, cut, cart, cot, court, all, horse, force, home, book, cool, bird, about.

7. What are diphthongs? Give a list of R.P. diphthongs and one example of each sound in a word.
8. What is the difference between a pure vowel and a diphthong?
9. Which English vowels do not occur finally?
10. Which English consonants do not occur initially?

Notes

5.8 Further Readings



Books

1. Verma, S.K., V.N. Krishnaswamy. *Modern Linguistics: An Introduction*.
2. *An Introduction to Linguistics*, John Lyon.
3. Peter Roach: *English phonetics and phonology*. Cambridge University Press.
4. *Encyclopedia of Linguistic Science* Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 6: Consonants and Its Phonetic Transcription

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Objectives

After reading this Unit students will be able to:

- Understand Consonants and its Phonetic Transcription.

Introduction

There are two kinds of language sounds: consonants and vowels. Consonants involve interrupting the air that comes out of your mouth; vowels are made by opening the mouth and letting air come out freely. Consonants are relatively stable and invariable; vowels are extremely variable and are more difficult to transcribe. We'll start with consonants. You must refer to your handout giving the phonetic transcription symbols, as these symbols are not reproduced on this web page.

There are two basic ways of making consonants: voiced and unvoiced. Voiced consonants involve a vibration of the vocal cords that you can feel when you place your hand on your throat. Unvoiced consonants involve no vibration of the vocal cords.

There are five types of consonants: stops, fricatives, nasals, affricates, and semivowels. Nasals and semivowels are always voiced; stops, fricatives and affricates can be voiced or unvoiced.

Stops are the simplest kind of consonant; you simply stop the air coming out of your mouth. You cannot "hold" a stop consonant; you simply block and then release the air. The stop consonants are distinguished by what part of your mouth you use to block the air.

Stopping the air with both lips together produces a bilabial (two-lip) stop. If voiced, the bilabial stop is the initial consonant of *bill*. If unvoiced, it's the initial consonant of *pill*.

Further back in the mouth, we pronounce alveolar stops. These are made by placing your tongue against the alveolar ridge--the hard ridge in the top of your mouth, behind your teeth--and stopping the air there. The voiced alveolar stop is the initial consonant of *dill*. The unvoiced alveolar stop is the initial consonant of *till*.

Still further back are the velar stops. The back of your tongue stops the air at the back of your hard palate. The voiced velar stop is the initial consonant of *gill*. The unvoiced velar stop is the initial consonant of *kill*.

Furthest back is the glottal stop, which does not (yet, anyway) distinguish one word from another in English, but is increasingly replacing the intervocalic alveolar stop in British English, and is heard in many American dialects in various places. The glottal stop is unvoiced in English. If you say "Iowa apples" you will hear it before each of the initial vowels in those words.

Fricatives involve letting the air slide through a narrow opening in the mouth. They can be prolonged for some time. The air is not completely blocked.

If you make the narrow opening with your bottom lip against your top teeth, you are producing a labiodental (lip-tooth) fricative. The voiced labiodental fricative is the initial consonant of *veer*. The unvoiced labiodental fricative is the initial consonant of *fear*.

If you make that opening with your tongue against your top teeth, you produce a dental fricative. The voiced dental fricative is the initial consonant of *though*. The unvoiced dental fricative is the initial consonant of *think*.

There are voiced and unvoiced alveolar fricatives, just as there are alveolar stops (above). The voiced alveolar fricative is the initial consonant of *zoo*; the unvoiced alveolar fricative is the initial consonant of *sue*.

Postalveolar fricatives are made with the tongue constricting the air behind the alveolar ridge, almost at the top of the roof of the mouth. The voiced postalveolar fricative is the initial sound of the second syllable of *version*. The unvoiced postalveolar fricative is the initial sound of the second syllable of *motion*.

The unvoiced velar fricative is not now used in English except in some Scots dialects; it is like the consonant sound in German *ich*. A voiced velar fricative is heard sometimes as the initial consonant in Spanish *llame*. I include these sounds here because the unvoiced velar fricative is perhaps the sound that was heard after a front vowel (see below in Middle English words like *knight* and *bright*).

Modern English has an unvoiced glottal fricative, the initial consonant in *home* (at least for American speakers). Another, slightly “rougher” glottal fricative is heard at the end of Scots *loch* or German *Nacht*, and may have been the sound heard after a back vowel (see below) in Middle English words like *brought* and *caught*.

Nasals involve blocking the mouth completely, holding the blockage (instead of releasing it as in a stop consonant), and letting the air come out of your nose. All nasals are voiced. You can hold and hum them.

The bilabial nasal is the initial consonant of *might*.

The alveolar nasal is the initial consonant of *night*.

The velar nasal is never initial in English. It is the final consonant of *sing*.

The affricates are represented in phonetic transcription (usually) by double symbols. They begin as stops and slide into fricatives, and hence are represented as a stop followed by a fricative. Only two affricates are used in most dialects of English: a voiced affricate that is the initial consonant in *jeer* and an unvoiced affricate that is the initial consonant in *cheer*.

When we make semivowels, we only partially obstruct the flow of air. Each semivowel is unique; all are voiced. Rounding the lips and then opening them straight up and down gives the initial consonant of *weir*. Flattening and extending the lips and cheeks--almost as if smiling--gives the initial consonant of *year*. Flapping the tongue toward the front and top of the mouth, while letting air go around its sides, gives the initial consonant of *leer*. Rounding the lips and then opening them sideways gives the initial consonant of *rear*. /l/ and /r/ are sometimes called “laterals” because of the sideways motion involved in producing them. /w/ and /y/ are sometimes called “glides” or “liquids”; they often occur along with vowels--if before, as “on-glides,” if after, as “off-glides.” /l/ and /r/ also sound quite different depending on whether they come before or after a vowel.

6.1 Nasals

The basic characteristic of a nasal consonant is that the air escapes through the nose. For this to happen, the soft palate must be lowered; in the case of all the other consonants and vowels of English, the soft palate is raised and air cannot pass through the nose. In nasal consonants, however, air does not pass through the mouth; it is prevented by a complete closure in the mouth at some point. If you produce a long sequence dndndndndn without moving your tongue from the position for alveolar closure, you will feel your soft palate moving up and down. The three types of closure are: bilabial

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(lips), alveolar (tongue blade against alveolar ridge) and velar (back of tongue against the palate). This set of places produces three nasal consonants - m, n, ŋ – which correspond to the three places of articulation for the pairs of plosives p b, t d, k g.

The consonants m, n are simple and straightforward with distributions quite similar to those of the plosives. There is in fact little to describe. However, ŋ is a different matter. It is a sound that gives considerable problems to foreign learners, and one that is so unusual in its phonological aspect that some people argue that it is not one of the phonemes of English at all. The place of articulation of ŋ is the same as that of k, g; it is a useful exercise to practise making a continuous ŋ sound. If you do this, it is very important not to produce a k or g at the end - pronounce the ŋ like m or n.

We will now look at some ways in which the distribution of ŋ is unusual.

1. In initial position we find m, n occurring freely, but ŋ never occurs in this position. With the possible exception of **ʒ**, this makes ŋ the only English consonant that does not occur initially.
2. Medially, ŋ occurs quite frequently, but there is in the BBC accent a rather complex and quite interesting rule concerning the question of when ŋ may be pronounced without a following plosive. When we find the letters 'nk' in the middle of a word in its orthographic form, a k will always be pronounced; however, some words with orthographic 'ng' in the middle will have a pronunciation containing ŋg and others will have ŋ without g. For example, in BBC pronunciation we find the following:

A	B
'finger' fɪŋgə	'singer' sɪŋə
'anger' æŋgə	'hanger' hæŋə

In the words of column A the ŋ is followed by g, while the words of column B have no g. What is the difference between A and B? The important difference is in the way the words are constructed - their **morphology**. The words of column B can be divided into two grammatical pieces: 'sing' + '-er', 'hang' + '-er'. These pieces are called **morphemes**, and we say that column B words are morphologically different from column A words, since these *cannot* be divided into two morphemes. 'Finger' and 'anger' consist of just one morpheme each.

We can summarise the position so far by saying that (within a word containing the letters 'ng' in the spelling) ŋ occurs without a following g if it occurs at the end of a morpheme; if it occurs in the middle of a morpheme it has a following g.

Let us now look at the ends of words *ending* orthographically with 'ng'. We find that these always end with ŋ; this ŋ is never followed by a g. Thus we find that the words 'sing' and 'hang' are pronounced as sɪŋ and hæŋ; to give a few more examples, 'song' is sɒŋ, 'bang' is bæŋ and 'long' is lɒŋ. We do not need a separate explanation for this: the rule given above, that no g is pronounced after ŋ at the end of a morpheme, works in these cases too, since the end of a word must also be the end of a morpheme. (If this point seems difficult, think of the comparable case of sentences and words: a sound or letter that comes at the end of a sentence must necessarily also come at the end of a word, so that the final k of the sentence 'This is a book' is also the final k of the word 'book'.)

Unfortunately, rules often have exceptions. The main exception to the above morpheme-based rule concerns the comparative and superlative suffixes '-er' and '-est'. According to the rule given above, the adjective 'long' will be pronounced lɒŋ, which is correct. It would also predict correctly that if we add another morpheme to 'long', such as the suffix '-ish', the pronunciation of ŋ would again be without a following g. However, it would additionally predict that the comparative and superlative forms 'longer' and 'longest' would be pronounced with no g following the ŋ, while in fact the correct pronunciation of the words is:

'longer' lɒŋgə 'longest' lɒŋgəst

As a result of this, the rule must be modified: it must state that comparative and superlative forms of adjectives are to be treated as single-morpheme words for the purposes of this rule. It is important to remember that English speakers in general (apart from those trained in phonetics) are quite ignorant of this rule, and yet if a foreigner uses the wrong pronunciation (i.e. pronounces *ŋg* where *ŋ* should occur, or *ŋ* where *ŋg* should be used), they notice that a mispronunciation has occurred.

- (iii) A third way in which the distribution of *ŋ* is unusual is the small number of vowels it is found to follow. It rarely occurs after a diphthong or long vowel, so only the short vowels *ɪ, e, æ, ʌ, ɒ, ʃ, ə* are regularly found preceding this consonant.

The velar nasal consonant *ŋ* is, in summary, phonetically simple (it is no more difficult to produce than *m* or *n*) but phonologically complex (it is, as we have seen, not easy to describe the contexts in which it occurs).

6.2 The Consonant *l*

The *l* phoneme (as in 'long' *lɒŋ*, 'hill' *hɪl*) is a **lateral approximant**. This is a consonant in which the passage of air through the mouth does not go in the usual way along the centre of the tongue; instead, there is complete closure between the centre of the tongue and the part of the roof of the mouth where contact is to be made (the alveolar ridge in the case of *l*). Because of this complete closure along the centre, the only way for the air to escape is along the sides of the tongue. The lateral approximant is therefore somewhat different from other approximants, in which there is usually much less contact between the articulators. If you make a long *l* sound you may be able to feel that the sides of your tongue are pulled in and down while the centre is raised, but it is not easy to become consciously aware of this; what is more revealing (if you can do it) is to produce a long sequence of alternations between *d* and *l* without any intervening vowel. If you produce *dldldldl* without moving the middle of the tongue, you will be able to feel the movement of the sides of the tongue that is necessary for the production of a lateral. It is also possible to see this movement in a mirror if you open your lips wide as you produce it. Finally, it is also helpful to see if you can feel the movement of air past the sides of the tongue; this is not really possible in a voiced sound (the obstruction caused by the vibrating vocal folds reduces the airflow), but if you try to make a very loud whispered *l*, you should be able to feel the air rushing along the sides of your tongue.

We find *l* initially, medially and finally, and its distribution is therefore not particularly limited. In BBC pronunciation, the consonant has one unusual characteristic: the realisation of *l* found before vowels sounds quite different from that found in other contexts. For example, the realisation of *l* in the word 'lea' *li:* is quite different from that in 'eel' *i:l*. The sound in 'eel' is what we call a "dark *l*"; it has a quality rather similar to an [u] vowel, with the back of the tongue raised. The phonetic symbol for this sound is ɫ . The sound in 'lea' is what is called a "clear *l*"; it resembles an [i] vowel, with the front of the tongue raised (we do not normally use a special phonetic symbol, different from *l*, to indicate this sound). The "dark *l*" is also found when it precedes a consonant, as in 'eels' *i:lz*. We can therefore predict which realisation of *l* (clear or dark) will occur in a particular context: clear *l* will never occur before consonants or before a pause, but only before vowels; dark *l* never occurs before vowels. We can say, using terminology introduced, that clear *l* and dark *l* are allophones of the phoneme *l* in complementary distribution. Most English speakers do not consciously know about the difference between clear and dark *l*, yet they are quick to detect the difference when they hear English speakers with different accents, or when they hear foreign learners who have not learned the correct pronunciation. You might be able to observe that most American and lowland Scottish speakers use a "dark *l*" in all positions, and don't have a "clear *l*" in their pronunciation, while most Welsh and Irish speakers have "clear *l*" in all positions.

Another allophone of *l* is found when it follows *p, k* at the beginning of a stressed syllable. The *l* is then devoiced (i.e. produced without the voicing found in most realisations of this phoneme) and pronounced as a fricative. The situation is similar to the aspiration found when a vowel follows *p, t, k* in a stressed syllable: the first part of the vowel is devoiced.

6.3 The Consonant *r*

This consonant is important in that considerable differences in its articulation and its distribution are found in different accents of English. As far as the articulation of the sound is concerned, there is really only one pronunciation that can be recommended to the foreign learner, and that is what is called a post-alveolar approximant. An **approximant**, as a type of consonant, is rather difficult to describe; informally, we can say that it is an articulation in which the articulators approach each other but do not get sufficiently close to each other to produce a “complete” consonant such as a plosive, nasal or fricative. The difficulty with this explanation is that articulators are always in *some* positional relationship with each other, and any vowel articulation could also be classed as an approximant - but the term “approximant” is usually used only for consonants.

The important thing about the articulation of *r* is that the tip of the tongue approaches the alveolar area in approximately the way it would for a *t* or *d*, but never actually makes contact with any part of the roof of the mouth. You should be able to make a long *r* sound and feel that no part of the tongue is in contact with the roof of the mouth at any time. This is, of course, very different from the “*r*-sounds” of many other languages where some kind of tongue-palate contact is made. The tongue is in fact usually slightly curled backwards with the tip raised; consonants with this tongue shape are usually called **retroflex**. If you pronounce an alternating sequence of *d* and *r* (drdrdrdrdr) while looking in a mirror you should be able to see more of the underside of the tongue in the *r* than in the *d*, where the tongue tip is not raised and the tongue is not curled back. The “curling-back” process usually carries the tip of the tongue to a position slightly further back in the mouth than that for alveolar consonants such as *t*, *d*, which is why this approximant is called “post-alveolar”. A rather different *r* sound is found at the beginning of a syllable if it is preceded by *p*, *t*, *k*; it is then voiceless and fricative. This pronunciation is found in words such as *press*, *tress*, *cess*.

One final characteristic of the articulation of *r* is that it is usual for the lips to be slightly rounded; learners should do this but should be careful not to exaggerate it. If the lip-rounding is too strong the consonant will sound too much like *w*, which is the sound that most English children produce until they have learned to pronounce *r* in the adult way.

The distributional peculiarity of *r* in the BBC accent is very easy to state: this phoneme only occurs before vowels. No one has any difficulty in remembering this rule, but foreign learners (most of whom, quite reasonably, expect that if there is a letter ‘*r*’ in the spelling then *r* should be pronounced) find it difficult to apply the rule to their own pronunciation. There is no problem with words like the following:

1. ‘red’ red’ arrive’ əraɪv ‘hearing’ hɪəɪrɪŋ

In these words *r* is followed by a vowel. But in the following words there is no *r* in the pronunciation:

2. ‘car’ kɑː ‘ever’ evə ‘here’ hɪə
3. ‘hard’ hɑːd ‘verse’ vɜːs ‘cares’ keəz

Many accents of English do pronounce *r* in words like those of (ii) and (iii) (e.g. most American, Scots and West of England accents). Those accents which have *r* in final position (before a pause) and before a consonant are called **rhotic** accents, while accents in which *r* only occurs before vowels (such as BBC) are called **non-rhotic**.

6.4 The Consonants *j* and *w*

These are the consonants found at the beginning of words such as ‘yet’ and ‘wet’. They are known as approximants. The most important thing to remember about these phonemes is that they are phonetically like vowels but phonologically like consonants (in earlier works on phonology they were known as “semivowels”). From the phonetic point of view the articulation of *j* is practically the same as that of a front close vowel such as [i], but is very short. In the same way *w* is closely similar to [u]. If you make the initial sound of ‘yet’ or ‘wet’ very long, you will be able to hear this. But despite this vowel-like character, we use them like consonants. For example, they only occur before vowel

phonemes; this is a typically consonantal distribution. We can show that a word beginning with *w* or *j* is treated as beginning with a consonant in the following way: the indefinite article is 'a' before a consonant (as in 'a cat', 'a dog'), and 'an' before a vowel (as in 'an apple', 'an orange'). If a word beginning with *w* or *j* is preceded by the indefinite article, it is the 'a' form that is found (as in 'a way', 'a year'). Another example is that of the definite article. Here the rule is that 'the' is pronounced as ð ə before consonants (as in 'the dog' ð ə dɒg, 'the cat' ð ə kæt) and as ð i before vowels (as in 'the apple' ð i æpl, 'the orange' ð i ɒrɪndʒ). This evidence illustrates why it is said that *j*, *w* are phonologically consonants. However, it is important to remember that to pronounce them as fricatives (as many foreign learners do), or as affricates, is a mispronunciation. Only in special contexts do we hear friction noise in *j* or *w*; this is when they are preceded by *p*, *t*, *k* at the beginning of a syllable, as in these words:

'pure' pʃj ə (no English words begin with pw)
 'tune' t ju:n 'twin' twɪn
 'queue' kju: 'quit' kwɪt

When *p*, *t*, *k* come at the beginning of a syllable and are followed by a vowel, they are aspirated, as was explained in Chapter 4. This means that the beginning of a vowel is voiceless in this context. However, when *p*, *t*, *k* are followed not by a vowel but by one of *l*, *r*, *j*, *w*, these voiced continuant consonants undergo a similar process, as has been mentioned earlier in this chapter: they lose their voicing and become fricative. So words like 'play' plew, 'tray' trew, 'quick' kwɪk, 'cue' kju: contain devoiced and fricative *l*, *r*, *w*, *j* whereas 'lay', 'ray', 'wick', 'you' contain voiced *l*, *r*, *w*, *j*. Consequently, if for example 'tray' were to be pronounced without devoicing of the *r* (i.e. with fully voiced *r*) English speakers would be likely to hear the word 'dray'.

This completes our examination of the consonant phonemes of English. It is useful to place them on a consonant chart, and this is done in Table 6.1. On this chart, the different places of articulation are arranged from left to right and the manners of articulation are arranged from top to bottom. When there is a pair of phonemes with the same place and manner of articulation but differing in whether they are fortis or lenis (voiceless or voiced), the symbol for the fortis consonant is placed to the left of the symbol for the lenis consonant.

Self-Assessment

1. When the vocal tract is in its resting position for normal breathing, the soft palate is usually lowered. Describe what movements are carried out by the soft palate in the pronunciation of the following words:

(i) banner (ii) mid (iii) angle

6.5 Summary

- The notes for this chapter are devoted to giving further detail on a particularly difficult theoretical problem. The argument that η is an allophone of *n*, not a phoneme in its own right, is so widely accepted by contemporary phonological theorists that few seem to feel it worthwhile to explain it fully. Since the velar nasal is introduced in this chapter, I have chosen to attempt this here. However, it is a rather complex theoretical matter, and you may prefer to leave consideration of it until after the discussion of problems of phonemic analysis in Chapter 13.
- There are brief discussions of the phonemic status of η in Chomsky and Halle (1968: 85) and Ladefoged (2006); for a fuller treatment, see Wells (1982: 60-4) and Giegerich (1992: 297-301). Everyone agrees that English has at least two contrasting nasal phonemes, *m* and *n*. However, there is disagreement about whether there is a third nasal phoneme η . In favour of accepting η as a phoneme is the fact that traditional phoneme theory more or less demands its acceptance despite the usual preference for making phoneme inventories as small as possible. Consider **minimal pairs** (pairs of words in which a difference in

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Table 6.1: Chart of English consonant phonemes

		PLACE OF ARTICULATION							
		Bilabial	Labiodental	Dental	Alveolar	Post-alveolar	Palatal	Velar	Glottal
MANNER OF ARTICULATION	Plosive	p b			t d			k g	
	Fricative		f v	θ ð	s z	ʃ ʒ			h
	Affricate					tʃ dʒ			
	Nasal	m			n			ŋ	
	Lateral approximant				l				
	Approximant					r		j	
	Approximant	w							

- Meaning depends on the difference of just one phoneme) like these: ‘sin’ sɪn - ‘sing’ sɪŋ; ‘sinner’ sɪnɪs - ‘singer’ sɪŋə.
- There are three main arguments against accepting ŋ as a phoneme:
 - (i) In some English accents it can easily be shown that ŋ is an allophone of n, which suggests that something similar might be true of BBC pronunciation too.
 - (ii) If ŋ is a phoneme, its distribution is very different from that of m and n, being restricted to syllable-final position (phonologically), and to morpheme-final position (morphologically) unless it is followed by k or g.
 - (iii) English speakers with no phonetic training are said to feel that ŋ is not a ‘single sound’ like m, n. Sapir (1925) said that “no native speaker of English could be made to feel in his bones” that ŋ formed part of a series with m, n. This is, of course, very hard to establish, although that does not mean that Sapir was wrong.
- We need to look at point (i) in more detail and go on to see how this leads to the argument against having ŋ as a phoneme. Please note that I am not trying to argue that this proposal must be correct; my aim is just to explain the argument. The whole question may seem of little or no practical consequence, but we ought to be interested in any phonological problem if it appears that conventional phoneme theory is not able to deal satisfactorily with it.
- In some English accents, particularly those of the Midlands, ŋ is only found with k or g following. For example:

‘sink’ sɪŋk ‘singer’ sɪŋgə
 ‘sing’ sɪŋg ‘singing’ sɪŋgɪŋg
- This was my own pronunciation as a boy, living in the West Midlands, but I now usually have the BBC pronunciation sɪŋk, sɪŋ, sɪŋə, sɪŋɪŋ. In the case of an accent like this, it can be shown that within the morpheme the only nasal that occurs before k, g is ŋ. Neither m nor n can occur in this environment. Thus within the morpheme ŋ is in complementary distribution with m, n. Since m, n are already established as distinct English phonemes in other contexts (mæp, næp, etc.), it is clear that for such non-BBC accents ŋ must be an allophone of one of the other nasal consonant phonemes. We choose n because when a morpheme-final n is followed by a morpheme-initial k, g it is usual for that n to change to ŋ; however, a morpheme-final m followed by a morpheme-initial k, g usually doesn’t change to ŋ. Thus:

‘raincoat’ reɪŋkəʊt but ‘tramcar’ træmkɑ:

- So in an analysis which contains no ɨ phoneme, we would transcribe 'raincoat' phonemically as $\text{rɛw}n\text{k} \text{ ə} \text{f} \text{ t}$ and 'sing', 'singer', 'singing' as $\text{sɪ}n\text{g}$, $\text{sɪ}n\text{g}ə$, $\text{sɪ}n\text{g}ɪn\text{g}$. The phonetic realisation of the n phoneme as a velar nasal will be accounted for by a general rule that we will call

Rule 1:

- (i) **Rule 1:** n is realised as ɨ when it occurs in an environment in which it precedes either k or g.

Let us now look at BBC pronunciation. The crucial difference between 'singer' $\text{sɪ}n\text{g}ə$ and 'finger' $\text{fɪ}n\text{g}ə$ is that 'finger' is a single, indivisible morpheme whereas 'singer' is composed of two morphemes 'sing' and '-er'. When ɨ occurs without a following k or g it is always immediately before a morpheme boundary. Consequently, the sound ɨ and the sequence ɨg are in complementary distribution. But within the morpheme there is no contrast between the sequence ɨg and the sequence ng, which makes it possible to say that ɨ is also in complementary distribution with the sequence ng.

After establishing these "background facts", we can go on to state the argument as follows:

- English has only m, n as nasal phonemes.
 - The sound ɨ is an allophone of the phoneme n.
 - The words 'finger', 'sing', 'singer', 'singing' should be represented phonemically as $\text{fɪ}n\text{g}ə$, $\text{sɪ}n\text{g}$, $\text{sɪ}n\text{g}ə$, $\text{sɪ}n\text{g}ɪn\text{g}$.
 - Rule 1 (above) applies to all these phonemic representations to give these phonetic forms: $\text{fɪ}n\text{g}ə$, $\text{sɪ}n\text{g}$, $\text{sɪ}n\text{g}ə$, $\text{sɪ}n\text{g}ɪn\text{g}$
 - A further rule (Rule 2) must now be introduced:
- (ii) **Rule 1:** n is realised as ɨ when it occurs in an environment in which it precedes either k or g.

Rule 2: g is deleted when it occurs after ɨ and before a morpheme boundary.

It should be clear that Rule 2 will not apply to 'finger' because the ɨ is not immediately followed by a morpheme boundary. However, the rule does apply to all the others, hence the final phonetic forms: $\text{fɪ}n\text{g}ə$, $\text{sɪ}n$, $\text{sɪ}n\text{ə}$, $\text{sɪ}n\text{ɪ}n$.

- Finally, it is necessary to remember the exception we have seen in the case of comparatives and superlatives.

- The argument against treating ɨ as a phoneme may not appeal to you very much. The important point, however, is that if one is prepared to use the kind of complexity and abstractness illustrated above, one can produce quite far-reaching changes in the phonemic analysis of a language.
- The other consonants – l, r, w, j – do not, I think, need further explanation, except to mention that the question of whether j, w are consonants or vowels is examined on distributional grounds in O'Connor and Trim (1953).

6.6 Key-Words

1. The pharynx : The pharynx is the part of the neck and throat situated immediately posterior to (behind) the mouth and nasal cavity, and cranial, or superior, to the esophagus, larynx, and trachea. The pharynx's muscles can modify the pharyngeal cavity to a great extent. These modification affects the quality of sound produced.
2. The lips : The lips play an important part in the production of sounds like /p/ and /b/ which are produced by attaching both the lips and releasing it abruptly to let pass the stream of air behind it. When both the lips are attached and the air is blown out from nose, it leads to the production of consonant sound /m/. Though, vowel sounds do not need any articulators but their quality depends upon the movement of lips.

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3. The teeth : Some consonant sounds are produced with the help of teeth, for example, both version of /th/ sound in words like 'think' and 'that' are produced by the quick movement of tip of tongue between the upper and lower teeth.
4. The teeth ridge : The teeth ridge is also known as the alveolar ridge. It is convex in shape, lying between upper teeth and hard palate. It also helps in production of consonant sounds like /t/ and /d/.

6.7 Review Questions

1. List all the consonant phonemes of the BBC accent, grouped according to manner of articulation.
2. Transcribe the following words phonemically:
(i) sofa (ii) steering (iii) verse (iv) breadcrumb
(v) square (vi) bought (vii) anger (viii) nineteen

Answers-Self Assessment

1. The soft palate is raised for the b plosive and remains raised for æ. It is lowered for n, then raised again for the final ə.
2. The soft palate remains lowered during the articulation of m, and is then raised for the rest of the syllable.
3. The soft palate is raised for the æ vowel, then lowered for ŋ. It is then raised for the l plosive and remains raised for the l.

6.8 Further Readings



Books

1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 7: Vowels and Its Phonetic Transcription

Notes

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Objectives

After reading this Unit students will be able to Aristotle

- Understand Vowels and Its Phonetic Transcription
- Discuss Vowes versus Consonants.

Introduction

Vowels are made by opening your mouth and letting air come out while your vocal cords vibrate. They're voiced by definition. They are the sounds that you sing; listen particularly to opera singers and you will notice that they just suggest consonants while moving from one vowel (one note) to another.

We classify vowels according to a grid of two characteristics: whether the lips are more nearly close or open, and whether the tongue is more nearly front, central, or back in the mouth as the vowel is being produced.

The front vowels are, going from close to open, the vowels in *lead* (as in "a horse"), *lid*, *laid*, *lead* (as in pencil), *lad*, and *lod* (if that were a word ... it would rhyme with how most Americans pronounce *prod*, *sod*, *God*).

The central vowels, both of which are middle vowels, are the second vowel of *bullet* and the first vowel of *Luddite*. The second vowel of *bullet*, the mid-central vowel, is often "reduced," and the symbol for it is called schwa. The first vowel of *Luddite* is more heavily stressed.

The back vowels, again going from close to open, are the vowels of *lewd*, *look*, *load*, *laud*, and *Lawd* (as pronounced in a rich stage dialect). The vowel of *Lawd* is close to what your doctor makes you say to get a look at the back of your throat, because to make that sound you open your mouth and depress your tongue as far as possible.

Many vowel sounds in English are diphthongs, vowels that begin in one vowel position and move toward another as the vowel is articulated. The vowel in *laid* is actually a diphthong, beginning with the "long a" sound and ending a bit closer. Starting with the vowel of *prod* and going up much closer gives the diphthong in *lied*. Starting with the back vowel of *laud* and then moving front and near-close yields the diphthong in *Lloyd*. Starting way back and open and moving up to a back near-close sound gives the diphthong of *loud*. The English "long" vowels are usually pronounced as diphthongs: the vowels of *lead*, *load*, and *lewd* are actually pure vowels followed by a semivowel "off-glide."

Note, however, that the distinction between "long" and "short" vowels, so often made in elementary teaching, is really not a distinction between long and short versions of the same sound. For instance,

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we think of the vowel in *bad* as being a “short a” and the vowel in *bathe* as being a “long a.” But the two sounds are quite different and articulated in different parts of the mouth. *Bathe* has a “long” sound because it is a diphthong, not because it has the sound of *bad* lengthened. We call both of these vowels “a” sounds just because of an accident of spelling.

Historical Example

Here’s an example of what I mean by the stability of consonants and the variability of vowels, both across time and across the English-speaking world at a given time.

The Old English words *stan*, *ham*, *bat*, and *rad* correspond to the Modern English words *stone*, *home*, *boat* and *road*. The Old English words were pronounced with an open back vowel; the standard modern American pronunciation of those words has the diphthong /ow/. Yet the consonants of the Old English words are substantially identical to the consonants of the modern American words. The consonants have remained stable for 1,500 years while the vowels have changed a great deal.

At the present moment, the consonants in *stone*, *home*, *boat* and *road* are pretty much stable in all English dialects, except that the majority of British speakers have no initial consonant in *home* and may also substitute a glottal stop for the final /t/ in *boat*. So there’s great stability in this age-old consonant pattern at the present moment.

But there’s enormous variability world-wide in the vowels of these words. This variability is the basic manifestation of what we call “accents” or dialectal differences in pronunciation. The OE vowel has disappeared from these words, leaving a host of regional variants.

The Standard American vowel in *stone* is, as I noted, the /ow/ “off-glide” diphthong. The British RP vowel is also a diphthong, one that starts with the vowel of *met* and ends with that of *put*. It’s like the diphthong in some East Coast US dialects (South Jersey / Philadelphia/ Maryland), which starts with the vowel of *bathe* and ends with that of *put*.

Another British diphthong, that of Southeastern or “Estuary” speakers, starts with the front vowel of *bat* and ends up back and central. Make that a bit longer and you have the distinctive Australian diphthong in *stone*, which makes sense because Australian dialects are relatively recent developments from London English.

By contrast, some English dialects have a short pure vowel /o/--notably South African dialects and some West Indian dialects. A longer /o/ is a feature of some Irish dialects, but there are Irish speakers who have a high long pure vowel, almost that of American *boot*, in *stone*. If you start with /o/ and glide into a central vowel, you have the Canadian and Minnesota version of *stone*, and if you make the initial /o/ of that diphthong longer, you have the Scottish diphthong--again, Canadian speech owes a great deal to Scottish English. Finally, if you use a short vowel like that of *put* in *stone*, you have an approximation of the vowel in some Indian dialects.

7.1 Vowels versus Consonants

Several examples in the last chapter involved vowels: for instance, we found that there is free variation for some speakers between [i] and [ɛ] in *economic*, but that these two vowels nonetheless contrast, as shown by minimal pairs like *pet- peat*, or *hell - heal*. We also saw that the usual contrast of /eɪ/, /ɛ/ and /æ/, is neutralised before /r/ for many General American speakers, who pronounce *Mary*, *merry* and *marry* homo-phonously. It follows that the central ideas of phonemic contrast, with minimal pairs determining the members of the phoneme system, and rules showing allophonic variation in different contexts, apply equally to vowels and to consonants; free variation, phonetic similarity and neutralisation affect both classes of sounds too.

However, when we turn to the physical description of actual vowel sounds, it is not possible simply to reuse the parameters and features already introduced for consonants. Of course, vowels and consonants are all speech sounds; and in English at least, they are all produced using the same pulmonic egressive airstream. In almost all other respects, however, the features which allow us to classify and understand consonants are less than helpful in distinguishing between vowels.

To describe a consonant in articulatory terms, we needed to know the airstream mechanism involved; the state of the glottis, determining whether the sound is voiced or voiceless; the position of the velum, which either allows or stops airflow through the nose, making the consonant nasal or oral; the manner of articulation, namely stop, affricate, fricative or approximant; whether airflow is central or lateral; and finally, the place of articulation, and consequently the identity and position of the active and passive articulators.

Unfortunately, almost none of these helps us in classifying vowels. All vowels, universally, are produced on a pulmonic egressive airstream, with central airflow: there is no contrast between central and lateral vowels. It is possible, but rare, for vowels to be voiceless or nasal; in English, however, all vowel phonemes are voiced and oral, and voiceless and nasal allophones appear only in very specific circumstances, as we shall see later. Vowels are all continuants: that is, airflow through the oral tract is not significantly obstructed during their production, so they are all approximants on the consonant manner classification: there are no stop, fricative or affricate vowels. Finally, although we shall distinguish between vowels in terms of place of articulation, the range of options is much more restricted than for consonants, where places from labial to glottal are distinguished in English alone. All vowels are produced in a very limited 'vowel space' in the centre of the oral tract, roughly between palatal and velar in consonantal terms; and the place of articulation will also be much more difficult to ascertain from self-observation, since the tongue never moves close enough to the roof of the mouth in vowel production to make its position easy to feel.

It follows that an adequate vowel classification requires new features and descriptive parameters which are better designed to capture the ways in which vowels *do* vary. This kind of situation, where two classes of objects or concepts share some essential unity, but need different descriptors, is not unique to vowels and consonants. For instance, plants and animals are both categories of living things; they both populate the world widely, and are mutually necessary in terms of their complementary roles in gas exchange, for instance. They both require the same basic nutrients, operate according to the same chemical principles, and have common structures, including identical cell types. However, there is just as little point in classifying plants according to whether or not they are mammals, or have feathers, or are carnivores or herbivores, as there is in categorising animals as being evergreen or dropping their leaves, bearing cones or flowers, or producing fruit or not. At that lower classificatory level, it is simply necessary to recognise the divergence of the two categories by using different distinguishing features. Equally, vowels and consonants are both speech sounds, and are both necessary for language, since they play complementary roles in structuring syllables and words. Both are formed by modifications of a moving airstream, carried out by the actions of the vocal folds and articulatory organs. However, below this very general, common level, consonants and vowels operate as different sets, and to allow us to produce as precise and insightful a classification of each set as possible, they must be described in different terms.

7.2 The Anatomy of a Vowel

In classifying vowels, we need not indicate airstream mechanism, since it will always be pulmonic egressive, and we can generally assume that vowels are all voiced and oral. To describe vowels adequately and accurately, we then need to consider three different parameters, all of which can be seen as modifications of the place or manner of articulation continua for consonants: as we shall see, these are height, frontness and rounding. Additionally, vowels may be long or short (long ones are marked with a following : below), and monophthongs or diphthongs. The examples in the sections below will be from Standard Southern British English (sometimes called RP, or Received Pronunciation), and General American, the most widely spoken variety of English in the United States, excluding the southern states, and the eastern seaboard, especially Boston, New England and New York City. SSBE and GA are generally thought of by English and American speakers respectively as not having any strong regional marking, and both are varieties highly likely to be heard in broadcasting, for instance in reading the television or radio news.

The front-back dimension

Front vowels are produced with the front of the tongue raised towards the hard palate (although not raised enough, remember, to obstruct the airflow and cause local friction; vowels are approximants).

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The vowels in (1) are front. These could, in principle, equally be described as palatal, and this might be helpful in making phonological rules transparent. The rule palatalising velar /k g/ before front vowels in *kitchen*, *key*, *give*, *geese* looked rather perplexing as the relationship between palatal and front was not obvious. However, calling front vowels palatal would be misleading, since frontness covers a larger area than [palatal], as we shall see below; and it contrasts with completely different alternatives, namely central and back, rather than labial, alveolar, dental, velar and so on.

1. Front vowels

	SSBE	GA
kit	ɪ	ɪ
dress	ɛ	ɛ
trap	æ	æ
fleece	i:	i:
face	eɪ	eɪ

Conversely, back vowels have the back of the tongue raised, towards the soft palate or velum. The vowels in (2) are back.

2. Back vowels

	SSBE	GA
lot	ɒ	ɑ:
foot	ʊ	ʊ
palm	ɑ:	ɑ:
thought	ɔ:	ɔ:
goat	oʊ	o:
goose	u:	u:

There is also a class of vowels between front and back: these are known as central vowels, and involve a raising of the body of the tongue towards the area where the hard and soft palate join. Central vowels are exemplified in (3). The most common of these in English, [ə], is known as schwa, and only appears in unstressed syllables.

3. Central vowels

	SSBE	GA
about	ə	ə
nurse	ɜ:	ɜr
strut	ʌ	ʌ

The high-low dimension

High vowels have the tongue raised most towards the roof of the mouth; if the raising was significantly greater, then friction would be produced, making a fricative consonant, not a vowel. The high vowels from the last section are in (4).

4. High vowels

	SSBE	GA
kit	ɪ	ɪ
fleece	i:	i:
foot	ʊ	ʊ
goose	u:	u:

Low vowels are those where the tongue is not raised at all, but rather lowered from its resting position: when you produce a low vowel, you will be able to feel your mouth opening and your jaw dropping, even if it is not very easy to figure out quite what your tongue is doing. Low vowels are given in (5).

5. Low vowels

	SSBE	GA
trap	a	æ
lot		ɑ:
palm	ɑ:	ɑ:

Again, there is a further class intermediate between high and low, namely the mid vowels, shown in (6). These can if necessary be further subclassified as high mid (like the *face* and *goat* vowels) or low mid (like the *dress*, *thought*, *strut* vowels) depending on whether they are nearer the high end of the scale, or nearer the low end.

6. Mid vowels

	SSBE	GA
face	eɪ	eɪ
goat	oʊ	o:
dress	ɛ	ɛ
lot	ɒ	
thought	ɔ:	ɔ:
about	ə	ə
nurse	ɜ:	ɜr
strut	ʊ	ʊ

Lip position

In the high back [u:] vowel of *goose*, there is tongue raising in the region of the soft palate; but in addition, the lips are rounded. Vowels in any of the previous categories may be either rounded, where the lips are protruded forwards, or unrounded, where the lips may be either in a neutral position, or sometimes slightly spread (as for a high front vowel, like [i:] *fleece*). However, it is overwhelmingly more common cross-linguistically for back vowels to be rounded than for front ones, and for high vowels to be rounded than low ones; this is borne out in English, as you can see in (7).

7. Rounded vowels

	SSBE	GA
lot	ɒ	
foot	ʊ	ʊ
thought	ɔ:	ɔ:
goat	oʊ	o:
goose	u:	u:

Length

Using these three dimensions of frontness, height and rounding, we can now define the vowel in *fleece* as high, front and unrounded; that in *goose* as high, back and rounded; and the unstressed vowel of *about*, schwa, as mid, central and unrounded. However, our elementary descriptions would class the *kit* vowel as high, front and unrounded, and the *foot* vowel as high, back and rounded; these labels make them indistinguishable from the clearly different vowels of *fleece* and *goose* respectively. SSBE and GA speakers very readily perceive the *fleece* and *kit* vowels, and the *goose* and *foot* vowels, as different; and there are plenty of minimal pairs to support a phoneme distinction, as in *peat-pit*,

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leap-lip, Luke-look, fool-full. This distinction is usually made in terms of vowel length: in SSBE and GA, the vowels in (8) are consistently produced as longer than those in (9).

8. Long vowels

	SSBE	GA
fleece	i:	i:
goose	u:	u:
goat		o:
thought	ɔ:	ɔ:
palm	ɑ:	ɑ:
lot		ɑ:
nurse	ɜ:	ɜr

9. Short vowels

	SSBE	GA
kit	ɪ	ɪ
dress	ɛ	ɛ
trap	a	æ
lot	ɒ	
foot	ʊ	ʊ
about	ə	ə
strut	ʊ	ʊ

This is not to say, however, that the *only* difference between [i:] and [ɪ], or [u:] and [ʊ], is one of length: the quantity difference goes along with a difference in quality, [i:] is higher and fronter than [ɪ]; [u:] is higher and backer than [ʊ]; and similarly, [ɑ:] in *palm* is lower and backer than the corresponding short [a] in *trap*. In general, long vowels in English are more peripheral, or articulated in a more extreme and definite way, than their short counterparts. Some phonologists use a feature [\pm tense] rather than length to express this difference, with the long, more peripheral vowels being [+tense], and the short, more centralised ones being [–tense], or lax.

Monophthongs and diphthongs

Most of the vowels we have considered so far have been monophthongs, in which the quality of the vowel stays fairly consistent from the beginning of its production to the end. However, there are also several diphthongs in English. Diphthongs change in quality during their production, and are typically transcribed with one starting point, and a quite different end point; as might be expected from this description, diphthongs are typically long vowels. In English, all diphthongs have the first element as longer and more prominent than the second, and are known as falling diphthongs. Three diphthongs are found very generally in accents of English, and are shown in (10).

10. Diphthongs (i)

	SSBE	GA
price	aɪ	aɪ
mouth	aʊ	aʊ
choice	ɔɪ	ɔɪ

The long high-mid front and back vowels in *face* and *goat* are also characteristically diphthongal in SSBE and GA, as shown in (11).

11. Diphthongs (ii)

	SSBE	GA
face	eɪ	eɪ
goat	oʊ	o:

Finally, SSBE has a third set of diphthongs, which are known as the centring diphthongs as they all have the mid central vowel schwa as the second element. These centring diphthongs developed historically before /r/, which was then lost following vowels in the ancestor of SSBE; they consequently appear mainly where there is an <r> in the spelling, although they have now been generalised to some other words, like *idea*.

GA speakers have a diphthong in *idea*, but still pronounce the historical [ɪ] in *near*, *square*, *force*, *cure* and therefore lack centring diphthongs in these words.

12. Centring diphthongs

	SSBE	GA
near	ɪə	ɪr
square	ɛə	ɛr
force	ɔə/ɔ:	ɔ:r
cure	ʃə	ʃr

7.3 Vowel Classification

The labels outlined in the previous section are helpful, but may leave questions unresolved when used in comparisons between different languages or different accents of the same language. Thus, French [u:] in *rouge* is very close in quality to English [u+] in *goose*, but not identical; the French vowel is a little more peripheral, slightly higher and more back. Similarly, [o:] in *rose* for a GA speaker is slightly lower and more centralised than 'the same' vowel for a speaker of Scottish English. None of the descriptors introduced so far would allow us to make these distinctions clear, since in the systems of the languages or accents concerned, these pairs of vowels would quite appropriately be described as long, high, back and rounded, or long, high-mid, back and rounded respectively.

Furthermore, a classification of this sort, based essentially on articulation, is arguably less appropriate for vowels than for consonants. In uttering a vowel, the important thing is to produce a particular sort of auditory impression, so that someone listening understands which vowel in the system you are aiming at; but it does not especially matter which articulatory strategies you use to convey that auditory impression. If you were asked to produce an [u:], but not allowed to round your lips, then with a certain amount of practice you could make at least something very similar; and yet it would not be a rounded vowel in the articulatory sense, although you would have modified the shape of your vocal tract to make it sound like one. This is not possible with most consonants, where the auditory impression depends on the particular articulators used, and how close they get, not just the overall shape of the vocal tract and the effect that has on a passing airstream. It is true that the whole oral tract is a continuum, but it is easier to see the places for consonants as definite 'stopping off places' along that continuum, helped by the fact that most consonants are obstruents, and we can feel what articulators are involved.

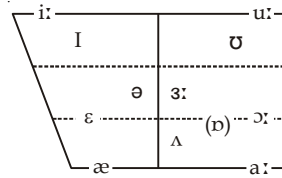
One possible solution is to abandon an articulatory approach to vowel classification altogether, and turn instead to an analysis of the speech wave itself: but acoustic phonetics is beyond the scope of this book. In any case, it is true that most speakers of particular accents or even languages will produce certain vowels in an articulatorily similar fashion. For comparative purposes, what we need is an approach which allows vowel qualities to be expressed as relative rather than absolute values.

We can achieve this comparative perspective by plotting vowels on a diagram rather than simply defining them in isolation. The diagram conventionally used for this purpose is known as the Vowel Quadrilateral, and is an idealised representation of the vowel space, roughly between palatal and velar, where vowels can be produced in the vocal tract. The left edge corresponds to the palatal area, and hence to front vowels, and the right edge to the velar area, and back vowels. The top line extends slightly further than the bottom one because there is physically more space along the roof of the mouth than along the base. Finally, the chart is conventionally divided into six sectors, allowing high, high-mid, low-mid and low vowels to be plotted, as well as front, central and back ones. There is no way of reading information on rounding directly from the vowel quadrilateral, so that vowels are typically plotted using an IPA symbol rather than a dot; it is essential to learn these IPA symbols to see which refer to rounded, and which to unrounded vowels. The SSBE and GA monophthongs

Notes

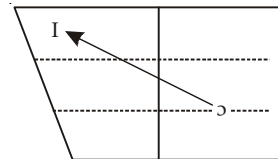
discussed earlier are plotted in (13); the monophthongs of the two accents are similar enough to include on a single chart, although the [ɒ] vowel is bracketed, since it occurs in SSBE but not in GA, where words like *lot* have low [ɑ:] instead.

13. SSBE and GA monophthongs



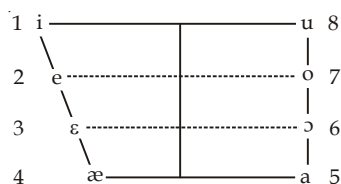
Diphthongs are not really well suited to description in terms of the labels introduced above, since they are essentially trajectories of articulation starting at one point and moving to another; in this respect, they are parallel to affricate consonants. Saying that [ɔɪ] in *noise*, for instance, is a low-mid back rounded vowel followed by a high front unrounded vowel would not distinguish it from a sequence of vowels in different syllables or even different words; but the diphthong in *noise* is clearly different from the sequence of independent vowels in *law is*. Using the vowel quadrilateral, we can plot the changes in pronunciation involved in the production of a diphthong using arrows, as in (14). Plotting several diphthongs in this way can lead to a very messy chart, but it is nonetheless helpful in clarifying exactly how a particular diphthong is composed, and what its starting and stopping points are; and the notation reminds us that a symbolic representation like [ɔɪ] is actually short-hand for a gradual articulatory and auditory movement.

14.



However, plotting vowels on the quadrilateral is only reliable if the person doing the plotting is quite confident about the quality she is hearing, and this can be difficult to judge without a good deal of experience, especially if a non-native accent or language is being described. To provide a universal frame of reference for such situations, phoneticians often work with an idealised set of vowels known as the Cardinal Vowels. For our purposes, we need introduce only the primary cardinals, which are conventionally numbered 1-8. Cardinal Vowel 1 is produced by raising and fronting the tongue as much as possible; any further, and a palatal fricative would result. This vowel is like a very extreme form of English [i:] in *fleece*. Its opposite, in a sense, is Cardinal Vowel 5, the lowest, backest vowel that can be produced without turning into a fricative; this is like a lower, backer version of SSBE [ɑ:] in *palm*. Between these two fixed points, organised equidistantly around the very edges of the vowel quadrilateral, are the other six primary cardinal vowels, as shown in (15). Cardinal 8 is like English [u:] in *goose*, but again higher and backer; similarly, Cardinals 3, 4 and 6 can be compared with the vowels of English *dress*, *trap* and *thought*, albeit more extreme in articulation. Finally, Cardinals 2 and 7 are, as we shall see in Chapters 7 and 8, like the monophthongal pronunciations of a Scottish English speaker in words like *day*, *go*. The steps between Cardinals 1-4 and 5-8 should be articulatorily and acoustically equidistant, and lip rounding also increases from Cardinals 6, through 7, to 8.

15. The Primary Cardinal Vowels



In truth, the only way of learning the Cardinal Vowels properly, and ensuring that they can act as a fixed set of reference points as they were designed to do, is to learn them from someone who already knows the system, and do a considerable amount of practice (various tapes and videos are available if you wish to do this). For the moment, what matters is to have an idea of what the Cardinal Vowels are, and what the theoretical justification for such a system is, in terms of describing the vowels of an unfamiliar language, or giving a principled account of the differences between the vowels of English and some other language, or different accents of English. We turn to such differences, as well as a more detailed outline of English vowel phonemes and allophones, in the next two chapters.

Self-Assessment

1. Using the 'phonetic' definitions of 'vowels' and 'consonant' say how many vowels and how many consonants there are in the following English words.

- | | | | |
|-------------|--------------|-------------|-----------------|
| (i) Call | (ii) Know | (iii) Thumb | (iv) Hasses |
| (v) Blessed | (vi) Leaves | (vii) Wish | (viii) Language |
| (ix) Photo | (x) Cunning. | | |

7.4 Summary

- We classify vowels according to a grid of two characteristics: whether the lips are more nearly close or open, and whether the tongue is more nearly front, central, or back in the mouth as the vowel is being produced.
- The front vowels are, going from close to open, the vowels in *lead* (as in "a horse"), *lid*, *laid*, *lead* (as in pencil), *lad*, and *lod* (if that were a word ... it would rhyme with how most Americans pronounce *prod*, *sod*, *God*).
- The central vowels, both of which are middle vowels, are the second vowel of *bullet* and the first vowel of *Luddite*. The second vowel of *bullet*, the mid-central vowel, is often "reduced," and the symbol for it is called schwa. The first vowel of *Luddite* is more heavily stressed.
- The back vowels, again going from close to open, are the vowels of *lewd*, *look*, *load*, *laud*, and *Lawd* (as pronounced in a rich stage dialect). The vowel of *Lawd* is close to what your doctor makes you say to get a look at the back of your throat, because to make that sound you open your mouth and depress your tongue as far as possible.
- Many vowel sounds in English are diphthongs, vowels that begin in one vowel position and move toward another as the vowel is articulated. The vowel in *laid* is actually a diphthong, beginning with the "long a" sound and ending a bit closer. Starting with the vowel of *prod* and going up much closer gives the diphthong in *lied*. Starting with the back vowel of *laud* and then moving front and near-close yields the diphthong in *Lloyd*. Starting way back and open and moving up to a back near-close sound gives the diphthong of *loud*. The English "long" vowels are usually pronounced as diphthongs: the vowels of *lead*, *load*, and *lewd* are actually pure vowels followed by a semivowel "off-glide."
- Note, however, that the distinction between "long" and "short" vowels, so often made in elementary teaching, is really not a distinction between long and short versions of the same sound. For instance, we think of the vowel in *bad* as being a "short a" and the vowel in *bathe* as being a "long a." But the two sounds are quite different and articulated in different parts of the mouth. *Bathe* has a "long" sound because it is a diphthong, not because it has the sound of *bad* lengthened. We call both of these vowels "a" sounds just because of an accident of spelling.
- At the present moment, the consonants in *stone*, *home*, *boat* and *road* are pretty much stable in all English dialects, except that the majority of British speakers have no initial consonant in *home* and may also substitute a glottal stop for the final /t/ in *boat*. So there's great stability in this age-old consonant pattern at the present moment.
- But there's enormous variability world-wide in the vowels of these words. This variability is the basic manifestation of what we call "accents" or dialectal differences in pronunciation. The OE vowel has disappeared from these words, leaving a host of regional variants.

Notes

- The Standard American vowel in *stone* is, as I noted, the /ow/ “off-glide” diphthong. The British RP vowel is also a diphthong, one that starts with the vowel of *met* and ends with that of *put*. It’s like the diphthong in some East Coast US dialects (South Jersey / Philadelphia/ Maryland), which starts with the vowel of *bathe* and ends with that of *put*.
- Another British diphthong, that of Southeastern or “Estuary” speakers, starts with the front vowel of *bat* and ends up back and central. Make that a bit longer and you have the distinctive Australian diphthong in *stone*, which makes sense because Australian dialects are relatively recent developments from London English.
- By contrast, some English dialects have a short pure vowel /o/--notably South African dialects and some West Indian dialects. A longer /o/ is a feature of some Irish dialects, but there are Irish speakers who have a high long pure vowel, almost that of American *boot*, in *stone*. If you start with /o/ and glide into a central vowel, you have the Canadian and Minnesota version of *stone*, and if you make the initial /o/ of that diphthong longer, you have the Scottish diphthong--again, Canadian speech owes a great deal to Scottish English. Finally, if you use a short vowel like that of *put* in *stone*, you have an approximation of the vowel in some Indian dialects.

7.5 Key-Words

1. The hard palate : The hard palate is the upper part of the mouth after alveolar ridge towards the throat. It can be felt with tongue. With the help of hard palate some sounds are produced like initial sounds in ‘yes’.
2. The soft palate : After hard palate towards the throat, if we roll our tongue we will find a portion of soft skin. This portion is called soft palate or velum. Velum functions in two ways to produce sounds: (i) It makes contact with the back of the tongue to complete the closure and (ii) It gets raised and makes contact with the back wall of pharynx to complete the closure. The first type of closure is called Velar closure and the second type of closure is called velic closure. Sound in words like flat, board, spray, etc. are produced during a velic closure.
3. The uvula : The uvula is a small tongue like organ at the end of the soft palate.
4. The tongue : Tongue is the most important and flexible articulator in the speech apparatus. It moves to make contact with different articulators to produce different sounds. Many sounds are produced with the help of tongue. For example, when tongue is suspended in the mid of the mouth slightly curved sound /sh/ produced.

7.6 Review Questions

1. (i) Which of the following words contains a rounded vowel?
put seek hook grew grey hoe hold
- (ii) Which of the following words contains a front vowel?
see seat met tap throw tape through
- (iii) Which of the following words contains a high vowel?
see seat steak throw list lost through
- (iv) Which of the following words contains a central vowel?
about put luck hit purse father kept
- (v) Which of the following words contains a high back vowel?
put love hit heat luck look food
2. (i) What do the vowels in these words have in common?
bet hair rose post love purse mate
- (ii) What do the vowels in these words have in common?
see leap weird pit fiend miss crypt

(iii) What do the vowels in these words have in common?

height boy try noise loud crowd fine

(iv) What do the vowels in these words have in common?

flea rude piece flu stew leave sees

3. Make vowel quadrilateral diagrams for all the diphthongs of SSBE, showing the position of the first and second elements and drawing lines and arrows connecting them.
4. Give as detailed a description as you can of the vowels in the following words:
father leaving hear thoroughly fast haste look alike sausage ooze

Answers: Self-Assessment

1. Cell : One vowel represented by the letter a
Two consonants represented by the letter c and ll.
2. Know : One vowel represented by the letters ow
One consonant represented by the letters kn.
3. Thumb : One vowel represented by the letter u
Two consonants represented by the letters th and mb.
4. Hasses : Two vowels represented by the letters o(r) and e
Three consonants represented by the letters h, s and s.
5. Blessed : One vowel represented by the letter e
Four consonants represented by the letters, b, l, ss, and ed.
6. Leaves : One vowel represented by the letters ea
Three consonants represented by the letters, i, v, and es.
7. Wish : One vowel represented by the letter i
Two consonants represented by the letters - w and sh.
8. Language : Two vowels represented by the letters a and a. Five consonants represented by the letters, l, n, g, u, ge.
9. Photo : Two vowels represented by the letters o and o.
Two consonants represented by the letters ph and t.
10. Cunning : Two vowels represented by the letters u and i
Three consonants represented by the letters c, n and ng.

7.7 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 8: Diphthongs and Its Phonetic Transcription

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Objectives

After reading this Unit students will be able to:

- Learn about Diphthongs and its Phonetic Transcription.
- Discuss Types of Diphthongs.

Introduction

A **diphthong** (literally “two sounds” or “two tones”), also known as a **gliding vowel**, refers to two adjacent vowel sounds occurring within the same syllable. Technically, a diphthong is a vowel with two different targets: That is, the tongue moves during the pronunciation of the vowel. In most dialects of English, the words *eye*, *hay*, *boy*, *low*, and *cow* contain diphthongs.

Diphthongs contrast with monophthongs, where the tongue doesn't move and only one vowel sound is heard in a syllable. Where two adjacent vowel sounds occur in different syllables – for example, in the English word *re-elect* – the result is described as hiatus, not as a diphthong.

Diphthongs often form when separate vowels are run together in rapid speech during a conversation. However, there are also unitary diphthongs, as in the English examples above, which are heard by listeners as single-vowel sounds (phonemes).

Diphthong 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. In the International Phonetic Alphabet, monophthongs are transcribed with one symbol, as in English *sun* [sʌn]. Diphthongs are transcribed with two letters, as in English *sign* [saɪn] or *sane* [seɪn]. The two vowel symbols are chosen to represent the beginning and ending positions of the tongue, though this can be only approximate.

The non-syllabic diacritic (an inverted breve below, ⟨̯⟩) can be placed under the less prominent component to show that it is part of a diphthong rather than a separate vowel. It is, however, usually omitted in languages such as English, where there is not likely to be any confusion.

Without the diacritic, the sequence ([ai]) can represent either a diphthong ([aɪ̯]) or two vowels in hiatus ([a.i]).

8.1 Types of Diphthongs

Falling and rising

Falling (or **descending**) diphthongs start with a vowel quality of higher prominence (higher pitch or volume) and end in a semivowel with less prominence, like [aɪ] in *eye*, while **rising** (or **ascending**) diphthongs begin with a less prominent semivowel and end with a more prominent full vowel, similar to the [ja] in *yard*. (Note that “falling” and “rising” in this context do *not* refer to vowel height; the terms “opening” and “closing” are used instead. See below.) The less prominent component in the diphthong may also be transcribed as an approximant, thus [aj] in *eye* and [ja] in *yard*. However, when the diphthong is analysed as a single phoneme, both elements are often transcribed with vowel letters (/ aɪ /, / ɪa /). Note also that semivowels and approximants are not equivalent in all treatments, and in the English and Italian languages, among others, many phoneticians do not consider rising combinations to be diphthongs, but rather sequences of approximant and vowel. There are many languages (such as Romanian) that contrast one or more rising diphthongs with similar sequences of a glide and a vowel in their phonetic inventory. (see semivowel for examples).

Closing, opening, and centering

In **closing** diphthongs, the second element is more close than the first (e.g. [ai]); in **opening** diphthongs, the second element is more open (e.g. [ia]). Closing diphthongs tend to be falling ([aɪ]), and opening diphthongs are generally rising ([ia]), as open vowels are more sonorous and therefore tend to be more prominent. However, exceptions to this rule are not rare in the world’s languages. In Finnish, for instance, the opening diphthongs / iɛ / and uo / are true falling diphthongs, since they begin louder and with higher pitch and fall in prominence during the diphthong.

A third, rare type of diphthong that is neither opening nor closing is **height-harmonic** diphthongs, with both elements at the same vowel height. These were particularly characteristic of Old English, which had diphthongs such as / æɑ /, / eo /.

A **centering** diphthong is one that begins with a more peripheral vowel and ends with a more central one, such as [ɪə], [ɛə], and [ʊə] in Received Pronunciation or [iə] and [uə] in Irish. Many centering diphthongs are also opening diphthongs ([iə], [uə]).

diphthongs may contrast in how far they open or close. For example, Samoan contrasts low-to-mid with low-to-high diphthongs:

- ‘ai [ʔaɪ] ‘probably’
- ‘ae [ʔaɛ] ‘but’
- ‘auro [ʔauro] ‘gold’
- ao [aɔ] ‘a cloud’

Length

Languages differ in the length of diphthongs, measured in terms of morae. In languages with phonemically short and long vowels, diphthongs typically behave like long vowels, and are pronounced with a similar length. In languages with only one phonemic length for pure vowels, however, diphthongs may behave like pure vowels. For example, in Icelandic, both monophthongs and diphthongs are pronounced long before single consonants and short before most consonant clusters.

Notes

Some languages contrast **short** and **long** diphthongs. In some languages, such as Old English, these behave like short and long vowels, occupying one and two morae, respectively. In other languages, however, such as Ancient Greek, they occupy two and three morae, respectively, with the first element rather than the diphthong as a whole behaving as a short or long vowel. Languages that contrast three quantities in diphthongs are extremely rare, but not unheard of; Northern Sami is known to contrast long, short and “finally stressed” diphthongs, the last of which are distinguished by a long second element.

8.2 Difference from a Vowel and Semivowel

While there are a number of similarities, diphthongs are not the same as a combination of a vowel and an approximant or glide. Most importantly, diphthongs are fully contained in the syllable nucleus while a semivowel or glide is restricted to the syllable boundaries (either the onset or the coda). This often manifests itself phonetically by a greater degree of constriction, though this phonetic distinction is not always clear. The English word *yes*, for example, consists of a palatal glide followed by a monophthong rather than a rising diphthong. In addition, while the segmental elements must be different in diphthongs so that [i̯i̯], when it occurs in a language, does not contrast with [i:] though it is possible for languages to contrast [ij] and [i:].

Examples

Germanic languages

English

All English diphthongs are falling, apart from /ju:/, which can be analyzed as [i̯u:].

In words coming from Middle English, most cases of the Modern English diphthongs [aɪ, oʊ, eɪ, aʊ] originate from the Middle English long monophthongs [i:, ɔ:], a:, u:] through the Great Vowel Shift, although some cases of [oʊ, eɪ] originate from the Middle English diphthongs [ɔu, aɪ].

Standard English diphthongs

	RP (British)	Australian	American GA	Canadian
low	[əʊ]	[əʊ]		[oʊ]
loud				[aʊ]
	[aʊ]	[æɔ]	[aʊ]	
lout				[ʌʊ] ^[t2 1]
lied				[aɪ]
light	[aɪ]	[æe]		[ʌɪ] ^[t2 1]
lane	[eɪ]	[æɪ]		[eɪ]
loin	[ɔɪ]	[oɪ]		[ɔɪ]
loon	[u:]	[ʊ:]		[ʊu] ^[t2 2]
leen	[i:]	[li] ^[t2 2]		[i:] ^[t2 2]

leer	[lɛ]	[lɛ]	[lɛː] ^[t23]
lair	[ɛɪ] ^[t24]	[eɪ] ^[t24]	[ɛɪː] ^[t23]
lure	[ʊɛ] ^[t24]	[ʊɛ]	[ʊɛː] ^[t23]

Notes

8.3 IPA Transcription Systems for English

1. Introduction: the IPA. 2. Pronunciations in dictionaries. 3. Consonants. 4. Stress. 5. Vowels: quantitative and qualitative. 6. Vowels: the standard scheme. 7. Upton's scheme.

1. Introduction: the IPA

The **International Phonetic Alphabet (IPA)** is widely used for the transcription of English and many other languages. People are often surprised to find that not all authorities who claim to use the IPA transcribe the same words in the same way. They feel that since phonetics is a science there should be just one pronunciation scheme for a word.

The reasons for the fact that there are several such schemes can be summed up in the term **academic freedom**. No one can impose a given transcription scheme on an author, although most authors have the common sense to adopt a widely-used scheme rather than invent one of their own.

The IPA offers a set of symbols, and some general guidelines **for their use. It does not prescribe transcription systems for particular languages**. In practice, the system that people use may well depend on the purpose for which they use it. Specifying the pronunciation of a headword in a dictionary is one thing; transcribing a specimen of running speech, making notes in linguistic fieldwork, or annotating an acoustic display may each require something rather different. Transcriptions intended to be used by native speakers of a language may well differ from those intended for foreign learners; indeed, different groups of foreign learners may have rather different requirements.

The symbols currently recognized by the IPA are set out on the Chart of its Alphabet. There are over a hundred of them; any given language normally needs to exploit only a small subset.

2. Pronunciations in dictionaries

Our focus here is on British English dictionaries and how they indicate the pronunciation of each headword. First, a little history.

Until relatively recently, English dictionaries did not use IPA. Instead, they used (if anything) various respelling schemes. The only dictionaries that did use IPA were specialist pronunciation dictionaries, notable Daniel Jones's *English Pronouncing Dictionary* ("EPD", first edition 1917). The earliest general dictionaries to adopt IPA seem to have been dictionaries aimed at learners of English as a foreign language: the *Oxford Advanced Learner's Dictionary* (first edition 1948), the *Longman Dictionary of Contemporary English* (first edition, 1978). This was in response to market forces, since specialist teachers of pronunciation for EFL had been using IPA for many years. The first native-speaker dictionary with IPA may have been *Collins English Dictionary* (first edition 1979). Since then, many others have followed suit.

3. Consonants

The transcription of English consonants in IPA is not subject to any disagreement. Everyone agrees that we give the symbols /p, t, k, b, d, f, v, s, z, m, n, r, l, w, h/ their usual values as in ordinary spelling. The remainder are as shown in the box. For Scottish, Welsh and foreign words there is also /x/ (*loch*) available.

g or ɣ	get, giggle	ŋ	sing, think
tʃ	church	dʒ	judge

Notes

θ	<i>thin, author</i>	ð	<i>this, father</i>
f	<i>sheep</i>	ʒ	<i>vision</i>
(x)	<i>loch</i>	j	<i>yes</i>

4. Stress

Likewise, there is no disagreement among IPA users about the symbols for word stress (although there may well be disagreement about the analysis of secondary stress). Primary stress is shown by the mark ' , placed before the syllable concerned. (Compare the older, non-IPA, dictionary tradition, where it was shown by the mark ' after the syllable.)

Secondary stress, if shown at all, is indicated by a similar mark below the line.

5. Vowels: quantitative and qualitative

The pronunciation scheme used in the first twelve editions of EPD was one that required rather few special symbols. It achieved this parsimony by transcribing the English vowels **quantitatively**. This meant writing /i:/ for the vowel of *reed* and /i/ for that of *rid*, using the same phonetic symbol with and without a length mark.

i:	<i>reed</i>
i	<i>rid</i>
ɔ:	<i>cord</i>
ɔ	<i>cod</i>

The vowel of *cord* was written /ɔ:/, that of *cod* /ɔ/, and similarly for other pairs. Thus the difference in vowel quality (vowel timbre, vowel colour) between such pairs of vowels was not shown explicitly but had to be inferred from the presence or absence of the length mark.

i	<i>reed</i>
I or L	<i>rid</i>
ɔ	<i>cord</i>
ɒ	<i>cod</i>

Many phoneticians were dissatisfied with this scheme, feeling that the difference in vowel quality was at least as important as that of quantity. They preferred to use a scheme in which each vowel was shown by a separate letter-shape, without the use of length marks. Thus /i/ was used for *reed*, /I/ for *rid*, /ɔ/ for *cord* and /ɒ/ for *cod*. This **qualitative** scheme was particularly popular among speech therapists and students of speech and drama.

i:	<i>reed</i>
I	<i>rid</i>
ɔ:	<i>cord</i>
ɒ	<i>cod</i>

The rivalry of these two widely used schemes was resolved by A.C. Gimson. Both in his own works and in Jones's *EPD*, which he took over as editor, he made use of a scheme that was both quantitative and qualitative. It uses distinct letter-shapes for the different vowels, but also retains length marks for the long vowels. So *reed* is written with /i:/, *rid* with /I/, *cord* with /ɔ:/, and *cod* with /ɒ/. The resulting scheme is admittedly somewhat redundant – but almost all British phoneticians quickly rallied to it, and this quantitative-qualitative notation has become a de facto standard.

All three types of transcription can be defended as conforming to IPA principles. All are equally "scientific". All convey the same information, equally unambiguously. The difference is in what they make explicit and what they leave to be inferred. The quantitative-qualitative type, now generally adopted, makes explicit both vowel length and vowel quality.

6. Vowels: the standard scheme

By 1990 the quantitative-qualitative transcription had been adopted by all the most influential writers on phonetics in England, and by many general dictionaries. It is found, for example, in

Collins English Dictionary, the *Oxford Pocket Dictionary*, and the *Hutchinson Encyclopedic Dictionary*, as well as in my own *Longman Pronunciation Dictionary* and in the 14th and 15th editions of Daniel Jones's *English Pronouncing Dictionary*, now edited by Peter Roach. It is what you will find in Gimson's *Introduction to the Pronunciation of English* and in the second edition of O'Connor's *Better English Pronunciation*. It is used in the *Oxford Advanced Learner's Dictionary*, the *Longman Dictionary of Contemporary English*, and the *Collins Cobuild Dictionary*. Almost all recent EFL textbooks published in Britain have adopted it.

ɪ	<i>bit</i>	ʊ	<i>put, foot</i>
e	<i>bet</i>	ʌ	<i>cut, blood</i>
æ	<i>bat</i>	ɒ	<i>lot</i>

Here (left) is how the **short ə ago vowels** are represented in this scheme. To them we must add **schwa** (right), the weak vowel of *ago, banana*.

To the right we see the symbols for the **long vowels** (monophthongs). Note that in every case not only is there a length mark, but the symbol shape is different from that for the corresponding short vowel.

iː	<i>beat</i>	uː	<i>boot</i>
		ɜː	<i>nurse</i>
ɔː	<i>cart</i>	ɔː	<i>caught</i>

Lastly we have the **diphthongs**. These are vowels whose quality noticeably alters as the tongue moves in the course of their production. They are represented by two letters, one indicating the start of the diphthongal movement, the other indicating its end or general direction.

eɪ	<i>face</i>	əʊ	<i>goat</i>
aɪ	<i>price</i>	aʊ	<i>mouth</i>
ɔɪ	<i>choice</i>		
ɪə	<i>near</i>	ʊə	<i>poor</i>
eə	<i>square</i>		

There are also the sequences to be aɪə *fire* aʊə *power*

heard in words such as *fire, power*, which some people analyse as **triphthongs**: they are represented by the diphthong symbols as in *price, mouth* plus schwa. Some authors recognize other similar sequences as well (*player, slower...*), but there really seems to be no need to list them separately.

English, like all languages, gradually changes over time. The transcription of some words has to change accordingly. Dictionaries still generally prescribe /ʊə/ for words such as *poor*, but it has to be admitted that more and more people pronounce /ɔː/ instead, making *poor* like *pour, pore, paw*, and similarly with other /ʊə/ words.

Another recent trend is that of

i *happy* u *situation*

pronouncing the vowel at the end of *happy, coffee, valley* tense, like *beat*, rather than lax like *bit*. This is actually another weak vowel, restricted like schwa to unstressed syllables. Traditionally it was identified with the vowel of *bit*, and transcribed identically, /w/. However LDOCE decided instead to use the symbol /ɪ/ (without length marks) for this vowel. This was intended as a kind of cover symbol, which everyone could interpret in their own way: traditionalists could think of it as identical with /ɪ/, whereas users of the tenser vowel might want to identify it with /i:/. I followed this lead in my LPD and so subsequently did Roach in EPD—15 and Ashby in the Oxford ALD. (In fact we need two extra weak vowels: /ɪ/ in *happy* and /u/ in *situation*.)

It is fair to say that by the 90's, with these minor tweakings, the Gimson quantitative-qualitative scheme had become the standard IPA transcription system for RP-oriented phonetics.

Notes

7. Upton's scheme

This hard-won uniformity was shaken, however, by Clive Upton's appointment as pronunciation consultant for Oxford's native-speaker dictionaries. His scheme, adopted by the influential *Concise Oxford Dictionary* (1995) remains quantitative-qualitative, but differs from the standard scheme in the symbolization of five vowels (see box: the standard notation in green, Upton's in pink). In at least some of the cases one can see what motivated Upton to alter the standard symbol: but in my view the supposed gains did not make up for the sacrifice of an agreed standard.

e	<i>bet</i>	ɛ
æ	<i>bat</i>	a
ɜ:	<i>nurse</i>	ə:
eə	<i>square</i>	ɛ:
aw	<i>price</i>	ʌɪ

Upton's Reforms: for and against

- **Bet:** In some languages, notably French and German, one needs to distinguish two e-type vowels, a closer one (IPA [e]) and an opener one (IPA [ɛ]). The English *bet* vowel lies between them, but is more similar to [ɛ], which is why Upton prefers that symbol. However, from the point of view of an EFL learner whose native language is, say, Japanese or Greek – languages that have no such distinction – it is quite unnecessary to distinguish the “[e]” at the starting point of the *face* diphthong from the “[ɛ]” of *bet*. And following IPA principles, if we are to choose just one of the two symbols we should prefer the simpler one.
- **Bat:** It is well known that the quality of the RP *bat* vowel has changed since the 1930's. It is now more similar to “cardinal [a]” than it used to be. Hence Upton's choice of the [a] symbol. A more conservative line is to stick with the familiar symbol [æ], but to redefine it as appropriate. That, after all, is what we have all done with the [ʌ] symbol for the vowel of *cut*, *blood*, which used to be a back vowel but now has a central/front quality for which the most specific IPA symbol would probably be [ɐ] (turned a). A further argument in favour of retaining the symbol [æ] is that it preserves the parallelism with American and Australian English, in which the movement towards an opener quality has not taken place.
- **Nurse:** For many speakers there is no appreciable difference in quality between the short [ə] in *ago* and the long vowel of *nurse*. Hence Upton writes them with the same symbol, with and without length marks. The arguments against this are that (i) all other long-short pairs use distinct letter shapes alongside presence/absence of length marks; (ii) schwa is a weak vowel, restricted to unstressed syllables, and subject to very considerable variability depending on its position. This is not true of the *nurse* vowel. (I concede that the logic of this argument would lead also to the avoidance of the schwa symbol in the *goat* diphthong [əʊ]. It might well have been better if Gimson had chosen to write it [ɜʊ]. I was tempted to innovate in LPD by using that symbol. But I decided, rightly I believe, that it was not worth upsetting an agreed standard for.)
- **Square:** People do increasingly use a long monophthong for this vowel, rather than the schwa-tending diphthong implied by the standard symbol. What used to be a local-accent feature has become part of the mainstream. There are millions of English people, however, who still use a diphthong. To produce the distinction in pairs such as *shed* – *shared* EFL learners generally find it easier to make the *square* vowel diphthongal ([eə]) rather than to rely on length alone.
- **Price:** The standard notation might seem to imply that the starting point of the *price* diphthong is the same as that of the *mouth* diphthong. In practice, speakers vary widely in how the two qualities compare. In *mouth* people in the southeast of England typically have a rather *bat*-like

starting point, while in *price* their starting point is more like *cart*. In traditional RP the starting points are much the same. Upton's notation implicitly identifies the first element of *price* with the vowel quality of *cut* – an identification that accords with the habits neither of RP nor of southeastern speech (Estuary English). His choice of [ʌɪ] is really very unsuitable.

- My recommendation is therefore to remain with the standard scheme

Self-Assessment

1. Write the symbol for the diphthong you hear in each word. (1–12).

8.4 Summary

- Technically, a diphthong is a vowel with two different targets: That is, the tongue moves during the pronunciation of the vowel. In most dialects of English, the words *eye*, *hay*, *boy*, *low*, and *cow* contain diphthongs.
- Diphthongs contrast with monophthongs, where the tongue doesn't move and only one vowel sound is heard in a syllable. Where two adjacent vowel sounds occur in different syllables – for example, in the English word *re-elect* – the result is described as hiatus, not as a diphthong.
- Diphthongs often form when separate vowels are run together in rapid speech during a conversation. However, there are also unitary diphthongs, as in the English examples above, which are heard by listeners as single-vowel sounds (phonemes).
- **Diphthong** 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.
- In **closing** diphthongs, the second element is more close than the first (e.g. [ai]); in **opening** diphthongs, the second element is more open (e.g. [ia]). Closing diphthongs tend to be falling ([aɪ]), and opening diphthongs are generally rising ([iə]), as open vowels are more sonorous and therefore tend to be more prominent. However, exceptions to this rule are not rare in the world's languages. In Finnish, for instance, the opening diphthongs /ie/ and /uo/ are true falling diphthongs, since they begin louder and with higher pitch and fall in prominence during the diphthong.
- A third, rare type of diphthong that is neither opening nor closing is **height-harmonic** diphthongs, with both elements at the same vowel height. These were particularly characteristic of Old English, which had diphthongs such as /æɑ/, /eo/.
- Languages differ in the length of diphthongs, measured in terms of morae. In languages with phonemically short and long vowels, diphthongs typically behave like long vowels, and are pronounced with a similar length. In languages with only one phonemic length for pure vowels, however, diphthongs may behave like pure vowels. For example, in Icelandic, both monophthongs and diphthongs are pronounced long before single consonants and short before most consonant clusters.

8.5 Key-Words

1. Vocalic/non-vocalic : Vowel is differentiated from consonant by this feature. Vocalics are marked by resonance patterns.
2. Compact/diffuse : Shape and volume of the resonance chamber characterise these features. Compact sounds show closer, resonance patterns.

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3. Consonantal/non-consonantal : Vowels are non-consonantal and vocalic, consonants are non-vocalic. Vocal energy is notably high in vowels and quite low in consonants.

8.6 Review Questions

1. Write the symbol for the vowel you hear in each word. (1–10)

Check your answers.

2. Listen and repeat (words in spelling):

i:	and	ɪ	α:	and	ʌ	ɑ:	and	æ		
feel		fill	calm		come	part		pat		
bead		bid	cart		cut	lard		lad		
steel		still	half		huff	calm		Cam		
reed		rid	lark		luck	heart		hat		
bean		bin	mast		must	harms		harms		
ɔ:	and	ɒ	u:	ʊ	ɜ:	and	ʌ	ɑ:	and	ɒ
caught		cot	pool	pull	hurt		hut	dark		dock
stork		stock	suit	soot	turn		ton	part		pot
short		shot	Luke	look	curt		cut	lark		lock
cord		cod	wooded	wood	girl		gull	balm		bomb
port		pot	fool	full	bird		bud	large		lodge

Answers: Self-Assessment

- | | |
|------------------------|-----------------------|
| 1. ɪə in fɪəs 'fierce' | 7. aɪ in kawe 'kite' |
| 2. eə in keəd 'cared' | 8. ɪə in biəd 'beard' |
| 3. ʊə in muəz 'moors' | 9. ʊə in tuəz 'tours' |
| 4. eɪ in reɪd 'raid' | 10. əʊ in beʊn 'bone' |
| 5. aɪ in taɪm 'time' | 11. ɔɪ in boɪl 'boil' |
| 6. əʊ in keʊt 'coat' | 12. aʊ in taʊn 'town' |

8.7 Further Readings



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3. Peter Roach: English phonetics and phonology. Cambridge University Press.
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Unit 9: Clusters and Syllables

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Objectives

After studying this Unit students will be able to:

- Discuss Clusters.
- Understand Syllables.

Introduction

In linguistics, a **consonant cluster** (or **consonant blend**) is a group of consonants which have no intervening vowel. In English, for example, the groups /spl/ and /ts/ are consonant clusters in the word *splits*. Some linguists argue that the term can only be properly applied to those consonant clusters that occur within one syllable. Others contend that the concept is more useful when it includes consonant sequences across syllable boundaries. According to the former definition, the longest consonant clusters in the word *extra* would be /ks/ and /tr/, whereas the latter allows /kstr/. The German word *Angstschweiß* (/aŋstʃvaɪs/; “fear sweat”) is another good example, with a cluster of five consonants: /ŋstʃv/.

Languages’ phonotactics differ as to what consonant clusters they permit.

Many languages forbid consonant clusters altogether. Maori and Pirahã, for instance, forbid any two consecutive consonants in a word. Japanese is almost as strict, but allows clusters of consonant plus /j/ as in *Tokyo* [to: kjo:], the name of Japan’s capital city. Across a syllable boundary, it also allows a sequence of a nasal plus another consonant, as in *Honshū* [honʃu:] (the name of the largest island) and *tempura* [tempuɾa] (a traditional dish). A great many languages are more restrictive than English in terms of consonant clusters; almost every Malayo-Polynesian language forbids consonant clusters entirely. Tahitian, Samoan and Hawaiian are all of this sort. Standard Arabic forbids initial consonant clusters and more than two consecutive consonants in other positions. So do most other Semitic languages, although Modern Israeli Hebrew permits initial two-consonant clusters (e.g. *pkak* “cap”; *dlat* “pumpkin”), and Moroccan Arabic, under Berber influence, allows strings of several consonants. Like most Mon-Khmer languages, Khmer permits only initial consonant clusters with up to three consonants in a row per syllable. Finnish has initial consonant clusters natively only on South-Western dialects and on foreign loans, and only clusters of three inside the word are allowed. Most spoken languages and dialects, however, are more permissive. In Burmese, consonant clusters of only up to three consonants (the initial and two medials – two written forms of /-j-/, /-w-/) at the initial onset are allowed in writing and only two (the initial and one medial) are pronounced. These clusters are restricted to certain letters. Some Burmese dialects allow for clusters of up to four consonants (with the addition of the /-l-/ medial, which can combine with the above-mentioned medials).

Notes

Loanwords

Consonant clusters occurring in loanwords do not necessarily follow the cluster limits set by the borrowing language's phonotactics. The Ubykh language's root *psta*, a loan from Adyghe, violates Ubykh's rule of no more than two initial consonants; also, the English words *sphere* /'sfɪər/ and *sphinx* /'sfɪŋks/, Greek loans, violate the restraint (or constraint, see also optimality theory) that two fricatives may not appear adjacently word-initially.

English

In English, the longest possible initial cluster is three consonants, as in *split* /'splɪt/ and *strudel* /'ʃtruːdəl/, all beginning with /s/ or /ʃ/ and ending with /l/ or /r/; the longest possible final cluster is five consonants, as in *angsts* /'æŋksts/, though that is rare and four, as in *twelfths* /'twɛlfθs/, *sixths* /'sɪksθs/, *bursts* /'bɜːsts/ and *glimpsed* /'glɪmpst/, is more common. In compound words, longer clusters are possible, as in *handspring* /'hændsprɪŋ/.

However, it is important to distinguish clusters and digraphs. Clusters are made of two or more consonant *sounds*, while a digraph is a group of two consonant *letters* standing for a single sound. For example, in the word *ship*, the two letters of the digraph ⟨sh⟩ together represent the single consonant [ʃ]. Also note a combination digraph and cluster as seen in *length* with two digraphs ⟨ŋg⟩, ⟨th⟩ representing a cluster of two consonants: /ŋθ/; *lights* with a silent digraph ⟨gh⟩ followed by a cluster ⟨t⟩, ⟨s⟩: /ts/; and compound words such as *sightscreen* /'saɪtskriːn/ or *catchphrase* /'kætʃfreɪz/.

The **phonological history of English consonant clusters** is part of the phonological history of the English language in terms of changes in the phonology of consonant clusters.

9.1 Clusters

Most English syllables consist of more than one vowel. We must examine what they can consist of, because it is not sufficient to add any consonant or group of consonants to a vowel to get an English syllable: /pteɪ/ is not a syllable of English whereas /pleɪ/ and /steɪ/ are.

The construction of a syllable is always organised around a vowel which is the **nucleus**, i.e. the indispensable element of the syllable. What comes before the nucleus is called **onset** and what follows it is called **termination**. Neither onset nor termination are necessary. They occur separately, or together with the nucleus, as illustrated in the table below:

Table: 9.1 Structure of the syllable

	onset	nucleus	termination	examples
nucleus only	--	X	--	/a:/ <i>are</i>
onset + nucleus	X	X	--	/bi:/ <i>bee</i>
nucleus + termination	--	X	X	/ɔ:t/ <i>ought</i>
onset + nucleus + termination	X	X	X	/bed/ <i>bed</i>

There are restrictions as to the position consonant phonemes can occupy: for example /ŋ/ can never occur before a vowel; just as /h/, /w/ and /j/ can never occur after a vowel. Our list does not include /r/ as in RP, it never occurs in a termination cluster.

Both onset and termination can consist of one or more consonant phonemes. Two or more consonants in the onset or in the termination form **consonant clusters**. Here again there are restrictions as to how the consonants can combine in the onset and termination respectively (onset clusters do not have the same restrictions as termination clusters and vice-versa)

s +	p +	{	l =	spɪl	splay
		r =	sprɛɪ	spray	
		j =	spju:	sprew	
	t +	{	r =	strɔ:	straw
		j =	stju:	stew	stew
	k +	{	l =	skle(rɔ:zɪs)	sclerosis
		r =	skru	screw	
		w =	skwi:z	squeeze	
		j =	skju:	skew	

Any consonant can be the sole element of the onset except /ŋ/ as mentioned before. Note that /ʒ/ is rare and is found in initial position only in words directly imported from French, such as /ʒ Igələʃ/ *gigolo* or /ʒ i:g/ *gigue* (examples from Gimson 1980:189). The largest onset consonant cluster can consist of three elements. In this case the first one is necessarily /s/: /s C C nucleus/ (where C stands for "consonant").



Notes

1. Examples for these clusters could be found; however they are all foreign or onomatopoeic: psoriasis - pterodactyl - pshaw - tsetse - gwen - Sri-Lanka - Schweppes.
2. A decision has to be made here as to whether /tʃ/ and /dʒ/ are single phonemes or clusters.
3. It is a matter of pronunciation: some dialects pronounce [m̥ eə(r)] for *where* (the sound /m̥/ is a voiceless velar approximant).

Notice that among two-consonant clusters /s/ seems to combine most easily when in initial position.

Whereas it was possible to list the combinations of onset clusters fairly faithfully, it is practically impossible to present termination clusters in a chart that would allow immediate reading. Trnka (cited in Troubetzkoy 1967: 269) trying to enumerate and explain possible clusters in English and yet doesn't succeed in producing simple rules!

Hence we will restrict ourselves to showing some of the most frequent termination clusters. Any consonant may be a final consonant i.e. be the only element of a termination except for /h/, /w/, /j/ and to a certain extent /r/, as we have seen.

Examples of two-consonant clusters in termination:

bump	/__mp/
rent	/__nt/
bank	/__ŋk/
belt	/__1t/

Notes	beds	/__ dz/
	bets	/__ ts/
	nest	/__ st/
	bathes	/__ ð z/

Note that /pm/ wouldn't be possible, nor /kn/, /tl/ (/bi:tl/ *beetle* is considered to be split into two syllables).

Examples of three-consonant clusters in termination:

bumps	/__ mps/
bonds	/__ ndz/
banks	/__ ŋks/
helped	/__ lpt/
belts	/__ lts/
twelfth	/__ lf θ /
fifths	/__ f θ s/
next	/__ kst/
lapsed	/__ pst/

Examples of four-consonant clusters in termination:

twelfths	/__ lf θ s/
sixths	/__ ks θ s/
texts	/__ ksts/

9.1.1 H-cluster Reductions

The h-cluster reductions are various consonant reductions that have occurred in the history of English involving consonant clusters beginning with /h/ that have lost the /h/ in certain varieties of English.

Wh-cluster reductions

- The hole-whole merger is the replacement of /hw/ with /h/ before the vowels /o:/ and /u:/ which occurred in Old English. This is due to the effect that rounded back vowels have on /h/, giving it velar and labial characteristics making /hw/ an allophone of /h/ before these vowels; the true phonetic /hw/ then eventually became perceived as this allophone of /h/ and no longer a phonologically distinct speech sound.
- The wine-whine merger is the merger of /hw/ (spelled *wh*) with /w/. It occurs in the speech of the great majority of English speakers. Notable dialects that retain the distinction include Irish English, Scottish English, and Southern American English. This occurred after the hole-whole merger meaning that *wh-* is usually /w/ before orthographic *a, e, i* and *y*, but /h/ before orthographic *o*. (Orthographic *a* is usually phonologically /ɒ/ or /ɔ:/ after /w/ in some varieties of English.)

Yew-hew merger

The yew-hew merger is a process that occurs in some dialects of English that causes the cluster /hj/ to be reduced to /j/. It leads to pronunciations like /ju:d ʒ/ for *huge* and /ju:mən/ for *human*; *hew* and *yew* become homophonous. It is sometimes considered a type of glide-cluster reduction, but is much less widespread than *wh*-reduction, and is generally stigmatized where it is found. Aside from accents with *h*-dropping, this reduction is in the United States found mainly in accents of Philadelphia and New York City; also in Cork accents of Hiberno-English. In some dialects of English, the cluster

/hj/ (phonetically [çj]) has been reduced to [ç] so that *hew* and *yew* differ only by the initial consonant sound (i.e. [çu:] and [ju:]).

hl-cluster, hr-cluster and hn-cluster reductions

The hl-cluster, hr-cluster and hn-cluster reductions are three reductions that occurred in Middle English that caused the consonant clusters /hl/, /hr/ and /hn/ to be reduced to /l/, /r/, and /n/. For example, Old English hl *āf*, *hring* and *hnutu* became *loaf*, *ring* and *nut* in Modern English.

9.1.2 Y-cluster Reductions

Yod-dropping

Yod-dropping is the elision of the sound [j]. The term comes from the Hebrew letter yod, which represents [j].

Yod-dropping before [u:] occurs in most varieties of English in the following environments:

- After [tʃ, dʒ, j], for example *chew* [tʃu:], *juice* [dʒu:s], *yew* [ju:]
- After /ɪ/, for example *rude* [ɪu:d]
- After consonant+/l/ clusters; for example *blue* [ˈblu:]

There are accents, for example Welsh English, in which pairs like *chews/choose*, *yew/you*, *threw/through* are distinct: the first member of each pair has the diphthong [ɪu] while the second member has [u:].

Many varieties of English have extended yod-dropping to the following environments, on condition that the [j] be in the same syllable as the preceding consonant:

- After /s/, for example *suit* [ˈsu:t]
- After /l/, for example *lute* [ˈlu:t]
- After /z/, for example *Zeus* [ˈzu:s]
- After /θ/, for example *enthusiasm* [ɛnˈθu:ziæzəm]

Yod-dropping in the above environments was formerly considered nonstandard in England, but today it is heard even among well-educated RP speakers. In General American yod-dropping is found not only in the above environments but also:

- After /t/, /d/ and /n/, for example *tune* [ˈtu:n], *dew* [ˈdu:], *new* [ˈnu:]

9.1.3 Other Initial-cluster Reductions

Rap-wrap merger

The rap-wrap merger is a reduction that causes the initial cluster /wr/ to be reduced to /r/, making *rap* and *wrap*, *rite* and *write* etc. homophones.

Old English had a contrast between /wr/ and /r/, the former characterized by lip rounding. In Middle English, the contrast disappeared and all cases of initial /r/ came to be rounded [rʷ].

Not-knot merger

The not-knot merger is a reduction that occurs in modern English where the historical cluster /kn/ is reduced to /n/ making *knot* and *not* homophones.

All of the *kn* words stem from Old English forms beginning with *cn-*, and at the time all were pronounced with an initial /k/ before the /n/. These words were common to the Germanic languages, most of which still pronounce the initial /k/. Thus, for example, the Old English ancestor of *knee* was

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kn̄ē o, pronounced /kn̄eð:/, and the cognate word in Modern German is *Knie*, pronounced /kni:/. Most dialects of English reduced the initial cluster /kn/ to /n/ relatively recently; the change seems to have taken place in educated English during the seventeenth century, meaning that Shakespeare did not have the reduction.

Nome-gnome merger

The nome-gnome merger is the reduction of the initial cluster /gn/ to /n/. In Middle English, words spelt with *gn* like *gnat*, *gnostic*, *gnome*, etc. had the cluster /gn/. The humorous song *The Gnu* jokes about this, even though the *g* in *gnu* may actually have always been silent in English, since this loanword did not enter the language until the late 18th century. The trumpeter Kenny Wheeler wrote a composition titled “Gnu High”, a pun on “New High”.

S-cluster reduction

S-cluster reduction is the dropping of /s/ from the initial consonant clusters with voiceless plosives (environments /sp/, /st/, and /sk^(w)/) occurring in Caribbean English. After the initial /s/ is removed, the plosive is aspirated in the new word-initial environment, resulting in pronunciations such as:

spit	→	ˈpit ([ˈspit])	→	[ˈp ^h ɪt]
stomach	→	ˈtomach ([ˈstɛmək])	→	[ˈt ^h ɛmək]
spend	→	ˈpen ([ˈspɛnd])	→	[ˈp ^h ɛn] (also affected by final consonant-cluster reduction)
squeeze	→	ˈkwi:z ([ˈskwi:z])	→	[ˈk ^h wi:z]

9.1.4 Final-cluster Reductions

Final-consonant-cluster reduction

Reduction of final consonant clusters occurs in African American Vernacular English and Caribbean English. The new final consonant may be slightly lengthened as an effect.

Examples are:

test	→	tes' ([t ^h ɛst])	→	[t ^h ɛs]
desk	→	des' ([dɛsk])	→	[dɛs]
hand	→	han' ([hænd])	→	[hæn]
send	→	sen' ([sɛnd])	→	[sɛn]
left	→	lef' ([lɛft])	→	[lɛf]
wasp	→	was' ([wasp])	→	[was]

The plurals of *test* and *desk* may become *tesses* and *desses* by the same English rule that gives us plural *messes* from singular *mess*.

Plum-plumb merger

The plum-plumb merger is the reduction of the final cluster /mb/ to [m] that occurs in all dialects of present English. In early Middle English, words spelled with *mb* like *plumb*, *lamb* etc had the cluster /mb/.

9.1.5 Consonant-cluster Additions

Prince-prints merger

The **prince-prints merger** is a merger of /ns/ and /nts/ occurring for many speakers of English. For them, “prince” and “prints” are homonyms as [prints]. A [t] is inserted between the [n] and the [s]. Likewise the fricative [ʃ] often becomes [tʃ] after [n], so that “pinscher” and “pincher” are homophones.

These similar clusters may also merge:

- /nz/ and /ndz/ as in “bans”, “pens” and “Hans” sounding the same as “bands”, “pends” and “hands”. The merged form being [nz]
- /mt/ and /mpt/ as in “dreamt” and “attempt”. The merged form being [mpt].
- /ms/ and /mps/ as in “camps” and “hamster”. The merged form being [mps].

9.1.6 Consonant-cluster Alterations

Yod-rhotacization

Yod-rhotacization is a process that occurs for some Southern AAVE speakers where /j/ is rhotacized to /r/ in consonant clusters causing pronunciations like:

beautiful → /'bru:tɪfəl/

cute → /'kru:t/

music → /'mru:zɪk/

S-cluster metathesis

S-cluster metathesis is the metathesis of final consonant clusters starting with /s/ occurring in African American Vernacular English as well as many other varieties of English.

For AAVE speakers with S-cluster metathesis the following words can undergo the following changes:

ask → /'æks/

grasp → /'græps/

wasp → /'waps/

gasp → /'gæps/

S-cluster metathesis is lexically determined.

The above pronunciations in fact have a long history, and all the metathesised forms have existed in English for around as long as the words themselves, with varying degrees of acceptance.

For example, the Old English verb *ascian* also appeared as *a'sian*, and both forms continued into Middle English. The two forms co-existed and evolved separately in various regions of England, and later America. The variant *ascian* gives us the modern standard English *ask*, but the form “axe”, probably derived from Old English *acsian*, appears in Chaucer: “I axe, why the fyfte man Was nought housband to the Samaritan?” (*Wife of Bath's Prologue*, 1386.) It was considered acceptable in literary English until about 1600 and can still be found in some dialects of English including African American Vernacular English. It is, however, one of the most stigmatized features of AAVE, often commented on by teachers. It also persists in Ulster Scots as /'aks/ and Jamaican English as /'a:ks/, from where it has entered the London dialect of British English as /'a:ks/.

Conclusion

In summarizing her research on the cluster, Dandy (1991) notes that the form is found in Gullah and in the speech of some young African Americans born in the Southern United States. She explains that

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the stream-scream merger is a highly stigmatized feature and that many of the students in her study who used it were referred to speech pathologists. She goes on to note the following about her research: “I also found a continuum that may indicate sound change in progress. If children said *skretch* for *stretch*, they probably have used the *skr* alternation in other words that contained the feature: *skreet* for *street*, *skrong* for *strong*, *shrike* for *strike*, *skranger/deskroy* for *stranger/destroy*. There were some who said *skreet* for *street* but did not make alteration on other words with that sound”. Also, although Dandy does not make this point, it is important to note that the students’ use of /skr/ may have been affected by the training they were getting from the speech pathologists.

In my paper, I will discuss the English Syllable, phoneme, ways of identifying phonemes and the application of stress in English words. The area of linguistics that puts effort into the understanding the sounds of a language is Phonetics, a sub-category of Phonetics, which deals specifically with the ways sounds are organized into the individual languages and studies the subset of those sounds that constitute language and meaning, is Phonology.

Phonologically talking the sounds are the phonemes. According to Rogers (2000) “phonemes can be thought of as instructions for articulating speech-sounds, and so a phoneme can be described in terms of the behavior of the vocal apparatus that occurs when a physiologically normal speaker articulates his or her particular representation of the phoneme. Thus phonemes are the phonetic alphabet of the mind. That is, phonemes are how we mentally represent speech; how we store the sounds of words in our memory. The following two tables show phonemes of Modern English, the consonants and vowels.

9.2 Syllables

The syllable is a very important unit. Most people seem to believe that, even if they cannot define what a syllable is, they can count how many syllables there are in a given word or sentence. If they are asked to do this they often tap their finger as they count, which illustrates the syllable’s importance in the rhythm of speech. As a matter of fact, if one tries the experiment of asking English speakers to count the syllables in, say, a recorded sentence, there is often a considerable amount of disagreement.

9.2.1 The Nature of the Syllable

When we looked at the nature of vowels and consonants in Previous units it was shown that one could decide whether a particular sound was a vowel or a consonant on phonetic grounds (in relation to how much they obstructed the airflow) or on phonological grounds (vowels and consonants having different distributions). We find a similar situation with the syllable, in that it may be defined both phonetically and phonologically. Phonetically (i.e., in relation to the way we produce them and the way they sound), 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 this centre (i.e., at the beginning and end of the syllable), there will be greater obstruction to airflow and/or less loud sound. We will now look at some examples:

1. What we will call a minimum syllable is a single vowel in isolation (e.g. the words ‘are’ a:, ‘or’ ɔ:, ‘err’ ɜ:). These are preceded and followed by silence. Isolated sounds such as m, which we sometimes produce to indicate agreement, or ∫, to ask for silence, must also be regarded as syllables.
2. Some syllables have an onset—that is, instead of silence, they have one or more consonants preceding the centre of the syllable:
‘bar’ ba: ‘key’ ki: ‘more’ mɔ:
3. Syllables may have no onset but have a coda—that is, they end with one or more consonants:
‘am’ æm ‘ought’ ɔ:t ‘ease’ i:z
4. Some syllables have both onset and coda:
‘ran’ ræn ‘sat’ sæt ‘fill’ fil

This is one way of looking at syllables. Looking at them from the phonological point of view is quite different. What this involves is looking at the possible combinations of English phonemes; the study of the possible phoneme combinations of a language is called phonotactics. It is simplest to start by looking at what can occur in initial position - in other words, what can occur at the beginning of the first word when we begin to speak after a pause. We find that the word can begin with a vowel, or with one, two or three consonants. No word begins with more than three consonants. In the same way, we can look at how a word ends when it is the last word spoken before a pause; it can end with a vowel, or with one, two, three or (in a small number of cases) four consonants. No current word ends with more than four consonants.

9.2.2 The Structure of the English Syllable

Let us now look in more detail at syllable onsets. If the first syllable of the word in question begins with a vowel (any vowel may occur, though *ʊ* is rare) we say that this initial syllable has a zero onset. If the syllable begins with one consonant, that initial consonant may be any consonant phoneme except *ŋ*; *ʒ* is rare.

We now look at syllables beginning with two consonants. When we have two or more consonants together we call them a consonant cluster. Initial two-consonant clusters are of two sorts in English. One sort is composed of *s* followed by one of a small set of consonants; examples of such clusters are found in words such as 'sting' stɪŋ, 'sway' sweɪ, 'smoke' sməʊk. The *s* in these clusters is called the pre-initial consonant and the other consonant (*t*, *w*, *m* in the above examples) the initial consonant. The other sort begins with one of a set of about fifteen consonants, followed by one of the set *l*, *r*, *w*, *j* as in, for example, 'play' pleɪ, 'quick' kwɪk, 'few' fju:. We call the first consonant of these clusters the initial consonant and the second the post-initial. There are some restrictions on which consonants can occur together. This can best be shown in table form, as in Table 9.2. When we look at three-consonant clusters we can recognise a clear relationship between them and the two sorts of two-consonant cluster described above; examples of three-consonant initial clusters are: 'split' splɪt, 'stream' stri:m, 'square' skweə. The *s* is the pre-initial consonant, the *p*, *t*, *k* that follow *s* in the three example words are the initial consonant and the *l*, *r*, *w* are post-initial. In fact, the number of possible initial three-consonant clusters is quite small and they can be set out in full (words given in spelling form):

		Post-Initial			
		l	r	w	j
s plus initial	p	'splay'	'spray'	—	'spew'
	t	—	'string'	—	'stew'
	k	'sclerosis'	'screen'	'squeak'	'skewer'

We now have a similar task to do in studying final consonant clusters. Here we find the possibility of up to four consonants at the end of a word. If there is no final consonant we say that there is a zero coda. When there is one consonant only, this is called the final consonant. Any consonant may be a final consonant except *h*, *w*, *j*. The consonant *r* is a special case: it doesn't occur as a final consonant in BBC pronunciation, but there are many rhotic accents of English in which syllables may end with this consonant. There are two sorts of two-consonant final cluster, one being a final consonant preceded by a pre-final consonant and the other a final consonant followed by a post-final consonant. The pre-final consonants form a small set: *m*, *n*, *ŋ*, *l*, *s*. We can see these in 'bump' bʌmp, 'bent' bent, 'bank' bæŋk, 'belt' belt, 'ask' a:sk. The post-final consonants also form a small set: *s*, *z*, *t*, *d*, *θ*; example words are: 'bets' betz, 'beds' bedz, 'backed' bækt, 'bagged' bægd, 'eighth' eɪtθ. These post-final consonants can often be identified as separate morphemes (although not always—'axe' æks, for example, is a single morpheme and its final *s* has no separate meaning). A point of pronunciation can be pointed out here: the release of the first plosive of a plosive-plus-plosive cluster such as the *g* (of *gd*) in bægd or the *k* (of *kt*) in bækt is usually without plosion and is therefore practically inaudible.

Table: 9.2 Two-consonant clusters with pre-initial s

Pre-initial s followed by:

		Initial																	
		p	t	k	b	d	g	f	θ	s	ʃ	h	v	ð	z	ʒ	m	n	ŋ
spɪn	strɪk	skɪn	—	—	—	—	—	sfɪə	—	—	—	—	—	—	—	—	smel	sneʊ	—

Note: Two-consonant clusters of s plus l, w, j are also possible (e.g. slɪp, swɪŋ, sju:), and even perhaps sr in 'syringe' srɪndʒ for many speakers. These clusters can be analysed either as pre-initial s plus initial l, w, j, r or initial s plus post-initial l, w, j, r. There is no clear answer to the question of which analysis is better; here they are treated in the latter way, and appear in Table: 9.3.

Table: 9.3 Two-consonant clusters with post-initial l, r, w, j

		p	t	k	b	d	g	f	θ	s	ʃ	h	v	ð	z	ʒ	m	n	ŋ	l	r	w	j
l	pleɪ	—	bleɪ	blæk	—	glu;	flaɪ	—	slɪp	—	—	—	—	—	—	—	—	—	—	—	—	—	—
r	preɪ	treɪ	kraɪ	briːʃ	drɪp	grɪn	fraɪ	qrəʊ	ʔ ¹	ʃru:	—	—	—	—	—	—	—	—	—	—	—	—	—
w	—	twɪn	kwɪk	—	dwel	ʔ ²	—	θwɔ:t	swɪm	ʔ ³	—	—	—	—	—	—	—	—	—	—	—	—	—
j	pʃɔ:	tju:n	kju:	bju:ti	dju:	ʔ ⁴	fju:	ʔ ⁵	sju:	—	hju:dʒ	vju:	—	—	—	—	mju:d	nju:z	—	lju:d	—	—	—

Notes in doubtful cases:

1. Some people pronounce the word 'syringe' as srɪndʒ; there are no other cases of sr unless one counts foreign names (e.g. Sri Lanka)
2. Many Welsh names (including some well known outside Wales) — such as girls' names like Gwen and place names like the country of Gwent-have initial gw and English speakers seem to find them perfectly easy to pronounce.
3. Two cases make ʃw seem familiar: the vowel name 'schwa', and the name of the soft drinks brand Schweppes. This is, however, a very infrequent cluster for English.
4. The only possible occurrence of gj would be in the archaic (heraldic) word 'gules', which is in very few people's vocabulary.
5. θj occurs in the archaic word 'thew' only.

There are two types of final three-consonant cluster; the first is pre-final plus final plus post-final, as set out in the following table:

		Pre-final	Final	Post-final
'helped'	he	l	p	t
'banks'	bæ	n	ŋ	s
'bonds'	ba	n	d	z
'twelfth'	twe	l	f	θ

The second type shows how more than one post-final consonant can occur in a final cluster: final plus post-final 1 plus post-final 2. Post-final 2 is again one of s, z, t, d, θ.

		Pre-final	Final	Post-final 1	Post-final 2
'fifths'	fɪ	—	f	θ	s
'next'	ne	—	k	s	t
'lapsed'	læ	—	p	s	t

Most four-consonant clusters can be analysed as consisting of a final consonant preceded by a pre-final and followed by post-final 1 and post-final 2, as shown below:

		Pre-final	Final	Post-final 1	Post-final 2
'twelfths'	twe	l	f	θ	s
'prompts'	pro	m	p	t	s

A small number of cases seem to require a different analysis, as consisting of a final consonant with no pre-final but three post-final consonant:

		Pre-final	Final	Post-final 1	Post-final 2	Post-final 3
'sixths'	sɪ	—	k	s	θ	s
'texts'	te	—	k	s	t	s

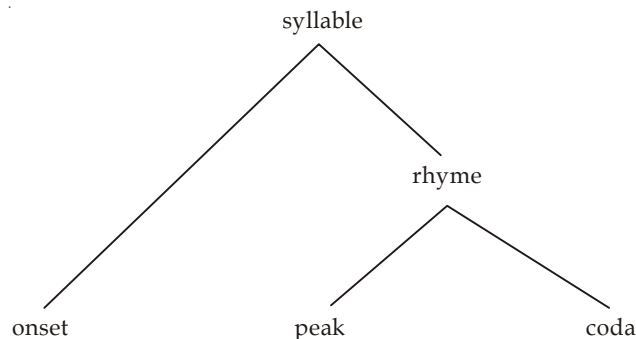
To sum up, we may describe the English syllable as having the following maximum phonological structure:

pre-initial	initial	post-initial	Vowel	pre-final	final	post-final 1	post-final 2	post-final 3
Onset				Coda				

In the above structure there must be a vowel in the centre of the syllable. There is, however, a special case, that of syllabic consonants; we do not, for example, analyse the word 'students' stju:dnts as consisting of one syllable with the three-consonant cluster stj for its onset and a four-consonant final cluster dnts. To fit in with what English speakers feel, we say that the word contains two syllables, with the second syllable ending with the cluster nts; in other words, we treat the word as though there was a vowel between d and n, although a vowel only occurs here in very slow, careful pronunciation.

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Much present-day work in phonology makes use of a rather more refined analysis of the syllable in which the vowel and the coda (if there is one) are known as the rhyme; if you think of rhyming English verse you will see that the rhyming works by matching just that part of the last syllable of a line. The rhyme is divided into the peak (normally the vowel) and the coda (but note that this is optional: the rhyme may have no coda, as in a word like 'me'). As we have seen, the syllable may also have an onset, but this is not obligatory. The structure is thus the following



9.2.3 Syllable Division

There are still problems with the description of the syllable: an unanswered question is how we decide on the division between syllables when we find a connected sequence of them as we usually do in normal speech. It often happens that one or more consonants from the end of one word combine with one or more at the beginning of the following word, resulting in a consonant sequence that could not occur in a single syllable. For example, 'walked through' wɔ:kt θru: gives us the consonant sequence ktθr.

We will begin by looking at two words that are simple examples of the problem of dividing adjoining syllables. Most English speakers feel that the word 'morning' mɔ:nɪŋ consists of two syllables, but we need a way of deciding whether the division into syllables should be mɔ: and nɪŋ and ɪŋ. A more difficult case is the word 'extra' ekstrə. One problem is that by some definitions the s in the middle, between k and t, could be counted as syllable, which most English speakers would reject. They feel that the word has two syllables. However, the more controversial issue relates to where the two syllables are to be divided; the possibilities are (using the symbol . to signify a syllable boundary):

1. e.kstrə
2. ek.strə
3. eks.trə
4. ekst.rə
5. ekstr.ə

How can we decide on the division? No single rule will tell us what to do without bringing up problems.

One of the most widely accepted guidelines is what is known as the maximal onsets principle. This states that where two syllables are to be divided, any consonants between them should be attached to the right-hand syllable, not the left, as far as possible. In our first example above, 'morning' would thus be divided as mɔ:.nɪŋ. If we just followed this rule, we would have to divide 'extra' as (i) e.kstrə, but we know that an English syllable cannot begin with kstr. Our rule must therefore state that consonants are assigned to the right-hand syllable as far as possible within the restrictions governing syllable onsets and codas. This means that we must reject (i) e.kstrə because of its impossible onset, and (v) ekstr.ə because of its impossible coda. We then have to choose between (ii), (iii) and (iv). The maximal onsets rule makes us choose (ii). There are, though, many problems still remaining. How should we divide words like 'better' betə. The maximum onsets principle tells us to put the t on the right-hand syllable, giving be.tə, but that means that the first syllable is analysed as be. However, we never find isolated syllables ending with one of the vowels I, e, æ, ʌ, ɒ, ʊ, so this division is not possible. The maximal onsets principle must therefore also be modified to allow a consonant to be assigned to the left syllable if that prevents one of the vowels I, e, æ, ʌ, ɒ, ʊ from occurring at the end of a syllable. We can then analyse the word as bet.ə, which seems more satisfactory. There are

words like 'carry' *kæri* which still give us problems: if we divide the word as *kæ.ri*, we get a syllable-final *æ*, but if we divide it as *kær.i* we have a syllable-final *r*, and both of these are non-occurring in BBC pronunciation. We have to decide on the lesser of two evils here, and the preferable solution is to divide the word as *kær.i* on the grounds that in the many rhotic accents of English this division would be the natural one to make.

One further possible solution should be mentioned: when one consonant stands between vowels and it is difficult to assign the consonant to one syllable or the other – as in 'better' and 'carry' – we could say that the consonant belongs to both syllables. The term used by phonologists for a consonant in this situation is ambisyllabic.

Self-Assessment

1. Answer the following questions:

(i) Final plosive-plus-plosive clusters

(a) When one plosive is followed by another at the end of a syllable, the second plosive is usually the only one that can be clearly heard. In this exercise, take care not to make an audible release of the first plosive.

pækt	packed	rɪgd	rigged
bægd	bagged	dʃkt	duct
drɒpt	robbed	græbd	grabbed

(ii) It is difficult to hear the difference between, for example, 'dropped back' and 'drop back,' since in the normal pronunciation only the last plosive of the cluster (the *b* of *bæk*) is audibly released. The main difference is that the three-consonant cluster is longer.

Listen and repeat:

A	B
græbd bəʊtɪθ grabbed both	græ bəʊtɪθ ɣrɒβ βoʊtɪ
laɪkt ðə m laɪkəd liked them	laɪk ðə m laɪkəd like them
hɒpt bæ k hɒpt bæ k hopped back	hɒ p bæ k hɒ p bæ k hop back
lʊkt fɔ:wəd lʊkt fɔ:wəd looked forward	lʊ k fɔ:wəd lʊ k fɔ:wəd look forward
pegd daʊn pegd daʊn pegged down	peg daʊn peg daʊn peg down
wɪpt kri:m wɪpt kri:m whipped cream	wɪ p kri:m wɪ p kri:m whip cream

9.3 Summary

- The study of syllable structure is a subject of considerable interest to phonologists. If you want to read further in this area, I would recommend Giegerich, Katamba, Hogg and McCully and Goldsmith. In the discussion of the word 'extra' *ekstrə* it was mentioned that the *s* in the middle might be classed as a syllable. This could happen if one followed the sonority theory of syllables: sonority corresponds to loudness, and some sounds have greater sonority than others. Vowels have the greatest sonority, and these are usually the centre of a syllable. Consonants have a lower level of sonority, and usually form the beginnings and ends of syllables. But *s* has greater sonority than *k* or *t*, and this could lead to the conclusion that *s* is the centre of a syllable in the middle of the word 'extra,' which goes against English speakers' feelings. There is a thorough discussion, and a possible solution, in Giegerich. Some writers believe that it is possible to describe the combinations of phonemes with little reference to the syllable as an independent unit in theoretical phonology.
- A paper that had a lot of influence on more recent work in Fudge (1969). This paper brought up two ideas first discussed by earlier writers: the first is that *sp*, *st*, *sk* could be treated as individual phonemes, removing the pre-initial position from the syllable onset altogether and removing *s* from the pre-final set of consonants; the second is that since post-initial *j* only occurs before

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ʊ, u:, ʊə (which in his analysis all begin with the same vowel), one could postulate a diphthong Ju and remove j from post-initial position. These are interesting proposals, but there is not enough space here to examine the arguments in full.

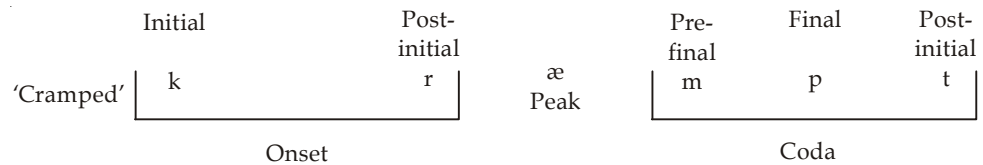
- There are many different ways of deciding how to divide syllables. Analysing syllable structure, as we have been doing in this unit, can be very useful to foreign learners of English, since English has a more complex syllable structure than most languages. There are many more limitations on possible combinations of vowels and consonants than we have covered here, but an understanding of the basic structures described will help learners to become aware of the types of consonant cluster that present them with pronunciation problems. In the same way, teachers can use this knowledge to construct suitable exercises. Most learners find some English clusters difficult, but few find all of them difficult.

9.4 Key-Words

1. Plum-Plumb merger : It is the reduction of the final cluster /mb/ to MI that occurs in all dialects to present English.

9.5 Review Questions

1. Using the analysis of the word ‘cramped’ given below as a model, analyse the structure of the following one-syllable English words:



- (i) spuealed (ii) eighths (iii) splash (iv) texts
2. Devoicing of l, r, w, j

When l, r, w, j follow p, t or k in syllable-initial position they are produced as voiceless, slightly fricative sounds. Listen and repeat:

plɛɪ play	trɛɪ tray	klɪə clear
preɪ pray	twɪn twin	kraɪ cry
pju: pew	tju:n tune	kju: queue

3. Repetition of initial clusters

Two Consonants

Listen and repeat:

spɒt spot	pləʊ plough
stəʊn stone	twɪst twist
sket skate	kri:m cream
sfiə sphere	pjəʊ pure
smalt smile	fleɪm flame
snəʊ snow	ʃrɪŋk shrink
slæm slam	vju: view
swɪtʃ switch	kwɔ:t thwart

Three Consonants

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Listen and repeat:

spleK splay

streɪ stay

skru: screw

spreɪ spray

stju: stew

skwɒʃ squash

spju: spew

skju: skew

9.6 Further Readings*Books*

1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 10: Phonemes: Detailed Study

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Objectives

Introduction

- 10.1 What is Phonology?
- 10.2 Difference between Phonetics and Phonology
- 10.3 Some Major Concepts of Phonology
- 10.4 Theories of Phonological Analysis
- 10.5 Phonemes of English
- 10.6 Phonology of English
- 10.7 Summary
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Objectives

After studying this Unit students will be able to:

- Define Phonology.
- Discuss Phonemes.

Introduction

Children do not learn the rules of spoken language by explicit instruction, but rather by a combination of copying what they hear, and building up mental generalisations based on their experiences. How much they are helped in this by some internal structure in the brain dedicated to language acquisition, which linguists call a Language Acquisition Device or Language Faculty, is still a matter of debate.

Nonetheless, aspects of spoken language show very strong similarities to the types of patterns outlined above for writing. Again, some differences between units matter, because replacing one with another will cause a different meaning to be conveyed in the language in question: replace the initial sound [k] in *call* with [t], and you have *tall*, an entirely different English word. Correspondingly, English speakers perceive [k] and [t] as entirely separate sounds, and find them rather easy to distinguish.

In other cases, two sounds which phoneticians can equally easily tell apart will be regarded as the same by native speakers. For instance, say the phrase *kitchen cupboard* to yourself, and think about the first sounds of the two words. Despite the difference in spelling (another case where orthography, as we saw also in the last chapter, is not an entirely reliable guide to the sounds of a language), native speakers will tend to think of those initial consonants as the same—both are [k]. However, if you say the phrase several times, slowly, and think uncharacteristically carefully about whether your articulators are doing the same at the beginning of both words, you will find that there is a discernible difference. For the first sound in *kitchen*, your tongue will be raised towards the roof of your mouth, further forward than for the beginning of *cupboard*; and for *kitchen*, your lips will be spread apart a little more too, while for *cupboard* your mouth will be more open. Unless you are from Australia or New Zealand, this difference is even clearer from the phrase *car keys*, this time with the first word having the initial sound produced further back in the mouth, and the second further forward.

In IPA terms, these can be transcribed as [k], the *cupboard* sound, and [c], the *kitchen* one. However, in English [k] and [c] do not signal different meanings as [k] and [t] do in *call* versus *tall*; instead, we can always predict that [k] will appear before one set of vowels, which we call back vowels, like the [ɔ]

of cupboard or the [ɑ:] a Southern British English speaker has in *car*, while [c] appears before front vowels, like the [ɪ] of *kitchen* or the [i:] in Southern British English *keys*. Typically, speakers control predictable differences of this type automatically and subconsciously, and sometimes resist any suggestion that the sounds involved, like [k] and [c] in English, are different at all, requiring uncharacteristically close and persistent listening to tell the two apart. The difference between [k] and [c] in English is redundant; in phonological terms, this means the difference arises automatically in different contexts, but does not convey any new information.

Returning to our orthographic analogy, recall that every instance of a hand-written *a* or *A* will be different from every other instance, even produced by the same person. In just the same way, the same speaker producing the same words (say, multiple repetitions of *kitchen cupboard*) will produce minutely different instances of [k] and [c]. However, a hierarchical organisation of these variants can be made: in terms of spelling, we can characterise variants as belonging to the lower-case or capital set, and those in turn as realisations of the abstract grapheme <a>. The subclasses have a consistent and predictable distribution, with upper-case at the beginnings of proper nouns and sentences, and lower-case everywhere else: we can say that this distribution is rule-governed. Similarly again, we can classify all the variants we hear as belonging to either frontier [c] or backer [k], although we are not, at least without a little phonetic consciousness-raising, aware of that difference in the way we are with *a* and *A*; presumably the fact that we learn writing later, and with more explicit instruction, accounts for our higher level of awareness here.

In turn, [c] and [k], which native speakers regard as the same, are realisations of an abstract unit we call the phoneme (where the ending-*eme*, as in *grapheme*, means ‘some abstract unit’). Phonemes appear between slash brackets, and are conventionally represented by IPA symbols, in this case /k/. As with graphemes, we could in principle use an abstract symbol for this abstract unit, say /ʒ/, or /⊕/, or give it a number or a name: but again, it is convenient and clear to use the same symbol as one of its realisations. Those realisations, here [k] and [c], are allophones of the phoneme /k/.

To qualify as allophones of the same phoneme, two (or more) phones, that is sounds, must meet two criteria. First, their distribution must be predictable: we must be able to specify where one will turn up, and where the other; and those sets of contexts must not overlap. If this is true, the two phones are said to be in complementary distribution. Second, if one phone is exceptionally substituted for the other in the same context, that substitution must not correspond to a meaning difference. Even if you say *kitchen cupboard* with the [k] first and the [c] second (and that won’t be easy, because you have been doing the opposite as long as you have been speaking English—it will be even harder than trying to write at your normal speed while substituting small *a* for capital *A* and vice versa), another English speaker will only notice that there is something vaguely odd about your speech, if that. She may think you have an unfamiliar accent; but crucially, she will understand that you mean ‘kitchen cupboard’, and not something else. This would not be so where a realisation of one phoneme is replaced by a realisation of another: if the [k] allophone of /k/ is replaced by the [t] allophone of /t/, then *tall* will be understood instead of *call*.

Finally, just as the orthographic rules can vary between languages and across time, so no two languages or periods will have exactly the same phonology. Although in English [k] and [c] are allophones of the same phoneme, and are regarded as the same sound, in Hungarian they are different phonemes. We can test for this by looking for minimal pairs: that is, pairs of words differing in meaning, where the only difference in sound is that one has one of the two phones at issue where the other has the other (think of *tall* and *call*). In Hungarian, we find minimal pairs like *kuka* [kuka] ‘dustbin’ and *kutya* [kuca] ‘dog’. It follows that [k] and [c] are not in complementary but in contrastive distribution; that interchanging them does make a meaning difference between words; and hence that [k] and [c] belong to different phonemes, /k/ and /c/ respectively, in Hungarian. Unsurprisingly, speakers of Hungarian find the difference between [k] and [c] glaringly obvious, and would be extremely surprised to find that English speakers typically lump them together as the same sound.

As for differences between periods of the same language, it is straight forward to demonstrate that Modern English [f] and [v] contrast, or are in complementary distribution, since minimal pairs like *fat* [f] versus *vat* [v], *leaf* versus *leave*, or *safer* versus *saver* are easy to come by. The phoneme system of

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Modern English therefore contains both /f/ and /v/. However, the situation was very different in Old English, as the examples in (3) show.

3. Old English

hla[v]ord <hlaford> 'lord'	heo[v]on <heofon> 'heaven'
æ[f]ter <æfter> 'after'	[f]isc <fisc> 'fish'
o[v]er <ofer> 'over'	
heal [f] <healf> 'half'	

Instead of minimal pairs, we find predictable, complementary distribution, with [v] appearing medially, between vowels, and [f] in other positions. Consequently, [f] and [v] can be analysed as allophones of one phoneme, which we might call [f]: Old English speakers would have regarded [f] and [v] as the same, just as Modern English speakers think of [k] and [c] as the same sound. Later in the history of English, many words like *very*, *virtue* and *veal* were borrowed from French, bringing with them initial [v], which had not previously been found in English. The distribution of [f] and [v] therefore ceased to be complementary, since both could appear in word-initial position, creating minimal pairs like *very* and *ferry*, or *veal* and *feel*. In consequence, [v] stopped being an allophone of [f], and became a phoneme in its own right, producing the opposition of [f] (realised as [f]) and [v] (realised as [v]) we find today.

10.1 What is Phonology?

According to Bloomfield phonology is the organization of sounds into patterns. In order to fulfil the communicative functions, languages organize their material, the vocal noises, into recurrent bits and pieces arranged in sound patterns. It is the study of this formal organisation of languages which is known as phonology.

What is sound? How and where is it produced from? How is it received by the ears? How and why is one sound different from the other?—questions like these are the subject-matter of Phonology.

10.2 Difference between Phonetics and Phonology

The difference between phonetics and phonology is that of generality and particularity. Whereas phonetics is the science of speech sounds, their production, transmission and reception and the signs to represent them in general with no particular reference to any one language, phonology is the study of vocal sounds and sound changes, phonemes and their variants in a particular language. If phonetics can be likened to a world, phonology is a country. Phonetics is one and the same for all the languages of the world, but the phonology of one language will differ from the phonology of another. According to John Lyons. "Phonetics differs from phonology.... in that it considers speech sounds independently of their paradigmatic opposition and syntagmatic combinations in particular languages," and that phonology is the level at which the linguist describes the sounds of a particular language.

The subject-matter of phonology is the selected phonetic material from the total resources available to human beings from phonetics. The human vocal system can produce a very large number of different speech sounds. Members of a particular speech community speaking that particular language, however, use only a limited number of these sounds. Every language makes its own selection of sounds and organizes them into characteristic patterns. This selection of sounds and their arrangement into patterns constitute the phonology of the language.

To quote Robins, "Phonetics and phonology are both concerned with the same subject-matter or aspect of language, speech sounds, as the audible result of articulation, but they are concerned with them from different points of view. Phonetics is general (that is, concerned with speech sounds as such without reference to their function in a particular language), descriptive and classificatory: phonology is particular (having a particular language or languages in view) and functional (concerned with working or functioning of speech in a language or languages). Phonology has in fact been called functional phonetics."

10.3 Some Major Concepts of Phonology

10.3.1 Phoneme

Most linguists, until recently at least, have regarded the phoneme as one of the basic units of language. But they have not all defined the phonemes in the same way. Some linguists like Bloomfield and Daniel Jones have described phonemes in purely physical terms. Others like Sapir have preferred psychological definitions. Some regard the phoneme only as an abstract, fictitious unity and argue that in a language it is not phonemes but allophones that exist in reality. Furthermore, linguists of the Copenhagen School treat the phonemes as *glassemes* and regard them as algebraic units.

The term phoneme was first used in the late 1870's notably by Kruszewski. Saussure too worked on the phonemes. But the most notable work in this field was done by Sapir in 1927. Most phoneticians such as Louis Jhelslev, Bloomfield, Trubetzkoy, Daniel Jones, Roman Jakobson, and Pike have thrown light on the phoneme.

The phoneme, according to Bloomfield, is the minimal unit of distinctive sound-feature. In Webster's *Third New International*, the phoneme is defined as the smallest unit of speech distinguishing one unit from another, in all the variations it displays in the speech of one person or in one dialect as a result of modifying influences, such as neighbouring sounds or stress. In Dorfman's opinion a phoneme is a single speech sound or group of similar or related speech sounds functioning analogously in a language, and usually represented in writing by the same letter, with or without diacritic marks.

According to most contemporary linguists, however, the phoneme is the minimal bundle of relevant sound features. A phoneme is not a sound; it can be realized only through one of its allophones: it is a class of sounds, actualized or realized in a different way in any given position by its representative, the allophone: it is an ideal towards which the speaker strives, while the allophone is the performance he achieves; it occupies an area within which the various allophones move and operate; its outer limits may approach but not overlap those of other phonemes, and it cannot invade the territory of another phoneme without loss of phonemic distinction.

Thus the precise definition of a phoneme has been the subject of much discussion among linguists and there are two major points of view. The first is the 'classification' theory developed by Daniel Jones which considers the phoneme to be a group or family of related sounds, e.g. /p/ in English consisting of [p], [p^h], etc. or /u/ consisting of (u:), (u) etc. The second or 'distinctive feature' theory developed by N.S. Trubetzkoy and the Prague School considers a phoneme to be a bundle of distinctive features, e.g. /p/ in English is considered to be made up of bilabial + stop + voiceless (aspiration is therefore not distinctive and thus the allophones (p^h) and (p) above are allowed for.

Depending on the point of view taken, a phoneme can be defined as "a unit, a rubric, a bundle of sound-features", or "the smallest contrastive linguistic unit which may bring about a change of meaning. "Hence it is a minimum distinct functional unit. Phonemes of a language may be discovered by forming minimal pairs, i.e. pairs of words are different in respect of only one sound segment. The series of words **pat, bat, cat, hat, sat, that, mat**, supplies us with seven words which are distinguished simply by a change in the first (consonantal) element of the sound sequence. These elements of contrastive significance are phonemes and be symbolized as /p,b,k,h,s,ð,m/. Similarly, in the series of words **hat, hit, heat, hot, heart**, the elements of contrastive significance are æ,i,i:,o,a:/

10.3.2 Phone

Any objective speech sound, considered as a physical event, and without regard as to how it fits into the structure of any given language, is a phone. Hence a phone in phonology is 'the smallest possible segment of sound abstracted from the continuum of speech'.

10.3.3 Allophone

Some sounds, the native speaker thinks are the same, while others are different. The linguist has to figure out what sounds are grouped together as the same, what it is that they all have in common among themselves and how dissimilar are they to other groups of sound in the informant's speech

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and what criteria the native speaker uses to tell sounds apart. We said earlier that by substituting other segments, the linguist can arrive at a list of these significant, contrastive classes of sounds called 'phonemes'. But we do not always find minimal pairs to help us figure out the list of phonemes. There must be other criteria too, which we will have to incorporate into the definition of a phoneme. The **k**-sound in **keel**, **calm** and **cool** differs. In **keel** it is at the front in the mouth, in **calm** it is a little in the centre and in **cool** further back in the mouth. The absence of the above mentioned features do not distort the message for the native speaker. He does not differentiate these sounds in every day speech in the sense that he is not aware of the physical differences. He thinks these sounds are members of the k-class or are all **k**. In other words for the phoneme /k/. central-k, retracted-k, fronted-k are all allophones.

Hence an allophone is a speech sound which is one of a number of variants of a phoneme. Such a variant can be either in complementary variation or in free variation. The occurrence of a particular allophone may be determined by its environment, or it may be in free variation. Allophones determined by environment, for example, are front or clear [l] as in **lamp** or **light** occurring before vowels and the so-called 'back' or 'dark [l] as in **old** and **table** occurring before consonants and at the end of words. They are in complementary distribution, that is where the dark [l] appears in English, there cannot occur the clear [l]. An example of allophones occurring in free variation in the Southern British English (R.P.) is the /r/ between vowels, as in **very**, which can occur either as a flap, or as a fricative. Thus allophones are phonetic variants; they are positional or contextual, or conditional variants (alternants) of phoneme.

According to Trager and Smith (*An Outline of English Structure*), a linguist identifies these allophones in the following way:

1. The sounds should be phonetically similar.
2. They should be in complementary distribution.
3. They should exhibit pattern congruity with other groups of sounds.

10.3.4 Diaphone

Sometimes a sound is used by a particular speaker or group of speakers of a language, but is substituted by another sound by some other speaker or group of speakers of the same language. For example, the sound of the diphthong /ou/, as in the word 'loan' may be substituted by the vowel-sound /ə/ɔ:/, or the sound of the consonants dark 'l' as in 'little' may be substituted by the sound of clear 'l' by some speaker. The bilabial plosive consonant-sounds /p/ and /b/ may often be replaced by the aspirated sound /p^h/ and /b^h/. In Hindi words वक्ष (meaning 'towards'), the sound 'व' is replaced by 'व^h' and the word is spoken as 'व^h' (meaning 'and'). Similarly, the consonant 'क' /k/ is replaced by 'क^h' /s/, and the word "क^h" is pronounced as | h | k. Now, both the sounds that is originally used by the speakers of a language as well as that which is used by other speakers of that language, are said to constitute a *diaphone*. Daniel Jones has defined a *diaphone* in the following manner: "The term *diaphone* is suggested to denote a sound used by one group of speakers together with other sounds which replace it consistently in the pronunciation of other speakers" (*An Outline of Phonetics*, 9th edn. 1962, Cambridge, Heffer.)

Jones elucidates certain facts related to *diaphones*, two of which are stated below:

1. "Everyone has different styles of pronunciation. Such different styles are merely different ways of pronouncing the language. When a person consistently uses one sound in one style of speech but substitutes another for it in another style, it is as if two different people were speaking, and the two sounds must be regarded as two members of the same diaphone." (*Ibid*).
2. "Care must be taken to distinguish diaphones from phonemes. The different members of one phoneme are sounds used by *one single person* speaking in one particular style; their use is conditioned by the nature of the surrounding sounds in the sequence and on the degree of stress, sometimes also on length and intonation. The different members of one diaphone are found in *comparing the speech of one person with that of another*, or in comparing two styles of speech of the same person." (*Ibid.*)

10.3.5 Phonetic Similarity

Phonetically similar sounds are sounds that share a phonetic feature, such as nasality /m,n,ŋ/, or labial quality (/p/ and /b/ or front vowel quality (/i/ and /e/). But the notion of phonetic similarity is not a reliable guide. In a sense all sounds are phonetically similar, and are produced by the same organs of speech. In another sense they are also dissimilar, which is why we can tell them apart. Hence phonetic similarity is a tricky notion.

10.3.6 Complementary Distribution

Having discovered sets of phonetically similar sounds, for examples /p/ and /b/ we must ask whether the variation in each set can be accounted for in terms of the phonetic environments of the members of the set. Mutually exclusive distribution is otherwise known as complementary distribution. For every phoneme there may be positional variants—allophones. Sometimes an allophone occurs in a fixed place in a word. The English phoneme /l/, for example, has one form at the beginning of a word and another form at the end. In a word such as **light**, the first consonant is a ‘clear’ l, pronounced by placing the tip of the tongue just behind the teeth and keeping the back of the tongue fairly low. In **hill**, the tongue tip is in the same place, but the back of the tongue is raised resulting in a ‘dark’ l. These variants of /l/ are said to be in complementary distribution: each allophone occurs in its own predictable place in a word.

Another example of complementary distribution is found in the English phoneme /p/. When p occurs in initial and stressed position, it is pronounced with aspiration (a puff of breath). After s, this puff of breath disappears. This can be tested by holding a sheet of paper in front of the mouth and saying the words **spot, spill, pot, pill**. In the case of **spot and spill**, the paper remains motionless. But when **pot and pill** are pronounced, the accompanying puff of breath makes the paper billow out.

The notion of complementary distribution in the discovery and assignment of the allophones of a phoneme is useful in a number of cases, but fails in some other cases. For example, in English no word has the segment /ŋ/ in its initial position. Nor does the segment /h/ ever occur in the final position. These two phones are in mutually exclusive distribution, but they are not phonetically very similar to each other. Therefore, the linguist does not regard them as allophones of a simple phoneme, but two different phonemes in English, although there is no minimal pair establishing that these two sounds are in contrastive distribution. If two allophones are not in contrast, they are said to be in complementary distribution: that is, neither occurs in any environment in which the other is found.

10.3.7 Symmetrical Patterning

A third principle of discovering allophones, besides those of phonetic similarity and complementary distribution, is that of symmetrical patterning. Languages seem to have symmetrical patterning. This patterning is also known as phonetic patterning or pattern congruity. This pattern differs from language to language. It is to a large extent unconscious and appears to be one of the means by which human memory is able to store a large number of items. In English, for example, many consonant phonemes are unconsciously paired together: /p/ is paired with /b/, /t/ is paired with /d/, /f/ is paired with /v/. In addition, /p/ and /t/ and /k/ behave in a very similar way to one another. Each of them has an aspirated form which occurs at the beginning of a word, as in **pill, till, kill**, and an unaspirated form after /s/, as in **spill, still, skill**.

By pattern congruity we also mean that relationships are far more important than the phonetic characteristics of the sounds. For example, the allophones of /t/ in English are produced at different points of articulation in words like fountain, the allophone of /t/ is realized at the back of the mouth and in a word like *little* it is at the glottis. For this reason, they ought not to be considered allophones of a dental stop. They are phonetically similar to velar and glottal stops. But the linguist looks at distribution and maintains there are parallel positional variants for /p/ and /k/. So, disregarding the physical characteristics and paying attention to the patterning, the assignment of the allophones to a phoneme is made.

10.3.8 Criterion of Economy

Yet another governing principle is economy. The list of phonemes should be as small as possible. It will be in accordance with the principle of economy if we recognize length /: / as a phoneme in English. Similarly some others prefer on the basis of economy to transcribe **choose** as /cu:z/ rather than as /tʃ /u : z / . These examples are given to show that there is no unified theory of phonemics or phonology and that there are some controversial questions that have not been resolved yet. Different linguists use different symbols, consider the material at different times, thus giving rise to different interpretations.

10.3.9 Neutralization

Lack of contrast between two phonemes in one particular environment is referred to as neutralization of the contrast in the environment. This so-called neutralization of the distinction between two phonemes is a more common phenomenon than free variation between phonemes in phonology. In languages like German, Russian, Turkish, there is a phonemic distinction between voiced and voiceless consonants in most positions of the word, but in the final positions voiced consonants do not occur. Thus both the German words **Rad** ('wheel', 'bicycle') and **Rat** ['council', 'advice'] are pronounced alike namely /ra: t/. The normal orthography maintains the difference but in the phonology this difference is neutralized. In English, examples of this kind are to be found in the allophones of /m/ and /n/ before f and /v/, in words like **sympathy** and **infancy**. The nasal consonant in each case is likely to [m], that is to say, that /m/ and /n/ are not opposed, so that the sound could be allocated to either the /m/ or the /n/ phoneme.

There are different ways of treating this kind of neutralization. Some scholars say, that it is the phoneme /t/ that occurs in both **Rad** and **Rat** and account for the change of /d/ to /t/ in **morphonemics** which is an intermediate linguistic level between grammar and phonology. Others [e.g. the linguists of the so called Prague-school] account for this phenomenon by recognizing in addition to the phonemes the **archiphonemes** restricted to the positions of neutralization. They symbolize the archiphonemes by the use of capital letters and would transcribe **Rad** and **Rat** as [ra:d] and [ra:t]

10.3.10 Free Variation

Non-significant linguistic variation between two or more linguistic forms is known as free variation. We have an instance of free variation when two phonetically different units occur, but do not contrast: that is to say, the substitution of one for the other does not produce, a different word, but merely a different pronunciation of the same word; e.g [ai] and [i:] in the pronunciation of the word **either** as / aiðe/ or i: ðe/ are not allophones [phonemic alternants], but are in free variation. Similarly / ekənɒmiks/ and / i:kə nɒmiks/ would produce only one word **economics**. The difference in the pronunciations of **either economics**, etc. is 'accidental'; it is not a part of the regular phonological structure of the language. Other examples of free variation are [w] and [hw] in the pronunciation of the word wheel as / wi: l/ or as / whi: l/. Similarly a word like fortnight may be pronounced either as / fɔ: tnaɪt/ or fɔ:?. nait/[?] is the symbol for the 'glottal stop', a sound produced by first bringing the vocal cords together and then releasing them so that there is a sudden escape of air. So [ʔ] is a free variant of /t/ at the end of an English syllable as [hw] is of [w] in the beginning of an English syllable.

10.4 Theories of Phonological Analysis

The analysis of an utterance into segmental and suprasegmental features is known as phonemic or phonological analysis. There are several different theories of phonological analysis. Some of these major theories are discussed below:

10.4.1 Structure and System

One approach is in terms of what are called structure and system. The phonological units (Phonemes or sounds) of a language are grouped together to form the various systems and the arrangements of these units in larger units such as syllables, feet, tone-group, sentence that form the structure of that

language. The units that form a system, can be replaced by other units to produce different utterances, while the relations between the different units present in an utterance constitute a structure. For instance, the English word sack/sack has one syllable, which is made up of sequence of three phonemes /s/, /æ/ and /k/. The phoneme /s/ can be replaced by other phonemes /b/, /p/, /t/dz/, /h/, /l/ to give us different words **back, pack, tack, jack, hack, lack**. All these items that can be replaced by another at a particular place in a structure are in **paradigmatic** relationship and form a system. Similarly, /æ/ forms a system with other phonemes /i/, /i:/, /e/, /ei/ that can be used as substitutes to give us other words **sick, seek, seck, sake**, /k/ also forms a system with the /t/, /d/, /p/, /m/ /ŋ/ that give us the words **sat, sad, sap, sam, sang**.

The units of phonological analysis have a hierarchy, so that a unit of higher ranks consists of a sequence of one or more occurrences of the next lower rank. For example, in English one or more phonemes make up a syllable; one or more syllables make up a foot (which is the unit of rhythm); one or more feet make up a tone group (which is the unit of intonation); one or more tone groups make up a sentence. Examples of these phonological units are given here:

- 1. Phoneme:** /k/, /b/, /t/, /d/, /i/, /e/, etc.
- 2. syllable:** **back**/bæk/ ago/ə'gou/ **button** b ^-tn, /etc.
- 3. foot:** The cur/few tolls/the knell/of part/ing day/. Here we have five feet. (/A slanting bar/ represents a foot boundary)
- 4. tone group:** // If the "bride a, grees // the 'marriage is in' January./ / . (// represents tone group boundary; 'represents rising tone, and 'falling tone,' accent (strong or stressed syllable.)
- 5. Sentence:** For example, the sentence given above has two tone groups.

10.4.2 Prosodic Analysis

Prosodic analysis is another aspect of phonology. It is concerned with phonological features 'that extend beyond a phonematic unit in a structure'. Features like aspiration, nasalization, labialization, retroflexion and palatalisation often relate to sequences of more than one phonematic unit. The study of supra-segmental features like stress, rhythm, intonation, etc. also forms a part of prosodic analysis. Examples of a few prosodic features are given below:

- 1. aspiration:** The English word **clay** /klei/ has an aspirated /k/ in the form of [kh], but the aspiration affects the following /l/ also and devoices it to [l̥]. It can therefore be described as /h/ prosody.
- 2. nasalization:** The English word **sing** /siŋ/ has incidental nasalization of the vowel /i/ under the influence of the nasal consonant after it. Nasalization can therefore be described as a prosody in this kind of syllable.
- 3. lip-rounding:** The English word **quiet** /kwait/ has lip-rounding for /k/ also under the influence of the following /w/. We have here an example of /w/—prosody.
- 4. retroflexion:** The Hindi word ग्लम्क has retroflexion extending to both the nasal and the following plosive sounds. We can call it an example of the prosody of retroflexion.
- 5. palatalization:** The English word **key** /ki:/ has a palatal instead of a velar /k/ under the influence of the following /i:/. This can be described as /i/—prosody.
- 6. accent:** Accent on a particular syllable in a word can be taken as a prosody. For example, the English word ago/ə'gou/ has the accent on the second syllable.
- 7. sentence stress, rhythm and intonation** are also prosodic features.

10.4.3 Phonemics

Another approach to phonology is based on phonemics, according to which the discovery of the phonemes (the minimal distinctive sound-units) of a language is done by forming minimal pairs (by replacement of one phoneme by another which can bring about a change of meaning). Each phoneme, however, may have slightly different phonetic realizations, called allophones, in different environments. Most phonological theories are based on phonemics.

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Some linguists restrict the use of the term 'phoneme' to segments of human sounds only, and analyse what are called suprasegmental or **prosodic** features separately. The most important of the suprasegmental features are: (1) **length** (syllables and feet), **stress, and pitch**. (These are discussed in the next section of this chapter). Other linguists extend the use of the term 'phoneme' to cover all distinctive sound features including levels of stress, levels of pitch, and types of juncture.

10.4.4 Distinctive Features Theory

In the phoneme theory, the phoneme (segment) is the smallest unit of phonology, but in the **Distinct Features Theory** the phonetic feature is the smallest unit of phonology. Segment theory is linguistically inconvenient. There are no rules in any language which apply to all the sounds. There are a fixed number of features or components which form a basic stockpile from which every language selects phonetic features and combines them in different ways. It is these features which keep a segment distinct or separate from others. That is why they are called the distinctive features.

In distinctive features theory (as different from the notation transcription), the phonetic transcription is simplified and systematized by regarding each sound a set of components, exactly parallel to semantic component. As proposed by Roman Jakobson, Morris Halle, Chomsky, etc., acoustics and/or articulatory variables can be reduced to a small number of parameters or phonetic features (twenty-seven with multi-values). A distinctive features component, for example for the sounds /t/ and /k/ as in the English word take according to this theory, may be as follows:

t	k
+ consonantal	+ consonantal
- vocalic	- vocalic
- voice	- voice
+ plosive	+ aspirate
+ alveolar	+ plosive
+ aspirate	.
+ tense	.
.	.
.	.
.	.



Notes Dots [.] mean that the list is inexhaustive.

In English, for example, the following phonetic features are distinct:

1. **State of Glottis:** voiceless/voiced.
2. **Position of Soft Palate:** oral/nasal.
3. **Place of Articulation:** (a) bilabial/alveolar/velar; (b) labiodental/ dental/alveolar/palato-alveolar.
4. **Manner of Articulation:** (a) plosive/fricative/nasal; (b) nasal/lateral; (c) affricate/fricative.
5. **Part of Tongue Raised:** front/back.
6. **Height of Tongue:** Close/between half-close and half-open/between half-open and open/open.
7. **lip-position:** unrounded/rounded.
8. stressed/unstressed.
9. reduced vowel/unreduced vowel.

9. tonic/non-tonic.
10. **Tone:** falling/rising; low fall/high fall/low rise/high rise/fall rise: or primary/secondary/tertiary/fall-rise.

In more recent work on generative phonology, particularly by Noam Chomsky and Morris Halle, these features have been extensively modified and placed into categories such as

1. **Major class features** as sonorant [making a deep impression] vs. non-sonorant; vocalic vs. non-vocalic.
2. **Cavity features** relating to the shape of the oral cavity and the point of articulation with such features as coronal vs. non-coronal, anterior vs. non-anterior.
3. **Manner of Articulation** features such as continuant vs. non-continuant, tense vs. lax.
4. **Source Features** as voiced vs. voiceless; strident vs. mellow.
5. **Prosodic Features** as stress, pitch, etc.

10.4.5 Generative Phonology

Modern science of speech sounds really began with the concept of the 'phoneme' (as developed by Trubetzkoy and others of Prague School in 1930's. The first significant modification occurred in 1952 with the distinctive features theory, which goes further in rejecting many concepts of the 'traditional' phonology).

'Classical' phonology was concerned with the analysis of the continuum of speech into distinctive segments, whereas the aim of Generative Phonology is to establish a series of universal rules for relating the output of the syntactic component of a generative grammar to its phonetic realization. As mentioned by P. Ladefoged, the aim of generative phonology is to formulate rules to express, "the relationship between the output of a set of syntactic rules and the sounds of actual utterances."

In the application of the generative rules two levels of representation are recognized: a systematic 'phonetic representation' and a 'phonological representation'. An earlier term for the latter was 'systematic phonemic', but this was later rejected because of the meaning of 'phonemic' in structural theories. Generative grammar rejects the notion of a phonemic level and the concept of 'phoneme'. On the phonetic level the phones are bundles of distinctive features and phonological rules relate these phones directly to 'lexical' level.

10.5 Phonemes of English

Trager and Smith set up the following forty-five phonemes for English:

9	simple vowels
3	semi-vowels
21	consonants
4	stresses
4	itches
1	plus juncture
3	terminal juncture

Total 45

Vowels: Trager and Smith propose nine simple vowels arranged 3x3:

	Front	Central	Back
High	i	ɪ	u
Mid	e	ə	o
Low	æ	ɑ	ɔ

Semi-Vowels: There are three semi-vowels /y,w,h/.

Notes

Complex Vowels: Any one of these can be added to each of the nine vowels giving us $9 \times 3 = 27$ complex vowels—a vowel phoneme followed by a semi-vowel phoneme. Thus in all there are thirty-six (9 simple and 27 complex) vowel phonemes that serve as the vocalic nuclei.

Consonants:

In addition, there are twenty-one consonant phonemes

/p t k b d g c j f θ s sv ð z z m nŋ l r/.

Stress

Trager and Smith recognize four levels of stress:

1. Primary /' /: teacher
2. tertiary / /: Miss Smith; contens
3. weak [zero] /˘ /: animal
4. Secondary /˘˘ /: under; came

Tell me the truth.: /tel miy ð ə truw θ /

Juncture: Trager and Smith recognize four junctures as phonemes: 1. Internal junction /+ / as in **night+rate** as contrasted to **nitrate**; 2. Single-bar Juncture /1 /, indicative of incompleteness; 3. Double-bar Juncture /1 /, indicative of incompleteness; 3. Double-bar Juncture /ll /, indicative of uncertainty; 4. Double-cross Juncture /# /, corresponding to the orthographic period of fullstop, indicative of assertion. The first one is known as plus juncture, the other three are called terminal junctures.

Pitch: Trager and Smith accord the phonemic status to pitch and recognize four levels /1 2 3 4 /; for example,

/²wə n / /²tu w / /²θ viy / /³fohv³# /

Stress, pitch and juncture are described by Trager and Smith as 'suprasegmental' whereas the vowels and consonants, including the semi-vowels, are segmental phonemes. With segmental phonemes there is very little transition from one segment to the other. But the suprasegmentals are not restricted to one segment but extend over more than one. The segmental phonemes are discrete; the suprasegmental phonemes are super-imposed.

10.6 Phonology of English

In English (the Received Pronunciation of England), there are 44 distinctive speech sounds or phonemes. Twenty of these are vowel sounds and the remaining 24 are consonantal sounds. In the vowel sounds twelve are **pure vowels or monophthongs**—/i:/, /i/, /e/, /æ/, /a:/, /ɔ:/, /ɔ/, /u:/, /u, /ə/, /ə:/, /ʌ/; and eight are **vowel glides or diphthongs**—/ei/, /ai/, /au/, /ou/, /ɔi/, /uə/, /eə/. The vowels /i:/, /a:/, /ɔ:/, /u:/, are comparatively long and the vowels /i/, /e/, /æ/, /ɔ/, /u/, /ʌ/ and /ə/ are comparatively short. In other words, the five long vowels are always longer than other seven short vowels in identical phonetic environments (=when they are preceded and followed by the same sounds.) Thus the vowel in **peel** is always longer than the vowel in **pill**).

10.6.1 Vowels in Detail

/i:/ During the articulation of /i/ the front of the tongue is raised in the direction of the hard palate, to an almost close position. The lips are spread, and thus it is a **front close unrounded vowel** [since all English vowels are **voiced** and **oral** we shall not repeat this phenomenon]. The various **spellings** for this vowel are e, ee, ea, ie, i, ey, eo, as in the words eve, see, tea, piece, receive, police, key and people respectively. As regards the **distribution** of /i/ it can occur initially [eat], medially [meat] and finally [bee].

/i/ During the articulation of R.P. vowel /i/ the front part of the tongue is raised in the direction of the hard palate to a position between the close and half-close positions. The lips are loosely spread. /i/ is thus a **centralised front unrounded vowel between close and half-close positions**. /i/ is represented in spelling by i, e, y, a, u, ee, ey, ia, ai, ui, and ei as in pit, begin, city, baggage, ladies,

busy, coffee, money, carriage, bargain, build, and foreign respectively. As regards its **distribution**, /i/ can occur initially, medially and finally in a word.

/e/ During the articulation of the vowel /e/, the front of the tongue is raised in the direction of the hard palate to a position between the half-close and half-open positions. The lips are neutral. Thus /e/ is **front unrounded vowel between half-close and half-open positions**. /e/ is represented in spelling by e, ea, a, u, ie, ei, ai, ay, as in bed, dead, any, bury, /beri/, friend, leisure, said, /sed/ and says, /sez/. Regarding its **distribution**, it occurs initially and medially and does not occur finally.

/æ:/ The vowel /æ/ is articulated with the front of the tongue raised toward the hard palate to a height between the half-open and half open-positions. The lips are neutral. It is thus a **front unrounded vowel between half-open and open positions**. Regarding its distribution, it can occur initially and medially in a word. It does not occur finally. It is represented in spelling by a as in apple, cat, bad, etc.

/ɑ:/ can occur initially, medially and finally in a word. It is represented in spelling by **a, au**, (laugh), **e** (clerk) and **ea** (heart). During the articulation of /ɑ:/, the back of the tongue is in the fully open position; it is very low in the mouth; the lips are neutral. It is thus a **back open unrounded vowel**.

/ɔ:/ During the articulation of /ɔ/ the back of the tongue is in the fully open position. The lips are rounded. Hence it is a **back open rounded vowel**. In spelling it is represented by o, ua, au, ou, ow in words such as pot, quality, because, cough, knowledge respectively. As far as its distribution is concerned, /ɔ:/ occurs initially and medially. It does not occur finally.

/ɔ:/ occurs initially, medially and finally in a word, e.g. in ought, thought, law. In spelling it is represented by a (wall), or (corn), our (court), ore (more), ough (bought), oor (door), aw (awful), al (walk), oar (board), ough (caught), o (story), ar (war), etc. During the articulation of /ɔ:/ the back of the tongue is raised towards the soft palate to a height between the half-open and half-close position. The lips are rounded (more closely than for /ɔ:/described above). /ɔ:/ is thus a **back rounded vowel between half open and half-close position**.

/u/ During the articulation of /u/, the fore part of the back of the tongue is raised towards the soft palate to a height between the half-close and close positions. The lips are rounded. /u/ is thus a **centralized back rounded vowel between close and half-close positions**. In spelling it is represented by oo (book), u (bull), o (woman) and oul (could). It does not occur initially. It occurs very freely in the medial position, e.g. book, cook. In the final position it occurs only in the weak form of the preposition **to**.

/u:/ is articulated with the back of the tongue raised to an almost close position towards the soft palate. The lips are closely rounded, /u:/ is thus a **back close rounded vowel**. In the spelling it is manifested by (pronounced/ju/) as in 'unit', oo (fool), o (do) ou (soup), ui (fruit), ew (few) eau (beauty), oe (shoe) and wo (two), /u:/ can occur initially and finally in a word.

/ʌ/ During the articulation of /ʌ/, the centre of the tongue is raised towards that part of the roof of the mouth which is between the hard palate and soft palate, to a height between the open and half-open positions. The lips are neutral. It is thus a **central unrounded vowel between open and half-open positions**. This vowel is represented in spelling by u, o, ou, oo, oe as in out, come, rough, blood, and does respectively. As regards its **distribution**, it can occur initially and medially in a word (up, cup). But it does not occur finally.

/ə:/ During the articulation of /ə:/ the centre of the tongue is raised towards the roof of the mouth (i.e. between the hard and soft palates to a height between the half-close and half-open positions. The lips are spread. /ə:/ is thus a **central unrounded vowel between half-close and half-open positions**. In spelling, it can be represented by er (perfect), ir (bird), ur (church), or (word), ear (earth) and our (journey). As far as its distribution is concerned, it can occur initially, medially and finally as in earn, burn and fur.

/ə/ is a very frequently occurring vowel in English; it can occur initially, medially and finally in a word (admit, excellent, and upper respectively). **This vowel occurs only in unaccented syllables**. It is articulated with two different tongue-positions, depending upon whether it occurs finally in a word or elsewhere.

Notes

During the articulation of non-final /ə/ the centre of the tongue is raised towards the roof of the mouth to a height between half-close and half-open. The lips are neutral. Nonfinal /ə/ is thus a central **unrounded vowel between half-close and half-open**. Final /ə/ is slightly open rather than nonfinal /ə/.

Spellings	(non-final/ə/)	Transcription
a	about	/ə, baʊt/
ar	backward	/bækwəd/
e	sentence (n)	/sentəns/
er	entertain	/entə'tein/
o	condition	/kəndi:ʃən/

10.6.2 Diphthongs of R.P.

A diphthong is an independent vowel-glide. It has to occupy one syllable. During the articulation of /ei/, the glide is from a front unrounded vowel between half-close and half-open to a front unrounded vowel just above the half-close position. Its spelling can be represented by a (age), ay (day), ai (pain), ey (they) and ea (break). It occurs initially, medially and finally as in age, pain and say respectively.

During the articulation of /ai/, the glide is from a front open unrounded vowel to a front unrounded vowel just above the half-close position. The spelling is represented by i (mine), y (by), igh (high), ei (either) and uy (buy). It occurs, as regards its **distribution** initially, medially and finally, in a word, e.g. ice (initial), fine (medial) and cry (final).

During the articulation of /ɔi/, the glide is from a back rounded vowel between open and half open to a front unrounded vowel just above the half-close positions. The spelling is represented by **oi** and **oy** as in boil and boy. This diphthong can occur initially, medially and finally as in oil, boil, and boy.

During the articulation of /au/, the glide is from a back open unrounded vowel to a back rounded vowel just above the half-close position. It occurs initially (out), medially (scout) and finally (cow). Its spelling is represented by ou (house) and ow (how).

During the articulation of /ou/, the glide is from a central unrounded vowel between half-close and half-open to a back rounded vowel just above the half-close position. As to its distribution, this diphthong can occur in all three positions: initial (over), medial (coat), and final (go). Its spelling is represented by o, ow, oa and ou as in bone, blow, boast, shoulder respectively.

During the articulation of /iə/, the glide starts from a front unrounded vowel just above the half close position and moves in the direction of central unrounded vowel between half-close and open. Its spelling can be represented by **eer** (deer), **ear** (clear), **ere** (here), **e** (zero), **ier** (fierce) and **ea** (idea). As regards its **distribution** /ie/ can occur initially, medially and finally as in **ear**, **serious** and **fear** respectively.

During the articulation of /uə/, the glide starts from a back rounded vowel just above the half-close position and moves in direction of a central unrounded vowel between half-close and half-open. Its **spellings** are represented by **oor**, **ure** and **our** as in **poor**, **sure** and **tour** respectively. As far as the **distribution** is concerned, /uə/ occurs medially and finally, as in **poorly**, and **moor**. It does not occur initially in a word.

During the articulation of /eə/, the glide is from a front half-open unrounded vowel to a central unrounded vowel between half-close and half-open. The spellings are **air** (chair), **are** (bare), **ear** (bear) **ae** (aeroplane), **eir** (their). As regards its **distribution**, this diphthong can occur in all the three positions in a word, e.g. initial (**airoplane**), medial (**daring**) and final (**dare**).

10.6.3 Triphthongs

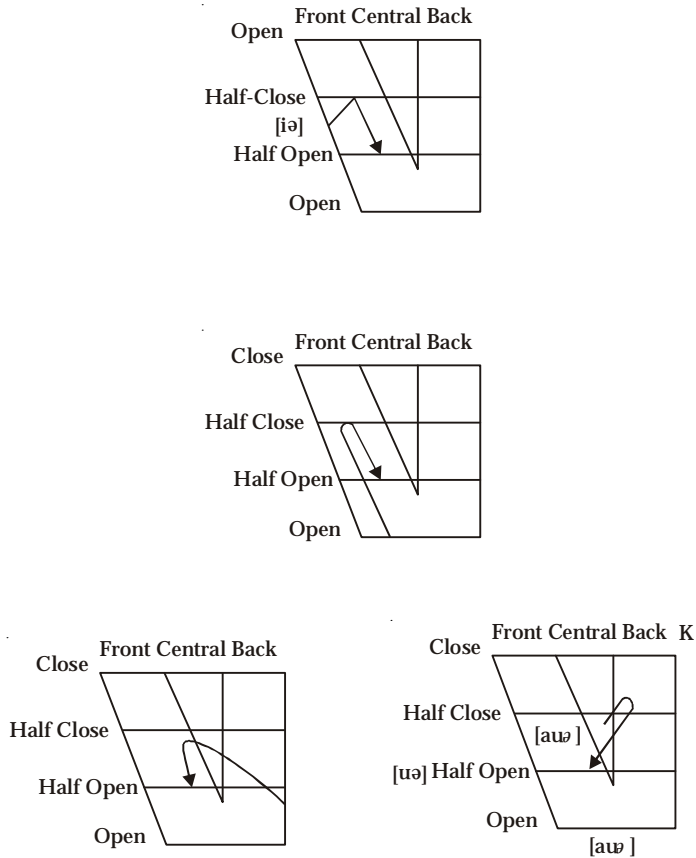
The diphthongs /ei/, /ai/, /ou/, /au/ may be followed by the vowel /ə/ within a word e.g.

player	/plɛə* /
higher	/'haɪə* /

employer	/ ¹ m'plɔ̃ə*/
mower	/ ¹ mə ɔ̃ə*/
shower	/ ¹ ʃ a ɔ̃ə*/

Notes

These glides (called triphthongs), i.e., /e¹ə/, /a¹ə /, /ɔ̃¹ə/, /ə and /ə e/ are represented in the diagrams given below.



10.6.4 Consonants of English

A: Plosives or Stops

A plosive or stop consonant is one that is produced with a stricture. The articulators are in firm contact for some time and then are separated suddenly.

There are six plosive consonants in English (R.P.). These are /p/, /b/, /t/, /d/, /k/, /g/. Of these /p/ and /b/ are bilabial, /t/ and /d/ are alveolar, and /k/ and /g/ are velar.

1. During the articulation of /p/, the two lips make a firm contact with each other. The soft palate is raised, thereby shutting off the nasal passage. Air that is compressed by pressure from the lungs, escapes with an explosive sound when the two lips are separated. The vocal cords are held apart and they do not vibrate, /p/ can thus be described as a **voiceless bilabial plosive**.

Spellings: The phoneme /p/ is represented by the letters p and pp as in *pin*, *paper*, *upper*, *gap*. It is to be remembered that the letter *p* is silent in words like *psalm*, *psychology*, *receipt*, *cupboard*, etc.

Distribution: /p/ can occur initially, medially and finally in words as in *pin* (initial), *supper* (medial) and *gap* (final).

Notes

- (i) /p/ is aspirated (i.e., released with a strong puff of air) when it occurs initially in a stressed syllable. The aspirated variety can be represented by the symbol [p^h].

pin	/ˈpɪn/	[p ^h ɪn]
appoint	/əˈpɔɪnt/	[eˈp ^h ɔɪnt]
paper	/ˈpeɪpə*/	[p ^h eɪpə*]
appear	/əˈpiə*/	[əp ^h iə*]

- (ii) /p/ is unaspirated when it occurs after /s/ and in unaccented syllables e.g.,

spare	/ˈspeɪə*/
spirit	/ˈspɪrɪt/
supper	/ˈsʌpə*/
pot'ato	/puˈteɪtəu/

- (iii) /p/ is nasally released when it is followed by /m/, e.g., topmost toepmoust

- (iv) /p/ is not released audibly when it occurs finally or before another plosive or affricate e.g.,

gap	/ˈgæp/	(final /p/)
captain	/ˈkæptɪn/	(/p/ occurring before another plosive)
capture	/ˈkæptʃə*/	(/p/ occurring before an affricate)

2. /b/ is articulated exactly like /p/ described above, except that during the articulation of /b/ the vocal cords vibrate producing voice. /b/ can thus be described as **voiced bilabial plosive**.

Spellings: /b/ is represented by the letter b and bb in *beer, tobacco, rubber, tub*. It is to be remembered, however, that the letter is silent in words like *thumb, plumber, etc.*

Distribution: /b/ occurs initially, medially and finally in a word as in *bin* (initial), *rubber* (medial) and *tub* (final).

Allophonic variants:

- (i) /b/ is nasally released when it is immediately followed by /m/ e.g.,

submit	/səbˈmɪt/
submarine	/ˈsʌbməri:n/

- (ii) In R.P. /b/ is devoiced when it occurs initially and finally (devoicing is represented by a diacritic [◌̥] placed under the symbol concerned).

- (iii) /b/ is not released audibly when it occurs finally and when it is immediately followed by another plosive or affricate e.g.,

tub	/tʌb/	(final)
subject	/ˈsʌbdʒɪkt/	(noun occurring before an affricate)
obtain	/əbˈteɪn/	(/b/ occurring before another plosive)

3. /t/ is articulated by the tip or blade of the tongue making a firm contact against the teeth ridge. The soft palate is raised thereby blocking the nasal passage of air. When the tip or blade of the tongue is released from the teeth ridge, the air that is compressed by pressure from the lungs escapes with an explosive sound. The vocal cords do not vibrate. /t/ can thus be described as a **voiceless alveolar plosive**.

Spellings: /t/ is represented by the letters t and it as in *tea, at, stain, cut*, etc. **Also, the past tense marker ed is pronounced /t/ when the present tense form ends in a voiceless consonant other than /t/.**

Distribution: /t/ can occur initially, medially, and finally in a word as in *tell* (initial), *obtain* (medial) and *bat* (final).

- (i) /t/ is aspirated when it occurs initially in a stressed syllable. e.g.
- | | | |
|--------|---------------------|---------------------------|
| tub | /t ^h ʌb/ | [t ^h ʌb] |
| attain | /ə'tein/ | [ə't ^h ein] |
| potato | /Pə'teitou/ | [Pə't ^h eitou] |
- (ii) /t/ is unaspirated when it is preceded by /s/ and when it occurs in an unaccented syllable e.g.,
- | | |
|----------|---------------|
| stain | /'steɪn/ |
| stamp | /'stæmp/ |
| butter | /bʌtə*/ |
| computer | /kəm'pjʊ:tə*/ |
- (iii) /t/ is nasally released when it is immediately followed by /n/. e.g.,
- | | |
|--------|---------|
| cotton | /'kɒtn/ |
| button | /'bʌtn/ |
- (iv) /t/ is laterally released when it is immediately followed by /l/
- | | |
|--------|----------|
| little | /'lɪtl/ |
| cattle | /'kætlɪ/ |
- (v) /t/ is not released audibly when it occurs finally in a word and when it is immediately followed by another plosive or affricate e.g.,
- | | | |
|-------------|--------------|--|
| cut | /kʌt/ | (final /t/) |
| football | /'fʊtbɔ:l/ | (/t/ occurring before another plosive) |
| that church | (/æ'tʃɜ:tʃ/) | (/t/ occurring before an affricate) |

4. /d/ is articulated exactly like /t/ described above, except that during the articulation of /d/ the vocal cords vibrate, producing voice, /d/ can thus be described as a **voiced alveolar plosive**.

Spellings: /d/ is represented by the letters d, dd as in *dog, rudder, good*, etc.

Distribution: /d/ can occur initially, medially and finally in a word as in *day* (initial), *modest* (medial) and *bad* (final).

Allophonic Variants

- (i) /d/ is released nasally when it is immediately followed by /n/ e.g.
- | | |
|---------|----------|
| sudden | /'sʌdn/ |
| gladden | /'glædn/ |
- (ii) /d/ is laterally released when it is immediately followed by /l/ e.g.
- | | |
|----------|----------|
| riddle | /'rɪdl/ |
| 'bridle/ | 'braɪdl/ |
- (iii) /d/ is not released audibly when it occurs finally and when it is immediately followed by another plosive or affricate e.g.
- | | | |
|----------|-----------|------------------------------------|
| good | /'gʊd/ | (final /d/) |
| bad boy | /bædboɪ/ | (/d/ followed by another plosive). |
| good jam | /gʊddʒæm/ | (/d/ followed by an affricate). |



Notes

Most Indians substitute retroflex plosive /t/ and /d/ for the English alveolar plosive /t/ and /d/.

Notes

5. During the articulation of /k/, the back of the tongue makes a firm contact with the soft palate. The soft palate is raised, thereby shutting off the nasal passage of air. The air that is compressed by pressure from the lungs, escapes with an explosive sound when the back of the tongue is released from the soft palate. The vocal cords do not vibrate. /k/ can thus be described as a **voiceless velar plosive**.

Spellings: /k/ is represented by:

- (i) the letter k as in **book**.
- (ii) the letter c as in **cot, music**.
- (iii) the letters ch as in **character**.
- (iv) the letters ck as in **back**.
- (v) the letters cc as in **account**.
- (vi) the letters que as in **cheque**.

Distribution: /k/ can occur initially and finally in a word as in *calm*, (initial), *reckon* (medial) and *like* (final).

Allophonic Variants

- (i) /k/ is aspirated when it occurs initially in a stressed syllable, e.g.

captain	v̥/v̥kæptin/	[v̥/k ^h æptin'
---------	--------------	---------------------------

kit	/'kit/	['k ^h it]
-----	--------	----------------------

- (ii) /k/ is unaspirated after /s/ and in unaccented syllables, e.g.,

skin	/skin/	(/k/after/s/)
canal	/kənæl/	(/k/ in an unaccented syllable)

6. /g/ is articulated like /k/ described above except that during the articulation of /g/ the vocal cords vibrate, producing voice, /g/ can thus be described as a **voice velar plosive**.

Spellings: /g/ is represented by

- (i) the letter g as in *get, glory, bag, ago*.
- (ii) the letters gg as in *baggage, luggage*.

B: Affricates

An affricate is produced with a complete closure, but the articulators are separated slowly so that some friction is heard. It is to be remembered that friction heard while articulating an affricate is of shorter duration than that heard during the articulation of a fricative.

In English there are two affricates, /tʃ/ and /dʒ/. Both are palato-alveo-lar.

1. During the articulation of /tʃ/, the tip and blade of the tongue make a firm contact with the teeth ridge. Simultaneously, the front of the tongue is raised in the direction of the hard palate. The soft palate is raised to shut off the nasal passage of air. The tip of the tongue is separated very slowly from the teeth ridge so that some friction is heard and the sound so produced is described as a **voiceless palato-alveolar affricate**.

Spellings: /tʃ/ is represented by

- (i) the letters *ch* as in *cheap, church*
- (ii) letters *tch* as in *batch*.
- (iii) The letter *t+ure* as in *picture*.
- (iv) the letter *t+ion* as in *question*.

Distribution

/tʃ/ can occur initially, medially and finally as in *chip* (initial), *butcher* (medial) and *catch* (final).

2. /dz/ is articulated exactly as /tʃ/ described above, except that during the articulation of /dz/, the vocal cords vibrate producing voice. /dz/ is thus **voiced palato alveolar affricate**.

Spellings: /dz/ is represented by the following letters:

- (i) initial *j* as in *jump*.
- (ii) initial *g* as in *gin, gentle*.
- (iii) *gg* as in *suggest*.
- (iv) final *ge* as in *luggage, revenge*.
- (v) *di* as in *soldier*
- (vi) medial *gi* as in *religion*

Distribution

/dz/ occurs initially, medially and finally as in *join* (initial), *religion* (medial) and *badge* (final)

C: Nasals

A nasal consonant is produced by a complete oral closure. That is, the oral passage of air is completely blocked by the articulators coming into firm contact with each other, but the soft palate is lowered so that the nasal passage of air is open. The air has thus a free passage through the nose.

There are three nasal consonant-phonemes in English. They are:

- /m/ bilabial
- /n/ alveolar
- /ŋ/ velar

1. During the articulation of /m/, the two lips are brought together and thus the oral passage of air is blocked completely. The soft palate is lowered and the air escapes through the nose. The vocal cords vibrate, producing voice. /m/ is thus a **voiced bilabial nasal**.

Spellings: /m/ is represented by

- (i) the letter *m* as in *man, many*
- (ii) the letters *mm* as in *summer*
- (iii) the letters *mb* as in *comb, lamb*
- (iv) the letters *mn* as in *autumn*

Distribution

/m/ can occur initially, medially and finally as in *man* (initial), *enemy* (medial) and *some* (final).

2. During the articulation of /n/, the tip of the tongue makes a firm contact with the teeth ridge, thus blocking off the oral passage of air completely. The soft palate is lowered so that the air escapes through the nose. The vocal cords vibrate producing voice. /n/ is thus a **voiced alveolar nasal**.

Spellings: /n/ is represented by

- (i) the letter *n* as in *near, pin*
- (ii) the letters *nn* as in *running*
- (iii) initial *kn* as a *knife, knit*
- (iv) final *gn* as in *sign*

Distribution

/n/ can occur initially, medially and finally as in *name* (initial), *many* [medial] and *son* [final].

Allophonic variants

A dental [n] instead of the nasal is used if /n/ is immediately followed by the voiceless and dental fricative /θ/, and // e.g.

Notes

tenth	/t enθ/	(/n/ followed by /θ/)
in there	/in ð eə */	(/n/ followed by /ð/)

/n/ occurs as the syllabic nucleus in certain syllables. The second syllables of following words are examples:

sudden	/'sʌ-dn/
mutton	/'mʌ-tn/
cotton	/'kɒ-tn/
button	/'bʌ-tn/

3. During the articulation of (ŋ), the oral closure is made by the back of the tongue making a firm contact against the soft palate. The soft palate is lowered thereby allowing the air to escape freely through the nose. The vocal cords vibrate producing voice, /ŋ/ is thus a **voiced velar nasal**.

Spellings

- (i) *ng* as in *sing, king*
(ii) *n* followed by /k/ as in *monkey, uncle*

Distribution

[ŋ] occurs medially and finally as in *uncle* (medial) and *sing* (final). It does not occur initially.

Important note: In R.P. final orthographic *ng* is pronounced /ŋ/ as in *sing* /sɪŋ/ and *king* /kɪŋ/. Medial *ng* is also Symbol (i.e. without a /g/ following /ð/ in words which are derived from verbs. In other words medial *ng* is /ŋg/. Thus *singer* is pronounced /sɪŋgə*/ while *finger* is pronounced /fɪŋgə*/.

Listed below are words in which the consonants that we have discussed so far, occur in various positions. The words are given in ordinary spelling. In words of more than one syllable, stress is marked. Practise saying these words.

- (i) Aspirated /p/ at the beginning of accented syllables:

'paper	pre'pare'	policy
'pepper	o'pinion	'previous
a'part	'perfect (adj.)	im'portant
ap'pear	'pen	'pool
'parrot	'precious	'pill
re'pair	'pencil	ap'point

- (ii) Unaspirated /p/

- (a) after /s/

'spin	'spear
'split	'spring
'splash	'spine
'spleen	'spurious

- (b) 'apple open
'capital 'protect
po'lice per'fect (verb)
par'ticular re'present

D: Fricatives

A fricative is articulated with a *stricture of close approximation*: that is, the two articulators are brought so close to each other that the gap between them is very narrow. The air that is compressed by pressure from the lungs escapes through the narrow gap with *audible friction*.

In English there are 9 fricative consonants. These are:

- /f/ and /v/ : labiodental fricatives
- /θ/ and ð : dental fricatives
- /s/ and /z/ : alveolar fricatives
- /ʃ/ and /zʃ/ : palato-alveolar fricatives
- /h/ : glottal fricative

of these, /f/, /θ/, /s/, /ʃ/ and /h/ are voiceless and /v/, ð, /z/ and /zʃ/ are voiced.

/f/

1. During the articulation of /f/, the lower lip is brought very close to the upper front teeth so that the gap between them is extremely narrow. The soft palate is raised and thus the nasal passage of air is blocked completely. The air escapes through the narrow gap between the lower lip and the upper front teeth with audible friction. The vocal cords are held wide apart and they do not vibrate. /f/ is thus a **voiceless labio-dental fricative**.

Spellings: /f/ is represented by

- (i) the letter f as in *five, fool*
- (ii) the letters ff as in *coffee, affair*
- (iii) the letters ph as in *physics, photograph*
- (iv) the letters gh as in *cough, rough*.

Distribution

/f/ can occur initially, medially and finally as in *five* (initial) *offer* (medial) and *roof* (final).

(v)

2. /v/ is articulated exactly like /f/ described above except that during the articulation of /v/ the vocal cords vibrate producing voice. /v/ is thus a **voiced Labio-dental fricative**.

Spellings: /v/ is represented by

- (i) the letter v as in *over*,
- (ii) the letter f as in *of*
- (iii) the letter ph as in *nephew*.

Distribution

/v/ occurs initially, medially and finally, as in *vine* (initial) *cover*, (medial) and *love* (final).

/θ/

3. The tip of the tongue makes a light contact with the edge of the upper front path. The soft palate is raised so as to shut off the nasal passage of air. The air escapes through the narrow space between the tip of the tongue and the front teeth, causing audible friction. The vocal cords do not vibrate. /θ/ is thus a **voiceless dental fricative**.

Spellings

/θ/ is represented by the letters *th* as in *thin, thick, path*, etc.

/θ/ can occur initially, medially and finally in a word as in *thick* (initial), *ethereal* (medial) and *oath* (final).

(ð)

Notes

4. /ð/ is articulated exactly like /θ/ described above, except that during the articulation of /ð/ the vocal cords vibrate producing voice, /ð/ is thus a **voiced dental fricative**.

Spellings: /ð/ is represented by the letters *th* as in *then* and *that*.

Distribution: /ð/ occurs initially, medially and finally in a word as in *then* (initial), *leather* (medial) and *soothe* (final).

(s)

5. /s/ is articulated by placing the tip and blade of the tongue very near the teeth ridge so that the space between them is very narrow. The soft palate is raised, shutting off the nasal passage of air. The vocal cords do not vibrate. The air escapes through the narrow gap between the tip and blade of the tongue and teeth ridge with audible friction. /s/ is thus a **voiceless alveolar fricative**.

Spellings: /s/ is represented by

- (i) the letter *s* as in *sin*.
- (ii) the letters *ss* as in *message*, *pass*.
- (iii) the letter *c*, (followed by the letter *e* or *i*) as in *cease*, *cell*.
- (iv) Medial and final *x* is pronounced /ks/ as in *ox*, *box*, *taxi*.
- (v) the letters *sc* as in *Scene*, *Science*

Distribution

/s/ can occur initially, medially and finally as in *seen* (initial), *passive* (medial) and *less* (final).

(z)

6. /z/ is articulated exactly like /s/ described above, except that during the articulation of /z/ the vocal cords vibrate producing voice. /z/ can thus be described as a **voiced alveolar fricative**.

Spellings: /z/ is represented by

- (i) the letter *z* as in *zoo*, *zero*, *lazy*
- (ii) the letter (medial and final) *s* in *poison*, *dogs*
- (iii) the letters *ss* as in *scissors*
- (iv) the letters *zz* as in *buzz*.

Distribution

/z/ occurs initially, medially and finally as in *zoo* (initial), *puzzle* (medial), and *lose* (final).

A NOTE ABOUT INFLEXIONAL SUFFIXES

Inflexional suffixes (i.e. suffixes used for making plurals and possessives of nouns and third person simple present tense singular forms of verbs) are pronounced /s/ /z/ or /z/ according to certain rules.

- (i) /s/, if the stem ends in voiceless consonants except /s/, /f/ and /tʃ/.

cats	/kæts/
cups	/kʌps/
puffs	/pʌfs/
cooks	/kuks/

- (ii) /z/, if the stem ends with a voiced sound except /z/, /ʒ/ and /dʒ/ e.g.

boys	/bɔiz/
eggs	/egz/
lads	/lædz/
comes	/kʌmz/

nuns	/nʌnz/
calls	/kɔ:lz/
writhes	/raɪðz/
laws	/lɔ:z/

(iii) /iz/, if the root ends in /s/, /z/, /ʃ/, /z/, /tʃ/, and /dz/, e.g.,

losses	/ˈlɒsɪz/
buzzes	/ˈbʌzɪz/
bushes	/ˈbʊʃɪz/
garages	/gəˈrɑ:zɪz/
churches	/ˈtʃɜ:ʃɪz/
judges	/ˈdʒɪdʒɪz/

(ʃ)

7. The tip and blade of the tongue are brought very close to the teeth ridge. Simultaneously the front of the tongue is raised in the direction of the hard palate. The soft palate is raised, thereby completely blocking the nasal passage of air. The air escapes through the narrow passage between the tip, blade and front of the tongue and the teeth ridge and the hard palate, with audible friction. The vocal cords do not vibrate. /ʃ/ is thus a **voiceless palatoalveolar fricative**.

Spellings: /ʃ/ is represented by

- (i) the letters *sh* as in *shine, sheep*.
- (ii) the letters *ch* as in *machine*.
- (iii) the letter *s* [+u] as in *sugar*.
- (iv) the letters *tio* as in *nation, caution*,
- (v) the letter *c* as in *efficient*.
- (vi) the letters *ss* as in *pressure*.
- (vii) the letters *ci* as in *conscience*.

Distribution

/ʃ/ occurs initially, medially and finally as in *shell* [initial] *pressure* (medial) and *fish* (final).

/z/

8. /z/ is articulated exactly like /ʃ/ described above, except that during the articulation of /z/ the vocal cords vibrate producing voice. /z/ is thus a **voiced palato-alveolar fricative**.

Spellings: /z/ is represented by

- (i) the letters *si* as in *decision, vision*,
- (ii) the letters *s* [+u] as in *pleasure, leisure*,
- (iii) the letters *ge* in French loan words like *rouge, garage*.

Distribution

/z/ occurs only medially in English words. It occurs finally in French loan words. It does not occur initially e.g. *pleasure* [medial] and *mirage* (final).

/h/

9. The vocal cords are kept close together so that the glottis is very narrow. The air escapes through the narrow glottis with audible friction. /h/ is thus **voiceless glottal fricative**. In English /h/ occurs only in syllable-initial positions, always followed by a vowel. It may thus be regarded as a strong, voiceless onset of the succeeding vowel.

Notes

Spellings: /h/ is always represented by the letter h.

Allophonic Variant: Between two vowels /h/ may be voiced as in *behind*, *beehive*.

Distribution: /h/ occurs only initially and medially as in *hat* (initial), *behave* (medial).

E: Lateral

A lateral consonant is articulated with a complete closure in the centre of the vocal tract the air escaping along the sides of the tongue.

In English there is one lateral consonant which is /l/.

/l/ is articulated by the tip of the tongue making a firm contact against the teeth ridge. There is thus a complete closure in the middle of the mouth. The soft palate is raised so as to shut off the nasal passage of the air completely. The sides of the tongue are lowered so that the lung air is free to escape along sides of the tongue without any friction. The vocal cords vibrate, producing voice. /l/ is thus **voiced alveolar lateral**.

Spellings: /l/ is represented by the letter l as in *leave* and by letters ll as in *villain*. It should be remembered that the letter l is silent in words like *calm*, *palm*, *alms* etc.

Allophonic Variants

- (i) A dental [l] is used when [l] followed by /θ / or /ð /-

/helθ / (/l/ followed by /θ /)

/telð em/ (l/ followed by /ð /)

- (ii) in R.P. there are two varieties of /l/. One is called a 'clear' /l/ and the other a 'dark' /l/, (the phonetic symbols are [l] and [ɫ] respectively).

'Clear' /l/ is articulated by making a closure in the middle as described above and simultaneously raising the front of the tongue in the direction of the hard palate. In R.P. this variety of /l/ is used before vowels and /j/, e.g.

live /liv/

lure /ljʊə'/

'Dark' /l/ is articulated by making a closure in the middle as described above and simultaneously raising the back of the tongue in the direction of the soft palate. In R.P. it is used before consonant other than /j/ and finally e.g.

told /tould/ (before a consonant)

tell /te l/ (finally)

- (iii) In R.P. [l] is syllabic (i.e. it functions as the nucleus of the syllable) in certain words like

little /'litl/

cattle /kaetl/ (The final /l/ is syllabic in these words)

Distribution

/l/ occurs initially, medially and finally as in *leave* (initial), *pulley* (medial) and *pull* (final).

F. Frictionless Continuant

A frictionless continuant is articulated with an open approximation of the articulators, so that the air passes between the articulators without any friction. Thus the sound is vowel like, but it is included in the list of consonants because it never functions as the nucleus of a syllable.

In English there is one frictionless continuant which is symbolized by /r/.

/r/

The tip of the tongue is raised in the direction of the hinder part of the teeth ridge. The soft palate is raised so as to shut off the nasal passage of the air. The air from the lungs comes out through the gap between the tip of the tongue and the post-alveolar region without any friction. The vocal cords vibrate, producing voice. /r/ is thus a **voiced postalveolar frictionless continuant**.

Spellings: /r/ is represented by the letter /r/ but in R.P. it occurs only before a vowel sounds e.g. in *red, run, dry, trial*. /r/ is not pronounced in other positions, e.g., in words *Vike, garden, larder, early, jerk*, etc.

Allophonic Variants

- (i) A voiced post-alveolar fricative /r/ (phonetic symbol [ɹ] is used after /d/ as in *dry, draw*.
- (ii) A voiceless, post-alveolar fricative /r/ (phonetic symbol [ɹ̥] is used after aspirated /p/, /t/ and /k/ as in *pray, try, and cry*).
- (iii) A voiced alveolar, single flap-phonetic symbol [ɾ] is used when /r/ occurs between two vowels and after /θ/ as in

very	} /r/ between two vowels
sorry	
three	

(/r/ after /θ/

Distribution:

In R.P. /r/ occurs initially and medially, but only before a vowel sound. It does not occur finally. For example,

red	(initial)
moderate	(medial)

[LINKING /r/: In R.P. /r/ does not occur finally, but in connected speech, /r/ is retained when followed by a vowel in the following words. For example, the word *far* is pronounced /fɑː/ but in *far away* the final r in *far* is pronounced because away in isolation begins with a vowel sound. The phrase *far away* is pronounced /fɑːr/. A few other examples are:

pepper	/ˈpepə/
pepper and salt	/ˈpepə r ˈænˈsɑːlt/
here	/ˈhiə/
here and there	/ˈhiə r ˈænˈðeə/
father	/ˈfɑːðə/
father is at home	/ˈfɑːðə r ɪz ətˈhəʊm/

INTRUSIVE /r/: Some people use an /r/ at word boundaries if the first word ends in [ɹ] and the second begins with a vowel even if there is no r in spelling. Thus, we often hear

/ˈlɔːrən ˈɔːdə [law and order]

/ˈdrɑːmə r ˈmjuːzɪk/ [drama and music]

G: Semi-Vowels

A **semi-vowel is a vowel glide to a more prominent sound in the same syllable**. In English there are two semi-vowels, /j/ and /w/.

/j/ is a **palatal semi-vowel**.

/w/ is a **labio-velar semi-vowel**.

Notes

/j/ is a glide from /:/ and /w/ is glide from /u:/ Though these sounds are vowel-like in their articulation, they are classified as consonants because they do not function as the nucleus of any syllable.

/j/

1. The soft palate is raised, shutting off the nasal passage of air. The front of the tongue assumes a position for a vowel between close and half-close and quickly glides to the position of the following vowel. The vocal cords vibrate, producing voice. /j/ is thus a **voiced unrounded palatal semi vowel**.

The lips are normally spread or neutral during the articulation of /j/ but there may be anticipatory lip rounding if the immediately following vowel is a rounded vowel as in *you, yawn* etc.

Spellings: /j/ is represented by the letter *y* as in *yes, yard, beyond, yellow*. The letters *u, eau, ue, ew* and *iew* are pronounced /ju/, as in *unit, beauty, due, dew, view*.

/w/

2. The soft palate is raised to shut off the nasal passage of air completely. The back of the tongue is raised in the direction of the soft palate to the position for a vowel between close and half-close and the lips are rounded. Then the tongue quickly glides to the position of the following vowel. The position of the lips also changes depending upon the immediately following vowel. The vocal cords vibrate, producing voice. /w/ is thus a **voiced rounded labio-velar semi-vowel**.

Spellings: /w/ is represented by

- (i) the letter *w* as in *west*.
- (ii) the letters *wh* as in *why*.
- (iii) the letter *q* or *g + w* as in *queen, language*.
- (iv) the words, *one, once, suit* also have the sound of /w/.

Distribution: /w/ occurs initially as in *west* (initial) and *queen* (middle). It does not occur finally.

(i) Most Indians do not have /w/ as a distinct phoneme in their English. Instead, they generally use a voiced labio-dental frictionless continuant (phonetic symbol [b] the sound represents the Devnagari symbol(c). Most Indians use [V] even in place of the fricative /v/. There is no distinction in their speech between minimal pairs like

wine	vine
west	vest
wail	vale
why	vie
went	vent
wile/while	vile
whale	vale

/w/ can be acquired easily by trying to say /u:/ and then quickly moving on the vowel.

Various English sounds are (shown in a classified manner in the table given on the next page (from Daniel Jones's book 'An Outline of English Phonetics')):

	Labial	Dental	Alveolar	Post-alveolar	Palato-alveolar	Palatal	Velar	Glottal	
CONSONANTS	Labial Bi-labial		t	tr	tʃ		k g		
			d	dr	dʒ				
	Labio-dental		n						
			l						
		f v	θ ð	s z	r	ʃ ʒ			
		w				j	(w)	h	
VOWELS	Close						Front Central Back i: i e ə ε æ a	u: u o ɔ: ɔ a	
	Half-close								
	Half-open								
	Open								

10.7 Summary

- The difference between phonetics and phonology is that of generality and particularity. Whereas phonetics is the science of speech sounds, their production, transmission and reception and the signs to represent them in general with no particular reference to any one language, phonology is the study of vocal sounds and sound changes, phonemes and their variants in a particular language. If phonetics can be likened to a world, phonology is a country. Phonetics is one and the same for all the languages of the world, but the phonology of one language will differ from the phonology of another.
- Most linguists, until recently at least, have regarded the phoneme as one of the basic units of language. But they have not all defined the phonemes in the same way. Some linguists like Bloomfield and Daniel Jones have described phonemes in purely physical terms. Others like Sapir have preferred psychological definitions. Some regard the phoneme only as abstractional fictitious unity and argue that in a language it is not phonemes but allophones that exist in

Notes

reality. Furthermore, linguists of the Copenhagen School treat the phonemes as *glassemes* and regard them as algebraical units.

- The term phoneme was first used in the late 1870's notably by Kruszewski. Saussure too worked on the phonemes. But the most notable work in this field was done by Sapir in 1927. Most phoneticians such as Louis Jhelmslev, Bloomfield, Trubetzkoy, Daniel Jones, Roman Jakobson, and Pike have thrown light on the phoneme.
- According to most contemporary linguists, however, the phoneme is the minimal bundle of relevant sound features. A phoneme is not a sound; it can be realized only through one of its allophones: it is a class of sounds, actualized or realized in a different way in any given position by its representative, the allophone: it is an ideal towards which the speaker strives, while the allophone is the performance he achieves; it occupies an area within which the various allophones move and operate; its outer limits may approach but not overlap those of other phonemes, and it cannot invade the territory of another phoneme without loss of phonemic distinction.
- According to most contemporary linguists, however, the phoneme is the minimal bundle of relevant sound features. A phoneme is not a sound; it can be realized only through one of its allophones: it is a class of sounds, actualized or realized in a different way in any given position by its representative, the allophone: it is an ideal towards which the speaker strives, while the allophone is the performance he achieves; it occupies an area within which the various allophones move and operate; its outer limits may approach but not overlap those of other phonemes, and it cannot invade the territory of another phoneme without loss of phonemic distinction.
- Thus the precise definition of a phoneme has been the subject of much discussion among linguists and there are two major points of view. The first is the 'classification' theory developed by Daniel Jones which considers the phoneme to be a group or family of related sounds, e.g. /p/ in English consisting of [p], [p^h], etc. or /u/ consisting of (u:), (u) etc. The second or 'distinctive feature' theory developed by N.S. Turbetzkoy and the Prague School considers a phoneme to be a bundle of distinctive features, e.g. /p/ in English is considered to be made up of bilabial + stop + voiceless (aspiration is therefore not distinctive and thus the allophones (p^h) and (p) above are allowed for.

10.8 Key-Words

1. **Affricates** : An affricate is produced with a complete closure, but the articulators are separated slowly so that some friction is heard.
2. **Nasals** : A nasal consonant is produced by a complete oral closure. That is, the oral passage of air is completely blocked by the articulators coming into firm contact with each other, but the soft palate is lowered so that the nasal passage of air is open.
3. **Fricatives** : A fricative is articulated with a stricture of close approximation: that is, the two articulators are brought so close to each other that the gap between them is very narrow.
4. **Lateral** : A lateral consonant is articulated with a complete closure in the centre of the vocal tract the air escaping along the sides of the tongue.

10.9 Review Questions

1. Distinguish between **phonetics** and **phonology**.
2. Define and exemplify: (a) **phoneme**, and (b) **allophone**.
3. What is a **minimal pair**?
4. Distinguish between a phoneme and an allophone.
5. How many phonemes are there in British English (R. P.)
6. What is an **allophone**?
7. Distinguish between **free variation and complementary Distribution**.

8. Do [P] and (p^h) exist in your language? If they do, give one example of each used in a word. Do they belong to different phonemes or to the same phoneme? How will you prove it? Indicate your language.
9. If [p], [t] and [k] exist in your language, indicate whether they belong to three different phonemes or not. How do you prove it? Indicate your language.
10. Prove that [p], [b], [t], and [d] belong to separate phonemes in English.
11. Show how phonology can be described in terms of structure and system.
12. What are supra segmental (non-segmental) features in phonology? Exemplify from English.
13. Distinguish between the clear 1 and the dark 1 and the aspirated **p, t** and unaspirated **p** and **t**.
14. What are weak forms? Give some ten examples of words which have weak forms in **R.P.**
15. Describe the phonemes of English.

10.10 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
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3. Peter Roach: English phonetics and phonology. Cambridge University Press.
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Unit 11: Allophones–Allophonic Variation in English Speech: Difference between Monophthong and Diphthong Glides

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Objectives

After studying this Unit students will be able to:

- Understand Allophones.
- Discuss Monophthong and Diphthong Glides.

Introduction

In phonology, an **allophone** is one of a set of multiple possible spoken sounds (or *phones*) used to pronounce a single phoneme. For example, [p^h] (as in *pin*) and [p] (as in *spin*) are allophones for the phoneme /p/ in the English language. Although a phoneme's allophones are all alternative pronunciations for a phoneme, the specific allophone selected in a given situation is often predictable. Changing the allophone used by native speakers for a given phoneme in a specific context usually will not change the meaning of a word but the result may sound non-native or unintelligible. Native speakers of a given language usually perceive one phoneme in their language as a single distinctive sound in that language and are “*both unaware of and even shocked by*” the allophone variations used to pronounce single phonemes.

11.1 Concept of Allophones

The term “allophone” was coined by Benjamin Lee Whorf in the 1940s. In doing so, he placed a cornerstone in consolidating early phoneme theory. The term was popularized by G. L. Trager and Bernard Bloch in a 1941 paper on English phonology and went on to become part of standard usage within the American structuralist tradition.

Allophones are audibly distinct variants of a phoneme, such as the different pronunciations of the ‘t’ sound in *tar* and *star*. Substituting one allophone for another allophone of the same phoneme doesn’t lead to a different word, just a different pronunciation of the same word. In other words the sounds that are merely phonetic variants of the same phoneme are allophones. Notice that any two sounds of a given language represent either two allophones of the same phoneme (if the sound can be interchanged in words with no resulting change in meaning, such as the p’s of *pit* and *keep*) or two different phonemes (if the sounds cannot be interchanged without a resulting change in meaning, such as the m and s of *milk* and *silk*).

“Now consider the word *stop*. If you say the word several times, you will probably notice that sometimes the final /p/ contains more aspiration and sometimes, less. (In fact, if you end the word with your lips together and do not release the /p/, it contains no aspiration at all). Since you are not

pronouncing stop as part of a larger chunk of language that varies from utterance to utterance (for example, John told Mary to stop the car versus Stop and go versus when you come to the sign, stop), the phonetic environment of the /p/ remains constant—it is at the end of the word and preceded by /a/. In other words, we cannot predict when a particular allophone with more or less aspiration is likely to occur, so the allophones of /p/ must be in free variation.” (Thomas Murray, *the Structure of English*. Allyn and Bacon, 1995)

Phonetics and Phonology

Phonetics and phonology are two branches of linguistics that deal primarily with the structure of human language sounds. Phonetics focuses on the physical manifestations of speech sounds and on theories of speech production and perception. Phonology is concerned with the systems of rules (or constraints) that determine how the sounds of a language combine and influence one another.

Most phonetic work falls into the sub-field of articulatory phonetics (the study of the human vocal tract, the International Phonetic Alphabet, and how to make and describe language sounds), but with recent advances in computers and the availability of good phonetics software, there has been a recent boom in acoustic research (the physical properties of sounds-wave forms, pitch, intensity, spectrograms).

Phonology cares about the entire sound system for a given language. The goal is to formulate a model/theory which explains not only the sound patterns found in a particular language, but the patterns found in all languages. Examples of questions which are interesting to phonologists are: How do sounds change due to the sounds around them? (For example, why does the plural of cat end with an ‘s’ sound, the plural of dog end with a ‘z’ sound, and the plural of dish end in something sounding like ‘iz’?) How do sounds combine in a particular language? (For example, English allows ‘t’ and ‘b’ to be followed by ‘t’ rattle, rabble, atlas, ablativ—so why then does ‘blick’ sound like a possible word in English when ‘tlick’ does not?)

Complementary and free-variant Allophones

Every time a speech sound is produced for a given phoneme, it will be slightly different from other utterances, even for the same speaker. This has led to some debate over how real, and how universal, phonemes really are (see phoneme for details). Only some of the variation is significant (i.e., detectable or perceivable) to speakers. There are two types of allophones, based on whether a phoneme must be pronounced using a specific allophone in a specific situation, or whether the speaker has freedom to (unconsciously) choose which allophone he or she will use.

When a specific allophone (from a set of allophones that correspond to a phoneme) *must* be selected in a given context (i.e. using a different allophone for a phoneme will cause confusion or make the speaker sound non-native), the allophones are said to be **complementary** (i.e. the allophones complement each other, and one is not used in a situation where the usage of another is standard). In the case of complementary allophones, each allophone is used in a specific phonetic context and may be involved in a phonological process.

In other cases, the speaker is able to select freely from **free variant** allophones, based on personal habit or preference.

Allotone

A tonic allophone is sometimes called an **allotone**, for example in the neutral tone of Mandarin.

Examples in English vs. other languages

For example, [p^h] as in *pin* and [p] as in *spin* are allophones for the phoneme /p/ in the English language because they cannot distinguish words (in fact, they occur in complementary distribution). English speakers treat them as the same sound, but they are different: the first is aspirated and the second is unaspirated (plain). Plain [p] also occurs as the **p** in *cap* [k^hæp], or the second **p** in *paper* [p^heɪ.pə]. Chinese languages treat these two phones differently; for example in Mandarin, [p] (written **b** in Pinyin) and [p^h] (written **p**) contrast phonemically. Many Indo-Aryan languages, such as Hindi-Urdu, also write the two phones differently and treat them as completely distinct phonemes: [p] is

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written as, *i* (or 'حی'), while [p^h] is written Q (or 'ق') and so on.

There are many other allophonic processes in English, like lack of plosion, nasal plosion, partial devoicing of sonorants, complete devoicing of sonorants, partial devoicing of obstruents, lengthening and shortening vowels, and retraction.

- **Aspiration** — strong explosion of breath. In English a voiceless plosive that is p, t or k is aspirated whenever it stands as the only consonant at the beginning of the stressed syllable or of the first, stressed or unstressed, syllable in a word.
- **Nasal plosion** - In English a plosive (/p, t, k, b, d, g/) has nasal plosion when it is followed by a nasal, inside a word or across word boundary.
- **Partial devoicing of sonorants** — In English sonorants (/j, w, l, r, m, n, ŋ/) are partially devoiced when they follow a voiceless sound within the same syllable.
- **Complete devoicing of sonorants** — In English a sonorant is completely devoiced when it follows an aspirated plosive (/p, t, k/).
- **Partial devoicing of obstruents** - In English, a voiced obstruent is partially devoiced next to a pause or next to a voiceless sound, inside a word or across its boundary.
- **Retraction** — in English /t, d, n, l/ are retracted before /r/.

Because the choice of allophone is seldom under conscious control, people may not realize they exist. English speakers may be unaware of the differences among six allophones of the phoneme /t/, namely unreleased [t̚] as in *cat*, aspirated [t^h] as in *top*, glottalized [ʔ] as in *button*, flapped [ɾ] as in American English *water*, nasalized flapped as in *winter*, and none of the above [t] as in *stop*. However, they may become aware of the differences if, for example, they contrast the pronunciations of the following words:

- **Night rate**: unreleased [ˈnʌ | t̚ .ɪˈweɪ | t̚] (without word space between . and ɪ)
- **Nitrate**: aspirated [ˈnaɪ .t^h .ɪˈweɪ | t̚] or retracted [ˈnaɪ .t̚ | ɪˈweɪ | t̚]

If a flame is held before the lips while these words are spoken, it flickers more during aspirated *nitrate* than during unaspirated *night rate*. The difference can also be felt by holding the hand in front of the lips. For a Mandarin speaker, to whom /t/ and /t^h/ are separate phonemes, the English distinction is much more obvious than it is to the English speaker who has learned since childhood to ignore it.

Allophones of English /l/ may be noticed if the 'light' [l] of *leaf* [ˈliː f] is contrasted with the 'dark' [ɫ] of *feel* [fiː ɫ]. Again, this difference is much more obvious to a Turkish speaker, for whom /l/ and /ɫ/ are separate phonemes, than to an English speaker, for whom they are allophones of a single phoneme.

Allophony of “v-w” in Hindi-Urdu

A reverse example is that of [v] versus [w] in Hindi-Urdu. These are distinct phonemes in English, but both allophones of the phoneme /o/ (or 'و') in Hindi-Urdu. Native Hindi speakers pronounce /o/ as [v] in *vrāt* ('or', *fast*) but [w] in *pakwan* i doku (*food dish*), treating them as a single phoneme and without being aware of the allophone distinctions they are subconsciously making, though these are apparent to native English speakers. However, the allophone phenomenon becomes obvious when speakers switch languages.

When non-native speakers speak Hindi-Urdu, they might pronounce /o/ in 'or' as [w], i.e. as *wrat* instead of the correct *vrāt*. This results in an intelligibility problem because *wrat* can easily be confused for *aurat*, which means *woman* instead of *fast* in Hindi-Urdu. Similarly, Hindi-Urdu speakers might unconsciously apply their native 'v-w' allophony rules to English words, pronouncing *war* as *var* or *advance* as *advance*, which can result in intelligibility problems with native English speakers.

Representing a Phoneme with an Allophone

Since phonemes are abstractions of speech sounds, not the sounds themselves, they have no direct phonetic transcription. When they are realized without much allophonic variation, a simple (i.e.

'broad') transcription is used. However, when there are complementary allophones of a phoneme, so that the allophony is significant, things become more complicated. Often, if only one of the allophones is simple to transcribe, in the sense of not requiring diacritics, then that representation is chosen for the phoneme.

However, there may be several such allophones, or the linguist may prefer greater precision than this allows. In such cases a common convention is to use the "elsewhere condition" to decide which allophone will stand for the phoneme. The "elsewhere" allophone is the one that remains once the conditions for the others are described by phonological rules. For example, English has both oral and nasal allophones of its vowels. The pattern is that vowels are nasal only when preceding a nasal consonant within the same syllable; elsewhere they're oral. Therefore, by the "elsewhere" convention, the oral allophones are considered basic; nasal vowels in English are considered to be allophones of oral phonemes.

In other cases, an allophone may be chosen to represent its phoneme because it is more common in the world's languages than the other allophones, because it reflects the historical origin of the phoneme, or because it gives a more balanced look to a chart of the phonemic inventory. In rare cases a linguist may represent phonemes with abstract symbols, such as dingbats, so as not to privilege any one allophone.

An **allophonic rule** is a phonological rule that indicates which allophone realizes a phoneme in a given phonemic environment. In other words, an allophonic rule is a rule that converts the phonemes in a phonemic transcription into the allophones of the corresponding phonetic transcription. Every language has a set of allophonic rules.

In American English, the voiceless alveolar stop phoneme /t/ is realized as the alveolar flap allophone [ɾ] when it is preceded by a sonorant phoneme other than an alveolar nasal or lateral, and, at the same time, followed by an unstressed vowel phoneme.

/t/ → [ɾ] | /+ son - lat/ — /+ vwl - str/

[st Λ b] *This linguistics article is a stub. You can help Wikipedia by expanding it.*

Examples and Observations

- "Sounds that are merely phonetic variants of the same phoneme are **allophones**. Notice that any two sounds of a given language represent either two allophones of the same phoneme (if the sounds can be interchanged in words with no resulting change in meaning, such as the *p*'s of *pit* and *keep*) or two different phonemes (if the sounds *cannot* be interchanged without a resulting change in meaning, such as the *m* and *s* of *milk* and *silk*)....

"Now consider the word *stop*. If you say the word several times, you will probably notice that sometimes the final /p/ contains more aspiration and sometimes, less. (In fact, if you end the word with your lips together and do not release the /p/, it contains no aspiration at all.) Since you are not pronouncing stop as part of a larger chunk of language that varies from utterance to utterance (for example, *John told Mary to stop the car* versus *Stop and go* versus *When you come to the sign, stop*), the phonetic environment of the /p/ remains constant--it is at the end of the word and preceded by /a/. In other words, we cannot predict when a particular allophone with more or less aspiration is likely to occur, so the allophones of /p/ must be in *free variation*."

- "[E] very speech sound we utter is an **allophone** of some phoneme and can be grouped together with other phonetically similar sounds."
- "[T] he choice of one **allophone** rather than another may depend on such factors as communicative situation, language variety, and social class. . . . [W]hen we consider the wide range of possible realisations of any given phoneme (even by a single speaker), it becomes clear that we owe the vast majority of allophones in free variation to idiolects or simply to chance, and that the number of such allophones is virtually infinite."

11.2 Phonemes and Allophones; Describing English Sounds

What is language? → What is it that we know when we know a language? → What is it that we know when we know English?

I. Phonological Knowledge (roughly):

- (a) Sounds
- (b) Sound Patterns

Thus, phonologists are concerned with:

a. Sound Inventory

What sounds does the language make use of?

Exercise 1: Which ones of the followings are possible sounds of English?

- a. [!]: as in *tut-tut!* / *tsk-tsk!*
- b. [y]
- c. [ʒ]
- d. [ð]
- e. [ŋ]

What relationship do these sounds have to each other?

Which are used contrastively and which are the variant pronunciations of contrastive sounds?

Can we predict the different realizations of a contrastive sound?

b. Sound patterns

Which sound combinations are allowed?

Exercise 1: Which of the followings can be a possible word of English?

- a. hled
- b. θok
- c. tlnaz
- d. ŋala
- e. pkar
- f. plask
- g. talg

II. The concept of phoneme and allophony: “Same but different”:

Aspirated vs. unaspirated stops in English

pill *spill*

till *still*

kill *skill*

PHONETIC FACT: There is a burst or puff of air after the /p/ in *pill*, *till*, and *kill*, that is absent in *spill*, *still*, and *skill*.

Aspiration: The period between the release of the closure of a consonant and the start of the vocal cord activity for the vowel that comes after it. This period is usually felt as a puff of air.

pill [p^hɪl]

till [t^hɪl]

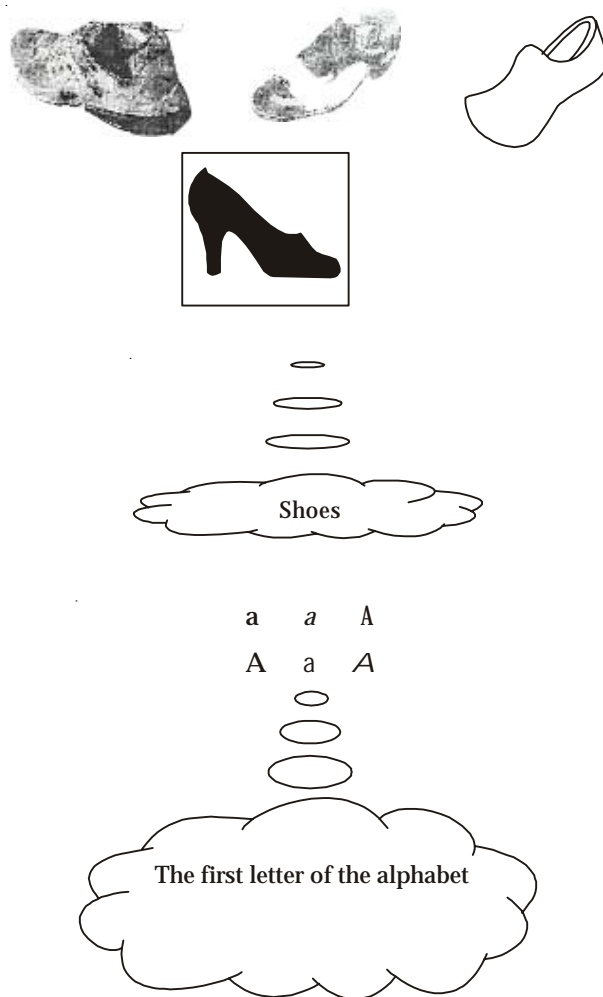
kill [k^hɪl]

spill [spɪl]
 still [stɪl]
 skill [skɪl]

Notes

Aspiration Rule in English: Aspiration occurs on all voiceless stops occurring as the first sound in a stressed syllable.

- Although aspirated stops and unaspirated stops are physically different, we consider both to be the same sound.
- For English, aspiration is not employed to create a meaning difference.
- Human mind also ignore other physical/perceptible differences which are not relevant for particular purposes:



III. Same sounds but different representations

Two or more languages might share the same sound or sounds but this does not mean that those languages organize these sounds in the same way.

a. Hindi aspirated stops

[p^hal] “knife edge”

[pal] “take care of”

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[kapi] “copy”
 [kap^hi] “ample”

- Aspiration is “contrastive” in Hindi.
- [pal] for “knife edge” instead of [p^hal] is like saying “shave” instead of “save”.
- Hindi speakers cannot “overlook” the difference between aspirated and unaspirated stops because they distinguish meaning based on it.
- [s] and [ʃ] are contrastive and the occurrence of the two is **unpredictable** in English.
- In Japanese, we can predict their distribution.
- In Japanese, [s] and [ʃ] are considered to be the “same” sound even though they may be phonetically distinct.

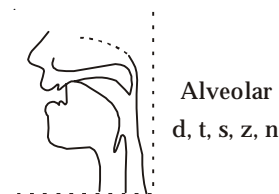
Phonology deals with the following questions:

1. Of all the sounds in a language, which are predictable?
2. What is the phonetic context that allows us to predict the occurrence of these sounds?
3. Which sounds affect the meaning of words?

c. English lateral liquid (/l/):

lean
 let
 lace
 kneel
 tell
 sail

Articulatory Facts about /l/: An alveolar consonant



But, when saying the first three words (i.e., *lean, let, lace*):

[l]: clear ‘l’ / alveolar lateral

Tip of the tongue: high, touches the alveolar ridge

Back of the tongue: down

Sides of the tongue: drawn in so that the air escapes around the tongue

But, When saying the last three words (i.e., *kneel, tell, sail*):

[ɫ]: dark ‘l’ / velarized lateral

Tip of the tongue: may be raised

Back of the tongue: high

Center of the tongue: low

Sides of the tongue: curled in

- /l/ may be pronounced several different ways. And, we overlook this difference when we learn words that contain this sound.

What is the distribution?

Rule (to be revised in the following lectures):

Before a vowel, we say [l], after a vowel we say [ɫ].

Thus, English [l] and [ɫ] are in predictable (complementary) distribution.

Turkish

[soɫ] 'left'
[sol] 'a musical note'

Scots Gaelic

[bala] 'town'
[ba'ɫ'a] 'wall'

d. English voiceless alveolar stop /t/:

- tip
- stick
- little

Acoustic/ articulatory phonetic facts

FACT #1: Aspiration

Examples

- [p^hat] vs. [spat] "pot" vs "spot"
- [t^hek] vs. [stek] "take" vs. "stake"



Caution

When sounds are in complementary distribution, they cannot be contrastive. The replacement of one sound for the other does not change the meaning of the word.

FACT #2

a. Speakers of American English

The /t/ in "little" sounds a lot "softer" (and a bit voiced). In American English, this sound is actually pronounced as a flap ([ɾ]).

Flap: A flap sound is a consonant in which one articulator strikes the other with a sliding motion (as in the Spanish word *pero*).

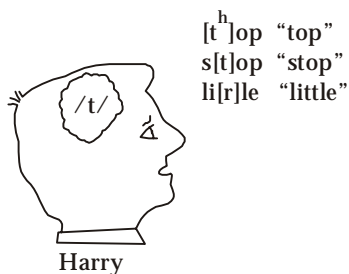
b. Speakers of (non-Standard) British English

/t/ is pronounced as a glottal stop [ʔ]

- At least at some psychological level, that this word contains a /t/ sound although we may not pronounce or hear it as such.

/t/

[t] [t^h] [r] [ʔ]



Notes

What is a phoneme?

A class of speech sounds that are identified by a native speaker as the same sound is called a *phoneme*. The different phonetic realizations of a phoneme are called *allophones*.

Thus [p^h] and [p] are the allophones of the same phoneme in English; Whereas in Hindi, [p^h] and [p] are different phonemes.

[l] and [ɫ] are the allophones of the same phoneme in English; whereas in Turkish and Scots Gaelic, they are different phonemes.

Phonemes are the psychological (abstract) representations or units of actual physical realizations of phonetic segments.



Did u know?

If two sounds are separate phonemes, then they are contrastive (in terms of meaning).

- If the two phones are allophones of the same phoneme, then they are non-contrastive.
- To determine whether a given pair of sounds is contrastive, linguists look for minimal pairs.

III. Phonemes of English**CONSONANTS**

When describing a consonant, use the following parameters:

VOICE: do your vocal cords vibrate?

PLACE: Which cavity is involved? Which articulators are used?

MANNER: how is the sound produced?

Voicing

Try putting a hand lightly on your throat and then say the following words, drawing out the initial sounds.

If you feel vibration, this means that your vocal cords are open and the sound in question is a **voiceless** sound. If, on the other hand, you feel some vibration or a buzzing feeling, this is due to the vibration of your vocal cords which are closed together. This means that the sound you are making is a **voiced** sound.

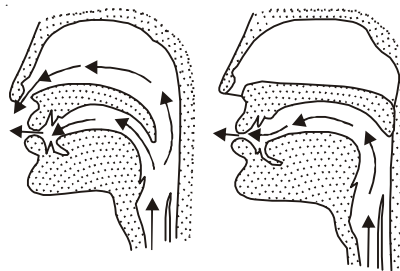
feel, veal

zip, sip

thigh, thy

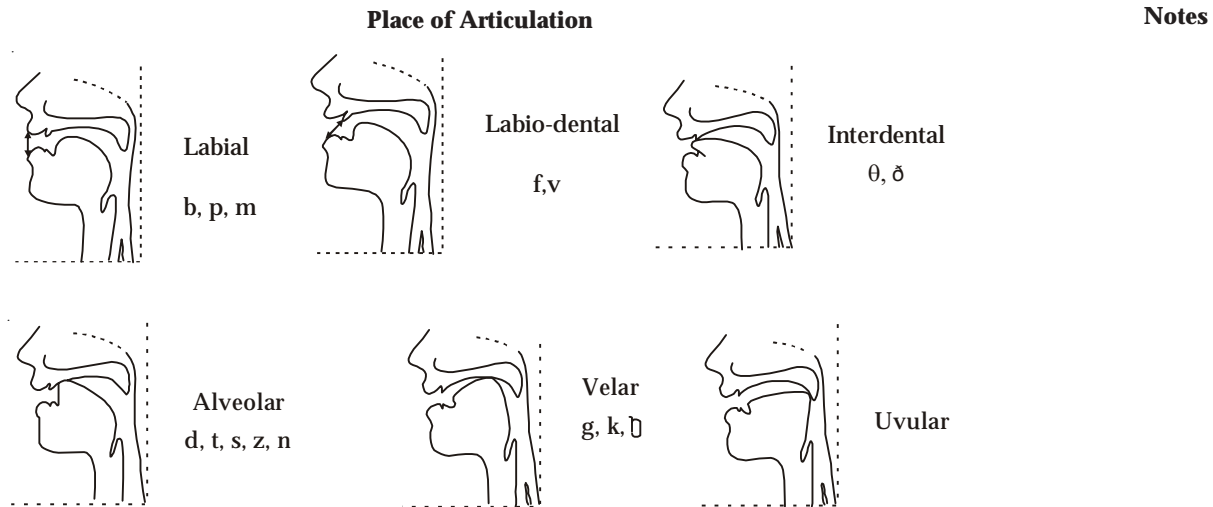
gap, cap

cheap, jeep

Oral vs. Nasal Cavities

Nasal
articulation

Oral
articulation



Notes

There are also alveopalatal and palatal sounds in English, for which I don't have figures. The two articulatory points associated to these sounds are between the alveolar ridge and the velum.

Manner of Articulation

How is the air stream modified by the vocal tract to produce the sound?

Stops: Sounds that are stopped completely in the oral cavity for a brief period of time.

Fricatives: If the airstream is not completely stopped because of a narrow passage in the oral cavity that causes friction and turbulence.

Affricates: a stop closure + slow release (fricative)

Liquids: some obstruction formed by the articulators, but not narrow enough to cause any real constriction.

Glides: slight closure of the articulators, they are almost like vowels. Therefore, they are often called semi-vowels.

Consonants Vs Vowels

- Consonants are produced with some closure or restriction in the vocal tract as the airstream is pushed through the glottis out of the mouth.
- When vowels are produced, there is nothing in the vocal tract that narrows the passage such that it would obstruct the free flow of the airstream. That is, vowels are produced without any articulators touching or even coming close together.
- Vowels are the most audible, SONORANT (or intense) sounds in speech.
- Vocal fold vibration is the sound source for vowels. Therefore, all vowels are, almost always, VOICED.
- Unlike consonants, there is neither place of constriction or closure (place of articulation), nor a specific manner of articulation.
- The shape of the vocal tract determines the quality of the vowel. There are several ways in which we can change the shape of the vocal tract:

Notes

1. raising or lowering the body of the tongue
2. pushing the tongue forward or pulling it back
3. rounding the lips



Figure 11.1 Tongue position for [i]



Figure 11.2 Tongue position for [æ]



Figure 11.3 Tongue position for [u]

We can classify vowels by answering the following questions:

1. How high is the tongue?
HIGH , MID , LOW
2. Is the tongue advanced or retracted?
FRONT , CENTRAL , BACK
3. Are the lips rounded?
ROUNDED, UNROUNDED
4. Is the tongue tense?
TENSE, LAX
 - Compare the vowels in 'beat' and 'bit', or 'bait' and 'bet'.
 - TENSE vowels ([i], [u], [e], [o]) are produced with greater tension of the tongue muscles than their LAX counterparts (all others). TENSE vowels are phonetically longer than LAX vowels.

11.3 Monophthongs and Diphthongs Glides

The Monophthongs: As explained in the chart of vowel sounds above, there are twelve monophthongs. Monophthongs can be divided into three categories depending upon the different placement of tongue in the mouth. They are-front vowels, back vowels and central vowels.

Front Vowels, /i:, ɪ, e, æ/: The defining characteristics of a front vowel is that the tongue is positioned as far in front as possible in the mouth without creating a constriction that would be classified as a consonant. Front vowels are sometimes also called bright vowels because they are perceived as sounding brighter than the back vowels. The different front vowels are:

1. /i:/ (the phoneme spelled ee in beet): high front vowel, also called close unrounded vowel. It appears in both accented and unaccented positions. Examples of accented /i:/ are: bel'icve, 'seizure, etc. and examples of unaccented /i:/ are: decrease, secrete, etc.
2. /ɪ/ (the phoneme is spelled i in bit): high front vowel. this vowel is articulated slightly further back and slightly lower than the preceding vowel /i/. It is also called centralised front half-close unrounded vowel. This vowel sound also appears in both accented and unaccented positions. Examples for accented /ɪ/ are: for 'bid, 'dimple, 'sister, etc. and examples of unaccented /ɪ/ are: engine, folly, etc.
3. /e/ (the phoneme is spelled e in bet): mid front vowel. This vowel is articulated slightly further back and slightly lower than the preceding vowel /ɪ/. This vowel is also seen as front unrounded vowel between half-close and half-open. This vowel sound, usually, appears in accented position in words like, 'celebrate, 'definite, etc., but sometimes it can also be used in unaccented position in words like, insect, inquest, etc.
4. /æ/ (the phoneme is spelled a in bat): low front vowel. this vowel is also described as front unrounded vowel between the half-open and half-closed positions. It appears in both accented and unaccented positions. Examples for accented /æ/ are: 'absent, 'calendar, 'camphor, etc. and examples for unaccented /æ/ are: canteen, stampede, etc.



Notes

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. Whereas a diphthong is a contour vowel—that is, a unitary vowel that changes quality during its pronunciation, or “glides”, with a smooth movement of the tongue from one articulation to another, as in the English words eye, boy, and cow.

Back Vowels, /ɑ:, ɒ, ɔ:, ɔ, u:/: The defining characteristic of a back vowel is that the tongue is positioned as far back as possible in the mouth without creating a constriction that would be classified as a consonant. Back vowels are sometimes also called dark vowels because they are perceived as sounding darker than the front vowels.

1. /ɑ:/ (the phoneme is spelled a in arm): low back vowel. This vowel sound is produced when central back part of tongue is lowered, and air comes out. It is called back open unrounded vowel. /ɑ:/ sound usually appears in accented positions like 'car, 'bar, etc.
2. /ɒ/ (the phoneme spelled o in cot): mid back vowel. It is articulated at a bit higher position than /ɑ:/. This vowel is then described as a back rounded vowel just above the open position. It also, usually, appears in accented syllables.
3. /ɔ:/ (the phoneme spelled au in caught): mid back vowel. This vowel is articulated slightly further forward and slightly lower than is the preceding vowel /o/. It is described as a back rounded vowel between half-open and half-close. It mostly appears in accented syllables, e.g. 'crawl, 'yawn, etc.
4. /ʊ/: (the phoneme spelled u in put): high back vowel. This vowel is articulated slightly further forward and slightly lower than is the preceding vowel /u/. It is a centralised back rounded vowel just above half-close. This vowel sound appears in both accented and unaccented positions. Examples of accented /ʊ/ are: 'woman, 'sugar, 'bullock, etc. and examples of unaccented /ʊ/ are: manhood, fulfill, careful, etc.

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5. /u:/ (the phoneme spelled oo in food): high back vowel. It is also called a back close rounded vowel. It appears in both accented and unaccented positions. Examples of accented /u:/ are: 'beautiful, 'foolish, 'frugal, etc. and the examples of unaccented /u:/ are: value, tuition, etc.

Central vowels, /ʌ, ɜ, ə/: The defining characteristic of a central vowel is that the tongue is positioned halfway between a front vowel and a back vowel.

1. /ʌ/ (the phoneme spelled u in but): mid central vowel. It is articulated with help of raised central part of the tongue. Also described as central unrounded vowel between open and half-open. It appears usually in accented syllables, but sometimes also appears in unaccented syllables. Examples of accented are: 'butter, e'nough, etc. examples of unaccented are: hiccup, cucumber, etc.
2. /ə/ (this sound is also called schwa): In linguistics, specifically phonetics and phonology, schwa (sometimes spelled shwa) can mean the following:
 - (i) An unstressed and toneless neutral vowel sound in some languages, often but not necessarily a mid-central vowel. Such vowels are often transcribed with the symbol 'ə', regardless of their actual phonetic value.
 - (ii) The mid-central vowel sound (rounded or unrounded) in the middle of the vowel chart, stressed or unstressed. In IPA phonetic transcription, it is written as /ə/. In this case the term mid-central vowel may be used instead of schwa to avoid ambiguity.
3. /ɜ:/ (the phoneme is spelled as ea in early): To articulate this sound the centre of the tongue is raised between half-open and half-closed position. This sound is also described as a central unrounded vowel between half-close and half-open. /ɜ:/ appears mostly in accented positions as well but sometimes in unaccented positions as well. Examples of accented /ɜ:/ are: 'burden', 'certain', etc. and examples of unaccented /ɜ:/ are: commerce, foreword, etc.

/ə/ is also called central unrounded short vowel. This vowel sound appears only in unaccented position. For examples, account, achieve, etc.

The Diphthongs of English

A diphthong is a speech sound in which the articulatory mechanism moves continuously from an initial vowel position to a final vowel position. In other words it is contour vowel—that is, a unitary vowel that changes quality during its pronunciation, or “glides”, with a smooth movement of the tongue from one articulation to another, as in the English words eye, boy, and cow. This contrasts with “pure” vowels, or monophthong, where the tongue is held still.

In English there are total eight diphthongs, which can be classified in three categories according to the tongue glide.

- (i) In diphthongs /cɪ, aɪ, ɔɪ/ the tongue glides towards /ɪ/. These are called closing diphthongs.
- (ii) In diphthongs /əʊ, aʊ/ the tongue glide towards /ʊ/. These diphthongs are also called closing diphthongs.
- (iii) In diphthongs /ɪə, æ, ʊə/ tongue glide towards /ə/. These diphthongs are called centering diphthongs.

Closing Diphthongs Gliding to /ɪ/

- (i) /eɪ/ (this diphthong is spelled as a in gate): For the production of this diphthong the glide of tongue starts from just below the front of the tongue and moves toward /ɪ/. /eɪ/ appears in both accented and unaccented syllables. Examples of accented /eɪ/ are: di'splay, 'neighbour, etc. And examples of unaccented /eɪ/ are: survey, hesitate, etc.

- (ii) /aɪ/ (this diphthong is spelled as i in bite): This diphthong sound is produced when the tongue glides towards /I/ from somewhere near the front-open position. /aɪ/ also like /eɪ/ appears in both accented and unaccented syllables. Examples of accented /aɪ/ are: 'either, 'trial, etc. And examples of unaccented /aɪ/ are: idea, qualify, etc.
- (iii) /ɔɪ/ (It is spelled as oy in boy): For the production of this sound it is necessary for the lips to be open-rounded and back of the tongue should glide between open and open-rounded positions. Usually /ɔɪ/ appears in accented syllables in words like an'nony, 'oyster, etc. but sometimes it may appear in unaccented syllables as well, for example, employee, exploit, etc.

Closing Diphthongs Gliding to /u/

- (i) /əʊ/ (this diphthong is spelled as oa in boat): During the production of this diphthong, the tongue moves in between half-close and half-open and glides towards /ʊ/. /əʊ/ appears in both accented and unaccented syllables. Examples for accent /əʊ/ are: be'low, cor'rode, etc. And examples for unaccented /əʊ/ are: donate, fellow, etc.
- (ii) /aʊ/ (this is spelled as ow in cow): During the production of this sound tongue glides towards /ʊ/ from between back and central-open positions. Usually /aʊ/ appears in accented syllables in words like a'round, 'boundary, etc. But vry rarely it may appear in unaccented syllables in words like anyhow, eyebrow, etc.

Centering Diphthongs of English (R.P)

- (i) /ɪə/ (spelled as ea in tear): For the production of this diphthong the glide of tongue starts from /I/ and moves toward /ə/. /ɪə/ appears in accented syllables in words like 'theatre, 'theorem, etc. It also appears in unaccented syllables in words like curious, impious, etc.
- (ii) /eə/ (spelled as ea in bear): In the production of this sound the tongue glides towards /ə/ from the front between the half-close and half-open. /eə/ too appears in both accented and unaccented syllables. Examples of accented /eə/ are: de'clare, re'pair, etc. And examples of unaccented /eə/ are: hardware, fanfare, etc.
- (iii) /ʊə/ (this sound is spelled as ou in tour): During the production of this sound, tongue glides from the position of /ʊ/ and moves towards /ə/. /ʊə/ also appears in both accented and unaccented syllables. Examples of accented /ʊə/ are: 'furious, 'rural, etc. And examples of unaccented /ʊə/ are influence, manual, etc.

Self-Assessment

1. Transcription of words:

You should now be able to recognise all the vowels, diphthongs and triphthongs of English, and all the plosives. In the next exercise you will hear one-syllable English words composed of these sounds. Each word will be said twice. You must transcribe these words using the phonemic symbols that you have learned in the first three chapters. When you hear the word, write it with phonemic symbols. (1–20).

11.4 Summary

- The term “allophone” was coined by Benjamin Lee Whorf in the 1940s. In doing so, he placed a cornerstone in consolidating early phoneme theory. The term was popularized by G. L. Trager and Bernard Bloch in a 1941 paper on English phonology and went on to become part of standard usage within the American structuralist tradition.
 - A tonic allophone is sometimes called an **allotone**, for example in the neutral tone of Mandarin.
- Examples in English vs. other languages**
- Since phonemes are abstractions of speech sounds, not the sounds themselves, they have no direct phonetic transcription. When they are realized without much allophonic variation, a

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simple (i.e. 'broad') transcription is used. However, when there are complementary allophones of a phoneme, so that the allophony is significant, things become more complicated. Often, if only one of the allophones is simple to transcribe, in the sense of not requiring diacritics, then that representation is chosen for the phoneme.

- An **allophonic rule** is a phonological rule that indicates which allophone realizes a phoneme in a given phonemic environment. In other words, an allophonic rule is a rule that converts the phonemes in a phonemic transcription into the allophones of the corresponding phonetic transcription. Every language has a set of allophonic rules.
- A class of speech sounds that are identified by a native speaker as the same sound is called a *phoneme*. The different phonetic realizations of a phoneme are called *allophones*.
- Thus [p^h] and [p] are the allophones of the same phoneme in English; Whereas in Hindi, [p^h] and [p] are different phonemes.

11.5 Key-Words

1. Monophthongs : They are front vowels, back vowels and central vowels.
2. Diphthong : It is a speech sound in which the articulatory mechanism moves continuously from an initial vowel position to a final vowel position.

11.6 Review Questions

1. What are Diphthongs? Describe their articulation in different classifications.
2. Define Monophthongs.
3. Discuss the concept of Allophones.

Answers: Self-Assessment

- | | | |
|--------------------|----------------------|--------------------|
| 1. (i) geɪt 'gate' | (ii) kəʊt '' | (iii) bɪt 'bit' |
| (iv) taɪəd 'tired' | (v) bi:t 'beat' | (vi) pəʊk 'poke' |
| (vii) kɑ:t 'cart' | (viii) kɔ:t 'caught' | (ix) paʊə 'power' |
| (x) kɔ:d 'cord' | (xi) gæp 'gap' | (xii) bɪəd 'beard' |
| (xiii) kɑ: 'car' | (xiv) peɪd 'paid' | (xv) ɡʌt 'gut' |
| (xvi) daʊt 'doubt' | (xvii) təʊd 'toad' | (xviii) du: 'do' |
| (xix) peə 'pair' | (xx) dek 'deck' | |

11.7 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 12: Transcription of English Speech Sounds: From Words to Sentences, Syllables: Monosyllabic, Bi-syllabic and Stress in English

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Objectives

After studying this Unit students will be able to:

- Understand the English Speech Sound.
- Explain the Definitions, Structure, Parts, Phonotactics, Syllable Division and Classification.

Introduction

One of the major hurdles that people face in the pronunciation of English words are that they try to pronounce words as they are spelled, i.e., the correspondence between the spellings and pronunciation. For example, 'cough', 'through' and 'bough', all these words use the 'ough', but their pronunciations are different. In order to overcome this problem International Phonetic Association introduced International Phonetic Alphabet (IPA) to describe the sounds and their pronunciation. The association claims that these sound symbols can be used for any language in the world.

12.1 Transcription

Roach (2000: 41) states that transcription is a number of symbols of several different sorts. As a matter of fact. English transcription is of two kinds:

1. Phonemic Transcription

It is the kind of transcription" where every speech sound must be identified as one of the phonemes and written with the appropriate symbol."

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2. **Phonetic Transcription**

A phonetic transcription “containing a lot of information about the exact quality of the sounds would be called a narrow phonetic transcription, while the one which only include a little more information than a phonemic transcription would be called a broad phonetic transcription “.

12.2 Phonetic Transcription

Phonetic transcription (or phonetic notation) is the visual system of symbolisation of the sounds occurring in spoken human language. The most common type of phonetic transcription uses a phonetic alphabet (such as the International Phonetic Alphabet). Phonetic transcription becomes important, because the spelling of a word does not tell us how you should pronounce it. Consider two words, call and cell both the word begin with c but their pronunciations are different. In word call ‘c’ is pronounced as /k/ and in word cell ‘c’ is pronounced as /s/. Phonetic transcription is based on the principle of one sound-one symbol i.e., one symbol will always represent one sound.

Phonetic transcription may aim to transcribe the phonology of a language, or it may wish to go further and specify the precise phonetic realisation. In all systems of transcription we may therefore distinguish between broad transcription and narrow transcription. Broad transcription indicates, only the more noticeable phonetic features of an utterance, whereas narrow transcription encodes more information about the phonetic variations of the specific allophones in the utterance. The difference between broad and narrow is a continuum. One particular form of a broad transcription is a phonemic transcription, which disregards all allophonic difference, and, as the name implies, is not really a phonetic transcription at all, but a representation of phonemic structure.

Phonetic transcription can be simply defined as the representation of the alphabet of any language in the word into the special language sound symbols, as one given by the International Phonetic Association, which is known as International Phonetic Alphabet. The English word ‘call’ when transcribed into phonetic alphabet will look like /cɔ:l/ and ‘cell’ will look like /sel/. We can see from the above examples that the letter ‘c’ can be pronounced in two different ways, which can be very well distinguished by the phonetic transcription of the words. In English there isn’t any relationship between the spellings and the pronunciation of the word. There are various instances when one letter is pronounced differently in different words. Therefore, the concept of phonetic transcription can avoid lot of confusion and make this entire deal of pronunciation simple. Phonetic transcription is based on the principle of one sound, one symbol.

Phonetic transcription can be of many types, but the widely used are phonemic or broad phonetic transcription and allophonic or narrow phonetic transcription.

Initial Two Consonant Clusters

With reference to initial consonant clusters, Roach (2000: 71) refers to the cluster of two categories in English, e.g. ‘smoke’ /smɔk/. The **s** is called the pre-initial consonant and the **m** is called the initial consonant (see table 12.1.)

Table 12.1

Two Consonant Clusters with Pre-initial s

Pre-Initial	Initial																			
s plus	p	t	k	b	d	g	f	θ	s	ʃ	h	v	ð	z	ʒ	m	n	ŋ		
	spIm	stlk	sklm	-	-	-	sfl	ð	-	-	-	-	-	-	-	smel	sn	ð	U	-

(Taken from Roach, 2000: 72)

The other sort begins with one of a set of about fifteen consonants, followed by one of the set l, r, w, j, the first consonant of these clusters is called the initial consonant and the second is the post-initial e.g., ‘play’ /pleɪ/, ‘try’ /traɪ/, ‘quick’ /kwɪk/, ‘few’ /fju:/, (Ibid.: 73).

12.3 Phonotactics

Notes

Looking at syllables from the phonological point of view, i.e., “the possible combinations of English phonemes of a language are called phonotactics”.

Fromkin and Rodman (1988: 83) indicate that “speakers know more about the phonological system of their language”. While Carr (1993: 193) stresses that “the phonotactics of a language... are enforced by the phonological rules”. It is generally agreed that the syllable is a central unit in phonotactic description. “In describing the phonotactics (patterning of phonemes) of English syllables, linguists focus on absolute restrictions concerning which phonemes may occupy which slots of the syllable”.

Consonant Cluster

With respect to the definition of the term ‘consonant cluster’, Roach (2000, 71) defines that “a consonant cluster is a combination of two or more consonants without the interference of a vowel”. Consonant clusters in English fall into different categories. They are:

Initial Three Consonant Clusters

This type of initial cluster usually begins with **s** e.g. ‘split’, ‘stream’ /stri:m/, ‘square’ /skweə/. The **s** is the pre-initial consonant, the **p**, **t**, **k**, follow **s** in the three words are the initial consonants, and the **l**, **r**, **w** are post-initials as shown in table 2:

Final Three Consonant Clusters

As far as final three consonant clusters are concerned, there are two types as illustrated in the tables 3,4 and 5.

12.4 The Syllable: Definitions

In its broadest sense, the term ‘syllable’ is looked at from the phonetic and phonological point of view. In his turn, Crystal defines the syllable as: “A unit of pronunciation typically larger than a single sound and smaller than a word.”

“It should be born in mind that the syllable is found in languages all over the world and can be put into units, i.e., syllables. Humans seem to need syllables as a “way of segmenting the stream of speech...””.

To recapitulate, two different approaches are used in dealing with the syllable, i.e., the phonetic approach and the phonological approach.

The first and for the while the most popular, phonetic definition of the syllable was given by “Stetson (1928) who argued that each syllable corresponds to an increase in air pressure... the pulse or motor theory of syllable production”. A number of phoneticians like among others, look at the syllable from articulatory, acoustic and auditory points of view) i.e., the phonetic approach. Abercrombie (1967: 39) points out that:

The basis of the syllable is a sudden brief contraction of the respiratory muscles and this construction expels a small amount of air from the lungs. This air so expelled needs for its escape to the outer air a relatively free and unrestricted passage through the vocal tract, and it is this movement of lead restriction in the sequence of movements that makes up the syllable.

Gimson (1989: 52) takes the same view when he states that the syllable is a “Unit that is defined by counting peaks of activity of the breathing muscles”. Viewing the ‘syllable’ acoustically, O’Connor & Arnold (1973: 200) mention that “the highly inter-related acoustic activity within short stretches of syllable length...” The syllable is also defined auditorily. Jones (1972: 134), for instance, explains that “in every word made up from more than a single sound; at least one of the sounds is heard to be more

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'prominent' than the other(s). If there is only one such 'prominent' sound, the sequence is said to consist of a single syllable". Schane (1973, 9) argues that "the vowels... are more capable of being heard than consonants...".

1. On the other hand, discuss the syllable from the phonological point of view. In this respect, Crystal (2003: 374) observes that "the phonological approach of Hyman (1975: 188) illustrates that "the most discussed suprasegmental feature is the syllable". Katambas' (1989: 153) words are worth quoting where he believes that "The syllable is at the heart of the phonological representation. It is the unit in terms of which phonological systems are organized".

Some writers believe that there is still no sufficient or adequate definition to the term 'syllable'. In this regard, Abercrombie (1976: 34) expresses that "It is believed that a syllable is unit which can be apprehended but cannot be easily defined".

12.4.1 The Structure of the English Syllable

It is worth noting that in a particular language, or in languages generally, the requirements and constraints which determine the shapes of possible syllables, usually formulated in terms of sequences of consonants and vowels, and also in terms of onset plus rhyme, or onset plus nucleus plus coda (Trask, 1996: 346). In this regard, Kreidler (2003: 74) asserts that when discussing syllables, two kinds of facts are important:

1. the structure of the syllable, and
2. the relative prominence of the syllable.

Every syllable has a structure that can be divided into two parts. Consider the following figure which diagrammatically illustrates the division:

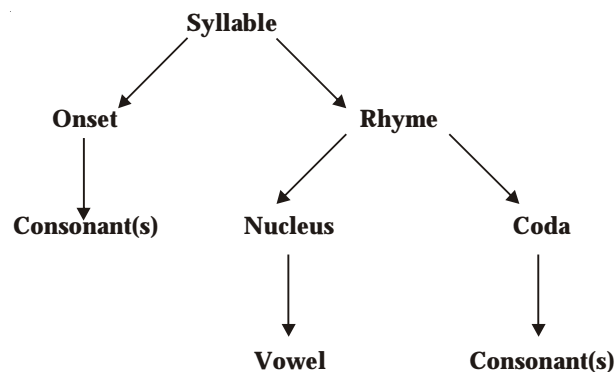


Figure 12.2: Typical Syllable Structure

It is significant to point out that not all syllables have all these parts; the smallest syllable may contain a nucleus only. Simply, onset means the beginning sound(s) of the syllable; the one(s) preceding the nucleus. These are always consonants in English (Roca & Johnson, 2000: 239).

The term 'Rhyme' consists of "the vowel that is treated as the nucleus, as well as any following consonant(s) treated as the coda" (Hogg & McCully, 1989: 369). The essential part of the syllable is called 'the nucleus'. The term 'peak' is used interchangeably (Kreidler, 2003: 74). Similarly, Rogers (2000: 88) points out that "the vowel is a syllable, and any following semivowel, is regarded as the nucleus or center of the syllable. Coda is the closing segment of a syllable.

12.5 Syllable Structure Analysis

The internal structure of a simple syllable, for example: 'read' is analysed phonologically as follows:

read: one syllable

onset: [r]

rhyme: [i:d] (within the rhyme)

nucleus: [i:]

coda: [d]

If the word contains more than one syllable, e.g. 'window', it is analysed phonologically as shown below:

window: two syllables

first syllable: [win]

rhyme: [in]

nucleus: [i]

coda: [n]

second syllable: [dow]

onset: [d]

rhyme: [ow]

nucleus: [əu]

(This syllable has no coda)

(Rubba, 2000: 2)

A syllable may not have a vowel in special cases as when syllabic consonants are used, for example,

(*l, m, n, ŋ, r,*) To exemplify, the word 'middle' is made up of two syllables though it has only one

vowel and pronounced with a final syllabic consonant [midl̩] (Brandford, 1967: 32). Rogers (2000: 88-9) states that syllables with an empty coda are called 'open syllables' e. g. tree /tri:/; while those with final coda are called 'closed syllables' e. g. sweet /swi:t/ (Yule, 1998: 57). Thus, the basic syllable structure is as follows:

Consonant(s) Vowel consonant(s) or in short: CVC

(Thornborrow and Wareing, 1998: 26).

In every language there are restrictions on the sequences of phonemes that are used, and studying the syllables of the language helps to analyse what the restrictions and regularities are in a particular language. For example, no English word begins with the consonant sequence zbf or ends with the sequence ah. (Ibid.: 45).

It is necessary to have a look at the following maximum phonological structure as seen below:

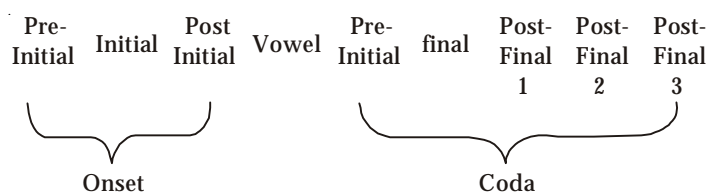


Figure 12.3: The Maximum Phonological Structure of the syllable

Taken from Roach (2000: 76)

12.6 Syllable Division

On syllable division, Kreidler (2003:84-6) stresses the fact that the English language has stress timing, i.e., certain syllables are louder and longer; others are softer and shorter and usually have a reduced vowel. It is easy to indicate and clarify the beginning of the strong syllable, but it is too difficult to tell where a weak syllable begins unless it is an initial syllable. It is possible to get information about how a written word should be syllabified from a dictionary, the dictionary indicates syllable division according to certain conversation that are based on two principles (1) recognition of certain prefixes and suffixes which are not divided (mis. treat, un.able, free, dom, work, ing), and (2) different treatment according to whether the vowel letter A, E, I (or Y), if the vowel is 'long', it ends with a syllable and

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the next letter goes in the following syllable, but if the vowel is 'short' the next letter goes with a preceding vowel letter. Thus as in writing:

ra. dical. Sa.vor	but rad. ic. al
le. gal, me. di. um but	leg. a. cy, med.i.cine
fi. nal, ri. val	but fin. ish, riv. er
co. pi. ous, so. lo	but op.er.a, sol.id
pu. ny, stu. di. ous	but punish, stud. y

Generally speaking, the rules for syllabifying spoken English words are:

1. If two vowels occur in a sequence, the syllable break is between the vowel (v,v): ne. on, cha. os, cru.el (ty), bi.o (logy), re.a(lity).
2. If one consonant occurs between vowels and the second is strong, the consonant is part of the second syllable whether the second vowel is stressed or not. e.g. re'.pent, va' ca (tion).
3. If two vowels are separated by a consonant cluster, syllable division depends on the consonant in the cluster. If the cluster is of the type (sc-, cr-, cl-, cw-, scr-, etc.) that can occur word initially and followed by a vowel which is strong, the whole cluster is part of the syllable with the strong vowel: pa. tri (cia), de. 'c'line, re. 'q'uire, s'u. 'spect etc.
4. The consonants are divided in such a way that the second syllable begins with a single consonant or cluster that can occur initially if the consonant cluster is one that cannot occur in initial position e.g. can. dy.lat, shel. ter, a. car. pen. ter (ibid.).

12.7 Classification of the English Syllable

The classification of the English syllable has been acknowledged in a large number of linguistic and phonetic studies. Thus, syllables are categorized in terms of three criteria: quality (strong and weak), number (monosyllabic, disyllabic and polysyllabic) and complexity (complex and simple).

Strong (Heavy) and Weak (Light) Syllables

Laver (1994:517) distinguishes between heavy syllables and light syllables saying that a light syllable is one whose rhyme is made up of a nucleus consisting of a short vowel, followed by a maximum of one short consonant. A heavy syllable is any other type of syllable, and its phonological length is greater than mora".

Another important fact is that strong syllables are stressed while weak syllables are unstressed; any strong syllable has in its peak one of vowel phonemes (or triphthong). If the vowel is short, the strong syllable will have a coda (Roach, 2000:81). Heavy syllables always have more quantity than light ones (Ohsieck, 1978:35).

Weak syllables, on the other hand, can only have one of a very small number of possible peaks (ibid.).

Kreidler (2003:81) points out that the strong unstressed syllables are similar to stressed ones in certain ways:

1. Strong syllables never contain a schwa.
2. The onset of a strong medial syllable is much clearer than the onset of weak medial syllable.
3. Voiceless stops at the onset of the strong unstressed syllables are aspirated just as they are at the onset stressed syllables.
4. A strong syllable is a stressed syllable.

A weak syllable, on the other hand, is potentially an accented syllable. Roach (2000:82-6) identifies the different types of weak syllables as follows:

1. The vowel (ə) schwa.
2. A close front rounded vowel, i.e., in the general area between /i:/ and /i/.
3. A close back rounded vowel i.e, in the general area between /u:/ and /u/.
4. A syllabic consonant e.g., [ŋ] and [l] etc.

12.7.1 Monosyllabic, Disyllabic and Polysyllabic

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Trask (1996: 226) defines monosyllabic as “A word consisting of a single syllable e.g. cat, dog, is, try, black, when, strength.” While the longest complex monosyllabic English words are: scratched, stretched, scrunched, straights, strengths (the Free Encyclopedia, 2005: a Int.). In one syllable lexical word, the primary stress is actually unmarked because it is predictable (Tathem, 1998:1). Disyllabic is a word consisting of two syllables e.g. money, delay, trouble, happy, believe, teacher etc. Polysyllabic is a word consisting of three or more syllables, e.g.:

generous /gen ə r ə s/

ambassador / ə mbas ə d/

opportunity /op ə tjʊn ə ti/

particular / p ə tikj ə l ə /

Roach (2000).

12.7.2 Simple and Complex Syllables

Syllables are classified in terms of complexity. Singh and Singh (1977:170) differentiate between a simple syllable and a complex one saying that a simple syllable is “one with a vowel or vowel accompanied by a single consonant or a vowel preceded and followed by a single consonant. All other syllable types are called complex syllables i.e., one with consonant clusters in the onset and/ or the coda” the symbol ‘c’ is used to refer to consonant whereas the symbol ‘V’ stands for a vowel e.g. see/si:/, the letter s is represented by the symbol ‘C’ and the double letter ee are represented by the symbol ‘V’ (Stetson , 2003:1).

The following table illustrates the distinction between simple and complex syllables by Singh and Singh (1979: 38)

Table 12.4
Simple and Complex Syllables

	Syllable type	example
Simple	V	a/ ə /or/o:
	CV	the / ð ə , ð e/
	VC	it /it/
	CVC	sit /sit/
Complex	CCV	tree /tri:/
	VCC	east /i:st/
	CCVC	stood /stud/
	CCCVC	street /stri:t/
	CCCVCC	streets /stri:ts/
	CCCVCCC	strength /streŋkθ /
	CVCC	sips /sips/
	CCVCC	treats /tri:ts/
	CVCCC	depths /depθs/
	CCCV	screw /skru:/
	VCCC	asks /a:skz/

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Roach (200:20-1) argues that: simple syllables are of the following categories:

1. A minimum syllable would be a single vowel in isolation, e.g. the words 'are' (strong form) a:, 'or' o:, 'err' ɜ: these are preceded and followed by silence. Isolated sounds such as m, which is some times produced to indicate agreement, or ʃ to ask for silence, must also be regarded as syllables.
2. Some syllables have an onset (i.e., they have more than just silence preceding the centre of the syllable (CV) e.g.:

'bar' ba: 'key' ki: 'more' mo:.

3. Syllables may have no onset but have a coda (VC) e.g.: 'æ m' am 'ought' o:t 'ease' i:z.
4. Some syllables have onset and coda (CVC) e. g.: 'rn' r ^ n 'sat' 'fill' fil(lbid.).

Cox, Harrington and Mannel (2000: 6) affirm that the open syllable has the structure CV as in 'die' /dai/. On the other hand, closed syllables are those which end with the 'coda', the most common closed syllable has the structure (CVC) as in 'died' /daid/.

The different structures of the open and closed syllables are:

A- Open Syllables:

V	I	/ai/
CV	tea	/ti:/
CCV	spy	/spai/
CCCV	spray	/sprei/

B-Closed Syllables:

VC	am	/æm /
VCC	ant	/ænt/
VCCC	ants	/ænts/
VCCCC	pre-empts	/primpts/
CVC	man	/mæn/
CVCC	band	/bænd/
CVCCC	bands	/b æ ndz/
CVCCCC	sixths	/siks θ s/
CCVC	brag	/bræg/
CCVCC	brags	/brægz/
CCVCCC	plants	/plænts/
CCCVC	spring	/spring/
CCCVCC	springs	/springz/
CCCVCCC	splints	/splints/
CCCVCCCC	strengths	/streryk θ s/

(Ibid.)

Two-syllable Words

In the case of simple two-syllable words, either the first or the second syllable will be stressed-not both. There is a general tendency for verbs to be stressed nearer the end of a word and for nouns to be stressed nearer the beginning. We will look first at verbs. If the final syllable is weak, then the first syllable is stressed. Thus:

'enter'	'entə'	'open'	'əʊpən
'envy'	'envi	'equal'	'i:kwəl

A final syllable is also unstressed if it contains əv (e.g. 'follow' 'fɒləʊv' 'borrow' 'bɒrəʊv).

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If the final syllable is strong, then that syllable is stressed even if the first syllable is also strong. Thus:

'apply' ə'plai 'attract' ə'trækt 'rotate' rəʊ'teɪt
'arrive' ə'raɪv 'assist' ə'sɪst 'maintain' meɪn'teɪn

Two-syllable simple adjectives are stressed according to the same rule, giving:

'lovely' 'lʌvli 'divine' dɪ'vaɪn
'even' i:vən 'correct' kə'rekt
'hollow' 'hɒləʊv 'alive' ə'laɪv

As with most stress rules, there are exceptions; for example: 'honest' 'ɒnɪsl, 'perfect' 'pɜ:flkt, both of which end with strong syllables but are stressed on the first syllable.

Nouns requires a different rule: stress will fall on the first syllable unless the first syllable is weak and the second syllable is strong. Thus:

'money' 'mʌni 'divan' dɪ'væn
'product' prɒdʌkt 'balloon' bə'lu:n
'larynx' 'lærɪŋks 'design' dɪ'zaɪn

Other two-syllable words such as adverb seem to behave like verbs and adjectives.

Three-syllable Words

Here we find a more complicated picture. One problem is the difficulty of indentifying three-syllable words which are indisputably simple. In simple verbs, if the final syllable is strong, then it will receive primary stress. Thus:

'entertain' 'entəteɪn 'resurrect' 'rezə'rekt

If the last syllable is weak then it will be unstressed, and stress will be placed on preceding (penultimate) syllable if that syllable is strong. Thus:

'encounter' ɪŋkəʊntə 'determine' dɪ'tɜ:mɪn

If both the second and third syllables are weak, then the stress falls on the initial syllable:

'Parody' pærədi 'monitor' 'mɒnɪtə

Nouns require a slightly different rule. The general tendency is for stress to fall on the first syllable unless it is weak. Thus:

'quantity' 'kwɒntəti 'emperor' 'empərə
'custody' 'kʌstədi 'enmity' 'enməti

However, in words with a weak first syllable the stress comes on the next syllable:

'mimosa' mɪ'məʊzə 'disaster' dɪ'zɜ:stə
'potato' pə'teɪtəʊ 'synopsis' sɪ'nɒpsɪs

When a three-syllable noun has a strong final syllable, that syllable will not usually receive the main stress:

'intellect' 'ɪntəlket 'marigold' 'mærɪgəʊld
'alkali' ælkəlaɪ 'stalactile' 'stæləktalt

Adjectives seem to need the same rule, to produce stress patterns such as:

'opportune' 'ɒpətju:n 'insolent' 'ɪnsələnt
'derelict' 'derəlɪkt 'anthropoid' 'ænθrəpɔɪd

The above rules certainly do not cover all English words. They apply only to major categories of lexical words (nouns, verbs and adjectives in this chapter), not to function words such as articles and prepositions. There is not enough space in this course to deal with simple words of more than three

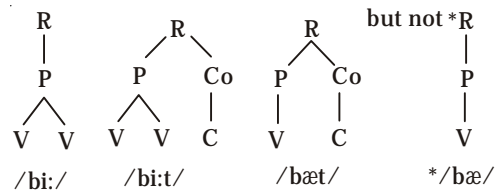
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syllables, nor with special cases of loan words (words brought into the language from other languages comparatively recently). Other words—which we will look at in studying connected speech—change their stress pattern according to the context they occur in. Above all, there is not space to discuss the many exceptions to the above rules. Despite the exceptions, it seems better to attempt to produce some stress rules (even if they are rather crude and inaccurate) than to claim that there is no rule or regularity in English word stress.

English Strong-Syllable Rhymes

English has certain limitations on the form of strong syllables – they can be **open** only if they contain a long vowel or a diphthong, and only a **closed** strong syllable may have a short vowel. In other words, long vowels and diphthongs can occur in both open (*sue* / su:/, *bay* / b eɪ /) and closed (*beam* / bi: m/, *eight* / eɪ t /) strong syllables, whereas short vowels only occur in closed ones (*cat* / kæt/, *ill* / ɪ l/).

As we saw in the section on **syllable structure**, a syllable ending in VC has a branching Rhyme with a non-branching Peak and Coda; and VV is a branching Peak, while VVC is a branching Rhyme with a branching Peak and a non-branching Coda. We can now consider the permissible Rhyme structures of English strong syllables:



The phonotactic restriction can be defined this way: the Rhyme of a strong syllable must branch, OR contain at least one branching constituent. (Lass, 1984: 254—255)

Division of Syllables

So far we have been using monosyllabic words as examples. But when a string of syllables is concerned, how do we decide what is the Coda of one and the Onset of the next? The question of syllabification, the division of a word into syllables, is quite controversial and there are several approaches to it.

The two most important and widely used pronunciation dictionaries of the English language, the *English Pronouncing Dictionary* (EPD) and the *Longman Pronunciation Dictionary* (LPD), employ different principles of syllabification, which we shall quote in turn, and then briefly mention another, more abstract, approach to syllable division.

Syllabification in EPD, Maximal Onsets Principle

In the introduction to EPD syllable divisions are explained as follows:

A dot is used to divide syllables, in accordance with the current recommendations of the **International Phonetic Association**. (...) However, this is not used where a stress mark or occurs, as these are effectively also syllable division markers. (...)

1. As far as possible, syllables should not be divided in a way that violates what is known of English syllable structure. The 'Maximal Onsets Principle', which is widely recognised in contemporary phonology, is followed as far as possible. This means that, where possible, syllables should be divided in such a way that as many consonants as possible are assigned to the beginning of the syllable to the right (if one thinks in terms of how they are written in transcription), rather than to the end of the syllable to the left. However, when this would result in a syllable ending with a stressed /l/, /e/, /æ/, /ʌ/, /ɛ/ or /ʃ/, it is considered that this

would constitute a violation of English phonotactics, and the first (or only) intervocalic consonant is assigned to the preceding syllable; thus the word 'better' is divided /'bet. ə/, whereas 'better' is divided /'bi: tə/. In the case of unstressed short vowels, /e/, /æ/, /ʌ/ and /ɐ/ are also prevented from appearing in syllable-final position; however, unstressed /ɪ/ and /ʊ/ are allowed the same "privilege of occurrence" as /ə/ when a consonant begins a following syllable, and may therefore occur in final position in unstressed syllables except pre-pausally. Thus in a word such as 'develop', the syllable division is /dɪ'vel.əp/.

2. Notwithstanding the above, words in compounds should not be re-divided syllabically in a way that does not agree with perceived word boundaries. For example 'hardware' could in theory be divided /'ha: .dweə/, but most readers would find this counter-intuitive and would prefer /'ha: d .weə/. This principle applies to open, closed and hyphenated compounds.

Syllabification in LPD

Here is how LPD sets out an alternative approach to syllabification:

Syllable divisions are shown in LPD by spacing. (...)

It is generally agreed that phonetic syllable divisions must as far as possible avoid creating consonant clusters which are not found at the edges of words. This is the phonotactic constraint. Thus windy might be 'wln dɪ or 'wln dɪ, but it could not be 'wln dɪ (because English words cannot begin with nd). LPD takes the view that the syllabification of this word actually parallels its morphology: wind+y, 'wln dɪ. For the same reason, language must be 'læŋ gwɪd ʒ, not 'læŋ wɪd ʒ or 'læ ŋ wɪd ʒ.

The principle that LPD adopts is that consonants are syllabified with whichever of the two adjacent vowels is more strongly stressed. If they are both unstressed, it goes with the leftward one. A weak vowel counts as 'less stressed' than an unstressed strong one.

In general, this principle is subject to the phonotactic constraint. However, there are some cases where correct prediction of allophones requires us to override it.

1. Certain unstressed syllables end in a strong short vowel, even though words cannot. In nostalgia the t is unaspirated (as in stack stæk, not as in tack tæk), so the syllabification is (BrE) nɛ 'stæld ʒ ə/
2. r can end a syllable, even though in BrE it cannot end a word pronounced in isolation. The r in starry is like the r in star is, and different from the more forceful r in star runner. Likewise, ʒ can end a syllable: vision 'vɪ ʒ 'ɪ.
3. Within a morpheme, tr and dr are not split. If petrol were 'pet rəl, as the phonotactic constraint leads us to expect (since English words do not end in tr), its t would likely be glottal and its r voiced (as in rat-race 'ræt r əl s). In fact, the tr in this word is pronounced as a voiceless affricate; so LPD syllabifies it 'petr əl.

Ambisyllabicity

Yet another possibility of treating intervocalic consonants that the phonotactics of a language allows as both Codas and Onsets is to view them as belonging to both syllables at the same time. Consider the disyllabic word *habit* /'hæbɪt/. The consonant /b/ may well function as Coda in the initial syllable – [hæb] – or, alternatively, as Onset in the final syllable – [bɪt]. (Here we use square brackets [] to indicate syllable boundaries.) In cases like this, many phonologists argue that the intervocalic consonant has a dual function – Coda in syllable 1, on one hand, and Onset in syllable 2, on the other. This can be represented as follows: [₁hæ[₂b]₁ɪt]₂ (σ₁ = [hæb]₁ σ₂ = [bɪt]). Consonants that enter the structure of two syllables are called ambisyllabic. (Example from Lass, 1984: 266)

12.8 Pronunciation: General Theoretical Framework

12.8.1 Definition of Pronunciation

In its broadest sense, Roach (2002:61) views pronunciation

As shown in the following lines:

Pronunciation is the acts of producing the sounds of a language. The things that concern most people are (1) standards of pronunciation and (2) the learning of pronunciation.

12.8.2 The Main Features of Pronunciation

The main features of pronunciation. In this regard, Kelly (2000:1) provides us with a diagram illustrating the main features of pronun.

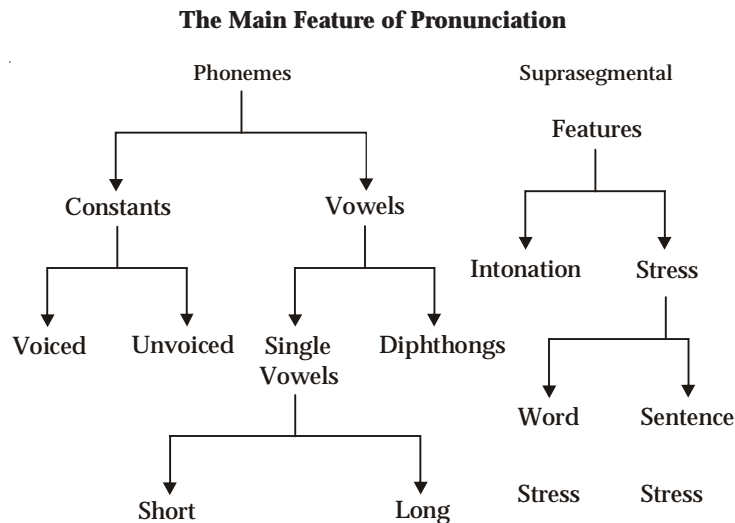


Figure 12.5

12.9 Stress

Stress is also seen from the phonetic and phonological points of view. Jones (1969:245) defines 'stress' as "the degree of force with which a sound or a syllable is uttered". Hyman (1975:204) emphasizes the function of stress, i.e., a word receives only one primary stress'. Words with several syllables receive primary stress and secondary stress'. Unstressed syllables, as stated by Heffner (1975:226), are "used loosely for minimally stressed and always understood in that sense".

English word stress is part of the language; it is used to communicate rapidly. To exemplify, the words 'photography' and 'photographer' are distinguishable according to the position of stress (Roach, 2002: 89). Hyman (1925:205) puts forward two criteria that determine stress patterns in all languages: a grammatical criterion, and a phonological one.

Sentence stress, at the other extreme, depends on the important words. In other words, the most important lexical stress, i.e., noun, verb, adjective . and adverb in a given sentence can carry stress (ibid.: 20).

Stress placement within a word is either unpredictable as adopted by Jones (1969) or predictable as adopted by Chomsky and Hall é (1968). Aitchison (1994:12) believes that a basic feature of the skeleton is the number of syllables".

12.10 The Nature of Stress

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Stress has been mentioned several times already in this course without an explanation of what the word means. The nature of stress is simple enough: practically everyone would agree that the first syllable of words like 'father', 'open', 'camera' is stressed, that the middle syllable is stressed in 'potato', 'apartment', 'relation', and that the final syllable is stressed in 'about', 'receive', 'perhaps'. Also, most people feel they have some sort of idea of what the difference is between stressed and unstressed syllables, although they might explain it in different ways.

We will mark a stressed syllable in transcription by placing a small vertical line (ˈ) high up, just before the syllable it relates to; the words quoted above will thus be transcribed as follows:

'fɑːðə	pə'teltəv	ə'baʊt
'əʊpən	ə'pɔːtmənt	rɪ'siːv
'kæmrə	rɪ'lɪʃn	pə'hæps

What are the characteristics of stressed syllables that enable us to identify them? It is important to understand that there are two different ways of approaching this question. One is to consider what the speaker does in producing stressed syllables and the other is to consider what characteristics of sound make a syllable seem to a listener to be stressed. In other words, we can study stress from the points of view of production and of perception; the two are obviously closely related, but are not identical. The production of stress is generally believed to depend on the speaker using more muscular energy than is used for unstressed syllables. Measuring muscular effort is difficult, but it seems possible, according to experimental studies, that when we produce stressed syllable, the muscles that we use to expel air from the lungs are often more active, producing higher subglottal pressure. It seems probable that similar things happen with muscles in other parts of our vocal apparatus.

Many experiments have been carried out on the perception of stress, and it is clear that many different sound characteristics are important in making a syllable recognisably stressed. From the perceptual point of view, all stressed syllables have one characteristic in common, and that is prominence. Stressed syllables are recognised as stressed because they are more prominent than unstressed syllables. What makes a syllable prominent? At least four different factors are important:

1. Most people seem to feel that stressed syllables are louder than unstressed syllables; in other words, loudness is a component of prominence. In a sequence of identical syllables (e.g. ba:ba:ba:ba:), if one syllable is made louder than the others, it will be heard as stressed. However, it is important to realise that it is very difficult for a speaker to make a syllable louder without changing other characteristics of the syllable such as those explained below (2–4); if one literally changes only the loudness, the perceptual effect is not very strong.
2. The length of syllables has an important part to play in prominence. If one of the syllables in our "nonsense word" ba:ba:ba:ba: is made longer than the others, there is quite a strong tendency for that syllable to be heard as stressed.
3. Every voiced syllable is said on some pitch; pitch in speech is closely related to the frequency of vibration of the vocal folds and to the musical notion of low and high-pitched notes. It is essentially a perceptual characteristic of speech. If one syllable of our "nonsense word" is said with a pitch that is noticeably different from that of the others, this will have a strong tendency to produce the effect of prominence. For example, if all syllables are said with low pitch except for one said with high pitch, then the high-pitched syllable will be heard as stressed and the others as unstressed. To place some movement of pitch (e.g. rising or falling) on a syllable is even more effective in making it sound prominent.
4. A syllable will tend to be prominent if it contains a vowel that is different in quality from neighbouring vowels. If we change one of the vowels in our "nonsense word" (e.g. ba:bi:ba:ba:) the "odd" syllable bi: will tend to be heard as stressed. This effect is not very powerful, but there is one particular way in which it is relevant in English: the previous chapter explained how the most frequently encountered vowels in weak syllables are ə, I, i, u (syllabic consonants are also

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common). We can look on stressed syllables as occurring against a “background” of these weak syllables, so that their prominence is increased by contrast with these background qualities.

Prominence, then, is produced by four main factors: (1) loudness (2) length, (3) pitch and (4) quality. Generally these four factors work together in combination, although syllables may sometimes be made prominent by means of only one or two of them. Experimental work has shown that these factors are not equally important; the strongest effect is produced by pitch, and length is also a powerful factor. Loudness and quality have much less effect.

12.11 Levels of Stress

Up to this point we have talked about stress as though there were a simple distinction between “stressed” and “unstressed” syllables with no intermediate levels; such a treatment would be a two-level analysis of stress. Usually, however, we have to recognise one or more intermediate levels. It should be remembered that in this chapter we are dealing only with stress within the word. This means that we are looking at words as they are said in isolation, which is a rather artificial situation: we do not often say words in isolation, except for a few such as ‘yes’, ‘no’, ‘possibly’, ‘please’ and interrogative words such as ‘what’, ‘who’, etc. However, looking at words in isolation does help us to see stress placement and stress levels more clearly than studying them in the context of continuous speech.

Let us begin by looking at the word ‘around’ ˈaɪrəʊnd, where the stress always falls clearly on the last syllable and the first syllable is weak. From the point of view of stress, the most important fact about the way we pronounce this word is that on the second syllable the pitch of the voice does not remain level, but usually falls from a higher to a lower pitch. We can diagram the pitch movement as shown below, where the two parallel lines represent the speaker’s highest and lowest pitch level. The prominence that results from this pitch movement, or tone, gives the strongest types of stress; this is called primary stress.

In some words, we can observe a type of stress that is weaker than primary stress but stronger than that of the first syllable of ‘around’; for example, consider the first syllables of the words ‘photographic’ ˌfəʊtəˈɡræfɪk, ‘anthropology’ ˌænθrəˈpɒlədʒi. The stress in these words is called secondary stress. It is usually represented in transcription with a low mark (ˌ) so that the examples could be transcribed as, ˌfəʊtəˈɡræfɪk, ˌænθrəˈpɒlədʒi.

We have now identified two levels of stress; primary and secondary; this also implies a third level which can be called unstressed and is regarded as being the absence of any recognisable amount of prominence. These are the three levels that we will use in describing English stress. However, it is worth noting that unstressed syllables containing ə, I, i, u, or a syllabic consonant, will sound less prominent than an unstressed syllable containing some other vowel. For example, the first syllable of ‘poetic’ pəʊˈtɪk is more prominent than the first syllable of ‘pathetic’ pəˈθetɪk. This could be used as a basis for a further division of stress levels, giving us a third (“tertiary”) level. It is also possible to suggest a tertiary level of stress in some polysyllabic words. To take an example, it has been suggested that the word ‘indivisibility’ shows four different levels: the syllable bɪl is the strongest (carrying primary stress), the initial syllable ɪn has secondary stress, while the third syllable vɪz has a level of stress which is weaker than those two but stronger than the second, fourth, sixth and seventh syllable (which are all unstressed). Using the symbol ˊ to mark this tertiary stress, the word could be represented like this: ˊɪnɪˌvɪzəˈbɪlɪti. While this may be a phonetically correct account of some pronunciations, the introduction of tertiary stress seems to introduce an unnecessary degree of complexity. We will transcribe the word as, ɪnɪˌvɪzəˈbɪlɪti.

12.12 Placement of Stress within the Word

We now come to a question that causes a great deal of difficulty, particularly to foreign learners (who cannot simply dismiss it as an academic question): how can one select the correct syllables to

stress in an English word? As is well known, English is not one of those languages where word stress can be decided simply in relation to the syllables of the word, as can be done in French (where the last syllable is usually stressed), Polish (where the syllable before the last—the penultimate syllable—is usually stressed) or Czech (where the first syllable is usually stressed). Many writers have said that English word stress is so difficult to predict that it is best to treat stress placement as a property of the individual word, to be learned when the word itself is learned. Certainly anyone who tries to analyse English stress placement has to recognise that it is a highly complex matter. However, it must also be recognised that in most cases (though certainly not all), when English speakers come across an unfamiliar word, they can pronounce it with the correct stress; in principle, it should be possible to discover what it is that the English speaker knows and to write it in the form of rules. The following summary of ideas on stress placement in nouns, verbs and adjectives is an attempt to present a few rules in the simplest possible form. Nevertheless, practically all the rules have exceptions and readers may feel that the rules are so complex that it would be easier to go back to the idea of learning the stress for each word individually.

In order to decide on stress placement, it is necessary to make use of some or all of the following information:

1. Whether the word is morphologically simple, or whether it is complex as a result either of containing one or more affixes (i.e., prefixes or suffixes) or of being a compound word.
2. What the grammatical category of the word is (noun, verb, adjective, etc.).
3. How many syllables the word has.
4. What the phonological structure of those syllables is.

It is sometimes difficult to make the decision referred to in (1). The rules for complex words are different from those for simple words and these will be dealt with in previous Chapter. Single-syllable words present no problems: if they are pronounced in isolation they are said with primary stress.

Point (4) above is something that should be dealt with right away, since it affects many of the other rules that we will look at later. We saw that it is possible to divide syllables into two basic categories: strong and weak. One component of a syllable is the rhyme, which contains the syllable peak and the coda. A strong syllable has a rhyme with either (1) a syllable peak which is a long vowel or diphthong, with or without a following consonant (coda). Examples:

'die' daɪ 'heart' ha:t 'see' si:

or (2) a syllable peak which is a short vowel, one of I, e, æ, ʌ, ɒ, ʊ, followed by at least one consonant. Examples:

'bat' bæt 'much' mʌtʃ 'pull' pʊl

A weak syllable has a syllable peak which consists of one of the vowels ə, i, u and no coda except when the vowel is ə. Syllabic consonants are also weak. Examples:

'fa' in 'sofa' 'səʊfə 'zy' in 'lazy' 'leɪzi
'flu' in 'influence' 'ɪnfluəns 'en' in 'sudden' 'sʌdn

The vowel I may also be the peak of a weak syllable if it occurs before a consonant that is initial in the syllable that follows it. Examples:

'bi' in 'herbicide' 'hɜ:bɪsɪdɪt 'e' in 'event' 'ɪvent

(However, this vowel is also found frequently as the peak of stressed syllables, as in 'thinker' θɪŋkə, 'input' 'ɪnpʊt.)

The important point to remember is that, although we do find unstressed strong syllables (as in the last syllable of 'dialect' 'dɪəlekt), only strong syllables can be stressed. Weak syllables are always unstressed. This piece of knowledge does not by any means solve all the problems of how to place English stress, but it does help in some cases.

12.13 Summary

- This study aims at finding out whether there are significant differences in the frequency of occurrence of the different consonants depending on whether they are in the onset or coda. The researcher analyzed 2001 mono morphemic CVC words found in the Random House Dictionary (Elexner 1987)
 - Grammars coefficient is used to find out the association between consonant type and syllable position which is found to be a strong association in this study.
 - The findings of this study are:
 - (i) Glides (/h/,/j/,/w/,) can only occur in the onset.
 - (ii) /z/,/t/,/l/and/k/ show a significant preference for the coda.
 - (iii) /b/,/s/and/r/ show a significant preference for the onset
- (i) A strong syllable is a stressed syllable.
- Roach (200:20-1) argues that: simple syllables are of the following categories:
- (ii) A minimum syllable would be a single vowel in isolation, e.g. the words 'are' (strong form) a:, 'or' o:, 'err' ɜ: these are preceded and followed by silence. Isolated sounds such as m, which is some times produced to indicate agreement, or ʃ to ask for silence, must also be regarded as syllables.
 - (iii) Some syllables have an onset (i.e., they have more than just silence preceding the centre of the syllable (CV) e.g.:

'bar' ba: 'key' ki: 'more' mo:.
 - (iv) Syllables may have no onset but have a coda (VC) e.g.: 'æ m' am 'ought' o:t 'ease' i:z.
 - (v) Some syllables have onset and coda (CVC) e. g.: 'run' r ^ n 'sat' 'fill' fil(ibid.).

12.14 Key-Words

1. Phonotactics : The possible combinations of English Phonemes of a language are called Phonotactics.
2. Monosyllabic : A word consisting of a single syllable. For examples, cat, dog.

12.15 Review Questions

1. Mark the stress on the following words:

(i) Verbs

- | | | | |
|-------------|-------------|----------------|------------|
| (a) protect | (b) clamber | (c) festoon | (d) detest |
| (e) bellow | (f) menace | (g) disconnect | (h) enter |

(ii) Nouns

- | | | | |
|--------------|-------------|------------|----------------|
| (a) lanugage | (b) captain | (c) career | (d) paper |
| (e) event | (f) jonquil | (g) injury | (h) connection |

(Native speakers of English should transcribe the words phonemically as well as marking stress.)

12.16 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
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Unit 13: Branches in Linguistics: Socio-Linguistics

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Objectives

After studying this Unit students will be able to:

- Know Socio-Linguistics.
- Discuss Language Variation.
- Understand Varieties of English.

Introduction

Sociolinguistics is a term including the aspects of linguistics applied toward the connections between language and society, and the way we use it in different social situations. It ranges from the study of the wide variety of dialects across a given region down to the analysis between the way men and women speak to one another. Sociolinguistics often shows us the humorous realities of human speech and how a dialect of a given language can often describe the age, sex, and social class of the speaker; it codes the social function of a language.

13.1 Socio-Linguistics and Other Branches of Linguistics

Language is a social-cultural-geographical phenomenon. There is a deep relationship between language and society. It is in society that man acquires and uses language. When we study a language which is an abstraction of abstractions, a system of systems, we have to study its further abstractions such as dialects, sociolects, idiolects, etc. That is why we have to keep in mind the geographical area in which this language is spoken, the culture and the society in which it is used, the context and situation in which it is used, the speakers who use it, the listeners for whom it is used, and the purpose for which it is used, besides the linguistic components that compose it. Only then can our study of a language be complete and comprehensive. So we must look at language not only from within but also from without; we should study language from the points of view of both form and functions. An informal definition of socio-linguistics suggested by a linguist is that it is the study of: *'Who can say what how, using what means, to whom and why.'* It studies the causes and consequences of linguistic behaviour in human societies; it is concerned with the function of language, and studies language from without.

Socio-linguistics is a fascinating and challenging field of linguistics. It studies the ways in which language interacts with society. It is the study of the way in which the structure of a language changes

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in response to its different social functions, and the definition of what these functions are. 'Society, here is to cover a spectrum of phenomena to do with race, nationality, more restricted regional, social and political groups, and the interactions of individuals within groups. Different labels have sometimes been suggested to cover various parts of this spectrum. **Ethnolinguistics** is sometimes distinguished from the rest, referring to the linguistic correlates and problems of ethnic groups—illustrated at a practical level by the linguistic consequences of immigration; there is a language side to race relations. The term Anthropological Linguistics is sometimes distinguished from 'sociological linguistics', depending on one's particular views as to the validity or otherwise of a distinction between anthropology and sociology in the first place (for example, the former studying primitive cultures, the latter studying more 'advanced' political units; but this distinction is not maintained by many others). 'Stylistics' is another label which is sometimes distinguished, referring to the study of the distinctive linguistic characteristics of smaller social groupings. But more usually, stylistics refers to the study of the literary expression of a community using language. Socio linguistics gradually merges into ethno-linguistics, anthropological linguistics, stylistics and the subject-matter of psychology.



Did u know?

Socio-linguistics is the study of speech functions according to the speaker, the hearer, their relationship and contact, the context and the situation, the topic of discourse, the purpose of discourse, and the form of discourse.

Broadly speaking, however, the study of language as part of culture and society has now commonly been accepted as Sociolinguistics. But there are also some other expressions which have been used at one time or another, including 'the sociology of language', 'social linguistics', 'institutional linguistics', 'anthropological linguistics', 'linguistic anthropology', 'ethnolinguistics', the 'ethnography of communication', etc.

The kinds of problems which are faced by the sociolinguist are: the problems of communities which develop a standard language, and the reactions of minority groups to this (as in Belgium, India, Pakistan, Bangla Desh, or Wales) ; the problems of people who have to be educated to a linguistic level where they can cope with the demands of a variety of social situations (for example of problem of learning Hindi in the people of Tamil Nadu if they want to have a communication with the common people of North India); the problems of communication which exist between nations or groups using a different language, which affects their 'world-view' (for example the problem of popularising Russian among the nations which are friendly to Russia); the problems caused by linguistic change in response to social factors; the problems caused or solved by bilingualism or multilingualism (for example in India and Canada); the problems caused by the need for individuals to interact with others in specific linguistic ways (language as an index of intimacy or distance, of solidarity, or prestige of power, or pathology, and so on). By this however, we do not mean that socio-linguistics can or does solve all such problems as stated above. Yet it can identify precisely what the problems are and provide information about the particular manifestation of a problem in a given area, so that possible solutions can thereby be found out or expedited. Furthermore, problems related to interference, code-switching or dialect-switching can be successfully handled by socio-linguistics. But the success of socio-linguistics ultimately depends upon 'pure linguistics'.

As J.B. Pride says, socio-linguistics is not simply 'an amalgam of linguistics and sociology (or indeed of linguistics and any other of the social sciences)'. It incorporates, in principle at least, every aspect of the structure and use of language that relates to its social and cultural functions. Hence there seems no real conflict between the socio-linguistics and the psycho-linguistic approach to language. Both these views should be reconciled ultimately. Linguisticians like John Lyons and cognitive psychologists like Campbell and Wales advocate the necessity of widening the notion of competence to take account of a great deal of what might be called the 'social context' of speech.



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The scope of socio-linguistics, therefore, is the interaction of language and various sociologically definable variables such as social class, specific social situation, status and roles of speakers/hearers, etc.

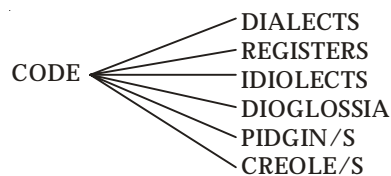
13.2 Language Variation

Language with its different varieties is the subject matter of socio-linguistics. Socio-linguistics studies the varied linguistic realizations of socio-cultural meanings which in a sense are both familiar and unfamiliar and the occurrence of everyday social interactions which are nevertheless relative to particular cultures, societies, social groups, speech communities, languages, dialects, varieties, styles. That is why language variation generally forms a part of socio-linguistic study.

Language can vary, not only from one individual to the next, but also from one sub-section of speech-community (family, village, town, region) to another. People of different age, sex, social classes, occupations, or cultural groups in the same community will show variations in their speech. Thus language varies in geographical and social space. Variability in a social dimension is called sociolectal. According to socio-linguists, a language is code. There exist varieties within the code. And the factors that cause language variation can be summarized in the following manner:

- **nature of participants, their relationship** (socio-economic, sexual, occupational, etc.)
- **number of participants** (two face-to-face, one addressing a large audience, etc.)
- **roles of participants** (teacher/student priest/parishoner/father/son/husband/wife, etc.)
- **function of speech event** (persuasion, request for information ritual, verbal, etc.)
- **nature of medium** (speech, writing, scripted speech, speech reinforced by gesture, etc.)
- **genre of discourse** (scientific, experiment, sport, art, religion, etc.)
- **physical setting** (noisy/quiet,/public/private/family/formal gathering, familiar/unfamiliar, appropriate for speech (e.g. sitting-room) (inappropriate.)
- **regional or geographical setting**, etc.

The major varieties that exist within the code are the following:



13.2.1 Code

'A code' is 'an arbitrary, pre-arranged set of signals'. A language is merely one special variety of code. The total organization of various linguistic components in a language is the code of that language. It is an abstract system which happens to be accepted arbitrarily in the community which uses it.

13.2.2 Dialect and Sociolect

A regional, temporal or social variety within a single language is a dialect; it differs in pronunciation, grammar and vocabulary from the standard language, which is in itself a socially favoured dialect. So a dialect is a variation of language sufficiently different to be considered a separate entity within a language but not different enough to be classed as a separate language. Sometimes it is difficult to decide whether a variant constitutes a dialectal sub-division or a different language, since it may be blurred by political boundaries, e.g. between Dutch and some Low German dialects. Regional dialects

Notes

(or local or geographical or territorial dialects) are spoken by the people of a particular geographical area within a speech community, e.g. Cockney in London, but due to the increase in education and mobility they are receding.

“Dialect is a specific form of a given language, spoken in a certain locality or geographic area, showing sufficient differences from the standard of literary form of **that** language, as to pronunciation, grammatical construction and idiomatic use of words, to be considered a distinct entity, yet not sufficiently distinct from other dialects of the language to be regarded as a different language.”

—*A Dictionary of Linguistics* (1954) by
A. Pie and Frank Gaynor.



Sociolects (social dialects or class dialects), on the other hand, are spoken by the members of a particular group or stratum of a speech community.

A variety of language used at a particular stage in its historical development, e.g. Prakrit and Pali in ancient India, may be called **temporal dialects**.

Dialects are dialects not because of linguistic reasons but because of political or cultural reasons. It is customary to describe them as varieties of a language according to users. For example Brijbhasha, Avadhi, Bhojpuri, Khari Boli, etc. are some of the dialects of Hindi.

To the linguist, however, as stated by Sapir, ‘there is no real difference between a dialect and a language.’ Grierson also observes, ‘In the course of the survey, it has sometimes been difficult to decide whether a given form of speech is to be looked upon as an independent language or as a dialect of some other definite form of speech. In practice, it has been found that it is sometimes impossible to decide the question in a manner which will gain universal acceptance. The two words ‘language’ and ‘dialect’ are in this respect like ‘mountain’ and ‘hill’. One has no hesitation in saying that Everest is mountain and Hoborn Hill a hill, but between these two the dividing line cannot be accurately drawn.’

13.2.3 Isogloss

An isogloss is ‘a line indicating the degree of linguistic change’. ‘On linguistic maps, a line separating the areas (called isogloss area) in which the language differs with respect to a given feature or features, i.e. a line making the boundaries within which a given linguistic feature or phenomenon can be observed’ (*A Dictionary of Linguistics*).

So an isogloss is a representation of statistical probabilities, a graphic way of portraying a transition in speech characteristics from one area to another, a bundle of isoglosses may be interpreted as marking a zone of relatively great transition in speech. We may, therefore, think of it as indicating **dialect boundary**. It is a term modelled on geographical terms like **isotherm** (a line joining areas of equal temperature) and **isobar** (a line joining areas of equal atmospheric pressure). It is in contrast to another linguistic term **isograph**, i.e. ‘any line on a linguistic map, indicating a uniformity in the use of sounds, vocabulary, syntax, inflection, etc.’

Though an isogloss is a convenient way of description, but may be misleading if the apparent sharpness of distinction between the areas is not carefully discounted. “The drawing of isoglosses is one of many places where it is easy to be over-precise. The reading of them is even more dangerous, since the reader has not seen the intricate mass of data upon which they are based.” (Gleason)

13.2.4 Registers

Whereas dialects are the varieties of language according to users, registers are the varieties of language according to use. Registers are ‘stylistic-functional varieties of a dialect or language’. These may be narrowly defined by reference to subject matter (field of discourse, e.g. jargon of fishing, gambling, sports, etc.) to medium (mode of discourse e.g. printed material, written letter, message on tape, etc.),

or to level of formality, that is style (manner of discourse). Registers are, therefore, situationally conditioned field-of-discourse oriented varieties of a language. Some well-known definitions of register are cited below:

1. “By register we mean a variety correlated with a performer’s social role on a given occasion. Every normal adult plays a series of different social roles—one man, for example, may function at different times as head of a family, motorist, cricketer, member of a religious group, professor of bio-chemistry and so on, and within his idiolect he has varieties shared by other persons and other idiolects appropriate to these roles. When the professor’s wife tells him to ‘stop talking like a professor,’ she is protesting at a misuse of register.”
—J. C. Catford, *A Linguistic Theory of Translation*, OUP, 1965.
2. Registers are those “varieties of language which correspond to different situations, different speakers and listeners, or readers and writers, and so on.”
—R.M.W. Dixon, “On Formal & Contextual Meaning,” *A L H* (Budapest), XIV.
3. “By register, itself a linguistic, not situational category, is meant a division of idiolect, or what is common to dialects, distinguished by formal (and possibly substantial) features and correlated with types of situations of utterance (these distinguished by such components as those here enumerated).”
—J. Ellis, “On Contextual Meaning,” *In Memory of J. R. Firth*, Longmans.

According to the role of the speaker, a young lecturer, for example, will speak in different ways when communicating with his wife, his children, his father, his colleagues, his students, or when shopping, and so on. Each of these varieties will be a register. Examples of registral varieties according to the subject matter or field of discourse are scientific, religious, legal, commercial writings and also the language of newspaper, of buying and selling, of agriculture, of airport announcers, of telephone operators, etc. The following passage belongs to the register of embroidery.

Make a small hem on the edge of the garment, turn it on to the right side, then take it down. Arrange the lace in position over this hem, with the straight edge of the lace to the hem of edge. Pin and tack. Sew the lace to the garment with tiny stitches worked close together as according.

A register is also determined by the medium or mode of discourse. The main distinction is between speech and writing. But within speech one may have such distinctions as conversation, discussion, debate, talk and lecture. And in writing we may have distinctions like a personal letter, a memoir, a biography, an autobiography, a poem to be read, a speech to be read aloud, and a play to be performed on a stage and so on.

The Advanced Learner’s Dictionary of Current English (1976) indexes the following types of register:

accounts	ecclesiastical	naval
aerospace	electricity	pathology
algebra	engineering	philosophy
anatomy	farming	phonetics
architecture	finance	photography
arithmetic	football	physics
art	gambling	physiology
astronomy	geology	politics
ballet	geometry	psychology
biblical	grammar	racing
biology	journalism	radio telegraphy
book-keeping	mathematics	rugby
botany	mechanics	science
business	medical	sports
chemistry	meteorology	tennis

Notes	cinema	military	theatre
	commerce	music	trigonometry
	cricket	nautical	zoology

Though this list covers a fairly wide range of language registers, yet it should not be regarded as final and complete.

Register and Style

Registers may be classified on the basis of style. We may talk of, for example religion, in a temple with the old folk or at a seminar with scholars, or in a restaurant with friends. Depending on who participates (passively or actively) in the discourse or discussion, the tone, the words etc. will vary. In a religious gathering or temple we may be serious and reverential in our speech; in a seminar we may be analytical; in a restaurant casual. The topic is a serious one but our treatment of it may be highly formal or frozen; it may be, at the other extremes, highly informal or casual. The degree of formality may vary according to the style or manner of discourse. In the restaurant we may say that water is 'dirty', but in a laboratory we may have to say it is 'impure' or 'polluted.'

On the basis of stylistic values the following types of stylistic varieties have been listed in *The Advanced Learner's Dictionary* (1976):

archaic	formal	pejorative
colloquial	historical	poetic
dated	humorous	proverb
derogatory	ironical	rare
dialect	jocular	slang
emphatic	laudatory	taboo
emotive	literary	vulgar
euphemistic	literal	
facetious	modern	
figurative	old use	

Nevertheless, it is difficult to draw a sharp dividing line between the two axes of **register** and **style**; and register classification, instead of being a pigeon-hole classification, is only a workable solution. Register, says Dr. S.K. Verma, is primarily "field (of discourse)-bond and situationally conditioned. It is a restricted code of social behaviour." Furthermore, 'register is a variety of language with marked phonological, grammatical and lexical features correlating with distinctive situational features. Hence registral varieties, like any other variety, can be analysed and described at the interpreting levels of phonology, grammar and lexis. One of the marked features of a register is predominance of a particular type of technical terms. It is only with the help of certain marked lexical features that we delimit and classify registers, e.g. in the passage quoted above. (S.K. Verma. "Towards a Linguistic Analysis of Registral Features," *Acta Linguistica Academica*, Budapest).

Style in linguistics has to do with those components or features of the form of a literary composition which give to it its individual stamp, marking it out as the work of a particular author and producing a certain effect upon the reader. The analysis of style in this sense is commonly called stylistics

13.2.5 Idiolect

Idiolect is a variety of language used by one individual speaker, including peculiarities of pronunciation, grammar, vocabulary, etc. A dialect is made of idiolects of a group of speakers in a social or regional subdivision of a speech community. Linguists often analyse their own idiolect to make general statements about language. So the idiolect is "an identifiable pattern of speech characteristic of an individual." or "Idiolect is the individual's personal variety of the community language system" (*A Dictionary of Linguistics*: 1954).

13.2.6 Diglossia

Where we do find two or more dialects or languages in regular use in a community we have a situation which Ferguson has called 'diglossia.' He has observed that in diglossic communities there is a strong tendency to give one of the dialects or languages a higher status or prestige, and to reserve it for certain functions in society, such as government, education, the law, religion, literature, press, radio and television. The 'prestige dialect' is often called the standard dialect (= the language).

The use of two widely divergent forms of the same language by all members of the community under different conditions is called diglossia. In such a situation, a 'high' or a 'classical' literary language is used for formal occasions and in written texts, and a 'low' or vernacular form is used in colloquial conversation. Thus within the same speech community, one form is used for specialised activities—official work, religion, education, law, press, radio, television, literature, etc. The other form is used for non-specialized daily activities. Perhaps the most familiar example is the standard language and regional dialect as used, say, in Italian or Persian, where many speakers speak their local dialect at home or among family or friends of the same dialect area but use the standard language in communicating with speakers of other dialects or on public occasions. A similar situation exists in the Arab world, where classical Arabic is used for specialised purposes by speakers of all dialects of Arabic. An example from India would be 'high' and 'low' Tamil. These forms vary considerably at all levels of language—sounds, words, grammar and meaning.

13.2.7 Pidgin

A pidgin is a contact language, a mixture of elements from different natural languages. Its use is usually restricted to certain groups, e.g. traders and seamen. Pidgins are used in some parts of South-West Asia. Chinese pidgin, a combination of items from Chinese and English to serve the limited purpose of trade, is another well-known example. An alternative term used for the pidgin is contact vernacular.

13.2.8 Creole

When a pidgin becomes a lingua franca, it is called a creole. Thus a pidgin may extend beyond its limited function and permeate through various other activities. Then it may acquire a standardized grammar, vocabulary and sound-system; and it may then be spoken by an increasing number of people as their first language. It has no such history, nor much prestige either. But on account of its wider application and first-language status, it has to be distinguished from a pidgin. A creole or a creolized language is a mixed natural language composed of elements of different languages in areas of intensive contact. Well-known examples are the creoles of the islands of Mauritius and Haiti.

An example of Creole English from Jamaica is quoted here from Randolph Quirk's *The English Language and Images of Matter* (London, 1972:48):

Hin sed den, 'Ma, a we in lid?' Him sie, 'Mi nc nuo, wi pikini, bot duon lukfi him niem hahd, or eni wie in a di wohld an yu kal diniem, him hie unu.' Him sed, 'Wel Ma, min want im hie me an nuo mi.' 'Lahd nuo masa'. Duo no kal di niem, hin we kom kil yu.' Him sie, 'Wei Ma, hin wi haf fi kil mi.

The following is the 'translation' of the sample quoted above: He said then, 'And where does he live, mother?' 'I don't know, my child' she said, 'but don't look hard for his name, or anywhere in all the world that you call the name, he will hear you.' 'Well, mother,' he said, 'I want him to hear me and know me.' 'Heavens, no sir,' 'Don't call the name: he'll come and kill you.' 'Well, mother,' he said 'he'll have to kill me.'

13.3 Varieties of English

There are many varieties of English which can be classified according to the following six criteria:

1. Region,
2. Education and Social Standing,
3. Subject Matter,
4. Medium,
5. Attitude, and
6. Interference.

Notes

The variety according to region as a criterion is the most well-known and has been called '*dialect*'. Dispersion in geographical terms has been the basis for the establishment of dialects. Sometimes dialects diverge so vastly that they become independent language. For example, Dutch, English, Norwegian, and Danish as distinct languages emerged from the dialectal varieties of their ancestor Germanic. But such vast variations are rare. Regional variation manifests itself most commonly in phonology, though occasional difference in grammar or vocabulary cannot be ruled out. American English (AmE) and British English (BrE), Canadian English, Australian English are the dialects of English on international geographical basis. Scots, Irish, Northern Midland, London, and Southern varieties within the British English are examples of the regional variation.

Within each dialect area, one notices linguistic variation according to education and social standing. The uneducated speech is most easily identified with the regional dialect, while educated speech tends to transcend regional limitations. Educated speech has the additional advantage of being patronised by the government, the universities, the learned professions, the press, and the political parties, for which reason it is accorded implicit social and political sanction, allowing it, therefore, to become 'Standard English'. Speech deviating from Standard English is termed 'substandard' to distinguish it from 'dialectal'. Standard English is reasonably monolithic despite regional and national pulls.

Varieties according to the subject matter of the discourse are called 'register'. It is very clear that every profession, every subject uses peculiar vocabulary which distinguished one register from another. Literary critics have their own language, while engineers and doctors have different needs expressed by vocabulary which especially meets their needs. Different registers exist in English too.

Varieties depend on the medium also. The two commonly used media being speaking and writing, their products are different. One difference is situational. Speech involves two or more persons, while writing can be, and most frequently is, done by an individual insulated from others. Writing generally entails the necessity of explicitness, leaving nothing vague or unsaid,—things which are compensated for by the physical presence of the speaker and hearer. The other difference arises out of the limitation of the graphic system which is unable to cope with devices of spoken language such as emphasis, stress and intonation.

Varieties according to attitude are called *style*. Depending upon the attitude of the speaker about the hearer of the subject matter, the variety can be anywhere between stiff, formal, cold on the one hand and relaxed, informal, warm, friendly on the other. On this basis, for the sake of simplicity, we have two varieties 'formal' and 'informal' interposed by the third called 'neutral'.

As regards the varieties due to interference, English, being an international language, is being learnt by people of different cultures and countries which allow lexical and grammatical structures of their languages to enter the English language. Such varieties of English as spoken by the French, the Russians, or the Japanese, are examples of varieties of English according to interference. Indian English is a special case of this category because it is learnt and studied not as a *foreign* language, but as a *second* language.

Self-Assessment**1. Answer the following questions:**

- (i) What is Isogloss?
- (ii) Define Registers.

13.4 Summary

- Sociolinguistics is the branch of linguistics concerned with the social functions of language use and the impact of social context on language. As opposed to other branches of linguistics which seek to understand the formal and structural aspects of language, sociolinguistics focuses on how social structures, situations and contexts can alter the rules, functions and uses of language.

- Sociolinguistics is the descriptive study of the effect of any and all aspects of society, including cultural norms, expectations, and context, on the way language is used, and the effects of language use on society. Sociolinguistics differs from sociology of language in that the focus of sociolinguistics is the effect of the society on the language, while the latter's focus is on the language's effect on the society. Sociolinguistics overlaps to a considerable degree with pragmatics. It is historically closely related to linguistics anthropology and the distinction between the two fields has even been questioned recently.
- It also studies how language varieties differ between groups separated by certain social variables, e.g., ethnicity, religion, status, gender, level of education, age, etc., and how creation and adherence to these rules is used to categorize individuals in social or socioeconomic classes. As the usage of a language varies from place to place, language usage also varies among social classes, and it is these sociolects that sociolinguistics studies.
- Studies in the field of sociolinguistics typically take a sample population and interview them, assessing the realisation of certain sociolinguistic variables.
- A commonly studied source of variation is regional dialects. Dialectology studies variations in language based primarily on geographic distribution and their associated features. Sociolinguists concerned with grammatical and phonological features that correspond to regional areas are often called dialectologists.
- There are several different types of age-based variation one may see with in a population. They are: vernacular of a subgroup with membership typically characterized by a specific age range, age-graded variation, and indications of linguistic change in progress.
- Variation may also be associated with gender. Men and women, on average, tend to use slightly different language styles. These differences tend to be quantitative rather than qualitative. That is, to say that women use a particular speaking style more than men do is akin to saying that men are taller than women (i.e., men are on average taller than women, but some women are taller than some men).
- Sociolinguistics is a quickly developing branch of linguistics which investigates the individual and social variation of language. Just as regional variation of language can give a lot of information about the place the speaker is from, social variation tells about the roles fulfilled by a given speaker within one community, or country. Sociolinguistics is a practical scientific discipline researching the language that is actually used either by native speakers, or foreigners, in order to formulate theories about language change.
- There are numerous factors influencing the way people speak which are investigated by sociolinguistics:
 - (i) Social class: the position of the speaker in the society, measured by the level of education, parental background, profession and their effect on syntax and lexis used by the speaker;
 - (ii) Social context: the register of the language used depending on changing situations, formal language in formal meetings and informal during meetings with friends for examples;
 - (iii) Geographical origins: slight differences in pronunciation between speakers that point at the geographical region which the speaker come from;
 - (iv) Ethnicity: differences between the use of a given language by its native speakers and other ethnic groups;
 - (v) Nationality: clearly visible in the case of the English language: British English differs from American English, or Canadian English;

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- (vi) Gender: differences in patterns of language use between men and women, such as quantity of speech, intonation patterns.
- (vii) Age: the influence of age of the speaker on the use of vocabulary and grammar complexity.
- An important factor influencing the way of formulating sentences is according to sociolinguists the social class of the speakers. Thus, there has been a division of social classes proposed in order to make the description accurate. Two main groups of language users, mainly those performing non-manual work and those with more years of education are the 'middle class', while those who perform some kind of manual work are 'working class'. Additional terms 'lower' and 'upper' are frequently used in order to subdivide the social classes. Therefore, differences between upper middle class can be compared with lower working class.
 - It is notable that people are actually aware of the differences in speech patterns that mark their social class and are often able to adjust their style to the interlocutor. It is especially true for the members of the middle class who seem eager to use forms associated with upper class, however, in such efforts the forms characteristics of upper class are often overused by the middle class members. The above mentioned process of adopting own speech to reduce social distance is called convergence. Sometimes, however, when people want to emphasize the social distance they make use of the process called divergence purposefully using idiosyncratic forms.
 - Investigates the way in which language changes depending on the region of country it is used in. To describe a variety of language that differs in grammar, lexis and pronunciation from others a term dialect is used. Moreover, each member of community has a unique way of speaking due to the life experience, education, age and aspiration. As individual personal variation of language use is called an idiolect.
 - There are numerous factors influencing idiolect some of which have been presented above, yet two more need to be elucidated, namely jargon and slang. jargon is specific technical vocabulary associated with a particular field of interest, or topic. For example words such as convergence, dialect and social class are sociolinguistic jargon. Whereas slang is a type of language used most frequently by people from outside of high-status groups characterized by the use of unusual words and phrases instead of conventional forms.

13.5 Key-Words

1. Style : Varieties according to attitude.
2. Registers : It is the variety of language according to use.

13.6 Review Questions

1. Write brief notes on:

(i) Dialect	(ii) Idiolect
(iii) Register	(iv) Diglossia
(v) Pidgin	(vi) Creole
2. What is an isogloss? How are isoglosses useful in determining dialect boundaries?
3. Distinguish between standard language and dialect.
4. Distinguish between dialect and idiolect.
5. Distinguish between pidgin and creole.
6. 'What is correct and what is not correct is ultimately only a matter of what is accepted by society, for language is a matter of conventions within society.' Discuss this view.
7. What is socio-linguistics? What is its relation with other branches of linguistics?

8. What do you mean by language varieties? How would you classify language varieties? Give examples from English.
9. How are registers classified on the basis of style?
10. Bring out the difference between dialect and sociolect.

Notes

Answers: Self-Assessment

1. (i) An isogloss is 'a line indicating the degree of linguistic change'. 'On linguistic maps, a line separating the areas (called isogloss area) in which the language differs with respect to a given feature or features, i.e. a line making the boundaries within which a given linguistic feature or phenomenon can be observed' (*A Dictionary of Linguistics*).
- (ii) Registers are those "varieties of language which correspond to different situations, different speakers and listeners, or readers and writers, and so on."

13.7 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. *Modern Linguistics: An Introduction*.
2. *An Introduction to Linguistics*, John Lyon.
3. Peter Roach: *English phonetics and phonology*. Cambridge University Press.
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Unit 14: Branches in Linguistics: Psycho-Linguistics

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Objectives

After studying this Unit students will be able to:

- Discuss Psycho-Linguistics.
- Explain Language Acquisition
- Understand Other Areas of Psycho-Linguistics.

Introduction

Psycholinguistics is a recent branch of linguistics developed in the sixties. It is the study of interrelationship of psychological and linguistic behaviour. It uses linguistic concepts to describe psychological processes connected with the acquisition and use of language. As a distinct area of interest, psycholinguistics developed in the early sixties, and in its early form covered acoustic phonology and language pathology. But now-a-days it has been influenced deeply by the development of generative theory, and its most important area of investigation has been language acquisition. It has raised and has partly answered questions such as how do children acquire their mother tongue? How do they grow up linguistically and learn to handle the registral and stylistic varieties of their mother tongue effectively? How much of the linguistic system that they ultimately command, are they born with and how much do they discover on the basis of their exposure to that system?

14.1 Psycho-Linguistics

In its early form, psycholinguistics covered the psychological implications of an extremely broad area, from acoustic phonetics to language pathology. Now-a-days, certain areas of language and linguistic theory tend to be concentrated on by the psycholinguist. Much of psycholinguistics has been influenced by generative theory and the so-called mentalists. The most important area is the investigation of the acquisition of language by children. In this respect there have been many studies of both a theoretical and a descriptive kind. The need for descriptive study arises due to the fact that until recently hardly anything was known about the actual facts of language acquisition in children, in particular about the order in which grammatical structures were acquired. Even elementary questions as to when and how the child develops its ability to ask question syntactically, or when it learns the inflectional system of its language, remained unanswered. However, a great deal of work has been done recently on the methodological and descriptive problems related to the obtaining and analysing information of this kind.



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As a distinct area of interest, psycholinguistics developed in the early sixties, and in its early form covered acoustic phonology and language pathology. But now-a-days it has been influenced deeply by the development of generative theory, and its most important area of investigation has been language acquisition.

The theoretical questions have focussed on the issue of how we can account for the phenomenon of language development in children at all. Normal children have mastered most of the structures of their language by the age of five or six. The generative approach argued against the earlier behaviourist assumptions that it was possible to explain language development largely in terms of imitation and selective reinforcement. It asserted that it was impossible to explain the rapidity or the complexity of language used by the people around them.

Psycholinguists therefore argue that imitation is not enough; it is not merely by mechanical repetition that children acquire language. They also acquire it by natural exposure. Both nature and nurture influence the acquisition of language in children. Children learn first not items but systems. Every normal child comes to develop this abstract knowledge of his mother tongue, even of a foreign language, to some extent for himself; and the generative approach argues that such a process is only explicable if one postulates that certain features of this competence are present in the brain of the child right from the beginning. 'In other words, what is being claimed is that the child's brain contains certain **innate** characteristics which 'pre-structure' it in the direction of language learning. To enable these innate features to develop into adult competence, the child must be exposed to human language, i.e. it must be stimulated in proper to respond. But the basis on which it develops its linguistic abilities is not describable in behaviourist terms.' (David Crystal, *Linguistics*).

The boundary between psycholinguistics and linguistics is becoming increasingly blurred as the result of recent developments in linguistics which aim at giving psychological reality to the description of language. The bonds between psychology and linguistics become more and more strong by the extent to which language is influenced by and itself influences such things as memory, motivation, attention, recall and perception.

Similarly psycholinguistics and sociolinguistics are coming closer because of the realization that merely grammatical competence is not enough; we have to aim at communicative competence too. Whereas psycholinguistics is language and the mind, sociolinguistics is language and community. In other words, psycholinguistics can be said to deal with language and the individual, and sociolinguistics with language and society.



Did you know?

Chomsky regards linguistics as a subfield of psychology, more specially the cognitive psychology. His view of linguistics, as outlined for instance, in his book *Language and Mind*, is that the most important contribution linguistics can make, is to the study of the human *mind*.

14.2 Language Acquisition

By the study of language acquisition is meant the process whereby children achieve a fluent control of their native language. Few people in the 1950s asked about the processes by which language was acquired. It was assumed that children imitated the adults around them, and that their speech gradually became more accurate as they grow up. There seemed to be some mystery attached to this apparently straight-forward process. Psycholinguists have therefore attempted general theories of language acquisition and language use. Some have argued that learning is entirely the product of experience and

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that our environment affects all of us in the same way. Others have suggested that everybody has an innate language learning mechanism which determines learning or acquisition of language identically for each of us. These two schools are known as 'empiricists' (behaviourists) and 'rationalists' (mentalists).

The empiricists say that all knowledge is derived from experience. They are of the opinion that children start out as clean slates. Learning a language is a process of getting linguistic habits printed on these slates. Language acquisition is the result of stimulus-response activities. Imitation, repetition, memorization, reward, and reinforcement facilitate this process of language acquisition. The behaviourists argue that learning is controlled by the conditions under which it takes place and that, as long as individuals are subjected on the same condition, they will learn in the same way. Variations in learning are caused because of the difference in learning experience, difference in the past experience of learning, difference in aptitudes, motivation, memory and age. So, for them there is not a theory of language learning as such but merely the application to language of general principles of learning.

From this follows that in general there is no difference between the way one learns a language and the way one learns to do anything else. So, according to the empiricists, language is a result of stimulus and response. A child should therefore learn to make a response in the first place, and then the response should be reinforced in a variety of ways. Indeed strength of learning is measured in terms of the number of times that a response has been made and reinforced. A word that has been uttered thirty times is better learned than one which has been said twenty times. So language learning process is basically a mechanical process of habit formation. Habits are strengthened by reinforcement.



Did u know?

Language is behaviour, a conditioned behaviour which can be learned only by inducing the child to behave. Repetition plays a vital role in learning a language. Hence the necessity of mechanical drills and exercises, imitation and repetition.

The rationalists contradict the empiricists at almost every point. Children learn a language, not because they are subjected to a similar conditioning process, but because they possess an inborn capacity which permits them to acquire a language as a normal maturational process. This capacity is universal. The child has an innate language acquiring device. He learns a language by exposure to it in society and by unconsciously forming certain hypotheses about language, which he goes on modifying till he comes to the adult model to which he is for the most part exposed. So the child goes on constructing an innate grammar, operating overgeneralized rules.

Language acquisition is species-specific and species-uniform. The ability to take up and understand language is inherited genetically but the particular language that children speak, is culturally and environmentally transmitted to them. Children all over the world acquire their native tongue without tutoring. Whereas a child exposed to an English speaking community begins to speak English fluently, the other one exposed to a community of Hindi speakers, begins to use Hindi fluently. Only human beings can acquire language. Language acquisition thus appears to be different in kind from acquisition of other skills such as swimming, dancing, or gymnastics. Native language acquisition is much less likely to be affected by mental retardation than the acquisition of other intellectual activities. Every normal human child learns one or more language unless he is brought up in linguistic isolation, and learns the essentials of his language by a fairly little age, say by six. To acquire fluency in a language a child has to be exposed to people who speak that language. A language is not something we know by instinct or inherit from our parents. It is the result of our exposure to a certain linguistic community. It is part of that whole complex of learned and shared behaviour that anthropologists call 'culture'. By this we do not mean that language is acquired ready-made. It is created anew by each child by putting together bits and pieces of environmental raw material. The human child does play an active role in this process; he actively strains, filters, recognizes what he is exposed to. His imitations are not photographic reproductions but artistic recreations. A child is a linguist in cradle. He acquires a language more easily than adults. He discovers the structure of his native language to use that language; no one hands it to him in a ready-to-use form.

Both schools have said significant things, yet neither is perfect. The mentalists' emphasis on the rule-learning is over-enthusiastic, and the behaviourists' rejection of meaning entirely is unjust. Language acquisition seems to be a process both of analogy and application, nature and nurture. The difference between the empiricists' approach and that of the rationalists can be summarised in the following manner also:

Empirical or behavioural Approach	Rationalistic or Mentalistic Approach
L.a. — Language acquisition	
1. Language acquisition is a result of experience.	L. a. is result of condition.
2. L. a. is a stimulus-response process.	L. a. is an innate, in-born process.
3. Language is a conditioned behaviour.	Language is not a behaviour like other behaviours but a species-specific and species-uniform mental process.
4. Children learn language by imitation and analogy.	Children learn language by application.
5. Language learning is practice based.	Language learning is rule based.
6. Language learning is mechanical.	Language learning is analytic, generative and creative.
7. Role of imitation, repetition, reinforcement, memory, motivation is very significant in language learning	Role of exposure is very significant.
8. Language acquisition is the result of nurture.	Language acquisition is the result of nature.

Two points in particular have become clearer: (1) Language is a maturationally controlled behaviour, and (2) child language is rule-governed, at every stage. Many types of behaviour develop 'naturally' at a certain age, provided that the surrounding environment is adequate and teaching is available at the crucial time. Such behaviour is maturationally controlled. Arguments as to whether it is inborn or learnt, are futile. Both nature and nurture, analogy and application, practice and exposure are important. Innate potentialities lay down the framework. Within this framework, there is wide variation depending on the environment. From the age of around eighteen months, human infants are in a state of 'language readiness'. The urge for language in them at this time is very strong, and only very extraordinary circumstances can suppress it. A child brought up in complete linguistic isolation, will not acquire language. But all normal children and some abnormal ones—begin to speak if they hear language going on around them at this time.

Having been exposed to a small number of utterances, the child begins to extract the principles underlying the utterance and compose new utterances of his own. This is the way every child constructs a mini-grammar of his native language. He uses this grammar to communicate in an intelligible manner. He makes mistakes and produces ungrammatical sentences. His elders correct him. He feeds this information into his mini-grammar, modifies some of the rules, and again produces new utterances. In a period of about four years he is able to master and internalize all the essential rules of language. He begins not only to speak but also to understand altogether new utterances of his language. That is to say, the child does not learn individually all the idiosyncratic linguistic phenomena. He learns and internalizes the regular linguistic phenomena. For example, in learning English, he does not learn individually thousand of nouns: that **pencil** has a plural, that **pen** has a plural, and so forth. He internalizes the general structure principle that any common noun referring to a concrete, individual object has a plural. **Mohan**, **honesty**, and **cheese** are instances of nouns that normally do not have plurals. Mohan is a proper noun or name, not a common noun, **honesty** is not a concrete object; and **cheese** is not an individual object.

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Another more advanced but obvious example of the rule-governed nature of child language are forms such as **mans, foots, gooses, childs**, which children produce frequently. Such plurals occur even when a child understands and responds correctly to the adult forms **men, feet, geese**, etc. This is a proof that a child's own rules of grammar are more important to him than mere imitation.

14.3 Other Areas of Psycho-Linguistics

Psycholinguistics covers a wide range of interests, and other aspects are currently being studied. The study of speech disturbances, aphasia, pausing and hesitations, language use, etc. are the other aspects of psycholinguistics. More recent studies are taking into consideration not only the utterance of children but also of parents. The realisation is growing that future studies must take into account the child's whole environment, and particularly the speech of its parents.

Roger Brown and Ursula Bellugi of Harvard University have studied an interesting type of interaction which takes place between parent and child, to processes which they call 'imitation and reduction', and 'imitation and expansion'. They have noted that the child imitates its mother; but reduces the utterance in length and omits inflections, resulting in a 'telegraphic' style of speech:

Mother: Daddy is eating food.

Child: Daddy food.

Conversely, a parent tends to imitate the child by repeating and expanding its utterance:

Child: Daddy food.

Mother: Yes, that's right. Daddy's eating food.

But more research on parent and child speech is needed before any firm conclusions about universal acquisition processes can be reached.

Self-Assessment

1. Why the boundary between Psycholinguistics and languages becoming blurred?

14.4 Summary

- As a distinct area of interest, psycholinguistics developed in the early sixties, and in its early form covered acoustic phonology and language pathology. But now-a-days it has been influenced deeply by the development of generative theory, and its most important area of investigation has been language acquisition.
- Now-a-days, certain areas of language and linguistic theory tend to be concentrated on by the psycholinguist. Much of psycholinguistics has been influenced by generative theory and the so-called mentalists. The most important area is the investigation of the acquisition of language by children. In this respect there have been many studies of both a theoretical and a descriptive kind. The need for descriptive study arises due to the fact that until recently hardly anything was known about the actual facts of language acquisition in children, in particular about the order in which grammatical structures were acquired. Even elementary questions as to when and how the child develops its ability to ask question syntactically, or when it learns the inflectional system of its language, remained unanswered. However, a great deal of work has been done recently on the methodological and descriptive problems related to the obtaining and analysing information of this kind.
- Psycholinguists therefore argue that imitation is not enough; it is not merely by mechanical repetition that children acquire language. They also acquire it by natural exposure. Both nature and nurture influence the acquisition of language in children. Children learn first not items but systems. Every normal child comes to develop this abstract knowledge of his mother tongue, even of a foreign language, to some extent for himself; and the generative approach argues that such a process is only explicable if one postulates that certain features of this competence are present in the brain of the child right from the beginning.

- Similarly psycholinguistics and sociolinguistics are coming closer because of the realization that merely grammatical competence is not enough; we have to aim at communicative competence too. Whereas psycholinguistics is language and the mind, sociolinguistics is language and community. In other words, psycholinguistics can be said to deal with language and the individual, and sociolinguistics with language and society.
- Psycholinguistics covers a wide range of interests, and other aspects are currently being studied. The study of speech disturbances, aphasia, pausing and hesitations, language use, etc. are the other aspects of psycholinguistics. More recent studies are taking into consideration not only the utterance of children but also of parents. The realisation is growing that future studies must take into account the child's whole environment, and particularly the speech of its parents.

14.5 Key-Words

1. Empiricists : Behaviourists
2. Rationalists : Mentalists

14.6 Review Questions

1. What is psycholinguistics?
2. Write a note on the process of language acquisition.
3. Distinguish between the empirical (behavioural) and rationalistic (mentalistic) approach to language acquisition.
4. 'The first things that are learned are principles—not items: principles of categorization and pattern perceptions'. Discuss.
5. What is the crucial difference between being able to utter some sentences of English and being able to 'speak English'?

Answers: Self-Assessment

1. The boundary between psycholinguistics and linguistics is becoming increasingly blurred as the result of recent developments in linguistics which aim at giving psychological reality to the description of language.

14.7 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
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Unit 15: Branches in Linguistics: Educational Linguistics

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Objectives

After studying this unit students will be able to:

- Provide the background and a description of the ways in which Linguistics and Education interact with each other in current HE* teaching.

Introduction

A fully developed Educational Linguistics has to integrate linguistic understanding with all the areas listed above. Thus educational linguistics is inevitably a sub-branch of applied linguistics, the study of language in real-world situations where the problems and conventions are defined by non-linguists, whether the general public or language professionals such as (eg) teachers or translators. It needs to be informed by linguistic research but it cannot be limited to it, for language activity is constrained by social, economic, political and ethical factors which are beyond the immediate concerns of Linguistics proper. Thus the individual contribution that linguists can make to educational work is twofold. First, they can provide technical understanding deriving from linguistic, psycho- or socio-linguistic research to address educational problems, or to enable educational practitioners to become more proficient in addressing them themselves. Second, they can contribute by collaborating with colleagues, or by themselves operating both as linguistic and as educational researchers and teachers, understanding the inevitable "messiness" of classroom and broader educational practice, in which so many agendas are competing for attention in limited space. The first contribution is relatively easy; it

*HE - Higher Education

is in a sense a loaning of linguistic understanding to another field. The second is more valuable, but is more difficult, and involves individuals understanding sympathetically the nature of two distinct approaches to understanding and practice.

15.1 Two Disciplines: Education and Linguistics

Much human activity could be described as educational, for human beings are distinguished by their capacity to learn, and learning is usually co-operative. "Education" can refer both to formal activity within controlled and planned educational institutions, and to the more informal upbringing of children or helping adults who wish to benefit from others' experience. Language is of course the most distinctive means of human communication and therefore for transmission of cultural understanding, skills and value systems.

The disciplines that have developed for the study of these two phenomena are known in higher education as "Linguistics" and "Education", but their histories as the sources of professional and scholarly understanding have taken different routes. Both are characterised, like most disciplines, by the tension between tidiness and manageability on the one hand, and closeness to their object of study on the other. The first takes us towards idealisation and formal models, and the second towards contextualisation and embeddedness in "real world" data. Linguistics has tended to move towards idealisation and formalisation of data, while Education has tended to resist calls for a formal science of learning. This is partly because Education is inevitably bound up with conflicting goals about the nature of the society it is aspiring to create, and political debates about control and investment. Linguistics is less liable to external political interference in the definition of its goals and procedures. Nonetheless, language and learning are so deeply implicated each with the other that it is difficult to conceive of a study of education in which communication and language are not central issues.

One effect of the different domains that each of these addresses is that Education, as studied and taught in higher education, is regarded as a field of human activity which can be investigated from the standpoint of many different, well-established disciplines: history, philosophy, psychology, sociology, among others - and of course linguistics. Branches of Education include not only pedagogy (procedures for effective teaching), but curriculum design, policy, comparative education, and the traditional core disciplines of earlier teacher education (but now largely abandoned) of psychology, sociology, philosophy, and history of education.

Linguistic study impinges on Education through two main routes. First, it has been the core discipline in work on teaching languages, mostly foreign and classical, but to some extent mother tongues. Second, it provides a foundation for studies of communication in the general educational process, mainly in relation to (a) literacy, (b) social behaviour in formal educational settings, and (c) learning processes.

15.2 The Historical Relationship between the Disciplines

The close relationship between language and education is recorded for almost as long as either has been discussed. Certainly, in the western tradition since classical times the association of learning with rhetoric, reflected in (eg) Quintilian, testifies to a close connection between educational standing and oral linguistic performance. Even stronger has been the association between education and the development of literacy (reflected in the widespread use of the term "grammar school"), though this has also been closely connected with the political concerns about who, and how many, in any population should learn to read and write.

Current practice is most directly affected by the past century's greater involvement of government in all levels of education, including HE. This saw an immense increase in access to formal education throughout the world, alongside a similar increase in our understanding of contemporary, particularly spoken language use.

In English-speaking countries much HE work on the interface between the two fields has been driven by the expanding market for English as a foreign language, and for professionally qualified teachers in this field. This has been part of a world-wide development in which government agencies in most

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countries funded their educational provision to respond to pressures from a wide range of sources. Between them, parents, taxpayers, international agencies and researchers influenced governments with three major aims. These were (a) to increase multilingualism, including especially command of English (b) to defend minority cultures and thus minority languages in the face of a greater threat by global economic and political power, and (c) to exploit linguistic understanding that had been acquired as the volume of research in this field increased.

Language in education work has to make sense of the effects of these pressures on current educational practice. It is clear that the three aims potentially conflict with each other.

15.3 The Contribution of Linguistics to Education

Areas in which Linguistics has been seen to contribute to understanding the total education process, beyond teaching methodology, include the following:

1. the relationship between language and cognition;
2. the role of language as a socialising agent within educational institutions;
3. the relationship between language in the educational institution and the wider community;
4. the role of language in general educational policy, in relation to (for example) national and international literacy policies, language in development, and language as a marker of local, regional, national and wider identities;
5. language and its relationship to power structures and the manipulation of communicative strategies by those with power.

Areas in which Linguistics typically contributes to work on language pedagogy include the following:

1. Basic descriptive and analytical work to establish skills necessary for (eg) describing target models and styles, learner errors or literary sources (conventional phonology, morphology, syntax, lexis, semantics, discourse);
2. Sociolinguistic studies, geared to the understanding of language variation and change;
3. Institutional sociolinguistic work aimed at national and educational language policy decision-making;
4. Language acquisition and learning;
5. Categories for the structure of language curricula: formal, functional, situational, etc.
6. Research methods for understanding language use in the classroom (or in other acquisition settings);
7. Language and ideology: power relations, the development of languages of wider communication, language loss (both individual and societal) - providing the context of much language teaching;
8. Various specialised fields: literary stylistics, lexicology, etc for courses with particular orientations.

15.4 Educational Linguistic

First named as a field 30 years ago and defined in two introductory books (Spolsky, 1978; Stubbs, 1986), the title "Educational Linguistics" was proposed by Bernard Spolsky in 1972 for a discipline whose primary task would be "to offer information relevant to the formulation of language education policy and to its implementation" (1974:554). It is an area of study that integrates the research tools of linguistics and other related disciplines of the social sciences in order to investigate holistically the broad range of issues related to language and education.

In his book "The Handbook of Educational Linguistics", Spolsky (2008) says that he first proposed the term "Educational Linguistics" (EL) because of his dissatisfaction with efforts to define the field

of applied linguistics and of his belief in the close relationship among research, theory, policy, and practice. He asserted that it should be a problem-oriented discipline, focusing on the needs of practice and drawing from available theories and principles of relevant fields including many subfields of linguistics (Hornberger, 2001). Pica also supports this idea and sees it as a problem- and practice-based field "whose research questions, theoretical structures, and contributions of service are focused on issues and concerns in education".

With the responsibility it has taken for L1 and L2 learning, EL has become particularly influential on the scholars engaged in Foreign Language Education (FLE), who attempt to understand how teachers teach and how students learn languages in schools, and especially how they acquire foreign literacy skills, that is, the ability not only to comprehend and interpret but also to create written texts in the foreign language. FLE has become, since the 1920s, a highly scientific field of research that draws its insights mostly from social and educational psychology, thus educational linguistics.

In the following sections, educational linguistics will be examined in detail creating associations with foreign language learning/teaching (FLL/FLT). In addition to the background information and its relations to a number of approaches, theories, and methods; its principles and how they are implemented in ELT settings will be discussed. Moreover, its relations to language teacher education and its contributions to FLL and FLT will be put forward.

15.5 Related Approaches, Theories, and Methods

The problem-oriented nature of EL leads it to look to linguistics together with other relevant disciplines such as theoretical linguistics, sociolinguistics, psycholinguistics, anthropological linguistics, neurolinguists, clinical linguistics, pragmatics, discourse analysis and educational psychology. This transdisciplinary structure provides it to be associated with a number of approaches, theories and methods.

15.5.1 Whole Language Approach

Rigg (1991) claims that the term "whole language" comes from educators not from linguists. It is an approach developed by educational linguists in 1980s to teach literacy in the mother tongue, which is one of the important issues that educational linguists are concerned. In this approach, it is emphasized that learning goes from whole to part for the reason that the whole is not equal to the sum of the parts. Actually, it can be traced back to Gestalt Psychology, which is a theory of mind and brain proposing that the operational principle of the brain is holistic. Similarly, Whole Language Approach adopts the view that learning cannot be achieved through isolated entities; that exactly corresponds to the educational linguists' hatred for segmental phonology and their insistence on educational phonology.

15.5.2 Humanistic Approach

Humanistic Approach originated by Carl Rogers in 1951 (Demirezen, 2008), also has close links with EL in the sense that it focuses on the emotional side of learning and the principles such as learner-centeredness, cooperation and unearthing students' potentials, which are also basic elements of educational psychology, and thus EL.

15.5.3 Communicative Approach

Communicative Approach is also associated with EL regarding the idea that the fundamental aim of language instruction should be communicating in the target language. In order to achieve this, it is not sufficient to have a comprehensive knowledge of language forms and functions; what is further needed is exchange of meanings in real communication.

15.5.4 Discourse Theory

Discourse theory and especially discourse analysis play a significant role in Educational Linguistics. As Stubb (1986) stresses that it is important to distinguish between language in education and linguistics in education, referring to the need to study language "in its own terms" (1986:232), as a discourse system, rather than treating language at the level of isolated surface features, ignoring its abstract, underlying, sequential and hierarchic organization.

15.5.5 Interactionist Theory

In parallel with communicative approach, interactionist theory also puts emphasis on the effect of social environment in which linguistic competence can be turned out to be communicative competence through interaction and by the help of nonverbal components, much more meaningful language learning can be achieved, as proposed by educational linguists. It is worth noting that "classroom interaction" is the core of educational linguistics research.

According to the associations given above, it is obvious that communicative language teaching, silent way, suggestopedia, TPR and other methods such as task-based and competency-based language teaching can also be linked to educational linguistics.

15.6 The Birth and Development of Educational Linguistics

As a research area, educational linguistics is very young. Its birth occurred in 1972 with the works of Bernard Spolsky in America. As mentioned earlier, it grew from the discomfort with the ambiguity of the term "applied linguistics". Therefore, the history of educational linguistics is inextricably linked to applied linguistics.

Since its inception, applied linguistics has had a broad scope, but it is language and education that has come to be dominant. In 1950s, it included a wide range of topics (linguistic geography, dictionary and literature, rhetoric, stylistics, lexicography, general language planning, etc.); however, while ELT was gaining momentum in 1960s and booming by the 1970s, many of these areas which were included in applied linguistics either received less attention or became the object of interest of other developing areas of study.

The problems and controversies regarding the nature and scope of applied linguistics were driving forces in Spolsky's decision to formulate a more precise title for the research studies specifically related to language and education. Moreover, there was also an implication in the term applied linguistics that linguistics is simply applied to issues of social practice. Such a "unidirectional" approach is undesirable and even dangerous especially in education where attempts by linguists to insert their theories directly into practice have led to disastrous results in, for example, phonemic approaches to reading and audiolingual approaches to general language learning.

Spolsky felt that applied linguistics in broad sense obscures the work specifically devoted to language and education. He also felt that to use applied linguistics in a narrow sense to refer to only language education research obscures the multiplicity of the work being done within the field in other domains. Namely, the term applied linguistics was imprecise and disadvantaging for everyone concerned.

He first set forth his vision for its nature in a presentation at the third AILA congress in 1972, later published in its proceedings. Then, in 1976, the department of Educational Linguistics was established at the University of Pennsylvania's Graduate School of Education within the deanship of Dell Hymes. In 1978, Spolsky published a seminal monograph on educational linguistics. Moreover, in 1984, the journal *Working Papers in Educational Linguistics* has been established, and since then, sixteen volumes have been published under student editorial direction which include topics ranging from speech act analysis and classroom discourse to language planning and second language acquisition.

At the beginning, people thought that his objective was to provide a new label for applied linguistics. This was largely stemming from a view of applied linguistics as being solely occupied with language and education. However, it was later understood that it's a "unified field within the wider discipline of applied linguistics". And today, it has turned out to be an independent field whose "starting point is always the practice of education and the focus is squarely on the role of language in learning and teaching (Hornberger, 2001: 19). Now, it is widely believed that it is EL which should be responsible for L1 and L2 learning, not applied linguistics.

15.7 The Nature and Composition of Educational Linguistics

Concerning the nature and composition of EL, Spolsky puts forward that language teaching takes place in a school and is closely tied to sociological, economic, political, and psychological factors.

Therefore, a good language education policy or effective methods of implementation will not ignore linguistics and the other related fields but will represent much more than an application of linguistics. In this respect, educational linguistics is concerned with the dynamic ways in which theory, research, policy, and practice inter-relate, and all work done under the rubric of educational linguistics is focused on this relationship. Actually, what is distinctively important in his original formulation is his "problem-oriented approach" to doing educational linguistics.

15.8 Problem-oriented Nature of Educational Linguistics

In educational linguistics, one does not simply apply disciplinary knowledge to a specific situation. Instead, the researcher starts with a problem (or theme) related to language and education and then synthesizes the research tools in his/her intellectual repertoire to investigate or explore it. Here, the synthesis of research tools refers to a number of methods used in related fields for data acquisition and analysis such as tutorials, observations, surveys, questionnaires, statistics, national/international anthropological archives, government information sources, etc. All these research tools present educational linguists the data from different perspectives and help attaining reliable and valid findings for a specific situations.

Still, Spolsky admits that linguistics has a central role to play and it is in this area that most educational linguists will have their primary training. However, while there has been a consensus on the relevance of linguistics for education (and also education for linguistics), there is still less clarity as to the nature of this relationship between them: is it application, implication, interpretation or mediation? Or is it coexistence, collaboration, complementarity or compatibility?

Spolsky insistently emphasizes that educational linguistics "should not be, as it often seems, the application of the latest linguistic theory to any available problem", but rather a problem-oriented discipline focused on the needs of practice. He argues that linguistics has applications to and implementations for education, both directly through language descriptions and secondarily through linguistic subfields. At the same time, such a relationship includes the "coexistence of activities, collaboration of efforts, complementarity of contributions, and compatibility of interests" - a balanced reciprocity which may well serve as a model for theory and practice in the whole of the educational linguistics field.

In educational linguistics, the focus on educational practice is both indirect and direct. The knowledge generated in EL may be used to guide the process of crafting sound educational language policy which is designed to influence practice. On the other hand, this knowledge may be used to guide sound teaching practice as it is implemented in relation to educational language policy. Then, the scope of educational linguistics, Spolsky later elaborates, is the intersection of linguistics and related language sciences with formal and informal education.

One of the core themes in educational linguistics is language policy. Within language policy, it is educational language policy that they are concerned. Educational language policy forms a part of wider national language planning, focusing specifically on the educational sector as "the transmitter and perpetuator of culture". Other themes dealt within EL can be specified as L1 and L2 acquisition, language choice, language and ethnicity, descriptive analysis of speech acts and discourse, educational implications of linguistic diversity, language planning, bilingual education, spoken interaction in professional settings, and biliteracy.

15.9 Subfields of Educational Linguistics

Thanks to its problem-oriented nature, educational linguistics has close links with a number of disciplines which are regarded as 'subfields' of educational linguistics by Hornberger. This also proves that EL is an independent field, not a subfield of applied linguistics any more, but it has its own subfields.

Theoretical Linguistics: It is a branch of linguistics concerned with developing models of linguistic knowledge. It involves the search for and explanation of linguistic universals. Syntax, phonology, morphology, and semantics are the core of theoretical linguistics.

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Sociolinguistics: It is the study of effect of any and all aspects of society, including cultural norms, expectations, and context on the way language is used. The chief contribution of sociolinguistics in educational settings has been to draw attention to the differences between language use in the classroom and in students' homes and communities. Because it is important to teaching and learning, language is heavily regulated in classrooms. Teacher talk is the name given to the special register that teachers use. It is a means of inducting pupils into specific topics and approaches and imparting instruction. Like all registers, Teacher Talk has developed certain conventions and properties. It typically comprises longer and more complex utterances than the teacher expects from the pupils.

Psycholinguistics: It is interdisciplinary in nature and is studied by people in a variety of fields such as psychology, cognitive science and linguistics. Linguistic-related areas are phonetics and phonology (focusing on how the brain processes and understands these sounds), morphology (relationships among words and their formations), syntax (how words are combined together to form sentences), semantics, and pragmatics.

Anthropological Linguistics: It is the study of the relations between language and culture, and the relations among human biology, cognition and language. It studies humans through the languages that they use.

Neurolinguistics: It is the science concerned with the human brain mechanisms underlying the comprehension, production and abstract knowledge of language, be it spoken, signed or written. Neurolinguistics has highlighted the special role of that part of the human brain known as Broca's area in crucial aspects of human language, namely syntax: the component of language that involves recursion.

Clinical Linguistics: It is a sub-discipline of linguistics and involves the application of linguistic theory to the field of Speech-Language Pathology. The International Clinical Phonetics and Linguistics Association is the unofficial organization of the field and was formed in 1991. They conduct researches with the aims of advancing techniques in assessment and remediation in Speech-Language Pathologists and offering insights to formal linguistic theories.

Pragmatics: It is the study of the ability of natural language speakers to communicate more than what is explicitly stated. The ability to understand another speaker's intended meaning is called pragmatic competence. Another perspective of pragmatics is that it deals with the ways we reach our goals in communication.

Discourse Analysis: It is a general term for a number of approaches to analyzing written, spoken or signed language use. Discourse analysis has been taken up in a variety of social science disciplines such as linguistics, sociology and psychology. As stated earlier, it has close links with educational linguistics in the sense that language is a discourse system so it should not be treated at the level of isolated surface features.

Educational Psychology: It is the study of how humans learn in educational settings, the effectiveness of educational interventions, the psychology of teaching, and the social psychology of schools as organizations. It informs a wide range of specialities within educational studies, including instructional design, educational technology, curriculum development, organizational learning, special education and classroom management. It both draws from and contributes to cognitive science and the learning sciences. Actually, it is one of the most important fields from which educational linguistics benefit.

It is clear that linguistics and psychology are indispensable parts of educational linguistics. However, language teaching should not look to educational psychology or linguistics for revelations or discoveries on how to teach language, but should learn to utilize these disciplines to make the vast practical experience in the teaching of foreign languages more meaningful, to evolve definite principles of language teaching and consolidate them in a true science of language learning.

15.10 Basic Principles of Educational Linguistics

The principles of Educational Linguistics got matured around 1970s by Spolsky giving references to a number of related disciplines. Giving a general framework for the practices of foreign language education, they can be specified as follows:

1. Literacy is at the core of foundations of education. Literacy can be defined as the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts. It involves a continuum of learning to enable an individual to achieve his or her goals, to develop his or her knowledge and potential, and to participate fully in the wider society. For this reason, EL stresses that literacy should be in primary consideration at each and every stage of educational processes.
2. It is educational linguistics which should be responsible for L1 and L2 acquisition, not applied linguistics. As an independent field of inquiry with its own departments, journals, conferences and scholars specialized in the field, EL is the one which should conduct researches and studies specifically on L1 and L2 learning, and thus seek ways for improving opportunities in language learning contexts.
3. Verbal intelligence is one of the most-used predictors of educational success. Therefore, learners should be encouraged to have sufficient amount of linguistic competence and then turn it into communicative competence.
4. Education needs linguistics since the improvement in language skills of writing, reading, speaking, and listening can only be achieved through knowledge about language. Spolsky himself admits that linguistics is an indispensable part of language learning process. Without knowing about language itself, it is impossible to use it properly. The important point is the 'proportion' that should be allocated for linguistics in language learning. It should be as it is required in foreign language education, not more than that.
5. A learner-centered, holistic, humanistic, and problem-oriented language teaching approach should be adopted. Only in this way, learners' full potential can be unearthed and they can fulfill the communicative functions of language use.
6. The use of target language in real communication should be the focus of foreign language education. Literacy in foreign language can only be achieved through the use of target language in all stages of learning, and thus teachers should create opportunities for learners to use the language outside the classroom. Especially in the context of foreign language learning and teaching, this can be managed through the use of technological devices.
7. Language education is a whole together with individuals, educational setting, curriculum design, and educational language policy. Therefore, language learning process should be considered as a whole with its components and all planning should be made within this framework.

In the light of these principles, educational linguists aim at organizing classroom activities so as to fulfill basic functions of foreign language education such as literacy, communicative competence, learner-centered language learning tasks, and attempt to consider language learning/teaching issue in a holistic manner including learners, schools, curricula and national policies of the governments.

15.11 Educational Linguistics' Relations to ELT

Even though it is considered as a young field, educational linguistics has been very active since 1970s in the sense that it has strong arguments related to the teaching of English as a second or foreign language.

Its emphasis on "classroom interaction" is one of them. Educational linguists think that as well as it is the core of educational linguistics research, classroom interaction is a significant part of language teaching methodology. It is also important since it is closely associated with power and control in classrooms and schools. Since the main objective of ELT practices is to be able to make students equipped with necessary knowledge of language so that they can communicate well in real world, educational linguistics' focus on classroom interaction is quite reasonable.

On the other hand, Pica notes that educational linguistics research has shed light upon primarily two domains of practice: design and implementation of learner-centered, communicative curricula and professionalization of the classroom teacher as decision-making educator. Stubbs (1986) also supports the idea and adds that educational linguistics provides teachers with the knowledge of language

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itself and how to teach it, so this, in turn, helps educators tackle with English language education problems such as the teaching of vocabulary, reading and writing.

Teacher's role is very important in this respect. As well as being a good source of knowledge for the learners, s/he should also act like a psychologist so as to determine proper applications in accordance with learners' mood, perceptions, backgrounds, etc. Namely, s/he should be a professional need analyst.

According to EL, ELT practitioners are required to create an autonomous, interactive and meaningful language learning environment for the learners while making necessary decisions in accordance with the school and the state policies because classroom applications are thought together with its hierarchical structure in EL. Similarly, learners are regarded as the center of all classroom practices and thus educational objectives of the school and the state.

All materials are presented in a meaningful way which enables learners to see the whole picture first and then getting the necessary knowledge through this holistic structure, not in isolation. Similarly, that is why educational linguists reject segmental phonology, but create educational phonology to be used in language education.

15.12 Educational Linguistics and Language Teacher Education

The recent recommendation by Fillmore and Snow that all teachers need to know quite a bit about language has revived old debates about the role of linguistics in educating teacher trainees.

At the beginning of the 20th century, the predominant assumption was that teachers were born and not made, or if they were made, they were "self-made." Therefore little attention was paid to the idea of foreign language teacher education. By the 1920s, however, articles began to appear that outlined curricula for the training of high school language teachers. One of the problems confronting teacher education programs in the early years of the century was lack of speaking ability on the part of candidates for certification. Teacher exams were proposed over the years to ensure a reasonable level of proficiency. They were required to pursue general methods and testing courses as well as courses in the psychology of learning. As a consequence, teachers were no longer producers, but were consumers of knowledge related to language learning and teaching.

By the 1960s, teachers were expected to demonstrate both subject matter and professional competence. They were required to take courses that focused on the language itself. When linguistics courses were taught, for example, linguists in general had serious problems making linguistics relevant to teaching. Especially interesting is that in a 1964 special issue of the *Modern Language Journal*, a set of "guidelines" for teacher preparation was published. Despite the field's best efforts, one problem continued to nag the profession -the low level of language proficiency among future teachers. This was due to the fact that although teachers were knowledgeable about language itself, they were not taught how to present that knowledge in communicative ways.

This great lack in language teacher education became booming in mid 1970s and drew special attention of educational linguists. Then they have proposed that language teachers are not -and should not be -pure linguists, thus they should learn linguistics as it is required by language education. Furthermore, EL also emphasizes that as well as language learners, teacher trainees also should be educated in a holistic and humanistic way which will enable them to teach foreign languages in the same manner, and all practices in teacher education process should aim at revealing trainees full potential in communicative competence.

Educational Linguistics' Contributions to FLL/FLT

While educational linguistics contributes distinctive disciplinary focus, concepts, methods and history, it also takes distinctive form in each of the following types of curriculum and comes up with novel perspectives in curriculum planning.

- **Skills:** An economic-vocationally oriented curriculum: In this kind of curricula, teaching aims to facilitate the acquisition of skills which are seen to be discrete or separately specific,

and are taught via pedagogies that stress explicit teaching, identifying sub-skills and teaching these separately and aiming through apprenticeship to combine the subskills. For instance, it may be suitable for "language for specific purposes".

- **Eloquence:** A humanistic-intellectual paradigm: When curricula are conceptualized as in some sense "humanizing", the educational linguistics makes use of notions of eloquence, expression, rhetoric, and elevated culture. Informing learners of timevalidated canonical thought, works of art, and literature distinguishes this class of curricula.
- **Virtue:** Paradigms of religion or social ideology: Some curricula aim to reproduce norms of life that derive from ethnicity, religious creed, or moral ideology. Educational linguistics, in this respect, serves unique goals of teaching, content sequencing, assessment, and evaluation associated with modes of practice particular to the ideology of the schools involved.
- **Nationing:** The discourse of loyal citizenship to nationality-defined states: Nationing, both in new nations intent on forging identities larger than regional or local ones and in established nations intent on preserving distinctiveness, utilizes linguistic based narration, story telling about national cohesion and unity, or subliminal and continual reminders of the persistence of nationality.

On the other hand, it gave way to the emergence of Whole Language Approach in 1980s which is also called "the real books approach" since it used real books instead of coursebooks. Its focus on meaningful and purposeful communication in language classes enabled it to help students be at ease while communicating.

In this respect, it is not wrong to say that Ausubel's Meaningful Learning Theory is one of the contributions of EL to the teaching and learning foreign languages. As an opposition to the traditional language learning theories, particularly Audiolingualism, it has derived from a cognitive perspective to language learning and teaching, thus attempts to find ways of creating meaningful learning situations in which learners feel comfortable and construct knowledge with their own effort.

Participatory approach is another term proposed by educational linguists which means a process through which the views of all interested parties are integrated into the decision-making process Alatis, et al. That is why EL benefits from a number of disciplines to solve an educational problem.

Educational linguistics also created a market of materials designed specifically for foreign language learning and teaching. Different text types and application-oriented materials became available all around the world.

Furthermore, it became influential on the emergence a number of language teaching methods such as Silent Way, TPR, content-based and task-based language teaching, which are all holistic, humanistic, and problem-oriented in nature. But most importantly, educational linguistics enabled L1 and L2 learning to be an independent field with its own research studies, approaches and applications for better educational opportunities.

15.13 Criticism of Educational Linguistics

Educational linguistics is a relatively recent issue that draws scholars' and researchers' attention from a number of disciplines and thus takes various reflections concerning its strong sides and inadequacies. They can be listed as follows:

15.13.1 Advantages of Educational Linguistics

- It has been understood that there is a need for more research into teachers' explicit beliefs about, and understanding of, language in order to enable us to understand teachers' central role as educational linguists, that is, as conscious analyst of linguistic processes.
- Educational linguists made an attempt to address a fundamental problem -the language barrier to education- i.e. the instance where a child acquires a vernacular language informally and is required by the educational system to acquire a different, standard language, a problem which recurs for millions of children daily, weekly, and yearly all over the world.

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- It has elucidated that education and linguistics are in need of each other all the time; especially teaching linguistics to the educators is important so that they can cope with the problems such as teaching vocabulary, reading, and writing.
- EL follows from this notion that educational linguists variously investigate a host of themes related to individuals, the institutions they inhabit, and the societies in which both are situated, all as they relate to language and education. This holistic perspective makes it so strong and successful.

15.13.2 Disadvantages of Educational Linguistics

o Although educational linguistics claims that it is an independent but transdisciplinary field any more, there are some other arguments which insist that it is still a sub-branch of applied linguistics. For instance, van Lier puts forward that researchers working on language learning should consider themselves to be linguists who do applied linguistics who do educational linguistics.

o In a similar way, applied linguists also claim that for a discipline to be an independent one, it has to create its own approaches, theories and methods. Therefore, they assert that EL cannot be regarded as a separate field in this respect. However, the contradiction that applied linguistics -considering itself as an independent field- also does not have its own approaches, theories, or methods weakens this argument.

The inadequacy of EL concerning these aspects can be explained best with its being such a young field to produce its own approaches, theories, and methods. In the course of time, educational linguistics is to come up with novel approaches in L1 and L2 learning and improve current practices with more efficient and innovative ones.

Self-Assessment

1. Fill in the blanks:

- The book 'The Handbook of Educational Linguistics' written by
- The title 'Educational Linguistic' was proposed by Spolsky in

15.14 Summary

- Concerning Spolsky's own words; educational linguistics starts with the assessment of a child's communicative competence on entering school and throughout his or her career, includes the analysis of societal goals for communicative competence, and embraces the whole range of activities undertaken by an educational system to bring its students' linguistic repertoires into closer accord with those expected by society.
- With its roots in the controversies of applied linguistics, educational linguistics has grown into a thriving field of inquiry focused on foreign language education. Its transdisciplinary nature has allowed it to flourish in a wide range of disciplinary climates. While this wide range has resulted in an impressively diverse body of knowledge with great potential to influence educational practice, it has also made it challenging to develop a sense of cohesion for educational linguistics as a whole.
- Although the question "Do we really need educational linguistics as a separate field?" is still echoing especially at the part of applied linguists, EL has proved that language practitioners are really in need of such a distinct field so as to specifically work on the issues belonging to this particular area: foreign language education. On the other hand, this does not mean that applied linguistics is useless any more. In the case that EL becomes insufficient to solve a particular problem related to language learning and teaching, it is applied linguistics that EL will call upon. In this respect, the two are always in juxtaposition and cannot reject the presence and significance of each other.
- Even though there are some oppositions concerning its independent structure, today it is obvious that educational linguistics stands powerfully as an independent but at the same time transdisciplinary discipline. This position can be summarized best with the metaphor used by Hornberger: birds on a wire. He says that the shifting and repositioning nature of

academic disciplines can be depicted best with this metaphor. When a new one joins their midst; if they refuse to budge, the newcomer will have to fly off again. That is to say, educational linguistics has indeed found a place on the wire amidst its peer disciplines and goes on its way with strong paces.

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15.15 Key-Words

1. Theoretical Linguistics : It is a branch of linguistics concerned with developing models of linguistic knowledge. It involves the search for and explanation of linguistic universals. Syntax, phonology, morphology, and semantics are the core of theoretical linguistics.
2. Sociolinguistics : It is the study of effect of any and all aspects of society, including cultural norms, expectations.
3. Psycholinguistics : It is interdisciplinary in nature and is studied by people in a variety of fields such as psychology, cognitive science and linguistics.
4. Anthropological Linguistics : It is the study of the relations between language and culture, and the relations among human biology, cognition and language.
5. Neurolinguistics : It is the science concerned with the human brain mechanisms underlying the comprehension, production and abstract knowledge of language, be it spoken, signed or written.

15.16 Review Questions

1. What is meant by Educational Linguistics? Discuss.
2. Discuss the Basic Principles of Educational Linguistics.
3. Explain the nature of Educational Linguistics.
4. What are the Sub-fields of Educational Linguistics?

Answers: Self-Assessment

1. (i) Bernard Spolsky (ii) 1972

15.17 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 16: Varieties of English Cardinal Vowel System

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Objectives

After studying this unit students will be able to:

- Understand Varieties of English Cardinal Vowel System.
- Discuss Concept of Phonemic Analysis.

Introduction

Cardinal vowel no. 1 has the symbol [i], and is defined as the vowel which is as close and as front as it is possible to make a vowel without obstructing the flow of air enough to produce friction noise; friction noise is the hissing sound that one hears in consonants like *s* or *f*. Cardinal vowel no. 5 has the symbol [ɑ] and is defined as the most open and back vowel that it is possible to make. Cardinal vowel no. 8 [u] is fully close and back and no. 4 [a] is fully open and front. After establishing these extreme points, it is possible to put in intermediate points (vowels no. 2, 3, 6 and 7). Many students when they hear these vowels find that they sound strange and exaggerated; you must remember that they are *extremes* of vowel quality. It is useful to think of the cardinal vowel framework like a map of an area or country that you are interested in. If the map is to be useful to you it must cover all the area; but if it covers the whole area of interest it must inevitably go a little way beyond that and include some places that you might never want to go to.

When you are familiar with these extreme vowels, you have (as mentioned above) learned a way of describing, classifying and comparing vowels. For example, we can say that the English vowel æ (the vowel in 'cat') is not as open as cardinal vowel no. 4 [a]. We have now looked at how we can classify vowels according to their tongue height and their frontness or backness. There is another important variable of vowel quality, and that is lip-position. Although the lips can have many different shapes and positions, we will at this stage consider only three possibilities. These are:

1. **Rounded**, where the corners of the lips are brought towards each other and the lips pushed forwards. This is most clearly seen in cardinal vowel no. 8 [u].

2. **Spread**, with the corners of the lips moved away from each other, as for a smile. This is most clearly seen in cardinal vowel no. 1 [i].
3. **Neutral**, where the lips are not noticeably rounded or spread. The noise most English people make when they are hesitating (written 'er') has neutral lip position.

Now, using the principles that have just been explained, we will examine some of the English vowels.

English short vowels

English has a large number of vowel sounds; the first ones to be examined are short vowels. The symbols for these short vowels are: ɪ, e, æ, ʌ, ɒ, ʊ. Short vowels are only *relatively* short; as we shall see later, vowels can have quite different lengths in different contexts.

Each vowel is described in relation to the cardinal vowels.

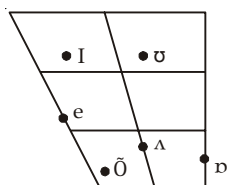


Figure 16.1: English short vowels

ɪ (example words: 'bit', 'pin', 'fish') The diagram shows that, though this vowel is in the close front area, compared with cardinal vowel no. 1 [i] it is more open, and nearer in to the centre. The lips are slightly spread.

e (example words: 'bet', 'men', 'yes') This is a front vowel between cardinal vowel no. 2 [e] and no. æ [æ]. The lips are slightly spread.

æ (example words: 'bat', 'man', 'gas') This vowel is front, but not quite as open as cardinal vowel no. 4 [a]. The lips are slightly spread.

ʌ (example words: 'cut', 'come', 'rush') This is a central vowel, and the diagram shows that it is more open than the open-mid tongue height. The lip position is neutral.

ɒ (example words: 'pot', 'gone', 'cross') This vowel is not quite fully back, and between open-mid and open in tongue height. The lips are slightly rounded.

ʊ (example words: 'put', 'pull', 'push') The nearest cardinal vowel is no. 8 [u], but it can be seen that ʊ is more open and nearer to central. The lips are rounded.

There is one other short vowel, for which the symbol is ə. This central vowel - which is called **schwa** - is a very familiar sound in English; it is heard in the first syllable of the words 'about', 'oppose', 'perhaps', for example. Since it is different from the other vowels in several important ways.

One of the most difficult aspects of phonetics at this stage is the large number of technical terms that have to be learned. Every phonetics textbook gives a description of the articulators. Useful introductions are Ladefoged, Ashby, and Ashby and Maidment.

An important discussion of the vowel-consonant distinction is by Pike. He suggested that since the two approaches to the distinction produce such different results we should use new terms: sounds which do not obstruct the airflow (traditionally called "vowels") should be called **vocoids**, and sounds which *do* obstruct the air-flow (traditionally called "consonants") should be called **contoids**. This leaves the terms "vowel" and "consonant" for use in labelling phonological elements according to their distribution and their role in syllable structure. While vowels are usually vocoids and consonants are usually contoids, this is not always the case; for example, j in 'yet' and w in 'wet' are (phonetically) vocoids but function (phonologically) as consonants. A study of the distributional differences between vowels and consonants in English is described in O' Connor and Trim; a briefer treatment is in Cruttenden. The *Handbook of the International Phonetic Association* (1999: Section 2.6) explains the IPA's principles of vowel classification. The distinction between primary and secondary cardinal vowels is

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a rather dubious one which appears to be based to some extent on a division between those vowels which are familiar and those which are unfamiliar to speakers of most European languages. It is possible to classify vowels quite unambiguously without resorting to this notion by specifying their front/back, close/open and lip positions.

16.1 The Description and Distribution of English Monophthongs and Diphthongs

Having established the vowel chart as a basic system of reference we can now proceed to a brief description of the vowel phonemes of English and of their distribution in a manner similar to that used in the case of consonants.

A. The English *simple* (“pure”) vowels or *monophthongs*.

- a. English *front* vowels. There are four front vowel phonemes in English: [i:], [ɪ], [e] and [æ]
- [i:] is a close (high), long, tense, unrounded vowel. The duration of [i:] can be compared to that of the Romanian vowel in plural nouns like *genii* and the sound is roughly similar to the French vowel of the French word *précise*, though not so close. The vowel is distributed in all three basic positions: word-initial: *east*; word-medial: *dean* and word-final: *sea*. As already mentioned, it is longer if it occurs in syllable final position and shorter if it is followed by a voiced sound, the shortest variants being those followed by a voiceless obstruent. If followed by a nasal stop it is nasalized: e.g. *bean*, *beam*. It is spelt **e**: *economy*, *remark*, or **ee**: *eel*, *see*, *feet*, or **ea** *each*, *seal*, *plea*. Other possible spellings are **ie**: *fiend*, **ei**: *seizing*, **i**: *machine*, or, exceptionally: **ey**: *key*; **ay**: *quay* [ki:], **eo**: *people*, **oe**: *Oedipus* or **eau**: *Beauchamp* [bi:tʃəʊm]
 - [ɪ] This is a more retracted front vowel, and its degree of openness is close to that of the cardinal half-close position. [ɪ] is a short, lax, unrounded vowel, its length varying, as in the case of the preceding vowel, according to the nature of the following consonant. The length decreases if the following sound is voiceless. It is distributed in all three basic positions: initial, medial and final: *ink*, *kill*, *aptly*. After the schwa, it is the commonest English vowel in unstressed positions. The vowel is spelt **i** (e.g. *ill*, *tick*) or **y**: *syntax*, *party*. Other spellings are possible as well, as in the exceptional examples *minute* [mɪnɪt] (NB. The adjective having the same spelling is read [maɪnju : t], *private* [praɪvɪt], *women* [wɪmɪn]. As it commonly represents a reduced unstressed vowel, other spellings are also possible - for instance *day* [deɪ] is reduced to [dɪ] in the names of the days of the week: Friday [frɪdɪ]
 - [e] This is a short, lax, unrounded vowel whose degree of openness is intermediate between cardinal half-close and half-open. It is a common vowel in English, distributed in initial position: *end*, or medial position: *tell*. It never occurs in word-final position as it is normally reduced to [ɪ] or [ə] if it is unstressed or diphthongizes to [eɪ] in loan words like *attache*, *fiance* or *café* if it is stressed. It can occur, nevertheless, in syllable-final position, under stress, as in *telegraph* [telɪɡrɑf], *peril* [pɛrɪl]. The vowel is spelt either **e** in words like *elf*, *fell*, or **ea** in *lead* (n. = plumb), *head* or *bread*. It can be exceptionally spelt **a** in *ate* (the past tense of *eat*), *many*, *any*, *Thames* or *Pall Mall*.
 - [æ] is the lowest front vowel of English. It is a short, lax, unrounded vowel, a little higher than the cardinal vowel [a]. It is a very common vowel in English and, contrary to the perception of many foreign learners of English, it is a short, not a long vowel. In fact, the basic difference between this vowel and the preceding one is the degree of openness, [æ] being lower. Romanian speakers of English find it particularly difficult to make the difference between the two vowels (which is a contrastive, phonemic one) simply because Romanian does not recognize this contrast between front low vowels as being a functional one. Constant training can, however, lead to a correct pronunciation of the English sound. The vowel is distributed in syllable-initial, medial and final position (e.g. *ant* [ænt], *cat*

[kæt], *rapid* [ræpɪd]), but not in word-final position. It is usually spelt a: *act, fat*, and only exceptionally ai: *plait* [plæɪt], *plaid* [plæɪd].

- b. English *back* vowels. There are five back vowel phonemes in standard English: [ɑ:], [ɔ], [ɔ:], [ʊ] and [u:]
- [ɑ:] in RP does not coincide with cardinal vowel 5 [a] It is a more advanced, low, long, tense, unrounded vowel. It is distributed in all three basic positions: *are, cart, far*. It is normally spelt by the letter **a** followed by a silent **r** in syllable or word-final position: *jar, carpet*. It is often followed by a silent **l** in words like *palm, calm, balm*. Sometimes **f** or **ff** can follow: *after, staff*; or **ss**: *pass, class*, or **s** or **n** followed by another consonant: *past, demand*; or **th** in word-final position: *path, bath* or, exceptionally, other letters: *aunt*[ɑ:nt], *Berkeley* [bɑ:kli], *hearth* [hɑ:θ], *father*[fɑ:ðə], *sergeant* [sa:dʒənt], *memoir* [memwa:], *barrage* [bæra:ʒ].
 - [ɔ] is a genuine back vowel in RP. It is short, lax, open and slightly rounded. It is only distributed in initial and medial position: *on, pot*, and never in final position. In some accents of English the vowel is pronounced pretty close to the cardinal vowel 5 [a]. In some varieties of American English it is still open and a little bit fronted, coming very close to [ɑ:] so that it is often difficult to distinguish *pot* from *part*, for instance. The vowel is usually spelt **o**. Other spellings are possible; **ou, a** and **au** in rare cases like *cough, want, or laurel*.
 - [ɔ:] is closer and longer than [ɔ]. It is a long, tense vowel, more rounded than [ɔ], the degree of aperture being between open and half-open. The vowel is distributed in all three basic positions: *awful, caught, flaw*. It is usually spelt either **aw** or **au**: *awl, drawn, thaw, august, taught*. The sequence **or** is also read [ɔ:] if it occurs in final position or is followed by either a consonant or a silent **e**: *for, sore, port*. The sound is exceptionally spelt **oo** in *floor, door, oa* in *board, broad, coarse* and *hoard, ough* in (*n*) *ought, sought, wrought*, and **a** in *water* or *wrath* and **ou** in *course, source*.
 - [ʊ] is a *short, lax, rounded* vowel which is considerably closer than [ɔ:] its degree of aperture being a little bit higher than the cardinal half-close. The vowel never occurs in initial position and only exceptionally in final position, in the weak, unstressed form of the preposition *to*, the verb *do* or the pronoun *who*. We can then say that its distribution is restricted to medial position. The usual spelling for [ʊ] is the letter **u** in words like *push, cushion, pull, put*. The letter **o** can also represent the sound after **w**: *wolf, Worcester*. In quite a few words double **oo** is the spelling for the sound, followed by **k**: *look, book*; by **t**: *foot, soot*, by **d**: *wood, stood*; by the lateral **l**: *wool*, or a nasal: *room, broom, groom*; **ou** appears as the spelling of the sound in verbal forms like *would, could, should*.
 - [u:] is the highest back vowel of English. It is a *long, tense, rounded* vowel. It occurs in all three basic positions, though pretty infrequently in initial position: *oom, oomph, ooze, ugh, uhlan; rude, baboon, crew, chew, tatoo*. Romanian speakers of English should remember that the vowel is closer and tenser than the preceding sound for which it must not be mistaken. The sound is usually spelt **u** or **oo**: *rule, root, taboo*. **O** can be the spelling of [u:] in final position in the stressed forms of *to, who*, etc, and in the noun *ado*. In words like *route, through, routine, soup, douche*, the sound is spelt **ou**. In *shoe, canoe, manoeuvre* it is rendered by **oe**. The sound is often preceded by the palatal [j] which is optionally inserted in words like *suit* [su:t/sju:t] or *fruit* [fru:t/frju:t], and obligatorily in *beauty* and its derivatives, in *feud, music, mutiny, deluge*, etc.

We can easily notice that all English front vowels' are unrounded, while the back ones, with the exception of [a:] which is not, strictly speaking, a back vowel, since its pronunciation in standard English is a little more advanced than that of cardinal vowel 5 [a] -display different degrees of roundness. This means that only the primary cardinal vowel chart is relevant for English, as there are no front rounded vowels or back unrounded vowels in this language (at least in RP)

Notes

- c. English *central* vowels. There are three central vowel phonemes in English: [ʃ], [ə] and [ɜ:].
- [ʃ] (*N.B. For technical reasons, I have followed Daniel Jones and the majority of phonetic transcriptions in use in choosing this symbol to represent the vowel of the English word cut; however, strictly speaking, this symbol is used in the IPA alphabet to represent secondary cardinal vowel 14, the unrounded counterpart of primary cardinal vowel 6 [ɔ]-see above*) is a central half-open, short, lax, unrounded vowel. It is the lowest standard English vowel and is distributed in word-initial and medial position: *utter, subtle*. It never occurs in word or syllable-final position. It is usually spelt either **u**: *under, but*, or **o**: *come, front, honey*; in a number of words it is spelt **ou**: *courage, southern, rough, tough*, and exceptionally **oo** in *blood* and *flood* and **oe** in *does*. Many Romanian speakers of English find it difficult to acquire the correct pronunciation of [ʃ] mistaking it for some variant of **a** or **o**.
 - [ə] is the commonest English vowel. It is a central, mid, lax, unrounded vowel-the *schwa* mentioned before-for the pronunciation of which the tongue adopts the neutral position in relation to which all the other articulatory positions can be described. The vowel freely occurs in all basic positions, but only in unstressed syllables: *aside, collide, rather*. Its pronunciation doesn't normally raise any problem for a Romanian speaker of English. It should be noted, however, that one of the most difficult to acquire of the phonological features of English is the change of the vowel quality with the stress shift (in a way comparable to Russian). Thus, most English vowels, if unstressed, will be reduced to schwa only to resume their basic value if the stress shifts back on them: cf *Satan* [seɪtən], *Satanic* [sə'tænik], *Satanism* [sə'tænɪzəm] or *fatal* [fətəl], [fətæ'lɪtɪ], *fatalism* [fətəlɪzəm]. It would be superfluous to list all the possible spellings of [sə], since the vowel can be, as I have said, the reduced form of any simple vowel or even diphthong (see *fatality*, above) in English and can consequently be rendered in writing by any vowel letter with the exception of **y** which only represents the semivowel **j** or the vowel **i**.
 - [ɜ:] is a central, mid, long, tense central vowel. It is the tense counterpart of the schwa and since it only occurs in stressed syllables, in complementary distribution with the preceding vowel, some phoneticians, including Daniel Jones, argue that the two sounds are positional variants of the same mid central vowel phoneme. It is distributed in all three basic positions, very often in monosyllabic words: *err, first, curtain, fur, refer*. It is commonly spelt **ir, ur, er**, or **yr** in final position or followed by a consonant or ear when followed by a consonant: *bird, burn, fern, myrtle, learn*. Other spellings include **our** in words like *courtesy, journal, journey, scourge*, and, exceptionally, **o** in *colonel*.

Here are the English simple vowels or monophthongs distributed contrastively in the same context:

- the front vowels: *eat* [bi:t], *bit* [bɪt], *bet* [bet], *bat* [bæt]
- the central vowels: *Burt* [bɜ:t], *but* [bət] - the weak, unstressed form, *butt* [bʃt]
- the back vowels: *boot* [bu:t], *butch* [bʊtʃ], *bought* [bɔ:t], *bot* [bɒt], *Bart* [bɑ:t].

We can now summarize the information we have on the English simple vowels (monophthongs) and include it in the following table:

	Front		Central		Back	
	Lax	Tense	Lax	Tense	Lax	
High/close	i:	i			u:	ʊ
Mid		e	ɜ:	ə	ɔ:	
Low/open		æ		ʃ	ɑ:	ɒ

B. The English diphthongs.

Diphthongs have already been described as sequences of two vowels pronounced together, the two vocalic elements being members of the same syllable. We have shown that it is often difficult to distinguish a genuine diphthong from a sequence of a vowel and a semivowel, that we can often pronounce diphthongs and even long vowels as such sequences and it is often the shorter duration of the less prominent vowel in the diphthong that transforms it into a semivocalic element. There is, for instance, a difference, both in quantity and quality between the second vocalic element in the English diphthong [aɪ] - that occurs, say, in the word *buy*, and the semivowel [j] in the Spanish interjection *ay!* [aj].

According to the position of the more prominent element in the diphthong we have already divided diphthongs into *falling* diphthongs-if the prominent element comes first-and *rising* diphthongs - if the less prominent element comes first. All English diphthongs belong to the first category, as it has already been pointed out. Diphthongs can then be *opening* diphthongs if the degree of aperture increases with the glide or *closing* diphthongs if the less prominent vowel is closer than the first. We can also differentiate between *wide* diphthongs - those in which the glide implies a more radical movement of the speech organs (e.g. [aɪ]) and *narrow* diphthongs - if the two vocalic elements occupy neighbouring positions (e.g. [əɪ]) on the vowel chart. There are also *centring* diphthongs-if the glide is from a marginal vowel in the vowel chart- either back or front - to a central vowel. (See the three English diphthongs gliding towards schwa; [ɪə] in *dear*, [ɛə] in *chair* and [ʊ ə] in *moor* - to which we should add [ɔə], no longer met in present-day standard English).

A. The *centring* diphthongs: [ɪə], [ɛə], [ʊ ə], [ɔə]

- a. [ɪə] is a *centring, falling, narrow, opening* diphthong that starts at about the position of the short, lax [ɪ] and glides towards schwa. The diphthong is distributed in all three basic positions: *ear, deer, tier*. If the first element of the diphthong does not have the normal prominence and length, it can be reduced to a glide and the diphthong is changed into [jə]. There are several possible spellings for the diphthong: **eer** as in *deer, peer* or *career*; **ea(r)** as in *ear, weary, idea, tear* (n. "lacrimā"), *beard, eir* as in *weird, ier* as in *fierce* or *pierce*, **ere** as in *here* or *mere*. Exceptionally we can have **ia** as in *media(l), labia(l), genial*, **eu** as in *museum, iu* as in *delirium*; **eo** as in *theory* and *theology*; **e** as in *hero* or in the diphthongized version of [i:]: *serious, serial*.
- b. [ɛə] is a *centring, falling, narrow*, in most cases *opening* diphthong. The degree of openness of the first element varies, in some dialects of English the sound being quite close to [ae]. In the more conservative pronunciations, closer to RP, the articulation of the diphthong starts somewhere in the vicinity of cardinal vowel 2 [ɛ]. Then follows a glide towards a variant of the schwa. There are dialects where the glide to [ə] is very short and sometimes the diphthong is changed into a monophthong, a long, tense vowel [ɛ:]. The diphthong is distributed in all three basic positions: *air, scarce, fare*. It can be spelt **air**: *air, fair, chair, dairy, fairy*; **are**: *fare, mare, care, care*; **ear**: *bear, wear, tear* (v.); **aer**: *aerial, aeroplane*; **ere**: *there*; **eir**: *their, heir*. In words like *prayer, layer, mayor*, the spelling is **ay** followed by either **or er**. The vowel of *Mary* and derived words such as *Maryland* or *Maryport* is normally diphthongized to [ɛə].
- c. [ʊ ə] is a *centring, falling, narrow, opening* diphthong. If in the case of the two diphthongs analyzed before the glide was from a front vowel towards the centre of the imaginary vowel chart, in the case of [ʊ ə] the articulation starts with a fairly back, close vowel [ʊ]. [ʊ ə] is distributed only in word-medial: *jewel* or word-final position: *sure*. The most common spellings of the diphthong are: **ure** and **oor** - *endure, mature, cure, pure* (words where the semivowel [j] is inserted before the diphthong), *sure, poor, moor*, or **ur** followed by other vowels than **e**: *curious, duration*. In a number of cases we can have the spelling

Notes

ou: *our, gourd, bourse*. The diphthong can also occur in words where the suffix **er** is attached to a base ending in [(j)ʊ] *fewer, newer, chewer, doer, pursuer*.

- d. [ɔə] is a diphthong that has not survived in present-day RP. It used to render the vowel of words like *floor, door, pore, score, shore, coarse, hoarse, oar, course* now pronounced [ɔ:]. It still does that in various dialects of English, though the general tendency seems to be to monophthongize such diphthongs. This has been the fate of [ʊə] as well, which in many variants of English is pronounced [ɔ:] in words like *poor, sure* etc.
- B. The diphthongs to [ɪ]: [ɔɪ], [eɪ]
- a. [aɪ] is a *falling, wide, closing* diphthong. It is the diphthong that actually implies the amplest articulatory movement of the speech organs that shift from the position of an open vowel which is fairly central (the position varies between cardinal vowels 5 and 4) to a front, close, lax vowel (not far from the position of cardinal vowel 1. Historically, the vowel originates in [i:], that subsequently lowered to [eɪ], than centred and lowered again to finally become [aɪ]. The diphthong is distributed in all three basic positions: *isle* [aɪl], *bite* [baɪt], *cry* [kraɪ]. It can be spelt **i** as in *ice, dime, loci*, or **y** as in *dyke, fly*, or **ie** as in *die, lie, pie*, or in inflected forms: *spies, spied*; **ye** as in *dye, fye*; **ei** as in *height, either, neither*; and, exceptionally **uy** in *buy, guy*. Note also the pronunciation of *ay(e)* [aɪ], *eye* [aɪ] and *aisle* [aɪl].
- b. [ɔɪ] is a *falling, wide, closing* diphthong. It starts from a back, mid vowel, situated between cardinal vowels 6 and 7 and ends in a front, close, lax vowel, somewhere in the vicinity of cardinal vowel 1. Like the preceding diphthong, it also involves an ample articulatory movement from a back vowel to the front part of the imaginary vowel chart. It is distributed in all three basic positions: *ointment, boil, toy*. It can be spelt either **oi**: *oil, toil* or **oy**: *oyster, Boyle, coy*.
- c. [eɪ] is a *falling, narrow, closing* diphthong. It starts with a front, mid vowel - between cardinal vowels 2 [e] and 3 [ɛ] - and glides to a higher vowel value, closing. Often the second element is very short, sometimes even dropped, the diphthong being reduced to a long vowel monophthong [e:]. In Cockney the diphthong starts with a lower and central vowel, being pronounced [ɟɪ]: *late* [lɟɪt], *say* [sɟɪ], *'day* [dɟɪ]. The diphthong is distributed in all three basic positions: *eight*; *plate, play*. It can be spelt **a**: *ace, lace*; **ai**: *aid, maid*; **ay**: *aye, clay*; **ei**: *eight, reign*; *ey*: *they, grey*; **ea**: *break, steak*. Exceptionally, there are spellings like *gaol* [dʒeɪl], *bass* [beɪs], *gauge* [geɪdʒ], *halfpenny* [hɛɪpni]. The diphthong also occurs in a small number of French loan words ending in **et** or **é** *ballet, bouquet, chalet, café, fiancé, attaché, resumé*.
- C. The diphthongs to [ʊ]. There are two diphthongs in RP ending in a glide to [ʊ]: [əʊ] and [aɪ].
- a. [əʊ] is the counterpart of [eɪ] in the back area of the vowel chart. The diphthong starts with a central mid vowel and glides to a back close one. It is a falling, narrow, closing diphthong. It is distributed in all three basic positions: *old, gold, flow*. It has various spellings: **o**: *old, sold, no*; **oa**: *oak, roast*; **oe**: *toe, own, known, row*; **ou**: *poultry, dough*; **eau**: *beau, bureau*, and, exceptionally, **au**: *gauche*; **oo**: *brooch*; **ew**: *sew*; **oh**: *oh*.
- b. [aʊ] is a *falling, wide, closing* diphthong. It starts as an open, fairly front vowel (in the vicinity of cardinal vowel 4) and glides towards [ʊ] It is distributed in all three basic positions: *ouch, loud, bough*. It can be spelt by **ou**: *oust, doubt, plough*, or **ow**: *owl, howl, how* and, exceptionally **eo** in *MacLeod*.

Here are the English complex vowels (diphthongs) distributed contrastively in the same context:

- (a) centring diphthongs: *beer* [bɪə], *bear* [bɛə], *boor* [bʊə], *boar* [bɔə]
- (b) diphthongs to [ɪ]: *buy* [baɪ], *boy* [bɔɪ], *bay* [beɪ]
- (c) diphthongs to [ʊ]: *bow, beau* [bəʊ], *bow, bough* [baʊ]

English triphthongs: The very existence of triphthongs in present-day English is a controversial problem. There is hardly any phonetic evidence for the survival of the respective structures at least in RP. The controversial sequences occur wbefore the rhotic **r** when the non-centrig diphthongs are followed by schwa. Thus [aɪ], [ɔɪ], [eɪ], [əʊ], [aʊ] become [aɪə], [ɔɪə], [eɪə], [bɑɪ-ə], [aʊə] in *fire, employer, layer, mower, power*. As Roca and Johnson point out, the actual pronunciation of these vocalic sequences tends either to break them into the diphthong and the following simple vowel (schwa) - e.g. buyer [baɪ - ə], or to reduce the diphthong to a simple vowel followed by schwa - e.g. buyer [bæə], Triphthongal sequences are quite common in Romanian as proved by examples like *leoracă, arpioară beai, vreau, i-ai, miau, luai, luau, miei, leoracă*.

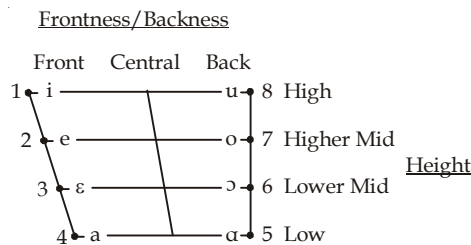
Vowels in the Languages of the World

- We earlier looked at a classification of vowels using parameters based on labels referring to articulation -height & backness of tongue body and lip position.
- In practice, most vowel description is based on auditory evaluation or on acoustic measurement.
- The standard IPA vowel chart provides reference points for a primarily auditory comparison of vowel qualities.



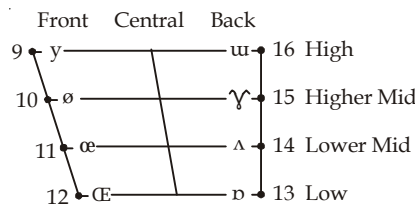
The reference system for vowels is based on the concept of (CV's), devised by Daniel Jones (1881-1967) Jones proposed a set of 8 reference vowels.

Cardinal Vowels recorded by Jones in 1965 when he was 75.



Primary cardinal vowels with rising intonation

The Secondary Cardinal Vowels are reference vowels with opposite lip position.



The secondary cardinal vowels

The choice of 8 vowels in the Primary Cardinal Vowel system was probably strongly influenced by the vowel system of late 19th/early 20th century French which included 8 vowels somewhat similar to the them (plus three front rounded vowels, and four nasalized vowels).

Jones was a teacher of the phonetics of French, and the French phonetician Paul Passy was the President of the International Phonetic Association when the system was adopted by the IPA as its framework for vowel classification).

Notes

1 [i]	<i>lit</i>	[li]	“bed”
2 [e]	<i>les</i>	[le]	“the (pl.)”
3 [ɛ]	<i>lait</i>	[lɛ]	“milk”
4 [a]	<i>la</i>	[la]	“the (f. sg)”
5 [ɑ]	<i>lache</i>	[lɑ]	“loose”
6 [ɔ]	<i>loque</i>	[lɔk]	“rag”
7 [o]	<i>lot</i>	[lo]	“lot, share”
8 [u]	<i>loup</i>	[lu]	“wolf”



Notes

- Two “anchor points” - the highest, frontest possible vowel (Cardinal Vowel 1) and the lowest, backest possible vowel Cardinal Vowel 5). The 6 remaining Cardinal Vowels are distributed at equal auditory intervals - 3 along the front limit of the notional vowel space (CV's 2-4) and 3 along the back (CV's 6-8).
- In practice there is an implicit third anchor vowel - the highest, backest, most rounded vowel possible; also the three back CV's above CV 5 have increasing degrees of rounding.
- A set of Secondary Cardinal Vowels with the same tongue positions but opposite values of lip rounding are also proposed, so that front rounded and back unrounded vowels can be referenced. Note that there are no Central CV's.

Using the Cardinal Vowel System

- The primary and secondary cardinal vowel categories provide a suitable framework for comparison for many languages (e.g. a vowel close to CV 1; a vowel a little lower and more retracted than CV 2, a vowel halfway between CV 8 and CV 9, etc.).
- Note that the Cardinal Vowels are not the vowels of any language but reference points for the comparison of the vowel qualities of particular languages.
- But vowels belonging to the broad categories of which the CV's are prototypes are found in many languages.

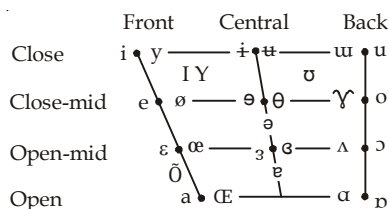
Additional Vowel Symbols?

- The cardinal vowel system does not include any central vowel prototypes - additional symbols (and auditory types) are required for these.
- Separate phonetic symbols are also useful for some frequently encountered or ‘politically important’ vowel sounds that are different from cardinal qualities.
- Each symbol represents vowels produced in a particular area of the ‘vowel space’.

Vowel symbols in the International Phonetic Alphabet

The canonical height/backness value for each symbol is shown by the position of a dot on the chart; the symbol to the left of the dot represents an unrounded vowel at that position, the symbol on the right a rounded vowel of the same height and backness. Note the omission a symbol for a low central vowel. The 8 dots on the front and back lines of the chart are the CV positions.

VOWELS



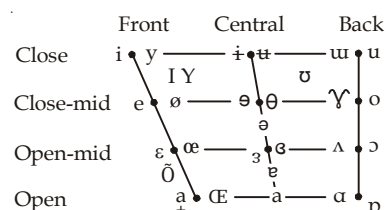
Where symbols appear in pairs, the one to the right represents a rounded vowel.

Low central vowels are the most common in the world’s languages. Because no specific IPA symbol is provided for their transcription, one of those with ‘nearby’ values must be used to represent them - any of [a], [ɚ] or [ɘ] may be used.

The usual practice is to use [a] for the low central vowel and symbolize a low front unrounded vowel as [a̟] using the ‘fronting’ diacritic if the distinction is needed.

[æ] can also be used for the low front vowel where necessary.

VOWELS



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

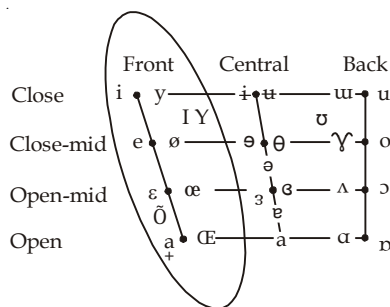
Front vowels

- i High front unrounded
- y High front rounded
- I Lowered high front unrounded
- Y Lowered high front rounded
- e Higher mid front unrounded
- ø Higher mid front rounded
- ε Lower mid front unrounded
- œ Lower mid front rounded
- æ Raised low front unrounded
- a Low front unrounded
- (IPA value of symbol)
- ɛ Low front rounded

Recommended usage

- a̟ Low front unrounded
- a Low central unrounded

VOWELS



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

Notes

Front Vowels

- i High front unrounded - English *beat* [bit]
- y High front rounded - French *su* [sy] “knew”
- I Lowered high front unrounded - English *bit* [bit]
- Y Lowered high front rounded - German *Hütten* [ˈhʏtŋ] “huts”
- e Higher mid front unrounded - French *ses* [se] “his/her/its, pi”
- ø Higher mid front rounded - French *peu* [pø] “(a) little”
- ɛ Lower mid front unrounded - German *Bett* [bɛt] “bed”
- œ Lower mid front rounded - German *Goethe* [ˈgœtə]
- æ Raised low front unrounded - English *flash* [flæʃ]
- ɶ Low front unrounded - Southern US English *light* [lɶt]
- ɶ̃ Low front rounded - *not reported in any natural language.*

Central Vowels

- ɨ High central unrounded
- ʉ High central rounded
- ə Higher mid central unrounded
- ɘ Higher mid central rounded
- ɚ Mid central unrounded
- ɜ Lower mid central unrounded
- ɞ Lower mid central rounded
- ɚ̃ Raised low central unrounded

Recommended usage

- a Low central unrounded

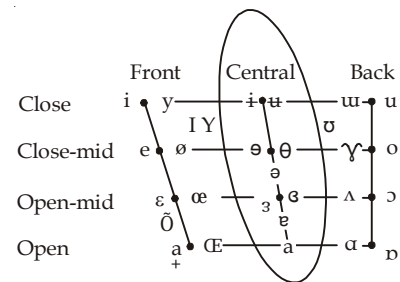
Central Vowels

- ɨ High central unrounded - Amharic [mɨn] “what”
- ʉ High central rounded -Norwegian *butt* [bʉt] “blunt”
- ə Higher mid central unrounded - (can be used for ‘high schwas’)
- ɘ Higher mid central rounded - not known
- ɚ Mid central unrounded - unstressed vowel of English *sofa*
- ɜ Lower mid central unrounded - British English *heard*
- ɞ Lower mid central rounded - no known example
- ɚ̃ Raised low central unrounded - English *hut*

Recommended usage

- a Low central unrounded - much American English *hot*

VOWELS



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

Back Vowels

- u High back rounded
 ʊ High back unrounded
 ɔ Lowered high back rounded
 o Higher high back rounded
 ɤ Higher mid back unrounded
 ɔ Lower mid back rounded
 ʌ Lower mid back unrounded
 ɑ Low back unrounded
 ɒ Low back rounded
- u High back rounded - French *sou* [su] “penny”
 ʊ High back unrounded - Vietnamese [tʊ] “fourth”
 ɔ Lowered high back rounded - English *push*
 o Higher high back rounded - French *eau* [o] “water”
 ɤ Higher mid back unrounded - Vietnamese [tɤ] “fourth”
 ɔ Lower mid back rounded - Vietnamese [tɔ] “large”
 ʌ Lower mid back unrounded - Vietnamese [tʌ] “fourth”
 ɑ Low back unrounded - British English *barred* [bɑd]
 ɒ Low back rounded - British English *cot* [cɒt]

Although the labels for vowel characteristics seem to refer to articulatory positions, it is mostly auditory impression which underlies the description. Since auditory impressions are based on acoustic characteristics, a description of the acoustic properties of vowels is not only interesting in itself but also explains much in the judgments of degrees of similarity or difference between one vowel and another. Practice producing slowly changing articulatory position from one ‘known’ vowel to another, noting the quality of the intermediate sounds produced.

Vowel Nasalization

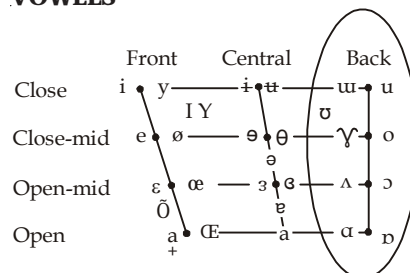
- Vowels are most often oral but may be nasalized.
- Nasalization commonly occurs in vowels next to nasal consonants, but can be a contrastive property in vowel systems, e.g. in French, Hindi, Navajo (transcription is a tilde over the vowel symbol \tilde{a} , \tilde{o} , \tilde{e} etc.).

French nasalized vowels

\tilde{a}	$s\tilde{a}$	<i>sans</i>	‘without’
\tilde{o}	$s\tilde{o}$	<i>son</i>	‘his, hers’ (m sg.)
\tilde{e}	$s\tilde{e}$	<i>saint</i>	‘saint’
	$b\tilde{r}\tilde{e}$	<i>brun</i>	‘brown’

Voiceless vowels

- Vowels are most often modally voiced, but also occur with other laryngeal settings (voiceless, breathy voiced, glottalized or creaky voice).

VOWELS**Notes**

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

Notes

- Voiceless vowels are often variants of voiced vowels in particular positions, e.g. Japanese high vowels /i, u/ are usually voiceless [i̥, u̥] when between two voiceless consonants (especially sibilants)
- /h/ in English can be transcribed as a voiceless vowel.

i̥	[i̥iit]	heat
u̥	[u̥ut]	hoot
ɔ̥	[ɔ̥ɑt]	hot

16.2 Concept of Phonemic Analysis

The concept of the phoneme was introduced earlier, and a few theoretical problems connected with phonemic analysis have been mentioned in other units. The general assumption (as in most phonetics books) has been that speech is composed of phonemes and that usually whenever a speech sound is produced by a speaker it is possible to identify which phoneme that sound belongs to. While this is often true, we must recognise that there are exceptions which make us consider some quite serious theoretical problems. From the comparatively simple point of view of learning pronunciation, these problems are not particularly important. However, from the point of view of learning about the phonology of English they are too important to ignore.

There are problems of different types. In some cases, we have difficulty in deciding on the overall phonemic system of the accent we are studying, while in others we are concerned about how a particular sound fits into this system. A number of such problems are discussed below.

16.3 Affricates

The affricates $tʃ, dʒ$ are, phonetically, composed of a plosive followed by a fricative, as explained previous in this book. It is possible to treat each of the pair $tʃ, dʒ$ as a single consonant phoneme; we will call this the **one-phoneme analysis** of $tʃ, dʒ$. It is also possible to say that they are composed of two phonemes each - t plus $ʃ$, and d plus $ʒ$ respectively - all of which are already established as independent phonemes of English; this will be called the **two-phoneme analysis** of $tʃ, dʒ$. If we adopted the two-phoneme analysis, the words 'church' and 'judge' would be composed of five phonemes each, like this:

$$t-ʃ-ɜ: - t-ʃ - d-ʒ - \Lambda - d-ʒ$$

instead of the three phonemes that result from the one-phoneme analysis:

$$tʃ-ɜ: - tʃ - dʒ - \Lambda - dʒ$$

and there would be no separate $tʃ, dʒ$ phonemes. But how can we decide which analysis is preferable?

The two-phoneme analysis has one main advantage: if there are no separate $tʃ, dʒ$ phonemes, then our total set of English consonants is smaller. Many phonologists have claimed that one should prefer the analysis which is the most "economical" in the number of phonemes it results in. The argument for this might be based on the claim that when we speak to someone we are using a code, and the most efficient codes do not employ unnecessary symbols. Further, it can be claimed that a phonological analysis is a type of scientific theory, and a scientific theory should be stated as economically as possible. However, it is the one-phoneme analysis that is generally chosen by phonologists. Why is this? There are several arguments: no single one of them is conclusive, but added together they are felt to make the one-phoneme analysis seem preferable.

16.4 The English Vowel System

Notes

The analysis of the English vowel system presented in previous units contains a large number of phonemes, and it is not surprising that some phonologists who believe in the importance of keeping the total number of phonemes small propose different analyses which contain fewer than ten vowel phonemes and treat all long vowels and diphthongs as composed of two phonemes each. There are different ways of doing this: one way is to treat long vowels and diphthongs as composed of two vowel phonemes. Starting with a set of basic or "simple" vowel phonemes (e.g. ɪ , e , æ , ʌ , ɒ , ɔ , ʊ , ɔ) it is possible to make up long vowels by using short vowels twice. Our usual transcription for long vowels is given in brackets:

ɪ (i:) æ (æ:) ɒ (ɔ:) ɔ (ɔ:) ʊ (u:) ə (ɜ:)

This can be made to look less unusual by choosing different symbols for the basic vowels. We will use i , e , a , ʌ , ɔ , u , ə : thus i: could be transcribed as ii , a: as aa , ɔ: as ɔɔ , u: as uu and ɜ: as əə . In this approach, diphthongs would be composed of a basic vowel phoneme followed by one of i , u , ə , while triphthongs would be made from a basic vowel plus one of i , u followed by ə , and would therefore be composed of three phonemes.

Another way of doing this kind of analysis is to treat long vowels and diphthongs as composed of a vowel plus a consonant; this may seem a less obvious way of proceeding, but it was for many years the choice of most American phonologists. The idea is that long vowels and diphthongs are composed of a basic vowel phoneme followed by one of j , w , h (we should add r for rhotic accents). Thus the diphthongs would be made up like this (our usual transcription is given in brackets):

ej (eɪ)	əw (ɔʃ)	ɪh (ɪə)
æj	æw (aʃ)	eh (eə)
ɒj (ɔɪ)		ʃh (ʃɔ)

Long vowels:

ɪj (i:) æh (a:) ɒh (ɔ:) əh (ɜ:) ʃ (u:)

Diphthongs and long vowels are now of exactly the same phonological composition. An important point about this analysis is that j , w , h do not otherwise occur finally in the syllable. In this analysis, the inequality of distribution is corrected.

Although ɪ , i: are clearly distinct in most contexts, there are other contexts where we find a sound which cannot clearly be said to belong to one or other of these two phonemes. The suggested solution to this problem was to use the symbol i , which does not represent any single phoneme; a similar proposal was made for u . We use the term **neutralisation** for cases where contrasts between phonemes which exist in other places in the language disappear in particular contexts. There are many other ways of analysing the very complex vowel system of English, some of which are extremely ingenious. Each has its own advantages and disadvantages.

16.5 Syllabic Consonants

It has to be recognised that syllabic consonants are a problem: they are phonologically different from their non-syllabic counterparts. How do we account for the following minimal pairs, which were given in earlier.

<i>Syllabic</i>	<i>Non-syllabic</i>
'coddling' kɒdɪŋ	'codling' kɒdɪŋ
Hungary' hʌŋgɪ	'hungry' hʌŋgɪ

Notes

One possibility is to add new consonant phonemes to our list. We could invent the phonemes $\text{ɹ}, \text{ɻ}, \text{ɰ}$, etc. The distribution of these consonants would be rather limited, but the main problem would be fitting them into our pattern of syllable structure. For a word like 'button' bʌtʌn or 'bottle' bɒtl , it would be necessary to add $\text{ɻ}, \text{ɰ}$ to the first post-final set; the argument would be extended to include the ɹ in 'Hungary'. But if these consonants now form part of a syllable-final consonant cluster, how do we account for the fact that English speakers hear the consonants as extra syllables? The question might be answered by saying that the new phonemes are to be classed as vowels. Another possibility is to set up a phoneme that we might name **syllabicity**, symbolised with the mark \cdot . Then the word 'codling' would consist of the following six phonemes: $\text{k} - \text{ɒ} - \text{d} - \text{l} - \text{ɪ} - \text{ŋ}$, while the word 'coddling' would consist of the following *seven* phonemes: $\text{k} - \text{ɒ} - \text{d}$ and simultaneously $\cdot - \text{ɪ} - \text{ŋ}$. This is superficially an attractive theory, but the proposed phoneme is nothing like the other phonemes we have identified up to this point - putting it simply, the syllabic mark doesn't have any sound.

Some phonologists maintain that a syllabic consonant is really a case of a vowel and a consonant that have become combined. Let us suppose that the vowel is ə . We could then say that, for example, 'Hungary' is phonemically hʌŋgəri while 'hungry' is hʌŋgri ; it would then be necessary to say that the ə vowel phoneme in the phonemic representation is not pronounced as a vowel, but instead causes the following consonant to become syllabic. This is an example of the abstract view of phonology where the way a word is represented phonologically may be significantly different from the actual sequence of sounds heard, so that the phonetic and the phonemic levels are quite widely separated.

16.6 Clusters of *s* with Plosives

Words like 'spill', 'still', 'skill' are usually represented with the phonemes $\text{p}, \text{t}, \text{k}$ following the s . But, as many writers have pointed out, it would be quite reasonable to transcribe them with $\text{b}, \text{d}, \text{g}$ instead. For example, $\text{b}, \text{d}, \text{g}$ are unaspirated while $\text{p}, \text{t}, \text{k}$ in syllable-initial position are usually aspirated. However, in $\text{sp}, \text{st}, \text{sk}$ we find an unaspirated plosive, and there could be an argument for transcribing them as $\text{sb}, \text{sd}, \text{sg}$. We do not do this, perhaps because of the spelling, but it is important to remember that the contrasts between p and b , between t and d and between k and g are neutralised in this context.

16.7 Schwa (ə)

It has been suggested that there is not really a contrast between ə and Λ , since ə only occurs in weak syllables and no minimal pairs can be found to show a clear contrast between ə and Λ in unstressed syllables (although there have been some ingenious attempts). This has resulted in a proposal that the phoneme symbol ə should be used for representing any occurrence of ə or Λ so that 'cup' (which is usually stressed) would be transcribed 'kəp' and 'upper' (with stress on the initial syllable) as 'əpə'. This new ə phoneme would thus have two allophones, one being ə and the other Λ ; the stress mark would indicate the Λ allophone and in weak syllables with no stress it would be more likely that the ə allophone would be pronounced.

Other phonologists have suggested that ə is an allophone of several other vowels; for example, compare the middle two syllables in the words 'economy' $\text{ɪ} \text{kɒnəmi}$ and 'economic' $\text{i:} \text{i:kə} \text{nɒmɪk}$ - it appears that when the stress moves away from the syllable containing ɒ the vowel becomes ə . Similarly, compare 'Germanic' $\text{dʒɜ:} \text{mæni} \text{k}$ with 'German' $\text{dʒɜ:} \text{mən}$ - when the stress is taken away from the syllable mæn , the vowel weakens to ə . Many similar examples could be constructed with other vowels; some possibilities may be suggested by the list of words given earlier to show the different spellings that can be pronounced with ə . The conclusion that could be drawn from this argument is that ə is not a phoneme of English, but is an allophone of several different vowel phonemes when

those phonemes occur in an unstressed syllable. The argument is in some ways quite an attractive one, but since it leads to a rather complex and abstract phonemic analysis it is not adopted for this course.

16.8 Distinctive Features

Many references have been made to phonology in this course, with the purpose of making use of the concepts and analytical techniques of that subject to help explain various facts about English pronunciation as efficiently as possible. One might call this “applied phonology”; however, the phonological analysis of different languages raises a great number of difficult and interesting theoretical problems, and for a long time the study of phonology “for its own sake” has been regarded as an important area of theoretical linguistics. Within this area of what could be called “pure phonology”, problems are examined with little or no reference to their relevance to the language learner. Many different theoretical approaches have been developed, and no area of phonology has been free from critical examination. The very fundamental notion of the phoneme, for example, has been treated in many different ways. One approach that has been given a lot of importance is **distinctive feature analysis**, which is based on the principle that phonemes should be regarded not as independent and indivisible units, but instead as combinations of different features. For example, if we consider the English *d* phoneme, it is easy to show that it differs from the plosives *b, g* in its place of articulation (alveolar), from *t* in being lenis, from *s, z* in not being fricative, from *n* in not being nasal, and so on. If we look at each of the consonants just mentioned and see which of the features each one has, we get a table like this, where + means that a phoneme does possess that feature and - means that it does not.

If you look carefully at this table, you will see that the combination of + and - values for each phoneme is different; if two sounds were represented by exactly the same +’s and -’s, then by

	d	b	g	t	s	z	n
alveolar	+	-	-	+	+	+	+
bilabial	-	+	-	-	-	-	-
velar	-	-	+	-	-	-	-
lenis	+	+	+	-	-	+	(+)*
plosive	+	+	+	+	-	-	-
fricative	-	-	-	-	+	+	-
nasal	-	-	-	-	-	-	+

* Since there is no fortis/lenis contrast among nasals this could be left blank.

definition they could not be different phonemes. In the case of the limited set of phonemes used for this example, not all the features are needed: if one wished, it would be possible to dispense with, for example, the feature *velar* and the feature *nasal*. The *g* phoneme would still be distinguished from *b, d* by being neither bilabial nor alveolar, and *n* would be distinct from plosives and fricatives simply by being neither plosive nor fricative. To produce a complete analysis of all the phonemes of English, other features would be needed for representing other types of consonant, and for vowels and diphthongs. In distinctive feature analysis the features themselves thus become important components of the phonology.

It has been claimed by some writers that distinctive feature analysis is relevant to the study of language learning, and that pronunciation difficulties experienced by learners are better seen as due to the need to learn a particular feature or combination of features than as the absence of particular phonemes. For example, English speakers learning French or German have to learn to produce front rounded vowels. In English it is not necessary to deal with vowels which are + front, + round, whereas this is necessary for French and German; it could be said that the major task for the English-speaking learner of French or German in this case is to learn the combination of these features, rather than to learn the individual vowels *y, ø* and (in French) *œ**.

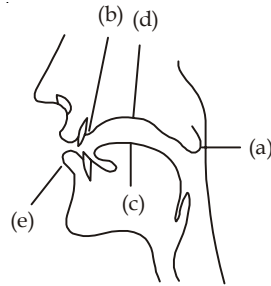
Notes

English, on the other hand, has to be able to distinguish dental from labiodental and alveolar places of articulation, for θ to be distinct from f , s and for δ to be distinct from v , z . This requires an additional feature that most languages do not make use of, and learning this could be seen as a specific task for the learner of English. Distinctive feature phonologists have also claimed that when children are learning their first language, they acquire features rather than individual phonemes.

Self-Assessment

1. Answer the following questions:

- (i) On the diagram provided, various articulators are indicated by labelled arrows (a-e). Given the name for the articulators.



- (ii) Using the descriptive labels introduced for vowel classification, say what the following cardinal vowels are:

(a) [u] (b) [e] (c) [a] (d) [i]
 (e) [o]

- (iii) Draw a vowel quadrilateral and indicate on it the correct places for the following English vowels:

(a) æ (b) ʌ (c) ɪ (d) e

- (iv) Write the symbols for the vowels in the following words:

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

16.9 Summary

- This unit is intended to show that there are many ways of analysing the English phonemic system, each with its own advantages and disadvantages. We need to consider the practical goal of teaching or learning about English pronunciation, and for this purpose a very abstract analysis would be unsuitable. This is one criterion for judging the value of an analysis; unless one believes in carrying out phonological analysis for purely aesthetic reasons, the only other important criterion is whether the analysis is likely to correspond to the representation of sounds in the human brain. Linguistic theory is preoccupied with economy, elegance and simplicity, but cognitive psychology and neuropsychology show us that the brain often uses many different pathways to the same goal.
- The analysis of tʃ , dʒ is discussed in Cruttenden. The “double vowel” interpretation of English long vowels was put forward by MacCarthy and is used by Kreidler. The “vowel-plus-semivowel” interpretation of long vowels and diphthongs was almost universally accepted by American (and some British) writers from the 1940s to the 1960s, and still pervades contemporary American descriptions. It has the advantage of being economical on phonemes and very “neat and tidy”. The analysis in this form is presented in Trager and Smith. In generative phonology it is claimed that, at the abstract level, English vowels are simply tense or lax. If they are lax they are realised as short vowels, if tense as diphthongs (this category includes what I have

been calling long vowels). The quality of the first element of the diphthongs/long vowels is modified by some phonological rules, while other rules supply the second element automatically. This is set out in Chomsky and Halle. There is a valuable discussion of the interpretation of the English vowel system with reference to several different accents in Giegerich, followed by an explanation of the distinctive feature analysis of the English vowel system and the consonant system. A more wide-ranging discussion of distinctive features is given in Clark *et al.*

- The idea that ə is an allophone of many English vowels is not a new one. In generative phonology, ə results from vowel reduction in vowels which have never received stress in the process of the application of stress rules. This is explained - in rather difficult terms - in Chomsky and Halle (1968: 110-26). A clearer treatment of the schwa problem is in Giegerich (1992: 68-9 and 285-7).
- Since this is a theoretical unit it is difficult to provide practical work. I do not feel that it is helpful for students to do exercises on using different ways of transcribing English phonemes - just learning one set of conventions is difficult enough. Some books on phonology give exercises on the phonemic analysis of other languages (e.g. Katamba, 1989; Roca and Johnson, 1999), but although these are useful, I do not feel that it would be appropriate in this book to divert attention from English. The exercises given below therefore concentrate on bits of phonetically transcribed English which involve problems when a phonemic representation is required.

16.10 Key-Words

1. The respiratory system : Respiration is achieved through the mouth, nose, trachea, lungs, and diaphragm. Oxygen enters the respiratory system through the mouth and the nose. The oxygen then passes through the larynx (where speech sounds are produced) and the trachea which is a tube that enters the chest cavity. In the chest cavity, the trachea splits into two smaller tubes called the bronchi. Each bronchus then divides again forming the bronchial tubes. The bronchial tubes lead directly into the lungs where they divide into many smaller tubes which connect to tiny sacs called alveoli.
2. The phonatory system : The phonatory system is the source of the production of voiced sound. This system gives way to phonation which means the production of voiced sounds. Phonation is accomplished with the larynx which is attached to the top of the trachea, and is the outlet of the respiratory pump into the upper airway. The larynx is the structure at the entrance to the trachea that functions as a valve biologically and as the source of voice for speech. The larynx contains a pair of muscular band called vocal cords. Vocal cords can attain a number of position for the production of sounds.

16.11 Review Questions

All the following exercises involve different ways of looking at the phonemic interpretation of English sounds. We use square brackets here to indicate when symbols are phonetic rather than phonemic.

1. In this exercise you must look at phonetically transcribed material from an English accent different from BBC pronunciation and decide on the best way to interpret and transcribe it phonemically.

(i) 'thing' [θɪŋg] (ii) 'think' [θɪŋk]

(iii) 'thinking' [θɪŋkɪŋg] (iv) 'finger' [fɪŋgə]

(v) 'singer' [sɪŋgə] (vi) 'singing' [sɪŋgɪŋg]

Notes

2. It often happens in rapid English speech that a nasal consonant disappears when it comes between a vowel and another consonant. For example, this may happen to the n in 'front': when this happens the preceding vowel becomes nasalised - some of the air escapes through the nose. We symbolise a nasalised vowel in phonetic transcription by putting the ~ diacritic above it; for example, the word 'front' may be pronounced [fr̃nt]. Nasalised vowels are found in the words given in phonetic transcription below. Transcribe them phonemically.

(i) 'sound' [s̃aʊnd]

(ii) 'anger' [æ̃gə]

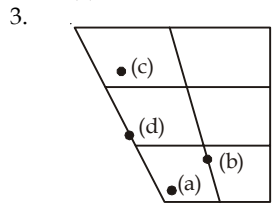
(iii) 'can't' [k̃ɑ:t]

(iv) 'camper' [k̃æpə]

(v) 'bond' [b̃ɒnd]

Answers: Self-Assessment

1. (a) Soft palate or velum
 (b) Alveolar ridge
 (c) Front of tongue
 (d) Hard palate
 (e) Lower lip
2. (a) Close back rounded
 (b) Close-mid front unrounded
 (c) Open front unrounded
 (d) Close front unrounded
 (e) Close-mid back rounded



4. (a) e (e) ʃ
 (b) ʌ (f) ɒ
 (c) ʃ (g) æ
 (d) ɪ (h) e

16.12 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 17: Connected English Speech: Accent

Notes

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Objectives

After reading this Unit students will be able to:

- Understand Word Accent and Rhythm.
- Explain Assimilation and Elision.
- Describe Linking.

Introduction

Many years ago scientists tried to develop machines that produced speech from a vocabulary of pre-recorded words; the machines were designed to join these words together to form sentences. For very limited messages, such as those of a “talking clock”, this technique was usable, but for other purposes the quality of the speech was so unnatural that it was practically unintelligible. In recent years, developments in computer technology have led to big improvements in this way of producing speech, but the inadequacy of the original “mechanical speech” approach has many lessons to teach us about pronunciation teaching and learning. In looking at connected speech it is useful to bear in mind the difference between the way humans speak and what would be found in “mechanical speech”.

17.1 Word Accent

Dividing a Word into Syllables

It is very important for us to know, that how a word is divided into syllables. How we divide a word makes a big difference in? How the word would be pronounced? For example, look at these words:

1. cab-in

2. ca-bin

The first is divided after the ‘b’. This makes the ‘a’ have a short sound. The second is divided after the ‘b’. This makes the ‘a’ long sound because it is the final letter.

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This would make the second sound like 'kay-bin' which is an incorrect pronunciation. In this practice it is important to concentrate on the most important rules for dividing words into syllables.

Basic Syllable Rules

1. To find the number of syllables
 - (i) Count the vowels in the word,
 - (ii) Subtract any silent vowels, (like the silent 'e' at the end of a word or the second vowel when two vowels are together in a syllable)
 - (iii) Subtract one vowel from every diphthong, (diphthongs only count as one vowel sound.)
 - (iv) The number of vowel sounds left is the same as the number of syllables.

The number of syllables that you hear when you pronounce a word is the same as the number of vowel sounds heard. For example:

The word 'came' has two vowels, but the 'e' is silent, leaving one vowel sound and one syllable.

The word 'outside' has four vowels, but the 'e' is silent and the 'ou' is a diphthong which counts as only one sound, so this word has only two vowel sounds and therefore, two syllables.

2. Divide between two middle consonants

Split up words that have two middle consonants. For example: hap/pen, bas/ket, let/ter, sup/per, din/ner, and Den/nis. The only exceptions are the consonant digraphs. Never split up consonant digraphs as they really represent only one sound. The exceptions are 'th', 'sh', 'ph', 'ch', and 'wh'.
3. Usually divide before a single middle consonant:

When there is only one syllable we usually divide in front of it, as, in: 'o/pen', 'e/vil', and 're/port'. The only exceptions are those times when the first syllable has an obvious short sound, as in 'cab/in'.
4. Divide before the consonant before an '-le' syllable

When you have a word that has the old-style spelling in which the '-le'. For example: 'a/ble', 'fum/ble', 'rub/ble', 'mum/ble' and 'thi/stle'. The only exceptions to this are 'ckle' words like 'tick/le'.
5. Divide off any compound words, prefixes, suffixes and roots which have vowel nouns:

For example, un/happy and house /boat, pre/paid or re/write.

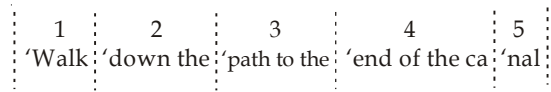
17.2 Rhythm

The notion of **rhythm** involves some noticeable event happening at regular intervals of time; one can detect the rhythm of a heartbeat, of a flashing light or of a piece of music. It has often been claimed that English speech is rhythmical, and that the rhythm is detectable in the regular occurrence of stressed syllables. Of course, it is not suggested that the timing is as regular as a clock: the regularity of occurrence is only relative. The theory that English has **stress-timed rhythm** implies that stressed syllables will tend to occur at relatively regular intervals whether they are separated by unstressed syllables or not; this would not be the case in "mechanical speech". An example is given below. In this sentence, the stressed syllables are given numbers: syllables 1 and 2 are not separated by any unstressed syllables, 2 and 3 are separated by one unstressed syllable, 3 and 4 by two, and 4 and 5 by three.

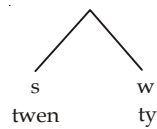
1 2 3 4 5
'Walk 'down the 'path to the 'end of the ca'nal

The stress-timed rhythm theory states that the times from each stressed syllable to the next will tend to be the same, irrespective of the number of intervening unstressed syllables. The theory also claims that while some languages (e.g. Russian, Arabic) have stress-timed rhythm similar to that of English, others (e.g. French, Telugu, Yoruba) have a different rhythmical structure called **syllable-timed rhythm**; in these languages, all syllables, whether stressed or unstressed, tend to occur at regular time intervals and the time between stressed syllables will be shorter or longer in proportion to the

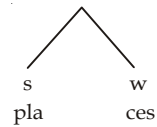
number of unstressed syllables. Some writers have developed theories of English rhythm in which a unit of rhythm, the **foot**, is used (with a parallel in the metrical analysis of verse). The foot begins with a stressed syllable and includes all following unstressed syllables up to (but not including) the following stressed syllable. The example sentence given above would be divided into feet as follows:



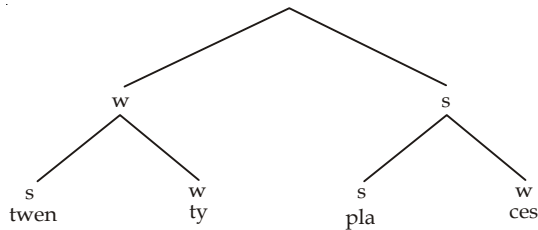
Some theories of rhythm go further than this, and point to the fact that some feet are stronger than others, producing strong-weak patterns in larger pieces of speech above the level of the foot. To understand how this could be done, let's start with a simple example: the word 'twenty' has one strong and one weak syllable, forming one foot. A diagram of its rhythmical structure can be made, where **s** stands for "strong" and **w** stands for "weak".



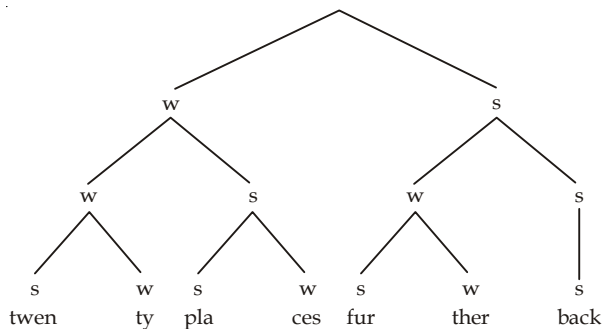
The word 'places' has the same form:



Now consider the phrase 'twenty places', where 'places' normally carries stronger stress than 'twenty' (i.e. is rhythmically stronger). We can make our "tree diagram" grow to look like this:



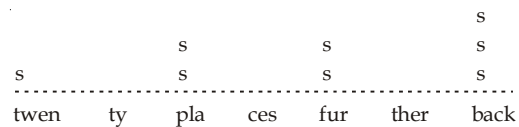
If we then look at this phrase in the context of a longer phrase 'twenty places further back', and build up the 'further back' part in a similar way, we would end up with an even more elaborate structure:



By analysing speech in this way we are able to show the relationships between strong and weak elements, and the different levels of stress that we find. The strength of any particular syllable can be

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measured by counting up the number of times an *s* symbol occurs above it. The levels in the sentence shown above can be diagrammed like this (leaving out syllables that have never received stress at any level):



The above “metrical grid” may be correct for very slow speech, but we must now look at what happens to the rhythm in normal speech: many English speakers would feel that, although in ‘twenty places’ the right-hand foot is the stronger, the word ‘twenty’ is stronger than ‘places’ in ‘twenty places further back’ when spoken in conversational style. It is widely claimed that English speech tends towards a regular alternation between stronger and weaker, and tends to adjust stress levels to bring this about. The effect is particularly noticeable in cases such as the following, which all show the effect of what is called **stress-shift**:

- compact (adjective) kəm'pækt *but* compact disk 'kɒmp æ kt' dɪsk
- thirteen θɜ:ti:n *but* thirteenth place 'θ ɜ:ti:n θ 'pleɪs
- Westminster west'mɪnstə *but* Westminster Abbey 'westmɪnstər 'æ bi

In brief, it seems that stresses are altered according to context: we need to be able to explain how and why this happens, but this is a difficult question and one for which we have only partial answers.

An additional factor is that in speaking English we vary in how rhythmically we speak: sometimes we speak very rhythmically (this is typical of some styles of public speaking) while at other times we may speak arhythmically (i.e. without rhythm) if we are hesitant or nervous. Stress-timed rhythm is thus perhaps characteristic of one style of speaking, not of English speech as a whole; one always speaks with *some* degree of rhythmicality, but the degree varies between a minimum value (arhythmical) and a maximum value (completely stress-timed rhythm).

It follows from what was stated earlier that in a stress-timed language all the feet are supposed to be of roughly the same duration. Many foreign learners of English are made to practise speaking English with a regular rhythm, often with the teacher beating time or clapping hands on the stressed syllables. It must be pointed out, however, that the evidence for the existence of truly stress-timed rhythm is not strong. There are many laboratory techniques for measuring time in speech, and measurement of the time intervals between stressed syllables in connected English speech has not shown the expected regularity; moreover, using the same measuring techniques on different languages, it has not been possible to show a clear difference between “stress-timed” and “syllable-timed” languages. Experiments have shown that we tend to hear speech as more rhythmical than it actually is, and one suspects that this is what the proponents of the stress-timed rhythm theory have been led to do in their auditory analysis of English rhythm. However, one ought to keep an open mind on the subject, remembering that the large-scale, objective study of suprasegmental aspects of real speech is difficult to carry out, and much research remains to be done.



Did u know?

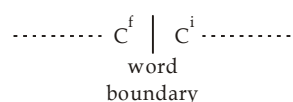
Factors such as assimilation and elision are dealt with in an interesting and original way in Shockey. Assimilation is described in more conventional terms in Cruttenden. For reading on coarticulation, which studies the influences of sounds on each other in wider and more complex ways than assimilation.

What, then, is the practical value of the traditional “rhythm exercise” for foreign learners? The argument about rhythm should not make us forget the very important difference in English between strong and weak syllables. Some languages do not have such a noticeable difference (which may,

perhaps, explain the subjective impression of “syllable-timing”), and for native speakers of such languages who are learning English it can be helpful to practise repeating strongly rhythmical utterances since this forces the speaker to concentrate on making unstressed syllables weak. Speakers of languages like Japanese, Hungarian and Spanish - which do not have weak syllables to anything like the same extent as English does - may well find such exercises of some value (as long as they are not overdone to the point where learners feel they have to speak English as though they were reciting verse).

17.3 Assimilation

The device mentioned earlier that produces “mechanical speech” would contain all the words of English, each having been recorded in isolation. A significant difference in natural connected speech is the way that sounds belonging to one word can cause changes in sounds belonging to neighbouring words. Assuming that we know how the phonemes of a particular word would be realised when the word is pronounced in isolation, in cases where we find a phoneme realised differently as a result of being near some other phoneme belonging to a neighbouring word we call this difference an instance of **assimilation**. Assimilation is something which varies in extent according to speaking rate and style: it is more likely to be found in rapid, casual speech and less likely in slow, careful speech. Sometimes the difference caused by assimilation is very noticeable, and sometimes it is very slight. Generally speaking, the cases that have most often been described are assimilations affecting consonants. As an example, consider a case where two words are combined, the first of which ends with a single final consonant (which we will call C^f) and the second of which starts with a single initial consonant (which we will call C^i); we can construct a diagram like this:



If C^f changes to become like C^i in some way, then the assimilation is called **regressive** (the phoneme that comes first is affected by the one that comes after it); if C^i changes to become like C^f in some way, then the assimilation is called **progressive**. An example of the latter is what is sometimes called **coalescence**, or **coalescent assimilation**: a final t , d and an initial j following often combine to form $tʃ$, $dʒ$, so that ‘not yet’ is pronounced $nɒtʃet$ and ‘could you’ is $kʊdʒu$. In what ways can a consonant change? We have seen that the main differences between consonants are of three types:

1. differences in place of articulation;
2. differences in manner of articulation;
3. differences in voicing.

An essential part of acquiring fluency in English is learning to produce connected speech without gaps between words, and this is the practical importance of linking. You can read about “linking r ” and “intrusive r ” in Collins and Mees and Giegerich.

In parallel with this, we can identify assimilation of place, of manner and of voicing in consonants. Assimilation of place is most clearly observable in some cases where a final consonant (C^f) with alveolar place of articulation is followed by an initial consonant (C^i) with a place of articulation that is *not* alveolar. For example, the final consonant in ‘that’ $ðæt$ is alveolar t . In rapid, casual speech the t will become p before a bilabial consonant, as in: ‘that person’ $ðæp pɜːsn$; ‘that man’ $ðæp mæn$; ‘meat pie’ $mi:p paɪ$. Before a dental consonant, t will change to a dental plosive, for which the phonetic symbol is $t̪$, as in: ‘that thing’ $ðæt̪ θɪŋ$; ‘get those’ $ge t̪ðəʊz$ ‘cut through’ $kʌt̪ θruː$. Before a velar consonant, the t will become k , as in: ‘that case’ $ðæk keɪs$, ‘bright colour’ $braɪk klɜː$, ‘quite good’ $kwawk ɡʊd$. In similar contexts d would become b , $d̪$ and $ɡ$, respectively, and n would become m , $n̪$ and $ŋ$; examples of this would be: ‘good boy’ $ɡʊb bɔɪ$, ‘bad thing’ $bæd̪ θɪŋ$, ‘card

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game' kɑ:g lewm, green paper' gri:m peɪpə, 'fine thought' faɪn θɔ:t, 'ten girls' teŋ ɡɜ:lz. However, the same is not true of the other alveolar consonants: s and z behave differently, the only noticeable change being that s becomes ʃ, and z becomes ʒ when followed by ʃ or j, as in: 'this shoe' ðɪʃ ʃuː; 'those years' ðəʃ ʒjɪəz. It is important to note that the consonants that have undergone assimilation have not disappeared; in the above examples, the duration of the consonants remains more or less what one would expect for a two-consonant cluster. Assimilation of place is only noticeable in this regressive assimilation of alveolar consonants; it is not something that foreign learners need to learn to do.

Assimilation of manner is much less noticeable, and is only found in the most rapid and casual speech; generally speaking, the tendency is again for regressive assimilation and the change in manner is most likely to be towards an "easier" consonant - one which makes less obstruction to the airflow. It is thus possible to find cases where a final plosive becomes a fricative or nasal (e.g. 'that side' ðæs saɪd, 'good night' ɡʊd naɪt), but most unlikely that a final fricative or nasal would become a plosive. In one particular case we find progressive assimilation of manner, when a word-initial ð follows a plosive or nasal at the end of a preceding word: it is very common to find that the Cⁱ becomes identical in manner to the C^f but with dental place of articulation. For example (the arrow symbol means "becomes"):

'in the'	in ðə	→	ɪ ŋ ñ ə
'get them'	get ðəm	→	ge t̪ t̪ əm
'read these'	ri:d ði:z	→	ri: d̪ d̪ i:z

The ð phoneme frequently occurs with no discernible friction noise.

Assimilation of voice is also found, but again only in a limited way. Only regressive assimilation of voice is found across word boundaries, and then only of one type; since this matter is important for foreign learners we will look at it in some detail. If C^f is a lenis (i.e. "voiced") consonant and Cⁱ is fortis ("voiceless") we often find that the lenis consonant has no voicing; for example in 'I have to' the final v becomes voiceless f because of the following voiceless t in aɪ hæv tu, and in the same way the z in 'cheese' tʃi:z becomes more like s when it occurs in 'cheesecake' tʃi:sketk. This is not a very noticeable case of assimilation, initial and final lenis consonants usually have little or no voicing anyway; these devoiced consonants do not shorten preceding vowels as true fortis consonants do. However, when C^f is fortis ("voiceless") and Cⁱ lenis ("voiced"), a context in which in many languages C^f would become voiced, assimilation of voice never takes place; consider the following example: I like that black dog' aɪ laɪk ðæt blæk dɒɡ. It is typical of many foreign learners of English that they allow regressive assimilation of voicing to change the final k of 'like' to ɡ, the final t of 'that' to d and the final k of 'black' to ɡ, giving aɪ laɪɡ ð æ d bl æ ɡ dɒɡ. This creates a strong impression of a foreign accent.

Up to this point we have been looking at some fairly clear cases of assimilation across word boundaries. However, similar effects are also observable across morpheme boundaries and to some extent also within the morpheme. Sometimes in the latter case it seems that the assimilation is rather different from the word-boundary examples; for example, if in a syllable-final consonant cluster a nasal consonant precedes a plosive or a fricative in the same morpheme, then the place of articulation of the nasal is always determined by the place of articulation of the other consonant; thus: 'bump' bʃmp, 'tenth' teŋ θ, 'hunt' hʃnt, 'bank' bæŋk. It could be said that this assimilation has become fixed as part of the phonological structure of English syllables, since exceptions are almost non-existent. A similar example of a type of assimilation that has become fixed is the progressive assimilation of voice with the suffixes s, z; when a verb carries a third person singular '-s' suffix, or a noun carries an '-s' plural suffix or an '-s' possessive suffix, that suffix will be pronounced as s if the preceding consonant is fortis ("voiceless") and as z if the preceding consonant is lenis ("voiced").

Thus:

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'cats' kæts	'dogs' dɒgz
'jumps' dʒʌmps	'runs' rʌnz
'Pat's' pæts	'Pam's' pæmz

Assimilation creates something of a problem for phoneme theory: when, for example, d in good' gʃd becomes ɡ in the context 'good girl', giving ɡʃɡ ɡɜ:l or b in the context good boy' ɡʃd bɔɪ, should we say that one phoneme has been substituted for another? If we do this, how do we describe the assimilation in 'good thing', where d becomes dental ɖ before the θ of 'thing', or in 'good food', where d becomes a labiodental plosive before the f in 'food'? English has no dental or labiodental plosive phonemes, so in these cases, although there is clearly assimilation, there could not be said to be a substitution of one phoneme for another. The alternative is to say that assimilation causes a phoneme to be realised by a different allophone; this would mean that, in the case of ɡʃɡ ɡɜ:l and ɡʃb bɔɪ, the phoneme d of 'good' has velar and bilabial allophones. Traditionally, phonemes were supposed not to overlap in their allophones, so that the only plosives that could have allophones with bilabial place of articulation were p, b; this restriction is no longer looked on as so important. The traditional view of assimilation as a change from one phoneme to another is, therefore, naïve: modern instrumental studies in the broader field of **coarticulation** show that when assimilation happens one can often see some sort of combination of articulatory gestures. In 'good girl', for example, it is not a simple matter of the first word ending *either* in d or in ɡ, but rather a matter of the extent to which alveolar and/or velar closures are achieved. There may be an alveolar closure immediately preceding and overlapping with a velar closure; there may be simultaneous alveolar and velar closure, or a velar closure followed by slight contact but not closure in the alveolar region. There are many other possibilities.

Much more could be said about assimilation but, from the point of view of learning or teaching English pronunciation, to do so would not be very useful. It is essentially a natural phenomenon that can be seen in any sort of complex physical activity, and the only important matter is to remember the restriction, specific to English, on voicing assimilation mentioned above.

17.4 Elision

The nature of **elision** may be stated quite simply: under certain circumstances sounds disappear. One might express this in more technical language by saying that in certain circumstances a phoneme may be realised as **zero**, or have **zero realisation** or be **deleted**. As with assimilation, elision is typical of rapid, casual speech. Producing elisions is something which foreign learners do not need to learn to do, but it is important for them to be aware that when native speakers of English talk to each other, quite a number of phonemes that the foreigner might expect to hear are not actually pronounced. We will look at some examples, although only a small number of the many possibilities can be given here.

1. Loss of weak vowel after p, t, k.

In words like 'potato', 'tomato', 'canary', 'perhaps', 'today', the vowel in the first syllable may disappear; the aspiration of the initial plosive takes up the whole of the middle portion of the syllable, resulting in these pronunciations (where^h indicates aspiration in the phonetic transcription):

p^htɛtəʃ t^hmɑ:təʃ k^hneəri p^hhæps t^hdeɪ

2. Weak vowel + n, l, r becomes syllabic consonant. For example:

'tonight' tnaɪt 'police' plɪs 'correct' krekt

3. Avoidance of complex consonant clusters.

It has been claimed that no normal English speaker would ever pronounce all the consonants between the last two words of the following:

'George the Sixth's throne' dʒɔ:dʒ ðə sɪksθs θrəʊn

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Though this is not impossible to pronounce, something like *sɪksθrəʊn* or *sɪksrəʊn* is a more likely pronunciation for the last two words. In clusters of three plosives or two plosives plus a fricative, the middle plosive may disappear, so that the following pronunciations result:

'acts' *æks*, 'looked back' *lʊk bæk*, 'scripts' *skɪps*

4. Loss of final *v* in 'of' before consonants; for example:

'lots of them' *lɒts ə ðəm*, 'waste of money' *weɪst ə mʌni*

This last example is typical of very casual speech, and would be regarded as substandard by conservative listeners. A more common case is where the vowel of 'of' is lost, leaving either *v* in a voiced context (e.g. 'all of mine' *ɔ:l v maɪn*) or *f* in a voiceless context (e.g. 'best of three' *best f θ ri:*).

It is difficult to know whether **contractions** of grammatical words should be regarded as examples of elision or not. The fact that they are regularly represented with special spelling forms makes them seem rather different from the above examples. The best-known cases are:

- 'had', 'would': spelt 'd, pronounced *d* (after vowels), *əd* (after consonants);
- 'is', 'has': spelt 's, pronounced *s* (after fortis consonants), *z* (after lenis consonants), except that after *s*, *z*, *ʃ*, *ʒ*, *tʃ*, *dʒ* 'is' is pronounced *ɪz* and 'has' is pronounced *əz* in contracted form;
- 'will': spelt 'll, pronounced *l* (after vowels), *ɪ* (after consonants);
- 'have': spelt 've, pronounced *v* (after vowels), *əv* (after consonants);
- 'not': spelt n't, pronounced *nt* (after vowels), *ɪt* (after consonants). There are also vowel changes associated with n't (e.g. 'can' *kæn* - 'can't' *kɑ:nt*; 'do' *du:* - 'don't' *dəʊnt*; 'shall' *ʃæl* - 'shan't' *ʃɑ:nt*);
- 'are': spelt 're, pronounced *ə* after vowels, usually with some change in the preceding vowel (e.g. 'you' *ju:* - 'you're' *jʃə* or *jɔ:*; 'we' *wi:* - 'we're' *wiə*; 'they' *ðeɪ* - 'they're' *ðeə*); linking is used when a vowel follows, as explained in the next section. Contracted 'are' is also pronounced as *ə* or *ər* when following a consonant.

17.5 Linking

In our hypothetical "mechanical speech" all words would be separate units placed next to each other in sequence; in real connected speech, however, we link words together in a number of ways. The most familiar case is the use of **linking r**; the phoneme *r* does not occur in syllable-final position in the BBC accent, but when the spelling of a word suggests a final *r*, and a word beginning with a vowel follows, the usual pronunciation is to pronounce with *r*. For example:

'here' *hɪə* but 'here are' *hɪər ə*

'four' *fɔ:* but 'four eggs' *fɔ:ɪr eɡz*

BBC speakers often use *r* in a similar way to link words ending with a vowel, even when there is no "justification" from the spelling, as in:

'Formula A' *fɔ:mjələr eɪ*

'Australia all out' *ɒstreɪliər ɔ:l aʊt*

'media event' *mɪdiər ɪvent*

This has been called **intrusive r**; some English speakers and teachers still regard this as incorrect or substandard pronunciation, but it is undoubtedly widespread.

"Linking *r*" and "intrusive *r*" are special cases of **junction**; we need to consider the relationship between one sound and the sounds that immediately precede and follow it. If we take the two words 'my turn' *maɪ tɜ:n*, we know that the sounds *m* and *aʊ*, *t* and *ɜ:*, and *ɜ:* and *n* are closely linked. The problem lies in deciding what the relationship is between *aɪ* and *t*; since we do not usually pause between words, there is no silence to indicate word division and to justify the space left in the

transcription. But if English speakers hear *maɪ tʒ:n* they can usually recognise this as ‘my turn’ and not ‘might earn’. This is where the problem of juncture becomes apparent. What is it that makes perceptible the difference between *maɪ tʒ:n* and *maɪ tʒ:n*? The answer is that in one case the *t* is fully aspirated (initial in ‘turn’), and in the other case it is not (being final in ‘might’). In addition to this, the *aɪ* diphthong is shorter in ‘might’. If a difference in meaning is caused by the difference between aspirated and unaspirated *t*, how can we avoid the conclusion that English has a phonemic contrast between aspirated and unaspirated *t*? The answer is that the position of a word boundary has some effect on the realisation of the *t* phoneme; this is one of the many cases in which the occurrence of different allophones can only be properly explained by making reference to units of grammar (something which was for a long time disapproved of by many phonologists).

Many ingenious minimal pairs have been invented to show the significance of juncture, a few of which are given below:

- ‘might rain’ *maɪt reɪn* (*r* voiced when initial in ‘rain’, *aɪ* shortened), vs.
‘my train’ *maɪ treɪn* (*r* voiceless following *t* in ‘train’, *aɪ* longer)
- ‘all that I’m after today’ *ɔ:l ðət aɪm ɑ:ftə tədeɪ* (*t* relatively unaspirated when final in ‘that’)
‘all the time after today’ *ɔ:l ðə taɪm ɑ:ftə tədeɪ* (*t* aspirated when initial in ‘time’)
- ‘tray lending’ *trew lendɪ* (“clear l” initial in ‘lending’)
‘trail ending’ *treɪl endɪ* (“dark l” final in ‘trail’)
- ‘keep sticking’ *ki:p stɪkɪ* (*t* unaspirated after *s*)
‘keeps ticking’ *ki:ps tɪkɪ* (*t* aspirated in ‘ticking’)

The context in which the words occur almost always makes it clear where the boundary comes, and the juncture information is then redundant.

It should by now be clear that there is a great deal of difference between the way words are pronounced in isolation and their pronunciation in the context of connected speech.

17.6 The Importance of Accent

Every speaker of English has a particular system of his or her own, known by linguists as that individual’s idiolect. However, considering language only at the idiolectal level might produce extremely thorough and detailed descriptions, but would give rather little insight into why individuals speak in the way they do. To understand this, we must identify higher-level groupings, and investigate geographical and social accents. That is to say, individuals adopt a particular mode of speech (or more accurately, move along a continuum of modes of speech) depending on who they want to identify with, who they are talking to, and what impression they want to make. Not all these ‘decisions’ are conscious, of course. Small children learn to speak as their immediate family members do; but quite soon, the peer group at school (even nursery) becomes at least equally important; and later, older children, then television presenters, actors or sporting heroes may become role models, leading to modifications in accent. Consequently, age-related differences appear in all varieties; some will be transient, as a particular TV show falls out of fashion and the words or pronunciations borrowed from it disappear; others will become entrenched in young people’s language, and may persist into adulthood, becoming entirely standard forms for the next generation.

This flexibility, and the associated facts of variation and gradual change, mean that phonologists face a Catch-22 situation. On the one hand, describing idiolects will give seriously limited information, since it will not reveal the groups an individual belongs to, or the dynamics of those groups. On the other hand, we must take care that the groups are not described at too abstract a level. Any description of ‘an accent’ is necessarily an idealisation, since no two speakers will use precisely the same system in precisely the same way: our physical idiosyncracies, different backgrounds, and different preferences and aspirations will see to that. Nonetheless, two speakers of, say, Scottish Standard English, or New Zealand English, will have a common core of features, which allows them to be grouped together by speakers of the same accent, by speakers of other accents, and by phonologists. Not everyone is equally adept at making these identifications, of course. Speakers of other varieties may succeed in

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equally adept at making these identifications, of course. Speakers of other varieties may succeed in placing accents only within a very wide geographical boundary: thus, a speaker of GA may have difficulty in distinguishing a Scottish from an Irish speaker, while conversely, a Scot may confuse Americans and Canadians. Within groups, however, much more subtle distinctions are perceived and have geographical or social meaning: hence, one speaker of SSE may identify another as coming from Glasgow rather than Edinburgh, and perhaps even from a particular area of the city; and may well base assumptions to do with social class and level of education on those linguistic factors.

Accent is clearly extremely important, as one of the major tools we use in drawing inferences about our fellow humans, and in projecting particular images of ourselves. Phonologists should, then, be able to do as speakers do, in identifying and classifying accents, but with a more technical rather than emotional classification of the differences and similarities between them. An accent, in phonological terms, is an idealised system which speakers of that variety share. Although slight differences in its use may be apparent, both across and within individuals, its speakers will still share more in common with one another, and with that idealised accent system, than with speakers of any other idealised accent system. Standard accents should also be described in just the same way as non-standard ones, as they provide just the same sort of social and geographical information about their users: that is, although it is quite common for speakers of a standard accent, such as SSBE in the south of England, to claim that they have no accent, other speakers (and phonologists) know different.

A more detailed appreciation of the cues speakers attend to in different accents, and the social judgements they make on that basis, is a matter for sociolinguistics and dialectology rather than phonology. The main contribution a phonologist can make is to produce a classification of types of differences between accents, which can then be used in distinguishing any set of systems; and that is the goal of this chapter. In the next three sections, then, we shall introduce a three-way classification of accent differences, and illustrate these using examples involving both consonants and vowels. First, the systems of two accents may contain different numbers of phonemes, so different phonemic oppositions can be established for them: these are systemic differences. Second, the same phonemes may have different allophones: these are realisational differences. Finally, there are distributional differences, whereby the same lexical item may have different phonemes in two different varieties; or alternatively, the same phoneme may have a phonological restriction on its distribution in one variety but not another.

17.7 Systemic Differences

The first and most obvious difference between accents is the systemic type, where a phoneme opposition is present in one variety, but absent in another. Consonantal examples in English are relatively rare. As we have already seen, some varieties of English, notably SSE, Scots and NZE, have a contrast between /w/ and /ɹ/, as evidenced by minimal pairs like *Wales* and *whales*, or *witch* and *which*. Similarly, SSE and Scots have the voiceless velar fricative /x/, which contrasts with /k/ for instance in *loch* versus *lock*, but which is absent from other accents. NZE speakers will therefore tend to have one more phoneme, and Scots and SSE speakers two more, than the norm for accents of English.

Conversely, some accents have fewer consonant phonemes than most accents of English. For instance, in Cockney and various other inner-city English accents, [h]-dropping is so common, and so unrestricted in terms of formality of speech, that we might regard /h/ as having disappeared from the system altogether. This is also true for some varieties of Jamaican English. In many parts of the West Indies, notably the Bahamas and Bermuda, there is no contrast between /v/ and /w/, with either [w] or a voiced bilabial fricative [β] being used for both, meaning that /v/ is absent from the phonemic and phonetic systems. The same contrast is typically missing in Indian English, but the opposition is resolved in a rather different direction, with the labio-dental approximant [ʋ] very frequently being used for the initial sound of *wine* and *vine*, or *west* and *vest*. Again, there is only a single phoneme in this case in Indian English.

The number of accent differences involving vowels, and the extent of variation in that domain, is very significantly greater than in the case of consonants for systemic, realisational and distributional

differences. This probably reflects the fact that the vowel systems of all English varieties are relatively large, so that a considerable number of vowels occupy a rather restricted articulatory and perceptual space; in consequence, whenever and wherever one vowel changes, it is highly likely to start to encroach on the territory of some adjacent vowel. It follows that a development beginning as a fairly minor change in the pronunciation of a single vowel will readily have a knock-on effect on other vowels in the system, so that accent differences in this area rapidly snowball. In addition, as we saw in earlier chapters, the phonetics of vowels is a very fluid area, with each dimension of vowel classification forming a continuum, so that small shifts in pronunciation are extremely common, and variation between accents, especially when speakers of those accents are not in day-to-day communication with each other, develops easily.

Systemic differences in the case of vowel phonemes can be read easily from lists of Standard Lexical Sets and the systems plotted from these on vowel quadrilaterals. If for the moment we stick to the four reference accents introduced in the last chapter, namely SSBE, GA, SSE and NZE, we can see that SSBE has the largest number of oppositions, with the others each lacking a certain number of these.

Comparing GA to SSBE, we find that GA lacks /ɒ/, so that LOT words are produced with /ɑ:/, as are PALM words, while CLOTH has the /ɔ:/ of THOUGHT. In this respect, SSBE is 'old-fashioned': it maintains the ancestral state shared by the two accents. However, in GA realisations of the earlier /ɒ/ have changed their quality and merged, or become identical with the realisations of either /ɑ:/ or /ɔ:/. GA also lacks the centring diphthongs of SSBE, so that NEAR, SQUARE, CURE share the vowels of FLEECE, FACE, GOOSE respectively, but since GA is rhotic, the former lexical sets also have a realisation of /r/, while the latter do not. In this case, however, the historical innovation has been in SSBE. At the time of the initial settlement of British immigrants in North America, most varieties of English were rhotic, as GA still is; but the ancestor of SSBE has subsequently become non-rhotic. The loss of /r/ before a consonant or a pause in SSBE has had various repercussions on the vowel system, most notably the development of the centring diphthongs.

In systemic terms, NZE lacks only one of the oppositions found in SSBE, namely that between /ɪ/ and /ə /; in NZE, both KIT and LETTER words have schwa. There are more differences in symbols between the SSBE and NZE lexical; but these typically reflect realisational, and sometimes distributional, rather than systemic differences, as we shall see in the next two sections. That is to say, I have chosen to represent the vowel of NZE TRAP as /ɛ / and DRESS as /e/, FLEECE as /li/ and FACE as /ɛɪ/, to highlight the typical realisational differences between the two accents. However, in phonemic terms, the TRAP and DRESS vowel, and the FLEECE and FACE vowel, still contrast in NZE just as they do in SSBE. That is, the pairs of vowel phonemes in (1) are equivalent: they are symbolised differently because they are very generally pronounced differently (and we could equally well have chosen the same phonemic symbols in each case, to emphasise this parity, at the cost of a slightly more abstract system for NZE; see the discussion in Section above), but the members of the pairs are doing the same job in the different accents.

(1)	SSBE	NZE	
	ɛ	e	DRESS
	æ	ɛ	TRAP
	i:	li	FLEECE
	eɪ	ɛɪ	FACE

When we turn to SSE, however, we find a considerably reduced system relative to SSBE. As we might expect, given that SSE is rhotic, it lacks the centring diphthongs, so that NEAR, SQUARE, CURE share the vowels of FLEECE, FACE, GOOSE, though the former will have a final [ɹ] following the vowel. SSE also typically lacks the /ɛ:/ vowel of NURSE, with [ɹ] appearing here instead; so the NURSE and STRUT sets share the same vowel. Leaving aside vowels before /r/, however, there are three main oppositions in SSBE which are not part of the SSE system, as shown in (2).

(2)	SSBE	SSE	
	a	a	TRAP
	ɑ:	a	PALM

Notes	ɒ	ɒ	LOT
	ɔ:	ɒ	THOUGHT
	ʃ	u	FOOT
	u:	u	GOOSE

Each of these three contrasting pairs of vowel phonemes in SSBE corresponds to a single phoneme in SSE. While *Sam-psalm*, *cot-caught*, and *pull – pool* are minimal pairs in SSBE, establishing the oppositions between /a/ and /ɑ:/, /ɒ/ and /ɔ:/, and /ʃ/ and /u:/ respectively, for SSE speakers the members of each pair will be homophonous. There is no vowel quality difference; and the Scottish Vowel Length Rule, which makes vowel length predictable for SSE and Scots, means there is no contrastive vowel quantity either. There is some variation in SSE in this respect: speakers who have more contact with SSBE, or who identify in some way with English English, may have some or all of these oppositions in their speech. If an SSE speaker has only one of these contrasts, it is highly likely to be /a/ – /ɑ:/; if /ʃ/ and /u/ are contrasted, we can predict that the /ɒ/ – /ɔ:/ and /a/ – /ɑ:/ pairs also form part of the system.

Of course, such systemic differences are not restricted to the reference accents surveyed above. For instance, within British English, many accents of the north of England and north Midlands fail to contrast /ʃ/ and /ʃ/, so that *put* and *putt*, or *book* and *buck* all have /ʃ/. In some parts of the western United States, speakers typically lack the /ɑ:/ – /ɔ:/ opposition found in GA, and will therefore have /ɑ:/ in both *cot* and *caught*. Other varieties of English have an even more extreme reduction of the vowel system relative to SSBE. These are typically accents which began life as second language varieties of English: that is, they were at least initially learned by native speakers of languages other than English, although they may subsequently have become official language varieties in particular territories, and be spoken natively by more recent generations. Inevitably, these varieties have been influenced by the native languages of their speakers, showing that language contact can also be a powerful motivating force in accent variation.

One case involves Singapore English. Singapore became a British colony in 1819, and English was introduced to a population of native speakers of Chinese, Malay, Tamil and a number of other languages. Increasingly today, children attend English-medium schools, and use English at home, so that Singapore English is becoming established as a native variety. Its structure, however, shows significant influence from other languages, notably Malay and Hokkien, the Chinese ‘dialect’ with the largest number of speakers in Singapore. As with many accents, there is a continuum of variation in Singapore English, so that non-native speakers are likely to have pronunciations more distant from, say, SSBE: thus, while a native Singapore English speaker will say [maɪl] ‘mile’, a second-language speaker who is much more influenced by his native language may say [mɨ ʃ]. Increasingly, younger speakers of Singapore English are also looking to American rather than British English as a reference variety, so that further change in the system is likely. The system presented as Singapore English (SgE) in (3) is characteristic of native or near-native speakers. Note that SgE has no contrastive differences of vowel length, and that /ʉ/ is the IPA symbol for a high back unrounded vowel.

(3)	SSBE	SgE	Set number	Keyword
	ɪ	ɪ	1	KIT
	ɛ	ɛ	2	DRESS
	a	ɛ	3	TRAP
	ɑ	ɔ	4	LOT
	ʃ	ʃ	5	STRUT
	ʃ	u	6	FOOT
	ɑ:	ɛ	7	BATH
	ɒ	ɔ	8	CLOTH
	ɜ:	ʉ	9	NURSE
	i:	i	10	FLEECE
	eɪ	e	11	FACE

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ɑ:	ʃ	12	PALM	
ɔ:	ɔ	13	THOUGHT	
oʊ	o	14	GOAT	
u:	u	15	GOOSE	
aɪ	ai	16	PRICE	
ɔɪ	ɔi	17	CHOICE	
aʊ	au	18	MOUTH	
iə	iə	19	NEAR	
ɛə	ɛ	20	SQUARE	
ɑ:	ʃ	21	START	
ɔ:	ɔ	22	NORTH	
ɔ:	o	23	FORCE	
ʃə	uə	24	CURE	
ɪ	i	25	HAPPY	
ə	ə	26	LETTER	
ə	ə	27	COMMA	

As (3) shows, many of the vowel oppositions found in SSBE are absent from SgE; and in the great majority of cases, the main reason for the changes in SgE is the structure of other languages spoken in Singapore. (The same contact influences account for realisational differences between SgE and other Englishes. Looking at the various phoneme mergers in SgE in more detail, we find the patterns in (4).

(4) Lexical sets	Merged SgE vowel	Malay	Hokkien
DRESS, TRAP, BATH	ɛ	e	e
KIT, FLEECE	i	i	i
LOT, THOUGHT	ɔ		ɔ
FOOT, GOOSE	u	ʃ, u	u
STRUT, PALM, START	ʃ		no low back vowels

In all these cases, lexical sets which have distinct vowels in SSBE (and often in other accents too) share a single vowel in SgE; and furthermore, this vowel tends to correspond to the vowel found in either Hokkien, or Malay, or both. Thus, instead of /e/ versus /a/, SgE has only /ɛ/; both Hokkien and Malay have only a higher vowel in this area, namely /e/ (and realisationally, SgE /e/ raises to [e] before plosives and affricates, as in *bead*, *neck*, neutralising the opposition between /e/, the monophthong found in FACE words, and /ɛ/ in TRAP, DRESS in this context, so that *bread* - *braid*, *red* - *raid*, *bed* - *bade* are homophones). The merger of the KIT, FLEECE sets follows the pattern for Malay and Hokkien, and the same is true of STRUT/PALM/START; neither Malay nor Hokkien has any low back vowels, and the SgE vowel for all these sets is higher and more central; in SgE this merger means that *cart* and *cut*, or *charm* and *chum*, are homophonous. In the cases of lot/THOUGHT, and FOOT/GOOSE, SgE follows the Hokkien pattern; Malay has neither /ɔ/ nor /ɔ/, but both /ʃ/ and /u/. Whichever local language has exerted most influence in any particular instance, it is clear that native language systems have acted as a filter or template for non-native learners of Singapore English, creating the vowel system found today.

17.8 Realisational Differences

In the second type of accent difference, part of the system of phonemes may be the same for two or more accents, but the realisations of that phoneme or set of phonemes will vary. For instance, in SSBE, SSE and GA, /l/ has two main allophones, being clear, or alveolar [l] before a stressed vowel, as in *light*, *clear*, but dark, velarised [ɫ] after a stressed vowel, as in *dull*, *bill*. This distribution of

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allophones is not the only possibility in English, however. In some accents, /l/ is always realised as clear; this is true, for instance, of Tyneside English (or 'Geordie'), Welsh English, and some South African varieties. On the other hand, in Australia and New Zealand, /l/ is consistently pronounced dark; and indeed, realisations may be pharyngeal rather than velar, or in other words, pronounced with a restriction even further back in the vocal tract. In London English, there is a further allophone of /l/, namely a vocalised (or vowel-like) realisation finally or before a consonant: in *sell*, *tall*, *people*, *help*, /l/ is typically realised as a high or high mid back vowel like [ɯ] or [o]. For younger speakers, vocalisation is also taking hold in medial position, in words like *million*; and the process is also spreading beyond London, as part of the shift towards so-called 'Estuary English', a mixture of SSBE and London English which is arguably becoming a new standard for young people, especially in urban centres in the south of England.

The other English liquid consonant, /r/, also provides plenty of scope for realisational differences, /r/ is typically an alveolar or slightly retro-flex approximant for SSBE and GA, but at least in medial position, is frequently realised as an alveolar tap in SSE (the tap is also a common realisation in South African English). In some parts of the north of England, notably in Northumberland and County Durham, a voiced uvular fricative [ʁ] is quite commonly found, although this may be receding gradually.

In other areas of northern England, this time notably Yorkshire, Tyneside and Liverpool, [ɹ] appears as an allophone of /t/, typically between vowels and across a word-boundary, as in *not on* [nɒtɹɒn], *lot of laughs* [lɒtɹə ...], *get a job* [gɛtɹə ...]. In Merseyside, voiceless stops are very generally realised as fricatives or affricates in word-final position, so that *cake*, *luck*, *bike* will be [keɪx], [lɪx], [baɪx]: whereas in Scots and SSE the appearance of [x] in *loch* constitutes a systemic difference, as there are minimal pairs establishing an opposition of /x/ and /k/, in Liverpool the velar fricative is clearly an allophone of /k/, so that the accent difference between, say, SSBE and Merseyside English in this respect is realisational, but not systemic.

Turning to vowels, one particularly salient example involves the FACE and GOAT vowels, which in SSBE, NZE and Australian English are pronounced consistently as diphthongs. In GA, the FACE vowel is diphthongal, while the GOAT vowel may be a monophthong; and in SSE and SgE, both are monophthongal, with the predominant allophones being high-mid [e] and [o] in both accents. The NURSE vowel in SSBE is mid central [ɜ:]; the same phoneme in NZE is very generally rounded, while in SgE it is typically raised to high-mid back unrounded [ʏ], or high back unrounded [ɯ] (as we might expect, Hokkien has [ʏ], Malay has both [ʏ] and [ɯ], but both lack [ɜ]).

Sometimes, although these realisational differences have no direct impact on the phoneme system, they do lead to neutralisations of otherwise consistent contrasts. For instance, we saw in the last section that SgE speakers raise /ɛ/ to [e] before plosives and affricates; the monophthongal pronunciation of /e/ as [e] in FACE words, and the lack of any systematic vowel-length distinction in SgE means that the contrast of /ɛ/ and /e/ is suspended in this context, leading to identical pronunciations of *bread* and *braid*, or *wreck* and *rake*. It is also possible for realisational differences in vowels to lead to allophonic differences in consonants. For instance, right at the beginning of this book, we identified an allophonic difference between velar [k] and palatal [c], with the latter appearing adjacent to a front vowel. In SSBE, SSE and GA, this will mean that velar realisations will be produced in *cupboard* and *car*, palatals in *kitchen* and *keys*. However, the distribution differs in other varieties of English, depending on their typical realisations of the FLEECE and KIT vowels. In NZE, FLEECE has a high front diphthong, so that *keys* will still have [c]; but no fronting will take place in *kitchen*, since the KIT set in NZE has central [ə]. On the other hand, in Australian English, KIT has a rather high, front [i] vowel so that *kitchen* will certainly attract a palatal [c]; but in some varieties at least, the diphthong in *keys* is central [əɪ], which will therefore favour a velar allophone of /k/.

17.9 Distributional Differences

Distributional differences fall into two subclasses. First, there are differences in lexical incidence: certain individual lexical items will simply have one vowel phoneme in some accents, and another in others. For example, British English speakers are quick to comment on American English /əf/ in

route, or /ɛ/ in *lever*; Americans find British English /ru:t/ and /li:v ə (ɪ)/ equally odd. Some Northern English speakers have /u:/ rather than /ʃ/ in *look* and other <oo> words; and it is fairly well-known in Britain that words containing /ɑ:/ vary in English English, with *grass*, *dance*, *bath*, for instance, having /a/ for many northern speakers, but /ɑ:/ in the south, though both varieties have /ɑ:/ in *palm*. Similarly, in SSE, *weasel* has /w/, and *whelk* / /; but in Borders Scots, where these phonemes also contrast, and where indeed most of the same minimal pairs (like *Wales* and *whales*, *witch* and *which*) work equally well, the lexical distribution in these two words is reversed, with / / in *weasel* and /w/ in *whelk*.

On the other hand, a difference in the distribution of two phonemes may depend on the phonological context rather than having to be learned as an idiosyncrasy of individual lexical items. For instance, in GA there is a very productive restriction on the consonant /j/ when it occurs before /u:/. Whereas in most British English [j] surfaces in *muse*, *use*, *fuse*, *view*, *duke*, *tube*, *new*, *assume*, in GA it appears only in the first four examples, and not in the cases where the /u:/ vowel is preceded by an alveolar consonant. There is also, as we have seen, a very clear division between rhotic accents of English, where /r/ can occur in all possible positions in the word (so [ɹ], or the appropriate realisation for the accent in question, will surface in *red*, *bread*, *very*, *beer*, *beard*, *beer is*), and non-rhotic ones, where /r/ is permissible only between vowels (and will be pronounced in *red*, *bread*, *very*, *beer is*, but not the other cases).

Again, vowels follow the same patterns. For instance, in many varieties of English, schwa is only available in unstressed positions, in *about*, *father*, *letter*; in NZE, however, its range is wider, since it appears also in stressed syllables, in the KIT lexical set. Similarly, in some varieties words like *happy* have a tense /i/ vowel in the second, unstressed syllable; this is true for Tyneside English, SSE, GA and NZE. In SSBE, however, only lax vowels are permitted in unstressed syllables, so that /ɪ/ appears in *happy* instead. Not all these distributional restrictions have to do with stress; some are the result of other developments in the consonant or vowel systems. For instance, the presence of the centring diphthongs before historical /r/ in SSBE (and other non-rhotic accents) means that non-low monophthongs cannot appear in this context. On the other hand, in rhotic accents like SSE and GA, there are no centring diphthongs, and the non-low monophthongs consequently have a broader range, with the same vowel appearing in FLEECE and NEAR, FACE and SQUARE, GOOSE and CURE.

In defining how accents differ, then, we must consider all three types of variation: systemic, realisational, and distributional. Although some of these (notably the systemic type) may seem more important to a phonologist, since they involve differences in the phoneme system, we must remember that one of the phonologist's tasks is to determine what speakers of a language know, and how their knowledge is structured. It follows that we must be able to deal with the lower-level realisational and distributional differences too, since these are often precisely the points native speakers notice in assessing differences between their own accent and another variety of English. In any case, all of these types of variation will work together in distinguishing the phonological systems of different accents, and as we have seen, variation at one level very frequently has further implications for other areas of the phonology.

1. Plot your vowel system on a vowel quadrilateral. (You may wish to use one diagram for monophthongs, and one for diphthongs; or even more than one for diphthongs if you have a system with a large number of these.)
2. What is your phonemic consonant system? Provide minimal pairs to establish the contrasts involved. Pay particular attention to whether your accent is rhotic or non-rhotic, and whether your system includes / / and /x/ or not. Do any of the consonant phonemes of SSBE fail to contrast in your accent? Why might this be?
3. Set out the differences between your variety, for both vowel and consonant systems, and (a) SSBE, (b) GA, (c) SSE, (d) NZE, (e) SgE. In each case, classify the discrepancies as systemic, realisational, or distributional. If you are a non-native speaker of English, or bilingual in English and another language, can you identify aspects of your native language(s) which might be responsible for some of the differences you have identified?

Self-Assessment

Listen to the following sentences. Put a stress mark ' on each stressed syllable, then divide the sentences into feet by placing a dotted line : at each foot boundary.

Example: : 'Come to the : 'party on : 'Monday : 'evening :

1. Each person in the group was trained in survival
2. About three hundred soliders were lined up
3. Buying a new computer is a major expense
4. All the people who came to the wedding were from England
5. Try to be as tactful as you can when you talk to him.

17.10 Summary

- English rhythm is a controversial subject on which widely differing views have been expressed. On one side there have been writers such as Abercrombie (1967) and Halliday (1967) who set out an elaborate theory of the rhythmical structure of English speech (including foot theory). On the other side there are sceptics like Crystal (1969: 161-5) who reject the idea of an inherent rhythmical pattern. The distinction between physically measurable time intervals and subjective impressions of rhythmicality is discussed in Roach (1982) and Lehiste (1977). Adams (1979) presents a review and experimental study of the subject, and concludes that, despite the theoretical problems, there is practical value in teaching rhythm to learners of English. The "stress-timed / syllable-timed" dichotomy is generally agreed in modern work to be an oversimplification; a more widely accepted view is that all languages display characteristics of both types of rhythm, but each may be closer to one or the other; see Mitchell (1969) and Dauer (1983). Dauer's theory makes possible comparisons between different languages in terms of their relative positions on a scale from maximally stress-timed to maximally syllable-timed.
- For some writers concerned with English language teaching, the notion of rhythm is a more practical matter of making a sufficiently clear difference between strong and weak syllables, rather than concentrating on a rigid timing pattern.
- The treatment of rhythmical hierarchy is based on the theory of metrical phonology. Hogg and McCully (1987) give a full explanation of this, but it is difficult material.
- Goldsmith (1990:) and Katamba (1989:) are briefer and somewhat simpler. A paper by Fudge (1999) discusses the relationship between syllables, words and feet. James (1988) explores the relevance of metrical phonology to language learning.
- An important question to be asked in relation to juncture is whether it can actually be heard. Jones (1931) implies that it can, but experimental work (e.g. O'Connor and Tooley, 1964) suggests that in many cases it is not perceptible unless a speaker is deliberately trying to avoid ambiguity. It is interesting to note that some phonologists of the 1950s and 1960s felt it necessary to invent a 'phoneme' of juncture in order to be able to transcribe minimal pairs like 'grey tape' / 'great ape' unambiguously without having to refer to grammatical boundaries; see, for example, Trager and Smith (1951).
- There is a lot of disagreement about the importance of the various topics in this chapter from the language teacher's point of view. My feeling is that while the practice and study of connected speech are agreed by everyone to be very valuable, this can sometimes result in some relatively unimportant aspects of speech (e.g. assimilation, juncture) being given more emphasis than they should. It would not be practical or useful to teach all learners of English to produce assimilations; practice in making elisions is more useful, and it is clearly valuable to do exercises related to rhythm and linking. Perhaps the most important consequence of what has been described in this chapter is that learners of English must be made very clearly aware of the problems that they will meet in listening to colloquial, connected speech.

- In looking at the importance of studying aspects of speech above the segmental level some writers have claimed that learners can come to identify an overall “feel” of the pronunciation of the language being learned. Differences between languages have been described in terms of their **articulatory settings** - that is, overall articulatory posture - by Honikman (1964). She describes such factors as lip mobility and tongue setting for English, French and other languages. The notion seems a useful one, although it is difficult to confirm these settings scientifically.
- Audio is liable to come as something of a surprise to students who have not had the experience of examining colloquial English speech before. The main message to get across is that concentration on selective, analytic listening will help them to recognise what is being said, and that practice usually brings confidence.

17.11 Key-Words

1. Tense/Lax : This feature marks off [p] from [b] and shorter vowels from longer ones. Tense vowels are longer and stronger, tense consonants are longer and possess great plosive strength.
2. Voiced/Voiceless : Glottal activity accompanies voiced sounds which is termed as ‘periodic frequency excitation,’ in which vibration of vocal cords occurs. This activity results in ‘buzz’ phonemes, ‘because of the tone generated at the glottal source’ - [b] - [p]; - [d] - [t]; - [g] - [k] sow this.
3. Strident/Mellow : Sounds showing irregular wave forms are termed strident, such as ‘noisy’ fricatives. Acoustically it is described as ‘higher intensity noise’ contrasted with the ‘lower intensity noise’.
4. Grave/Acute : We can identify grave sounds by noting concentration of energy in the lower extreme of the spectrum compared to the concentration of energy in the higher part which is the case in acute sounds. On this basis we can distinguish [u] and [o] from [i] and [e].
5. Nasal/Oral : Nasal cavity supplements oral cavity as resonator in nasal sounds, [m], [n], [ŋ].

17.12 Review Questions

1. Divide the following sentences up into feet, using a dotted vertical line (:) as a boundary symbol. If a sentence starts with an unstressed syllable, leave it out of consideration - it doesn’t belong in a foot.
 - (i) A bird in the hand is worth two in the bush.
 - (ii) Over a quarter of a century has elapsed since his death.
 - (iii) Computers consume a considerable amount of money and time.
 - (iv) Most of them have arrived on the bus.
 - (v) Newspaper editors are invariably underworked.
2. Draw tree diagrams of the rhythmical structure of the following phrases.
 - (i) Christmas present
 - (ii) Rolls-Royce
 - (iii) Pet-food dealer
 - (iv) Rolls-Royce rally event
3. The following sentences are given in spelling and in a “slow, careful” phonemic transcription. Rewrite the phonemic transcription as a “broad phonetic” one so as to show likely assimilations, elisions and linking.
 - (i) One cause of asthma is supposed to be allergies
wʃn kɔ:z əv æsθmə ɪz səpəʊzd tə bi ælədʒɪz

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(ii) What the urban population could use is better trains

wɒt ði ʊ:bən pɒpjələɪ f n kʃ d ju:z ɪz betə treɪnz

(iii) She acts particularly well in the first scene

ʃ i 'æ kts pətɪkjələli wel ɪn ðə fɜ:st si:n

Answers: Self-Assessment

1. |'Each |'person in the |'group was |'trained in sur |'vival |
2. A |'bont |'thee |'hundred |'soldiers were |lined |'up |
3. 'Buying a |'new com |'puter in a |'major ex |'pense |
4. |'All the |'people who |'com when you |'talk to him |
5. |'Try to be as |'tactful as you |'can when you |'talk to him |

17.13 Further Readings



Books

1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 18: Rhythm

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Objectives

After reading this Unit students will be able to:

- Understand Rhythm notation
- Discuss Rhythm in linguistics.

Introduction

Rhythm may be generally defined as a "movement marked by the regulated succession of strong and weak elements, or of opposite or different conditions." This general meaning of regular recurrence or pattern in time may be applied to a wide variety of cyclical natural phenomena having a periodicity or frequency of anything from microseconds to millions of years.

In the performance arts rhythm is the timing of events on a human scale; of musical sounds and silences, of the steps of a dance, or the meter of spoken language and poetry. Rhythm may also refer to visual presentation, as "timed movement through space." and a common language of pattern unites rhythm with geometry. In recent years, rhythm and meter have become an important area of research among music scholars. Recent work in these areas includes books by Maury Yeston, Fred Lerdahl and Ray Jackendoff, Jonathan Kramer, Christopher Hasty, Godfried Toussaint, William Rothstein, and Joel Lester.

Rhythm is made up of sounds and silences. These sound and silences are put together to form a pattern of sounds which are repeated to create a rhythm. A rhythm has a steady beat, but it may also have different kinds of beats. Some beats may be stronger, longer, shorter or softer than others. In a single piece of music, a composer can use many different rhythms. Percussion instruments have clearly defined dynamics that aid the creation and perception of complex rhythms.

In his series *How Music Works*, Howard Goodall presents theories that human rhythm recalls the regularity with which we walk and the heartbeat we heard in the womb. Other research suggests that it does not relate to the heartbeat directly, but rather the speed of emotional affect, which also influences heartbeat. London writes that musical metre "involves our initial perception as well as subsequent anticipation of a series of beats that we abstract from the rhythm surface of the music as it unfolds in time". The "perception" and "abstraction" of rhythmic measure is the foundation of human instinctive musical participation, as when we divide a series of identical clock-ticks into "tick-tock-tick-tock".

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Joseph Jordania recently suggested that the sense of rhythm was developed in the early stages of hominid evolution by the forces of natural selection. Plenty of animals walk rhythmically and hear the sounds of the heartbeat in the womb, but only humans have the ability to be engaged (entrained) in a rhythmically coordinated vocalizations and other activities. According to Jordania, development of the sense of rhythm was central for the achievement of the specific neurological state of the battle trance. This state was crucial for the development of the effective defense system of early hominids against major African predators, after hominids descended from the safer tree branches to more dangerous ground. Rhythmic war cry, rhythmic drumming by shamans, rhythmic drilling of the soldiers, and contemporary professional combat forces listening to the heavy rhythmic rock music all use the ability of rhythm to unite human individuals into a shared collective identity where group members put the interests of the group above their individual interests and safety. Some types of parrots can know rhythm. Neurologist Oliver Sacks states that chimpanzees and other animals show no similar appreciation of rhythm yet posits that human affinity for rhythm is fundamental, so that a person's sense of rhythm cannot be lost (e.g. by stroke). Human rhythmic arts are possibly to some extent rooted in courtship ritual.

18.1 Establishment of the Basic Beat

The establishment of a basic beat requires the perception of a regular sequence of distinct short-duration pulses and, as subjective perception of loudness is relative to background noise levels, a pulse must decay to silence before the next occurs if it is to be really distinct. For this reason the fast-transient sounds of percussion instruments lend themselves to the definition of rhythm. Musical cultures that rely upon such instruments may develop multi-layered polyrhythm and simultaneous rhythms in more than one time signature, called polymeter. Such are the cross-rhythms of Sub-Saharan Africa and the interlocking *kotekan* rhythms of the Indonesian *gamelan*.

For information on rhythm in Indian music see *Tala* (music). For other Asian approaches to rhythm see *Rhythm in Persian music*, *Rhythm in Arabian music* and *Usul - Rhythm in Turkish music and Dumbek rhythms*.

Pulse, beat and measure

Most music, dance and oral poetry establishes and maintains an underlying "metric level", a basic unit of time that may be audible or implied, the pulse or *tactus* of the mensural level, or beat level, sometimes simply called the beat. This consists of a (repeating) series of identical yet distinct periodic short-duration stimuli perceived as points in time. The "beat" pulse is not necessarily the fastest or the slowest component of the rhythm but the one that is perceived as basic: it has a tempo to which listeners entrain as they tap their foot or dance to a piece of music. It is currently most often designated as a crotchet or quarter note in western notation (see time signature). Faster levels are division levels, and slower levels are multiple levels. "Rhythms of recurrence" arise from the interaction of two levels of motion, the faster providing the pulse and the slower organizing the beats into repetitive groups. "Once a metric hierarchy has been established, we, as listeners, will maintain that organization as long as minimal evidence is present".

Unit and gesture

A durational pattern that synchronises with a pulse or pulses on the underlying metric level may be called a rhythmic unit. These may be classified as; metric - even patterns, such as steady eighth notes or pulses - intrametric - confirming patterns, such as dotted eighth-sixteenth note and swing patterns - contrametric - non-confirming, or syncopated patterns and extrametric - irregular patterns, such as tuplets.

A rhythmic gesture is any durational pattern that, in contrast to the rhythmic unit, does not occupy a period of time equivalent to a pulse or pulses on an underlying metric level. It may be described according to its beginning and ending or by the rhythmic units it contains. Beginnings on a strong pulse are *thetic*, a weak pulse, *anacrustic* and those beginning after a rest or tied-over note are called *initial rest*. Endings on a strong pulse are *strong*, a weak pulse, *weak* and those that end on a strong or weak upbeat are *upbeat*.



Did u know?

"In music, the rhythm is usually produced by making certain notes in a sequence stand out from others by being louder or longer or higher. . . . In speech, we find that syllables take the place of musical notes or beats, and in many languages the stressed syllables determine the rhythm. . . .

Alternation and repetition

Rhythm is marked by the regulated succession of opposite elements, the dynamics of the strong and weak beat, the played beat and the inaudible but implied rest beat, the long and short note. As well as perceiving rhythm we must be able to anticipate it. This depends upon repetition of a pattern that is short enough to memorize.

The alternation of the strong and weak beat is fundamental to the ancient language of poetry, dance and music. The common poetic term "foot" refers, as in dance, to the lifting and tapping of the foot in time. In a similar way musicians speak of an upbeat and a downbeat and of the "on" and "off" beat. These contrasts naturally facilitate a dual hierarchy of rhythm and depend upon repeating patterns of duration, accent and rest forming a "pulse-group" that corresponds to the poetic foot. Normally such pulse-groups are defined by taking the most accented beat as the first and counting the pulses until the next accent. A rhythm that accents another beat and de-emphasises the down beat as established or assumed from the melody or from a preceding rhythm is called syncopated rhythm.

Normally, even the most complex of meters may be broken down into a chain of duple and triple pulses either by addition or division. According to Pierre Boulez, beat structures beyond four, in western music, are "simply not natural". Western rhythms are usually arranged with respect to a time signature, partially signifying a meter usually corresponding to measure length and grouped into either two or three beats, which are called duple meter and triple meter, respectively. If the beats are in consistently even or odd groups of two, three, or four, it is simple meter, if by admixtures of two and three it is compound meter. In other systems of music such as Indian classical music rhythms may be grouped into various number of beats. In some music styles such as Yakshagana even group rhythms into fractional beats.

Tempo and duration

The tempo of the piece is the speed or frequency of the tactus, a measure of how quickly the beat flows. This is often measured in 'beats per minute' (bpm): 60 bpm means a speed of one beat per second, a frequency of 1 Hz. A rhythmic unit is a durational pattern that has a period equivalent to a pulse or several pulses. The duration of any such unit is inversely related to its tempo.

Musical sound may be analyzed on five different time scales, which Moravscik has arranged in order of increasing duration;:

1. Supershort: a single cycle of an audible wave, approximately $1/30$ - $1/10,000$ second (30-10,000 Hz or more than 1,800 bpm). These, though rhythmic in nature, are not perceived as separate events but as continuous musical pitch.
2. Short: of the order of one second (1 Hz, 60bpm, 10-100,000 audio cycles). Musical tempo is generally specified in the range 40 to 240 beats per minute. A continuous pulse cannot be perceived as a musical beat if it is faster than 8-10 per second (8-10 Hz, 480-600 bpm) or slower than 1 per 1.5 - 2 seconds (0.6-0.5 Hz, 40-30 bpm). Too fast a beat becomes a drone, too slow a succession of sounds seems unconnected. This time-frame roughly corresponds to the human heart rate and to the duration of a single step, syllable or rhythmic gesture.
3. Medium: few seconds, This median durational level "defines rhythm in music" as it allows the definition of a rhythmic unit, the arrangement of an entire sequence of accented, unaccented

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and silent or "rest" pulses into the cells of a measure that may give rise to the "briefest intelligible and self-existent musical unit", a motif or figure. This may be further organized, by repetition and variation, into a definite phrase that may characterise an entire genre of music, dance or poetry and that may be regarded as the fundamental formal unit of music.

4. Long: many seconds or a minute, corresponding to a durational unit that "consists of musical phrases" which may make up a melody, a formal section, a poetic stanza or a characteristic sequence of dance moves and steps. Thus the temporal regularity of musical organisation includes the most elementary levels of musical form
5. Very long: minutes or many hours, musical compositions or subdivisions of compositions.

Curtis Roads takes a wider view by distinguishing nine time scales, this time in order of decreasing duration. The first two, the infinite and the supramusical, encompass natural periodicities of months, years, decades, centuries, and greater, while the last three, the sample and subsample, which take account of digital and electronic rates "too brief to be properly recorded or perceived", measured in millionths of seconds (microseconds), and finally the infinitesimal or infinitely brief, are again in the extra-musical domain. Roads' Macro level, encompassing "overall musical architecture or form" roughly corresponds to Moravcsik's "very long" division while his Meso level, the level of "divisions of form" including movements, sections, phrases taking seconds or minutes, is likewise similar to Moravcsik's "long" category. Roads' Sound object "a basic unit of musical structure" and a generalization of note (Xenakis' ministructural time scale); fraction of a second to several seconds, and his Microsound down to the threshold of audible perception; thousands to millionths of seconds, are similarly comparable to Moravcsik's "short" and "supershort" levels of duration.

Metric structure

Notation of a clave rhythm pattern? Each cell of the grid corresponds to a fixed duration of time with a resolution fine enough to capture the timing of the pattern, which may be counted as two bars of four beats in divisive (metrical or symmetrical) rhythm, each beat divided into two cells. The first bar of the pattern may also usefully be counted additively (in measured or asymmetrical rhythm) as 3 + 3 + 2.

The study of rhythm, stress, and pitch in speech is called prosody: it is a topic in linguistics and poetics, where it means the number of lines in a verse, the number of syllables in each line and the arrangement of those syllables as long or short, accented or unaccented. Music inherited the term "meter or metre" from the terminology of poetry.

The metric structure of music includes meter, tempo and all other rhythmic aspects that produce temporal regularity against which the foreground details or durational patterns of the music are projected. The terminology of western music is notoriously imprecise in this area. MacPherson preferred to speak of "time" and "rhythmic shape", Imogen Holst of "measured rhythm".

Dance music has instantly recognizable patterns of beats built upon a characteristic tempo and measure. The Imperial Society of Teachers of Dancing (1983) defines the tango, for example, as to be danced in 2/4 time at approximately 66 beats per minute. The basic slow step forwards or backwards, lasting for one beat, is called a "slow", so that a full "right-left" step is equal to one 2/4 measure.



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"What does seem to be clear is that rhythm is useful to us in communicating: it helps us to find our way through the confusing stream of continuous speech, enabling us to divide speech into words or other units, to signal changes between topic or speaker, and to spot which items in the message are the most important."

Notation of three measures of a clave pattern preceded by one measure of steady quarter notes. This pattern is noted in double time relative to the one above, in one instead of two four-beat measures.

The general classifications of **metrical rhythm**, **measured rhythm**, and **free rhythm** may be distinguished.[27] Metrical or divisive rhythm, by far the most common in Western music calculates each time value as a multiple or fraction of the beat. Normal accents re-occur regularly providing systematical grouping (measures). Measured rhythm (additive rhythm)also calculates each time value is a multiple or fraction of a specified time unit but the accents do not recur regularly within the cycle. Free rhythm is where there is neither, such as in Christian chant, which has a basic pulse but a freer rhythm, like the rhythm.

Finally some music, such as some graphically scored works since the 1950s and non-European music such as Honkyoku repertoire for shakuhachi, may be considered ametric (Karpinski 2000, 19). Senza misura is an Italian musical term for "without meter", meaning to play without a beat, using time to measure how long it will take to play the bar.

Composite rhythm

A composite rhythm is the durations and patterns (rhythm) produced by amalgamating all sounding parts of a musical texture. In music of the common practice period, the composite rhythm usually confirms the meter, often in metric or even-note patterns identical to the pulse on a specific metric level. White defines composite rhythm as, "the resultant overall rhythmic articulation among all the voices of a contrapuntal texture."

18.2 Rhythm Notation

Worldwide there are many different approaches to passing on rhythmic phrases and patterns, as they exist in traditional music, from generation to generation.

African music

In the Griot tradition of Africa everything related to music has been passed on orally. Babatunde Olatunji, a Nigerian drummer who lived and worked in the United States, developed a simple series of spoken sounds for teaching the rhythms of the hand drum. He used six vocal sounds: Goon Doon Go Do Pa Ta. There are three basic sounds on the drum, but each can be played with either the left or the right hand. This simple system is now used worldwide, particularly by Djembe players.

It is noteworthy that the debate about the appropriateness of staff notation for African music is a subject of particular interest to outsiders, not insiders. African scholars from Kyagambiddwa to Kongo have for the most part accepted the conventions-and limitations-of staff notation and gone on to produce transcriptions in order to inform and to make possible a higher level of discussion and debate.- Agawu.

John Miller Chernoff 1979 has argued that West African music is based on tension between rhythms. This tension between rhythms is called polyrhythms and is created by the simultaneous sounding of two or more different rhythms. Often there is a dominant rhythm interacting with an independent competing rhythm, or rhythms. These often oppose or complement each other, and combine freely with the dominant rhythm creating a rich rhythmic texture not limited to any one set meter or tempo.

A set of moral values underpins a full musical system based on repetition of relatively simple patterns which meet at distant cross-rhythmic intervals and call and answer schemes. Values also show up in collective utterances such as proverbs or lineages appear either in phrases that translate as drum talk or in the words of songs. People expect musicians to stimulate participation of all present, notably by reacting to people dancing the music. Appreciation of musicians is related to the effectiveness of their upholding community values.

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Indian music

Indian music has also been passed on orally. Tabla players would learn to speak complex rhythm patterns and phrases before attempting to play them. Sheila Chandra, an English pop singer of Indian descent, made performances based on her singing these patterns. In Indian Classical music, the Tala of a composition is the rhythmic pattern over which the whole piece is structured.

Western music

In the 20th century, composers like Igor Stravinsky, Béla Bartók, Philip Glass, and Steve Reich wrote more rhythmically complex music using odd meters, and techniques such as phasing and additive rhythm. At the same time, modernists such as Olivier Messiaen and his pupils used increased complexity to disrupt the sense of a regular beat, leading eventually to the widespread use of irrational rhythms in New Complexity. This use may be explained by a comment of John Cage's where he notes that regular rhythms cause sounds to be heard as a group rather than individually; the irregular rhythms highlight the rapidly changing pitch relationships that would otherwise be subsumed into irrelevant rhythmic groupings. LaMonte Young also wrote music in which the sense of a regular beat is absent because the music consists only of long sustained tones (drones). In the 1930s, Henry Cowell wrote music involving multiple simultaneous periodic rhythms and collaborated with Léon Théremin to invent the Rhythmicon, the first electronic rhythm machine, in order to perform them. Similarly, Conlon Nancarrow wrote for the player piano.

Use of polyrhythms in American music is generally traced to the influence of black culture through Dixieland and Jazz styles. The effect of multiple soloing in these forms, often utilizing cross-rhythms comes directly from the underlying aesthetics of sub-Saharan African music. These complex rhythmic structures have been widely adopted in many current forms of western popular music.

18.3 Rhythm in Linguistics

In linguistics, rhythm or isochrony is one of the three aspects of prosody, along with stress and intonation. Languages can be categorized according to whether they are syllable-timed or stress-timed. Speakers of syllable-timed languages such as Spanish and Cantonese put roughly equal time on each syllable; in contrast, speakers of stressed-timed languages such as English and Mandarin Chinese put roughly equal time lags between stressed syllables, with the timing of the unstressed syllables in between them being adjusted to accommodate the stress timing.

Narmour describes three categories of prosodic rules which create rhythmic successions which are additive (same duration repeated), cumulative (short-long), or countercumulative (long-short). Cumulation is associated with closure or relaxation, countercumulation with openness or tension, while additive rhythms are open-ended and repetitive. Richard Middleton points out this method cannot account for syncopation and suggests the concept of transformation.

18.4 Right Hemisphere Damage

Rhythm in the speech of a person with right hemisphere damage: Applying the Pairwise Although several aspects of prosody have been studied in speakers with right hemisphere damage (RHD), rhythm remains largely uninvestigated. This paper compares the rhythm of an Australian English speaker with right hemisphere damage to that of a neurologically unimpaired individual using the pairwise variability index (PVI). The PVI allows for an acoustic characterisation of rhythm by comparing the duration of successive vocalic and intervocalic intervals. A sample of speech from a structured interview between a speech and language therapist and each participant was analysed, and it was hypothesised that there may be some rhythmic disturbance as previous research findings show difficulties in other areas of prosody for this population. Results show that the neurologically normal control uses a similar rhythm to that reported for British English (there are no previous studies available for Australian English), whilst the speaker with RHD produces speech with a less strongly stress-timed rhythm. This finding was statistically significant for the intervocalic intervals measured, and suggests that some aspects of prosody may be right lateralised for this

speaker. The findings are discussed in relation to previous findings of dysprosody in RHD populations, and in relation to syllable-timed speech of people with other neurological conditions.



Did u know? The writer is not advised to try consciously for special rhythmic effects. He ought, however, to learn to recognize rhythmic defects in his own prose as symptoms of poor or defective arrangement of sentences and sentence elements.

An area of interest for many researchers has been the production and comprehension of prosody by individuals with right hemisphere damage (RHD). The literature often states that the right hemisphere plays a crucial role in processing prosody and a general dysprosody has been suggested for individuals with RHD. Most previous studies have concentrated on stress and intonation with little attention paid to other aspects of prosody such as rhythm or intensity. The present study aims to take a step in the direction of an analysis of rhythm in speakers with RHD by applying an acoustic measure of speech rhythm. The paper begins with a summary of the mixed findings concerning prosody in speakers with RHD, and then approaches to the analysis of rhythm are discussed before the experimental work is presented.

Prosody in speakers with RHD

The impetus for the study of prosody in RHD populations comes from clinical observations that prosody is disrupted in these individuals. The disruption is often referred to as 'dysprosody' following Monrad-Krohn's (1947) term for a similar phenomenon in a patient with damage to the left frontal region of the brain.

However, the findings about the right hemisphere's role in prosody are mixed and often differ with respect to the function of prosody under study. Many researchers propose a binary division between linguistic and affective prosodic functions. Linguistic functions of prosody include: stress differences between otherwise identical words ('record (noun) and re`cord (verb)), the marking of syntactic boundaries (old men (.) and women were there), and the indication of the speaker's illocutionary act (question vs. statement). The affective, or paralinguistic functions of prosody inform the listener about the emotions and attitudes of the speaker.

The lateralisation of different prosodic functions has also been a focus of research. Baum and Pell summarise four different hypotheses for the lateralisation of prosody in the brain. The first hypothesis is that all functions of prosody are lateralised to the right, whilst the second says that only affective prosody is right lateralised whilst linguistic functions are associated with the left hemisphere. A third hypothesis is that there is no lateralisation, as the neural basis of prosody is subcortical, whilst the fourth states that individual prosodic cues can be independently lateralised.

The evidence for a strict lateralisation of prosody to the right hemisphere is equivocal (Baum and Pell, 1999, p. 592). The results of existing studies are mixed and seem to depend a great deal on whether the analysis undertaken is perceptual or acoustic, whether affective or linguistic prosody is tested and whether production or comprehension is the focus of the study. Additionally, few studies look at linguistic and affective prosody in the same participants. In conclusion to their review of the evidence for the neural bases of prosody, Baum and Pell (1999, p. 602) report only 'weak support of differential lateralization of prosodic cues as an index of their linguistic or affective communicative function in speech'.

Despite the large body of work on prosodic lateralisation, one aspect of prosody that has been little described in the literature on RHD is the production or perception of rhythm. Rhythm is studied less frequently than stress or intonation in both normal and clinical populations. This is likely to be because, for reasons explained in the next section, rhythm is difficult to define and measure. Although rhythm is little studied it in fact offers a different level of prosody for examination. Rhythm cannot be defined as having either a linguistic or affective function. Rather

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rhythm is a prosodic characteristic of a speaker's native language in much the same way as the phoneme inventory and the phonotactics are characteristic of the native language at a segmental level. Rhythm's phonological status therefore allows for the analysis of an aspect of prosody which has neither a linguistic or affective function, and it is interesting therefore to investigate if rhythm is compromised or spared in a speaker with RHD.

18.5 Defining and Measuring Rhythm

The definition of rhythm is somewhat nebulous, probably because rhythm works differently in different languages, and as described below, acoustic cues to rhythm have been difficult to locate. Trask however, defines rhythm as 'the perceptual pattern produced in speech by the occurrence at regular intervals of prominent elements'. The prominent elements that Trask refers to may be either stresses or syllables, and on this basis early descriptions of speech rhythm, such as that by Pike, distinguish two types of rhythm known as stress-timing and syllable-timing. Abercrombie takes this distinction one step further and states that all languages fall into one of these two categories. For example, British English and Dutch are classified as being stress-timed. In stress-timed languages, speakers seem to leave roughly equal durations between stressed syllables. This gives rise to feet (another unit of rhythm, usually defined as consisting of one stressed syllable followed by any number of unstressed syllables) of roughly equal duration, but individual syllables within the foot may vary greatly in duration. Syllable-timed languages, such as French and Spanish, on the other hand, tend to exhibit syllables which sound to be of roughly equal duration, but display less of a durational alternation between stressed and unstressed syllables.

The chief problem with these classical descriptions of rhythm is that they rest heavily on the impressionistic perception of the listener. Instrumental studies (such as those by Roach, 1982 and Dauer, 1983), by contrast, have consistently found that feet are not isochronous (equally timed) in so called stress-timed languages, and that syllables are not isochronous in syllable-timed languages. As a result, researchers' views of rhythm have changed in two fundamental ways. Firstly, most researchers, following Dauer, now see rhythm as a continuous variable. Instead of all languages being classified as stress- or syllable-timed, they are now believed to fall on a continuum between these two extremes. Secondly most authors now claim that languages exhibit only perceptual isochrony, whereby syllables or feet sound to be of equal duration to the listener without being equal acoustically. However, the basis of this perceptual isochrony still needs to be explained, even if the acoustic measures of syllable and foot duration are inadequate for the task.

In recent years, researchers have begun to use new measures to investigate the basis of perceptual isochrony. The two most developed of these proposals describe rhythm by using measures of the relative durations of vowels and consonants. One proposal by Ramus, Nespors and Mehler suggested the use of three measures: the standard deviation of vowel, and consonant durations, and the proportion of the total utterance comprising vowel durations. These measures were shown to be significantly different when applied to the perceptually and classically defined syllable- and stress-timed languages. The Pairwise Variability Index (PVI) popularised by Low, Grabe and Nolan makes use of a similar comparison to that of Ramus et al. Essentially the PVI compares the duration of successive vocalic and intervocalic durations. Using the PVI, Low et al. showed that Singapore English is more syllable-timed than British English, and Grabe and Low further demonstrated that the PVI gives significantly different results when applied to those languages classically described as syllable- or stress- timed.

These metrics of speech rhythm work on the assumption that rhythm arises from the phonological structure of a language. The classically stressed timed languages will show greater variety in vowel durations than syllable-timed languages because they have a greater degree of vowel reduction. Because unstressed words will exhibit vowel reduction, and stressed words will not, and because stressed and unstressed syllables tend to alternate in these languages, there should be a large difference between successive vowel durations. In addition stress-timed languages will

tend to allow more types of onsets (the consonants in a syllable before the vowel) and codas (the consonants in a syllable after the vowel), including complex onset and coda clusters, so will also show more intervocalic durational variability than perceptually syllable-timed languages.

One of the major differences between the measures proposed by Ramus et al. and Low et al. is their treatment of speech rate (see White and Mattys, in press, for a review). Ramus et al. build speech rate into their measure by asking speakers of different languages to read utterances of similar duration. Low et al., on the other hand, add a normalisation measure to their equations. Specifically this normalisation is applied to vocalic intervals as these are considered to be most affected by speech rate (Gay, 1978). Low et al. demonstrate that, of the two measures, the PVI is more robust at different speaking rates.

Purpose

This paper aims to investigate the little studied area of rhythm in an RHD patient by applying the PVI. As there are no PVI norms for Australian English the data from the patient with RHD will be compared to that of a neurologically normal control. It is hypothesised that there may be some disruption to rhythm in the speech of the RHD patient on the basis of studies which demonstrate deficits in other aspects of prosody for this population. However, the direction of any change, be it to a more syllable or stress-timed rhythm, is not clear. In addition, as rhythm is neither a linguistic or affective aspect of prosody, and because there is no clear evidence that all aspects of prosody are right lateralised, it is also possible that no effect will be found. This paper aims, therefore, to test whether there are any differences between the rhythm of a person with RHD and a neurologically normal control, and to see if any differences are in the direction of more syllable- or stress-timed rhythm.

Method

Participants

Participants were both males and native, monolingual speakers of Australian English. They had both lived all their lives in Western Australia. Participants were matched on educational levels with both participants having completed 12 years of education.

The recording of the control participant was collected in the participant's own home. He was 64 at the time of the recording. The recording of the RHD participant was collected while the participant was an inpatient in a rehabilitation hospital. He was aged 51 at the time of the recording. He had suffered a large right middle cerebral artery ischaemic stroke 5 months prior to the recording. Occupational therapy assessments at the time of the recording indicated that the participant had reduced spatial awareness, left side neglect, difficulties with sequencing and reduced attention. The participant was referred to the speech pathology department due to impaired prosody, inappropriate topic choice, impaired discourse structure and tangential speech. The participant did not have any history of, or present with any symptoms of, dysarthria. Initial assessments of prosody by the speech pathologist indicated that although the client's prosody sounded impaired, measures of intonation including pitch variation and mean pitch were within the normal range.

The task

The recordings used for this analysis were taken from a 30 minute structured conversation between a speech pathologist and the participant. The speech pathologist was not known previously to the participants. The conversation sample was collected for use in a larger study on the impact of right hemisphere damage on gesture and prosody. For the purpose of this investigation only the section of the discourse in which the participant was asked to describe an event that evoked a positive emotion was analysed. The recordings were digitised using the acoustic analysis program PRAAT 4.0 at a sampling rate of 11025Hz with 16bits of resolution.

Applying the PVI

The PVI works by firstly measuring the durations of vocalic and intervocalic intervals in a sample of speech. So, for example, in the phrase 'the elephant ran' the first intervocalic (consonantal)

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section consists of the single segment /ð/. The first vocalic element, however, consists of the vowel at the end of 'the' and the vowel at the start of 'elephant'. The pattern then alternates with one vowel and one consonant in each successive interval until the sequence of three consonants from the coda of 'elephant' and the onset of 'ran', which is treated as a single intervocalic interval. In essence the raw intervocalic PVI (rInt) compares the duration of each intervocalic interval to the duration of the next occurring intervocalic interval. The absolute difference, in milliseconds, between the members of each pair is added, and the resulting figure is divided by the number of pairs minus one. A normalised measure (nVoc) is used for vowels to take account of differences in speech rate as described above. This normalised measure is essentially the same as the raw calculation for intervocalic intervals except that the absolute difference between each pair is expressed as a proportion of the mean duration of that pair. These proportions are added and then the result is divided by the total number of pairs minus one. The resulting number is fractional so is multiplied by 100 for easier comparison with the non-normalised figure for intervocalic intervals. The equations for both the rInt PVI and nVoc PVI are given in the appendix.

For each participant 115 vocalic and 115 intervocalic intervals were measured (Grabe and Low used between 118 and 205 intervals for each language studied. These measurements were taken from around 90 seconds of speech in each case, which resulted in approximately fourteen hours of acoustic analysis. The acoustic analysis was undertaken by the first author with reference to the waveform and spectrogram using standard procedures for measuring duration (Fischer-Jørgensen and Hutters, 1981; Peterson and Lehiste, 1960). The original PVI measure by Low et al. and Grabe and Low was applied to read speech that had been recorded in a speech laboratory. Therefore, because data for the current paper was conversation data recorded in non-laboratory situations, it was necessary to make some decisions about how best to analyse the recorded material. Firstly, because the recordings are of structured conversation, there are a number of pauses. These pauses were not included in the analysis. When a speaker paused, the relevant segment's end point was estimated as closely as possible. The duration of that consonant was then compared to the next occurring intervocalic interval after the pause. Likewise, there is an occasional dysfluency. In most instances it was possible to divide even these dysfluencies into sequences of vowels and consonants whose durations are measured and treated in the same way as all the other durations. Also, because the signal to noise ratio was lower than for laboratory speech, the visual displays were sometimes difficult to interpret. In these cases more reliance was placed on listening in order to mark the interval boundaries.

Results

The results of the analysis show that the control participant had higher overall PVI scores for both vocalic and intervocalic measures than the speaker with RHD. The lower PVI values suggest initially that the speaker with RHD spoke with more syllable-timed rhythm.

Discussion

This paper has compared the rhythm of a speaker with RHD to that of a neurologically normal control using the pairwise variability index (PVI). The results show that the speaker with RHD spoke with a more syllable-timed rhythm than the control, and that this result is significant for the durations of intervocalic intervals.

18.6 Relationship of Control Participant's Results to Measures of British English

The control participant had high PVI values for both nVoc and rInt, which suggests an extremely stress-timed rhythm. Because this speaker is Australian, there is no other material available for comparison (although the collection of this data is planned by the current authors). However, it is enlightening to compare the results of the control participant to results available in the literature for British English.

In general, it seems that the Australian English of the control participant has a similar rhythm to British English. Halliday classified British and Australian speech as being more rhythmically regular than American or Canadian speech, and phonologically Australian English is much closer to Received Pronunciation (RP) than many other varieties of English. These similarities would, of course, be expected given the pattern of immigration from England to Australia in the late 1700s although there are of course many phonetic differences between Australian and British English which have developed over the intervening time. One particular difference between the two varieties occurs in intonation. Since the 1970s many speakers of Australian English have begun to produce statements that end in a high rising nuclear tone. By contrast, RP statements tend to end in a falling tone (although the Australian pattern is now used by many younger speakers of British English). This prosodic difference between the two varieties might have suggested there would also be a rhythmical difference. However, the rhythm of the control participant, who is a speaker of Australian English, appears to be highly stress-timed like the rhythm of British English. This is likely due to the shared phonological characteristics of the two languages (such as vowel reduction and onset and coda complexity) and we await the results of further speakers to see if this result can be generalised to Australian English as a whole.

Relationship of RHD Participant to the Control Participant and to Other PVI Measures

For the RHD speaker we can see that there is a more syllable-timed rhythm than that found for the control participant or speakers of British English. This more syllable-timed rhythm was perhaps, therefore, the underlying reason for the speech pathologist's perception of unnatural prosody in the speech of this client. The results show that the significant difference between the two speakers comes from the more regular intervocalic intervals used by the participant with right hemisphere damage. Although the RHD participant also appears to use more regular vocalic intervals, there is no significant difference when compared to the normal control participant. This may suggest that the patient with right hemisphere damage is avoiding complex consonant clusters. However, the large, albeit non significant differences found for vocalic intervals suggest that other factors are also at work, and further explorations with more controlled data are needed before a firm conclusion can be drawn.

Another important issue is the description of the current RHD speaker's rhythm as 'syllable-timed'. This description is probably best avoided for two reasons. Firstly, as discussed above, rhythm is now generally believed to be a gradient phenomenon rather than the strict dichotomy between stress- and syllable-timed languages proposed by Abercrombie. Indeed, in their classification of different languages, Grabe and Low point out that, although the nVoc PVI perhaps gives a categorical split, the rInt PVI gives a gradient distribution. The second difficulty comes when comparing the RHD speaker's PVI values to those for other languages. The rInt PVI of 52 is quite similar to those Grabe and Low found for the classically syllable-timed languages of French (50) and Spanish (58). However, the nVoc PVI of 61 can certainly not be described as syllable-timed, as French and Spanish have values of 44 and 30 respectively. Rather than describing the rhythm as syllable-timed, it seems most sensible to say that this speaker produces speech that is less strongly stress-timed than that of the control participant, or the British English speakers reported in the literature.

It is also interesting to consider how this finding relates to other findings of dysprosody in speakers with RHD. As discussed above, the evidence supporting lateralisation of prosody to the right hemisphere is equivocal. This is especially true for linguistic prosody, but there is perhaps some weak evidence for lateralisation of affective prosody to the right hemisphere. Nevertheless the general consensus of opinion is that some elements of, or cues to, prosody reside in the right hemisphere. As mentioned above, rhythm cannot be classified as either a linguistic or affective aspect of prosody. It is, in fact, more akin to the phonological inventory of a particular language and a deficit at this level suggests a deep-seated, albeit subtle impairment. The evidence presented

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here suggests that some element of rhythm production is based in the right hemisphere, although further studies, including those considering LHD patients are necessary to further strengthen this conclusion.

Relationship of RHD speaker's rhythm to that found in other neurological conditions

It is interesting to note that the speech of individuals with Foreign Accent Syndrome (FAS) and ataxic dysarthria have both been described as more syllable-timed than that of normal controls. Speakers with Foreign Accent Syndrome appear to speak with a foreign accent after a stroke. In the majority of cases damage is to the left hemisphere, and in these cases, prosody is the feature of speech most usually described as contributing towards the perceived foreign accent. In particular, rhythm is often described as being more syllable-timed when English speakers develop FAS. Dankovičová et al. summarise a number of features which may lead to the impression of syllable timing. These features include: more equal syllable durations, non reduction of unstressed vowels, insertion of vowels, misplacement of lexical stress and reduced intensity of stressed syllables. Interestingly, however, when Dankovičová et al. investigated the speech of a patient with FAS arising from RHD they found little prosodic disturbance, a point that will be returned to shortly.

Speakers with ataxic dysarthria have also been described as having a more syllable-timed rhythm on the basis of impressionistic analyses. Using an early forerunner of the PVI, Ackerman and Hertrich and Kent, found little evidence of syllable timing for this population. However, the metric used appears to be overly sensitive to the durations of individual syllables. By contrast Stuntebeck used the PVI and found lower values for a group of speakers with ataxic dysarthria than for a similar group of healthy control participants, thus supporting the perceptual impressions of syllable timing.

It is somewhat of a puzzle why three different neurological conditions should all lead to impairment in rhythm. Whilst the focus in this study is on RHD, the cases of FAS have usually involved LHD, and ataxic dysarthria is usually attributed to damage of the cerebellum. Furthermore the case of FAS in a person with RHD reported by Dankovičová et al. showed little prosodic disturbance of any kind. It is possible that these different findings demonstrate that rhythm cannot be strictly lateralised to one hemisphere, or, as many different factors may lead to syllable timing, that these different factors are differently lateralised. It is also interesting that the same type of disturbance, that is more syllable-timed rhythm, is found in each case. This may simply be because English is so strongly stress-timed that any disruption tends in the opposite direction. It would, therefore, be interesting to examine these neurological conditions in speakers of strongly syllable-timed languages to see if their rhythm becomes more stress-timed. The answers to these questions are beyond the scope of this paper and await further work to apply the PVI to different populations, and to clients with different native languages.

It is possible that speakers with ataxic dysarthria and FAS also have a 'less stress-timed' rather than a syllable timed rhythm per se, although further evidence is needed in the form of PVI measures compared to those of normal participants in several languages.

Issues in analysis

These results are interesting and suggest a number of conclusions about prosody production in speakers with RHD. However, they must be treated with sufficient caution for a number of reasons. Firstly, only one speaker and one control participant were analysed, and there is always the possibility that these speakers are not representative of their respective populations. However, the control participant's results fit well with those found for British English, and the speech of the speaker with RHD presents similarly to other brain damaged populations that have been associated with syllable-timing. Secondly, the nature of the speech task is somewhat uncontrolled which is rather different to previous applications of the PVI which have been conducted on carefully controlled speech. Although the speakers in the present study are asked the same questions they necessarily give different answers, meaning that the data analysed is not lexically identical.

However, in the previous studies of different languages the data was also, necessarily, lexically different for each speaker. Related to the nature of the task is the nature of the recording environment. The original PVI measures were applied to recordings made in optimal conditions, whereas the results reported in the current experiment were made in a clinic and a participant's home. This means that it was sometimes more difficult to use a visual signal to measure durations, and consequently more reliance was placed on listening. The nature of the recording environment and the limitations of the task are necessary consequences of working with clinical populations. However it is the authors' feeling that the results presented in this paper can be treated with confidence as the control participant's measures were so similar to those previously described for other varieties of English.

Self-Assessment

1. Choose the correct options:

- (i) Rhythm is made up of and silences.
- | | |
|-----------|------------------|
| (a) rules | (b) grammar |
| (c) sound | (d) all of these |
- (ii) The establishment of a basic beat requires the perception of a regular sequence of distinct short-duration
- | | |
|------------|-------------------|
| (a) rhythm | (b) pulses |
| (c) drum | (d) none of these |

18.7 Summary

- The results presented in this paper indicate that there is a deficit in the rhythm produced by a speaker with RHD, which leads to a less stress-timed rhythm than that of a normal control in respect of intervocalic intervals. This may suggest that some aspects of speech prosody are right lateralised for this speaker. The authors of this paper are currently undertaking a study with more subjects, and with a more controlled task and recording environment in order to ascertain how far this finding can be generalised.
- Rhythm may be generally defined as a "movement marked by the regulated succession of strong and weak elements, or of opposite or different conditions." This general meaning of regular recurrence or pattern in time may be applied to a wide variety of cyclical natural phenomena having a periodicity or frequency of anything from microseconds to millions of years.
- In the performance arts rhythm is the timing of events on a human scale; of musical sounds and silences, of the steps of a dance, or the meter of spoken language and poetry. Rhythm may also refer to visual presentation, as "timed movement through space." and a common language of pattern unites rhythm with geometry. In recent years, rhythm and meter have become an important area of research among music scholars. Recent work in these areas includes books by Maury Yeston, Fred Lerdahl and Ray Jackendoff, Jonathan Kramer, Christopher Hasty, Godfried Toussaint, William Rothstein, and Joel Lester.
- Rhythm is made up of sounds and silences. These sound and silences are put together to form a pattern of sounds which are repeated to create a rhythm. A rhythm has a steady beat, but it may also have different kinds of beats. Some beats may be stronger, longer, shorter or softer than others. In a single piece of music, a composer can use many different rhythms.

18.8 Key-Words

1. Rhythm and Parallelism : "Parallelism builds rhythm, and nonparallelism kills it. Imagine that Marc Antony had said: 'I came for the purpose of burying Caesar, not to praise him.' Doesn't exactly roll off the tongue. "Inattentive writers muck up lists badly, throwing imbalanced

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cadences together and leaving their sentences scrambling. The elements of a list should echo each other in length, number of syllables, and rhythm. 'A government of the people, by the people, for the people' works. 'A government of the people, that the people created, for the people' doesn't."

2. Rhythm and Meter : "Meter is what results when the natural rhythmical movements of colloquial speech are heightened, organized, and regulated so that pattern--which means repetition--emerges from the relative phonetic haphazard of ordinary utterance. Because it inhabits the physical form of the words themselves, meter is the most fundamental technique of order available to the poet."

18.9 Review Questions

1. What is meant by Prosody in speakers with RHD?
2. How will you measure rhythm in speech?
3. What is rhythm?
4. Discuss the relationship of control participant's results to measures of British English.

Answers: Self-Assessment

1. (i) (a) (ii) (b)

18.10 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 19: Discourse

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Objectives

After reading this Unit students will be able to:

- Understand Discourse.
- Define Discourse.
- Explain the Features and Functions of Discourse.

Introduction

Discourse analysis (DA), or discourse studies, is a general term for a number of approaches to analyzing written, vocal, or sign language use or any significant semiotic event. The objects of discourse analysis - discourse, writing, conversation, communicative event, etc. - are variously defined in terms of coherent sequences of sentences, propositions, speech acts, or turns-at-talk. Contrary to much of traditional linguistics, discourse analysts not only study language use 'beyond the sentence boundary', but also prefer to analyze 'naturally occurring' language use, and not invented examples. Text linguistics is related. The essential difference between discourse analysis and text linguistics is that it aims at revealing socio-psychological characteristics of a person/ persons rather than text structure.

Discourse analysis has been taken up in a variety of social science disciplines, including linguistics, sociology, anthropology, social work, cognitive psychology, social psychology, international relations, human geography, communication studies, and translation studies, each of which is subject to its own assumptions, dimensions of analysis, and methodologies.

Although Harris had mentioned the analysis of whole discourses, he had not worked out a comprehensive model, as of January, 1952. A linguist working for the American Bible Society, James A. Lauriault/Loriot, needed to find answers to some fundamental errors in translating Quechua, in the Cuzco area of Peru. He took Harris's idea, recorded all of the legends and, after going over the meaning and placement of each word with a native speaker of Quechua, was able to form logical, mathematical rules that transcended the simple sentence structure. He then applied the process to another language of Eastern Peru, Shipibo. He taught the theory in Norman, Oklahoma, in the summers of 1956 and 1957 and entered the University of Pennsylvania in the

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interim year. He tried to publish a paper Shipibo Paragraph Structure, but it was delayed until 1970. In the meantime, Dr. Kenneth Lee Pike, a professor at University of Michigan, Ann Arbor, taught the theory, and one of his students, Robert E. Longacre, was able to disseminate it in a dissertation.

Harris's methodology was developed into a system for the computer-aided analysis of natural language by a team led by Naomi Sager at NYU, which has been applied to a number of sublanguage domains, most notably to medical informatics. The software for the Medical Language Processor is publicly available on SourceForge.

In the late 1960s and 1970s, and without reference to this prior work, a variety of other approaches to a new cross-discipline of DA began to develop in most of the humanities and social sciences concurrently with, and related to, other disciplines, such as semiotics, psycholinguistics, sociolinguistics, and pragmatics. Many of these approaches, especially those influenced by the social sciences, favor a more dynamic study of oral talk-in-interaction.

Mention must also be made of the term "Conversational analysis", which was influenced by the Sociologist Harold Garfinkel who is the founder of Ethnomethodology.

In Europe, Michel Foucault became one of the key theorists of the subject, especially of discourse, and wrote *The Archaeology of Knowledge*. In this context, the term 'discourse' is no longer referred to formal linguistic aspects, but to institutionalized patterns of knowledge, that become manifest in disciplinary structures and operate by the connection of knowledge and power. Since the 1970s, Foucault's works have had an increasing impact especially on discourse analysis in the social sciences. Thus, in modern European social sciences, one can find a wide range of different approaches working with Foucault's definition of discourse and his theoretical concepts. Apart from the original context in France, there is, at least since 2005, a broad discussion on socio-scientific discourse analysis in Germany. Here, for example, the sociologist Reiner Keller developed his widely recognized 'Sociology of Knowledge Approach to Discourse (SKAD)'. Following the sociology of knowledge by Peter L. Berger und Thomas Luckmann, Keller argues, that our sense of reality in everyday life and thus the meaning of every objects, actions and events are the product of a permanent, routinized interaction. In this context, SKAD has been developed as a scientific perspective that is able to understand the processes of 'The Social Construction of Reality' on all levels of social life by combining Michel Foucaults theories of discourse and power with the theory of knowledge by Berger/Luckmann. Whereas the latter primarily focus on the constitution and stabilisation of knowledge on the level of interaction, Foucaults perspective concentrates on institutional contexts of the production and integration of knowledge, where the subject mainly appears to be determined by knowledge and power. Therefore, the 'Sociology of Knowledge Approach to Discourse' can also be seen as an approach to deal with the vividly discussed micro-macro problem in sociology.

19.1 Linguistic Discourse Analysis

The following are some of the specific theoretical perspectives and analytical approaches used in linguistic discourse analysis. Although these approaches emphasize different aspects of language use, they all view language as social interaction, and are concerned with the social contexts in which discourse is embedded.

Often a distinction is made between 'local' structures of discourse (such as relations among sentences, propositions, and turns) and 'global' structures, such as overall topics and the schematic organization of discourses and conversations. For instance, many types of discourse begin with some kind of global 'summary', in titles, headlines, leads, abstracts, and so on.

A problem for the discourse analyst is to decide when a particular feature is relevant to the specification is required. Are there general principles which will determine the relevance or nature of the specification.

The practical part of this paper describes the study conducted on a group of Polish learners of English. The focus of this component was brought to finding lexical chains in texts - a type of

exercise which is not to be found in ordinary coursebooks. That variety of tasks was deliberately chosen so as to expand the knowledge of discursive devices to which most teachers pay close attention, namely linking words and phrases, by an additional set of useful tools. Moreover, in spite of the fact that the study was to check the perception and implementation of lexical chains in written texts, it might also be found useful in understanding long speeches, which makes them even more useful for learners. The assignments, together with the key of answers, which were used in the study are included in the appendices section

19.2 Definition of Discourse

Since its introduction to modern science the term 'discourse' has taken various, sometimes very broad, meanings. In order to specify which of the numerous senses is analyzed in the following dissertation it has to be defined. Originally the word 'discourse' comes from Latin 'discursus' which denoted 'conversation, speech'. Thus understood, however, discourse refers to too wide an area of human life, therefore only discourse from the vantage point of linguistics, and especially applied linguistics, is explained here.

Linguistic had focused its analysis on sentence until the beginning of decade 1950s. Then in 1952, a famous linguist in linguistic discipline, Harris published an article entitled "Discourse Analysis" in Language magazine. He expressed a new opinion stating that the most complete unit of language is discourse, not a sentence. That opinion had brought linguist started to analyze language basic on discourse.

Discourse analysis is not only widely recognized as one of the vastest, but also the least defined areas in linguistics. One reason for this statement is that our understanding to discourse analysis is based on scholar from a number of academic disciplines that are actually very different from one to another. However, as the least defined areas in linguistics, the study of discourse analysis is supposed to be the most important study of language.

According to Schiffrin, there are three definitions of discourse which are influenced by different paradigms where they reflect to different assumption between formalist, functionalist, and formalist-functionalist dichotomy. Discourse is often defined in two ways: a particular unit of language (above the sentence), and a particular focus (on language use). These two definitions of discourse reflect the difference between formalis and functionalist paradigm. And Schiffrin also suggests two prominent definitions, namely as a unit of language larger than a sentence and as language use.

1. The first is the classic definition of discourse as derived from formalist (in Hyme's 1974b terms, "structural") assumptions is that discourse as a unit above the sentence is not just a definiton of discourse, but a way of leading to a particular type of analysis. Although this definition and analysis to which it leads can be appealing, it also raises some problems. First, the view of discourse as a unit above the sentence allows one to focus quite easily upon how syntactic properties of clauses or sentences contribute to higher level structures of a text, e.g. specific properties of sentences, such as word order to typotactic versus paratactic coordination, can be related to the properties of texts. Second, structural view of discourse places discourse in a hierachy of languagestructure thus developing yhe view that one can describe in a unitary way that continues unimpeded from morpheme to clause in sentence to discourse. Concerning with the definition of discourse as language above the sentence, many contemporary structural analysis of discourse view the sentence as the unit of which discourse is comprised. One immediate problem ia that units in which people speak do not always seem like sentence.
2. The second definition to be considered replaces what is basically a formalist trust with a functionalist trust discourse is language use. Schiffrin considers a functionalist view: "The study of discourse is the study of any aspect of language use." And another statement is Brown and Yule's "the analysis of discourse, is necessarily, the analysis of language use. As such, it can not be restricted the description of linguistics forms independent of the purposes or functions which these forms are designed to serve in human affairs."

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A definition of discourse as language use is consistent with functionalism in general discourse is viewed as a system (a socially and culturally organized way of speaking) through which particular functions are realized. This functional analysis focuses on how people use language to different ends; they are typically concerned less with the way people intend what they want to say to serve referential meanings, and to move with the unintended social culture, and expressive meanings stemming from how their utterances are situated in context.

3. The third definition of discourse attempts to bridge the formalist-functional dichotomy discourse is utterances. This view captures the idea that discourse is above (larger than) other units of language; however, by saying that utterance (rather than sentence) is a unit of which discourse is comprised, we can suggest that discourse arises not as a collection of decontextualized units of language structure but of inherently contextualized units of language use. And the main problem with this definition is that the notion of "utterances" is not really all that clear. For many linguists, utterances are contextualized sentences, i.e. they are context bound (as well as text bound). Thus, defining discourse as utterances seems to balance both functional emphases on how language is used in context and the formal emphasis on extended pattern.

In another side three definitions of discourse above which are influenced by the differences in paradigm, there are still some linguists who give other definition of discourse. Few of them are as follows:

- (i) Henry Guntur Tarigan states that: "wacana adalah satuan bahasa yang terlengkap dan tertinggi atau terbesar di atas kalimat atau klausa dengan kohesi dan koherensi yang berkesinambungan yang mempunyai awal dan akhir yang nyata disampaikan secara lisan dan tulisan." (Discourse is one complete and highest language unit above sentence and clause with continuous cohesion and coherence, which have the reality beginning and ending, communicate as verbal and writing.)
- (ii) Stubbs explains that, "discourse analysis refers to the attempts to study the organization of language above the sentence or above the clause and therefore to study larger linguistic unit such as conversational exchanges or written texts."
- (iii) Edmonson in Tarigan says that discourse is a structural event manifested in linguistic behavior or others whereas a text is an arrangement of structural linguistic expressions which forms a unity.
- (iv) Linde in Tarigan says that discourse is a stretch of continuous beginning and ending, and also a number of internal structure.
- (v) Carlson in Tarigan says, "Discourse is a stretch of continuous utterances (a sequence of individual sentences). So, it does not only consist of utterances or sentences which are grammatically well-formed."

From definition about discourse analysis above, the writer sees some similarities and differences on concept of the linguists. For me, there are essentially some important points that the writer gets from all those definitions, i.e. discourse is: (1) linguistic unit; (2) the most complete or the highest; (3) above the sentence or above the clause; (4) well-tied or coherent; (5) sense of unity or cohesion; (6) continuity; (7) written and spoken; and (8) clear beginning and ending.

There is no agreement among linguists as to the use of the term discourse in that some use it in reference to texts, while others claim it denotes speech which is for instance illustrated by the following definition: "Discourse: a continuous stretch of (especially spoken) language larger than a sentence, often constituting a coherent unit such as a sermon, argument, joke, or narrative" (Crystal). On the other hand Dakowska, being aware of differences between kinds of discourses indicates the unity of communicative intentions as a vital element of each of them. Consequently she suggests using terms 'text' and 'discourse' almost interchangeably betokening the former refers to the linguistic product, while the latter implies the entire dynamics of the processes (Dakowska). According to Cook novels, as well as short conversations or groans might be equally rightfully named discourses.

Seven criteria which have to be fulfilled to qualify either a written or a spoken text as a discourse have been suggested by Beaugrande. These include:

- Cohesion - grammatical relationship between parts of a sentence essential for its interpretation;
- Coherence - the order of statements relates one another by sense;
- Intentionality - the message has to be conveyed deliberately and consciously;
- Acceptability - indicates that the communicative product needs to be satisfactory in that the audience approves it;
- Informativeness - some new information has to be included in the discourse;
- Situationality - circumstances in which the remark is made are important;
- Intertextuality - reference to the world outside the text or the interpreters' schemata;

Nowadays, however, not all of the above mentioned criteria are perceived as equally important in discourse studies, therefore some of them are valid only in certain methods of the research.

19.3 Features of Discourse

Since it is not easy to unambiguously clarify what a discourse is it seems reasonable to describe features which are mutual to all its kinds. To do it thoroughly Saussurean concepts of *langue* and *parole* are of use. Ferdinand de Saussure divided the broad meaning of language into *langue*, which is understood as a system that enables people to speak as they do, and *parole* - a particular set of produced statements. Following this division discourse relates more to *parole*, for it always occurs in time and is internally characterized by successively developing expressions in which the meaning of the latter is influenced by the former, while *langue* is abstract. To list some additional traits: discourse is always produced by somebody whose identity, as well as the identity of the interpreter, is significant for the proper understanding of the message. On the other hand *langue* is impersonal that is to say more universal, due to society. Furthermore, discourse always happens in either physical, or linguistic context and within a meaningful fixed time, whereas *langue* does not refer to anything. Consequently, only discourse may convey messages thanks to *langue* which is its framework.

19.4 The Functions of Discourse Analysis

As the highest unit of language above the sentences or the clause is discourse. It has the main functions or targets just like the function of language, that is to transmit information in social communication. So the study of discourse analysis is to lead the language users to understand thoroughly about the discourse and also are qualified to produce a well-formed discourse. It is important that the recipient gets the information correctly. For instance, when the doctor tells a nurse how to administer medicine to the patients, a policeman gives direction to the travelers, or a salesman explains the products to the buyers and so on. In each case, it matters that the speaker or writer should make what he/she says writes clear by. Every speaker or writer is expecting that his/her utterances or written text will be understood and appreciated by the recipients. In this situation, of course, the speaker or the writer will try to find the best way to make all events easily reported or uttered. So discourse is an appropriate unit for this purpose. Finally, it can be insisted that the function of discourse is defined as to organize a larger idea of a writer or a speaker (that the sentence has failed to do) and to arrange that the idea into a coherent state so that the recipients will easily comprehend what the writer or speaker means. That is why, as the consequence, the goal of language will be obtained. So, the main function of discourse is as the best way to convey information in the terms of communication. But, however, the participants, either the speaker (writer) or hearer (reader) should certainly understand thoroughly about the discourse and its structure or organization.

19.5 Types of Discourse

Not only is discourse difficult to define, but it is also not easy to make a clear cut division of discourse as such. Therefore, depending on the form linguists distinguish various kinds of

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communicative products. A type of discourse might be characterized as a class of either written or spoken text, which is frequently casually specified, recognition of which aids its perception, and consequently production of potential response. One of such divisions, known as the Organon model, distinguishes three types of discourse depending of the aspect of language emphasized in the text. If the relation to the context is prevailing, it conveys some knowledge.

Thus it is an informative type of discourse. When the stress is on a symptom aspect the fulfilled function is expression, as a result the discourse type is narrative. Last but not least in this division is argumentative discourse which is characterized by the accent on the signal aspect.

This distinction due to its suitability for written communicative products more than for spoken ones, faced constructive criticism whose accurate observation portrayed that there are more functions performed. Consequently there ought to be more types of discourse, not to mention the fact that these often mix and overlap. Thorough examination of the matter was conducted, thus leading to the emergence of a new, more detailed classification of kinds of spoken texts.

The analysis of oral communicative products was the domain of Steger, who examined features of various situations and in his categorization divided discourse into six types: presentation, message, report, public debate, conversation and interview. The criteria of this division include such factors as presence, or absence of interaction, number of speakers and their relation to each other (their rights, or as Steger names it 'rank'), flexibility of topic along with selection and attitude of interlocutors towards the subject matter.

However, it is worth mentioning that oral discourse might alter its character, for instance in the case of presenting a lecture when students start asking questions the type changes to interview, or even a conversation. Using this classification it is possible to anticipate the role of partakers as well as goals of particular acts of communication.

The above mentioned typologies do not exhaust the possible division of discourse types, yet, nowadays endeavor to create a classification that would embrace all potential kinds is being made. Also, a shift of interest in this field might be noticed, presently resulting in focus on similarities and differences between written and spoken communication.

Written and spoken discourse

Apart from obvious differences between speech and writing like the fact that writing includes some medium which keeps record of the conveyed message while speech involves only air, there are certain dissimilarities that are less apparent. Speech develops in time in that the speaker says with speed that is suitable for him, even if it may not be appropriate for the listener and though a request for repetition is possible, it is difficult to imagine a conversation in which every sentence is to be rephrased. Moreover, talking might be spontaneous which results in mistakes, repetition, sometimes less coherent sentences where even grunts, stutters or pauses might be meaningful. The speaker usually knows the listener, or listeners, or he is at least aware of the fact that he is being listened to, which enables him to adjust the register. As interlocutors are most often in face-to-face encounters (unless using a phone) they take advantage of extralinguistic signals as grimaces, gesticulation, expressions such as 'here', 'now', or 'this' are used. Employment of nonsense vocabulary, slang and contracted forms (we're, you've) is another feature of oral discourse. Among other significant features of speech there are rhythm, intonation, speed of uttering and, what is more important, inability to conceal mistakes made while speaking.

In contrast, writing develops in space in that it needs a means to carry the information. The author of the text does not often know who is going to read the text, as a result he cannot adjust to readers' specific expectations. The writer is frequently able to consider the content of his work for almost unlimited period of time which makes it more coherent, having complex syntax. What is more, the reader might not instantly respond to the text, ask for clarification, hence neat message organization, division to paragraphs, layout are of vital importance to make comprehension easier. Additionally, owing to the lack of context expressions such as 'now' or 'here' are omitted, since they would be ambiguous as texts might be read at different times and places. One other feature

typical of writing, but never of oral discourse, is the organization of tables, formulas, or charts which can be portrayed only in written form.

Naturally, this division into two ways of producing discourse is quite straightforward, yet, it is possible to combine the two like, for example, in the case of a lesson, when a teacher explains something writing on the blackboard, or when a speaker prepares detailed notes to be read out during his speech. Moreover, some of the foregoing features are not so explicit in the event of sophisticated, formal speech or a friendly letter.

- Discourse expressed formally and informally.

The difference in construction and reception of language was the basis of its conventional distinction into speaking and writing. Nevertheless, when the structure of discourse is taken into consideration more essential division into formal and informal communicative products gains importance. Formal discourse is more strict in that it requires the use of passive voice, lack of contracted forms together with impersonality, complex sentence structure and, in the case of the English language, vocabulary derived from Latin. That is why formal spoken language has many features very similar to written texts, particularly absence of vernacular vocabulary and slang, as well as the employment of rhetorical devices to make literary-like impact on the listener.

Informal discourse, on the other hand, makes use of active voice mainly, with personal pronouns and verbs which show feelings such as 'I think', 'we believe'. In addition, contractions are frequent in informal discourse, no matter if it is written or spoken. Consequently it may be said that informal communicative products are casual and loose, while formal ones are more solemn and governed by strict rules as they are meant to be used in official and serious circumstances.

The relation of the producer of the message and its receiver, the amount of addressees and factors such as public or private occasion are the most important features influencing selecting either formal or informal language. Therefore, it is not unreasonable to assume that the contemporary learner, who may easily travel and use his linguistic skills outside class, will encounter mainly informal discourse, which due to its flexibility and unpredictability might be the most difficult to comprehend. Accordingly, it seems rational to teach all varieties of language relying on authentic oral and written texts.

19.6 Discourse Analysis—Its Origins and Development

Discourse analysis is a primarily linguistic study examining the use of language by its native population whose major concern is investigating language functions along with its forms, produced both orally and in writing. Moreover, identification of linguistic qualities of various genres, vital for their recognition and interpretation, together with cultural and social aspects which support its comprehension, is the domain of discourse analysis. To put it in another way, the branch of applied linguistics dealing with the examination of discourse attempts to find patterns in communicative products as well as and their correlation with the circumstances in which they occur, which are not explainable at the grammatical level.

Starting point of discourse analysis

The first modern linguist who commenced the study of relation of sentences and coined the name 'discourse analysis', which afterwards denoted a branch of applied linguistics, was Zellig Harris. Originally, however, it was not to be treated as a separate branch of study - Harris proposed extension of grammatical examination which reminded syntactic investigations.

The emergence of this study is a result of not only linguistic research, but also of researchers engaged in other fields of inquiry, particularly sociology, psychology, anthropology and psychotherapy. In 1960s and 1970s other scholars, that is philosophers of language or those dealing with pragmatics enormously influenced the development of this study as well. Among other contributors to this field the Prague School of Linguists, whose focusing on organization of information in communicative products indicated the connection of grammar and discourse, along with text grammarians are worth mentioning.

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A significant contribution to the evolution of discourse analysis has been made by British and American scholars. In Britain the examination of discourse turned towards the study of the social functions of language. Research conveyed at the University of Birmingham fruited in creating a thorough account of communication in various situations such as debates, interviews, doctor-patient relations, paying close attention to the intonation of people participating in talks as well as manners particular to circumstances. Analysis of the factors essential for succession of decently made communication products on the grounds of structural-linguistic criteria was another concern of British scholars. Americans, on the other hand, focused on examining small communities of people and their discourse in genuine circumstances. Apart from that, they concentrated on conversation analysis inspecting narratives in addition to talks and the behavior of speakers as well as patterns repeating in given situations. Division and specification of types of discourse along with social limitations of politeness and thorough description of face saving acts in speech is also American scholars' contribution.

- Sphere of interest of discourse analysts.

The range of inquiry of discourse analysis not only covers linguistic issues, but is also concerned with other matters, such as: enabling computers to comprehend and produce intelligible texts, thus contributing to progress in the study of Artificial Intelligence. Out of these investigations a very important concept of schemata emerged. It might be defined as prior knowledge of typical situations which enables people to understand the underlying meaning of words in a given text. This mental framework is thought to be shared by a language community and to be activated by key words or context in order for people to understand the message. To implement schemata to a computer, however, is yet impossible.

Discourse analysts carefully scrutinize universal circumstances of the occurrence of communicative products, particularly within state institutions. Numerous attempts to minimize misunderstandings between bureaucrats and citizens were made, resulting in user-friendly design of documents. The world of politics and features of its peculiar communicative products are also of concern to discourse analysts. Having carefully investigated that area of human activity scholars depicted it as characterized by frequent occurrence of face saving acts and euphemisms. One other sphere of life of particular interest to applied linguists is the judicature and its language which is incomprehensible to most common citizens, especially due to pages-long sentences, as well as peculiar terminology. Moreover, educational institutions, classroom language and the language that ought to be taught to enable learners to successfully comprehend both oral and written texts, as well as participate in real life conversations and produce native-like communicative products is the domain of discourse analysis. Last but not least, influence of gender on language production and perception is also examined.

Spoken language analysis

The examination of oral discourse is mainly the domain of linguists gathered at the University of Birmingham, who at first concentrated on the language used during teacher - learner communication, afterwards altering their sphere of interest to more general issues. However, patterns of producing speech characteristic of communities, or members of various social classes within one population were also of ethnomethodologists' interest. A result of such inquiries was discovering how turn taking differs from culture to culture as well as how standards of politeness vary. In addition, manners of beginning discussions on new topics were described.

What is more, it was said that certain characteristics are common to all societies, for instance, indicating the end of thought or end of utterance. The words that are to point the beginning or the closing stages of a phrase are called 'frames'. McCarthy claims that it is thanks to them that people know when they can take their turn to speak in a conversation. However, in spite of the fact that frames can be noticed in every society, their use might differ, which is why knowledge of patterns of their usage may be essential for conducting a fluent and natural dialogue with a native speaker. Moreover, these differences are not only characteristic of cultures, but also of circumstances in which the conversation occurs, and are also dependent on the rights (or 'rank') of the participants.

Apart from that, it was pointed out that some utterances are invariably interrelated, which can enable teachers of foreign languages to prepare learners adequately to react as a native speaker would. Among the phrases whose successors are easy to anticipate there are for instance: greeting, where the response is also greeting; apology with the response in the form of acceptance or informing - and acknowledging as a response. Such pairs of statements are known as adjacency pairs. While the function of the reply is frequently determined by the former expression its very form is not, as it depends on circumstances in which the conversation occurs. Thus, in a dialogue between two friends refusal to provide help might look like that: no way! I ain't gonna do that!, but when mother asks her son to do something the refusing reply is more likely to take different form: I'm afraid I can't do that right now, can you wait 5 minutes? Frequently used phrases, such as "I'm afraid", known as softeners, are engaged when people want to sound more respectful. Learners of a foreign language should be aware of such linguistic devices if they want to be skillful speakers.

Written texts analysis

Since the examination of written language is easier to conduct than the scrutiny of oral texts, in that more data is available in different genres, produced by people from different backgrounds as well as with disparate purposes, it is more developed and of interest not only to linguists but also language teachers and literary scholars. Each of them, however, approaches this study in a different way, reaching diverse conclusions, therefore only notions that are mutual for them and especially those significant for language methodology are accounted for here. What is worth mentioning is the fact that in that type of analysis scholars do not evaluate the content in terms of literary qualities, or grammatical appropriateness, but how readers can infer the message that the author intended to convey.

Apart from differences between written and spoken language described beforehand it is obviously possible to find various types and classes of discourse depending on their purpose. Written texts differ from one another not only in genre and function, but also in their structure and form, which is of primary importance to language teachers, as the knowledge of arrangement and variety of writing influences readers' understanding, memory of messages included in the discourse, as well as the speed of perception. Moreover, written texts analysis provides teachers with systematic knowledge of the ways of describing texts, thanks to which they can make their students aware of characteristic features of discourse to which the learners should pay particularly close attention, such as cohesion and coherence.

One of the major concerns of written discourse analysts is the relation of neighboring sentences and, in particular, factors attesting to the fact that a given text is more than only the sum of its components. It is only with written language analysis that certain features of communicative products started to be satisfactorily described, despite the fact that they were present also in speech, like for instance the use of 'that' to refer to a previous phrase, or clause. As mentioned before written language is more integrated than the spoken one which is achieved by more frequent use of some cohesive devices which apart from linking clauses or sentences are also used to emphasize notions that are of particular importance to the author and enable the reader to process the chosen information at the same time omitting needless sections.

Links within discourse

Links in discourse studies are divided into two groups: formal - which refer to facts that are present in the analyzed text, and contextual - referring to the outside world, the knowledge (or schemata) which is not included in the communicative product itself. Since it is difficult to describe the processing of contextual links without referring to particular psychological inquiries, therefore, this section is devoted to representation of formal links.

By and large five types of cohesive devices are distinguished, some of which might be subdivided:

- Substitution: in order to avoid repeating the same word several times in one paragraph it is replaced, most often by one, do or so. So and do in its all forms might also substitute whole phrases or clauses.

Notes

- Ellipsis: it is very similar to substitution, however, it replaces a phrase by a gap. In other words, it is omission of noun, verb, or a clause on the assumption that it is understood from the linguistic context.
- Reference: the use of words which do not have meanings of their own, such as pronouns and articles. To infer their meaning the reader has to refer them to something else that appears in the text (Tom: "How do you like my new Mercedes Vito?" - Marry: "It is a nice van, which I'm also thinking of buying").
- Conjunction: specifies the relationship between clauses, or sentences. Most frequent relations of sentences are: addition (and, moreover e.g. "Moreover, the chocolate fountains are not just regular fountains, they more like rivers full of chocolate and sweets."), temporality (afterwards, next e.g. "He bought her perfume at a local perfume shop and afterwards moved toward a jewelry store.") and causality (because, since).
- Lexical cohesion: denotes links between words which carry meaning: verbs, nouns, adjectives. Two types of lexical cohesion are differentiated, namely: reiteration and collocation. Reiteration adopts various forms, particularly synonymy, repetition, hyponymy or antonymy (Collocation is the way in which certain words occur together, which is why it is easy to make out what will follow the first item).

It is clear from the analysis of written language that when people produce discourse they focus not only on the correctness of a single sentence, but also on the general outcome of their production. That is why the approach to teaching a foreign language which concentrates on creating grammatically correct sentences, yet does not pay sufficient attention to regularities on more global level of discourse, might not be the best one.

19.7 The Significance of Discourse Analysis in Language Teaching and Learning

To attain a good command of a foreign language learners should either be exposed to it in genuine circumstances and with natural frequency, or painstakingly study lexis and syntax assuming that students have some contact with natural input. Classroom discourse seems to be the best way of systematizing the linguistic code that learners are to acquire. The greatest opportunity to store, develop and use the knowledge about the target language is arisen by exposure to authentic discourse in the target language provided by the teacher.

Language is not only the aim of education as it is in the case of teaching English to Polish students, but also the means of schooling by the use of mother tongue. Having realized that discourse analysts attempted to describe the role and importance of language in both contexts simultaneously paying much attention to possible improvement to be made in these fields.

It has also been settled that what is essential to be successful in language learning is interaction, in both written and spoken form. In addition, students' failures in communication which result in negotiation of meaning, requests for explanation or reorganization of message contribute to language acquisition. One of the major concerns of discourse analysts has been the manner in which students ought to be involved in the learning process, how to control turn-taking, provide feedback as well as how to teach different skills most effectively on the grounds of discourse analysis' offerings.

Application of Discourse Analysis to Teaching Grammar

There are a number of questions posed by discourse analysts with reference to grammar and grammar teaching. In particular, they are interested in its significance for producing comprehensible communicative products, realization of grammar items in different languages, their frequency of occurrence in speech and writing which is to enable teaching more natural usage of the target language, as well as learners' native tongue.

While it is possible to use a foreign language being unaware or vaguely aware of its grammatical system, educated speakers cannot allow themselves to make even honest mistakes, and the more

sophisticated the linguistic output is to be the more thorough knowledge of grammar gains importance. Moreover, it is essential not only for producing discourse, but also for their perception and comprehension, as many texts take advantage of cohesive devices which contribute to the unity of texts, but might disturb their understanding by a speaker who is not aware of their occurrence.

Anaphoric reference, which is frequent in many oral and written texts, deserves attention due to problems that it may cause to learners at various levels. It is especially important at an early stage of learning a foreign language when learners fail to follow overall meaning turning much attention to decoding information in a given clause or sentence. Discourse analysts have analyzed schematically occurring items of texts and how learners from different backgrounds acquire them and later on produce. Thus, it is said that Japanese students fail to distinguish the difference between he and she, while Spanish pupils have problems with using his and your. Teachers, being aware of possible difficulties in teaching some aspects of grammar, should pay particular attention to them during the introduction of the new material to prevent making mistakes and errors.

The most prominent role in producing sophisticated discourse, and therefore one that requires much attention on the part of teachers and learners is that of words and phrases which signal internal relation of sections of discourse, namely conjunctions. McCarthy claims that there are more than forty conjunctive words and phrases, which might be difficult to teach. Moreover, when it comes to the spoken form of language, where *and*, *but*, *so*, *then* are most frequent, they may take more than one meaning, which is particularly true for *and*. Additionally, they not only contribute to the cohesion of the text, but are also used when a participant of a conversation takes his turn to speak to link his utterance to what has been said before.

The foregoing notions that words crucial for proper understanding of discourse, apart from their lexical meaning, are also significant for producing natural discourse in many situations support the belief that they should be pondered on by both teachers and students. Furthermore, it is advisable to provide learners with contexts which would exemplify how native users of language take advantage of anaphoric references, ellipses, articles and other grammar related elements of language which, if not crucial, are at least particularly useful for proficient communication.

Application of Discourse Analysis to Teaching Vocabulary

What is probably most striking to learners of a foreign language is the quantity of vocabulary used daily and the amount of time that they will have to spend memorizing lexical items. Lexis may frequently cause major problems to students, because unlike grammar it is an open-ended system to which new items are continuously added. That is why it requires close attention and, frequently, explanation on the part of the teacher, as well as patience on the part of the student.

Scholars have conducted in-depth research into techniques employed by foreign language learners concerning vocabulary memorization to make it easier for students to improve their management of lexis. The conclusion was drawn that it is most profitable to teach new terminology paying close attention to context and co-text that new vocabulary appears in which is especially helpful in teaching and learning aspects such as formality and register. Discourse analysts describe co-text as the phrases that surround a given word, whereas, context is understood as the place in which the communicative product was formed.

From studies conducted by discourse analysts emerged an important idea of lexical chains present in all consistent texts. Such a chain is thought to be a series of related words which, referring to the same thing, contribute to the unity of a communicative product and make its perception relatively easy. Additionally, they provide a semantic context which is useful for understanding, or inferring the meaning of words, notions and sentences. Links of a chain are not usually limited to one sentence, as they may connect pairs of words that are next to one another, as well as stretch to several sentences or a whole text. The relation of words in a given sequence might be that of reiteration or collocation, however, analysts are reluctant to denote collocation as a fully reliable element of lexical cohesion as it refers only to the likelihood of occurrence of some lexical items. Nevertheless, it is undeniably helpful to know collocations as they might assist in understanding of communicative products and producing native-like discourse.

Notes

Since lexical chains are present in every type of discourse it is advisable to familiarize learners with the way they function in, not merely because they are there, but to improve students' perception and production of expressive discourse. Reiteration is simply a repetition of a word later in the text, or the use of synonymy, but what might require paying particularly close attention in classroom situation is hyponymy. While synonymy is relatively easy to master simply by learning new vocabulary dividing new words into groups with similar meaning, or using thesauri, hyponymy and superordination are more abstract and it appears that they require tutelage. Hyponym is a particular case of a more general word, in other words a hyponym belongs to a subcategory of a superordinate with narrower meaning, which is best illustrated by an example: Brazil, with her two-crop economy, was even more severely hit by the Depression than other Latin American states and the country was on the verge of complete collapse. In this sentence the word Brazil is a hyponym of the word country - its superordinate. Thus, it should not be difficult to observe the difference between synonymy and hyponymy: while Poland, Germany and France are all hyponyms of the word country, they are not synonymous. Discourse analysts imply that authors of communicative products deliberately vary discursive devices of this type in order to bring the most important ideas to the fore, which in case of English with its wide array of vocabulary is a very frequent phenomenon.

One other significant contribution made by discourse analysts for the use of vocabulary is noticing the omnipresence and miscellaneous manners of expressing modality. Contrary to popular belief that it is conveyed mainly by use of modal verbs it has been proved that in natural discourse it is even more frequently communicated by words and phrases which may not be included in the category of modal verbs, yet, carry modal meaning. Lexical items of modality inform the participant of discourse not only about the attitude of the author to the subject matter in question (phrases such as I believe, think, assume), but they also give information about commitment, assertion, tentativeness.

Discourse analysts maintain that knowledge of vocabulary-connected discourse devices supports language learning in diverse manners. Firstly, it ought to bring students to organize new items of vocabulary into groups with common context of use to make them realize how the meaning of a certain word might change with circumstances of its use or

co-text. Moreover, it should also improve learners' abilities to choose the appropriate synonym, collocation or hyponym.

Application of Discourse Analysis to Teaching Text Interpretation

Interpretation of a written text in discourse studies might be defined as the act of grasping the meaning that the communicative product is to convey. It is important to emphasize that clear understanding of writing is reliant on not only what the author put in it, but also on what a reader brings to this process. McCarthy points out that reading is an exacting action which involves recipient's knowledge of the world, experience, ability to infer possible aims of discourse and evaluate the reception of the text.

Painstaking research into schemata theory made it apparent that mere knowledge of the world is not always sufficient for successful discourse processing. Consequently, scholars dealing with text analysis redefined the concept of schemata dividing it into two: content and formal schemata. Content, as it refers to shared knowledge of the subject matter, and formal, because it denotes the knowledge of the structure and organization of a text. In order to aid students to develop necessary reading and comprehension skills attention has to be paid to aspects concerning the whole system of a text, as well as crucial grammar structures and lexical items. What is more, processing written discourse ought to occur on global and local scale at simultaneously, however, it has been demonstrated that readers employ different strategies of reading depending on what they focus on.

Top-down and Bottom-up Text Processing

Distinguishing noticeably different approaches to text processing led to distinction of manners of attending to written communicative products. Bottom-up processes are those which are involved

in assimilating input from the smallest chunks of discourse: sounds in speech and letters in texts, afterwards moving to more and more general features. This technique is frequently applied by lower-level learners who turn much attention to decoding particular words, thus losing the more general idea, that is the meaning of a given piece of writing. In the same way learning a new language begins: first the alphabet, then words and short phrases, next simple sentences, finally elaborate compound sentences. While it is considered to be a good way of making learners understand the language, a wider perspective is necessary to enable students to successfully produce comprehensible discourse.

Alternatively, top-down processing starts with general features of a text, gradually moving to the narrower. This approach considers all levels of communicative products as a total unit whose elements work collectively, in other words, it is more holistic. Not only does the information in a text enable readers to understand it, but it also has to be confronted with recipient's former knowledge and expectations which facilitate comprehension. It is important to make students aware of these two ways of dealing with written discourse and how they may be exploited depending on the task. When learners are to get acquainted with the main idea of a particular communicative product they should take advantage of top-down approach, while when answering detailed true-false questions they would benefit from bottom-up reading.

Types of Text

Obviously, all texts have a certain feature in common, namely they are intended to convey some meaning. This function, however, might be fulfilled in a number of different ways: a road sign 'stop', and a six hundred pages long novel are both texts which might serve that purpose, yet, there are certain characteristics that distinguish them. The above example presents the idea somewhat in the extreme, although, enumerating several other common types of texts might affirm that the notion of text is a very broad one and is not limited to such varieties as those that can be found in language course books.

Differences between texts might be striking, while menu is usually easy to read, legal documents or wills are not. All of them, however, have certain features that others lack, which if explained by a qualified teacher might serve as a signpost to interpretation. Additionally, the kind of a given text might also provide information about its author, as for example in the case of recipes, warrants or manuals, and indirectly about possible vocabulary items and grammar structures that can appear in it, which should facilitate perception of the text. Having realized what kind of passage learners are to read, on the basis of its title they should be able to predict the text's content, or even make a list of vocabulary that might appear in the communicative product. With teacher's tutelage such abilities are quickly acquired which improves learners' skills of interpretation and test results.

Patterns in Text

Having accounted for various kinds of associations between words, as well as clauses and sentences in discourse, the time has come to examine patterns that are visible throughout written communicative products. Patterning in texts contributes to their coherence, as it is thanks to patterns that writing is structured in a way that enables readers to easily confront the received message with prior knowledge. Salkie indicates that the majority of readers unconsciously makes use of tendencies of arranging texts to approach information.

Among most frequently occurring patterns in written discourses there are inter alia claim-counterclaim, problem-solution, question-answer or general-specific statement arrangements. Detailed examination of such patterning revealed that problem-solution sequence is frequently accompanied by two additional parts, namely background (in other words introduction) and evaluation (conclusion). While in some elaborate texts the background and the problem might be presented in the same sentence, in other instances - when reader is expected to be familiar with the background, it might not be stated in the text itself. Although both cohesive devices and problem-solution patterns often occur in written communicative products only the former are designated as linguistic means, since patterning, when encountered, has to be faced with assumptions, knowledge and opinion of the reader.

Notes

One other frequently occurring arrangement of texts is based on general-specific pattern which is thought to have two variations. In the first one a general statement is followed by a series of more specific sentences referring to the same broad idea, ultimately summarized by one more general remark. Alternatively, a general statement at the beginning of a paragraph might be followed by a specific statement after which several more sentences ensue, each of which is more precise than its predecessor, finally going back to the general idea.

As McCarthy points out, the structure of patterns is fixed, yet the number of sentences or paragraphs in a particular part of a given arrangement might vary. Furthermore, one written text might contain several commonplace patterns occurring consecutively, or one included in another. Therefore, problem-solution pattern present in a text might be filled with general-specific model within one paragraph and claim-counterclaim in another. As discourse analysts suggest making readers aware of patterning might sanitize them to clues which enable proper understanding of written communicative products.

Self-Assessment

1. Choose the correct options:

- (i) Harris mentioned the analysis of whole discourse in
 (a) 1952 (b) 1950 (c) 1947 (d) 1915
- (ii) The article 'Discourse Analysis' was published by
 (a) Schiffrin (b) Edmonson (c) Harris (d) None of these
- (iii) The discourse is a structural event manifested in linguistic behaviour or whereas a text is an arrangement of structural linguistic expressions which forms a unit—stated by
 (a) Stubbs (b) Henry Guntur Tarigan
 (c) Edmonson (d) Linde
- (iv) The first modern linguistic who commented the study of relation of sentences and the name discourse analysis—coined by
 (a) McCarthy (b) Harris (c) Linede (d) Edmonson

19.8 Summary

- Discourse analysts do what people in their everyday experience of language do instinctively and largely unconsciously: notice patternings of language in use and the circumstances (participants, situations, purposes, outcomes) with which these are typically associated. The discourse analyst's particular contribution to this otherwise mundane activity is to do the noticing consciously, deliberately, systematically, and, as far as possible, objectively, and to produce accounts (descriptions, interpretations, explanations) of what their investigations have revealed.
- Since the study of language in use, as a goal of education, a means of education, and an instrument of social control and social change, is the principal concern of applied linguistics, indeed its *raison d'être*, it is easy to see why discourse analysis has such a vital part to play in the work that applied linguistics does, and why so much of the work that has been done over the last few decades on developing the theory and practice of discourse analysis been done by applied linguists (Widdowson, Candlin, Swales, for example) or by linguists (notably Halliday and his followers) for whom the integration of theory and practice is a defining feature of the kind of analysis is done by linguists who would not call themselves applied and much by scholars in other disciplines - sociology, psychology, psychotherapy, for example - who would not call themselves linguists.
- Discourse analysis is part of applied linguistics but does not belong exclusively to it; it is a multi-disciplinary field, and hugely diverse in the range of its interests. For many the interest in discourse is beyond language in use (Jaworski & Coupland, 1999, p. 3) to "language use relative to social, political and cultural formations . . . , language reflecting social order but also language shaping social order, and shaping individuals' interaction with society."

- Discourse analysis may, broadly speaking, be defined as the study of language viewed communicatively and/or of communication viewed linguistically. Any more detailed spelling out of such a definition typically involves reference to concepts of language in use, language above or beyond the sentence, language.
- As meaning in interaction, and language in situational and cultural context. Depending on their particular convictions and affiliations - functionalism, structuralism, social interactionism, etc. - linguists will tend to emphasize one, or some, rather than others in this list.

19.9 Key-Words

1. Cohesion : Grammatical relationship between parts of a sentence essential for its interpretation.
2. Coherence : The order of statements relates one another by sense.
3. Intentionality : The message has to be conveyed deliberately and consciously.
4. Acceptability : Indicates that the communicative product needs to be satisfactory in that the audience approves it.
5. Informativeness : Some new information has to be included in the discourse.

19.10 Review Questions

1. Define discourse.
2. Discuss the features of discourse.
3. What are the types of discourse.
4. Write a short note as the functions of discourse.

19.11 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 20: Difference in R.P. and Indian English

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Objectives

After reading this Unit students will be able to:

- Understand the difference in R.P. and Indian English.
- Explain the Emergence of Standard in English.

Introduction

We already know, what are consonants sounds, how they are produced, and on what basis they are classified. Apart from above we also need to know, how consonant sounds are usually; identified according to their symbolic representation. Most of the dialect of English language use twenty four distinctive consonant sounds. Let us examine these sounds and their symbolic representation and also their detailed description.

In England, one accent has traditionally stood out above all others in its ability to convey associations of respectable social standing and a good education. This “prestige” accent is known as Received Pronunciation, or R.P. It is associated with the south-east, where most R.P. speakers live or work, but it can be found anywhere in the country. Accents usually tell us where a person is from; R.P. tells us only about a person’s social or educational background.

In due course, R.P. came to symbolic a person’s high position in society. During the 19th century, it became the accent of public schools, such as Eton and Harrow, and was soon the main sign that a speaker had received a good education. It spread rapidly throughout the Civil Service of the British Empire and the armed forces, and became the voice of authority and power. Because it was a regionally ‘neutral’ accent, and was thought to be more widely understood than any regional accent, it came to adopted by the BBC, when radio broadcasting began in the 1920s. During WW2, it became linked in many minds with the voice of freedom, and the notion of a “BBC pronunciation” grew.

The Phonetic Symbols: Look at the chart of twenty four consonant sounds and notice how some of the sounds are very different from the letters of English alphabet. These phonetic symbols for consonant sounds are same as it appears in *Oxford Advanced Learner’s dictionary of Current English* by A.S. Hornby, and *Longman Dictionary of Contemporary English*. This chart also gives the uses of these sounds in initial, middle and final positions.

<i>Consonant</i>	<i>Initial</i>	<i>Middle</i>	<i>Final</i>	Notes
p	pan	span	sap	
b	bit	cubs	nib	
t	tip	steel	cut	
d	dot	heads	lid	
k	kite	skin	lock	
g	guide	flags	big	
tʃ	chain	touched	catch	
dʒ	joy	gauged	edge	
m	man	slums	calm	
n	nest	sense	stone	
ŋ	—	rings	things	
l	lane	split	bell	
f	fish	raft	stiff	
v	veil	sleeves	hive	
θ	think	months	width	
ð	they	breathed	bathe	
s	soap	test	cross	
z	zero	confusion	crows	
ʃ	shop	brushed	flash	
ʒ	—	confusion	beige	
h	heart	behave	—	
r	read	brave	—	
w	watch	sweet	—	
j	yatch	news	—	

We will now look at the descriptive classification of vowel sounds in English language. To understand the occurrence and functioning of vowel sounds, it is important to introduce the concept of 'cardinal' vowels. To help identify vowels in different languages, phoneticians use a series of reference vowels, called cardinal vowels with which to compare them. These consist of four vowels produced at each extremity of the vowel producing area: /i/, /a/, /ɔ/ and /u/, plus four in intermediate positions which sound equidistant between /i/ and /a/ at the front and /u/ and /a/ at the back. /e/ and /ɛ/ are intermediate at the front, and /o/ and /ɔ/ are intermediate at the back. These eight cardinal vowels are numbered as follows: 1/i, 2/e, 3/ɛ, 4/a, 5/ə, 6/ɔ, 7/o, and 8/u/. In addition, equidistant between /i/ and /u/ is the central, close vowel /ɪ/.

20.1 The Standard of Pronunciation

The pronunciation of a language varies every six miles because of geographical and cultural reasons. The speakers of one and the same language will vary in the standard of pronunciation on the basis of their standards of education and living. A villager may speak language of a different variety from a man from the city.

The pronunciation of English also varies from one geographical entity to the other, from one country to another. There are marked and distinct phonetic features associated with English spoken in the English-speaking nations such as the U.K., the U.S.A., Canada and Australia. Even within the U.K., there are variations between England, Scotland, Wales, and Northern Ireland.

Notes

Gimson observes that “the English today are particularly sensitive to variations in the pronunciation of their language and a kind of unofficial standard exists in England.”

20.2 The Emergence of a Standard in England

The credit of making the East-Midland dialect standard English goes to Chaucer, the father of English poetry. While a standard form of written English has existed for hundred of years, there has been even within England a great diversity in the pronunciation of people belonging to different regions and different sections of the community. One particular regional accent, however, has over the last five hundred years, acquired social prestige. It is the pronunciation of the southeast of England, particularly of the London region, to which this prestige was attached. It gradually lost some of the local characteristics of London speech and became the speech of the ruling class through the influence of the public schools in the nineteenth century. It thus got established as a ‘class’ pronunciation throughout England and was recognized as characteristic of a social class rather than a regional pronunciation. Those who wanted social advancement, had therefore to modify their speech to bring it nearer the social standard.

20.3 Received Pronunciation

According to Gimson, “great prestige is still attached to this implicitly accepted social standard pronunciation.” It is often called “Received Pronunciation” to indicate that it is the result of social judgment and wide acceptance because of its use by the BBC announcers. It is basically “educated Southern British English”, and is the form of pronunciation generally described in books on the phonetics of British English and the one generally taught to foreigners.

‘RP today is no longer the exclusive property of a particular social class In England and is generally equated with the correct pronunciation of English. Regional forms of pronunciation continue to exist. Some young people, however, have begun to reject RP as they wish to challenge traditional authority in every form.

Some forms of regional pronunciation are firmly established in Britain. Some of them, particularly Scottish, are accepted throughout the country, while others—popular London speech, for instance, are less acceptable. American pronunciation is now completely accepted in Britain. Speakers of RP now realize that their type of pronunciation is used by only a very small minority in the English-speaking world.

20.4 Indian English is not Always Intelligible to British Listener

Faulty pronunciation of the sounds of English, replacements of English sounds by their Indian equivalents, wrong accentual pattern, leaving important words unaccented in connected speech, faulty rhythmic patterns, faulty division of a long utterance into tone groups, wrong location of nucleus or the tonic syllable in a tone group are the main reasons of the unintelligibility of Indian English to native speakers of English in the U.K. and the U.S.A.

20.5 Difference between General Indian English and British R.P.

On the basis of the research conducted by Dr. R.K. Bansal at the Phonetics Department, University of London and by Mr. Colin Masica at CIEFL, Hyderabad, the difference between General Indian English and educated Southern British English known as Received Pronunciation (R.P.), is summarised below:

1. General Indian English lacks the category /z/. It is variously replaced by /s/ or /z/ as in words such as measure and garage.
2. General Indian English lacks the distinction between /v/ and /w/. Most speakers replace English /v/ and /w/ by [v]. Consequently the contrast between **vest**, and **west**, **vine** and **wine**, is lost.

3. General Indian English turns the fricative categories /θ/ into additional stops or dental plosives.
/θ/ is replaced by [t^h] or [t] and /ð/ is replaced by [d]. Dr. Bansal cites the examples of **themselves** with an initial [d] being misunderstood as **damsels** and **they** being misunderstood as **day**.
4. Speakers of General Indian English many a time use unaspirated [p], [t], [k] for aspirated [p^h], [t^h], [k^h] at the beginning of accented syllables. Aspiration is an important feature of native English. Of the two /p/ sounds in the word **paper** the first /p/ is aspirated and the second is unaspirated. So the word is pronounced [p^heɪp] by an English man, whereas it is pronounced [pe:p¹] by most Indians.
5. Sometimes some Indian speakers substitute /s/ for /z/. **House** has /s/ as the final sound whereas **noise** has /z/, though the spelling is identical. The letter s is pronounced /s/ in **hopes** but /z/ in **dogs**. The letter x is /ks/ in **expect** but [gz] in **exact**. Indian speakers and students are used to a “spelling pronunciation.” They go by the spelling and use the sound suggested by the spelling. Hence the confusion between sounds like /s/ and /z/ or /ð/ and /d/.
6. Most Indian speakers find the suprasegmental features of English very difficult. Their accentual patterns are often faulty. Very often they place the accent on the wrong syllable of a word with disastrous results, (see lesson 6).
7. They also commit mistakes of intonation. They fail to divide a long utterance into tone groups and often misplace the nucleus or the tonic syllable. They are also not exact in the choice of an appropriate tone.
8. The sounds /tʃ, dʒ/ are made more with the blade than the tip of the tongue, and also lack the lip-rounding associated with the R.P. sounds. As a result, they give a less sharp acoustic impression than their R.P. counterparts.
9. /t,d/ are generally replaced by the retroflex /t,d/.
10. While retaining /ŋ/ in the final position, Indian speakers usually add a /g/ in the medial positions, and therefore pronounce reading /ri:diŋ/as/ri:ding/
11. “Syllabic” /l,m,n,/ are usually replaced by the sequences /ɔ̃l, ɔ̃m, ɔ̃n/ (as in **button, apple**), or if a high front vowel precedes, by /il/ (as in **little**).
12. Many Indian speakers fail to make clear distinction between /e/ and /æ:/, and between /ɔ:/ and /ɔ:/ as in **men** and **man, cot** and **caught**.
13. Against R.P. /ɔ:/ and /ɔ:/, GIE has only vowel /ɔ/ as shown below:

	R.P.	GIE
cot	/kɔt/	/kɔt/
caught	/kɔ:t/	/kɔt/
court	/kɔ:t/	/ko:rt/
coat	/kout/	//ko:t/

14. As against R.P. /ʌ/, /e/ and /ə:/ General Indian English has only the phoneme /e/ as shown below:

	R.P.	GIE
hut	/hʌt/	/hət/
hurt	/hɜ:t/	/hərt/
account	/ə'kaunt/	/ə'kaunt/

Notes

15. In R.P. the five long vowels and the diphthongs are relatively longer than the other vowels but the length is reduced before voiceless consonants.
16. In General Indian English the long vowels tend to be shortened in unaccented positions.
17. R.P. generally has a weak vowels /ə/i/, or /u/ in unaccented syllables. This feature is not consistently observed in General Indian English where the choice of the vowels is often determined by the spelling.
18. General Indian English has monophthongs /e:/ and /o:/ in place of the R.P. diphthongs /ei/ and /ou/. R.P. has eight diphthongs whereas General Indian English has only six diphthongs.
19. In R.P. /r/ occurs only before a vowel. Most Indian speakers of English, however, pronounce it in all positions in words such as court, part, father, etc., whereas in R.P. /r/ remains silent before a consonant sound.

20.6 Suggestions for the Improvement of Indian English

The scholars of Central Institute of English and Foreign Languages, Hyderabad (India) have put forward the following suggestions for the improvement of Indian English in order to make it internationally intelligible:

1. The correct pattern of English word accent should be maintained.
2. The correct pattern of sentence stress and rhythm should be maintained.
3. The consonants /θ, v, w, / should be acquired.
4. The consonants should be clearly articulated.
5. English vowels and diphthongs must be given correct length. If /o:/ and /e:/ are used in place of /ou/ and /ei/ respectively, they should be sufficiently long.
6. The voiceless plosives /p, t, k, / should be aspirated at the beginning of accented syllables.
7. The reading of a set text should be done carefully with proper grouping of words.
8. The correct distribution of /s/ and /z/ in inflexional suffixes should be maintained.
9. The correct distribution of English vowels and consonants should be learnt through the constant use of a pronouncing dictionary.
10. Students should remember that the sound (r) at the end of a word or before a consonant is dropped. It is pronounced before a vowel only. It is, however, pronounced at the end of a word when the word immediately following it in connected speech begins with a vowel. It does not as a rule take place unless the word has a close or fairly close grammatical connection with the word following, e.g. far, morning, there, thereafter, thereby, archive-in these words (r) is not pronounced.
11. (m) before (b) is sometimes not pronounced when (b) happens to be the final letter of the word, e.g.,
lamb, comb, bomb, tomb
12. Sometimes two consonants occur next to each other. In pronunciation the first is often dropped, e.g.
Sit down: /si daun/
Budget: /budʒ it/
Postman: /pousmən/ or poustmen/
13. Some most commonly mispronounced words in India are: vowel, adjective, sew, opportunity, capacity, political, azure, rumour, drought, malign, malignity, condemn, autumn, forehead, extraordinary, Wednesday, zero, hero, etc. The students should check up the correct pronunciations of these and similar other problematic words in a pronouncing dictionary.

Self-Assessment**Notes****1. Choose the correct option:**

- (j) The credit of making the East-midland dialect standard English goes to
 (a) Milton (b) Chaucer
 (c) Gimson (d) None of these
- (i) Radio broadcasting began in
 (a) 1920s (b) 1930s
 (c) 1915s (d) 1940s

20.7 Summary

- Most of the dialect of English language use twenty four distinctive consonant sounds. Let us examine these sounds and their symbolic representation and also their detailed description.
- In due course, R.P. came to symbolic a person's high position in society. During the 19th century, it became the accent of public schools, such as Eton and Harrow, and was soon the main sign that a speaker had received a good education. It spread rapidly throughout the Civil Service of the British Empire and the armed forces, and became the voice of authority and power. Because it was a regionally 'neutral' accent, and was thought to be more widely understood than any regional accent, it came to adopted by the BBC, when radio broadcasting began in the 1920s. During WW2, it became linked in many minds with the voice of freedom, and the notion of a "BBC pronunciation" grew.
- To understand the occurrence and functioning of vowel sounds, it is important to introduce the concept of 'cardinal' vowels. To help identify vowels in different languages, phoneticians use a series of reference vowels, called cardinal vowels with which to compare them. These consist of four vowels produced at each extremity of the vowel producing area: /i/, /a/, /a/ and /u/, plus four in intermediate positions which sound equidistant between /i/ and /a/ the front and /u/ and /a/ at the back.
- Faulty pronunciation of the sounds of English, replacements of English sounds by their Indian equivalents, wrong accentual pattern, leaving important words unaccented in connected speech, faulty rhythmic patterns, faulty division of a long utterance into tone groups, wrong location of nucleus or the tonic syllable in a tone group are the main reasons of the unintelligibility of Indian English to native speakers of English in the U.K. and the U.S.A.

20.8 Key-Words

1. Plosion : The articulators quickly move away from each other. An explosive burst of air rushes through the opening, involving energy in most or all of the audible spectrum.
2. Aspiration : The articulators are now further apart, and the air pressure at the site of the obstruction has fallen so that the speech sound is no longer a burst with energy in all frequencies, but bands of aspiration which are more narrowly concentrated and which move toward the formant values in the next phoneme.

20.9 Review Questions

1. State the main difference between British R.P. and General Indian English.
2. How can Indian English be made internationally intelligible?
3. What standard of pronunciation would you like to aim at in India?
4. Write short note on the 'Received pronunciation' of England.

Notes

5. Name the important English-speaking countries, that is countries where English is spoken as the first language by most people.
6. What is a regional accent?
7. Which regional accent acquired social prestige in England?
8. What phonetic features should be introduced into Indian English to make it internationally intelligible?

Answers: Self-Assessment

1. (i) (b) (ii) (a)

20.10 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. *Modern Linguistics: An Introduction*.
2. *An Introduction to Linguistics*, John Lyon.
3. Peter Roach: *English phonetics and phonology*. Cambridge University Press.
4. *Encyclopedia of Linguistic Science* Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 21: Morphology: Morph, Morpheme, Allomorph

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Objectives

After reading this Unit students will be able to:

- Discuss Morphology.
- Define Morph, Morpheme, Allomorph.

Introduction

Morphology is the science and study of the smallest grammatical units of language, and of their formation into words, including inflection, derivation and composition. According to Dorfman, morphology is the study of the ways and methods of grouping sounds into sound-complexes or words, of definite, distinct, conventional meaning. Bloomfield calls it the study of the constructions in which sound forms appear among the constituents. Broadly speaking, morphology is the study of the patterns of word-forms. It studies how the words are formed, where they originate from, what their grammatical forms are, what the functions of prefixes and suffixes in the formation of words are, on what basis the parts of speech of a particular language are formed, how the systems of gender, number, plural, etc. function, and how and why the word-forms change.

Morphology is “a level of structure between the phonological and the syntactic.” It is complementary to syntax. **Morphology** is the grammar of words; **syntax** the grammar of sentences. One accounts for the internal structure, or ‘form’ of words (typically as sequences of morphemes), the other describes how these words are put together in sentences. A discussion of how plurals are formed, for example, would belong to morphology, while a discussion of prepositional phrases would belong to syntax. The way morphemes combine to form words is known as the morphology of a language. Morphology, therefore, refers to the form of words themselves in a language system, whereas **syntax** refers to the form of the arrangement of words in phrases and sentences. Agreement, for example, is a morphological feature and word-order is a syntactic feature of a language system.

Morphology is not only the synchronic study of word-forms but is also the study of the history and development of word-forms. So it is both a synchronic (**in a given time**) and a diachronic (**across time**) study of the word-forms. When it is only synchronic, it is called **morphemics**.

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The **morphological analysis** is the observation and description of the grammatical elements in a language by studying their form and function, their phonological variants, and their distribution and mutual relationships within larger stretches of speech. It may be either synchronic or diachronic, or may be both synchronic and diachronic.

21.1 Morpheme

Minimal units of grammatical structure, such as the four components of **un faith fulness**, are called morphemes. **Telephones** has three morphemes {tele}, phone, and {-s}, while **telephone** has two and **phone** just one. Morphemes are customarily described as minimal units of grammatical analysis—the units of ‘lowest’ rank out of which words, the units of next ‘highest’ rank are composed. So morphemes are those distinct, minimal syntactical units which form words. They can also be defined as the minimal units of meaning out of which meaningful words are composed in various ways.

A morpheme thus is a distinct linguistic form. It is a minimal unit of speech that is recurrent. It has a grammatical function. It is semantically different from other phonemically similar or identical linguistic forms, and is not divisible or analyzable into smaller forms. If we try to break or analyze a morpheme into its constituents, it loses its identity, and we end up with a sequence of meaningless noises, e.g., **nation** (na+tion, or nati-on). Analyzing the morphemes leads us straight into the realm of phonology.

Morphemes may or may not have meaning, may or may not have a phonological representation, [un-] has a negative meaning in **unfriendly, unhealthy, unable, unemployed** and many other words, but is meaningless in **under**. {-er} has a constant meaning in **teacher, heater, reader, writer, speaker, pointer, leader**, etc. But it would be difficult to pin down any constant meaning for **spect** in **respect, inspect, circumspect**, for **pro** in **protest, professor, prospective, process, proceed**, etc. In plural words like **sheep, fish** we have two morphemes in each word; the first morpheme in each case has a phonological representation but the second one has no phonological representation and is called **zero morpheme**. Morphologically the plural noun **sheep** is [sheep]+{ }, that is to say that the word ‘**sheep**’ is made up of two morphemes **sheep** plus a **plural morpheme** which is present in the meaning but is not physically present in spelling or pronunciation.

Morphemes sometimes vary in their phonological manifestations. **Pro**, for instance, is pronounced differently in **profess** and the noun **progress**. The plural morpheme is pronounced(s) in words like **cats, maps** and **snacks**; [z] in **dogs, hands**, and **ideas**; (iz) in words like **churches, judges, classes**; but it has no phonetic form at all in the plural nouns such as **sheep, fish**, etc. Then there are completely idiosyncratic forms such as **oxen, children, brethren**. It is not always clear whether or not a given sound sequence should be considered a morpheme. For instance, should **animal** be said to consist of two morphemes **anima** (a) and (b) 1, or just one? Consider **natural**: it has two morphemes (nature) and {-al}. Shouldn’t we then regard **woman** as a word having two morphemes {wo-} and {man}? A sound sequence is a morpheme in some words; it is not in some others. **Un** clearly is a morpheme in **unnatural** and **unfaithful** but it is not a morpheme in **under** or **sun**.

A morpheme may be monosyllabic as {man} and {a/an/the} or polysyllabic as {happy} and {nature}.

A morpheme has been called ‘a grammatical moneme’ by Martinet. Another synonym for the morpheme is ‘glosseme’.

Morphemes are usually put into braces, i.e. curly brackets {} {the} {help} {-less} {boy} {-s.}

21.2 Morphs

Any phonetic shape or representation of a phoneme is a morph (Hockett). Each morph, like each phone, or each person or each day, happens only once and then it is gone. To quote John Lyons, “When the word can be segmented into parts, these segments are referred to as morphs.” Thus the words **shorter** is analyzable in two morphs, which can be written orthographically as **short** and **er**, and in phonological transcription /fə t/ and /ə /. Each morph represents a particular morpheme, but each morpheme does not have a morph. For example, the plural noun **sheep** has one morph, but it has two morphemes [sheep] and [] **went** has one morph, but two morpheme [go] and [ed.]

21.3 Allomorphs

It frequently happens that a particular morpheme is not represented everywhere by the same morph, but by different morphs in different environments. The alternative phonological manifestation or representations of such a morpheme are called **allomorphs** or 'morpheme alternants' or 'morpheme variants'. An allomorph, therefore, is a non-distinctive variant of a morpheme. Or, it may be called a family or class of morphs which are phonemically and semantically identical, that is, an allomorph is "a family of morphs which are alike in two ways: (i) in the allophones of which they are composed and, (ii) in the meaning which they have".

The allomorphs are phonologically conditioned. Their forms are dependent on the adjacent phonemes. Or else, they are morphologically conditioned. That is, when morphemes are affected by their phonological environment 'sandhi', they become allomorphs. For example, /-z/, /-s/, /-iz/ and /∅/ are the various allomorphs of the plural morpheme {-z} in English.

The study of different shapes of allomorphs is half-way between phonology and morphology, and is sometimes referred to as **morphophonology** or **morphonology**. In America where phonology is considered as part of descriptive linguistics synchronic linguistics has relied on phonemic analysis, the term **morphophonemics** is used for this aspect of grammar.

21.4 Phonological Conditioning

The English plural morpheme provides very good examples of both phonologically and morphologically conditioned allomorphs. /-s/, /-z/, and /iz/ are all phonologically conditioned allomorphs of the English plural morpheme.

1. /-s/ appears with morphs ending in /p, t, k, f, θ/.
2. /-z/ appears with morphs ending in /b, d, g, v, ð, m, n, ŋ, l, r, y, w, /
3. /-iz/ appears with morphs ending in /z, ʃ, ʒ, tʃ, dʒ/

These generalizations can be exemplified in the following manner:

form taking	forms taking	forms taking
/s/	/z/	/iz/
cups/kʌps/	hubs/hʌbz/	classes /kla: siz/
hats/hæts/	hands/hændz/	mazes/meiziz/
thanks/θæŋks/	dogs/dɔgz/	dishes/diʃiz/
coughs/kɔfs/	gloves/glʌvz/	garages/gæraziz/
hycinths/haɪənsθs/	rims/rimz/	churches/tʃʌvʃiz/

If we study these data to find a principle governing this distribution we will discover that these generalizations can be restated in even more general and precise terms, as given below:

1. /-s/ appears after morphs ending in voiceless morphemes, except the sibilants and affricates.
2. /-z/ appears after morphs ending in voiced morphemes except the sibilants and affricates.
3. /-iz/ appears after morphs ending in sibilants and affricates.

That is, the linguist has stated the conditions or explained what factors are responsible for the particular physical form of the plural. Since the factors in this case are the preceding sound segments, he classifies this as phonological conditioning.

Another example of this phonological conditioning is the past tense morpheme of English [-ed]. It is also regularly represented by three phonologically conditioned allomorphs /t/, /d/ and /-id/. The rule governing their distribution is as follows:

Notes

1. /ɪd/ occurs after morphs ending in alveolar stops /t/ and /d/ as in **wanted**/w: ntɪd/ and **wedded**/wedɪd/.
2. /d/ occurs after voiced phonemes except /d/ as in **loved** /lʌvd/ **called** /k: Id./.
3. /t/ occurs after voiceless phonemes except /t/ as in **helped**/helpt/.

21.5 Morphological Conditioning

In pairs such as **man-men**, **child-children**, and **deer-deer**, in which second item can be said to contain the “plural” morpheme, we cannot state the variation, if any, between the two forms in terms of phonetic environments. Instead we must refer to each morpheme separately or, alternatively to their phonemic shapes, and specify the allomorph of the ‘plural morpheme’ separately for each. This kind of variation among allomorphs is called morphological conditioning. The morphologically conditioned allomorphs of a morpheme are regarded as irregular in contrast with the phonologically conditioned allomorphs, which are regarded as regular. **Men**, **children** and **deer** are therefore irregular English plurals, just as are **alumni**, **criteria**, **mice**, **women** and **oxen**. The “past tense” morpheme also has its irregular allomorphs, as in **drank**, **brought**, **swam**, **was**, **had**, **put**, **took**, **fled**, **built**, and so on likewise, the “past participle” morpheme has irregular allomorphs, as in **drunk**, **brought**, **sum**, **been**, **broken**, **stood**, **put** and **on**.

Let us analyze some of the words stated above:

Oxen-ox+/-ən/

Deer-+ / ∅ /

We noticed in the earlier section on “phonological conditioning” that the linguist was making some very useful generalization. But in cases of ‘oxen’ and ‘deer’ his prediction went wrong: we did not have “oxes” and “deers.” On the other hand we found the sense of plural was retained in “oxen” and “deer.” Though the sense is retained yet the form is puzzling. So he concludes that the morpheme **ox** itself is perhaps the condition factor and not the sound sequences of which it is composed for this new plural marker. So he calls this **morphological conditioning**.

Zero Suffix

There are certain forms which have the same singular and plural forms such as **sheep**, **deer**, **cattle**. Such forms in the singular and the plural are not different. They are homophonous. However, the linguist, for the sake of uniformity assumes that the plural morpheme is present but its phonetic manifestation or representation is zero. It has no visible marker in the environment of **sheep**, **deer**, or **cattle**. He would therefore, analyze these in the following manner:

sheep+ / ∅ /

deer+ / ∅ /

cattle+ / ∅ /

Replacive

There is no obvious way to analyse forms like **geese**, **mice**, **lice**, etc. Some linguists suggest that the plural vowel /i:/ in **geese**, /gi: s/ which replaces the /u:/ in **goose** /gu: s/ should be regarded as a special type of morphemic element called a replacive. And they would analyze the plural as:

/gu: s+ /i: /-(/u:/)

Here the formula /i: /-(/u:/) means ‘/i:/ replaces /u:/’. Such a morpheme is called “replacive” because it involves the replacement of a vowel.

But this is somewhat a strained explanation. It may be stated simply that the form /gi:s/ (geese) represents two morphemes

goose+plural

and so do **mice**, and **lice**.

Note that a similar explanation can be offered for forms such as **went, took** which represent
 go+past tense
 take+past tense

Notes

21.6 Problem of Morphemic Cutting

Different problems of morphemic division are presented by words such as **plate, late/ate**, etc. Should the linguist divide them as /pl/+ /eit/ and /eit/ on the basis of the morpheme [ate]? If he does so on a basis, he can go wrong, and may destroy the meaning. He is baffled where to place the right cutting.

Occasionally problems of still another kind can arise, as in **cran-berry, blackberry, strawberry** etc. At the first sight such words appear to consist of two morphemes: **cran-berry rasp-berry, black-berry, straw-berry**. On second sight it is difficult to justify **cran** and **rasp**—as independent morphemes but it is possible to establish (black) (straw), and (berry) as independent morphemes in case of **blackberry** and **strawberry**. **Cranberry** along with words such as **raspberry**, represents the so called 'cranberry morph' problem.

A similar problem is raised by the English **wh-** and **th-** words: **where-there, when-then, whither-thither**. Should these be analysed as two morphemes, **wh-ere, the-ere and so on**? Perhaps this would be a good solution if there were only **wh-** words English possessed. The situation is complicated by the existence of **who, why**, which cannot be divided, it may be more satisfactory to keep **where, when, whither** as single morphemes also.

There are numerous problems of other nature too. Hence morphemic cutting is not as simple as it seems to be. Many a linguist would not be happy with concepts like the replaceive morpheme, the zero morpheme and the zero allomorph. There are some languages in which several meaning categories are represented by single stretch of speech. The correspondence then is one to many between form and meaning. This is called syncretism. Then there are homophonous forms. There is always a possibility of over or under analysis. Because of these pitfalls, linguists have begun to doubt whether they can describe the arrangement of morphemes of an unknown language, and whether it is correct to go on from the phonological level to the morphological level with the ultimate goal of describing the syntax and semantics of a language. Chomsky, for example, abolished the morphological component in his revised model of transformational grammar in **Aspects of a Theory of Syntax** (1965) and merged morphology with phonology. Others would like to merge it with syntax; some others would look for a new name such as "Wordology" or Lexicology to account for words as well as morphemes. Nevertheless, the area of morphology is one in which languages tend to display a considerable amount of irregularity.

21.7 Classification of Morphemes

Lexical and Grammatical Morphemes

Ronald W. Langacker in his book **Language and its Structure** has divided **morphemes** into two classes: lexical and grammatical. Lexical morphemes are forms like **boy, write, paper and pen**. **Grammatical morphemes** are forms like **some, with, a, an, the, to, and from**. **Lexical morphemes** are nouns, verbs, adjectives, and adverbs. They have more or less independent meaning, so that one or a series of lexical forms in isolation can be fairly meaningful. Pen suggests something quite definite to us, as do **boy, paper** and **write**. Lexical morphemes are very large in a language; the number may go up to ten millions as in English. **Grammatical morphemes** are elements like prepositions, articles, conjunctions, forms indicating number, gender or tense, and so on. Grammatical morphemes, by and large, do not change frequently; new members in their family in any language are added rather infrequently. But lexical morphemes go on changing frequently; new members are added to the lexicon quite often.

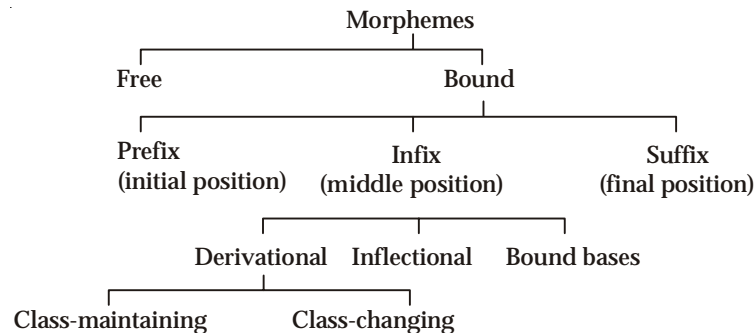
However, the distinction between lexical and grammatical morphemes is artificial and inadequate. 'Hood' is lexical morpheme in **she wears a hood**, but is not so in **boyhood**. Prepositions are classed as grammatical morphemes, yet they are not all empty of semantic content. Even small grammatical

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morphemes such as the {-ly} in **rapidly** the [un-] in **unemployment** and the [er] in **teacher** have definite semantic content. Hence the necessity of a more rationalistic division of morphemes.

Free and Bound Morphemes

A more acceptable and more satisfactory classification than the one mentioned above classifies morphemes into free and bound forms. The whole classification can be represented in the following manner:



These will be defined and illustrated in the following discussion. Morphemes, as defined earlier, are the minimum grammatical forms of a language. Some of them can occur alone, others cannot. Forms which do not occur alone are bound morphemes, and those which occur alone are free morphemes. **Rat, cat, go, black, the, yet, but, and** are free morphemes. Affixes to the words such as **-ness, -less, pre, up-, de-, con-, -er, -ment** are all bound morphemes.

- (a) **Roots and Affixes:** The root morpheme is that part of the word which is left when all the affixes have been removed. Root morphemes may be bound or free, and are potentially unlimited in a language, because languages go on creating new words or borrowing 'loan-words' from other languages. In a word like **unfaithful**, **faith** is the root, the **-un** and the **-ful** are affixes; the **un-** is a prefix, whereas the **-ful** is a suffix.

All affixes are bound morphemes, for they cannot occur alone. A word which consists of only free root morpheme is called **monomorphemic**, e.g. **cat, rat**. The words containing more than one root are called **polymorphemic** e.g. **air-craft**; they can co-occur with or without affixes; they are often called **compound words**.

Root and affixes may be of any structure and length, though affixes generally tend to be shorter than roots. The criterion of determining the root is its indivisibility into constituent morphemes by matching its parts with the parts of other words in the language.

The affixes is the recurrent formative morpheme of words other than roots. Affixes are of three types—**prefix, infix and suffix**. In the English words such as **receive, remove, deceive, perform, unfaithful, unemployment, re-, de-, per-, un-**, are all prefixes. The prefixes are affixed before the roots, and cannot occur independently; they are bound morphemes. The plural formative **-s, -en**; the verb paradigm affixes **-ing, -d, -ed**, etc. the comparative and superlative ending of the adjectives (**-er**, and **-est**) and so many other final position formatives such as **-ness, -less, -ment** are called suffixes. The suffixes are affixes after the roots or after the root-suffix. Infixes are less commonly found in English apart from one mode of analysis of plurals like **geese, men**. Infixes are found in Cambodian, in Sudanese and in Sanskrit too.

- (b) **Inflection and Derivation:** Both inflectional and derivational morphemes are suffixes; they are bound morphemes following a root. Inflection and derivation are, therefore, the sub-categories of suffixes. But they differ from each other. If one kind of suffix is affixed to a root we cannot affix any other. Suffix e.g., in **agreed** and **agrees**, **-d** and **-s** are suffixes and do not therefore, allow any further affixation of a suffix. Such affixes which do not allow further affixation called inflections, or inflectional morphemes. The suffixes which may be followed by

other suffixes are called **derivational** suffixes. For example, **-ment**, **-ble** are derivational suffixes in **agreement** and **agreeable**, because both can be followed by other suffixes and can, for instance, become **agreements** and **agreeableness** after the addition of the suffix **-s** and **-ness** to **agree+ment** and **agree+able** respectively.

Inflectional suffixes have a very wide distribution; that is, the words which they mark have a great many members. Inflectional suffixes are always final in the morpheme groups to which they belong. They are of wide occurrence; they make large words. Their distribution is regular. Derivational suffixes, on the other hand, may be final in the group to which they belong, or they may be followed by other derivational suffixes or by inflectional suffixes. They are of relatively limited occurrence, and their distribution tends to be arbitrary. (Prefixes are always derivational).

Inflectional suffixes are 'terminal', and their termination never changes the class (part of speech) of the root, for example, in **sweeter** and **sweetest**, the termination of **-er** **-est** does not change the part of speech; both the forms remain adjectives; come in a verb in **They come late**, and if we add an inflectional suffix **-ing** we get the form **coming** (as in **They are coming**) which is still a verb. An inflected form can be replaced by another inflected form only, e.g.

He	drink-s steal-s play-s
----	------------------------------

but not

He steal/drink/play, etc.

An inflectional suffix occurs at the end position of a form; no further affixation in a form is possible after an inflection. We can say

develop+s

root (-) inflectional suffix

develop+ment

root+derivational suffix + s Inflectional suffix

but not

develop

s

ment

root

inflectional

derivational

suffix

suffix

So an inflectional suffix is essentially terminal, whereas a derivational suffix is not essentially terminal. Derivational suffixes can occur medially and/or finally, but inflectional suffixes occur only finally.

- (c) **Class-maintaining and class changing derivational suffixes:** Derivational suffixes can be sub-classified into two types: (i) Class-maintaining derivational suffix and (ii) Class-changing Derivational suffix. The class-maintaining derivational suffixes are those which produce a derived form of the same class as the underlying form; they do not change the class of a part of speech. In **boyhood**, **childhood**, **kinship**, **principalship**, **hood** and **-ship** are class-maintaining derivational suffixes. In these examples they produce nouns out of nouns after suffixation. The class-changing derivations are those that produce a derived form of another class. In **teacher**, **boyish**, **develop-ment**, **national**, **-er**, **-ish**, **-ment**, **-al** are class-changing derivational suffixes. In **teacher**, a verb teach has become a noun after suffixing the **-er**. In **boyish**, a noun boy has become an adjective after suffixing the **-ish**.

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We can further review the example of morphemes in the following manner”:

Words	Free Morpheme (root)	Bound Morphemes			
		Prefix	Suffix		
			Derivational suffix		Inflectional Suffix
			Class maintaining	Class changing	
Pre-establishment	[establish]	[pre-]		-ment	
Establishmentarianism	[establish]			[ment -arian -ism]	
Prenominalizations	[nominal]	[pre]		[-iz -ation]	[-s]
Principalships	[principal]		[ship]		[-s]

- (d) **Bound Bases:** Bound bases are those morphemes which serve as roots for derivational forms but which never appear as free forms. In words such as **conclude, preclude, include, exclude**, the **clude** is a bound base; and so is the **-ceive** in **receive, perceive, deceive**.

Compounds

A compound is a lexical unit in which two or more lexical morphemes (free roots) are juxtaposed, e.g. **aircraft, textbook, white-cap, slow-down, bed-side, fingerprint**.

Idioms

An idiom is a phrase the meaning of which cannot be predicted from the individual meanings of the morphemes it comprises. Idioms are complex lexical items; it is difficult to translate them from one language into another; they have culturally determined meanings. Most idioms are ‘frozen metaphors’, their meanings must be learnt as a whole, e.g. **give way, in order to**.

21.8 Phonological Semantic and Syntactic Considerations in Morphemes

In the determinations and identification of morphemes all these considerations help a great deal. When a person learns a morpheme, he has to tie together three kinds of information: phonological, semantic, and syntactic. Morphs like **meet** and **meat** will have the same phonological representation/ mi:t/, they have to be distinguished on the basis of meaning and usage. Some morphemes are semantically empty, ‘to’, for example, in **I want to sleep**, has no obvious meaning. A morpheme is not fully defined by its semantic and phonological properties alone. It also has syntactic properties, some syntactic representation that determines how it functions with respect to the grammatical processes of the language. **Rat**, for example, can function only as a noun, and never say, as an adjective or as a verb. Thus the sentences **that fat rat jumped upon the table** is a grammatical construction but **that the rat fat jumped upon the table** is not a grammatical sentence. Therefore, morphemes are “bundles of semantic, phonological, and syntactic properties.”

21.9 Morphophonemics

The analysis and classification of the different phonological shapes in which morphemes appear, or by which they are represented, both in an individual language and in languages in general, is often called morphophonemics or morphophonology. So morphophonemics is a kind of code to represent morphemes in phonemic shapes. The morphophonemic of a language is never so simple. There are always many instances of two or more morphemes represented by the same phonemic shape as

illustrated by the example of **meet** and **meat**, and cases in which a single morpheme is represented now by one phonemic shape, now by another. For example, the English plural morpheme is represented by various allophones such as /s/, /-z/, /-iz/. Therefore the morphophonemics of a language is never trivial; any systematic description of any language should cover it. According to Hockett, the morphophonemic system is “the code which ties together the grammatical and the phonological system.”

We will speak about morphophonemic changes and morphological processes in the chapter entitled “Language Change” in this book.

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Many would agree with the view: ‘Morphology, syntax, and lexicology interpenetrate because every synchronic fact is identical. No line of demarcation can be drawn in advance. Recently, Generative grammarians too have abolished the morphological component of the linguistic theory. But we in this book have not followed any school of linguistics. Our purpose is to offer insights into its varied developments and trends; hence this discussion on ‘Morphology’ to facilitate the study of language.

21.10 Summary

- Morphology is the study of the ways and methods of grouping sounds into sound-complexes or words, of definite, distinct, conventional meaning. Bloomfield calls it the study of the constructions in which sound forms appear among the constituents. Broadly speaking, morphology is the study of the patterns of word-forms. It studies how the words are formed, where they originate from, what their grammatical forms are, what the functions of prefixes and suffixes in the formation of words are, on what basis the parts of speech of a particular language are formed, how the systems of gender, number, plural, etc. function, and how and why the word-forms change.
- Morphology is not only the synchronic study of word-forms but is also the study of the history and development of word-forms. So it is both a synchronic (**in a given time**) and a diachronic (**across time**) study of the word-forms. When it is only synchronic, it is called **morphemics**.
- The **morphological analysis** is the observation and description of the grammatical elements in a language by studying their form and function, their phonological variants, and their distribution and mutual relationships within larger stretches of speech. It may be either synchronic or diachronic, or may be both synchronic and diachronic.
- Morphemes may or may not have meaning, may or may not have a phonological representation, [**un-**] has a negative meaning in **unfriendly, unhealthy, unable, unemployed** and many other words, but is meaningless in **under**. **{-er}** has a constant meaning in **teacher, heater, reader, writer, speaker, pointer, leader**, etc. But it would be difficult to pin down any constant meaning for **spect** in **respect, inspect, circumspect**, for **pro** in **protest, professor, prospective, process, proceed**, etc. In plural words like **sheep, fish** we have two morphemes in each word; the first morpheme in each case has a phonological representation but the second one has no phonological representation and is called **zero morpheme**. Morphologically the plural noun **sheep** is [sheep]+{ }, that is to say that the word ‘**sheep**’ is made up of two morphemes **sheep** plus a **plural morpheme** which is present in the meaning but is not physically present in spelling or pronunciation.
- Any phonetic shape or representation of a phoneme is a morph (Hockett). Each morph, like each phone, or each person or each day, happens only once and then it is gone. To quote John Lyons, “When the word can be segmented into parts, these segments are referred to as morphs.” Thus the words **shorter** is analyzable in two morphs, which can be written orthographically as **short** and **er**, and in phonological transcription /fə t/ and /ə /. Each morph represents a particular morpheme, but each morpheme does not have a morph. For example, the plural noun **sheep** has one morph, but it has two morphemes [sheep] and [] **went** has one morph, but two morphemes [go] and [ed.]

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- It frequently happens that a particular morpheme is not represented everywhere by the same morph, but by different morphs in different environments. The alternative phonological manifestation or representations of such a morpheme are called **allomorphs** or 'morpheme alternants' or 'morpheme variants'. An allomorph, therefore, is a non-distinctive variant of a morpheme. Or, it may be called a family or class of morphs which are phonemically and semantically identical, that is, an allomorph is "a family of morphs which are alike in two ways: (i) in the allophones of which they are composed and, (ii) in the meaning which they have".
- The allomorphs are phonologically conditioned. Their forms are dependent on the adjacent phonemes. Or else, they are morphologically conditioned. That is, when morphemes are affected by their phonological environment 'sandhi', they become allomorphs. For example, /-z/, /-s/, /-iz/ and /∅/ are the various allomorphs of the plural morpheme {-z} in English.

21.11 Key-Words

1. Phonemics : The study and description of phonemes, i.e., the set of basic units of sound used in a language and phonemic systems.
2. Phonetics : The science or study of speech sounds and their production, transmission, and perception, and their analysis, classification, and transcription.
The science or study of speech sounds with respect to their role in distinguishing meanings among words.
3. Phonology : The study of the history and theory of sound changes in a language or in two or more languages comparatively.
4. Psycholinguistics : The study of the relationships between language and the behavioral mechanisms of its users, especially in language learning by children.

21.12 Review Questions

1. What is meant by morphology?
2. Distinguish between phonologically and morphologically conditioned allomorphs.
3. What is **zero morph**?
4. What is the '**cranberry, morph**' problem?
5. Distinguish between a **morpheme** and an **allomorph**.
6. Distinguish between a **phoneme** and a **morpheme**?
7. Distinguish between inflection and derivation.
8. Distinguish between free and bound morphemes.
9. Explain briefly (i) the motivations for a morphological analysis; (ii) the formation of plural in English and in your mother tongue; (iii) the functions of past tense form in English and in your mother tongue.
10. What do you understand by morphological analysis?
Give examples of both 'free' and 'bound' morphemes.
11. Write a short note on phoneme, morpheme and grapheme.

21.13 Further Readings



Books

1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 22: Morphological Analysis (Identification of Morphemes and Allomorph)

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Objectives

After reading this Unit students will be able to:

- Understand the Atoms of Words
- Discuss Morphological Operations
- Explain Morphological Typology

Introduction

In linguistics, **morphology** is the identification, analysis and description of the structure of a given language's morphemes and other linguistic units, such as words, affixes, parts of speech, intonation/stress, or implied context (words in a *lexicon* are the subject matter of *lexicology*).

Morphological typology represents a method for classifying languages according to the ways by which morphemes are used in a language—from the analytic that use only isolated morphemes, through the agglutinative (“stuck-together”) and fusional languages that use bound morphemes (affixes), up to the polysynthetic, which compress lots of separate morphemes into single words.

While words are generally accepted as being (with clitics) the smallest units of syntax, it is clear that in most languages, if not all, words can be related to other words by rules (grammars). For example, English speakers recognize that the words *dog* and *dogs* are closely related—differentiated only by the *plurality morpheme* “-s”, which is only found bound to nouns, and is never separate. Speakers of English (a fusional language) recognize these relations from their tacit knowledge of the rules of word formation in English. They infer intuitively that *dog* is to *dogs* as *cat* is to *cats*, similarly, *dog* is to *dog catcher* as *dish* is to *dishwasher*, in one sense. The rules understood by the speaker reflect specific patterns, or regularities, in the way words are formed from smaller units and how those smaller units interact in speech. In this way, morphology is the branch of linguistics that studies patterns of word formation within and across languages, and attempts to formulate rules that model the knowledge of the speakers of those languages.

A language like Classical Chinese instead uses unbound (“free”) morphemes, but depends on post-phrase affixes, and word order to convey meaning. However, this cannot be said of present-day Mandarin, in which most words are compounds (around 80%), and most roots are bound.

In the Chinese languages, these are understood as grammars that represent the morphology of the language. Beyond the agglutinative languages, a polysynthetic language like Chukchi will have words composed of many morphemes: The word “təmeyŋəlevtpə ɣ tərkan” is composed of eight

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morphemes $t^{\cdot}\text{-}\dot{m}ey\eta\text{-}\dot{\text{a}}\text{-}l\dot{e}vt\text{-}p\dot{\text{a}}\ \gamma\ t^{\cdot}\text{-}\dot{r}k\dot{\text{a}}n$, that can be glossed I.SG.SUBJ-great-head-hurt-PRES.I, meaning ‘I have a fierce headache.’ The morphology of such languages allows for each consonant and vowel to be understood as morphemes, just as the grammars of the language key the usage and understanding of each morpheme.

The discipline that deals specifically with the sound changes occurring within morphemes is called *morphophonology*.

22.1 The Atoms of Words

Words can be chopped into smaller pieces. At the phonological level, words can be divided into syllables or segments, and segments into their constituent phonological features. At the morphological level, words may consist of more than one unit as well, which we may call the morphological atoms of a word: pieces that are no further divisible into morphological subparts. Just as there are different kinds of atom in chemistry, there are different kinds of atom in morphology, and it is quite useful for morphological analysis to be acquainted with their classification. A good classification is an important analytic instrument, developed in order to get a better understanding of the structure and formation of words.

As we saw, the Polish lexeme KOT “cat” has a paradigm of case forms; compare this to the case forms of the noun KOBIEȒA “woman” in (1). Each cell of the paradigm of Polish nouns is occupied by a **grammatical word**, i.e. a form of a lexeme with a particular property for the grammatical categories number and case. Grammatical words may share the same word form. For instance, both the GEN.SG and the ACC.SG form of KOT have the form *kot-a*. The phenomenon that two or more grammatical words have the same word form is called **syncretism**. The distinction between lexeme, grammatical word, and word form shows that the general notion ‘word’ subsumes a number of different notions. In most cases it is clear which interpretation of ‘word’ is intended, but sometimes it will be necessary to use the more specific notions.

(1)	SINGULAR		PLURAL	
NOMINATIVE	kot	kobiet-a	kot-y	kobiet-y
GENITIVE	kot-a	kobiet-y	kot-ow	kobiet
DATIVE	kot-u	kobiec-i-e	kot-om	kobiet-om
ACCUSATIVE	kot-a	kobiet-e	kot-y	kobiet-y
INSTRUMENTAL	kot-em	kobiet-a	kot-ami	kobiet-ami
LOCATIVE	koci-e	kobiec-i-e	kot-ach	kobiet-ach
VOCATIVE	koci-e	kobiet-o	kot-y	kobiet-y

Each of the word forms of KOT consists of a stem and an **inflectional ending** (or **desinence**). The **stem** of a word is the word form minus its inflectional affixes, in this example *kot-*. It is the stem that forms the basis for word-formation, not the whole word form. This might not be so clear for the Polish noun KOT, because the NOM.SG word form *kot* of this word happens to have no overt ending. However, the noun KOBIEȒA does have an overt ending. For that reason, one may speak of a **zero-ending** for the NOM.SG. form of KOT, and likewise for the GEN.PL form of KOBIEȒA. The following example from Italian also illustrates the role of the stem. The singular form of *macchina* “machine” has the inflectional ending *-a*, and the plural ending is *-e*:

(2) *macchin-a* “machine” *macchin-e* “machines” *macchin-ista* “machinist”

It is the stem *macchin-* that is used as the basis for word-formation, as shown by *macchinista*. In English, the form of the stem is identical to that of the SG word form, and this is why English morphology is sometimes qualified as word-based morphology, in contrast to the stem-based morphology of, for instance, most Romance and Slavic languages. This is a superficial difference: these languages all have lexeme-based morphology, they only differ in that the stem-forms of lexemes do not always

correspond to word forms.

Stems can be either simplex or complex. If they are simplex they are called **roots**. Roots may be turned into stems by the addition of a morpheme, as the following examples from Polish (Szymanek 1989: 87) illustrate:

- | | | | |
|--------|-------------------|----|-----------------------------|
| (3) a. | butelk-a “bottle” | b. | butelk-owa-ć “to bottle” |
| | filtr “filter” | | filtr-owa-ć “to filter” |
| | bial-y “white” | | biel-i-ć “to whiten” |
| | gluch-y “deaf” | | gluch-na-ć “to become deaf” |

The verbs in (3b) are given here in their citation form, the infinitive. The **citation form** is the form in which a word is mentioned when we talk about it, and the form in which it is listed in a dictionary. In many languages, the infinitive is the citation form of a verb. In languages with case, the NOM.SG form is the citation form of nouns. Each of these Polish infinitives consists of a root, followed by a verbalizing morpheme that turns the root into a stem, and is followed by the infinitival ending *-ć*. It is the stem-forms that are used when new words are derived from these verbs.

Stem-forming suffixes play an important role in many Indo-European languages. Italian verbs, for instance, have a **thematic vowel** after the root morpheme, and this thematic vowel recurs in words derived from these verbs:

- | | | |
|-----|---------------------------------|-----------------------------|
| (4) | larg-o “wide” | al-larg-a-re “to widen” |
| | profond-o “deep” | ap-profond-i-re “to deepen” |
| | al-larg-a-ment-o “widening” | |
| | ap-profond-i-ment-o “deepening” | |

The thematic vowel is not a part of the root, as it does not occur in the roots *larg-* and *profond-*. On the other hand, it cannot be seen as part of the infinitival suffix, because we do not want to miss the generalization that all infinitives end in *-re*. Hence, the vowels preceding the ending *-re* must be assigned a morphological status of their own. Consequently, the noun *allargamento* contains five morphemes: a prefix *al-*, a root *larg*, a thematic vowel *-a-*, the derivational morpheme *-ment*, and the inflectional ending *-o*. So this word has five morphological atoms, which cannot be decomposed further into smaller morphological constituents. Each of these five atoms has a different name because they have different functions in the make-up of this word.

The general term for bound morphemes that are added to roots and stems is affix. If an affix appears before the root/stem, it is a **prefix**, if it appears after the root/stem, it is a **suffix**. So *al-* and *ap-* are prefixes, whereas *-a*, *-ment*, and *-o* are suffixes. Two other types of affixation are illustrated in (5):

- (5) **infix** (within a root): Khmu (Laos) *s-m-ka*: t “roughen” < *ska*: t “rough”; Alabama (Stump 2001: 131) *ho-chi-fna* “smell, 2SG” < *hofna* “to smell”, *chifip-as-ka* “poke, 2PL” < *chifipka* “to poke”;
- circumfix** (combination of prefix and suffix): Dutch *ge-fiets-t* “cycled, PAST PARTICIPLE” < *fiets* “to cycle”; German *Ge-sing-e* “singing” < *sing* “to sing”.

Infixation and circumfixation are much rarer than prefixation and suffixation.

Affixes are bound morphemes, but not all bound morphemes are affixes. There are many roots from Greek and Latin that are used in so called **neo-classical compounds** but do not occur as words by themselves. These compounds are called ‘neo-classical’ because they consist of constituents from the classical languages Greek and Latin that were combined into compounds long after these languages ceased to be ‘living languages’. In such compounds either one or both constituents are not lexemes:

- (6) micro-: micro-scope, micro-phone, micro-gram, micro-wave tele-: tele-phone, tele-vision, tele-communication
- graph: di-graph, sono-graph, photo-graph, tele-graph
- scope: micro-scope, tele-scope, cine-scope, spectro-scope

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Neo-classical roots such as *scope* and *graph* can also be used nowadays as words, but in that case they have a more specific meaning than in these compounds. Such non-lexical roots are called **combining forms** since they only occur in combination with other morphemes. These bound roots cannot be considered affixes since that would imply that words such as *necrology* would consist of affixes only. This goes against the idea that each word has at least one stem. Thus, we might adapt our definition of what compounds are, and define them as combinations of lexemes and/or non-affixal roots.

The bound morphemes in neo-classical compounds have an identifiable meaning, but there are also morphemes that have no clear meaning. In the word *cranberry* the part *berry* is identifiable, and this makes us interpret the word *cranberry* as denoting a particular kind of berry. Yet, *cran-* has no particular meaning. Similarly, the Dutch compound *stiefvader* “stepfather” denotes a particular kind of father, and hence can be parsed into *stief* and *vader*. However, the morpheme *stief* does not occur as a word. This phenomenon of **cranberry morphemes** is widespread, and is to be expected since complex words can lexicalize and thus survive, even though one of their constituent morphemes has disappeared from the lexicon. The following examples from Dutch illustrate the same phenomenon for derived words with suffixes that are still used for coining new words (the constituent before the suffix does not occur as a lexeme):

- (7) arge-loos “naive”, beslommer-ing “chore”, dier-baar “dear, precious”, le-lijk “ugly”, moei-zaam “difficult”, sprook-je “fairy tale”, veil-ig “safe”

These recognizable suffixes determine the syntactic category of the word of which they form a constituent. For example, *-baar* is a suffix that creates adjectives, and hence *dierbaar* is predictably an adjective. This implies that when we have to decompose words into morphemes, not all morphemes have an identifiable lexical or grammatical meaning. Cranberry morphemes like English *cran-* and Dutch *dier-* thus form a problem for an exclusively meaning-based definition of the notion morpheme. This also applies to another kind of non-affixal bound root, the recurrent constituents of words borrowed from Latin such as the following English verbs:

- (8) conceive, deceive, perceive, receive
adduce, deduce, induce, produce, reduce
admit, permit, remit, transmit

It makes sense to consider these words complex, because of recurrent elements such as *ad-*, *con-*, *de-*, *in-*, *per-*, *pro-*, *re-*, and *trans-* which are prefixes, and bound roots like *-ceive*, *-duce*, and *-mit*. Although these bound roots have no identifiable meaning, they should be recognized as morphemes since they determine the form of corresponding noun: all verbs in *-ceive* have a corresponding noun in *-ception*, those ending in *-duce* one in *-duction*, and verbs in *-mit* one in *-mission*. There is a wealth of such bound morphemes in the non-native part of the English lexicon, as the following examples illustrate:

- (9) arct-ic, cred-ible, in-del-ible, gradu-al, mor-al, mus-ic, negoti-ate, per-for-ate, per-nic-ious

In lexeme-based morphology these bound roots do not have a lexical entry of their own, they only occur as part of established (listed) complex lexemes. In morpheme-based morphology, on the other hand, they will have to be represented as bound lexical morphemes with their own lexical entry. The advantage of the lexeme-based approach is that it correctly predicts that new combinations of a prefix and a bound root such as *demit* or *perduce* are not to be expected, because we cannot assign a meaning to such new combinations.

Boundness of morphemes is also created through allomorphy. **Allomorphy** is the phenomenon that a morpheme may have more than one shape, corresponds with more than one morph. A **morph** is a particular phonological form of a morpheme. Allomorphy is found in both affixes and root morphemes. In the Italian examples in (4) we saw the prefixes *al-* and *ap-*. In fact, these are two allomorphs of the prefix *ad-*, in which the final consonant /d/ has assimilated to the first consonant of the root morpheme. This kind of allomorphy can be accounted for by assuming one common **underlying form** /ad/ for

the different allomorphs of this prefix, and a rule of assimilation that derives its different surface forms.

Allomorphy is also found in root morphemes. In languages such as Dutch, German, and Polish, **obstruents** (that is, stops and fricative consonants, which are articulated with a high degree of obstruction in the mouth) are voiceless at the end of a word. Hence we get alternations of the following kind in pairs of singular and plural nouns:

(10) Dutch	hoed [hut] “hat”	hoed-en [hudən]
German	Tag [ta:k] “day”	Tag-e [ta:gə]
Polish	chleb [xlɛp] “bread”	chleb-y [xlɛbɨ]

The symbols between brackets represent the phonetic forms of these word forms; the phonetic symbols are taken from the International Phonetic Alphabet (IPA). This is the alphabet used in dictionaries and grammars to indicate the phonetic forms of words in an unambiguous way. This is necessary because orthographical conventions differ from language to language. For instance, the vowel [u] is represented as *u* in German, but as *oe* in Dutch, as illustrated by the first example in (10).

Some linguists prefer to restrict the term ‘allomorphy’ to those cases in which the variation in phonetic shape of a morpheme does not follow from the automatic phonological rules of the language. The alternation between voiced and voiceless stops exemplified in (10) is determined by a phonological constraint that excludes voiced obstruents in syllable-final (Dutch and German) or word-final (Polish) position. Hence, the variation in shape of these morphemes is an automatic effect of the phonology of the language. This is usually accounted for by assuming a common underlying form for the different realizations of the morpheme involved, with a morpheme-final voiced obstruent. In the singular forms that lack an overt ending, a process of syllable-final or word-final devoicing then applies. The plural forms will not undergo this process because in these forms the relevant segments do not occur in final position.

This type of alternation can be contrasted to the alternation between voiceless and voiced obstruents in English, as in the singular-plural word pair *wife-wives*. This alternation applies to a small and closed set of English words only. That is, there are alternations that are restricted to a specific set of words. Another example is that the Dutch diminutive suffix has five different shapes (-*tje*, -*je*, -*etje*, -*pje*, and -*kje*); the choice of one of these depends on the phonological composition of the stem. For instance, the allomorph -*je* has to be selected after stems ending in an obstruent. The alternations involved are unique to diminutive words, and do not follow from general phonological constraints of Dutch. Therefore, a distinction is made between phonology proper (the variation of the kind mentioned in (10) that is the effect of automatic phonological rules) and **morphophonology**, the domain of phonology in which alternations are restricted to a specific subset of words. The term ‘allomorphy’ might therefore be reserved for such non-automatic alternations, which can be accounted for in two ways. One option is to assume a common underlying form for the allomorphs, and derive the surface forms by means of one or more morphophonological rules, that is, rules whose application depends on non-phonological properties such as the feature DIMINUTIVE. Alternatively, the allomorphs can be listed individually in their surface form, with a specification of the phonological context in which they occur.

In some cases the non-automatic alternation is unique for one or a few words. For instance, the English adjective *plato*, related to the noun *Plato*, has the morphological structure *platon-ic*, with the root *platon-* and the suffix *-ic*. The morpheme *platon-*, an allomorph of *Plato*, is a bound morpheme since it does not occur as a word of its own. This kind of allomorphy, a heritage from Greek (in the case of *Plato*) and Latin, increases the set of bound non-affixal morphemes enormously. An example from the Latinate substratum of English is *act*, *act-or* vs *ag-ent* with the bound root *ag-*. Although it has to be listed, the allomorph *platon-* does not require its own entry in the lexicon: it can be specified in the lexical entry for *Plato* as the allomorph to be used for the derivation of words from *Plato* by means of non-native suffixes. The same applies to the bound root *ag-*.

Notes

Another, more radical form of formal variation in paradigms is the phenomenon of **suppletion**, where there is no phonological similarity between the different forms of a lexeme. In the English word pair *good-better* we observe the suppletive root *bet* for *good*, followed by the comparative suffix *-er*. Thus, we might say that the lexeme GOOD comprises two different stems, *good* and *bet*. In the pair *bad-worse* the suppletive simplex form *worse* even expresses both the meaning of the stem *bad* and the comparative meaning. Some linguists also use the notion 'suppletion' in the domain of word-formation. In the following examples of inhabitative names in Italian you can observe a formally regular case of derivation, a case of allomorphy, and a case of suppletion respectively:

(11) Milano-Milan-ese, Forli-Forliv-ese, Chieti-Teat-ino

Although alternations in the phonological shape of a morpheme may not be the effect of the phonology of a language, the choice of a particular allomorph or suppletive root can still be phonologically conditioned (Carstairs 1988; Kiparsky 1994). For instance, the Dutch agentive suffix *-aar* is selected after stems ending in the vowel [ə] + *l, r, n* (that is, in a phonologically defined environment), and the allomorph *-er* elsewhere. The Italian verb *andare* "go" has two suppletive roots: *and-* when the root is not stressed, and *vad-* when the root is stressed in the verbal paradigm; see (12). This example illustrates that the choice between suppletive roots may be phonologically governed as well.

(12)

	SINGULAR	PLURAL
1. PERS	vádo	andi á mo
2. PERS	vái	and á te
3. PERS	vá	v á nno

22.2 Morphological Operations

Morphology does not only deal with the analysis of existing words into their constituent pieces. The language user is able to make new words or forms of words, and it is this form of creativity that is the focus of morphology. The key notion involved is that of 'morphological operation'. This term denotes a particular kind of linguistic activity, and invokes a dynamic perspective on morphology. Two types of morphological operations have been discussed so far: compounding and affixation. They are the prototypical cases of **concatenative morphology**, in which morphological constituents are concatenated in a linear fashion. Compounding and affixation are the most widespread types of morphology since they create words with a high degree of **transparency**, that is, words of which the formal morphological structure correlates systematically with their semantic interpretation.

The formal operations available in morphology have several functions. Affixation is used both in word-formation and in inflection, and this applies to a number of other morphological operations discussed in this section as well.

For each morphological operation, we have to define the set of **base words** to which it applies. Often, the operation is restricted to base words of a particular syntactic category. This is the input category of the operation. The outputs of an operation also belong to a specific syntactic category. The input category of the English suffix *-able* is V, and the output category is A. Hence, verbs are the base words of the suffix *-able*. Thus, in the case of derivation, the morphological operation may result in words of another syntactic category or subcategory than that of the input words. In that case, we speak of a **category-changing** or **class-changing** operation.

If compounding and affixation were the only kinds of morphological operation, morphology could be said to consist of just one operation— concatenation. In such a view, the elements to be concatenated are lexemes and affixes. Affixes are provided with a subcategorization feature that specifies with which kind of morphological elements it has to combine. For instance, the suffix *-able* will be specified

as $[V-]_A$, which means that it takes verbs to form adjectives.

The reason why the term ‘morphological operation’ is more adequate than the term ‘concatenation’ is that there are also morphological processes that do not consist exclusively of the attachment of affixes to words. In this section I present a short survey of these operations, which are dealt with in more detail in subsequent chapters on derivation and inflection.

A special kind of affixation is the attachment of a complete or partial copy of the base as a prefix or a suffix. This is called **reduplication**, illustrated by the following examples (Uhlenbeck 1978: 90) from Javanese:

(13) a. **full reduplication**

baita “ship”	baita-baita “various ships”
səsupe “ring”	səsupe-səsupe “various rings”
omaha “house”	omaha-omaha “various houses”

b. **partial reduplication**

gəni “fire”	gəgəni “to warm oneself by the fire”
jawah “rain”	jəjawah “to play in the rain”
tamu “guest”	tətamu “to visit”

In the examples of partial reduplication, the prefix consists of a copy of the first consonant of the base followed by the vowel schwa [ə]. The doubling effect of full reduplication is often reflected by its meaning contribution: for nouns it may express plurality or distributivity (as in 13a), for verbs a high intensity of the action expressed, and for adjectives a higher degree of the property mentioned by the adjective.

Reduplication is a kind of affixation (or compounding, in the case of full reduplication), and hence to a certain extent a case of concatenative morphology. Yet, it is clear that we cannot list reduplicative affixes with their phonological content in the lexicon since this content depends on the phonological composition of the stem. The obvious analysis is the assumption of an abstract affix RED(UPLICATION) that triggers a phonological operation of copying. The copy is then attached to the copied stem.

A second type of morphological operation is the use of tone patterns. Tone patterns belong to the **suprasegmental** properties of languages. In Ngiti, the plural form of kinship terms is expressed systematically by the tone pattern Mid-High on the stem, whatever the tone pattern of the singular (Kutsch Lojenga 1994: 135):

(14)	SINGULAR	PLURAL
	àba-du	abá-du “my father(s)”
	adhà-du	adhá-du “my co-wife(s)”
	andà-du	andá-du “my uncle(s)”

Thus, we may speak of a **tonal morpheme** Mid-High which is superimposed on the segmental material of the stem of these nouns. This is why such a tonal morpheme is sometimes called a **suprafix**. This is a case of non-concatenative morphology since this kind of affix is not linearly ordered with respect to its base.

Many languages make use of **internal modification**. Standard examples are the patterns of vowel alternation in the roots of the so-called strong verbs in Germanic languages, called **ablaut**, **vowel gradation**, or **apophony**. Such vowel alternations are used in a number of Indo-European languages for different forms of the verb:

(15) Classical Greek: leip-o “I leave”; le-loip-a “I have left”, e-lipon “I left”

The *e* in the first root form alternates with *o* in the second, and zero in the third (the second form also exhibits partial reduplication). This pattern of vowel alternation is reflected in Germanic languages, as the following examples from Dutch illustrate:

Notes

- (16) geef [ɣe:f] “to give” gaf [ɣaf] “gave” gegeven [ɣəɣe:vən] “given”
 help [hɛlp] “to help” hielp [hilp] “helped” geholpen [ɣəhɔlpən] “helped”
 schiet [sxit] “to shoot” schoot [sxɔ:t] “shot” geschoten [ɣəsxɔ:tən] “shot”

Vowel alternations also play a role in the derivation of deverbal nouns of such verbs, as shown by the related Dutch deverbal nouns *hulp* “help” and *schot* “shot”. They only differ from their verbal bases *help* and *schiet* with respect to the root vowel.

Ablaut is not the only kind of vowel alternation with a morphological function. German exhibits an alternation between back vowels and front vowels in singular-plural noun pairs:



Did u know?

Word formation is a process, as we have said, where you combine two complete words, whereas with inflection you can combine a suffix with some verb to change its form to subject of the sentence. For example: in the present indefinite, we use ‘go’ with subject I/we/you/they and plural nouns, whereas for third person singular pronouns (he/she/it) and singular nouns we use ‘goes’. So this ‘-es’ is an inflectional marker and is used to match with its subject. A further difference is that in word formation, the resultant word may differ from its source word’s grammatical category whereas in the process of inflection the word never changes its grammatical category.

- (17) Apfel [apfəl] Äpfel [ɛpfəl] “apple(s)”
 Bach [bɑx] Bäche [bɛçə] “brook(s)”
 Buch [bu:x] Bücher [by:çər] “book(s)”

This kind of alternation is called **umlaut** (also called **vowel mutation** or **metaphony**). Historically it is a case of assimilation: back vowels of roots are fronted before a high front vowel in the following syllable (the plural suffix contained a high vowel originally).

If we only take the first example of (17) into consideration, we might conclude that plural formation in German is a case of non-concatenative morphology: the plural is created by the replacement of the back root vowel by its front counterpart. However, an alternative analysis in terms of affixation is also possible. Given the three examples in (17), we might conclude that there are at least three different plural suffixes in German: ϕ (zero), *-e*, and *-er*. In addition, the plural nouns may exhibit stem allomorphy, a vowel alternation triggered by the attachment of the plural suffix. Such morphologically conditioned alternations may also affect consonants (Lieber 1987, 2000). English has cases of consonant modification as well, for instance *defend-defence*, *offend-offence*, *belief-believe*, and *proof-prove*.

An interesting kind of non-concatenative morphology is found in, among others, Semitic languages: **root-and-pattern morphology**. The basis of each lexeme is a skeleton of consonants, in most cases three, which functions as the root of the lexeme. The abstract pattern of consonants is combined with one or more vowels which are intertwined with the sequence of consonants. In addition, the lexeme may contain a prefix and a suffix. In the words of Modern Hebrew in (18) (Clark and Berman 1984: 545) the roots *g-d-l* “grow” and *k-t-b* “write” have been used (the *k* and *b* may surface as *x* [x] and *v* respectively). The vowel patterns that are intercalated with the consonantal skeletons are called **transfixes** since they are spread across the consonantal sequence.

(18)

Pattern	Root g-d-l	Root k-t-b
<i>CaCaC</i>	gadal “grow, get bigger”	katav “write”
<i>hiCCiC</i>	higdil “enlarge”	hixtiv “dictate”
<i>CCiCa</i>	gdila “growth”	ktiva “writing”
<i>miCCaC</i>	migdal “tower”	mixtav “letter, missive”
<i>haCCaCa</i>	hagdala “enlargement”	haxtava “dictation”

Notes

The morphological structure of the words in (18) can be represented as the linking between three different morphemes. Each of these morphemes forms a phonological tier of its own: (i) the skeletal tier that consists of a pattern of consonantal and vocalic slots that is characteristic of a particular morphological category, (ii) the sequence of consonants that represents the lexeme, and (iii) the vowels that fill the vocalic slots of the skeletal tier. The words *gadal* and *gdila* in (18) can be represented as in Figure 22.1. The consonants of the lexical root, and the vowel pattern (*a-a* for the base verb and *i-a* for the nominalization) are both linked to the central skeletal CV tier. These three tiers are then conflated into one sequence of sounds at the phonetic level of the grammar, where the phonetic forms of words are specified.

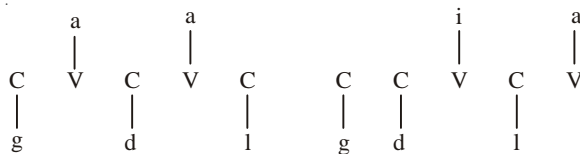


Figure 22.1: Three-tiered Representations of Words

The morphological operations discussed so far all have the effect that the phonological form of the input word is changed somehow. Conversion, on the other hand, consists of a change in syntactic (sub)category only. The conversion of nouns to verbs is quite common in European languages; see (19). The verbs are given here in their citation form, the infinitive. The conversion from noun to verb is not indicated directly by means of an affix, and is therefore also called **implicit transposition**, as opposed to **explicit transposition**, which denotes cases of category-changing word-formation in which the change is marked through the addition of an affix. Note that conversion does have indirect morphological effects: the verbs in (19) are recognized as such by their verbal inflectional endings, the infinitival suffixes (except the English verb since there is no overt infinitival ending in English). The category change may also have an effect on the stress pattern, as in the English pair *convért* (V)—*cónvert* (N), where the noun is derived from the verb, with concomitant stress shift from the last to the first syllable.

(19)

	Noun	Verb
Dutch	fiets “cycle”	fiets-en “cycle”
English	chain	(to) chain
French	guide “guide”	guid-er “guide”
Latin	corona “crown”	coron-a-re “crown”

If one wants to treat conversion as a kind of affixation, one is forced to assume a **zero-morpheme** that is added to the input word. However, there is no independent evidence for such a zero-affix, and we do not even know if the zero-morpheme should be taken to be a prefix or a suffix. Therefore, conversion as exemplified in (19) is better analysed in terms of the following morphological rule:

Notes

$$(20) [x]_N \rightarrow [[x]_N]_V$$

The verbs in (19) therefore have the structure $[[X]_N]_V$.

A defining property of the notion ‘conversion’ is that it has a direction: in the examples above, the verb has been derived from the noun. This phenomenon must therefore be distinguished from **multifunctionality**, the situation in which words can be used for different syntactic categories without a particular direction in the relation between these different uses of words. In Maori, for example, the word *waiata* can be used as a verb “to sing”, as a noun “song”, and as a participle “singing” (Bauer 1993: 510). In Sranan, a creole language of Surinam, the word *hebi* functions as an adjective “heavy”, a noun “weight”, an intransitive verb “to be heavy”, and a transitive verb “to make heavy” (Voorhoeve 1979: 43).

Change of category without overt morphological marking is also found in the case of **middle verbs**, which are intransitive and denote a property, whereas the corresponding activity verb denotes an activity (examples from Dutch):

- (21) Deze aardappelen schillen gemakkelijk
 These potatoes peel easily
 “These potatoes are easy to peel”
 Mars hapt zo heerlijk weg
 Mars eats so nicely away
 “Mars is so pleasant to eat”

(Mars is a kind of candy bar.) This kind of change from one subcategory of verbs to another subcategory may be subsumed under conversion because there is a clear direction in the relation between the verbs involved: the middle verb is derived from the activity verb.

In previous Unit you were introduced to the notion of paradigmatic word-formation, in which a morphological constituent of a word is replaced with another one. A typical case of this kind of word-formation is **affix substitution**, the replacement of one affix with another. In Dutch, female counterparts of agent nouns can be formed by replacing *-er* with *-ster* (Booij 2002a: 6):

- | | |
|--|------------------|
| (22) aanvoerd-er “captain” | aanvoerd-ster |
| betwet-er “lit. better knower, pedant” | betweet-ster |
| rederijk-er “rhetorician” | rederijk-ster |
| reizig-er “traveller” | reizig-ster |
| oproerkraai-er “ring leader” | oproerkraai-ster |

The operation of substitution as a viable way of making new words has developed from systematic relationships between words derived from the same base. In this case, both *-er* and *-ster* can be added to Dutch verbs to form agent nouns. Thus a pattern $[X-er]_N$: $[X-ster]_N$ could be observed, which was then extended to other nouns in *-er* without a straightforward verbal base. For instance, there is no Dutch verb *reizig* “to travel”, and yet, the agent noun *reiziger* has a female counterpart in *-ster*. The presence of the /d/ in *aanvoerdster* also betrays that this word is derived from *aanvoerder*. The /d/ does not belong to the verbal stem *aanvoer* “to lead”, but is part of the allomorph *-der* that is used after stems ending in /r/. Since it is *-er* that is replaced, the /d/ shows up in the female agent noun as well.

A prototypical case of paradigmatic word-formation is **back formation** in which the direction of derivation is inverted: the less complex word is derived from the more complex word by omitting something. Well-known examples from English are *to sculpt* from *sculptor*, and *to babysit* from *babysitter*. The noun *sculptor* is a borrowing from Latin. Because English has word pairs of the type V-[V+or]_N, {*terminate-terminator*, etc.}, the verb *sculpt* could be reconstructed from the noun *sculptor* by reinter-pretting this word as having the structure $[[sculpt]_V]_N$. The paradigmatic dimension involved here is that a word ending in *-or* is assigned an internal morphological structure with a verbal base on the basis of existing verb-noun pairs such as *terminate-terminator*.

The emergence of the verb *to babysit* can be reconstructed as follows. The word *babysitter* is a regular compound consisting of two nouns, *baby* and the deverbal noun *sitter*. However, there is no general process of N + V compounding in English. The exceptional NV compound *babysit* could therefore only arise through back formation. In the same way, the Dutch NV compound *stofzuig* “to vacuum-clean” arose through back formation from the regular NN compound *stofzuiger* “lit. dust sucker, vacuum cleaner”. In the cases of *to babysit* and *stofzuig*, the structure $[N][V-er]_{N,N}$ has been reinterpreted as $[[N V]_{V-er}]_N$, and subsequent back formation led to the rise of these N + V compounds.

22.3 Morphological Typology

The catalogue of morphological operations presented in section 2.2 raises the question to what extent the languages of the world make use of these possibilities. First, we can locate each language on a scale of degree of **synthesis**, the average number of morphemes in a word. On one end of the scale we find **isolating languages** that do not make use of morphology at all. A classical example of such a language is Vietnamese (which, however, is said to have compounds). At the other end of the scale we find **polysynthetic languages** such as Greenlandic and Alaskan Yup'ik, languages in which words may contain a considerable number of suffixes after the root.

Before we have a look at some relevant examples, I will first give a short clarification of the notational conventions used in **interlinear morphemic translation**. These conventions are of considerable importance for our understanding of the structure of sentences and words. A space marks the boundary between two words, and a hyphen represents a boundary between two morphemes within one word. Lexical morphemes are represented by lower case letters, and grammatical categories by small capitals. If one morpheme on the first line represents more than one piece of lexical or grammatical information in the morphemic gloss, the categories are separated by a dot, as in the following Latin example (Lehmann 1982: 205):

- (23) Manu-s manu-m lava-t
 hand-NOM.SG hand-ACC.SG wash-3sG
 “One hand washes the other”

The only exception to this use of the dot is its absence in combinations of the category PERSON and the category NUMBER, as in 3sG.

Let us now have a look at some examples of polysynthetic words in which the conventions just discussed are also exemplified—first Green-landic (Fortescue 1984: 273) and then Alaska Yup'ik (Mithun 1999: 28):



Did u know?

In the 19th century, philologists devised a now classic classification of languages according to their morphology. According to this typology, some languages are isolating, and have little to no morphology; others are agglutinative, and their words tend to have lots of easily separable morphemes; while others yet are inflectional or fusional, because their inflectional morphemes are “fused” together. This leads to one bound morpheme conveying multiple pieces of information.

- (24) tuqu-riikatap-puq
 die-long.ago-3SG.INDIC
 “He died long ago”
 anglani-tu-llru-u-nga caknek
 enjoy-customarily-PAST-IND.INTR-1SG very.much
 “I used to enjoy myself very much”

Notes

The first example is a sentence of one word only, the second one contains two words. When we compare this with the number of words in the English glosses (four and seven respectively), we get some idea of what it means for a language to be polysynthetic.

The second scale on which we may rank languages as to their morphological properties is that of **fusion**. In some languages, a word is easily segmentable into its constituent morphemes. An example is Turkish, a language that is therefore characterized as **agglutinative**: the stem of a word is followed by one or more suffixes, each with their own meaning:

- (25) *cocuk-lar-niz-dan*
 child-PL-YOUR.PL-ABL “from your children”

Most Indo-European languages are **fusional** in their inflectional system since different inflectional properties are often expressed by one and the same morpheme. In the Polish word form *koty* “cat, NOM.PL” the ending *-y* expresses simultaneously the properties NOMINATIVE and PLURAL. In the English word *walks*, the ending *-s* expresses three properties: PRESENT TENSE, SINGULAR, and 3.PERSON. Such units that serve to express more than one morphological property are called **portmanteau morphs**.

When a language tends to be more agglutinative, it will tend to have more morphemes per word than a fusional language, and hence it will be higher on the scale of synthesis as well. The average number of morphemes per word in Turkish is estimated to be four times higher than that in English (Csat 6 and Johanson 1998: 208).

The kind of typological classification discussed so far mainly has a descriptive and orientational function: by locating a language on a number of scales, we know roughly what kind of morphological system we may expect. But it does not provide fine-grained classifications. Germanic languages are fusional in their inflectional systems, but agglutinative in their system of derivational word-formation. Moreover, for an adequate descriptive classification other parameters are also relevant, for instance the parameter of reduplication: languages of the Austronesian family make wide use of reduplication patterns, whereas this does not apply to most Indo-European languages of Europe. Languages may also differ in the extent to which they make use of prefixation or suffixation.

Morphological typology becomes theoretically interesting if it enables us to predict certain properties of a language on the basis of other properties. For instance, the following **morphological universal** has been proposed by Greenberg(1963: 95):

- (26) If a language has the category of Gender, it always has the category of Number.

This universal has the form of an implication, and hence it predicts that of the four following logically possible languages only the first three exist:

- (27) a. Languages with Gender and Number
 b. Languages with Number only
 c. Languages without Gender or Number
 d. Languages with Gender only

Thus, an **implicational universal** is a restriction on the class of possible natural languages, and hence contributes to the definition of the notion ‘possible natural language’.

Some implicational universals pertain to markedness phenomena. **Markedness** is the asymmetrical distribution of properties. An example of a **markedness universal** is that there are many languages in which the singular is not expressed by a morpheme, but only the plural, whereas there are no languages where only the singular is expressed by a morpheme. For example, the asymmetric distributional pattern of singular and plural morphemes given in Table 22.1 has been found. This table shows that languages with a singular morpheme only must be excluded in order to restrict the degree of variation in natural language. Hence, we might formulate the following implication universal for this markedness pattern: ‘if singular number is expressed by a morpheme, then plural number as well’.

Table 22.1 Distribution of Number morphemes

Notes

	Absence of SG morpheme	Presence of SG morpheme
Presence of PL morpheme	English, Dutch	Latvian, Italian
Absence of PL morpheme	Chinese, Maori	

Source: Croft 1990: 69.

This generalization concerning the expression of number has to be amended slightly, however. There are languages where, for those entities that always occur in pairs or in groups, the plural form of the noun has no overt suffix, and the singular form ends in a **singulative** suffix. This is the case for Turkana (Dimmendaal 1983: 224-8), a language of Kenya with the singulative suffixes *-a* and *-it* (the prefixes are gender markers):



Notes

Word-based morphology is (usually) a Word-and-paradigm approach. This theory takes paradigms as a central notion. Instead of stating rules to combine morphemes into word forms, to generate word forms from stems, word-based morphology states generalizations that hold between the forms of inflectional paradigms.

- | | |
|-------------------------------|----------------------------|
| (29) <i>singulative</i> | <i>plural</i> |
| ε-sukɪn-a “breast” | ɨ-sukɪn “breasts” |
| e-turkàna-tt “Turkana person” | ɨ-türkanà “Turkana people” |

This reversal of the markedness pattern concerning singular-plural in a special domain is called **local markedness** (Tiersma 1982).

The use of **hierarchies** in morphological typology is illustrated by the following hierarchy for the different values for the category number:

- (30) singular > plural > dual

This hierarchy ranks singular above plural, and plural above dual. It expresses that singular forms are less marked than plurals, and plurals are less marked than duals. This means that if a language has a **dual** (that is, a word form with 2 as the value for the category number), it has also a plural, and if a language has a plural, it also has a singular. Hence, this hierarchy restricts the variation space of natural language: certain types of logically possible languages are excluded, such as a language with singular and dual only.

Not all the typological universals are absolute ones; some are statistical tendencies only. For instance, there are many more languages that only use suffixes (Turkish is an example) than there are languages that only use prefixes. Hence, there is a suffixing preference in natural languages. Yet, there are languages that are exclusively prefixing, so there is no absolute universal involved here. Many of the universals discussed in Greenberg (1963) are of this statistical nature.

Self-Assessment

- Form words of the following affixes:

- (i) bell (ii) bene (iii) bi (iv) bio

22.4 Summary

- Words can be divided into different kinds of morphemes such as roots and affixes, the morphological atoms of language. These morphemes may vary in shape (allomorphy), a variation that does not always follow from the phonological system of the language. In the case of suppletion, different stems co-occur in the paradigm of one lexeme.
- The set of morphological operations available to human languages comprises more than concatenation: conversion, reduplication (concatenation plus copying), different types of phonetic modification, root-and-pattern morphology, and paradigmatic word-formation also play a role.
- Languages do not all make the same use of the available morphological operations, and can be classified according to the indices of synthesis and fusion. In addition to this purely classificatory typology, morphologists make cross-linguistic comparisons of morphological systems in order to find constraints on the degree of morphological variation of natural language.

22.5 Key-Words

1. **Phone** : A phone in phonology has been described as “the smallest possible segment of sound abstracted from the continuum of speech”. Thus any objective smallest possible segment of speech sound, considered as a physical event, and without regard as to how it fits into the structure of any given language, is called a phone.
2. **Allophone** : An allophone is a speech sound that is one of a number of variants of a phoneme. This variant can be either in complementary variation or in free variation. We can classify allophone by way of an example. The k-sound in keel, calm and cool differs; in keel it is at the front in the mouth, in calm it is a little in the centre and in cool further back in the mouth. The absence of the above mentioned features do not distort the message for the native speaker. He does not differentiate between these sounds in everyday speech in the sense that he is not aware of the physical differences. He thinks these sounds to be the members of the k-class or to be all k. In other words, for the phoneme /k/, retracted-k, and fronted-k are all allophones.

22.6 Review Questions

1. Identify the bound constituents of the following English words: *disagreeable, acceptability, ungrammaticality, discriminatory, permafrost, fascination, protolanguage, versification, intolerance, productivity, unidirectionality*.
2. Consider the sets of morphologically related words in French in the table that exhibit variation in the underlined vowel of their base word (Dell and Selkirk 1978).

<i>Base word</i>	<i>Derived words</i>	
[œ] f <u>leur</u> “flower”	[œ] f <u>leu</u> rette “small flower”	[ɔ] f <u>lor</u> al “floral”
se <u>u</u> l “alone” pe <u>u</u> ple “people”	se <u>u</u> lement “only” pe <u>u</u> plade “tribe”	so <u>l</u> itude “popular” po <u>u</u> laire “popular”
[ɛ] v <u>ai</u> n “idle” cl <u>ai</u> r “clear” m <u>er</u> “sea”	[ɛ] v <u>ai</u> nement “in vain” écl <u>ai</u> rer “to light” am <u>er</u> rir “to land on the sea”	[a] v <u>ani</u> té “vanity” clar <u>i</u> fier “to clarify” mar <u>i</u> n “sailor”

africain “African”		Africaniste “Africanist”
humain “human”		humanité “humanity”
similaire “similar”		similarité “similarity”

Notes

- a. Formulate the rule that accounts for these vowel alternations.
- b. Is this rule an automatic phonological rule or a morphophonological rule?
3. In the following past tense forms of English verbs, the past tense suffix has three different phonetic shapes: *kept, walked, kissed, hugged, lived, added, fitted, coded*.
 - a. Which are the three phonetic forms of this suffix?
 - b. Formulate the rules (or rule) that account for this phonetic variation.
4. Make a morphological analysis of the following words of the Amerindian language Cree, and give the interlinear morphemic glossing of the last word (Cowan and Rakušan 1985: 111):

niwa:pahte : n “I see (it)”
 kiwa:pahte : n “you see (it)”
 niwa:pahte:na : n “we see (it)”
 kiwa:pahte:na:wa : w “you (plural) see (it)”
 nima:čiše : n “I cut (it)”
 kima:čiše : n “you cut (it)”
 nima:čiše:na : n “we cut (it)”
 kima:čiše:wa : w “you (plural) cut (it)”
 nitapin “I sit”
 kitapin “you sit”
 nitapina:n “we sit”
 kitapina:wa:w “you (plural) sit”

Answers: Self-Assessment

1. (i) belligerent, antebellum, bellicose, rebel
 (ii) benefactor, beneficial, benevolent, benediction, beneficiary, benefit
 (iii) bicycle, bifocals, biceps, billion, binary, bivalve, bimonthly, bigamy, bimetal, biathlete, bicarbonate
 (iv) biology, biography, biodiversity, bioavailability, bioflavonoid, biofuel, biohazard, biomass, biorhythm

22.7 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 23: Word-Formation: Process and Rules

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Objectives

After studying this Unit students will be able to:

- Understand the process of word formation
- Discuss the inflectional morphology of English.

Introduction

Morphemes are of great importance in the formation of words. Morphemes can be both grammatical and lexical. Examples of free grammatical morphemes could be articles, pronouns, etc. Morphemes like, plurals, past tenses, are also grammatical morphemes, but they are not free because they cannot exist independently. It is true that grammatical morphemes have no meaning in themselves but when they are attached to a lexical morpheme, they modify the meaning of lexical morphemes and thus produce a new grammatical word. Let us discuss in detail, how morphemes function in the formation of words.

23.1 The Process of Word-Formation

In English language we see new words coming into dictionary very frequently. In recent pasts words like criminalise, and marginalise have been introduced. Such formations of words are based on fixed rules and not on arbitrary basis. Let us examine these rules of word-formation in detail.

Simple, Complex, and Compound Words: Words can be categorised as simple, complex, and compound words depending upon the nature of combination of morphemes. If there is just a realisation of a free morpheme, it can be called as a simple word. A combination of free morpheme and grammatical or bound morpheme will make up a complex word and a combination of two or more free morphemes and one or more bound morphemes will make up a compound word. There are some cases wherein a complex word can be just a combination of two or more bound morphemes. For examples, word 'local'. 'local' is a combination of loc+al, linguists consider 'loc' as a morpheme, but there is no independent use of 'loc', it must be a realisation of a bound morpheme. Thus a complex word can be a combination of two or more bound morphemes.

Affixes, Stems, Roots: Morphemes that combine to make a word are also identified as separate elements. The three categories in which these elements are categorised are affixes, stems and roots.

As said earlier a complex word is, either a combination of one free morpheme and one or more bound morphemes or two or more bound morphemes. The free morpheme in a word is called 'base' of the complex word. In case wherein a complex word is a combination of two or more bound morphemes, the base cannot be a free morpheme. In such a case the base is a bound morpheme, and is called 'bound base'. And those bound morphemes which attach themselves either at the beginning or at the end of the base are called 'affixes'. Affixes are two types—prefixes and suffixes. Prefixes are those which are attached before the base and suffixes are those which are attached after the base. Common examples of prefixes are im-, de, etc. and the examples of suffixes are -fy, and -ly, etc. Bases are not always a free morpheme or a bound morpheme, but sometimes they can also be a combination of free and bound morphemes. 'Stem' is the synonym of 'base', i.e. stems are either a free morpheme, or bound morpheme or a combination of free and bound morphemes to which affixes are attached to make a new word.

Inflectional and Derivational Morphology: One of the most important and perhaps universal classifications of morphemes is derivational and inflectional morphemes.

1. **Derivational morphemes** make new words from old ones (Crystal, p.90). Thus creation is formed from create, but they are two separate words. Derivational morphemes generally
 - (a) change the part of speech or the basic meaning of a word. Thus-ment added to a verb, forms a noun (judg-ment). Re-activate means "activate again".
 - (b) are not required by syntactic relations outside the word. Thus un-kind combines un-and kind into a single new word, but has no particular syntactic connections outside the word—we can say he is unkind or he is kind or they are unkind or they are kind, depending on what we mean.
 - (c) are often not productive—derivational morphemes can be selective about what they'll combine with, and may also have erratic effects on meaning. Thus the suffix-hood occurs with just a few nouns such as brother, neighbour, and knight, but not with most others. e.g., *friendhood, *daughterhood, or * candlehood. Furthermore "brotherhood" can mean "the state or relationship of being brothers, " but "neighbourhood" cannot mean "the state or relationship of being neighbours."
 - (d) typically occur between the stem and any inflectional affixes. Thus in governments, -ment, a derivational suffix, precedes -s, an inflectional suffix.
 - (e) in English, may appear either as prefixes or suffixes: pre-arrange, arrangement.
2. **Inflectional Morphemes:** Vary (or "inflect") the form of words in order to express grammatical features, such as singular/plural or past/present tense. Thus boy and boys, for example, are two different forms of the "same" word; the choice between them, singular vs. plural, is a matter of grammar and thus the business of inflectional morphology. (Crystal, p.90)

Inflectional Morphemes generally

- (a) do not change basic meaning or part of speech, e.g. big, bigg-er, bigg-est are all adjectives.
- (b) express grammatically required features or indicate relations between different words in the sentence. Thus in Lee love-s Kim: -s marks the 3rd person singular present form of the verb, and also relates it to the 3rd singular subject Lee.
- (c) are productive. Inflectional morphemes typically combine freely with all members of some large class of morphemes, with predictable effects on usage/meaning. Thus the plural morpheme can be combined with nearly any noun, usually in the same form, and usually with the same effect on meaning.
- (d) occur outside any derivational morphemes. Thus in ration-al-ization-s the final -s is inflectional, and appears at the very end of the word, outside the derivational morphemes -al, -iz, -ation.
- (e) in English, inflectional affixes are only suffixes.

23.2 The Inflectional Morphology of English

Let us discuss in detail in inflection morphology of English by describing paradigm of all regular parts of speech.

Inflection Morphology of English Nouns: English nouns can be categorised into two major categories—proper nouns, and common nouns. Proper nouns are those which have a unique identify and common nouns are those which refer to a person, place, or a thing.

To understand inflectional morphology of noun, let us first examine two grammatical rules that apply on English nouns:

1. **The Number Rule:** According to this rule, one can choose between singular and plural references. If a noun is supposed to be singular, we can choose **singular** bound morpheme and if it is supposed to be plural, we can choose **Plural** bound morpheme.
2. **The Case-formation Rule:** According to this rule one noun can be combined with other in order to signify possession. In case we want to express that noun N2 belongs to N1, we can choose bound morpheme **Possession** with N1.

These are the two rules which apply in the paradigm formation of English nouns. In the case of proper noun only second rule is applicable because we do not have the choice of numbers in case of proper nouns. But a proper noun can also be used in a plural form, only it is used as common noun. This gives us two paradigm of proper noun.

- Common Case - Proper noun + COMMON, examples - Ram, Sam, etc
- Possessive Case - Proper noun Possessive, examples - Ram's, Sam's, etc.

Paradigm of Common Nouns: Common nouns can be categorised into 'count' nouns and 'mass' nouns.

Count nouns are those which can be counted, thus count nouns, for example house, bikes, cars, etc. and mass nouns are those which cannot be counted like love, peace, anger, etc. Paradigm of count nouns involves both the rules state above . i.e. number and case rules. This can be made clear with the clear with the following chart:

Rule I	SINGULAR	PLURAL
	COUNT NOUN + SINGULAR	COUNT NOUN + PLURAL
	Cat + SINGULAR = 'Cat'	Cat + PLURAL = 'Cats'
	Dog + SINGULAR = 'Dog'	Dog + PLURAL = 'Dogs'
	Horse + SINGULAR = 'Horse'	Horse + PLURAL = 'Horses'
Rule II	Common Case	Possessive Case
	COUNT NOUN + COMMON	COUNT NOUN + POSSESSIVE
	Cat + COMMON = 'Cat'	Cat + POSSESSIVE = 'Cat's'
	Dog + COMMON = 'Dog'	Dog + POSSESSIVE = 'Dogs'
	Horse + COMMON = 'Horse'	Horse + POSSESSIVE = 'Horses'
	= 'Horse's'	
	Plural Number + Common Case	Plural Number + Possessive Case
	Cat + PLU + COMMON = 'Cats'	Cat + PLU + POSSESSIVE = 'Cats'
	Dog + PLU + COMMON = 'Dogs'	Dog + PLU + POSSESSIVE = 'Dogs'
	Horse + PLU + COMMON = 'Horses'	Horse + PLU + POSSESSIVE = 'Horses'

Paradigm of Mass Noun : The mass nouns do not have nay plural inflection, as these nouns cannot be counted. Mass nouns are, however, different from zero plural count nouns. Some count nouns do have zero plural, but they can still be counted. Mass nouns do not have case inflection either. Thus mass nouns do not have any paradigm form.

Inflection Morphology of English Pronouns: Pronouns are the words used as a replacement of noun. For example, words like - he, she, it they, I, me, mine, you, yours, etc. Such pronouns are called personal pronouns. There is another form of pronoun which is called indefinite pronouns. Indefinite pronouns refer to the words like somebody, someone, etc. Personal pronouns are marked by following grammatical rules:

1. **The Case Rule:** According to this rule a personal pronoun can be used in nominative and objective or possessive forms. Such use of pronouns depends on the function of noun, which may vary from the subject of verb to the object of verb or it may combine with pronouns to show that N2 is the possession of N1 (N2 = Pronoun, N1 = Noun)
2. **The Person Rule:** According to this rule pronouns can function as a first person (the speaker), the second person (the addressee) or the third person (the third party)
3. **Gender Rule:** According to this rule pronouns can function as a masculine, a feminine, and a neuter.
4. **The Number Rule:** This rule allows pronoun to be two different forms, i.e. singular and plural. Thus keeping in mind these rules we can present the paradigm of pronouns as followings:

Person	Number	Gender			Case	
			Nom.	Obj.	1st Poss	2nd Poss
First	Singular		I	me	my	mine
	Plural		we	us	our	ours
Second			you	you	your	yours
Third	Singular	Masc.	he	him	his	
		Fem.	she	her		hers
		Neut		it		its
	Plural		they	them	their	theirs

Indefinite pronouns do not have any number inflection; they only show case inflection like someone someone's, etc.

Inflection Morphology of English Adjectives: Degree rule is the only grammatical rule with morphological result that applies on adjectives. According to this rule the base adjectives. According to this rule the base adjective morphemes can combine with degree morphemes i.e. superlative degree and comparative degree, to show inflection.

There are several adjectives which donot add nay suffixes in their superlative and comparative state, instead they add 'most' and 'more'. There are some other adjectives which in their comparative and superlative forms are completely unrelated to their base adjectives. For example, 'good' in comparative and superlative forms is 'better' and 'best'

These adjectives are not taken into consideration when presenting the morphological paradigm of adjectives as:

Base	Positive	Comparative	Superlative
Sweet	Sweet + POSITIVE = Sweet	Sweet + COMPARATIVE = Sweeter	Sweet + SUPERLATIVE = Sweetest

Inflection Morphology of Adverbs: Like adjective, adverbs also have only one rule for morphological consequence, i.e. the degree rule. Adverbs share their inflectional paradigm with adjectives, in fact there are number of adjectives which function like adverb without any change in form like fast, short, hard, etc., and thus also have same degree of inflection.

Notes

Inflection Morphology of English Verbs: In English language verbs can be categorised into three categories:

1. **Full Verbs:** These are the main verbs in the sentence for example jump, hit, eat, walk, etc.
2. **Modal Verbs:** These are the auxiliaries like can, could, shall, should, etc.
3. **Primary Verbs:** These are both auxiliaries and full verbs. There are only three primary verbs, they are be, have, and do.

Grammatical rules of morphological consequence which applies on English verbs are:

1. **The Person and Number Rule:** According to this rule there is a change in the form of primary and full verbs depending upon the number and person of nouns.
2. **The Tense Rule:** This rule refers to the change in the form of verb depending upon the reference of time in the sentence, i.e. past and present. Verbs do not undergo any changes in future tense. Thus we have only two bound morphemes for this – PRESENT and PAST.
3. **The Aspect Rule:** This rule refers to the continues and perfect form of tense.
4. **The Voice Rule:** This rules about the active and passive voice of the verb. In active voice, noun is the subject of verb by whom action has been performed and in passive voice noun becomes the affected person and corresponds to the object of verb.

Paradigm of Full Verbs: Full verbs can further be divided as regular and irregular verb. Regular verbs are those which have four forms. i.e. base (work), -s (works), -ing (working), and past (worked). Irregular verbs are of two types: (a) those which appears in all five forms. For example verbs like 'write'- write, writes, writing, wrote and written. (b) Those which appear in only three forms. For example, verb like 'cut' has only three forms – cut, cuts, and cutting.

Paradigm of Modal Verbs: Modal verbs do not show any inflection due to the above four rules, and thus they cause change in the forms of full verbs.

Paradigm of Primary Verbs: Primary verbs are used both as main verbs and auxiliary verbs. Consider as sentence "What did he do?" here did is the auxiliary and do is the main verb. These verbs change their forms according to the above rules. For example in person singular number 'be' becomes 'am' in present tense, 'was' in past tense; in first person plural number, second person singular and plural number, and third persons plural number it becomes 'are' in present tense and 'were' in past tense.

Self-Assessment

1. Distinguish inflectional and derivational affixes in the following words:
 - (i) tributaries
 - (ii) unclassified
 - (iii) beginnings
 - (iv) friendlier
 - (v) writer's

23.3 Summary

- Morphemes can be both grammatical and lexical. Examples of free grammatical morpheme could be articles, pronouns, etc. Morpheme like, plurals, past tenses, are also grammatical morpheme, but they are not free because they cannot exist independently. It is true that grammatical morphemes have no meaning in themselves but when they are attached to a lexical morpheme, they modify the, meaning of lexical morphemes and thus produce a new grammatical word. Let us discuss in detail, how morpheme functions in the formation of words.
- Words can be categorised as simple, complex, and compound words depending upon the nature of combination of morphemes. If there is just a realisation of a free morpheme, it can be called as a simple word. A combination of free morpheme and grammatical or bound morpheme and grammatical or bound morpheme will make up a compound word. There are some cases wherein a complex word can be just a combination of two or more bound morphemes. For examples, word 'local'. 'local' is a combination of loc+al, linguistics consider

'loc' as a morpheme, but there is no independent use of 'loc', it must be a realisation of a bound morpheme. Thus a complex word can be a combination of two or ore bound morphemes.

Notes

23.4 Key-Words

2. The Tense Rule : This rule refers to the change in the form of verb depending upon the reference of time in the sentence, i.e. past and present. Verbs do not undergo any changes in future tense. Thus we have only two bound morphemes for this – PRESENT and PAST.
3. The Aspect Rule : This rule refers to the continues and perfect form of tense.

23.5 Review Questions

1. What is the basis for the classification of morphemes into (a) Free and Bound, and (b) Grammatical and Lexical?
2. Discuss the process of word formation.

Answers: Self-Assessment

1. (i) tributaries : tribute + ary (deriv.) (tribute + ary) + s (Infl.)
 (ii) unclassified : class (i) + fy (Deriv.) (un + (Class (i) + fy) + ed (Infl.)
 (iii) beginnings : begin + ing (Deriv.) (Begin + ing) + s (Infl.)
 (iv) friendlier : friend + ly (Deriv.) (friend + ly) + er (Infl.)
 (v) writer's : write + er (Deriv.) (writer + er) + 's (Infl.)

23.6 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 24: Word-Formation: Derivation, Inflection

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Objectives

After studying this Unit students will be able to:

- Discuss Derivational Morphology
- Explain the Classification of Derivational Affixes.

Introduction

We have already seen that how inflectional morphology functions in the various transformation of a word. Now we will look at the various aspects of derivational morphology. Strictly speaking word-formation in real sense does not refer to the inflectional morphology, because the words created through the inflectional morphology, because the words created through the inflectional morphological are not new words, they are just the transformation of words into different grammatical forms. It is derivational morphology which actually creates new words. Let us understand its various functions in detail.

24.1 Derivational Morphology

Unlike inflectional morphology, in derivational morphology there is no need to stick with the constant demarcation between affixes and bound morpheme, because more or less they are the same thing. One reason behind this is that, in derivational morphology grammatical or bound morpheme is always treated as an affix. A derivational affix shows following characteristics:

1. When a derivational affix is combined with a lexical word, a new lexical word is created.
2. The meaning of the stem is modified in an arbitrary manner when attached with a derivational affix.
3. The attachments of derivational affixes are before the attachment of inflectional affixes in a complex word containing both derivational and inflectional affixes.
4. Derivational affixes are capable of changing the grammatical form of the stem.
5. Unlike inflectional affixes, derivational affixes could be both prefixes and suffixes.

24.2 Classification of Derivational Affixes

Classifications of derivational affixes are bit difficult in comparison with the classification of inflectional affixes, because derivational affixes do not restrict themselves with one grammatical

category. One derivational affix can combine with words of different grammatical categories, for example, prefix *dis-* can be combined with noun (*disorder*), with verb (*disobey*), etc. Another important fact is that, if a derivational affix is combined with the word of a particular grammatical category, it does not mean that same affix can be combined with all the words of that grammatical category. For example, *-er* (a suffix) when attached with verbs creates actor noun such as *player*, *killer*, etc. but *-er* cannot be combined with all the verbs in English to create an actor noun. It is difficult for us to imagine words like *dier*, *understander*, etc.

Meaning based classifications of derivational affixes i.e., *dis-* as a negative affix and *-er* as an actor affix does not work well in case of derivational prefixes. Though, it seems to work fine with derivational prefixes. But in case of suffixes it does not prove to be fruitful because, every derivational suffix imposes a different effect on the stems and sometimes same suffix changes the meaning of different stem in different manner. For example, as we have seen that *-er* derives actor noun when attached to a verb like *player* -one who plays, but when *-er* is attached to a word like *teenage* to become *teenager*, the above description fails.

Another way of classifying the derivational affixes is on the basis of the relating new words to their 'syntactic interpretation'. For example, words derived from the attachment of derivational suffix '*-able*', when relate to their syntactic interpretations tell us - "that which can be ...". For example, '*breakable* - which can be broken'; '*drinkable*-which can be drunk', etc. But this approach too, cannot be generalized as it does not tell us anything about the meaning of the derived word, like in case of *readable*, it tells something which can be read, but *readable* means something which is worth reading, something which can be read with enjoyment.

In the dark shadows of confusion regarding the classification of derivational affixes, it would be better if we keep following points in mind:

1. Try to use meaning in case of prefixes, as long as it proves to be helpful.
2. Classification of derivational suffixes involves two stages
 - (i) Classification on the basis of grammatical categories like noun suffixes, verb suffixes, etc.
 - (ii) Classification of these sub-categories again on the basis of stem.

Derivational Prefixes: Number of derivational prefixes is not much. Some common examples are negative prefixes like *dis-*, *un-*, *in-*, etc. Apart from adding the negative effect, prefixes are also used for several other purposes. Following are the ways in which prefixes can modify the meaning of the stem:

1. Negative: Common prefixes are *un-*, *a-*, *in-*, *dis-*, and *non-*.
2. Reversal and Deprivation: The well known example is *de-*, as in *dethrone*. Apart from *de-*, *dis-* and *un-* are also used for this purpose. Examples are, *disown*, *disconnect*, *unpack*, etc.
3. Disparagement: Common examples are *mal-*, *mis-*, *pseudo-*, etc., these are also called pejorative affixes because, when combined with stem they add meanings like *sad*, *wrong*, *false*, etc.
4. Expressing Number: *bi-*, *mono-*, *semi-*, etc.
5. Expressing Degree: *arch-*, *co-*, *extra-*, etc.
6. Expressing Size: *micro-*, *mini-*, *macro-*, etc.
7. Expressing Rank: *super-*, *sub-*, *under-*, etc.
8. Expressing Time and Order: *ex-*, *fore*, *pre*, etc.
9. Expressing Location: *fore-*, *inter-*, *super-*, *sub-* etc.
10. Expressing Attitude: *pro-*, *anti-*, *counter-*, etc.
11. Expressing Orientation: *counter-*, *anti-*, etc.

Let us first classify derivational suffixes on the basis of grammatical categories of the resulting or the product words.

1. **Noun Suffixes:** Those suffixes which create nouns, for example, *-hood*, *-dome*, *-ism*, *-ship*, etc.
2. **Adjective Suffixes:** These suffixes when combine with stem create adjectives. For example, *-ful*, *-ish*, *-less*, etc.

Notes

3. **Noun-adjective Suffixes:** These suffixes when added to stem create words, which can be used as both noun and adjectives. Examples are -ese, -ian, -ist, etc.
4. **Verb Suffixes:** These suffixes produce verbs when added to stem. Some common examples are -fy, -ize, -en, etc.
5. **Adverb Suffixes:** These suffixes when added to stem create adjectives. For example, -ward, -wise, -ly, etc.

Let us again classify each of these categories into various sub-categories based on the grammatical orientation of stem.

1. Noun suffixes can be classified into three sub-categories:
 - (i) **Denominal Noun Suffixes:** These suffixes when added to noun stem produce noun. Examples are -age, -dom, -eer, -er, -ery, -hood, etc.
 - (ii) **Deadjectival Noun Suffixes:** These suffixes when combined with adjective stem produce nouns. Examples are -dom, -er, -hood, -ness, etc.
 - (iii) **Deverbal Noun Suffixes:** These suffixes when added to verb stem produce nouns. Examples are -age, -ant, -action, -ee, -er, -ment, etc.
2. Adjective suffixes can also be further classified into three categories:
 - (i) **Denominal Adjective Suffixes:** These suffixes produce adjectives when added to noun stem. Examples are -al, -ful, -ial, -ical, -less, -ly, etc.
 - (ii) **Deadjectival Adjective Suffixes:** These suffixes create adjectives when combined with adjective stem. For example, -ish.
 - (iii) **Deverbal Adjective Suffixes:** These suffixes when attached with verbs create adjectives. Examples are -ale, -ant, -ent, -ful, -ive, etc.
3. Noun-adjective suffixes can have two forms:
 - (i) **Denominal Noun-adjective Suffixes:** These suffixes when added to noun stem produce words which can be used both as noun and adjectives. Examples are -ese, -an, -ist, etc.
 - (ii) **Deadjectival Noun-adjective Suffixes:** When added to adjectives these suffixes can produce words which can be used as both adjectives and nouns. For example, -ist.
 - (iii) **Deverbal Noun-adjective Suffixes:** When added to adjectives these suffixes can produce words which can be used as both adjectives and nouns. For examples, -ist.
4. Verb suffixes also have two forms:
 - (i) **Denominal Verb Suffixes:** These suffixes produce verbs when combined with noun stem. Examples are -fy, -ize, etc.
 - (ii) **Deadjectival Verb Suffixes:** When added to adjective stem, these suffixes create verbs. Example of such suffixes are -en, -ify, -ize, etc.
5. Adverb suffixes can be categorised into three forms:
 - (i) **Denominal Adverb suffixes:** When added to noun stems these suffixes are capable of producing adverbs. Examples are -ward, -wise, etc.
 - (ii) **Deadjectival Adverb Suffixes:** These suffixes produce adverbs when added to adjective stem. For example, -ly.
 - (iii) **Deverbal Adverb Suffixes** are capable of producing adverbs. For example, -ward.

24.3 Conversion (or Zero Derivation)

Conversion vs. Derivation: There are instances when a word changes its grammatical category without any addition of affixes. Consider following sentences:

1. Did you hear the record?
2. I have recorded everything you said.

In both the sentences word 'record' refers to different grammatical categories. In the first sentence it acts as a noun, however, in the second sentence it functions as a verb. Here no affixes have been added to the word and yet we have an entirely new lexical word. Such process of word formations is called conversion or zero derivation (as no derivational affixes have been added).

Though conversion appears to be an entirely different process of word formation, but it shares few characteristics of derivation.

1. Like derivation, once an inflectional affix has been added to a word, it cannot undergo conversion.
2. Just like derivation, conversion too changes the grammatical category of the word.
3. Similar to derivation, a new word formed by conversion has its independent grammatical paradigm depending upon the grammatical category it falls into.

An important point to think about is how to know whether verb 'record' has been converted into noun 'record' or vice versa. We can say that root word is always the primary nature or the meaning of word. The word 'record' is primarily is verb therefore the conversion is the noun 'record.'

Classifying Case of Conversion

For the classification of conversion we can use the same pattern as we used in the case of derivation.

1. Conversion to Noun:

- (i) **Conversion to Noun from Verb:** This conversion shows the quality of verb in terms on noun. For example, noun denotes the agent of action -cheat, rebel, spy, spy, etc., a single instance of action -attack, laugh, murder, etc.
- (ii) **Conversion of Noun from Adjectives:** When a definite article is put before almost any adjective it become a plural noun, for example, the rich, the high, the poor, etc. Apart from this another conversion of noun from adjectives are in words like criminal, noble, intellectual, etc., and also daily, weekly, and monthly in case of newspaper. These adjective turned nouns show the complete property of noun.

2. Conversion of Verb:

- (i) Conversion to Verb from Noun: Examples are to queue, to parade to pocket, to butter etc.
- (ii) Conversion to Verbs from Adjectives: Common examples are 'to slim', 'to dirty', etc.

3. Conversion to Adjectives: Nouns are used in modifying functions like adjective. Examples are 'a brick house', 'a gold chain', etc.

24.4 Compounding

Compounding is the process of word formation which involves two or more free morphemes. As these morphemes are free they also can be considered as free individual words. Not all words can combine to form a compound word. There are different approaches toward the theory of compounding.

The Syntactic Approach

According to this approach, two words compounds can be divided in to three categories, wherein noun, adjective and verb take second position. Apart of these three grammatical categories no other word can come at second position (with few exceptions of particles like out, up, etc.). Noun compounds are those in which noun takes the second position and combine with noun, adjective and verb to form new words. Examples are:

Noun	+	Noun	(girl friend, ice-cream)
Adjective	+	Noun	(darkroom, blackboard)
Verb	+	Noun	(breakfast)

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Adjective compounds are those in which adjective takes the second position and form new words while combining with noun, adjective and verbs. Examples are:

Noun + Adjective (waterproof)

Adjective + Adjective (ice-cold)

Verb + Adjective (freezing-cold)

Verb compounds are those in which verb takes the second position and combines with noun, adjective, and verb to form new words. Examples are:

Noun + Verb (brain-clean)

Adjective + Verb (dry-clean)

Verb + Verb (sleep-walk)

Apart from above types of word formations, there are few more types which requires the involvement of particles and adverbs.

Particle + Adverbs (income, outcast)

Verb + Particle (dropout)

Particle + Noun (overdose)

The Semantic Approach

According to this approach only those words are capable of forming compounds which when are combined together, produce a word of meaning which is more than the meaning of individual words involved. Thus a blackboard is not just any board which is black but a special board which is designed for classroom which is also black in colour. Compound words like 'girlfriend', uses the meaning of both the words involved, but the meaning of compound is more than the meaning of combined individual words. A girl friend is someone who is a girl and also a friend, but all friends who are girls cannot be girl friends.

A compound word like blackboard can also be considered as a phrase. The main semantic distinction between a compound word and a phrase is the position of stress. In compound words the stress is on the first part of the word while in a phrase stress is always on the second part of the word.

Another characteristic of the compound word is the arbitrary relationship between its constituents. For example, compounds like 'cleaning women' and 'walking stick' has same structure, i.e., verb (+ing) + noun but the relationship between the constituents are different. Cleaning woman means a woman who cleans, but walking stick is not a stick which walks.

The Syntactic-Semantic (Generative) Approach

The generative approach claims that there should be certain set of to generate or produce all possible compounds of English language. It says that rules for rules required for the sentence formation. Let us have a look at few:

1. Noun phrase and verb phrase are the constituents of a sentence.
2. A noun phrase may have up to three constituents, i.e., determiners, prepositional phrase, and nouns. Out of these three only nouns are mandatory.
3. A verb phrase can also have up to three constituents—a verb, a noun phrase and a prepositional phrase. Out of these three only verbs are mandatory.
4. A prepositional phrase can have up to two components - a preposition, and a noun phrase. Both are mediatory components are in this case.

According to generative approach these rules can also be used for the compound formation.

Some Minor Compounds Type: Apart from the types discussed, there are few ore types of compound like (i) coordinate type of compound, for example, author-publisher. (ii) Reduplicative type of compound like, for example, dilly-dallying. And (iii) phrase compounds like more-than-usual, do-it-if-you-can, etc.

Writing Convention of Compounds: There are compounds which are written as single words, there are some written with a hyphen in between and there also are some which are written as two separate words like cleaning woman. These types are called solid, hyphenated, and open compound respectively.

Self-Assessment

Form compounds of the following manner:

- | | |
|-------------------------|----------------------|
| (i) Adverb + Verb | (ii) Verbstem + Noun |
| (iii) Verbstem + Adverb | (iv) Para-synthetic |
| (v) Poetical Compounds | |
| (a) Shakespeare's | (b) Spenser's |

24.5 Summary

- In linguistics, word formation is the creation of a new word. Word formation is sometimes contrasted with semantic change, which is a change in a single word's meaning. The boundary between word formation and semantic change can be difficult to define: a new use of an old word can be seen as a new word derived from an old one and identical to it in form (see conversion). Word formation can also be contrasted with the formation of idiomatic expressions, although words can be formed from multi-word phrases (see compound and incorporation).
- One of the distinctive properties of human language is creativity, by which we mean the ability of native speakers of a language to produce and understand new forms in their language. Even though creativity is most apparent when it comes to sentence formation, it is also manifest in our lexical knowledge, where new words are added to our mental lexicon regularly. In this paper the most comprehensive expositions of word formation processes that speakers of a language use regularly (and unconsciously too) to create new words in their language are presented.
- Nowadays, the terms 'word formation' does not have a clear cut, universally accepted usage. It is sometimes referred to all processes connected with changing the form of the word by, for example, affixation, which is a matter of morphology. In its wider sense word formation denotes the processes of creation of new lexical units. Although it seems that the difference between morphological change of a word and creation of a new term is quite easy to perceive, there is sometimes a dispute as to whether blending is still a morphological change or making a new word. There are, of course, numerous word formation processes that do not arouse any controversies and are very similar in the majority of languages.
- Clipping is the word formation process which consists in the reduction of a word to one of its parts. Clippings are, also, known as "shortenings." Clipping mainly consists of the following types:
- Back clipping or apocopation is the most common type, in which the beginning is retained. The unclipped original may be either a simple or a composite. Examples are: ad (advertisement), cable (cablegram), doc (doctor), exam (examination), gas (gasoline), math (mathematics), memo (memorandum), gym (gymnastics, gymnasium) mutt (muttonhead), pub (public house), pop (popular concert), trad (traditional jazz), fax (facsimile).
- Fore-clipping or aphaeresis retains the final part. Examples are: phone (telephone), varsity (university), chute (parachute), coon (raccoon), gator (alligator), pike (turnpike).
- In middle clipping or syncope, the middle of the word is retained. Examples are: flu (influenza), tec (detective), polly (apollinaris), jams (pyjamas), shrink (head-shrinker).

Notes

- Clipped forms are also used in compounds. One part of the original compound most often remains intact. Examples are: cablegram (cable telegram), op art (optical art), org-man (organization man), linocut (linoleum cut). Sometimes both halves of a compound are clipped as in navicert (navigation certificate). In these cases it is difficult to know whether the resultant formation should be treated as a clipping or as a blend, for the border between the two types is not always clear. According to Bauer (1993), the easiest way to draw the distinction is to say that those forms which retain compound stress are clipped compounds, whereas those that take simple word stress are not. By this criterion bodbiz, Chicom, Comsymp, Intelsat, midcult, pro-am, sci-fi, and sitcom are all compounds made of clippings. According to Marchand (1969), clippings are not coined as words belonging to the standard vocabulary of a language. They originate as terms of a special group like schools, army, police, the medical profession, etc., in the intimacy of a milieu where a hint is sufficient to indicate the whole. For example, in school slang originated exam, math, lab, and spec(ulation), tick(et = credit) originated in stock-exchange slang, whereas vet(eran), cap(tain), are army slang. While clipping terms of some influential groups can pass into common usage, becoming part of Standard English, clippings of a socially unimportant class or group will remain groap slang.
- Acronyms and initialisms are abbreviations, such as NATO, laser, and IBM, that are formed using the initial letters of words or word parts in a phrase or name. Acronyms and initialisms are usually pronounced in a way that is distinct from that of the full forms for which they stand: as the names of the individual letters (as in IBM), as a word (as in NATO), or as a combination (as in IUPAC). Another term, alphabetism, is sometimes used to describe abbreviations pronounced as the names of letters.
- A blend is a word formed from parts of two other words. These parts are sometimes, but not always, morphemes.
- A blend is different from a portmanteau word in that a portmanteau refers strictly to a blending of two function words, similar to a contraction.
- Derivation is used to form new words, as with happi-ness and un-happy from happy, or determination from determine. A contrast is intended with the process of inflection, which uses another kind of affix in order to form variants of the same word, as with determine/ determine-s/ determin-ing/ determin-ed.
- A derivational suffix usually applies to words of one syntactic category and changes them into words of another syntactic category. For example, the English derivational suffix -ly changes adjectives into adverbs (slow ? slowly).
- Borrowing is just taking a word from another language. The borrowed words are called loan words. A loanword (or loan word) is a word directly taken into one language from another with little or no translation. By contrast, a calque or loan translation is a related concept whereby it is the meaning or idiom that is borrowed rather than the lexical item itself. The word loanword is itself a calque of the German Lehnwort. Loanwords can also be called "borrowings".

24.6 Key-Words

1. Noun Suffixes : Those suffixes which create nouns, for example, -hood, -dome, -ism, -ship, etc.
2. Adjective Suffixes : These suffixes when combine with stem create asjectives. For example, -ful, -ish, -less, etc.

24.7 Review Questions

Notes

1. What do you mean by Morphology?
2. Discuss Derivational Morphology.
3. Explain the classification of derivational affixes.
4. What is conversion?
5. Discuss the Syntactic and Semantic Approach.
6. What is derivation? Why was it possible to form derivatives in old English?

Answers: Self-Assessment

1. (i) Overtake, upturn, inlay, outdo.
 (ii) Kill-joy, scare-crow, turn-key, make-shift, break-neck, break-fast.
 (iii) Break-up, come-down, run-away.
 (iv) Blue-eyed, long-haired.
 (v) (a) Proud-pied-April, heaven-kissing-hill, word-wirhout-end hour.
 (b) Self-consuming-care, silver-dropping tears, rosy-fingered morn.

24.8 Further Readings

1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 25: Transformational Rules: Application-Tree Diagrams

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Objectives

After studying this Unit students will be able to:

- Explain deep structure and surface structure
- Illustrate tree diagrams

Introduction

In linguistics, a transformational grammar or transformational-generative grammar (TGG) is a generative grammar, especially of a natural language, that has been developed in the Chomskyan tradition of phrase structure grammars (as opposed to dependency grammars). Additionally, transformational grammar is the tradition that gives rise to specific transformational grammars. Much current research in transformational grammar is inspired by Chomsky's Minimalist Program.

25.1 Deep Structure and Surface Structure

In 1957, Noam Chomsky published *Syntactic Structures*, in which he developed the idea that each sentence in a language has two levels of representation - a deep structure and a surface structure. The deep structure represented the core semantic relations of a sentence, and was mapped on to the surface structure (which followed the phonological form of the sentence very closely) via transformations. Chomsky believed there are considerable similarities between languages' deep structures, and that these structures reveal properties, common to all languages that surface structures conceal. However, this may not have been the central motivation for introducing deep structure. Transformations had been proposed prior to the development of deep structure as a means of increasing the mathematical and descriptive power of context-free grammars. Similarly, deep structure was devised largely for technical reasons relating to early semantic theory. Chomsky emphasizes the importance of modern formal mathematical devices in the development of grammatical theory:

But the fundamental reason for [the] inadequacy of traditional grammars is a more technical one. Although it was well understood that linguistic processes are in some sense "creative," the technical devices for expressing a system of recursive processes were simply not available until much more recently. In fact, a real understanding of how a language can (in Humboldt's words) "make infinite use of finite means" has developed only within the last thirty years, in the course of studies in the foundations of mathematics.

Formal definition

Chomsky's advisor, Zellig Harris, took transformations to be relations between sentences such as "I finally met this talkshow host you always detested" and simpler (kernel) sentences "I finally met this talkshow host" and "You always detested this talkshow host". Chomsky developed a formal theory of grammar where transformations manipulated not just the surface strings, but the parse tree associated to them, making transformational grammar a system of tree automata.[4] This definition proved adequate for subsequent versions including the `extended`, `revised extended`, and `Government-Binding` (GB) versions of generative grammar, but may no longer be sufficient for the current minimalist grammar in that merge may require a formal definition that goes beyond the tree manipulation characteristic of Move?.

25.2 Development of Basic Concepts

Though transformations continue to be important in Chomsky's current theories, he has now abandoned the original notion of Deep Structure and Surface Structure. Initially, two additional levels of representation were introduced (LF - Logical Form, and PF - Phonetic Form), and then in the 1990s Chomsky sketched out a new program of research known as Minimalism, in which Deep Structure and Surface Structure no longer featured and PF and LF remained as the only levels of representation.

To complicate the understanding of the development of Noam Chomsky's theories, the precise meanings of Deep Structure and Surface Structure have changed over time - by the 1970s, the two were normally referred to simply as D-Structure and S-Structure by Chomskyan linguists. In particular, the idea that the meaning of a sentence was determined by its Deep Structure (taken to its logical conclusions by the generative semanticists during the same period) was dropped for good by Chomskyan linguists when LF took over this role (previously, Chomsky and Ray Jackendoff had begun to argue that meaning was determined by both Deep and Surface Structure).

Innate linguistic knowledge

Terms such as "transformation" can give the impression that theories of transformational generative grammar are intended as a model for the processes through which the human mind constructs and understands sentences. Chomsky is clear that this is not in fact the case: a generative grammar models only the knowledge that underlies the human ability to speak and understand. One of the most important of Chomsky's ideas is that most of this knowledge is innate, with the result that a baby can have a large body of prior knowledge about the structure of language in general, and need only actually learn the idiosyncratic features of the language(s) it is exposed to. Chomsky was not the first person to suggest that all languages had certain fundamental things in common (he quotes philosophers writing several centuries ago who had the same basic idea), but he helped to make the innateness theory respectable after a period dominated by more behaviorist attitudes towards language. Perhaps more significantly, he made concrete and technically sophisticated proposals about the structure of language, and made important proposals regarding how the success of grammatical theories should be evaluated.

Grammatical Theories

In the 1960s, Chomsky introduced two central ideas relevant to the construction and evaluation of grammatical theories. The first was the distinction between competence and performance. Chomsky noted the obvious fact that people, when speaking in the real world, often make linguistic errors (e.g., starting a sentence and then abandoning it midway through). He argued that these errors in linguistic performance were irrelevant to the study of linguistic competence (the knowledge that allows people to construct and understand grammatical sentences). Consequently, the linguist can study an idealised version of language, greatly simplifying linguistic analysis (see the "Grammaticality" section below). The second idea related directly to the evaluation of theories of grammar. Chomsky distinguished between grammars that achieve descriptive adequacy and those that go further and achieved explanatory adequacy. A descriptively adequate grammar for a particular language defines the (infinite) set of grammatical sentences in that language; that is, it

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describes the language in its entirety. A grammar that achieves explanatory adequacy has the additional property that it gives an insight into the underlying linguistic structures in the human mind; that is, it does not merely describe the grammar of a language, but makes predictions about how linguistic knowledge is mentally represented. For Chomsky, the nature of such mental representations is largely innate, so if a grammatical theory has explanatory adequacy it must be able to explain the various grammatical nuances of the languages of the world as relatively minor variations in the universal pattern of human language. Chomsky argued that, even though linguists were still a long way from constructing descriptively adequate grammars, progress in terms of descriptive adequacy will only come if linguists hold explanatory adequacy as their goal. In other words, real insight into the structure of individual languages can only be gained through comparative study of a wide range of languages, on the assumption that they are all cut from the same cloth.

"I-Language" and "E-Language"

In 1986, Chomsky proposed a distinction between I-Language and E-Language, similar but not identical to the competence/performance distinction. (I-language) refers to Internal language and is contrasted with External Language (or E-language). I-Language is taken to be the object of study in linguistic theory; it is the mentally represented linguistic knowledge that a native speaker of a language has, and is therefore a mental object - from this perspective, most of theoretical linguistics is a branch of psychology. E-Language encompasses all other notions of what a language is, for example that it is a body of knowledge or behavioural habits shared by a community. Thus, E-Language is not itself a coherent concept, and Chomsky argues that such notions of language are not useful in the study of innate linguistic knowledge, i.e., competence, even though they may seem sensible and intuitive, and useful in other areas of study. Competence, he argues, can only be studied if languages are treated as mental objects.

Grammaticality

Chomsky argued that the notions "grammatical" and "ungrammatical" could be defined in a meaningful and useful way. In contrast, an extreme behaviorist linguist would argue that language can only be studied through recordings or transcriptions of actual speech, the role of the linguist being to look for patterns in such observed speech, but not to hypothesize about why such patterns might occur, nor to label particular utterances as either "grammatical" or "ungrammatical." Although few linguists in the 1950s actually took such an extreme position, Chomsky was at an opposite extreme, defining grammaticality in an unusually mentalistic way (for the time).[9] He argued that the intuition of a native speaker is enough to define the grammaticality of a sentence; that is, if a particular string of English words elicits a double take, or feeling of wrongness in a native English speaker, and when various extraneous factors affecting intuitions are controlled for, it can be said that the string of words is ungrammatical. This, according to Chomsky, is entirely distinct from the question of whether a sentence is meaningful, or can be understood. It is possible for a sentence to be both grammatical and meaningless, as in Chomsky's famous example "colorless green ideas sleep furiously." But such sentences manifest a linguistic problem distinct from that posed by meaningful but ungrammatical (non)-sentences such as "man the bit sandwich the," the meaning of which is fairly clear, but no native speaker would accept as well formed.

The use of such intuitive judgments permitted generative syntacticians to base their research on a methodology in which studying language through a corpus of observed speech became downplayed, since the grammatical properties of constructed sentences were considered to be appropriate data to build a grammatical model on.

Minimalism

From the mid-1990s onwards, much research in transformational grammar has been inspired by Chomsky's Minimalist Program. The "Minimalist Program" aims at the further development of ideas involving economy of derivation and economy of representation, which had started to become significant in the early 1990s, but were still rather peripheral aspects of Transformational-generative grammar theory.

1. Economy of derivation is a principle stating that movements (i.e., transformations) only occur in order to match interpretable features with uninterpretable features. An example of an interpretable feature is the plural inflection on regular English nouns, e.g., dogs. The word dogs can only be used to refer to several dogs, not a single dog, and so this inflection contributes to meaning, making it interpretable. English verbs are inflected according to the number of their subject (e.g., "Dogs bite" vs "A dog bites"), but in most sentences this inflection just duplicates the information about number that the subject noun already has, and it is therefore uninterpretable.
2. Economy of representation is the principle that grammatical structures must exist for a purpose, i.e., the structure of a sentence should be no larger or more complex than required to satisfy constraints on grammaticality.

Both notions, as described here, are somewhat vague, and indeed the precise formulation of these principles is controversial.[11][12] An additional aspect of minimalist thought is the idea that the derivation of syntactic structures should be uniform; that is, rules should not be stipulated as applying at arbitrary points in a derivation, but instead apply throughout derivations. Minimalist approaches to phrase structure have resulted in "Bare Phrase Structure," an attempt to eliminate X-bar theory. In 1998, Chomsky suggested that derivations proceed in phases. The distinction of Deep Structure vs. Surface Structure is not present in Minimalist theories of syntax, and the most recent phase-based theories also eliminate LF and PF as unitary levels of representation.

Mathematical representation

Returning to the more general mathematical notion of a grammar, an important feature of all transformational grammars is that they are more powerful than context-free grammars. This idea was formalized by Chomsky in the Chomsky hierarchy. Chomsky argued that it is impossible to describe the structure of natural languages using context-free grammars. His general position regarding the non-context-freeness of natural language has held up since then, although his specific examples regarding the inadequacy of CFGs in terms of their weak generative capacity were later disproven.

25.3 Transformations

The usual usage of the term 'transformation' in linguistics refers to a rule that takes an input typically called the Deep Structure (in the Standard Theory) or D-structure (in the extended standard theory or government and binding theory) and changes it in some restricted way to result in a Surface Structure (or S-structure). In TGG, Deep structures were generated by a set of phrase structure rules.

For example, a typical transformation in TG is the operation of subject-auxiliary inversion (SAI). This rule takes as its input a declarative sentence with an auxiliary: "John has eaten all the heirloom tomatoes." and transforms it into "Has John eaten all the heirloom tomatoes?" In their original formulation (Chomsky 1957), these rules were stated as rules that held over strings of either terminals or constituent symbols or both.

X NP AUX Y X AUX NP Y

(where NP = Noun Phrase and AUX = Auxiliary)

In the 1970s, by the time of the Extended Standard Theory, following the work of Joseph Emonds on structure preservation, transformations came to be viewed as holding over trees. By the end of government and binding theory in the late 1980s, transformations are no longer structure changing operations at all; instead they add information to already existing trees by copying constituents.

The earliest conceptions of transformations were that they were construction-specific devices. For example, there was a transformation that turned active sentences into passive ones. A different transformation raised embedded subjects into main clause subject position in sentences such as "John seems to have gone"; and yet a third reordered arguments in the dative alternation. With the shift from rules to principles and constraints that was found in the 1970s, these construction-

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specific transformations morphed into general rules (all the examples just mentioned being instances of NP movement), which eventually changed into the single general rule of move alpha or Move. Transformations actually come of two types: (i) the post-Deep structure kind mentioned above, which are string or structure changing, and (ii) Generalized Transformations (GTs). Generalized transformations were originally proposed in the earliest forms of generative grammar (e.g., Chomsky 1957). They take small structures, either atomic or generated by other rules, and combine them. For example, the generalized transformation of embedding would take the kernel "Dave said X" and the kernel "Dan likes smoking" and combine them into "Dave said Dan likes smoking." GTs are thus structure building rather than structure changing. In the Extended Standard Theory and government and binding theory, GTs were abandoned in favor of recursive phrase structure rules. However, they are still present in tree-adjoining grammar as the Substitution and Adjunction operations, and they have recently re-emerged in mainstream generative grammar in Minimalism, as the operations Merge and Move.

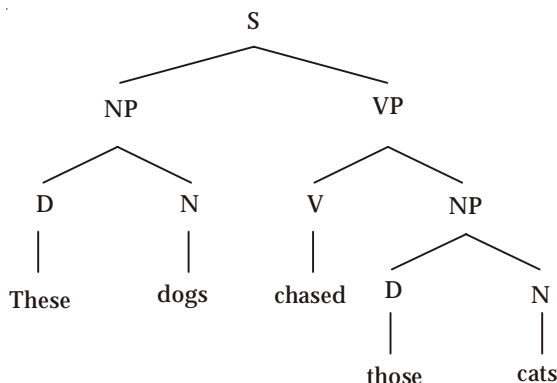
In generative phonology, another form of transformation is the phonological rule, which describes a mapping between an underlying representation (the phoneme) and the surface form that is articulated during natural speech

Tree Diagram

Tree diagrams, also called "parse trees" and "concrete syntax trees," are used in linguistics and formal grammar to divide a sentence into its separate parts while maintaining the structure of the sentence. Parse trees resemble regular tree diagrams in structure; however, they differ in that their function is very specific. A parse tree can quickly become complex. Though they may seem daunting and time-consuming, knowing how to correctly use a parse tree will demonstrate a deep understanding of the rules and placement of the parts of a sentence.

Ambiguous Sentences in English

Background Linguists use diagrams called trees to represent the groupings of words within sentences. Here is a very simple example:



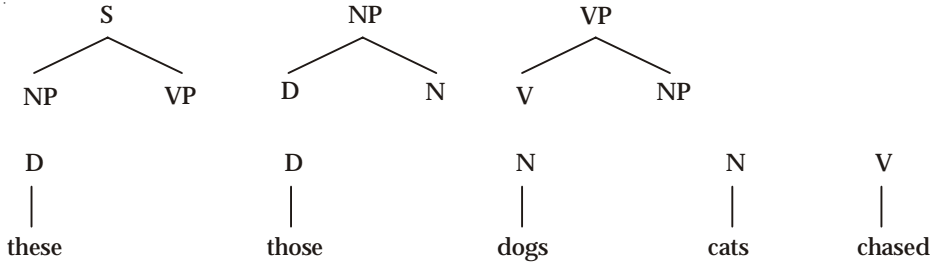
The tree diagram shows that in the sentence These dogs chased those cats. these is most closely related to dogs, those most closely related to cats etc.

The abbreviations S, NP, VP, D, N, and V stand for different types of words or groups of words. These abbreviations and a few others we will use in this problem are spelled out here:

- S : sentence
- NP : noun phrase
- VP : verb phrase
- PP : prepositional phrase
- N : noun
- V : verb

P : preposition
C : conjunction

When working with trees, linguists write systems of rules (called 'grammars') which describe sets of trees. Each rule in the system is a building block. Any tree which can be constructed out of those building blocks is in the set of trees described by the grammar. For example, the tree given above for These dogs chased those cats. requires the following building blocks or rules:



Sometimes, sentences have multiple meanings, and these meanings can be described in terms of different groupings of words, or different trees. For example, the sentence The tourist saw the astronomer with the telescope. could mean either of the following things:

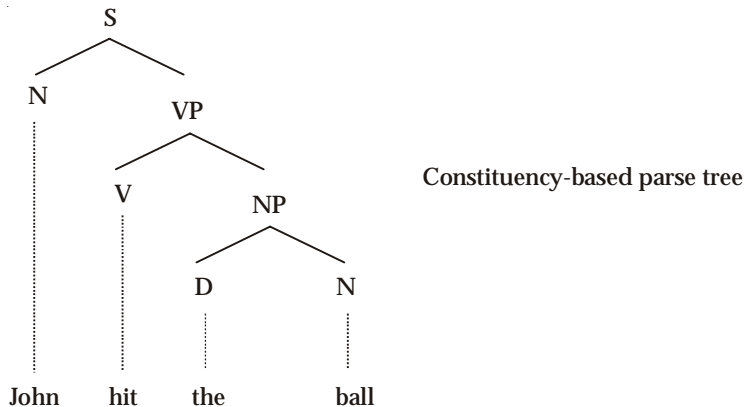
1. The tourist used the telescope to see the astronomer.
2. The astronomer that the tourist saw had a telescope.

The difference is whether the prepositional phrase (PP) with the telescope is grouped with saw the astronomer or just the astronomer. We can use tree diagrams to show this difference.

A concrete syntax tree or parse tree or parsing tree is an ordered, rooted tree that represents the syntactic structure of a string according to some formal grammar. Parse trees are usually constructed according to one of two competing relations, either in terms of the constituency relation of constituency grammars (= phrase structure grammars) or in terms of the dependency relation of dependency grammars. Parse trees are distinct from abstract syntax trees (also known simply as syntax trees), in that their structure and elements more concretely reflect the syntax of the input language. Parse trees may be generated for sentences in natural languages (see natural language processing), as well as during processing of computer languages, such as programming languages.

25.4 Constituency-Based Parse Trees

The constituency-based parse trees of constituency grammars (= phrase structure grammars) distinguish between terminal and non-terminal nodes. The interior nodes are labeled by non-terminal categories of the grammar, while the leaf nodes are labeled by terminal categories. The image below represents a constituency-based parse tree; it shows the syntactic structure of the English sentence John hit the ball:



Notes

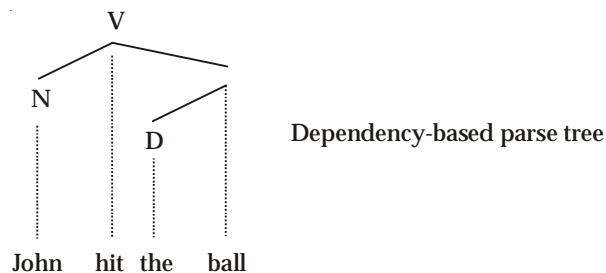
This parse tree is simplified; for more information, see X-bar theory. The parse tree is the entire structure, starting from S and ending in each of the leaf nodes (John, hit, the, ball). The following abbreviations are used in the tree:

1. S for sentence, the top-level structure in this example
2. NP for noun phrase. The first (leftmost) NP, a single noun "John", serves as the subject of the sentence. The second one is the object of the sentence.
3. VP for verb phrase, which serves as the predicate
4. V for verb. In this case, it's a transitive verb hit.
5. D for determiner, in this instance the definite article "the"
6. N for noun

Each node in the tree is either a root node, a branch node, or a leaf node. S is the root node, NP and VP are branch nodes, and John, hit, the, and ball are all leaf nodes. The leaves are the lexical tokens of the sentence.[2] A node can also be referred to as parent node or a child node. A parent node is one that has at least one other node linked by a branch under it. In the example, S is a parent of both NP and VP. A child node is one that has at least one node directly above it to which it is linked by a branch of the tree. From the example, hit is a child node of V. The terms mother and daughter are also sometimes used for this relationship.

25.5 Dependency-Based Parse Trees

The dependency-based parse trees of dependency grammars[3] see all nodes as terminal, which means they do not acknowledge the distinction between terminal and non-terminal categories. They are simpler on average than constituency-based parse trees because they contain many fewer nodes. The dependency-based parse tree for the example sentence above is as follows:



This parse tree lacks the phrasal categories (S, VP, and NP) seen in the constituency-based counterpart above. Like the constituency-based tree however, constituent structure is acknowledged. Any complete subtree of the tree is a constituent. Thus this dependency-based parse tree acknowledges the subject noun John and the object noun phrase the ball as constituents just like the constituency-based parse tree does.

The constituency vs. dependency distinction is far-reaching. Whether the additional syntactic structure associated with constituency-based parse trees is necessary or beneficial is a matter of debate.

25.6 Review Questions

- In linguistics, a transformational grammar or transformational-generative grammar (TGG) is a generative grammar, especially of a natural language, that has been developed in the Chomskyan tradition of phrase structure grammars (as opposed to dependency grammars).
- In 1957, Noam Chomsky published *Syntactic Structures*, in which he developed the idea that each sentence in a language has two levels of representation - a deep structure and a surface structure. The deep structure represented the core semantic relations of a sentence, and was mapped on to the surface structure (which followed the phonological form of the sentence very closely) via transformations. Chomsky believed there are considerable similarities between languages' deep structures, and that these structures reveal properties, common to all languages that surface structures conceal.
- Though transformations continue to be important in Chomsky's current theories, he has now abandoned the original notion of Deep Structure and Surface Structure. Initially, two additional levels of representation were introduced (LF - Logical Form, and PF - Phonetic Form), and then in the 1990s Chomsky sketched out a new program of research known as Minimalism, in which Deep Structure and Surface Structure no longer featured and PF and LF remained as the only levels of representation.
- Tree diagrams, also called "parse trees" and "concrete syntax trees," are used in linguistics and formal grammar to divide a sentence into its separate parts while maintaining the structure of the sentence. Parse trees resemble regular tree diagrams in structure; however, they differ in that their function is very specific.

25.7 Review Questions

1. What is meant by Transformational rules?
2. Discuss the development of basic concepts.
3. Discuss Transformations.
4. What do you understand by 'Tree diagram'? Illustrate the following sentences in tree diagram.
 - (i) These dogs chased those cats.
 - (ii) We used the bat to hit the ball.

25.8 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. *Modern Linguistics: An Introduction*.
2. *An Introduction to Linguistics*, John Lyon.
3. Peter Roach: *English phonetics and phonology*. Cambridge University Press.
4. *Encyclopedia of Linguistic Science* Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 26: Affixes: Prefixes, Suffixes, Infixes and Circumfixes

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Objectives

After studying this unit students will be able to:

- Discuss affixes
- Understand prefixes, suffixes and infixes.

Introduction

An affix is a morpheme that is attached to a word stem to form a new word. Affixes may be derivational, like English -ness and pre-, or inflectional, like English plural -s and past tense -ed. They are bound morphemes by definition; prefixes and suffixes may be separable affixes. Affixation is, thus, the linguistic process speakers use to form different words by adding morphemes (affixes) at the beginning (prefixation), the middle (infixation) or the end (suffixation) of words.

26.1 Positional Categories of Affixes

Affixes are divided into plenty of categories, depending on their position with reference to the stem. Prefix and suffix are extremely common terms. Infix and circumfix are less so, as they are not important in European languages. The other terms are uncommon.

Categories of Affixes			
<i>Affix</i>	<i>Example</i>	<i>Schema</i>	<i>Description</i>
Prefix	un-do	prefix-stem	Appears at the front of a stem
Suffix/Postfix	look-ing	stem-suffix	Appears at the back of a stem
Suffixoid/ Semi-suffix	cat-like	stem-suffixoid	Appears at the back of a stem but is somewhere between a free and bound morpheme
Infix	Minne<flippin'> sota	st(infix)em	Appears within a stem - common in Borneo-Philippines languages
Circumfix	a)scatter(ed)	circumfix) stem(circumfix	One portion appears at the front of a stem, and the other at the rear

				Notes
Interfix	speed-o-meter	stema-interfix-stemb	Links two stems together in a compound	
Duplifix	teeny~weeny	stem~duplifix	Incorporates a reduplicated portion of a stem (may occur in front, at the rear, or within the stem)	
Transfix	Maltese: k(i)t(e)b "he wrote" (compare root ktb "write")	s<transfix>te <transfix>m	A discontinuous affix that interleaves within a discontinuous stem	
Simulfix	mouse → mice	stem\simulfix	Changes a segment of a stem	
Suprafix	produce (noun)	produce (verb)	stem\suprafix Changes a suprasegmental phoneme of a stem	
Disfix	Alabama: tipli "break up" (compare root tipasli "break")	st<disfix>m	The elision of a portion of a stem	



Did u know? Prefix and suffix may be subsumed under the term adfix in contrast to infix.

When marking text for interlinear glossing, as in the third column in the chart above, simple affixes such as prefixes and suffixes are separated from the stem with hyphens. Affixes which disrupt the stem, or which themselves are discontinuous, are often marked off with angle brackets. Reduplication is often shown with a tilde. Affixes which cannot be segmented are marked with a back slash.

Lexical affixes

Lexical affixes (or semantic affixes) are bound elements that appear as affixes, but function as incorporated nouns within verbs and as elements of compound nouns. In other words, they are similar to word roots/stems in function but similar to affixes in form. Although similar to incorporated nouns, lexical affixes differ in that they never occur as freestanding nouns, i.e. they always appear as affixes.

Lexical affixes are relatively rare. The Wakashan, Salishan, and Chimakuan languages all have lexical suffixes - the presence of these is an areal feature of the Pacific Northwest of the North America.

The lexical suffixes of these languages often show little to no resemblance to free nouns with similar meanings. Compare the lexical suffixes and free nouns of Northern Straits Saanich written in the Saanich orthography and in Americanist notation:

Lexical suffixes when compared with free nouns often have a more generic or general meaning. For instance, one of these languages may have a lexical suffix that means water in a general sense, but it may not have any noun equivalent referring to water in general and instead have several nouns with a more specific meaning (such "saltwater", "whitewater", etc.). In other cases, the lexical suffixes have become grammaticalized to various degrees.

Orthographic affixes

In orthography, the terms for affixes may be used for the smaller elements of conjunct characters. For example, Maya glyphs are generally compounds of a main sign and smaller affixes joined at its margins. These are called prefixes, superfixes, postfixes, and subfixes according to their position to the left, on top, to the right, or at the bottom of the main glyph. A small glyph placed inside another is called an infix. Similar terminology is found with the conjunct consonants of the Indic alphabets. For example, the Tibetan alphabet utilizes prefix, suffix, superfix, and subfix consonant letters.

26.2 Complex Words

The nature of stress was explained and some broad general rules were given for deciding which syllable in a word should receive primary stress. The words that were described were called “simple” words; “simple” in this context means “not composed of more than one grammatical unit”, so that, for example, the word ‘care’ is simple while ‘careful’ and ‘careless’ (being composed of two grammatical units each) are complex; ‘carefully’ and ‘carelessness’ and also complex, and are composed of three grammatical units each. Unfortunately, as was suggested, it is often difficult to decide whether a word should be treated as complex or simple. The majority of English words of more than one syllable (polysyllabic words) have come from other languages whose way of constructing words is easily recognisable; for example, we can see how combining ‘mit’ with the prefixes ‘per-’, ‘sub-’, ‘com-’, produced ‘permit’, ‘submit’, ‘commit’ – words which have come into English from Latin. Similarly, Greek has given us ‘catalogue’, ‘analogue’, ‘dialogue’, ‘monologue’, in which the prefixes ‘cata-’, ‘ana-’, ‘dia-’, ‘mono-’ are recognisable. But we cannot automatically treat the separate grammatical units of other languages as if they were separate grammatical units of English. If we did, we would not be able to study English morphology without first studying the morphology of five or six other languages, and we would be forced into ridiculous analyses such as that the English word ‘parallelepiped’ is composed of four or five grammatical units (which is the case in Ancient Greek). We must accept, then, that the distinction between “simple” and “complex” words is difficult to draw.

Complex words are of two major types:

1. words made from a basic word form (which we will call the stem), with the addition of an affix; and
2. compound words, which are made of two (or occasionally more) independent English (e.g. ‘ice cream’, ‘armchair’).

We will look first at the words made with affixes. Affixes are of two sorts in English: prefixes, which come before the stem (e.g. prefix ‘un-’ + stem ‘pleasant’ → ‘unpleasant’) and suffixes, which come after the stem (e.g. stem ‘good’ + suffix ‘-ness’ → ‘goodness’).

Affixes have one of three possible effects on word stress:

1. The affix itself receives the primary stress (e.g. ‘semi-’ + ‘circle’ sɜ:kɪl → ‘semicircle’ ‘semɪs ɜ:kɪl; ‘-ality’ + person pɜ:sn → ‘personality’ pɜ:ɪn’æləti).
2. The word is stressed as if the affix were not there (e.g. ‘pleasant’ ‘pleznt, ‘unpleasant’ ‘ʌn’pleznt; ‘market’ ‘mɑ:kɪt, ‘marketing’ ‘mɑ:kɪtɪŋ).
3. The stress remains on the stem, not the affix, but is shifted to a different syllable (e.g. ‘magnet’ ‘mæg’etɪk).

26.3 Suffixes

There are so many suffixes that it will only be possible here to examine a small proportion of them: we will concentrate on those which are common and productive — that is, are applied to a considerable number of stems and could be applied to more to make new English words. In the case of the others, foreign learners would probably be better advised to learn the ‘stem + affix’ combination as an individual item.

One of the problems that we encounter is that we find words which are obviously complex but which, when we try to divide them into stem + affix, turn out to have a stem that is difficult to imagine as an English word. For example, the word ‘audacity’ seems to be a complex word – but what is its stem? Another problem is that it is difficult in some cases to know whether a word has one, or more than one, suffix: for example, should we analyse ‘personality’ from the point of view of stress assignment as pɜ:sn + æləti or as pɜ:sn + æl + əti? In the study of English word formation at a deeper level than we can go into here, it is necessary for such reasons to distinguish between a stem (which is what remains when affixes are removed), and a root, which is the

smallest piece of lexical material that a stem can be reduced to. So, in 'personality', we could say that the *suffix* '-ity' is attached to the *stem* 'personal' which contains the *root* 'person' and the suffix 'al.' We will not spend more time here on looking at these problems, but go on to look at some generalisations about suffixes and stress, using only the term 'stem' for the sake of simplicity. The suffixes are referred to in their spelling form.

Suffixes Carrying Primary Stress Themselves

In the examples given, which seem to be the most common, the primary stress is on the first syllable of the suffix. If the stem consists of more than one syllable there will be a secondary stress on one of the syllables of the stem. This cannot fall on the last syllable of the stem and is, if necessary, moved to an earlier syllable. For example, in 'japan' dʒə'pæn the primary stress is on the last syllable, but when we add the stress-carrying suffix '-ese' the primary stress is on the suffix and the secondary stress is placed not on the second syllable but on the first: 'japanese' ,dʒæ'pæn.

1. '-ee': 'refugee' ,refjʊ'dʒi:; 'evacuee' ɪ,vækju'i:
2. '-ee': 'mountaineer' ,maʊntɪnɪz; 'volunteer' ,valə'nɪtʃə
3. '-ese' 'Portuguese' ,pɔ:ʃəgi:z; 'journalese' ,dʒɜ:n'l'i:z

Otherwise the syllable *before* the last one receives the stress: inheritance in heritəns, 'military' 'mɪlɪtri.

26.4 Prefixes

We will look only briefly at prefixes. Their effect on stress does not have the comparative regularity, independence and predictability of suffixes, and there is no prefix of one or two syllables that always carries primary stress. Consequently, the best treatment seems to be to say that stress in words with prefixes is governed by the same rules as those for polysyllabic words without prefixes.

Circumfix

It is an affix, a morpheme that is placed around another morpheme. Circumfixes contrast with prefixes attached to the beginning of the words; suffixes, that are attached at the end and infixes, inserted in the middle.

26.5 Compound Words

The words discussed so far in this unit have all consisted of a stem plus an affix. We now pass on to another type of word. This is called compound, and its main characteristic is that it can be analysed into two words, both of which can exist independently as English words. Some compounds are made of more than two words, but we will not consider these. As with many of the distinctions being made in connection with stress, there are areas of uncertainty. For example, it could be argued that 'photograph' may be divided into two independent words, 'photo' and 'graph'; yet we usually do not regard it as a compound, but as a simple word. If, however, someone drew a graph displaying numerical information about photos, this would perhaps be called a 'photograph' and the word would then be regarded as a compound. Compounds are written in different ways: sometimes they are written as one word (e.g. 'armchair', 'sunflower'); sometimes with the words separated by a hyphen (e.g. 'open-minded', 'cost-effective'); and sometimes with two words separated by a space (e.g. 'desk lamp', 'battery charger'). In this last case there would be no indication to the foreign learner that the pair of words was to be treated as a compound. There is no clear dividing line between two-word compounds and pair of words that simply happen to occur together quite frequently.

As far as stress is concerned, the question is quite simple. When is primary stress placed on the first constituent word of the compound and when on the second? Both patterns are found. A few rules can be given, although these are not completely reliable. Perhaps the most familiar type of compound is the one which combines two nouns and which normally has the stress on the first element, as in:

Notes	'typewriter'	'taɪpraɪtə
	'car ferry'	'kɑ:'feri
	'sunrise'	'sʌnraɪz
	'suitcase'	'suɪtkes
	'teacup'	'ti:kʃp

It is probably safest to assume that stress will normally fall in this way on other compounds; however, a number of compounds receive stress instead on the second element. The first words in such compounds often have secondary stress. For example, compounds with an adjectival first element and the -ed morpheme at the end have this pattern (given in spelling only):

,bad - 'tempered

,half-'timbered

,heavy-'handed

Compounds in which the first element is a number in some form also tend to have final stress:

,three-'wheeler

,second-'class

,five-'finger

Compounds functioning as adverbs are usually final-stressed:

,head'first

,North-'East

,down 'stream

Finally, compounds which function as verbs and have an adverbial first element take final stress:

,down 'grade

,back- 'pedal

,ill-'treat

26.6 Variable Stress

It would be wrong to imagine that the stress pattern is always fixed and unchanging in English words. Stress position may vary for one of two reasons: either as a result of the stress on other words occurring next to the word in question, or because not all speakers agree on the placement of stress in some words. The former case is an aspect of connected speech that will be encountered the main effect is that the stress on a final-stressed compound tends to move to a preceding syllable and change to secondary stress if the following word begins with a strongly stressed syllable. Thus (using some examples from the previous section):

,bad-'tempered *but* a ,bad-tempered 'teacher

,half-'timbered *but* a ,half-timbered 'house

,heavy-'handed *but* a ,heavy-handed 'sentence

The second is not a serious problem, but is one that foreign learners should be aware of. A well-known example is 'controversy', which is pronounced by some speakers as 'kɒntɹɒvɜ:si and by others as kən'trɒvəsi; it would be quite wrong to say that one version was correct and one incorrect. Other examples of different possibilities are 'ice cream'.

26.7 Word-Class Pairs

One aspect of word stress is best treated as a separate issue. There are several dozen pairs of two-syllable words with identical spelling which differ from each other in stress placement, apparently according to word class (noun, verb or adjective). All appear to consist of prefix + stem. We shall treat them as a special type of word and give them the following rule: if a pair of prefix-plus-stem

words exists, both members of which are spelt identically, one of which is a verb and the other of which is either a noun or an adjective, then the stress is placed on the second syllable of the verb but on the first syllable of the noun or adjective. Some common examples are given below (V = verb, A = adjective, N = noun):

abstract	'æbstrækt (A)	æb'strækt (V)
conduct	'kɒndʃkt (N)	kəd'dʃkt (V)
contract	'kɒntrækt (N)	kən'trækt (V)
contrast	'kɒntrɑːst (N)	kən'trɑːst (V)
desert	'dezət (N)	dɪ'zɜːt (V)
escort	'eskə:t (N)	ɪ'skɔ:t (V)
export	'eksɔ:t (N)	ɪk'spɔ:t (V)
import	'ɪmpɔ:t (N)	ɪm'pɔ:t (V)
insult	'ɪnsʃlt (N)	ɪn'sʃlt (V)
object	'ɒbdʒekt (N)	əb'dʒekt (V)
perfect	'pɜːfɪkt (A)	pə'fekt (V)
permit	'pɜːmɪt (N)	pə'mɪt (V)
present	'preznt (N, A)	prɪ'zent (V)
produce	'prɒdʒu:s (N)	prə'ʒus (V)
protest	'prɒʃtest (N)	prə'test (V)
rebel	'rebl (N)	rɪ'bel (N)
record	'rekɔ:d (N, A)	rɪ'kɔ:d (V)
subject	'sʃbdʒekt (N)	səb'dʒekt (V)

Notes

Self-Assessment

1. Give example of the following prefix:

- (i) a, an (ii) ab (iii) acro (iv) act

26.8 Summary

- Looking specifically at compounds, it is worth reading Fudge (1984: Chapter 5). See also Cruttenden (2008: 242–5). If you wish to go more deeply into compound-word stress, you should first study English word formation. Recommended reading for this is Bauer (1983). On the distinction between *stem* and *root*, see Radford *et al* (1999; 67–8).
- In this article, we have tried to show that the position of the infix can be derived from more general principles. We have proposed that morpho-syntactic infixes cannot appear in word final position because of the general principle that forces every word to have a grammatical category. As the infix is the materialisation of a head without category features that selects a root, it must be dominated by a categorising head, such as little *v* or little *n*. In the case of morpho-phonological infixes, as they are part of the contextual allomorphs of certain pieces of the Vocabulary, they only appear when specific VIs are adjacent to them; in the absence of the adjacent constituent, the infix does not materialise. Therefore, the position of the infix does not have to be stipulated, but is the by-product of independently motivated grammatical phenomena.
- In the same sense, our explanation shows that these elements are not necessarily pieces of evidence for non-configurational theories of word formation. They are amenable to a configurational analysis where their properties can be explained and their position can be motivated.

Notes

- We have also shown that there is a quite sharp distinction between two classes of infixes in Spanish: morpho-syntactic infixes, which correspond to syntactic heads, and morpho-phonological infixes, which are part of specific allomorphs inserted to materialise abstract hierarchical configurations. Their semantic and formal properties are also different, as we have noted in sections two and three.
- Due to this distinction and the way in which we derive the two classes' properties from the different status of these elements, our analysis provides evidence for a distinction between two levels of analysis for complex words, one where the configurational properties of the word are defined following syntactic principles, and another where particular pieces with idiosyncratic properties are inserted. Distributed Morphology provides a general framework where this distinction can be framed, due to Late Insertion.
- One of the possible extensions of our analysis - which we will not explore here - has to do with the Spanish 'suffix' -ear. Under the light of this article, it would be worth studying whether this element is one single suffix or rather a sequence of two different suffixes, Manner^o and little v^o. Let us note that most verbs with morphosyntactic infix contain the sequence -ear. One possibility that we would like to suggest is that verbs with -ear and without an infix also contain MannerP, maybe with some special characteristics. However, this will have to be the subject of a different article.

26.9 Key-Words

1. Inflectional affixes : The Morphemes which serve a purely grammatical function, such as referring to and giving extra linguistic information about the already existing meaning of a word (e.g., number, person, gender, case, etc.), expressing syntactic relations² between words (e.g. possession, comparison), among others. For instance, the different forms of the verb speak are all considered to be verbs too, namely, speak, spoken, speaking.
2. Roots and Stems : Roots (or bases) are the morphemes (free or bound) that carry the principal or basic concept, idea or meaning in a word. They generally constitute the nuclei or cores of words. When roots are free morphemes, they constitute content (and function) words by themselves, such as book, dog, house, carry, quick, early, etc.
3. Affixation : Consists in adding derivational affixes (i.e., prefixes, infixes and suffixes) to roots and stems to form new words. For example, if the suffix -able is added to the word pass, the word passable is created. Likewise, if to the word passable the prefix in- (or rather its allomorph *im-*) is attached, another word is formed, namely impassable. Affixation is a very common and productive morphological process in synthetic languages. In English, derivation is the form of affixation that yields new words.

26.10 Review Questions

1. Put stress on the following words (try to put secondary stress marks on as well).

(i) shopkeeper	(ii) confirmation	(iii) Javanese	(iv) birthmark
(v) anti-clockwise	(vi) confirmation	(vii) eight-sided	(viii) fruitcake
(ix) defective	(x) roof timber		
2. Define affix.
3. Distinguish between suffix and prefix.

Answers: Self-Assessment

Notes

1. (i) Atheist, anarchy, anonymous apathy, aphasia, anemia, atypical, anesthesia.
(ii) Absent, abduction, aberrant, abstemious, abnormal, abstract, absorb.
(iii) Acrobat, acrophobia, acronym, acromegaly, acropolis.
(iv) Action, react, transaction, proactive, activity, activation, deactivate.

26.11 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 27: Grammar: Traditional to Transformational

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Objectives

After studying this Unit students will be able to:

- Discuss some Misconceptions about Grammar.
- Know Traditional to Transformational Grammar.
- Discuss Grammar.

Introduction

The hypothesis of generative grammar is that language is a structure of the human mind. The goal of generative grammar is to make a complete model of this inner language (known as i-language). This model could be used to describe all human language and to predict the grammaticality of any given utterance (that is, to predict whether the utterance would sound correct to native speakers of the language). This approach to language was pioneered by Noam Chomsky. Most generative theories (although not all of them) assume that syntax is based upon the constituent structure of sentences. Generative grammars are among the theories that focus primarily on the form of a sentence, rather than its communicative function. Among the many generative theories of linguistics, the Chomskian theories are:

Transformational Grammar (TG) (Original theory of generative syntax laid out by Chomsky in *Syntactic Structures* in 1957.

1. Government and binding theory (GB) (revised theory in the tradition of TG developed mainly by Chomsky in the 1970s and 1980s)
2. The Minimalist Programme (MP) (revised version of GB published by Chomsky in 1995).

Phrase Structure Rules in Early Transformational Grammar

Chomsky in 1957, proposed the first kind of generative grammar which is popularly known as transformational (generative) grammar. There were two basic rules which were proposed in this grammar. These rules were:

1. Phrase structure rules and
2. Transformational rules, which are also simply known as transformations. The basic phrase structure tree is constructed on the basis of phrase structure rules. Followings are the phrase structure rules which help in the construction of a phrase structure tree:

- | | |
|------------------------|---------------------|
| (i) S ----- NP Pred-P | (ii) NP ----- Det N |
| (iii) Pred-P ----- Aux | (iv) VP ----- V PP |
| (v) PP ----- P NP | |

After going through this rule the specific morpheme or words, lexical insertion rules come to fore, by the virtue of which these morphemes are inserted into the terminal nodes. The lexical insertion rules are:

- | | |
|---------------------------|----------------------------|
| (i) Det ----- <i>this</i> | (ii) Det ----- <i>that</i> |
| (iii) N ----- <i>boy</i> | (iv) N ----- <i>girl</i> |
| (v) VP ----- <i>run</i> | (vi) P ----- <i>to</i> |

These rules are either called the phrase structure rules or the 're-write rules.

27.1 Some Misconceptions about Grammar

Grammar has been studied from the early days of literate civilization both from the point of view of individual languages and from that of general linguistic theory. There is, however, a great deal of confusion about it because of the very many different ways in which the term is used. There are some misconceptions about grammar. These are:

1. A grammar of a language is a book written about it.
2. The grammar of the language is found only in the written language-spoken languages have no grammar or at least fluctuate so much that they are only partially grammatical.
3. Some languages have grammar, others do not.
4. Grammar is something that can be good or bad, correct or incorrect. It is bad (incorrect) grammar to say. 'It is me', for instance.
5. Some people know the grammar of their language, others do not.
6. All languages have the same grammar.
7. One language has less grammar than the others.
8. Grammar is only a utilitarian thing, i.e. a means of learning to use a language correctly.

We should free ourselves from misconceptions like these to understand the correct meaning of grammar in terms of linguistics.

27.2 What is Grammar?

Grammar is a word that confuses considerably. It has been approached and defined differently by different scholars and schools of linguistics. Etymologically, the term 'grammar' goes back (through French and Latin) to a Greek word **grammatkia** or **grammatika techne** which may be translated as 'the art of writing.' But for a long time this term has been used very loosely to incorporate the whole study of language. The Greeks considered grammar to be a branch of philosophy concerned with 'the art of writing'. By the Middle Ages **grammar** had come to be regarded as a set of rules, usually in the form of a text-book, dictating 'correct' usage. So in the widest and the traditional sense, grammar came to mean a set of normative and prescriptive rules in order to set up a standard of 'correct usage'. And grammar was both the art and the science of language. The grammarian until the nineteenth century was the law-giver. Though it is still a valid interpretation for a lay man, no contemporary or modern linguist will accept this definition of grammar in our age.

Today most linguists agree that grammar should be descriptive. Grattan and Gurrey (*Our Living Language*, 1928) argue on similar lines: "The grammar of a language is not a list of rules imposed upon its speakers by scholastic authorities, but is a scientific record of the actual phenomena of that language, written and spoken. If any community habitually uses certain form of speech, these forms are part of grammar of the speech of that community." According to the structuralists, grammar is an inventory or catalogue of elements classified with restrictions enumerated and relations made physically manifested: it is a discovery of the organization of a sentence upon its immediate and ultimate constituents: it is thus an inventory of units such as phonemes, morphemes, words, lexical categories, phrases and clauses. In the words of Nelson Francis (*Structure of American English*), 'Grammar is the study of organization of words into various combinations often representing many layers of structure such as phrases, sentences and complete utterances.'

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Thus recently it has developed a narrower interpretation and it tends to be restricted to the part of the analysis of languages which was handled in classical grammar under the heading of **inflection** (treatment of the internal structure of words) and **Syntax** (the way in which words combine to form sentences). Grammar, it has often been said, gives rules for combining words to form sentences. There are, therefore, two divisions of grammar: words (morphology) and sentences (syntax). Within linguistics, 'grammar', is thus used normally in a technical sense to distinguish it chiefly from phonology or the study of the sounds of a language, and semantics, or the study of meaning. It lies 'in the middle' of these two, and is related in a Janus-like way to both.

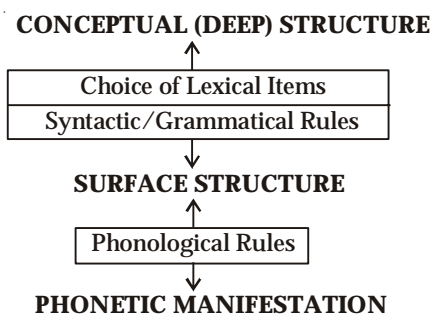


Did u know?

'Grammar is the study of organization of words into various combinations often representing many layers of structure such as phrases, sentences and complete utterances.'

But more recently, say since 1957 (i.e. the publication of Chomsky's *Syntactic Structures*), some new dimensions have been added to 'grammar', and 'the grammar of a language', to quote Noam Chomsky, the leader of the Transformational-Generative Grammar, has come to mean 'the theory that deals with the mechanisms of sentence constructions, which establish a sound-meaning relation in this language' (*Selected Readings*). Thus according to the latest interpretation of the term, grammar can be said to include all the linguistic levels with rules of transformation. In brief, it is 'a finite system of rules which explains how languages pair off sound and meaning' (S. K. Verma *Linguistics*). According to R.H. Robins, 'Grammar is concerned with the structure of stretches of utterance, or stretches of writing, and with the grouping and classification of the recurrent elements of utterances by virtue of the functional places they occupy and the relations they contract with one another in the structures. Grammar is thus organized on two dimensions, syntagmatic and paradigmatic. It may be approached from the point of view of the grammatical analysis of the actual utterance of a language, or from that of the generation or production of utterances by Grammatical rules framed for that purpose' (*General Linguistics*). So broadly speaking, in present usage in linguistics, grammar is a description of the structure of a language. And yet it was not the grammarian but the philosopher who created grammar, for the philosopher studies the nature of things and recognizes their essential qualities.

The organization of a complete grammar according to the Transformational-Generative grammarians may be as follows:



Hence the grammar of a language often includes, in addition to grammatical categories and rules, details of its pronunciation, transcription, and orthography.

Linguists like Chomsky and Fillmore make a distinction between **Transformational-Generative Grammar** and a pedagogical grammar. Grammars designed for teaching purposes are often called pedagogical grammar: they are performance-based. Grammars investigating language in general or a specific language, may be called **scientific grammars**. Within the transformational-generative framework such a grammar is competence based, and is economical, explicit and predictive. Grammars may be **synchronic**, i.e. describing the language of a particular period, or **diachronic**, i.e. describing

the development of a language, or **comparative** i.e. comparing and contrasting two or more different languages. Some contemporary grammarians (linguists) regard grammar as an all-encompassing theory of linguistic analysis, i.e. transformational generative grammar, systemic grammar, tagmemics, stratificational grammar. They are interested in establishing language universal too.

27.3 Kinds of Grammar

There are various kinds of grammar. Some major types of these have already been discussed. But those already discussed were the recent phenomena. We will discuss now the old or traditional and the new grammar and the major differences between the two.

Traditional Grammar

By traditional grammar is meant basically the Aristotelian orientation toward the nature of language as exemplified in the work of ancient Greeks and Romans, the speculative work of the medievals, and the prescriptive approach of the eighteenth century grammarians. The traditional grammar has a long tradition behind it. There are ideas about sentence structure deriving from Aristotle and Plato, ideas about the part of speech deriving from the Stoic grammarians, there are ideas about meaning stemming from the scholastic debates of the Middle Ages, ideas about the relationship between language and mind deriving from the seventeenth century philosophical controversies between rationalists and empiricists, ideas about correctness in language coming from the eighteenth century grammars of English, and ideas about the history of language deriving from the nineteenth century emphasis on comparative philology.

It is the most widespread and influential method of discussing languages in the world, fairly well understood and consistently applied by teachers. Traditional grammar distinguishes between rational, emotional, automatic and purely conventional type of discourse in theory if not in grammatical practice. It gives fairly a thorough and consistent analysis of the declarative sentence. It is the vehicle by means of which ordinary students and scholars have mastered many languages for centuries.

In the words of Chomsky, "I think that we have much to learn from a careful study of what was achieved by the universal grammarians of the seventeenth and eighteenth centuries. It seems to me, in fact, that contemporary linguistics would do well to take their concept of language as a point of departure for current work. Not only do they make a fairly clear and well-founded distinction between deep and surface structure, but they also go on to study the nature of deep structure and provide valuable hints and insights concerning the rules that relate the abstract underlying mental structures to surface from the rules that we would now call grammatical transformations." What is more, universal grammar developed as part of a general philosophical tradition that provided deep and important insights, also largely forgotten, into the use and acquisition of language, and furthermore, into problems of perception and acquisition of knowledge in general. These insights can be exploited and developed. The idea that the study of language should proceed within the framework of what we might now-a-days call 'cognitive psychology', is sound. There is much truth in the traditional view that language provides the most effective means for studying the nature and mechanisms of the human mind and that only within this context can we perceive the larger issues that determine the directions in which the study of languages should develop' (*Selected Readings*).

Weaknesses of Traditional Grammar

Traditional grammar is inadequate and full of shortcomings. If it had been adequate and perfect, there would have been no necessity of so many models of modern grammar. Traditional grammar is based mainly on Indo-European classical languages; hence it is a poor model for the grammars of languages that differ from Greek, Latin, Sanskrit, etc. It does not adequately distinguish between all the linguistic levels—phonetic, morphological, syntactic, and semantic. It is normative and prescriptive rather than explicit and descriptive. Its rules are illogical; it is inconsistent and inadequate as a description of actual language in use. It neglects not only the contemporary usage but also the functional and social varieties of language. Its approach is diachronic (historical) rather than synchronic (contemporary). It tries to study a living language like a dead one. In his book *The Structure of English* (1952), Fries challenges traditional grammars by calling them 'not insightful', 'prescientific',

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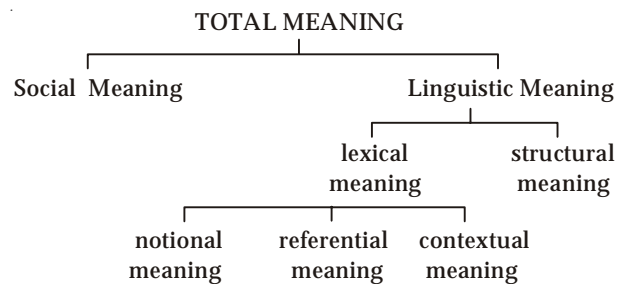
'prescriptive' and having a 'literary bias'. They are full of inadequacies. There may be about 200 definitions of the sentences, yet they are not able to differentiate between

the dog is barking

the barking dog

Traditional grammar says that a 'noun' is "the name of a person, place, or thing," yet cannot include blue and red in the list of nouns although they are the names of colours.

Traditional grammar uses meaning as the primary tool of linguistic analysis. Total meaning of a language utterance cannot be analysed in the present stage of our knowledge. Meaning is a complex entity for the understanding of which a formal description of language should form the base. Furthermore, it, fails to indicate clearly which meaning it is going to treat.



Traditional grammar gives priority to the written form of language, and ignores the notion that the spoken form is prior to the written form. It is not a complete grammar; it does not treat all aspects of language adequately; it does not cover even the whole range of the written forms of a language, but is restricted to specific kinds of writing—the more formal styles, in particular. It gives a general conception of the nature of language in essentially aesthetic terms. A language, structure, word or sound is said to be more 'beautiful', 'ugly', 'affected', and so on, than another. It regards grammar as something God-given, neat, holy, and does not allow the consideration for language-change and ignores the fact that the grammar of a language should also change as the language changes. It is inadequate to analyse all the ambiguities. Its methods and notions are unverifiable, inaccurate, incomplete and inconsistent; its descriptions are inexplicit and intuitive.

"The tradition of universal grammar came to an abrupt end in the nineteenth century, for reasons that I will discuss directly. Furthermore, its achievements were very rapidly forgotten, and an interesting mythology developed concerning its limitations and excesses. It has now become something of a cliché among linguists that universal grammar suffered from the following defects: (a) it was not concerned with the sounds of speech, but only with writing; (b) it was based primarily on a Latin model, and was in some sense 'prescriptive'; (c) its assumptions about language structure have been refuted by modern 'anthropological linguistics'. In addition, many linguists, though not all, would hold that universal grammar was misguided in principle in its attempt to provide explanations rather than mere description of usage, the later being all that can be contemplated by the sober scientist" (*Selected Readings*).

The traditional grammar does not have an adequate notion of a linguistic rule. It appeals only to intuition. The rules are not adequate and wholesome. The learner has to use his own commonsense or judgment in matters of unstated rules. This grammar concentrates on giving rules and defining terms, but its rules and definitions are not satisfactory; nor are they scientifically sound. To quote John Lyons, "The traditional grammarian tended to assume, not only that the written language was more fundamental than the spoken, but also that a particular form of the written language, namely the literary language, was inherently 'purer' and more 'correct' than all other forms of the language, written and spoken; and that it was his task, as a grammarian, to preserve this form of the language from 'corruption' (*An Introduction to Theoretical Linguistics*). So traditional grammar is informal, unscientific, illogical, full of contradictions and inconsistencies, inexplicit, inadequate prescriptive, uneconomical, unmethodical and unwholesome. It lacks scientific accuracy, objectivity, precision. It ignores the contemporary usage and all the varieties of language.

Structural Grammar

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The beginning of the twentieth century was marked by the new approaches suggested by Ferdinand de Saussure and the Prague School Linguists in Europe, the anthropological linguists in America, and the advances then being made in behavioural psychology and natural sciences. Consequently scientists began to study language in terms of observable and verifiable data obtained from the behaviour of the users of language. This new movement, which was a reaction against the 'traditional' or 'universal' grammars and an improvement upon the historical and comparative studies of languages in the nineteenth century, is known as structural linguistics as it attempts to describe a language as it is used in terms of recurrent element and recurrent regularities (structure). It has been called "mechanical" because its procedure is mechanical. It studies a language employing certain procedures which linguists have formulated, tested and improved. Furthermore, it eschews the mentalistic approach which is based on intuitive analysis of data, and insists on purely objective analysis.

In the words of John Lyons, the term **structuralism** 'means that each language is regarded as a system of relations (more precisely, a set of interrelated system), the elements of which—sound, words, etc.—have no validity independently of the relations of equivalence and contrast which hold between them.' (*Introduction to Theoretical Linguistics*).

The structuralists proved themselves to be iconoclasts. They used 'structure' somewhat as a slogan, and ignored meaning. They emphasized that the language should be studied in a mechanical way, and a linguist should therefore discover the various constituents of a language as a botanist discovers the petals of a flower. By structure the followers of Bloomfield meant 'regularities', 'patterns' or 'rules' of language. In fact, they envisaged language structure in a very precise and limited manner. In particular it was 'associated' with the 'phoneme' as the unit of phonology and the 'morpheme' as the unit of grammar. The structuralist's method implies that first we must find the phonemes, and then the morphemes, each without any reference to anything that has not already been empirically established. When the morphological elements have been set up, followed by a statement of their distribution, the structuralist can proceed on to analyse syntax into constituents, and state their relationship in terms of structure. Thus he has to establish phonemes without reference to morphemes (grammar) and both phonemes and morphemes without reference to semantics (meaning). So he is committed to the objective study of a language in its own terms in order to arrive at an abstract, synchronic description of the organization of the language analysed.

According to structuralism, any sentence of a language may be represented as a particular arrangement of the ultimate constituents, the minimal grammatical elements, of which it is composed. Every sentence has therefore what is known as **linear surface**. The structuralist developed the system of immediate constituents, or IC, Analysis.

Attention to structure, study of the spoken language, use of the inductive method of scientific analysis, and working from form to meaning characterize the work of the structural grammarian. He treats grammar as a device by which words are combined into larger units of discourse. He analyses the data, a given corpus, by means of inductive methods, and formulates a grammar based on discovery procedures of the data. To him grammar would mean a catalogue of elements classified with restrictions enumerated and relations made physically manifest. Restrictions were based on notions of distribution. It is a discovery of the organization of a sentence into its immediate and ultimate constituents.

Basic Assumptions of Structural Linguistics

1. **Priority of the spoken languages:** While almost all traditional grammarians till the beginning of our own century assumed the 'superiority' of the written form to the spoken form of language, the structural linguists maintained that spoken form is prior to the written form, and must form the main field of linguistic study. They maintain that the spoken language is primary and that writing is essentially a means of representing speech in another medium. The principle of priority of the spoken language over the written implies, first of all, that speech is older and more widespread than writing; that all systems of writing (except perhaps Chinese) are demonstrably based upon units of spoken language; that speech is acquired first and writing afterwards; and that no writing system in use can convey or represent all the features of speech. The extra-

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- linguistic features (gestures, etc.) are missing in writing besides total values, contrastive stresses, etc. Dependence on written language tended to promote prescriptivism and language teaching divorced from actual speech habits of the day. The structuralists attempted to change this emphasis with great success.
2. **Objective treatment of all languages:** All languages are structurally complex and completely adequate to the needs of their speech community. It was a common belief of the descriptive linguist, who studies languages for a better understanding of human languages as such, he took every language as an equal manifestation of the structure of human languages. At the same time, he studied each language separately not assuming that languages had common universal properties.
 3. **Importance of synchronic description:** Whereas the traditional and the historical grammarians were interested in the diachronic (through time) studies of language, the structuralists found it important to describe the language of the day as it is available for study and description. Synchronic description implies a study of usage of the day and of such varieties as exist in the language at the time of study.
 4. **Linguistics is a descriptive, not a prescriptive science:** The traditional grammarian tended to assume, not only that the written language was more fundamental than the spoken, but also that a particular form of the written language, namely the literary language, was inherently 'purer' and more 'correct' than all other forms of the language, written and spoken; and that it was his duty, as a grammarian, to 'preserve' that form of the language from 'corruption'. The traditional grammarian treated grammar as a set of normative, prescriptive rules. But the structuralists gave up such notions and treated linguistics as a descriptive science.
 5. **System Structure:** The structural linguist was concerned with describing the organization or the pattern, or the system or the structure of the language under scrutiny. According to the structuralists, the most striking feature of human languages is the complexity of their structure. Their study of language was based on empirical evidence.
 6. **Language and Utterance:** The structuralists maintained a clear distinction between language and utterance, between **langue** and **parole**. Language is an abstraction of a system at work; the parole is an instance, manifestation, in context demonstration of the principles at work. It was Saussure who indicated this difference between the two. He proposed that the task of the descriptive linguist was to state the relationship between actual speech acts and their recurring patterns. So to a structuralist a language is not the same thing as an utterance: it is abstraction of a system at work, the other is an instance, manifestation of the principles at work.

Strengths of Structural Linguists

'The major contributions of structural linguistics', according to Chomsky, 'are methodological rather than substantive.' It made the study of language scientific, precise, verifiable and objective. It took a living dialect for the study and analysed its features. The aim was to begin with the raw data and arrive at a grammatical description of the corpus (and therefore of the language). First the elements (phonetic, morphemic or syntactic) are set, and then are stated their distribution. And lastly, the syntax is analysed into constituents, and their relationship stated in terms of structures, but it is not always necessary to maintain this particular order. In brief, 'the structural linguist is committed to the objective study of a language in his own terms in order to arrive at an abstract, synchronic description of the organization of the language analysed'.

Structural linguistics is empirical, makes exactness a methodological requirement, and insists that all definitions be publicly verifiable or reliable. It examines all languages in terms of their phonological and grammatical systems. Because its description is structural, the uniqueness of each language is recognized; it also facilitates comparison. It described the minimum required contrasts that underline any construction or conceivable use of a language and not just those discoverable in some particular use.



Did u know?

The word “grammatical” tends to be used in a very loose sense in this context. It is usual to illustrate the grammatical function by inventing sentences which when written are ambiguous, and whose ambiguity can only be removed by using differences of intonation. A typical example is the sentence “Those who sold quickly made a profit”. This can be said in at least two different ways:

- (i) 'Those who 'sold vquickly | ,made a \profit
- (ii) 'Those who vsold | ,quickly 'made a \profit

Weaknesses of Structural Linguistics

Chomsky criticised this school of linguistics for its being corpus-bound, and neglect of meaning. Structuralism ignores explanatory adequacy, meaning, linguistic universals, native speaker’s intuition and his competence of generating infinite number of sentences from a finite set of items. Structuralism analyses the data of a given corpus by means of inductive methods, and formulates a grammar based on discovery procedures of the data. To the structuralists grammar is a catalogue of elements classified with restrictions enumerated, and relations made physically manifest. But the total corpus cannot be captured or verified. Language is not merely an inventory, or catalogue of items as the structuralists imagined.

Structuralisms fails to capture all ambiguities and relations. It does not include the idea of creativity. It does not account for the degree of grammatically and acceptability; nor does it stop the generation of ungrammatical sentences. The Grammar produced by it is not predictive and explicit; it does not offer explanations for the inter-relatedness of sentences. Grammar should not merely be a record of data; it should establish the general and innate properties of the language based on the intrinsic properties of human mind. Linguistics is a subclass of cognitive psychology. Language is both nature and nurture. Grammar should also specify what to say, and when and why to say. But the structural grammar does not fulfil all these goals. The structuralist grammar is not a whole but a part of a whole—an inventory of units such as phonemes, morphemes, words, lexical categories, phrases. Descriptive grammar is simply one aspect of generative grammar, hence apiphenomenal. Structuralism speaks nothing about the nature of language; it fails to establish a relationship between sound and meaning. A grammar should also account for deep structures, and should be concerned with the task of giving a factually accurate formulation of the rules that generate deep and surface structures, the rules that discover the inter-relatedness of sentences and the rules that give a phonetic transcription of surface structures and semantic interpretation of deep structures. ‘The units are logically prior to the grammar: the grammar is logically prior to the units’, it concentrates on structuralism and ignores the native speaker’s competence. It also ignores the psychological and sociological side of language. It is interested in data more for the sake of data than in capturing the creative power that generates an infinite set of sentences; it does not speak of the internalization. Hence the emergence of Transformational-Generative Grammar.

27.4 Formal vs. Notional Grammar

‘Formal grammar is grammar that both in theory and in method is concerned solely with the observable forms, structural functions, and interrelations of the components of sentences or stretches of utterance’. Modern grammatical theory is frequently said to be ‘formal’, in contrast with traditional grammar, which was ‘notional’. According to Jespersen, ‘notional’ grammar starts from the assumption that there exist ‘extralingual categories which are independent of the more or less accidental facts of existing languages’ and are ‘universal in so far as they are applicable to all languages, though rarely expressed in them in a clear and unmistakable way’. ‘Formal’ grammar puts forward no such assumptions about the universality of such categories as the ‘parts of speech’, ‘tense’, ‘mode’, etc. (as they were traditionally defined) and claims to describe the structure of every language on its own terms.

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There are scholars who by 'formal' mean 'the structural or modern anthropological linguistics' which does not attempt to deal with deep structure and its relations to surface structure. Rather, its attention is limited to surface structure—to the phonetic form of an utterance and its organisation into units of varying size (Chomsky). It is much more concerned with the form than with the spirit or content. In the words of Chomsky, "Structural linguistics has very real accomplishments to its credit. To me, it seems that its major achievement is to have provided a factual and a methodological basis that makes it possible to return to the problems that occupied the traditional universal grammarians with some hope of extending and deepening their theory of language structure and language use. Modern descriptive linguistics has enormously enriched the range of factual material available, and has provided entirely new standards of clarity and objectivity." (Chomsky, *op. cit.*)

One function of grammar is to specify as simply as possible for a language what sentences are 'acceptable', and to do this in terms of some general theory of language structure. The scholars of the formal grammar have formulated 'distribution' and 'discovery procedures'. In particular, it was assumed that the proper task of 'structural linguistics' was to formulate a technique, or procedure, which could be applied to a corpus of attested utterance and, with the minimum use of the informant's judgements of 'sameness' and 'difference' could be guaranteed to derive the rules of the grammar from the corpus itself.

A grammatical description which is based entirely on the observable forms of a language may be called FORMAL GRAMMAR, whereas a description based on meanings rather than forms is called NOTIONAL or PHILOSOPHICAL GRAMMAR. A formal definition of noun in English might be: 'a word which distinguishes between singular and plural and possibly has a possessive form', whereas a notional definition might be: a 'naming word'. Traditional grammar has always been a fusion of notional and formal elements, which has often led to inconsistencies and discrepancies.

Two major traditions have been distinguished in modern linguistic theory by Chomsky: one is the tradition of 'universal' or 'philosophical' or 'notional' grammar which flourished in the seventeenth and eighteenth centuries; the second is the tradition of structural or descriptive linguistics, which developed in the later 19th century and early twentieth century and reached its culminating point in the 1950s. Universal grammar was concerned with general features of language structure rather than with particular idiosyncracies. Universal grammarians believed: 'Grammar should not be merely a record of the data of usage, but rather should offer an explanation for such data. It should establish general principles applicable to all languages, based ultimately on intrinsic properties of the mind, which would explain how language is used and why it has the particular properties to which the descriptive grammarian chooses, irrationally, to restrict his attention' (Noam Chomsky, *Selected Readings*).

Chomsky further says that besides this, universal grammarians proceeded to develop a 'rich and far-reaching' account of the general principles of 'language structure', and a psychological theory dealing with certain aspects of language use, with production and comprehension of sentences. Universal grammar made a sharp distinction between what is called now 'deep structure' and 'surface structure'. 'What is more, universal grammar developed as part of a general philosophical tradition that provided deep and important insights, also largely forgotten, into the use and acquisition of language, and, further-more, into problems of preception, and acquisition, of knowledge in general' (*Selected Readings*).

The universal grammarians were interested in the universal properties of languages and not in their individual idiosyncracies or individual properties. They believed all languages were alike. They were vague and gave airy pronouncements not supported by any rigorous formalism. In theory grammar should not be merely a record of data but should rather offer explanation (in the inter-relatedness of sentences). They were interested in the organising power but they did it in the form of **impression**. They did not create any **formalism**; they did not have **motivated** rules, leading from one to the other. Yet they had a vision, not the framework to organise it.

Anthropological or structural linguists, on the other hand, were interested in studying languages as a mirror of culture. No cultures are alike; hence no language are alike. 'Structural linguistics is a direct outgrowth of the concepts that emerged in Indo-European comparative study, which was primarily concerned with language as a system of phonological units that undergo systematic modification in phonetically determined contexts. Structural linguistics reinterpreted this concept for a fixed state of a language, investigated the relations among such units and the patterns they form, and attempted,

with varying success, to extend the same kind of analysis of 'higher levels of linguistic' structure. Its fundamental assumption is that procedures of segmentation and classification, applied to data in a systematic way, can isolate and identify all types of elements that function in a particular language along with the constraints that they obey. A catalogue of these elements, their relations, and their restrictions of 'distribution', would, in most structuralist views, constitute a full grammar of the language' (Chomsky, *Selected Readings*).

Structural linguistics provided a remarkable and scientific methodological basis of language study. It also provided new standards of clarity and objectivity. 'These methodological contributions are not limited to a raising of the standards of precision. In a more subtle way, the idea that language can be studied as a formal system, a notion which is developed with force and effectiveness in the work of Harris and Hockett, is of particular significance. It is, in fact, this general insight and the techniques that emerged as it developed that have made it possible, in the last few years, to approach the traditional problems once again. Specifically, it is now possible to study the problems or rule-governed creativity in natural language, the problem of constructing grammars that explicitly generate deep and surface structures and express the relations between them, and the deeper problem of determining the universal conditions that limit the form and organization of rules in the grammar of human language' (Chomsky, *Selected Readings*).

Nevertheless, structural linguistics is the scientific study of language. It is inductive, objective, tentative, and systematic; it is concerned with reportable facts, methods, and principles; it works by means of observations, hypotheses, experiments, postulates, and inferences; its products are descriptive verbal or algebraic statements about language.

So the main difference between formal and notional grammar can be stated as follows:

Notional (traditional or Universal) Grammar	Formal or Structural Grammar
1. Old; declined after the 18th century	New; developed mainly in the twentieth century
2. Pre-scientific (or unscientific)	Scientific
3. Illogical, inconsistent and unmethodological	Consistent, logical and methodological
4. Subjective and intuitive	Objective and verifiable
5. Informal	Formal
6. Studies languages as if they were all alike	Studies a language as a mirror of culture; since no two cultures are alike; no two languages are alike either.
7. Gives priority to written form, especially literary form of language	Gives priority to the spoken form or the contemporary, actual usage.
8. Lacks precision and economy	Has precision and economy
9. Is a set of prescriptive or normative rules	Is an inventory of all the linguistic units: phonemes, morphemes, phrases, clauses, sentences.
10. Lays due emphasis on meaning	Since meaning is a very complex phenomenon, ignores meaning
11. Based on Greek and Latin models	Based on factual study of language.
12. Fusion of all linguistic levels	Separation of all linguistic levels
13. Explanatory (how and why)	Observational and descriptive
14. Humanistic and philosophical study	Empirical science
15. Has a long history	A short history

27.5 Summary

- But for a long time this term has been used very loosely to incorporate the whole study of language. The Greeks considered grammar to be a branch of philosophy concerned with 'the art of writing'. By the Middle Ages **grammar** had come to be regarded as a set of rules, usually in the form of a text-book, dictating 'correct' usage. So in the widest and the traditional sense, grammar came to mean a set of normative and prescriptive rules in order to set up a standard of 'correct usage'. And grammar was both the art and the science of language. The grammarian until the nineteenth century was the law-giver. Though it is still a valid interpretation for a lay man, no contemporary or modern linguist will accept this definition of grammar in our age.
- Linguists like Chomsky and Fillmore make a distinction between **Transformational-Generative Grammar** and a pedagogical grammar. Grammars designed for teaching purposes are often called pedagogical grammar: they are performance-based. Grammars investigating language in general or a specific language, may be called **scientific grammars**. Within the transformational-generative framework such a grammar is competence based, and is economical, explicit and predictive. Grammars may be **synchronic**, i.e. describing the language of a particular period, or **diachronic**.
- There are various kinds of grammar. Some major types of these have already been discussed. But those already discussed were the recent phenomena. We will discuss now the old or traditional and the new grammar and the major differences between the two.
- The traditional grammar has a long tradition behind it. There are ideas about sentence structure deriving from Aristotle and Plato, ideas about the part of speech deriving from the Stoic grammarians, there are ideas about meaning stemming from the scholastic debates of the Middle Ages, ideas about the relationship between language and mind deriving from the seventeenth century philosophical controversies between rationalists and empiricists, ideas about correctness in language coming from the eighteenth century grammars of English, and ideas about the history of language deriving from the nineteenth century emphasis on comparative philology.
- 'Formal grammar is grammar that both in theory and in method is concerned solely with the observable forms, structural functions, and interrelations of the components of sentences or stretches of utterance'. Modern grammatical theory is frequently said to be 'formal', in contrast with traditional grammar, which was 'notional'. According to Jespersen, 'notional' grammar starts from the assumption that there exist 'extralingual categories which are independent of the more or less accidental facts of existing languages' and are 'universal in so far as they are applicable to all languages, though rarely expressed in them in a clear and unmistakable way'.

27.6 Key-Words

1. Structuralism : It means that each language is regarded as a system of relations (more precisely, a set of interrelated system), the elements of which—sound, words,
2. 'Formal grammar' : It is grammar that both in theory and in method is concerned solely with the observable forms, structural functions, and interrelations of the components of sentences or stretches of utterance'.

27.7 Review Questions

1. What is grammar? Give one traditional, one structural and one generative definition of grammar.
2. What are the major misconceptions about grammar?
3. What are the major kinds of grammar?
4. What are the major characteristics and assumptions as well as achievements of the following:
 - (i) Traditional Linguistics (Grammar)
 - (ii) Structural Linguistics (Grammar)
5. Mention the major weaknesses of
 - (i) Traditional Grammar, and
 - (ii) Structural Linguistics.

6. Distinguish between Traditional Grammar and Structural Linguistics.
7. Is Transformational-Generative Grammar an attempt to fuse the traditional and the structural grammars? If yes, show how it is being done.
8. Distinguish between Formal and Notional grammar.
9. Write a note on the contribution of transformative Generative Grammar in the field of linguistic study.
10. Enumerate some of the mis-conceptions about grammar. What are the limitations of traditional grammar?

Notes

27.8 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. *Modern Linguistics: An Introduction*.
2. *An Introduction to Linguistics*, John Lyon.
3. Peter Roach: *English phonetics and phonology*. Cambridge University Press.
4. *Encyclopedia of Linguistic Science* Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 28: Transformational Generative Grammar

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Objectives

After studying this unit students will be able to:

- Discuss Transformational Generative Grammar.
- Explain Systemic Grammar.
- Know Stratificational Grammar.

Introduction

We have already seen the rise of structuralism and how did it spread itself in the different fields of study. The rise of American structuralism gave way to the generative grammar which was different from that of structuralism. The later development of thoughts and discussion in the generative grammar lead to the evolution of Transformational Generative Grammar.

Let us now take a look at the generative framework of grammar, and how it differs with the theory of structuralism, and also a brief look at the Transformational Generative Grammar.

28.1 Generative Grammar

The generative approach towards the description of language was introduced in 1957 with the publication of Noam Chomsky's Syntactic Structure. Generative approaches include meaning in the study of language, and look for patterned relationships between "deep" structures of meaning and "surface" structures of linguistic forms actually used by the speaker.

Principal Goals: The principle goal of generative approach towards language (generative grammar) can be summed up as following:

1. The elements of universal nature, which contribute in making up the grammar of a particular language, should be characterised in formal terms.
2. Grammar of different languages should be characterised by formal statements.

28.2 Transformational-Generative Grammar

The name 'Transformational-Generative' suggests that there are two aspects of the theory. The grammar it provides is both 'transformational' and 'generative'. These two aspects are not logically dependent upon each other, though the theory gains plausibility from the interaction of the two. Hence it is necessary to understand these two terms.

Transformational

Notes

It is because of the shortcomings of phrase structure grammar and because of the other reasons that Noam Chomsky came to hold the view that 'notions of phrase structure are quite adequate for a small part of the language and that the rest of the language can be derived by repeated application of a rather simple set of transformations to the strings given by the phrase structure grammar to cover the entire language directly, we would lose the simplicity of the limited phrase structure grammar and of the transformational development.'

Simply speaking, a transformation can be thought of as the act of transforming one sentence into another, the deep structure into surface structure. Whereas active sentences are 'kernel' sentences, passives are the transforms. There are however plenty of other transformations. According to R.H. Robins, "Essentially, transformation is a method of stating how the structures of many sentences in languages can be generated or explained formally as the result of specific transformations applied to certain basic sentence structures. These basic sentence types or structures are not necessarily basic or minimal from the point of view of immediate constituent analysis, the transformational syntax presupposes a certain amount of 'phrases structure' grammar of the immediate constituent type to provide the basis or the 'kernel' from which transformations start". (*General Linguistics*, Longmans, 1967 : 242), but the notion of "kernel" has been abandoned by Chomsky since the publication of his *Aspects of the Theory of Syntax* (1965).

For example **Has John seen Mary ?** is a transform of **John has seen Mary** (by simple transfer of **has** which is technically described as 'permutation' : **A snake was killed by Mohan** is the transform of the sentence in the active voice : **Mohan killed a snake** (by passivization). Similarly **The man who was standing there ran away** is the transformation of the two sentences.

The man ran away

and

The man standing there.

(by relative transformation)

Generative

The second characteristic of TG is that it is 'generative'. This means that a grammar must 'generate' all and only the grammatical sentences of a language. By this is not meant that a grammar should literally (at any time) bring all these sentences into existence. It means merely that grammar must be so formulated that by following its rules and conventions we could produce all or any of the possible sentences of the language. To 'generate' is thus to 'predict' what could be the sentences of the language or to 'specify' precisely what are the possible sentences of the language. Thus a grammar should 'generate', 'specify', 'predict' the grammatical/acceptable sentences of the language and not the ungrammatical/unacceptable ones.

So a generative grammar is not concerned with any ACTUAL set of sentences of the language but with POSSIBLE set of sentences. We are not concerned merely or solely even primarily with any observed sentences (utterances) that have occurred, but rather with those that can, or could have occurred. The advocates of TG have said that any corpus has a finite number of sentences, no matter how large, yet a language consists of an infinite number of sentences. This infinity is a result of what is known as 'recursion'— that we can apply the same linguistic device over again. To say that the number of sentences is infinite does not mean, of course, that the grammar itself is infinite. On the contrary, it has finite number of rules but allows to generate the infinite set of sentences.

Secondly, to say that a grammar is generative is to say that it is explicit, that is it explicitly, clearly, methodically and accurately indicates just what are the possible sentences of the language. It leaves nothing to chance, nothing to the reader's intelligence or his knowledge of the language or the way in which languages usually work. It should leave nothing to the imagination and should be formulated step by step in such a way that the generation of the sentences of a language should be a pure mechanical procedure. Even a person who did not know the language could generate sentences by following the rules step by step.

Notes

The **explicitness** and the **predictive** nature of such a grammar can be summed up in one word, the word **generative**. But the term **generative** should not automatically lead to conclude that all generative grammars are transformational. Any type of grammar which is explicit and predictive is generative. But not all generative grammars are transformational.

The Goals of Linguistic Theory and the Concept of Grammar

Between 1933 and 1957 the structuralists were largely concerned with the problem of how to DISCOVER the phonemes, morphemes, etc. of the language. They also believed that in the interest of 'empirical', 'scientific' linguistics we must begin with the observed data and work 'upwards' from the sound system to the grammatical system, keeping the two in their right place in the sequence and completely apart. The sound system had to come first because it was felt that only the phonetic/phonemic aspects of language provided a basis for scientific statement, since meaning was outside the possibility of serious investigation. So what linguistic theory had to provide, was only a set of 'discovery procedures'—procedures for discovering the structure of the language.

So at that time, a grammar could be defined as a perfect, objective description of a language. And the ultimate goal of linguistics was to find rules which led to such grammars. Chomsky suggested, on the other hand, that this aim was both far too ambitious and far too limited in scope. It was too ambitious in that it was unrealistic to expect a perfect grammar from a mass of data. It was too limited because such grammars had no predictive power. They catalogued what had happened, but did not predict what would happen.

Chomsky suggested that a grammar should be regarded, instead, as a theory or hypothesis about how a language worked. In the same way as a biochemist might formulate a hypothesis against actual living cells, so a grammar should be a hypothesis about language formulated and tested in the same way. If correctly formulated, such a grammar will be 'a device that generates all of the grammatical sequences (of a language) and none of the ungrammatical ones.'

The task of linguistics was to formulate such grammars and to work out principles and procedures by which they could be evaluated so that if a linguist was presented with two rival grammars, he could automatically identify the better of the two and reject the other. (So by 'evaluation procedures' is meant procedures for evaluating all the possible descriptions saying why one is better than the others).

The tasks before the Transformational, Generative grammarian, therefore, were to formulate a linguistic theory which will account for all the linguistic levels of the language, inter-relate sound and meaning, to provide a linguistic methodology for structural description and evaluation procedures for evaluating the best of all the available models of grammar and rejecting the other ones, and to have **explanatory** and **descriptive** adequacy.

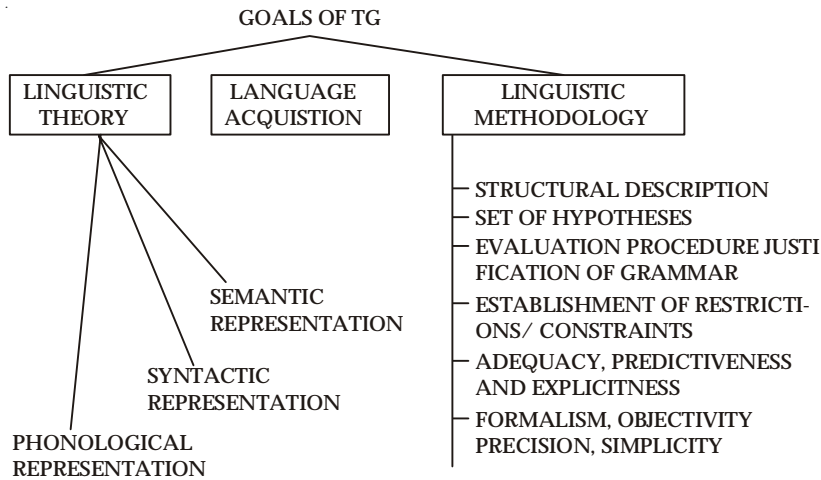
By **explanatory adequacy** is meant the grammar's capacity to offer an A.D., that is, a language acquisitions device

Primary data — A.D. —G

In other words, it should be adequate to establish linguistic universals, to develop a general evaluation procedure, to distinguish between the grammatical and the ungrammatical, between the more grammatical and less grammatical. That is, the theory must provide a practical and mechanical method for actually constructing the grammar, given a corpus of utterances. One way of testing the adequacy would be to determine whether or not the sequences it generates, are actually grammatical, acceptable to a native speaker, whether or not it mirrors the behaviour of the speaker.

Descriptive adequacy is an external condition. That is, a grammar must produce all and only grammatical sentences of that language, should offer a description of all the sentences, must indicate all the grammatical functions such as Subject, Object, Adverb, Adjective, etc., must indicate and specify ambiguity, if any, and must indicate grammatical relations, and processes such as paraphrasing, embedding, conjoining, deletion, permutation, etc. Furthermore, it should determine selectional restrictions or constraints too.

To summarize the tasks and goals of linguistic theory, we can draw the following diagram to be followed by detailed explanations :



Thus the tasks and goals of a Transformational-Generative theory were to be the following :

1. A linguistic theory should distinguish between competence and performance. The linguist's interest lies not in the actual utterances of the native speaker of a language, but rather in what he CAN say, his 'knowledge' of the language, his 'competence'. By performance is meant what a native speaker of a language says at a time, the sentence he actually produces. So the actual sentences produced by him are not themselves the object of the investigation of the linguist but merely form a part of the evidence for his competence.
2. It should relate sound and meaning.
3. It should account for all the linguistic levels of the language.
4. It should generate all and the only sentences of language.
5. It should provide a grammar which would be a device to generate from a finite set an infinite number of sentences.
6. It should offer the structural descriptions of grammatical sentences.
7. It should capture the native speaker's intuition.
8. It should explicate grammatical relationships and functions of various constituents of a structure.
9. It should indicate grammatical categories and classes.
10. It should establish grammatical correctness, account for plausibility and probability of occurrences; should be able to make a distinction between less grammatical, more grammatical and ungrammatical.
11. It should establish universals of language and explicate language acquisition.
12. It should have explanatory and descriptive adequacy, should provide not only discovery and decision procedures but also evaluation procedures.
13. It should account for creativity of the user (rule-changing and rule-governed creativity).
14. It should account for the sameness and unsameness of the language, show why sentences which are apparently very similar in their external appearance, are in fact understood differently by the speakers of a language; should disambiguate ambiguities, account for synonymities and immediate as well as ultimate constituents, immediate as well as remote relationships, account for all kinds of sentences, and syntactic relationships.

Hence the term grammar is being used here as linguistic theory—as a finite mechanism, capable of generating an infinite set of grammatical sentences, and of automatically associating structural description with each of them.

Notes

This grammar is neither a set of prescriptive rules, nor an inventory of data, but a general scientific theory of language. It is the native speaker’s ability to use, produce and understand a natural language; the ability to distinguish between grammatical and ungrammatical, between grammatical and less ungrammatical, the ability to interpret, certain grammatical strings even though elements of the interpretation may not be physically present in the string; the ability to perceive ambiguity in a grammatical string; the ability to perceive when two or more strings are synonymous.

Such a grammar is generative, explicit, predicting, simple, scientific, mechanical, economical and formal.

Components of a Transformational-Generative Grammar; Standard Theory (1957)

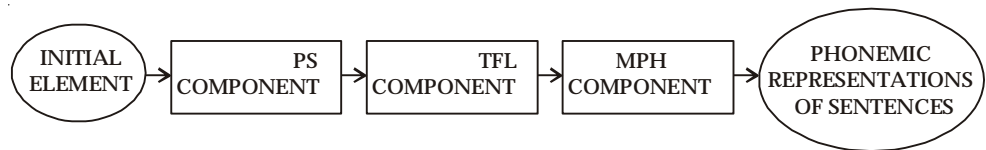
A well-known linguist once remarked : ‘There are three things in life you must never run after : a woman, a bus and a theory of transformational grammar—there will be another one along in a moment.’

Many changes have been taking place in TG since its first inception in 1957. Chomsky himself had modified many details in his grammar since the publication of *Syntactic Structures* (1957). A modified version appeared in 1965 with the publications of the *Aspects of the Theory of Syntax* (1965) but modifications are still being made. As there is no definitive version (nor does it look as if there is likely to be one in the near future), it is perhaps most useful to approach transformational grammar in its earliest formulation.

In *Syntactic Structures* the grammar is viewed as being in three components :

1. phrase structures (PS) component,
2. transformational (TFL) component, and
3. morphophonemic (MPH) component.

It is conventionally depicted as a kind of machine in which a sentence is pictured as progressing through each of the components in turn, moving from deep structure to surface structure.



The **Phrase structure** component generates the structure which underlies a kernel sentence by means of rewrite rules (11.2). So (in a much simplified version) we might get :

PS Rules

S → NP + VP

VP → V + NP

NP → $\left\{ \begin{array}{l} \text{NP Prop.} \\ \text{D + N} \end{array} \right.$

Prop. N John

D → the

N → door

V → Aux MV

Aux → Tense

Tense → past

MV-open

NP + VP

NP + V + NP

Prop N + V + D + N

John + V + D + N

John + V + the + N

John + V + the + door

John + Aux + MV + the + door

John + tense + MV + the + door

John + Past + MV + the + door

John + Past + open + the + door K-terminal string)

*the door

*John

Strings

(1st string)

(2nd string)

(3rd string)

(4th string)

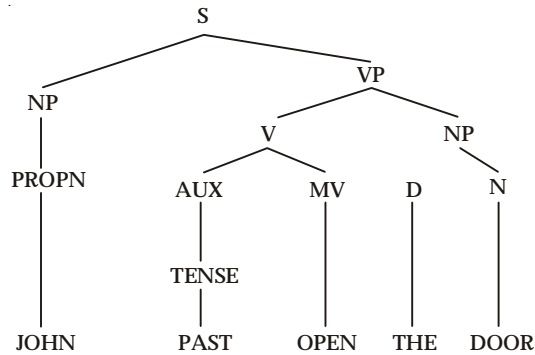
(5th string)

(6th string)

(7th string)

(8th string)

(9th string)



The result of each application of a PS rule is called a string. The PS rules for the sentences—**John opened the door**—for example, generate strings as above. Each of the strings shown above is a **kernel string**, and the last of them a **K-terminal string** since there are no further rules to apply: the K-terminal string is the last (terminal) string of the derivation. Notice that the K-terminal string ‘John + past + open + the + door’, though not itself a sentence, underlies the kernel sentence ‘John opened the door’.

So Chomsky begins by making a fundamental distinction between two kinds of sentences: **Kernel sentences** and **transforms**. Kernel sentences are the basic, elementary sentences of the language, the stuff from which all else is made. Transforms are the ‘all else’ structures drawn from the kernel to produce all the complications of English sentences. An English kernel sentence consists of a noun phrase followed by a verb phrase. We indicate this with the formula $S \rightarrow NP + VP$. The kernel is the part of English that is basic and fundamental. It is the heart of the grammar, the core of the language. All the other structures of English are derivations from, or transformations of, the K-terminal strings. For example, the sentences (ii-viii), below are the results of transformations applied to the kernel sentence K-terminal strings of No. 1—‘John opened the door’:

1. John opened the door.
2. John did not open the door.
3. Did John open the door ?
4. Didn’t John open the door ?
5. The door was opened by John.
6. The door was not opened by John.
7. Was the door opened by John ?
8. Wasn’t the door opened by John ?

The sentences (2-8) are derived from the same underlying string. They are generated by means of **optional** transformations. They differ in that (1) has had no optional transformations applied to the underlying; (2) has had the Negative transformations applied; (3) the **Interrogative**; (4) the Negative and **Interrogative**; (5) the **Passive**; (6) the **Passive** and **Negative**; (7) the **Passive** and **Interrogative**; and (8) the **Passive**, **Negative** and **Interrogative**, and so on so forth.

The **transformational component** contains rules which can alter the kernel in various ways. Negative Questions and passive transformations are optional; other transformations are **obligatory**. Such as the ‘number’ transformation, which deals with the agreement of a noun phrase with its verb. In ‘The door was opened by John’ the ‘number’ transformation specifies that a singular noun phrase (**the door**) must be followed by a singular verb (**was**). Note also that transformations have to be applied in a definite order, e.g. the number transformation must be applied after the passive transformation (for the order of transformation).

The **morphonemic component** converts the output of the transformational component into a phonemic transcription. So ‘The door was opened by John’ would become:

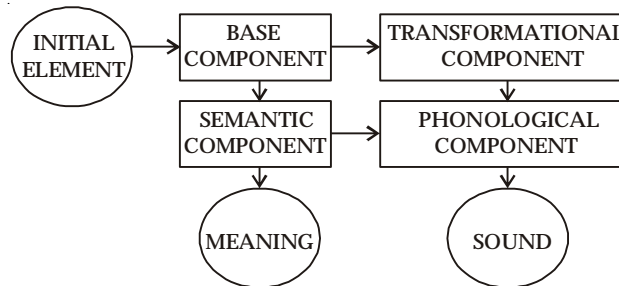
/ə dɔː wəz ɒpənd baɪ dʒɒn/

Notes

This early form of transformational grammar shows the essential ideas behind Chomsky's writing which are still best approached via **Syntactic Structures**.

Components of a Transformational-Generative Grammar : Modified Theory (1965)

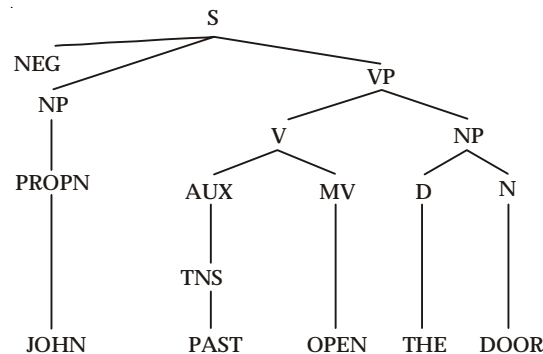
In later versions such as *Aspects of the Theory of Syntax* (1965), Chomsky's terminology and views changed. **Kernels, PS component, morphonemic component, transformations** no longer occur as such. The most notable difference is the inclusion of a totally new **semantic** component to deal with **meaning**. This is attached at deep structure level. The phrase structure component is modified and renamed the **base** component. And the morphonemic component is renamed the phonological component. So the revised model, as drawn by Lyons, will look like the following :



In *Syntactic Structure*, it was said that, although semantic considerations are not directly relevant to the syntactic description of sentences, there are 'striking correspondences between the structures and elements that are discovered in formal, grammatical analysis and specific semantic functions' and that, 'having determined the syntactic structure of the language, we can study the way in which this syntactic structure is put to use in the actual functioning of the language'. But in the **Aspects**-types, he came to the conclusion that the meaning of sentences could, and should, be submitted to the same kind of precise, formal analysis as their syntactic structure, and that semantics should be included as an integral part of the grammatical analysis of languages. The grammar of language is now seen by Chomsky as 'a system of rules relating the meaning (or meanings) of each sentence it generates to the physical manifestation of the sentence in the medium of sound' (Lyons : *Chomsky* : 1973 : 79).

Whereas grammar in 1957 was Syntax + Morphophonemics, in 1965 it became Syntax + Phonology + Semantics.

Another important difference is the abolition of optional transformations. Negatives, questions and passives are no longer introduced optionally at the stage of the transformational component, but are partially incorporated into the base. Instead of generating a kernel only, the base component includes deep structure 'notes' on the various transformations to take place :



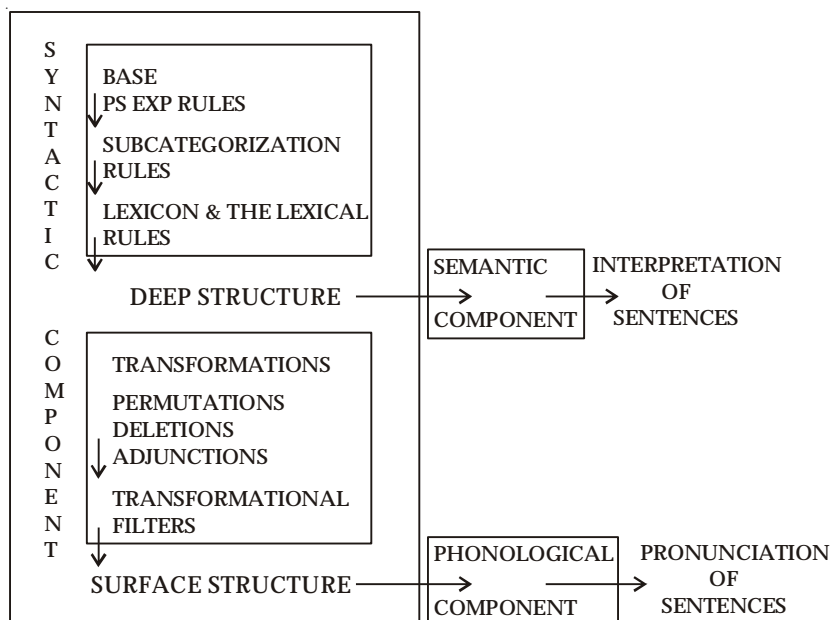
When such a note (NEG/Q/Passive) exists, it is the transformational component which obligatorily converts the string into its surface structure realisation. Thus the difference between a declarative

and an interrogative sentence, or between an active and a passive sentence, is no longer described in terms of optional transformations, but in terms of a choice made in the base rules.

As described in *Aspects*, the grammar of a language consists of three set rules : **syntactic**, **semantic** and **phonological**. The syntactic rules generate the sentences of the language. They assign to each sentence an **underlying** phrase mark (which represents the **deep** structure of the sentence) as well as a **derived** phrase marker (which represents the **surface structure**). The meaning of the sentence is derived (mainly, if not wholly) from its **deep** structure by means of the semantic rules of interpretation; and the phonetic realization of the sentence is derived from its surface structure by means of the phonological rules. In the theory 'syntax' is generative (reflecting the 'creative' or 'productive' aspect of language), while phonology and semantics are 'interpretative' (assigning a phonetic and semantic 'interpretation' to the abstract structures generated by the syntax). Let us redraw the whole model to make the syntactic component explicit :

The Components of a Grammar

The Aspects' model (1965)



The syntax falls into two parts : the **base** component and the **transformational** component. It is the base 'component that generates the deep structures and the transformational component that converts these into surface structures.' Transformational component is therefore 'interpretative' in much the same way as phonological and semantic rules are; and all the 'creative' power of the system is located in the base. The base itself consists of two parts, or 'subcomponents' : the **categorial** subcomponent and the lexicon. The **categorial** subcomponent contains a set of rules similar (with certain important differences which will be mentioned in due course) to the phrase-structure rules of the earlier system, the lexicon lists, in principle, all the lexical items of the language and associated with each the syntactic, semantic and phonological information required for the correct operation of the rules.

The primary role of the categories component is to define implicitly the basic grammatical relations that function in the deep structure of the language. The lexicon consists of an unordered set of lexical entries and certain redundant rules. It associates with each lexical item, the syntactic, semantic and phonological information required for the correct operation of the rules. This means that each lexical entry is represented as a set of features. More precisely, the lexicon is a set of lexical entries, each lexical entry being a pair (D.C.); where D is a phonological distinctive feature, matrix 'spelling' a certain lexical formative, and C is a collection of specified syntactic features. The base component generates the underlying representations (i.e. the deep structures) of sentences. These deep structures

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are then mapped (via the transformational subcomponent) into surface structures. The meaning of each sentence is derived from its deep structure by means of the semantic rules of interpretation. The phonetic realization of each sentence is derived from its surface structure by means of the phonological rules. The phonological and semantic components are, as stated earlier, 'interpretive' because they interpret the output of the base component.

Important changes in the theory are apparent 'in the representation of lexical categories and the relationship between the lexicon and the rest of the grammar, the introduction of separate phonological and semantic components, and the reformation of transformational component of the grammar. As a result of these formations applying to the concept of kernel sentences, and of a set of optional transformations applying to the underlying forms of kernel sentences to produce more complex sentence, was abandoned.'

The base component of a Generative grammar consists of PS rules + lexicon. It operates on the basis of three types of rules—**categorization**, **formative** and **category** symbols. Both formatives and category symbols are vocabulary symbols. For instance, to generate a sentence—***Honesty may admire the man**—**formatives** will be **the, man**, etc. **category symbols** will be S, NP, V, etc. The formative, furthermore, can be divided into **lexical** items (**honesty, man**) and **grammatical** items (Perfect, Progressive, etc., except possibly for **the**, none of these are represented in the simplified example given).

Among the rules of the categories component of an *Aspect*-type grammar, we might find the following (See Chomsky, 1965 : 85) :

1. NP (Det) N (S)
2. N—[+ N + common]
3. [+ Common]—[± Count]
4. [± Common]—[± Animate]
5. [+ Animate]—[± Human]
6. [+ Count]—[± Abstract]

Rule (1) is a phrase-structure rule of the kind we have discussed in the previous sections : it rewrites the **category** that appears to the left of the arrow as the string of (one or more) **categories** that appear to the right of the arrow. Such rules are called **branching rules** in Chomsky (1965). Rules (2)-(6) are **subcategorization rules**; and their function is to develop the category N into a set of **features**. The sub-categorization rules given here can be interpreted as follows : every member of the category 'Noun' has the property (or feature) of being either 'common' or 'non-common' ('plus Common' or 'minus common'); all categories that have the property 'plus common' must be either 'plus Count' (i.e. countable) or 'minus Count'; and so on. The set of features that results from the application of the subcategorization rules is called a 'complex symbol' (abbreviated elsewhere in Chomsky, 1965, as CS). One such complex symbol might be [+ N,—Count, + Abstract]; another be night [+ N, + Count, + Animate, + Human].

Given the formalization of the syntactic properties relevant to the subclassification of nouns, we can organize the lexicon appropriately, with entries of the following form :

1. **honesty** : [+ N, -Count, + Abstract]
2. **man** : [+ N,+ Count : + Common, + Animate, + Human].

These entries may be read as : the lexical item **honesty** is an uncountable, abstract noun and the lexical item **man** is a countable, common, animate, human noun. Now, assuming for the sake of the argument that the deviance of ***Honesty may admire the man** is correctly accounted for by saying that the verb **admire** occurs only with human nouns in the subject position, we can formulate a **selection rule** to this effect in term of the feature [+ [+ Human], Aux.....]. So Chomsky treated selectional restriction as a matter for syntax, rather than semantics. He remarks, "it should not be taken for granted, necessarily, that syntactic and semantic considerations can be sharply distinguished." Alternately, the sub-categorization rules may be eliminated from the system of rewriting rules entirely and be assigned to the lexicon.

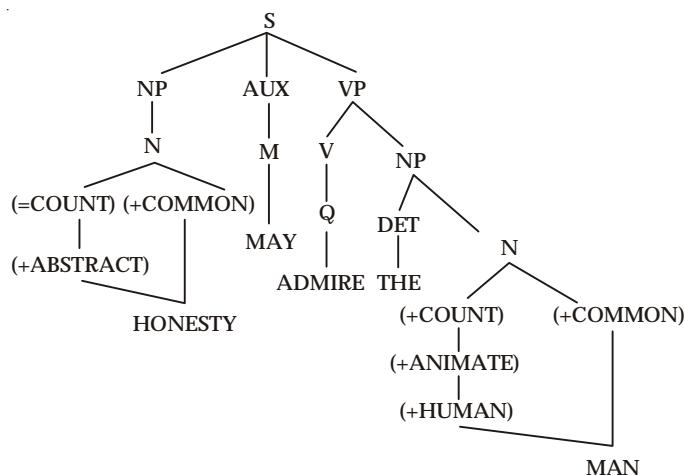
As a concrete example of an illustrative fragment of the base Component consider the sentence **honesty may admire the man** on the basis of Chomsky's *Aspects* (1965). Instead of a simple Phrase Structure type grammar (while we discussed in the previous section) we now have a grammar containing the branching rules (i), along with the subcategorization rules (ii) and containing a lexicon with the entries (iii). It should also be noted that the items in antique type stand for phonological distinctive feature matrices, that is, 'spellings' of formatives.

- (i) $S \rightarrow NP \cap AUX \cap VP^*$
 $VP \rightarrow V \cap NP$
 $NP \rightarrow Det N$
 $NP \rightarrow N$
 $Det \rightarrow \mathbf{the}$
 $Aux \rightarrow M$
- (ii) $N \rightarrow [+N \pm Common]$
 $[+Common] \rightarrow [\pm Count]$
 $[+Count] \rightarrow [\pm Animate]$
 $[-Common] \rightarrow [\pm Animate]$
 $[+Animate] \rightarrow [\pm Human]$
 $[-Count] \rightarrow [\pm Abstract]$
- (iii) (**honesty**, [+N, -Count + Abstract])
 (**man**, [+N, +Count, +Common + Animate + Human])
 (**may**, [+M])

These rules allow us to generate the preterminal string. $(+ (iv) N, + Count, + Abstract) \cap M \cap$. The $(+ N, Count, + Animate, + Human)$, where Q is the complex symbol into which V is analysed by rules that we shall discuss directly. The lexical rule allows us to insert **honesty** for the first complex symbol.

*The symbol \cap has the same function as +

and **man** for the last complex symbol of (iv). Information about **admire** and **may** is also given fully. We might represent this Phrase-marker in the form shown in (v).



The category V is analysed into a complex symbol in the following manner :

- (iv) $V \rightarrow [+V, \pm progressive, \pm Transitive, \pm Abstract,$
 $subject, \pm Animate, Object]$

Notes

PS Rules vs. T Rules

Transformational rules map deep structures into intermediate or surface structures. They operate on the output of the underlying string as well as on their own output. They need the derivational history of underlying string. They do not apply to single, unexpanded nodes one at a time to generate deep structures, but rather to whole trees. They are not the expansion rules which apply on single nodes, but are used to perform the operation of permutation (rearrangement of the parts of a tree), deletion (removing parts of a tree), and adjunction (attaching elements to nodes of a tree), etc. All of them are not obligatory; some are obligatory while others are optional. They signify grammatical distinctions; they simplify grammars. They capture the LSG (linguistically significant generalizations).

Transformations can be **singular** (operating on a single Phrase-marker) or **generalized** (operating on two or more Phrase-markers) or produce a single new Phrase-marker by a process of embedding or conjoining). The following pairs of sentences represent singular transformations :

- (i) (1) Mohan kissed Radha → Radha was kissed by Mohan
 (2) He will go → Will he go ?
 (3) She was good → She wasn't good.

The following sentence represents generalized transformations :

- (ii) (1) The linguist wrote this book) → } The linguist who wrote this book
 The linguist bought a house) } bought a house.
 (2) He said it) → } He said that he was waiting.
 He was waiting }
 (3) They have to work hard } Their having to work hard is a nuisance
 It is nuisance }

Transformational rules cannot convert one P-marker into another P-marker. They are applied in a definite order. They account for structural index, structural description, and structural change. They can disambiguate the ambiguities better than PS rules. They are more powerful than PS rules, as they account for more facts or account for them more 'correctly'. Recursion is the property of PS rules, and not of T rules.

PS rules rewrite one symbol into another. Only one symbol at a time is expanded by them. They do not allow addition, deletion and permutation. They specify the categorical component of the base and define basic grammatical relations that function in the deep structure. They determine the ordering (organization) of elements in the deep structure. PS rules are both binary and sequential. They do not generate a sentence but only an underlying string : we cannot always generate a full grammatical sentence without applying some transformational rule to the underlying string. In the base component, we cannot expand a symbol into zero; we cannot expand a symbol into the same symbol (* A → A). At a given time there should only be one symbol (*BC → DEF).

We can summarize the difference between PS rules and T rules in the following manner :

- (1) PS rules do not require any derivational history; they are somewhat independent. T rules require derivational history; they are applied to the output of the PS rules (underlying string); and thus are somewhat dependent, or supplementary.
- (2) PS rules apply to single, unexpanded nodes, one at a time, and generate deep structures. T rules apply to the whole string (deep structure) to produce intermediate and surface structures.
- (3) PS rules account for the relationships among constituents and sub-categories; T rules account for various syntactic relations between one sentence and other sentence/s. That is to say T rules show inter-tree relation, PS rules indicate 'intratree' relations.
- (4) PS rules cannot delete, or adjunct, or permute; T rules can.
- (5) All PS rules are (though a rule may contain optionality within it) obligatory; some T rules are obligatory and some optional.

- (6) PS rules follow an 'intrinsic', 'a trivial' order; T rules follow an 'extrinsic,' 'cyclic order'.
- (7) PS rules use/—>/symbol. T rules use/=>/symbol.
- (8) With various constraints PS rules, according to Chomsky, would look very "complex" whereas T-rules are "simple" (some scholars disagree with the claim of Chomsky).
- (9) T rules are 'more powerful' than PS rules as they account for more facts or account for them more correctly.
- (10) T rules are more adequate, more precise, more insightful and more elegant than PS rules.
- (11) PS rules only expand one symbol into another, T-rules transform one structure into another.
- (12) T rules reflect the intuition of the native speaker and are semantically more revealing than PS rules.

Why Should T-Rules be Ordered ?

T-rules must always be ordered. They follow strict, extrinsic cyclic order. If they are not ordered we will not be able to derive the desired surface structure, or else will get an ungrammatical, unacceptable, surface structure. The following data may stand for the validity of our statement,

1. IMPERATIVE

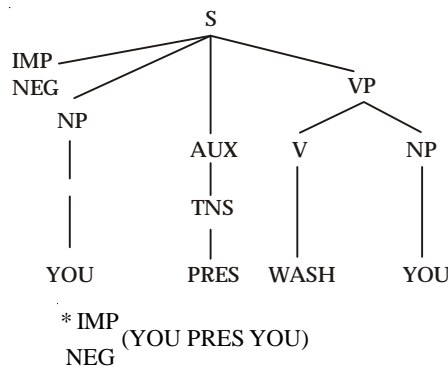
Don't wash yourself

From the underlying string

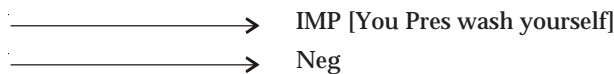
Imp

[You pres wash you]

Neg



Rule No. 1 T Rflexivization



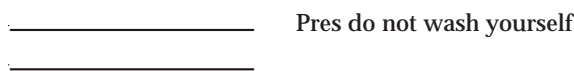
Rule No. 2 T Neg



Rule No. 3 T Do-Insertion



Rule No. 4 T Imp

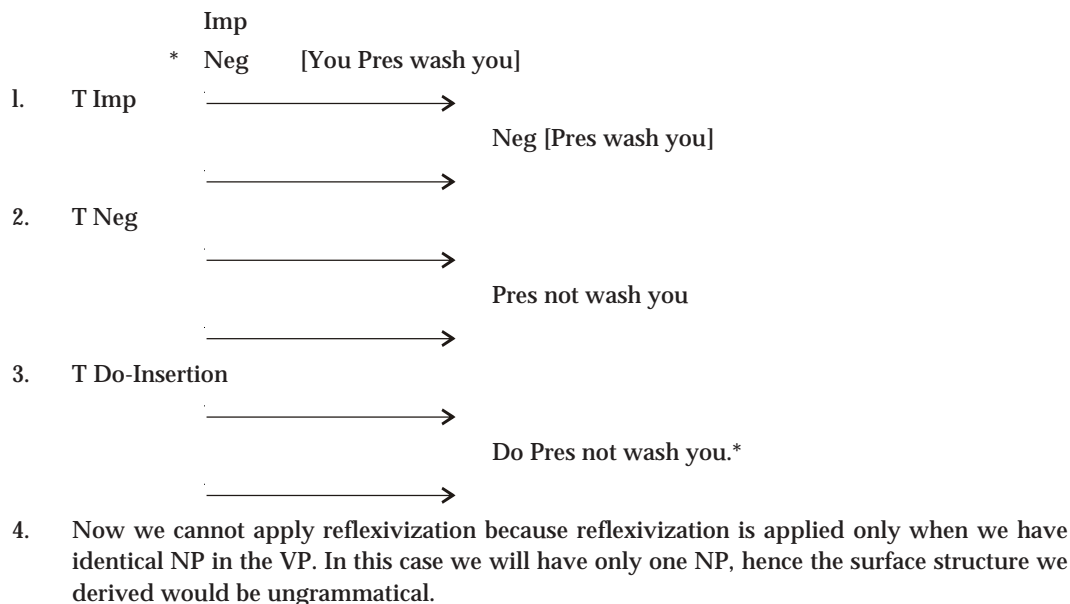


Rule No. 5 Affix

do pres
Do not wash yourself.

Notes

The order stated above is a correct order. Had we changed the order, we would not have derived the desired surface structure. For example, had we not applied Rule No. 1 (Reflexivization) first of all and instead had applied Rule No. 4 (Imperative), for example, the position would have been quite different :



Similarly in the operation involving extraposition, agent deletion, e.g.

It was proved that the earth is round

from

[some one proved] [that the earth is round.]

we can derive the right surface by the following order only :

1. Passivization
2. Extraposition
3. Agent Deletion

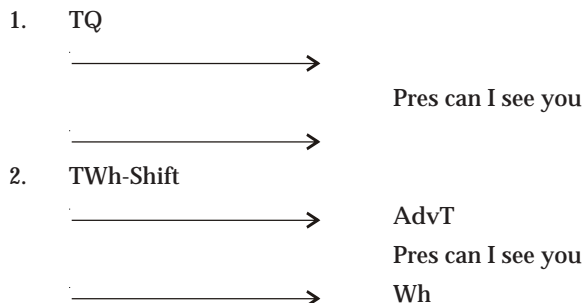
And if we change the order, we can't get the surface structure mentioned above

Similarly consider the following example too :

Sentence : **When can I see you ?**

Underlying String : $\frac{\text{Adv.T}}{\text{Wh}} \text{ }]_s$

Qs [I Pres can see you] $\frac{\text{Adv.T}}{\text{Wh}}$



3. TWh-insertion

_____→

When Pres can I see you

_____→

4. TAffix Attachment

_____→

When $\frac{\text{can Pres}}{\text{can}}$ I see you

_____→

Any deviations from this correct order will not produce the right result. Hence our proposition that T-rules **must** be ordered, stands proved.

Some Possible Objections against TG

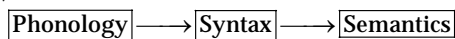
- (1) The development of Chomskyan theory is still incomplete.
- (2) The explications of his theory have been directed more towards pure-linguists, psychologists, philosophers, mathematicians than towards teachers of English grammar.
- (3) Criticisms of his theory by other linguists and modifications suggested by a few others have generated more heat than light, and most teachers tend to reject the opportunity to be burned.
- (4) There is a possibility of developing a pedagogical grammar based on TG, yet so far the results have not been very conclusive.
- (5) Despite Chomsky's claim that TG is a simple grammar, students in general find it very complex and difficult, and those who have little scientific and mathematical aptitude, find it still more difficult.
- (6) There are too many PS and T rules; there are problems of storing them.
- (7) It too fails to capture certain meaning relations like the following :

This table polishes well.

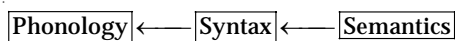
This man polishes well.

- (8) It cannot account for the social context of a sentence. Suppose an Indian clerk in an office asks his officer in Hindi :
 - (a) **Tu kahan gaya tha ?** he may get a dismissal order, although he has not committed any grammatical mistake. The only mistake he has committed is that he has not used an idiom appropriate in the social context, that is, he has forgotten that he is talking to his officer (boss) and not to his subordinate. Had he spoken :
 - (b) **Aap kahan gaye the ?** the matter could have been different. Grammatically both the sentences (a) and (b) of Hindi are correct; semantically too both mean 'where had you gone ?' yet they make a lot of difference to the speaker, a difference of life and death. Such problems may not creep up so sharply in a model of English TG, but would surely haunt when we go to make a Model of Hindi TG. So will be the case with Sanskrit.
- (9) One particularly tricky question is the integration of meaning and syntax in deep structure. Many linguists are coming to the conclusion that meaning should not be 'tacked on' to deep structure syntax, but may even underline it at a still 'deeper' level. Others are proposing that deep structure syntax may itself be far more abstract and less tangible than is suggested in Chomsky's writings.
- (10) A very relevant point has been raised by Frank Palmer in his book *Grammar* (Pelican.). According to Chomsky, the grammar consists of three components, the syntactic, the semantic and the phonological. The syntactic component generated an infinite set of structures which are then RELATED by the semantic and phonological components to meaning and sound. The syntactic component is thus central and the semantic and phonological components are 'purely interpretive.' We can illustrate the model as :

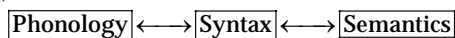
Notes



If, however, we agree that deep structure is identical with semantics it follows that model is somewhat different. It is instead



The different direction of the right-hand arrow indicates that we have to begin with semantics (= deep structure) and proceed from there to syntax and then only to phonology. A more sophisticated approach still asks why we should move in this direction, i.e. from meaning to sound, and suggests that we ought to go in either direction with syntax in the centre i.e.



This is a plausible model in purely abstract academic terms. How far it can be strictly formalised is not yet clear.

Palmer further adds, 'The deep structure semantics approach may seem attractive, but it faces most of the criticisms of traditional national grammar. The difficulty is that if there are no constraints on what can or cannot be said in deep grammar, then, to say that deep grammar is semantics is merely to give a new name to semantics. Linguists have for a long time sought to achieve a satisfactory theory of semantics but because of the complex heterogenous nature of meaning they have largely failed.'

- (11) There is some truth in the criticism that T G is a computer grammar.
- (12) Chomsky's own arguments in favour of ordering are far from conclusive.

28.3 Systemic Grammar

Systemic grammar is a refined model of Halliday's earlier model of grammar called **Scale and Category** grammar, in which he used a set of four categories (unit, structure, class, and system) and four **scales** (rank, exponence, realization and delicacy).

'Subject,' 'Object' and 'Complement' are the category of **structure**. 'Sentence' and 'Clause' are the instances of the category of **unit**, 'verb', 'noun' etc. are the category of **class**. **System** is the range of possibilities in a closed choice. For example, the domain of active and passive, affirmative and negative, singular and plural is the domain of system. So Scale and Category grammar tends to state that all languages have structures, units, classes and systems.

There are, however, different number of units in different languages. These units are built up one inside the other. If we start with the sentence, we have five units in English : sentence, clause, group, word and morpheme. **Sentence**, according to this description, is the highest unit and **morpheme** the lowest. These units have fixed relations between themselves, that is, every sentence consists of one or more than one clause; every clause consists of one or more than one group (phrase), every group consists of one or more than one word, and every word consists of one or more than one morpheme. If the whole utterance in some context is **No**, then 'no' is one sentence, one clause, one group, one word and one morpheme. All these five units are shown separately in the following sentence :

If she comes, she will be welcomed.

We can break it down into all the similar units in the following manner :

///if/she/come+s// she/will+be+welcome+ed///

Here the symbol (triple bars)/// shows a sentence-boundary, (double bar)// shows clause-boundary, (single bar) / "shows group boundary" **space** between one element and the other shows word-boundary, and + shows morpheme-boundary.

Halliday is of the opinion that the sentence is not the largest pattern-carrying unit in English. It may be **paragraph** and efforts are being made to analyse paragraph, although no significant progress has been made so far in this direction.

Sentence, according to Halliday, is distinct from other units because if the order of sentence in a text is changed, the text loses its meaning, but if the units below the sentence are re-ordered, we either get an impossible sentence or the meaning of the sentence is changed. For example, if the word order of the sentence —**The boy will help the girl**—is changed, we may get

- a Will the boy help the girl ?
- b Will the girl help the boy ?
- c* The girl help the boy will.
- d* The boy help the girl will.
- e* The will help boy girl. etc.

Since sentence is the unit with which language operates in situation, Halliday calls it the lowest non-disorderable unit. Traditional grammarians treated **word** as the unit of main interest and early structural linguists focused their attention on morphemes. But the recent tendency is to concentrate on the sentence which is the maximum unit of language besides the paragraph.

Sometime the units follow one another in simple sequence. For example, the second clause begins when the first ends as in the sentence (1) above. The exponents of this type are called **segmental**. There are also cases where they occur one inside the other or overlap one another. For example, in the word **teeth** we have two morphemes namely 'tooth'- 'plurality;' but one cannot find in this case where one ends where the other begins. This is a case of **fusion**. But when the upper unit becomes a part to the lower unit we call it a case of **rank-shift**. For example, a clause becomes a part of group, it is a case of **rank-shift**. In the sentence '**the book she gave me is hers**', the clause 'she gave me' has been rank-shifted and has been made to work as a part of the group, and is functioning as a post-head modifier in the structure of the subject noun phrase. Hence, we have an example of rank-shift. We should remember at this stage that discontinuity is different from rank-shift. In **discontinuity** the upper unit does not become a part of the lower unit; it only occurs at a remote place in the same hierarchy, e.g. **He called Mohan up**, 'call' and 'up' are discontinuous elements.

Structure accounts for "the various ways in which an occurrence of one unit may be made up out of occurrence of the unit next below it". Sentence structure, in English for Example, is an organization of clause classes, clause structure, for example, is an organization of phrase classes, phrase structure of word classes, and word structure of morpheme classes. Each element of structure of a unit is said to be realized by a class of the unit next below. For example, the element 'subject' is realized by the class nominal phrase. Classes are subdivided into choice classes which constitute systems. For example, transitive and intransitive, active and passive of transitivity and voice respectively.

The choices one has at one's command, are not always limitless. When one has only a limited number of possibilities to choose from, one is in the domain of **system**. The sets of possibilities in the system are called the terms. For example one can identify a place in a particular structure in English where the only words that can occur are 'who', 'whose', 'which' and 'what'. In such a condition these four items form a system.

So in the revised version of Halliday's grammar known as **Systemic grammar**, the basic concept is that of 'system', which means 'a set of options or choices together with an entry condition, such that if the entry condition is satisfied one option from the set must be selected. To each of these options is attached a realization statement showing the mechanisms by which these choices are realized in the language. The grammar itself takes the form of a series of 'system net-works'. It has therefore come to be called **systemic grammar**.

The aim of systemic grammar is not only to demonstrate our actual use of language but also, and importantly, to predict what choices we can make and show to what extent these choices are contextually conditioned. 'Halliday regards an act of speech as a simultaneous selection from among a large number of interrelated options. These options represent the 'meaning potential of language.' Some of such options are generalization or particularly, repetition or addition, a statement or a question, etc.

Systemic grammar has two components : systemic and structural. The systemic component details the choices and combinations of possible choices. The systemic component, in fact, is the deep grammar

Notes

of the underlying features and properties which tend to universal. The structural component shows how these choices are realized. It is the surface grammar of underlying choices. Any one sentence has not got just one structure, but many simultaneous structures all of which are superimposed on one another, as it were. For example, the following sentence may be said to have a number of simultaneous constituent structures :

Sheelu has sung a song

- | | |
|---|---|
| (i) Transitivity structure | Actor (Sheelu) + Process, (has sung) + Goal (a song). |
| (ii) Mood structure | Subject (Sheelu) + Predicator (has sung) + Object (a song). |
| (iii) Structure in terms of constituent classes | NP ¹ (Sheelu) + VP (has sung + NP ² (a song). |
| (iv) Information focus structure | Information given (Sheelu sung) + New Information (a song). |
| (v) Theme structure : | Theme (Sheelu) + Theme (has sung a song). |

In the above table, **Sheelu** is at once 'actor', 'subject', 'NP', 'given', and 'theme'. Each of these properties stand for a choice that the speaker had made in the construction of that sentence. The simple sentence (or the clause) may be regarded in most languages as the domain of three principle areas of syntactic choice—transitivity, mood, and theme. 'Transitivity is a set of options relating to cognitive content the linguistic representation of extralinguistic experience, whether of the phenomena of the external world or of feelings, thoughts and perceptions. Mood represents the organization of participants in speech situations, providing options in the form of speaker roles, the speaker may inform, question or command, he may confirm, request, contradict or display any one of a wide range of postures defined by the potentialities of linguistic interaction. Theme is concerned with the information structure of the clause; with the status of the elements not as participants in extralinguistic processes but as components of a message; with the relation of what is being said to what has gone before in discourse, and its internal organization into an act of communication. (M.A.K. Halliday, 'Transitivity and Theme in English,' *Journal of Linguistics*, 3, 1967). It is these clause options for which the terms 'transitivity, 'mood', 'theme' are being used. Transitivity is the grammar of experience, 'mood', and 'theme'. Hence 'Transitivity is the grammar of experience, mood is the grammar of speech function and theme is the grammar of discourse'.

As mentioned by Dr. S.K. Verma (*Introduction to ELT: Linguistics*, OUP, 1974.), 'There is a significant difference between systemic grammar and *Aspect*-type transformational grammar with regard to the notion of linear ordering. Participant roles are not linearly ordered in Halliday's deep structure. The ordering of elements of structure is effected by the systems belonging to the modal and thematic components of grammars. In the *aspects*-type base component the constituents are ordered.'

We have already hinted at the scales of Rank and Realization. The scale of delicacy shows how detailed the description is. It tries to measure the depth of syntactic sub-categorization. It seeks to draw attention to primary similarities first before directing attention to secondary difference. For example, the class 'animate' noun is more delicate than the general class 'noun', and the class 'nonhuman' noun is more delicate than the class 'animate noun', and yet they are alike, for they are sub-classes of the major class 'noun'. (For more details, see S.K. Verma, *op cit*).

28.4 Case Grammar

Charles Fillmore has suggested a modification to the theory of transformational grammar. His argument is that deep structures show role relationships rather than syntactic relationships and that nominal expressions are put into syntactic relationships by transformational rules. To Fillmore the sentence in its basic structure consists of a verb and one or more noun phrases. Each of these noun phrases is associated with the verb and one or more noun phrases. Each of these noun phrases is associated with the verb in a particular case relationship. In the case grammar, the base component has two constituents—a 'propositional' constituent and a modality constituent. The propositional

constituent is a tenseless set of relationships involving verb and nouns and the modality constituent includes such modalities on the sentences as whole as negation, tense, mood, and aspect. The deep relation in the following sentences remains the same irrespective of the position of these nouns related to the verb 'break' :

- (a) Thomas broke the door.
- (b) The door was broken by Thomas.
- (c) The hammer broke the door.
- (d) Thomas broke the door with the hammer.

In (a) the subject position is occupied by the **agent**, in (b) by the **goal** and in (c) by the instrument. These meaning relations—agentive, goal, instrumental, etc.—are what Fillmore calls deep case relations. These case relations include such concepts as Agentive, Instrumental, Objective, Factitive, Locative, Benefactive, Experiencer, Goal, Source, etc. The external manifestations of case relations are language-specific. Verbs are selected according to the case environments or 'case frames' provided by the sentence. For example, the verb **break** can occur in following environments :

- [-o] The door broke.
- [-o+A] Thomas broke the door.
- [-o+I] The hammer broke the door.
- [-o+1+A] Thomas broke the door with a hammer.

The total frame feature for **break** may be represented as

+[-O (I) (A)]

If there is an A (agentive), it becomes the subject; otherwise, if there is an I (instrumental), it becomes the subject; or else the subject is the O (objective). Where there is only one case category, its NP must serve as the surface subject. If neither agent nor instrument nor objective is expressed, then patient/locative must become the subject. Consider, for example, the following sentences and their case relations.

- | | |
|--|--|
| 1. Objective | The door (O) broke |
| 2. Agentive(+Objective) | Thomas (A) broke the door (O). |
| 3. Instrumental (+Objective) | The hammer (I) broke the door (O). |
| 4. Objective+Instrumental+Agentive | The door (O) was broken with the hammer (I) by Thomas (A). |
| 5. Locative | Hardwar (L) is windy. |
| 6. Locative | It is windy in Hardwar (L). |
| 7. Dative (Agentive+Objective +Dative) | Thomas (A) / gave a book (O) / to his sister (D). |

Verbs with similar meaning require different cases. **Kill** may have an agentive or an instrumental or both. (The boy killed the thief. The gun killed the thief. The boy killed the thief with a gun), but **murder** always has an agentive since we do not say **The gun murder the thief** though it can occur with both agentive and instrumental (The thief was murdered by the boy with a gun).

'Some of the mechanisms used by languages to externalize case relations are : inflexion, superlatation preposition/prepositional particles, word-order, or any combination of these. Human languages are universally possessed with such cases. These role types, according to Fillmore, can be identified with certain quite elementary judgments about the things that go on around us; judgments about who does something, who experiences something, where something happens, what it is that changes, what it is that moves, where it starts out, and where it ends up.' The following table gives us an idea of the correlation of 'roles' with prepositions in English.

Role	Preposition
Agent	by
Patient	of, to

Notes

Instrument	with, by
Causative	by
Result	to, in, into
Source	from
Goal	to
Location	in, at, on, near, around, beyond.

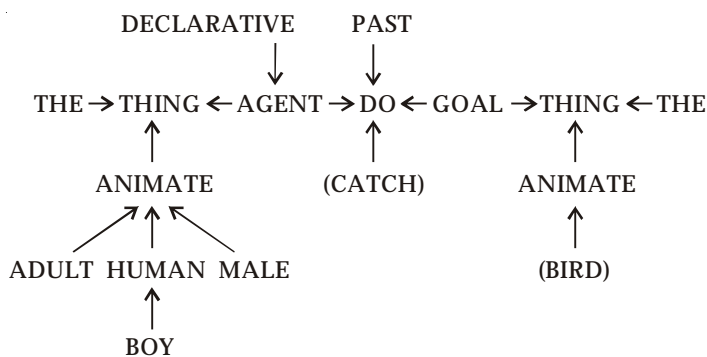
This is only a rough outline. Other cases are to be added and have, in fact, already been added. Fillmore has recently modified his theory and his terminology. But there are many difficulties ahead, both in establishing what cases are required and in the relationship between the deep grammar and the surface grammar. Nevertheless the credit goes to TG that it has stimulated such speculation.

28.5 Stratificational Grammar

Stratificational Grammar is associated with the name of Sidney Lamb. According to Sidney Lamb, language does not have only two levels of deep and surface structures but a series of levels or **strata**, each with a different kind of structure. This grammar has come to be known as **Stratificational** grammar as one of its chief features is its treatment of linguistic structure as comprising several structural layers called **strata** by Lamb. 'A language is a complex network of sound-meaning relationships. These relationships can be analysed in terms of a series of code-like systems. Each of these systems has its own syntax or tactics.'

According to Lamb, therefore, all natural languages may be said to have three major strata : **Semology**, **Grammar**, and **Phonology**. Semology is concerned with meaning and phonology with speech. Grammar is a 'link' between the two.

In stratificational grammar a sentence is realized as a string of sounds, a tree of morphemes and a constellation of meanings. The basic relationship in this model is that of representation of realization. It links the elements of one stratum with those of the stratum next below. Lamb's *Outline of Stratificational Grammar* (Georgetown University Press, Washington D.C., 1966) gives the features of this model. The following is an analysis of **The boy caught the bird** in terms of this system.



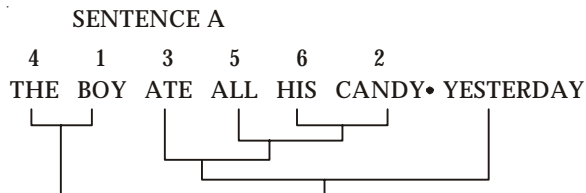
28.6 Tagmemics

Tagmemics is Kenneth Lee Pike's theory of linguistic analysis. It is an offshoot of structuralism. Structuralism ignored functions of a linguistic form and concentrated only on 'form'. Tagmemics fuses together the form and the function of a linguistic entity. It is conceptually very simple, and a large number of grammars have been written on Pike's model. It has produced quick results, and is simple and straightforward. Utterances, according to this approach, can be analysed simultaneously at three interpenetrating levels, where each level represents a hierarchy of units. These levels are—lexical, (in which the minimum unit is the morpheme), phonological (in which the minimum unit is the phoneme) and grammatical (in which the minimum unit is the tagmeme). The grammatical

component is a series of syntactic statements concerning sentence, clause, phrase, and word level structures. The lexicon lists the formal units of language. The phonological component gives the phonemic sentence a phonetic realization in the language.

Pike rejected the idea that the minimum unit of grammar was a sentence, but recommended a hierarchical order and labelling. The Tagmemic grammar has three semi-autonomous but interlocking levels or models. They are as mentioned above, phonology, grammar and lexicon. It stresses the hierarchical ordering of grammatical units into ranks of levels—morphemes, words, phrases, clauses, sentences, paragraphs, and discourses. Since a sentence can function as a clause and vice versa, it also adopts Halliday's concepts of rank shifting.

Immediate Constituent Analysis of the structuralists insists just on binary (two) cuts; but Tagmemics always goes in favour of string constituent analysis, and can have many cuts.



Tagmemics, unlike a structural analysis, probes or analyses the function of the categories and not merely their naming. It is a 'slot and filler' grammar. A slot is a position in a construction frame. The filler class is the list of all the items that can fill the functional slot. And a tagmeme is the correlation between a grammatical function like 'subject' and the class of fillers like nouns that can fill that function. But neither the slot nor the filler in itself is important; it is tagmeme which is significant. The slot is the function; the filler is the category. We can have sub-slots also. A tagmeme, therefore, is the correlation of a slot and the class of items which can occur in that slot. Hence we can have

- sentence level tagmemes
- clause level tagmemes
- phrase level tagmemes
- word level tagmemes, and
- morpheme level tagmemes

Sentence A has the following Tagmemes

- (1) BASE : transitive clause—Intonation Tagmeme
T : cl INT : F
- (2) Clause Level Tagmeme
S : NP + Pr : tv + O : n + - Temporal Adverb
- (3) Phrase Level Tagmeme
Det : det + H : n
...
- (4) Word Level Tagmeme
ate—Nuc : Verb stem + Tense : past
.
.
.
- (5) Morpheme level tagmeme eat
...

In this same way, the sentence : **She likes toys** consists of three tagmemes— the 'subject' slot filled by a pronoun, the 'Predicate' slot filled by a transitive verb, and the 'Object' slot filled by noun. It can be represented formulatically as :

S : pn + P : tv + O : n,

28.7 Summary

- The term “transformational generative grammar” is used to refer to Noam Chomsky theories about syntax. These theories were first put forward in a book entitled “*Syntactic Structure*”. In this Chomsky tried to find out certain rules which would create well-formed sentences and define the relation between them. According to Chomsky, it is generative because it can generate infinite number of sentences and it is transformational because a basic and simple sentence like, “I read the book” can be changed or transformed into number of sentences with either the same meaning like “The book is being read by me,” or the different meaning like, “Do I read the book?”, “I read the book. Don’t I?”
- Transformational generative grammar (TG) has two interesting properties, (i) it only generates the well formed or grammatically-correct sentences or language. It will not generate a sentence which is ill formed or incorrect. (ii) It has recursive rules. This property of recursiveness is the capacity of a rule to be applied again and again in order to generate infinite set of values. In this case value means new combinations of words which are grammatically correct. By using Chomsky’s transformational rules, we can show the similarity of the passive to the active mood by showing how a phrase marker for the active mood can be converted into a phrase marker for the passive mood. Thus, instead of generating two unrelated phrase markers by phrase structure rules, we can construct a simpler grammar by showing how both the active and the passive can be derived from the same underlying phrase marker.
- To account for sentences like “I like her cooking” we show that what we have is not just one phrase marker but several different underlying sentences each with a different meaning, and the phrase markers for these different sentences can all be transformed into one phrase marker for “I like her cooking.” Thus, underlying the one sentence “I like her cooking” are phrase markers, for “I like what she cooks,” “I like the way she cooks,” “I like the fact that she cooks,” etc.
- Different transformational rules convert each of these into the same derived phrase marker for the sentence “I like her cooking.” Thus, the ambiguity in the sentence is represented in the grammar by phrase markers of several quite different sentences. Different phrase markers produced by the phrase structure rules are transformed into the same phrase marker by the application of the transformational rules.
- Because of the introduction of transformational rules, grammars of Chomsky’s kind are often called “transformational generative grammars” or simply “transformational grammars.” Unlike phrase structure rules which apply to a single left-hand element in virtue of its shape, transformational rules apply to an element only in virtue of its position in a phrase marker: instead of rewriting one element as a string of elements, a transformational rule maps one phrase marker into another. Transformational rules therefore apply after the phrase structure rules have been applied; they operate on the output of the phrase structure rules of the grammar.
- Corresponding to the phrase structure rules and the transformational rules respectively are two components to the syntax of the language, a base component and a transformational component. The base component of Chomsky’s grammar contains the phrase structure rules, and these (together with certain rules restricting which combinations of words are permissible so that we do not get nonsense sequences like “The book will read the boy”) determine the deep structure of each sentence. The transformational component converts the deep structure of the sentence into its surface structure. In the example we just considered, “The book will be read by the boy” and the sentence “The boy will read the book,” two surface structures are derived from one deep structure. In the case of “I like her cooking,” one surface structure is derived from several different deep structures.
- At the time of the publication of *Aspects of the Theory of Syntax* it seemed that all of the semantically relevant parts of the sentence, all the things that determine its meaning, were contained in the deep structure of the sentence. The examples mentioned above fit in nicely with this view. “I like her cooking” has different meaning because it has different deep structures

though only one surface structure; “The boy will read the book” and “The book will be read by the boy” have different surface structures, but one and the same deep structure, hence they have the same meaning.

- This produced a rather element theory of the relation of syntax to semantics and phonology: the two components of the syntax, the base component and the transformational component, generate deep structures and surface structures respectively. Deep structures are the input to the semantic component, which describes their meaning. Surface structures are the input to the phonological component, which describes their sound. In short, deep structure determines meaning, surface structure determines sound.
- Chomsky’s work is one of the most remarkable intellectual achievements of the present era, comparable in scope and coherence to the work of Keynes or Freud. It has done more than simply produce a revolution in linguistics; it has created a new discipline of generative grammar and is having a revolutionary effect on two other subjects, philosophy and psychology. Not the least of its merits is that it provides an extremely powerful tool even for those who disagree with many features of Chomsky’s approach to language.

28.8 Key-Words

1. Fabula : The events of a narrative.
2. Pastiche : A work made up of imitation of other work(s); unlike parody, pastiche is not necessarily designed to ridicule.

28.9 Review Questions

1. Draw IC diagrams for the following :
 - (i) Books, (ii) Oxen,
 - (iii) Children, (iv) Unpardonable,
 - (v) The English teacher, (vi) Visiting linguists can be a nuisance,
 - (vii) Many people abroad don’t seem to know about the Indo-Bangladesh discussions.
2. Draw PS tree-diagrams and frame PS. rules for the sentences given below :
 - (i) Linguistics is an interesting subject. (ii) Phonetics is a fascinating study.
 - (iii) Semantics is a difficult branch.
3. What are the limitations of PS grammar ?
4. What is the difference between PS rules and Transformational rules ?
5. What, according to Chomsky, are the goals of linguistic theory ?
6. What is a generative grammar ?
7. What is a transformational grammar ?
8. What is a systemic grammar ? How does it differ from transformational grammar ?
9. What is a case grammar ?
10. What is a stratificational grammar ?
11. What components are required in transformational-generative grammar in :
 - (i) 1957 Version ? (ii) 1965 Version ?
12. Are T-rules ordered ? Illustrate and amplify.
13. Bring out the critical difference between structural syntax and transformational generative syntax with reference to the analyses of the following :
 - (i) The girls enjoyed the movie as much as their escorts,
 - (ii) The love of God.

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14. How does transformational generative grammar establish finally that 'you' is the 'understood' subject of an imperative sentence such as the following :
Open the window
15. Discuss specific instances from English which lend support to the view that transformational grammars provide formal explanation for many of the intuition-based observations made by traditional grammars.
16. Give the deep structures of :
 - (i) The report that the Committee has released is unsatisfactory.
 - (ii) The report that Committee may not meet for some time is disturbing.
17. Give the derivation of :
 - (i) John is easy to please.
 - (ii) John is eager to please.
18. What are the different kinds of Tagmemes ? Explain Tagmemics.

28.10 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
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Unit 29: Transformational and Phrase Structure Rules

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Objectives

After studying this unit students will be able to:

- Discuss systems of syntactic analysis.
- Explain phrase structure rules.

Introduction

In linguistics, syntax is the study of the principles and rules for constructing sentences in natural languages. In addition to referring to the discipline, the term syntax is also used to refer directly to the rules and principles that govern the sentence structure of any individual language, as in “the syntax of Modern Irish.”

There are a number of theoretical approaches to the discipline of syntax. Many linguists see syntax as a branch of biology, since they conceive of syntax as the study of linguistic knowledge as embodied in the human mind. Others (e.g. Gerlad Gazdar) take a more Platonistic view, since they regard syntax to be the study of an abstract formal system. Yet others (e.g. Joseph Greenberg) consider grammar a taxonomical device to reach broad generalisations across languages. Let us look at this term in details and the various functions it adopts.

Background: Syntax and Structural Linguistics: During mid 1950s there was special emphasis on the significance on the study of syntax. Before mid 1980s structuralism spreads items wing in the field of grammar. According to structuralism purely human phenomenon such as language, literature and culture are structured system. With this broader perspective of looking such phenomenon and structured system, structural linguistic came in to existence. It was Ferdinand de Saussure who introduced this approach towards linguistics. This further taken ahead by linguist in America, though independently like Edward Sapir and Leonard Bloomfield. In Europe it was popularised by Prague school linguists like Nikolay Sergejevitch, Trubetzkoy and Roman Jakobson. Further Claude Levi-Strauss applied this approach in anthropology.

Zelling Harris in 1955 suggested there exists some semantic and non-mechanical relationship between the sentences taken ahead and elaborated by Noam Chomsky—a student of Harris. Chomsky thus introduced a new approach which is known as generativist approach towards language or generative grammar. Chomsky advocated for the need of universal grammar, which considered additional language features of different languages. The study of sentence structure could be helpful in understanding the organization of thoughts in human brain. Thus syntax plays an important role in generative grammar.

29.1 Systems (Theories) of Syntactic Analysis

During the past fifty years modern linguistics has developed an impressive array of procedures and theories of linguistic or syntactic analysis. What had been in the past of interest mainly to the pedagogue

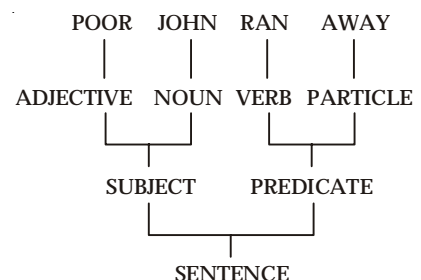
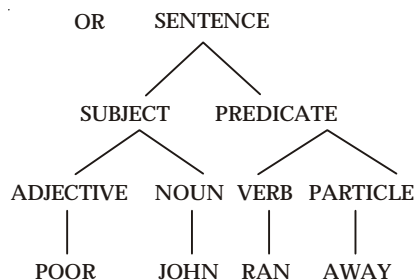
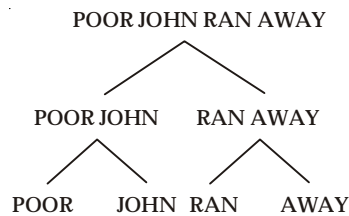
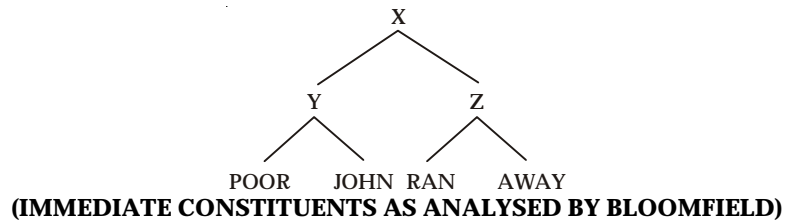
Notes

and linguistic historian, has become a major concern of philosophers, psychologists, sociologists, logicians, communication theorists and even biologists.

It would not be possible even in a book devoted entirely to the subject, to give a complete account of this development. Hence only a brief discussion on various systems or methods or procedures of syntactic analysis known as 'syntactic models' is given in the following pages.

29.2 Immediate Constituent Analysis

Immediate Constituent Analysis is one of the strong methods of analysing a sentence linguistically. It aims at finding out the ultimate constituents of a sentence and their relationship with one another. The constituents are nothing but the morphemes or groups of morphemes which, when structured into successive component, form utterances (sentences). It is the discovery of these constituents which has come to be known as Immediate Constituent Analysis or IC analysis in short. This term (immediate constituents) was introduced by Bloomfield in 1939, who illustrated the way in which it was possible to take a sentence (**Poor John ran away**) and split it up into two immediate constituents (**Poor John** and **ran away**), these being in turn analysable into further constituents (**Poor** and **John**, and **ran** and **away**). So a sentence is seen not as a sequence or a 'string' of elements, **Poor + John + ran + away**, but as being made up of 'layers' of constituents, each cutting points, or 'note' in the diagram being given an identifying label. This was made quite clear in the form of a 'tree diagram' such as



So the IC analysis attempts to break down constituents into subparts that are in some sense grammatically relevant. In this analysis we ask questions : what are the constituents of paragraph ? And how are they organized ?

The above sentence is made up of four morphs (Let us ignore, for the present, the fact that **ran** is a composite of **run** plus PAST), which may be defined as the minimum significant, syntactic units :

poor	John	ran	away
1	2	3	4

These morphemes are the **ultimate constituents** of the sentence. The expression **ultimate constituents** implies that these elements are not further analysable at the syntactic level. If we further analyse them we will enter the realm of phonology. They are **immediate** because there are no mediating or interrupting entities between them. These constituents have been organised in a particular order in the sentence. A jumble of morphemes thrown together at random might have produced a non-sentence.

Away John poor ran.

Each human language has certain permissible ways of organising morphemes in its sentence. Each language has its **linear structure**. The sequential ordering of the ultimate constituents shown above is called the **linear** of the sentence. Some of the constituents tend to go together. The morphemes (which are also words in this sentence) 'door' and 'John' 'ran' and 'away' are tied together. These groups of items which go together are called **Phrases**. Thus morphemes, words, phrases and clauses are all constituents of sentences though all of them are not ultimate (ultimate constituents are only morphemes). The phrasal relationship of the various constituents of the above sentence can be shown in the following manner.



This relation can be shown in brackets as well :

(Poor) (John) (ran) (away)

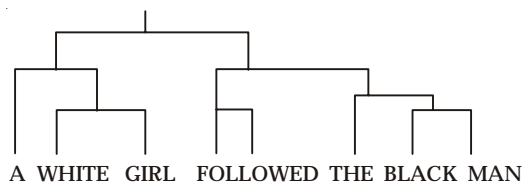
The initial emphasis is upon pure segmentation, simply dividing the sentence into its constituent elements without, at first, knowing what these elements are. The principle is that we take a sentence and cut it into two and then cut those parts into two and continue with this segmentation until we reach the lowest units the morpheme. Generally the division is binary except in some cases where division into three or more points is allowed. This can further be illustrated by the sentence.

A white girl followed the black man.

((A) ((white) (girl)))

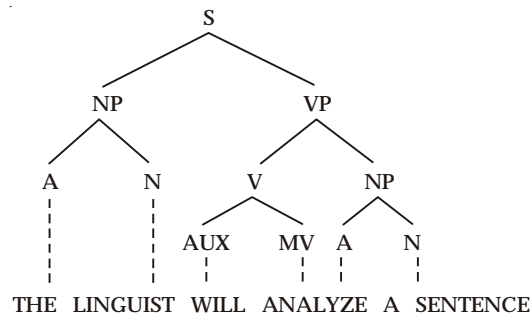
((Follow) (ed) (the) (black) (man)))

The best method of display is to use the principle of the family tree, with the main branching showing the main division, and so on. In fact, the terms 'tree diagram' and 'branching' have become technical terms in IC analysis. For our sentence the tree would be:



Simple bracketings or tree diagrams (as given above) do not show the nature and functions of the constituents. This inadequacy of the model was removed by introducing the notion of **labelling**. Labelled bracketing and trees with labelled nodes give us an insight into the syntactic function of the ultimate and intermediate constituents of sentences. We will take a sentence (**The linguist will analyze a sentence**) to illustrate this model. This sentence is represented by the symbol (S). It is composed of a noun phrase (**the linguist**) which is composed of an article (A) and a noun (N), and the verb phrase (**will analyze a sentence**) which is composed of a verb (V), and a noun phrase (NP); the verb (**will analyze**) is composed of an auxiliary (Aux.) and the main verb (MV); and the noun phrase (**a sentence**) is composed of an article (A) and a noun (N). The bracketing of these constituents with labels may be shown in the form of a **tree diagram** which is also known as **Phrase Maker**. A tree diagram is in fact a picture of the phrase structure of the particular sentence.

Notes



Here NP + VP represents the initial string and (The + linguist + will + analyse + a + sentence) the terminal string. This relation can also be shown in the form of labelled bracketing :

((The) A (linguist) N) NP ((will) Aux. (analyze) MV) V

((a) (A) (sentence) N) NP VP) S

The labels NP, VP, A, N, V, Aux., MV.....show that the constituents represent different classes or categories. These labels are categorical functions. The two noun phrases in the sentence perform two different grammatical functions. The Noun phrase (**the linguist**) functions as the 'Subject' of the sentence and the Noun phrase (**a sentence**) functions as the object of the Verb Phrase (or of the Main verb). Each constituent in a construction has a positionally defined grammatical function. These functions are : Subject, Object, Complement, Adjunct, Predicator. Any single class/category may serve several functions, e.g. a Noun Phrase may function as the subject of a sentence or as the Object of the Main Verb. 'Subject' and 'object' are not constituents in the sense in which NP and VP are. They are functions performed by constituents in particular configurations.

In a tree-diagram representation, the lines that lead down from one point to the next lower point are called **branches**; and the point, between which the lines run, are called **nodes**. **Nodes** refer to the places at which classes branch into sub-classes. **Branching** means analysis of a category into a sequence of categories, as when S is analysed into NP + Aux + VP. A symbol or a string is said to be **dominated** by another symbol if the latter appears higher in the tree but in the same line of derivation. For example, in the tree diagram given above NP and VP are both dominated by S. In terms of tree diagram, 'Object' is that NP which is immediately dominated by S and 'Subject' is that NP which is dominated by VP. Thus Subject and Object are recognized at different levels of constituent structure. The notion 'Subject', as distinct from the notion 'NP', designates a **grammatical function** rather than a **grammatical category**. A grammatical function is an inherently relational notion.

29.3 Phrase Structure Grammars

There are three distinct periods of development in the theory of constituent structure. Bloomfield only introduced notion and explained it by means of example. His followers, notably Eugene Nida, Rulon Wells, Zells Harris, formulated the principles of constituent analysis in greater detail and replaced Bloomfield's somewhat vague reference to 'taking account of the meanings, with explicitly distributional criteria.' Finally, in the last few years, the theory of constituent structure has been formalized and subjected to mathematical rigour by Chomsky and other scholars and has been called 'Phrase Structure Grammar.'

Once we start using 'levels' we have clearly departed from simple analysis and are undertaking analysis somewhat similar to traditional phrasing, the division of sentences into already established grammatical elements. This kind of analysis is today usually called 'phrase structure grammar.' It shows some of the weaknesses of the simple IC analysis. There are sophisticated versions of phrase structure grammars. The three best known are 'Scale and Category Grammar' associated with the name of Michael Halliday of London University. 'Tagmemics' is associated with the name Kenneth Pike of Michigan, and 'Stratificational Grammar' associated with Sidney Lamb of Yale.

Thus a PS grammar is an alternative way of expressing the information found in a tree diagram by means of **rewrite rules**. In this model the linguist formalizes the grammar by means of generative rules which explicitly assign the correct constituent structure to sentences. Such systems are called simple 'phrase-structure grammars'. This model of grammar shows not only the terminal elements or constituents of a linear structure but also specifies the subunits and the level at which these units form natural groups. So the linguist here is interested (1) in the patterns underlying the sentence and its constituents; and (2) in the syntactic devices used to link the constituents together, and the ways in which various parts relate to one another.

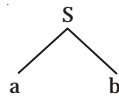
Without the axiom, there are bound to be an unlimited number of rules. This implies that we can neither formulate nor write down such rules in one life-time, which rules out the possibility of someone using this grammar to master a language. The fact that we learn a language by the time we are three or four, refutes such an implication and compels us to believe that the rules of a grammar have got to be finite and not infinite.

Phrase Structure rules of the generative grammar are an amalgamation of the Subject-Predicate and Parsing systems of the traditional grammars and the IC analysis of the structural grammar. They are framed to derive a kernel sentence as in the *Syntactic Structures* (Chomsky, 1957), or, **underlying (deep) strings** as in the *Aspects* (Chomsky, 1965). These rules define basic grammatical relations that function in the deep structure, categorize the various constituents of a deep structure, and determine the ordering (organization) of elements in the deep structure. They also make explicit the domination of one constituent over the other. In short, they make explicit the universal conditions that define "human language."

How do Phrase Structure Grammars Work ?

1. First we write down the initial symbol S.
2. Then we search for the Phrase Structure Rule (also known as Constituent Structure Rule, Branching Rule) which instructs us what to do with the initial symbol; i.e.,

Rules 1 : $S \rightarrow a + b$



Questions :

1. Are there any more Rules ? Yes, Rules 1 : $S \rightarrow a + s + b$. Does it apply ? (That is, do we still have a S after rewriting the initial symbol ?)
No there is no other S.
2. Are there any other Rules ?
No, none.
3. Then, we have got the Terminal String : $a + b$
or $a b$ (omitting +)

Thus **a b** is a **grammatical sentence of the language**.

Let us now consider the other case where we can apply the second rule of formation, Rule 2 :

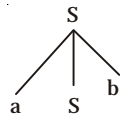
$S \rightarrow a + S + b$,

Initial Symbol : S

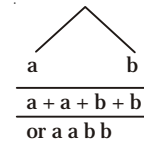
Rule 1 : $S \rightarrow a + b$... not applied

Rule 2 : $S \rightarrow a + S + b$

Now we apply Rule 1 : $S \rightarrow a + b$



Notes



Terminal String

a a b b is a grammatical sentence of the language.

Chomsky has demonstrated convincingly and conclusively that the framework of the phrase structure grammar enables us to derive the sentences of an artificial language. The formation, the axiom, the rules of formation and the theorem (that is, the sentence) are neat, precise and easy. The specification of the required set of sentences is complete.

Phrase Structure Expansion rules re-write one symbol into another (from left to right) until we reach the ultimate constituents beyond which we have left nothing on the right hand to expand. For example, we can derive the deep or underlying string of the following sentence by framing the following PS rules :

Sentence : **The boy admires sincerity.**

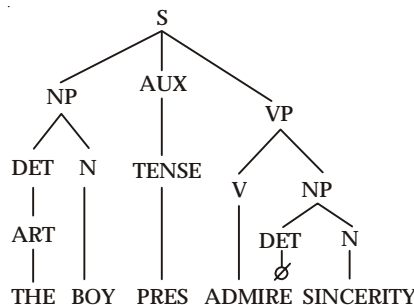
The Sentence is S

S	—> NP + VP	(Rule No. 1)
VP	—> Aux. + V + NP	(Rule No. 2)
NP	—> (Det)N	(Rule No. 3)
Aux.	—> Tense	(Rule No. 4)
Det.	—> Article	(Rule No. 5)
N	—> boy, sincerity	(Rule No. 6)
Tense	—> Present	(Rule No. 7)
Article	—> the	(Rule No. 8)

The string we get is

S [the + boy + pres + admire + sincerity] S

We can represent the above by a tree-diagram and reach P-markers (Phrase markers) :



This grammar enables us to decide the following :

1. **The boy admires sincerity** is a grammatical sentence of the English language.
2. **The boy** and **sincerity** are noun phrases.
3. **admires sincerity** is a verb phrase.
4. **admires** is a verb : the verb is in the present tense.
5. **boy** and **sincerity** are nouns (singular).

6. **the** is a determiner (article).
7. The Phrase marker represents the derivation diagrammatically.
8. The tree, that is, the Phrase Marker, is also the Structural Description of the Sentence.
9. S is a string (sentence).
10. NP and VP are substrings (phrases).
11. S dominates NP and VP. That is, S is a higher unit than NP or VP. Similarly, NP dominated Det and N
VP dominates V and NP
N dominates **boy**
V dominates **admire**, and so on.
NP, VP, Aux., V, Det, N, etc. are the nodes of the tree.
They are all constituents.
12. The derivation shows us the elements, the operation and the resulting relation.
13. It is all explicit—nothing is left to the reader's intuition.
14. If one knows how to apply the rules of grammar, one does not have to know the language to produce grammatical sentences of the language— a guarantee no other grammar can provide.
15. Traditional “parsing” and IC analysis are **formalised** by this grammar.
16. This grammar is different from other grammars in that it is a formal system with axioms, rules of inference, theorems (sentences) and mathematical proof derivation.

The set of rules given above for the sentence **The boy admires sincerity** is extremely limited in a variety of ways. For example, the set can be used to produce only a finite number of sentences, actually only four sentences :

1. The boy admires sincerity.
2. The boy admires the boy.
3. Sincerity admires the boy.
4. Sincerity admires sincerity.

Two of these sentences, sentences 3 and 4, turn out to be rather strange, and second sentence is a little peculiar with its two fold occurrence of **boy**. But an adequate grammar of English should not generate sentences such as 3 and 4, or, if it does, should indicate in some way that these sentences are less acceptable than sentences 1 and 2. Much more serious at the moment is the fact that this grammar generates so few sentences. A native speaker of a language can generate infinitely more sentences. So a grammar should generate **all** and **only** sentences of whatever language it is the grammar of. We shall deal with this problem in the following chapter.

Nevertheless, we must make certain changes in the previous set of rules to generate infinitely many sentences of English. A sample set of PS rules of English may be shown in the manner that follows:

1. S → Conj. SS S*
2. S → Pre. S NP Aux VP (Adv. P)
3. Pre. S ← (Decl.)
[Q.] (Neg.) (Emph.)
[Imp.]
4. NP [NP { }]
[{ S* }]
[Det N (S) []]
[V (Prt) [NP] {P}]]
[[NP] {S}]]

Notes

			[
5.	VP	—>	[Adj] [PP]]]
		—>	[	[S]]]]
			[Be] NP	[]]]
			[	] Adv]]]
6.	Aux	—>	Tns (Mdl)		(Have En)		(Being)	
			[PP]					
7.	Adv. P	<— P	[Adv]					
8.	PP	—	Prep. NP					

Explanation of (some) terms and signs

= Morpheme boundaries

—> = Rewrite

∩ /-/+ concotention

[] Optionality—choose or do not choose

choose any one

*	= Repeat
Pre. S	= Pre. Sentence
Decl.	= Declaration
Q	= Question
Imp.	= Imperative
Neg.	= Negative
Emph.	= Emphatic
Advb.	= Adverb Phrase
Pt	= Particle
PP	= Prepositional Phrase
Mdl	= Modal
...	= List is inexhaustive

Elaborations of these rules are given below :

1. Big capital S means that many sentences are conjoined together by conjunctions such as **and**, **but** etc.
2. S —> NP + Aux + VP
3. NP —> Det + Noun + No.

[Specified]	
Del —>	[]
[Unspecified]	
	[the. this, that, these, those, possessive]
Specified	[]
	[noun and possessive pronouns]
	[a/an, some, few, a couple, several,]	
Unspecified —>	[much, many few,	
	[little, a little]

Noun → (boy, tree, idea, ice, class, Mr. Brown.)

No → [sg]

[pl]

4. Aux → Tense + (Modal) + (Perfect) + (Progressive)

Tense → (Pres)

(Past)

Modal → can, may, must, shall, will

Perfect → have EN

Progressive → be + -ING

Flip-Flap rule : Let Af = Tense, - En, or - Ing

Af + Verb → verb) + Af (e.g. pres do → + pres/does

5. VP + Main Verb + Complement + (Adverbial)

∅

[NP]

[Adjective]

[Adverb of Place]

[Adverb of Motion]

Complement → [NP + Adverb of Motion]

[Np + Adjective]

[NP + Prep + NP]

[Adjective + Prep + NP

The grammar given above employs braces and parentheses. The use of such devices represents a claim about the possible kinds of rules a grammar can have. The claim is that a grammar allows for certain choices and that these choices are of two kinds : the brackets { } represent an obligatory choice, and the parentheses () represent an optional choice. "Likewise, the fact that the rules are ordered represents a claim that the optimal grammar for any language is one that contains a set of rules carefully arranged in sequence. A linguist is interested in other things than using ad hoc rules and devices to cover data in a language he is vitally interested in, what kinds of claims his rules seem to make about language in general, about speakers, and about such processes as language acquisition."

The formulations of the Phrase Structure Grammars make explicit the notion of rule, generation, and explicitness of the IC analysis, but they too do not succeed in the kinds of task in which constituent analysis failed.

Context-Sensitive Grammars

The chief defect of the rules above is that they are not context-sensitive. On the basis of these rules, one may construct unacceptable sentences like the following :

1. The bachelor delivered a child.
2. A man married a man.
3. The tree ate the elephant.
4. The boys kills the snake.
5. The snake kill the boys.

Notes

That is why it is needed to impose contextual restrictions upon the operation of the rules. A grammar that includes one or more context-sensitive rules is called a **context-sensitive phrase structure Grammar**. These rules can be formulated in various ways. For instance, the following :

$$Z + X + W \rightarrow Z + Y + W \text{ or } X \rightarrow Y/Z (-) \rightarrow W$$

that is, X is to be written as Y in the environment of Z to the left and W to the right. This system of rules is required mainly to include the phenomenon of **concord** or **agreement** in grammar. For example :

V+s/ in the context NP sing + ...

Verb-V + ϕ in the context NP plur +

Context-free phrase structure grammars can be defined as a sub-class of context-sensitive grammars. Any set of sentences that can be generated by a context sensitive grammar, but the converse is not true. Context-sensitive grammars are more powerful and precise than context-free grammars.

Limitations of Phrase Structure Grammars

- (a) A phrase Structure Grammar is essentially a grammar of segmentation and categorization; it is a taxonomic model—a Grammar of lists, an inventory of elements. Although it is very strong in the matter of giving structural description of the language, yet it is deficient in generative capacity. It is incapable of accounting for all the intuitions of native speakers. It fails to disambiguate all the ambiguities and understand all the synonymities. “A phrase structure grammar accounts for intra-sentence constituent relations like-active-passive, declarative-interrogative, affirmative-interrogative, etc.”
- (b) A PS grammar cannot adjunct, delete and permute. The processes that pose problems to PS grammar are :
 - ambiguities
 - synonymities
 - permutations
 - discontinuous constituents (e.g. particles)
 - remote relationships (e.g. those of cases)
 - concord phenomena
 - co-ordination
- (c) Despite its rules of inference, binarity and irreflexivity etc., a PS grammar runs into difficulties in describing syntactic structures of Questions, Negatives, Passives, Relatives, etc. easily. It fails to grasp the deep meaning. It cannot discover the crucial notions, nor can it prevent the assignment of false, ungrammatical structure.

PS rules are incapable-except by having recourse to very arbitrary solution—of accounting for the multiplicity of relations existing either between elements in the same sentence, or between different sentences. For example :

- (1) The police diverted the traffic.
- (2) The traffic was diverted by the police.
- (3) The traffic was diverted by a country road.

The **PS** rules will fail to show the relationship that connects (1) to (2). In sentence (2) “by the police” will be shown as prepositional phrase consisting of a preposition, a determiner and

noun, and sentence (3) “by a country road” too will be shown as a prepositional phrase (Prep + NP). Thus it would ignore semantic considerations and case relations.

(d) A PS grammar may provide misleading multiple descriptions. Consider, for example, the following sentences :

- (1) The dog’s **barking** is ferocious.
- (2) **Barking** is good for the lungs of the dog.
- (3) The dog is **barking** at the Stranger.

The word **barking** is an adjective in the first sentence, a noun in the second and a verb in the third. The PS grammarian handling them will have to provide the information in different ways. There ought to be a simpler way of describing barking in all these sentences.

(e) A PS grammar runs into difficulty in understanding remote relationships and in dealing with discontinuous constituents, e.g.

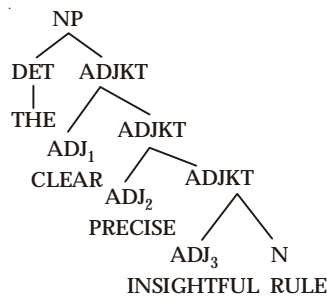
- (1) He is difficult to understand.
- (2) He is difficult to live with
- (3) John is easy to please.
- (4) John is eager to please.
- (5) He looked up the steet.
- (6) He islloked the street up.

Thus a phrase structure grammar fails to capture various grammatical relations and functions in more complex sentences.

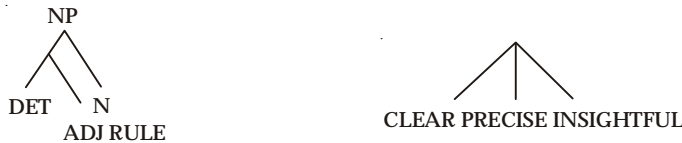
Suppose we want to derive the following construction :

The clear, precise, insightful rule

by means of the PS grammar. We may end up with a phrase marker like the following



or, in the following manner :

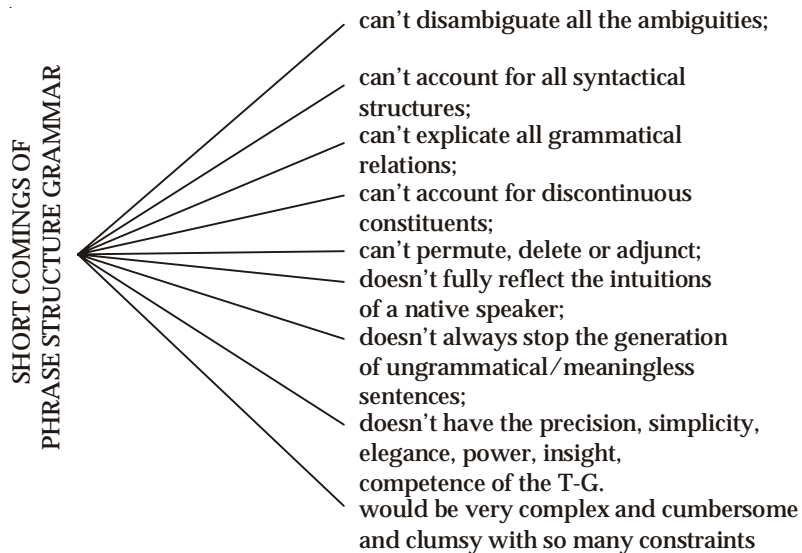


(f) And the PS grammar fails to tell us which of these P-markers should be preferred by us. Despite its formalism, we are left to apply our own intelligence. If we impose so many restrictions and constraints on it, we fear it would become very cumbersome, complex, ad hoc and unlegant.

(g) Ambiguous sentences like, ‘**Visiting linguists can be a nuisance**’ or ‘**Flying planes can be dangerous**’ can be explained only clumsily within the framework of phrase structure grammars, because in such cases the ambiguity does not stem from a difference in immediate constituency.

Notes

The limitations or shortcomings of the phrase structure grammar can be summarised in the following manner :



29.4 Chomsky's X-Bar Theory

In syntax, the notion of a syntactic constituent is fundamental. Words, phrases, and clauses are all types of syntactic constituents.

Once a syntactic constituent is established, its structure can be visually depicted in a phrase structure tree diagram. We can then start formulating phrase structure rules that specify the internal structures of various syntactic constituents.

It is at this stage the X-bar theory comes into picture. It is a rule schema that specifies what kind of valid phrase structure rules can be formulated. It, in fact, constraints the virtually unlimited power of phrase structure rules.

The X-bar syntax/theory is a rule schema that phrase structure rules conform to, in terms of maximal phrasal categories, intermediate categories, and (lexical) heads (e.g. N, V, A, P).

Phrase structure rules in early transformational grammar—The first kind of generative grammar proposed by Chomsky in 1957 was transformational (generative) grammar. In its, two basic types of syntactic rules were proposed: these were (i) phrase structure rules, and (ii) transformational rules, or simply transformations. The phrase structure tree is constructed out of a set of phrase structure rules of the following kind.

- | | | | |
|---------------|--------|-----------|----|
| 1. S→NP | Pred-P | 2. NP→Det | N |
| 3. Pred-P→Aux | VP | 4. VP→V | PP |
| 5. PP→P | NP | | |

The specific words or morphemes are not inserted into the terminal nodes (the smallest, indivisible nodes) by further lexical insertion rules of the following sort:

- | | |
|---------------------|---------------------|
| 1. Det→ <i>this</i> | 2. Det→ <i>that</i> |
| 3. N→ <i>boy</i> | 4. N→ <i>girl</i> |
| 5. V→ <i>speak</i> | 6. P→ <i>to</i> |

Rules of this kind are called rewrite rules, or phrase structures rules. They are called “rewrite rules” because the symbol on the left-hand side of the arrow is “rewritten” in terms of the symbol(s) on the right-hand side. They are called “phrase structure rules” because they enable us to diagram the phrase structure of a phrase or sentence in the form of a tree.

X-bar theory: The problem with phrase structure rules was they could be virtually of any kind, without any restrictions - whereas in actual linguistic expressions there are rather well-defined constraints on what can occur on the right-hand side of a phrase structure rule, given a particular node label on the left-hand side. Thus, there is no reason why a phrase structure rule like should not be possible.

AP → Det V

This kind of phrase structure rule would allow us e.g. to form an adjectival phrase like *that speak and hence a noun phrase such as *a that speak boy), which is absurd: speakers of English would dismiss such a phrase (especially such a noun phrase) as nonsensical.

Secondly, the phrase structure rule would allow a verb or a determiner to be the head of an Adjectival Phrase, which is not only counterintuitive but in fact does not conform to the linguistic facts at all. The head of an Adjectival Phrase must be an Adjective, not a Verb or Determiner or any other lexical category of word. However, so far there was no restriction on phrase structure rules to the effect that a phrase must be rewritten so that at least one lexical category of the same type (nominal, verbal, adjectival, or prepositional) appears on the right-hand side of the rule.

The notion of phrase structure rules was modified in the late 1960s by Chomsky himself. Chomsky proposed that phrase structure rules must be specific instances of a simple but well-defined rule scheme (i.e., a specification of what a phrase structure rule must be specific instances of a simple but well-defined rule schema (i.e., a specification of what a phrase structure rule must be like), which came to be known as X-bar theory.

29.5 Summary

- During mid 1950s there was special emphasis on the significance on the study of syntax. Before mid 1980s structuralism spreads its wings in the field of grammar. According to structuralism and culture are structured system. With this broader perspective of looking such phenomenon and structured system, structural linguistics came into existence. It was Ferdinand de Saussure who introduced this approach towards linguistics. This further taken ahead by linguists in America, though independently like Edward Sapir and Leonard Bloomfield. In Europe it was popularised by Prague school linguists like Nikolay Sergeyevitch, Trubetzkoy and Roman Jakobson. Further Claude Levi-Strauss applied this approach in anthropology.
- During the past fifty years modern linguistics has developed an impressive array of procedures and theories of linguistic or syntactic analysis. What had been in the past of interest mainly to the pedagogue and linguistic historian, has become a major concern of philosophers, psychologists, sociologists, logicians, communication theorists and even biologists.
- There are three distinct periods of development in the theory of constituent structure. Bloomfield only introduced notion and explained it by means of example. His followers, notably Eugene Nida, Rulon Wells, Zells Harris, formulated the principles of constituent analysis in greater detail and replaced Bloomfield's somewhat vague reference to 'taking account of the meanings, with explicitly distributional criteria.' Finally, in the last few years, the theory of constituent structure has been formalized and subjected to mathematical rigour by Chomsky and other scholars and has been called 'Phrase Structure Grammar.'
- Once we start using 'levels' we have clearly departed from simple analysis and are undertaking analysis somewhat similar to traditional phrasing, the division of sentences into already established grammatical elements. This kind of analysis is today usually called 'phrase structure grammar.' It shows some of the weaknesses of the simple IC analysis. There are sophisticated versions of phrase structure grammars. The three best known are 'Scale and Category Grammar' associated with the name of Michael Halliday of London University. 'Tagmemics' is associated with the name Kenneth Pike of Michigan, and 'Stratificational Grammar' associated with Sidney Lamb of Yale.

Notes

- Thus a PS grammar is an alternative way of expressing the information found in a tree diagram by means of **rewrite rules**. In this model the linguist formalizes the grammar by means of generative rules which explicitly assign the correct constituent structure to sentences. Such systems are called simple 'phrase-structure grammars'. This model of grammar shows not only the terminal elements or constituents of a linear structure but also specifies the subunits and the level at which these units form natural groups. So the linguist here is interested (1) in the patterns underlying the sentence and its constituents; and (2) in the syntactic devices used to link the constituents together, and the ways in which various parts relate to one another.

29.6 Key-Words

1. Syntax : "Syntax may be roughly defined as the principles of arrangement of the constructions formed by the process of derivation and inflection (words) into larger constructions of various kinds." "The distinction between morphology and syntax is not always sharp." Coming to syntax is entering into a level of linguistics analysis that is higher than morphology although at places the distinction between the two becomes blurred.
2. X-bar Theory : X-bar theory is a component of linguistic theory which attempts to identify syntactic features presumably common to all those human languages that fit in presupposed (1965) framework. It claims that among their phrasal categories, all those languages share certain structural similarities, including one known as the "X-bar", which does not appear in traditional, for inter alia natural English language, phrase structure rules. X-bar theory was first proposed by Chomsky (1970) and further developed by Jackendoff (1977).

29.7 Review Questions

1. State Chomsky's X-Bar theory in the context of Phrase Structure.
2. How do Phrase structure grammar work?

29.8 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 30: Language Teaching Analysis: Contrastive Analysis, Error Analysis

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Objectives

After studying this Unit students will be able to:

- Understand language teaching analysis.
- Discuss linguistics with regard to its role to language theory.

Introduction

Since the end of the Second World War much heat has been generated on the subject of the relevance of linguistics to second language teaching. Many a time extreme views have been expressed. Some over-enthusiastic neo-converts to linguistics, confusing language teaching with linguistics, say that no perfect teacher of language could be made without a knowledge of linguistics. Others reject it outrightly saying that teachers are born and not made. Some find only indirect applications of linguistics to the teaching of second languages useful and acceptable; whereas some others still see its direct applications. In a sense, such controversies are meaningless and unwanted. Neither are the linguists technical hawkers nor are the language teachers ginger merchants. Both are sane people engaged in an activity related to the development of human knowledge and human kind.

A lover of tradition may reject linguistics on the following grounds :

- Linguistic hunches about language acquisition are not well proved and verified. Linguistics is not yet fully developed; it has not reached a mature stage to provide useful universal insights and capability of practical application to language teachers. There is no concord, agreement and uniformity in theories, terminology, methods, conclusions, classifications, etc. among the linguists. Even in matters such as parts of speech, classification of sentences, categories and sub-categories, kinds of meaning, branches of linguistics, scope of linguistics, and linguistic levels, there are basic differences.
- Linguistics is a vast jungle of paradoxes : a messy and mazy discipline. Moreover, it is getting extremely sophisticated and technical day by day.
- The forms of grammar, the linguistic theories of language analysis offered by the linguists are not only inadequate and incomplete, but are pedagogically unsuitable.
- The amount of time and energy wasted in making the teacher linguistically knowledgeable and adaptable is too large, and the net results gainable seem to be out of proportion.
- Since most of the early language teaching in many countries such as India is carried on by undergraduate teachers, they are not mentally prepared to assimilate the linguistic acrobatics.

30.1 Linguistics and Language Teaching

Mackey sees no worthwhile relevance of linguistics to the teaching of English as a foreign language. His main objections are that linguistic descriptions are not identical and similar; the methods of the linguistic scientist as a teacher are not necessarily the most effective; the errors predicted by contrastive analysis are not always because of mother tongue interference; it is not enough to predict mistakes, what is needed is their correction; applications of different descriptions are so superficial and incomplete and misleading that there is a multiplicity of terms and approaches in linguistics; and that most of linguistically approved grammars are difficult to follow.



Did u know?

Linguistics and language teaching are two different disciplines. One is science and other is mostly an art. The objects of the linguist and the language teacher are at great variance. What is elixir to the linguist may be poison to the language-teacher.

Then there are statements of outstanding linguists like Chomsky :

I am, frankly, rather sceptical about the significance, for the teaching of languages, of such insights and understanding as have been attained in linguistics and psychology...it is difficult to believe that their linguistics or psychology has achieved a level of theoretical understanding that might enable it to support a 'technology' of language teaching.

Should the language teacher then give up in despair and go back to the bad old ways and the days when the scientific approach was regarded with uncomprehending mistrust, and when the teacher preferred his own 'intuitive' knowledge of the language ? Certainly not. Linguistics is not a useless stuff. It is not and should not be an end with language teachers. If employed as a useful tool, it may be found worthwhile and relevant.

A host of scholars such as Halliday, McIntosh, Strevens, Wilga Rivers, Paul Roberts, Sol Saporta, Lakoff and others find linguistics very useful to second language teaching. The following arguments can be put forward in favour of linguistics with regard to its role to language teaching.

30.2 Linguistics with Regard to its Role to Language Teaching

- (1) Linguistics is one of the major components of language teaching, others being organizational, pedagogic, technological, psychological and sociological ones and the disciplines like psycho-linguistics and socio-linguistics, besides pure linguistics, have tremendous insights to offer to the teacher as well as the learner by answering questions like the following :
 - (a) How is a language learnt ? What is the difference between first language acquisition and second language learning ? What is the innate, built-in property of human mind that internalizes the generalizations about a language ?
 - (b) What is meant by the use of language according to the role, the situation and the occasion, the hearer, etc. ?
 - (c) Is register based course possible and useful ? If yes, how, can a register based course be prepared ?
- (2) Linguistics helps in taking, fundamental decisions such as which languages are to be taught upto what time and at what level in an educational system. When such fundamental decisions have been made there is another aspect of planning and decision-making which is based on economic, administrative and social considerations within the country. For how long, for what purpose and to whom a certain language be taught ?...and here again the socio-linguistics has a part to play."
- (3) So linguistics helps in determining the place and position of a foreign language in a syllabus and also helps in determining the aims and objectives of the teaching of the target language.

Since teaching is determined by syllabus, linguistics has great usefulness for the syllabus-designer and can help him in determining, how, why, when and whom to teach. "Applied linguistics has to do with the devising of syllabuses and materials for carrying out the intention of authorities, whether local or national."

- (4) Since teaching is to take place through text-books, linguistics can help the text-book writer to prepare linguistically sound, learners' need-based textbooks. Linguistics can also be helpful in the selection and gradation of vocabulary structures.
- (5) Theories and descriptions of language make the teacher ask : how does a language work and function ? What is its nature ? What are its systems and sub systems ? How is the learner's first language a hindrance in the way of his learning a second language ? Why does a learner commit the errors of particular kind ? What are the characteristics of human language ?
- (6) Better theories and descriptions lead to the formulation of better methods and techniques of language teaching. Good descriptions of a language imply : a definite attitude towards a language, a definite idea of how a language works and how it is to account for the ability to perceive the difference between one language and the other.
- (7) Linguistics has offered to all those concerned with language teaching many a useful insight and awareness. Concepts such as 'langue' and 'parole', 'competence' and 'performance' : 'paradigm', 'system', 'abstraction', 'dialect', 'register', 'pidgin', 'creole', 'diaglossia', 'synchrony', 'diachrony', and a host of others have become home words not only for the linguists but also for the language-teachers. Language has been looked at afresh. Linguistics has tried to define complex phenomena like 'language', 'language teaching', 'language acquisition', 'language learning', etc. It has been able to explicate the distinction between human communication and other systems of communication, more especially between human language and animal system of communication. More significantly, linguistics has removed a number of misconceptions about language and language teaching. Linguistics has further established the supremacy of the current spoken form, the sameness and uniqueness of languages, has accepted language change and variation as an important phenomenon, has distinguished between mother tongue-acquisition and second/foreign language-learning, has stressed the need of examining the existing grammars open-mindedly and formulating more adequate grammars and theories of language, and has established that literature is only one register of language. It has made contributions to grammar, usage, lexicography, phonetics, psycholinguistics, sociolinguistics, semantics, machine translation, reading techniques, para-linguistics, etc. Albert Marchwardt rightly says :

Despite the fact that we now have available linguistically oriented English-language teaching materials on many levels, where ten years ago there were virtually none, I still believe that the most important contribution that linguistics can make to the classroom English teacher is in reshaping his view of language and of language learning...Linguistically sound teaching materials can be expected to produce satisfactory results only when they are used by linguistically knowledgeable and sophisticated teachers.

Linguistics has shown the possibilities, probabilities and plausibilities of how a language behaves: it has made prediction about the phenomena of language, has unified heterogeneous facts about the systems of language, has removed and corrected the folklorist attitude towards language, has provided new notions, ideas, insights, and concepts about language, has provided with the discovery, evaluation and decision procedures, has established a useful set of dichotomies between sound and meaning, langue and parole, competence and performance, synchrony and diachrony, the articulatory and the acoustic, the individual and the society, the material and the immaterial, the sameness and the difference, etc.

The concern of linguistics as well as of language teaching is grammar, vocabulary and pronunciation. Hence both are concerned with different objectives with same material, and have a give-and-take relationship. Linguistics has provided a number of grammars out of which a better pedagogical grammar can be built up. With the help of the phonetic alphabet and other facts related to phonetics, the learning and teaching of pronunciation has been greatly facilitated.

Notes

The greatest contribution of linguistics is that it has increased one's understanding of the nature of language. Anyone who has studied linguistics, is sensitized to language and thereby to the complexity of language learning. People will be better able to exercise critical judgement on attractive innovations in language teaching, including those that may claim to be supported by linguistic research. Wilkins believes that "the linguistically sophisticated teacher's judgement is better informed though still subjective," and that "the value of linguistics is that by increasing his awareness of language, it makes him more competent and therefore a better language teacher."

- (8) Methods of language teaching like fashion have been changing along with the developments in linguistics. Audiolingual, bilingual, function, skills method, implicit method (grammar taught through pattern drills without explanations), explicit English method (pattern drills in combination with explanations in the target language), etc. are the by-products of linguistics. In this field again, the linguist can help the language teacher better, and a teacher can, with the help of his knowledge in linguistics, evaluate and test the method most suitable to him, or at least can distinguish between a good and a bad grammar. There has never been a non-linguistic method of teaching languages, and the so-called linguistic method is not like a sudden fall from the blue of linguistics. It is a gift of linguistic evolution. Since empirical research has failed to provide us with firm answers related to the questions regarding language teaching, the only refuge left out is to seek assistance from linguistics.

Hence the study of linguistics by the language teacher is quite rewarding. Linguistics offers INSIGHTS/'notions that increase one's understanding of the nature of language and consequently of the nature of learning', IMPLICATIONS 'affecting the decisions about the methods and techniques of teaching', and APPLICATIONS, the 'cases where notions and informations drawn from linguistics act directly upon the process of language teaching'.

Nevertheless, foreign/second language teaching is currently getting eclectic as stated by the editor of **The English Teaching Forum** :

Current thinking in language-teaching methodology seems to show a trend toward eclecticism: that is, toward 'choosing what appears to be the best from diverse sources, systems.' Eclecticism is sometimes misunderstood to mean that all approaches are equally valid...and that therefore it is important to know what various methods or ideas or new experiments or trends are. An approach that is truly eclectic, makes the greatest demands on the teacher. It requires him to know enough about the various sources, systems, and styles of teaching and to choose wisely between what is good for his particular purposes and what is not useful for him. It requires of him both an intelligent skepticism and a ready enthusiasm—a willingness to reject both old and new techniques that seem unsuitable and an eagerness to refresh his teaching with useful adaptations of techniques both new and old. To do this intelligently, he must be well informed about the methods and techniques that are available to him.

So the antagonism between the language teacher and the linguist will indeed look trivial and uncalled for if the validity of the editor's opinion cited above is accepted, and if we agree that by teaching is not meant only an operation performed by teacher inside the classroom but an interdisciplinary, co-operative activity involving learners, society, government, education policy, language policy, syllabuses, teaching, pedagogy, technology, materials available, kinds of teachers available, classrooms and the strength of students in a class, examination system, evaluation, etc.

Moreover, linguistics may offer some useful things in some areas of language teaching. But it is not a panacea, a methodology, a subject matter, a code of conduct, a law, a judgement, a legislation, a demi-god to be imposed on a teacher. Ultimately the teacher has to decide whether linguistics is useful for him or not. If it is useful, the question arises which linguistics, in what forms and how much of it is going to help him and his learners? 'Linguistics is not a teaching method, but a growing body of knowledge and theory; and though it may offer helpful answers to some of the problems of language teaching, it surely does not know all the answers.' Linguistics is a tool, and, like any tool, is useful only in the hands of a craftsman who knows how to use it. For a linguist, linguistics is an end in itself, but for a teacher it is only a means to an end. Linguistics to a teacher is like cosmetics to a

woman, or as Bolinger has said, 'Linguistics to teaching is chemistry to medicine.' Hence the ultimate decisions have to be made by the teacher himself. Even Mackey and Chomsky have accepted the role of linguistics. Mackey writes :

Although the ability to analyse a language may not be the most important qualification of a language teacher, some training in practical linguistics can enable him to establish with more precision than he otherwise might be able to do, as to what is the same and what is different in the languages with which he has to deal. It can also help him to understand, evaluate, and perhaps use some of the descriptions of the language he is teaching. And if the training is neither too one-sided nor doctrinaire it may prevent him from becoming the prisoner of a single school of thought and encourage him to surmount the great terminological barriers which have prevented any mutual understanding in linguistics.

Noam Chomsky does not reject the use of linguistics in the teaching of language completely other, he observes :

Teachers, in particular, have a responsibility to make sure (the linguists') idea and proposal are evaluated on their merits and not passively accepted on grounds of authority, real or presumed. It is possible— even likely—that principles of psychology and linguistics, and research in these disciplines may supply useful insights to the language teacher. But this must be demonstrated and cannot be presumed. It is the language teacher himself who must validate or refute any specific proposal.'

Chomsky further adds :

there are certain tendencies and developments within linguistics and psychology that may have some potential impact on the teaching of language. I think these can be usefully summarized under four main headings : the 'creative' aspect of language use; the abstractness of linguistic representation; the universality of underlying linguistic structure, the role of intrinsic organization in cognitive process.

What Chomsky is suggesting is not a rejection of linguistics, but a synthesis of pedagogy, psychology and linguistics. Then there are strong advocates of linguistics. Paul Roberts says that linguistics has provided with a suitable subject matter for the teaching of English, and goes on to add : 'It gives us something that is teachable, interesting, and pertinent, and that is what most distinguishes it from traditional grammar'. Sol Saporta is of the opinion : "If linguistics has any contribution to make to language learning, it is this : to make explicit in general and in particular what is learned." And then there is the testimony of Pit Corder who says :

"The application of linguistics to language teaching is an indirect one. It is not a single-stage operation. That is why many teachers, when first introduced to linguistics, see no relevance in it for their work and, conversely, why many linguists unacquainted with language teaching in practice disclaim any practical usefulness for their work. The fact seems to be that only those who are familiar with both linguistics and language teaching, are in a position to discern the relation between the two."

Hence there can be no doubt about the relevance of linguistics to foreign language or second language teaching. But we have yet to find out answers to questions like the following :

- What kind of linguistics do we need for the purpose of foreign or second language teaching ?
- How much of it do we need ?
- When and in what form are we going to use it ?

30.3 Contrastive and Error Analysis

Languages is important from the point of view of translation theory, language typology and study of language universals. Contrastive analysis of two languages point at the specific features of each language system in its major areas: phonology, morphology, lexicology, syntax, text analysis. The knowledge about the kinds and degree of differences and similarities between languages on a number of linguistic levels helps in the process of anticipating possible difficulties with learners.

Notes

The most widely recognized source of foreign language learning errors is that of L interference. Those elements that are similar to the learner's native language, will be simple for him and those that are different will be difficult and will, by implication, be likely to produce errors. We may say that one of the undoubted merits of contrastive linguistics is the fact that it offered a natural, even if only partial explanation to the errors made by foreign language learners. Contrastive analysis considered most errors to be the result of a phenomenon of interference, when patterns existing in the learner's mother tongue were transferred as such into his/her use of the language to be learned. Viewed from this point of view, error analysis had no proper status, it was a mere addition to contrastive analysis. But not all errors made by learners of a foreign language are due to the differences existing between the structures of the two languages in contact. There are indeed a certain number of errors due, primarily, to this cause, especially with beginners but there are, of course, many others whose explanation should be looked for somewhere else. Scholars engaged in the study of foreign language learning, try, by various methods, to identify the process and strategies which might be considered responsible for the students' mistaken utterances. They distinguish:

1. Errors which might be explained by contrastive analysis, the so-called "interlingual errors" or
2. Errors due to the evolutive character of the acquisition of a foreign language, the "interlingual errors". It is the duty of the foreign language teacher both to identify and classify the typical errors and to apply remedial strategies, to find adequate methods to eliminate them both at the individual and group level. The methodology of error analysis has generally followed a uniform method of investigation consisting of the following steps:
 - (i) collection of data (either from "free" compositions by students on a given theme or from examination papers);-
 - (ii) identification of errors (labeling the exact nature of the deviation, e.g. dangling preposition, anomalous sequence of tenses, etc.);
 - (iii) classification into error types (e.g. errors of agreement, articles, verb forms, etc.);-
 - (iv) statement of relative frequency of error types;
 - (v) identification of the areas of difficulty in the target language;
 - (vi) therapy (remedial drills, lessons, etc.).

While the above methodology is roughly representative of the majority of error analyses in the traditional framework, the more sophisticated investigations went further, to include one or both of the following:

- (i) analysis of source of the errors (e.g. mother tongue interference,
- (ii) over-generalisation,
- (iii) inconsistencies in the spelling system of the target language, etc.);
- (iv) determination of the error in terms of communication, norm, etc.

The analysis of mistakes based on adequate material will clearly show that is most troublesome for the learners concerned and thus where they need support most. However, it is not only remedial work which can be guided thus, but the whole of a language course, and at every stage. Writing is the obvious basis for analysis but mistakes in speaking can be noted to with the help of the teacher. Some of the mistakes which our students make in learning English are based on false analogies within the foreign language but the majority of the mistakes result from carrying over into the English language the speech habits of Romanian, habits of pronunciation, of morphology, of syntax. Analysing the kinds of mistakes students make, we shall have a basis for supporting nearly every step of the language teaching instead of continually improvising and teaching by intuition. In her article "Contrastive Linguistics in Textbook and Classroom", Wilga M. Rivers states: "It may appear that the contrastive technique 'par excellence' in foreign language teaching is the translation exercise. Here the student is confronted with native language forms and structure and required to produce the contrasting forms and structure of the foreign language". The translation in which exact meaning is transferred from one language to another demands a thorough knowledge of areas of contrast in form and function and it is for this reason, being a very profitable exercise of the students' control of the foreign language at an advanced level. Methodologists consider that in the early stages of learning a foreign language,

translations of short patterns and simple forms may be a quick way to check whether students have ascribed the appropriate meaning to that they are practicing. At intermediate and advanced levels, equivalents of expressions, sentences, and even paragraphs may be necessary, and such practice could well lead to skill that we should help our students to acquire. One effective way of eliminating error is self-correction. This can be done if the teacher uses certain symbols (T = tense error, Sp = spelling; SgPl = singular and plural concord wrong etc.), explanatory comments in the margin of the written paper or only underlines the mistakes. Giving back written work with brief comments is a good way for the student to correct his own mistakes. Another procedure is to offer the students the possibility to examine the errors and discuss them with each other. After a few minutes, they are encouraged to ask questions if they still have doubts. The other students are asked to help, if they can, by giving examples. This procedure offers practice and reinforcement of material (For example, it can be successfully applied in contrasting the Present Perfect to the Past Tense). From our short experience we have reached the conclusion that in language areas, for which generalizations which are applicable to a large number of facts can be formulated, the chances of errors are smaller. For instance, when we teach the interrogative form of different tenses, we draw the students attention to the specific English word order: Auxiliary - Subject - National Verb. In view of these observations, it is our job to help the students arrive at as many generalizations as possible. Other solutions refer to further explanations with more adequate examples or teaching aids, comparison with the mother tongue, translations etc. But the most effective way to extinguish error is to have plenty of corrective exercises which should provide something for the students to say or write, sentences or short paragraphs to be imitated, completed or added to a series of exercises directed at each typical error.

30.4 Summary

- We may conclude that the aim of contrastive studies is not only a better understanding of the linguistic structure, but also applied deductions, meant to raise the entire teaching activity above the empirical and occasional practice, to outline fundamental teaching programs based on the scientific knowledge of the language. Contrastive analysis has laid the emphasis on error analysis as a way to study the difficulties encountered by foreign - language learners. The findings of such studies can be very helpful in setting up teaching devices. Contrastive analysis and error analysis are complementary to one another, in the sense that the results obtained and the predictions made by the contrastive studies are to be checked up and corrected by the results obtained in the error analysis.

30.5 Key-Words

1. Contrastive analysis : is the systematic study of a pair of languages with a view to identifying their structural differences and similarities. Historically it has been used to establish language genealogies.
2. Error analysis : assumes that errors indicate learning difficulties and that the frequency of a particular error is evidence of the difficulty learners have in learning the particular form.

30.6 Review Questions

1. Write an essay on the relation between linguistics and language teaching.
2. Discuss the following :

'The role of linguistics and phonetics in language teaching is not to tell the teacher how to teach. The teacher of the language is as much a specialist in his field as the linguist is in his, and will remain so'.

Or

"A study of linguistics in itself does not automatically contribute to the efficient teaching of a foreign language."

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3. How would you make use of modern linguistics in the teaching of grammar and composition?
4. “Linguistic science may serve the teacher of English on all levels and in all areas where he works, from the most elementary to the most abstruse.” If you agree with this statement, substantiate it with reference to any one of the areas of ELT (e.g., teaching of grammar, composition, literature, etc.). If you don't, mention your objection.
5. When do you understand by 'eclectic' approach to ELT ?
6. “When we describe the formal features of a language, its grammar and lexis, we are trying to account for all the possible meaningful contrasts that the language makes.”
Discuss the statement with specific reference to the teaching of English in India.

30.7 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 31: Semantic: Meaning Types: Lexical, Contextual and Others Semantics Practice

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Objectives

After reading this unit students will be able to:

- Understand about Semantics and Lexical practices.
- Explain the lexical and Grammatical Meaning.

Introduction

Where as syntax is about sentence formation, semantics is about sentence interpretation. Semantics is the study of the meaning of linguistic expressions. The language can be a natural language, such as English or Navajo, or an artificial language, like a computer programming language. Meaning in natural languages is mainly studied by linguists. In fact, semantics is one of the main branches of contemporary linguistics. Theoretical computer scientists and logicians think about artificial languages. In some areas of computer science, these divisions are crossed. In machine translation, for instance, computer scientists may want to relate natural language texts to abstract representations of their meanings; to do this, they have to design artificial languages for representing meanings.

31.1 What is Semantics ?

The study of meaning and its manifestation in language is normally referred to as semantics from the Greek noun **sema** 'sign', signal; and the verb **semains** 'signal, mean, signify'. The *Shorter Oxford Dictionary* glosses the term semantics as 'relating to signification or meaning'. Broadly speaking, semantics is that aspect of linguistics which deals with the relations between referents (names) and referends (things)—that is, linguistic levels (words, expressions, phrases) and the objects or concepts or ideas to which they refer—and with the history and changes in the meaning of words. Diachronic (historical) semantics studies semantic change, whereas synchronic semantics accounts for semantic relationship, simple or multiple. A semanticist would like to find how a man is able to paraphrase, transform, and detect ambiguities and why the surrounding words sometimes force him to choose one interpretation rather than another. A semantic analysis, for example of English, must also explain antonyms, synonyms, homonyms, polysemy, anomalies,

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contradictions, paraphrase, relations, ambiguities, implications and transformations of the language. It should give an account of semantic properties and relations. Hence to understand the meaning of a sentence and its semantic relations to other expressions, one must know not only the meaning of its lexical elements but also how they inter-relate.

According to Manfred Bierwisch, a semantic theory must : (a) make reference to the syntactic structure in a precise way; (b) systematically represent the meaning of the single words; (c) show how the structure of the meaning of words and the syntactic relations interact, in order to constitute the interpretation of sentences; and (d) indicate how these interpretations are related to the things spoken about.

31.2 Importance of Meaning

Although the structuralists tried to study language without meaning, the importance of meaning has been recognized since time immemorial. In the *Vedas*, meaning is treated as the essence of language, and the speech without meaning has been called 'the tree without fruits and flowers.' Ancient Indian scholars such as Katyayana, Patanjali, Vyadi, Vyas, etc. regard the relationship of word and meaning as **eternal**. According to Patanjali, words naturally express meaning. Were the words eternal, one word would have meant one and the same thing in all the languages; there would have been no semantic change, and men would not have felt any necessity of learning words. Nevertheless, some western scholars too have started talking about semantic universals now-a-days, and today, there is a wide agreement than it ever was that meaning is the soul of language.

31.3 Difficulties in the Study of Meaning

The problem of 'meaning' is quite difficult, it is because of its toughness that some linguists went on to the extent of excluding semantics from linguistics. A well-known structuralist made the astonishing statement that 'linguistic system of a language does not include the semantics. The system is abstract, it is a signalling system, and as soon as we study semantics we are no longer studying language but the semantic system associated with language.' The structuralists were of the opinion that it is only the form of language which can be studied, and not the abstract functions. Both these are misconceptions. Recently a serious interest has been taken in the various problems of semantics. And semantics is being studied not only by the linguists but also by philosophers, psychologists, scientists, anthropologists and sociologists.

Scholars have long puzzled over what words mean or what they represent, or how they are related to reality. They have at times wondered whether words are more real than objects, and they have striven to find the essential meanings of words. It may be interesting to ask whether words do have essential meaning. For example, difficulties may arise in finding out the essential meaning of the word **table** in **water table, dining table, table an amendment, and the table of 9**. An abstract word like **good** creates even more problems. Nobody can exactly tell what **good** really means, and how a speaker of English ever learns to use the word correctly. So the main difficulty is to account facts about essential meanings, multiple meanings, and real word conditions. The connotating use of words adds further complications to any theorizations about meaning, particularly their uses in metaphoric and poetic language. Above all is the question : where does meaning exist : in the speaker or the listener or in both, or in the context or situation ?

Words are in general convenient units to state meaning. But words have meanings by virtue of their employment in sentences, most of which contain more than one word. The meaning of a sentence, though largely dependent on the meaning of its component words taken individually, is also affected by prosodic features. The question whether a word may be semantically described or in isolation, is more a matter of degree than of a simple answer yes or no. It is impossible to describe meaning adequately in any other way except by saying how words are typically used as part of longer sentences and how these sentences are used. The meanings of sentences and their components are better dealt with in linguistics in terms of how they function than exclusively in terms of what they refer to.

Words are tools; they become important by the function they perform, the job they do, the way they are used in certain sentences. In addition to **reference** and **function**, scholars have also attached importance to popular historical considerations, especially etymology, while studying word-meanings. Undoubtedly the meaning of any word is casually the product of continuous changes in its antecedent meanings or uses, and in many cases it is the collective product of generations of cultural history. Dictionaries often deal with this sort of information if it is available, but in so doing they are passing beyond the bounds of synchronic statement to the separate linguistic realm of historical explanation.

Different answers have been given to the questions related to meaning. Psychologists have tried to assess the availability of certain kinds of responses to objects, to experiences, and to words themselves. Philosophers have proposed a variety of systems and theories to account for the data that interest them. Communication scientists have developed information theory so that they can use mathematical models to explain exactly what is predictable and what is not predictable when messages are channeled through various kinds of communication networks. From approaches like these a complex array of conceptions of meaning emerges. We shall discuss some of the major semantic theories soon.

31.4 Lexical and Grammatical Meaning

When we talk about meaning, we are talking about the ability of human beings to understand one another when they speak. This ability is to some extent connected with grammar. No one could understand :

hat one the but red green on bought tried Mohan

while

Mohan tried on the red hat but bought the green one causes no difficulties.

Yet there are numerous sentences which are perfectly grammatical, but meaningless. The most famous example is Chomsky's sentence

"Colourless green ideas sleep furiously."

Similar other examples are :

- **The tree ate the elephant.**
- The pregnant bachelor gave birth to six girls tomorrow.
- **The table sneezed.**

In a sentence such as **Did you understand the fundamentals of linguistics ?** a linguist has to take into account at least two different types of meaning : **lexical** meaning and **grammatical** meaning. Full words have some kind of intrinsic meaning. They refer to objects, actions and qualities that can be identified in the external world, such as **table, banana, sleep, eat, red**. Such words are said to have **lexical meaning**. Empty words have little or no intrinsic meaning. They exist because of their grammatical function in the sentence. For example, **and** is used to join items, **or** indicates alternative, **of** sometimes indicates possession. These words have grammatical meaning. **Grammatical meaning** refers mainly to the meaning of grammatical items as **did, which, ed**. Grammatical meaning may also cover notions such as 'subject' and 'object', sentence types as 'interrogative', 'imperative' etc. Because of its complexity, grammatical meaning is extremely difficult to study. As yet, no theory of semantics has been able to handle it properly. But the study of lexical items is more manageable.

31.5 Meaning of Meaning

There is a good number of semantic theories. Each of them defines meaning in its own manner. Ogden and I.A. Richards in their book *Meaning of Meaning* cite no less than sixteen definitions of meaning. To Ludwig Wittgenstein (*Philosophical Investigations*) the meaning of a word or expression is neither more nor less than its use. Usage, not meaning, is the right basis. Bloomfield defines

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meaning as ‘the situations in which the speaker utters it and the response which it calls forth in the hearer’. According to Harris, “the meaning of an element in each linguistic environment is the difference between the meaning of its linguistic environment and the meaning of the whole utterance.” In the opinion of J.R. Firth meaning is a group of ‘situational relations in a context of situation and in that kind of language which disturbs the air and other people’s ears, modes of behaviour in relation to other elements in the context of situation.

31.6 Semantic Theories

Traditional Approach

Linguists and earlier scholars of language often had very clear ideas about the importance of meaning and the need for its study. There were, to begin with, numerous preconceptions and false ideas about the nature of meaning which hindered clear thinking, but which it was difficult to get rid of because of their separable ancestry. One was the tendency to identify words and things or to think that meaning were somehow concrete entities— words would be called ‘dirty’, ‘dangerous’, ‘beautiful’, and so on, instead of the objects or events being referred to. This conception goes back to Plato. To the old philosophers such as Plato and Socrates, the semantic relationship was that of naming of ‘significant.’ This traditional view of the relationship between name and things is customarily represented by the triangle of ‘signification,’ sometimes referred to as ‘the semiotic triangle’ :

MEANING (THOUGHT/CONCEPT/SENSE/IMAGE/REFERENCE)



FORM (NAME/SYMBOL) REFEREND (INFORMATION/THING)

Analytical or ‘Referential’ Approach

The traditional approach gave birth to the analytical approach. An important analytical approach is the one by Saussure. Saussure’s theory of meaning is based on speech word relationship. Saussure uses the analogy of a sheet of paper whose one side is sound, the other thought, and therefore thought cannot be divided from sound nor sound from thought. Linguistics then operates on the borderland where the elements of sound and thought combined their combination produces a form, not a substance (Saussure). The sound is the ‘signifier’, the thought is the ‘signified’ and the thing signified is the ‘significant’. There is no direct relationship between word and the things they ‘stand for’; the word ‘symbolizes’ a ‘thought or reference’ which in its turn ‘refers’ to the features of event we are talking about. We know that the sound ‘dog’ we use in speech to refer to the four legged, domestic animal forms an arbitrary or conventional symbol. The dog, the living creature that we see with our eyes, we may call the referend, and the picture of it that we have in our minds as we speak, whether a memory picture or one actually seen at the moment, may be called the image. We may once again represent it through a simple diagram :

(IMAGE)



SYMBOL REFEREND

The symbol (name or significant) is the phonetic shape of the word, the sounds which make it up and also other acoustic features such as accent. The reference (sense of thought), put in general terms without committing oneself to any psychological doctrine, is 'the information which the name (symbol) conveys to the hearer', whereas the 'thing' (significant or referend) is the non-linguistic feature or event we are talking about. The letter, as we have seen, lies outside the linguist's province. Hence Bloomfield's famous definition. This definition refers primarily to the meaning of a whole utterance, but the meaning of individual words is obtained in the same way. According to the referential definitions, therefore, 'meaning' is a reciprocal and reversible relation between name and sense,' it can be investigated by starting from either end : but one can start from the name and look for the sense or senses attached to it, as do all alphabetical dictionaries : but one can also start from the sense and look for the name or names connected with it.

The Referential theoreticians wish to confine themselves to formal meaning because the contextual or functional level of language is difficult to describe rigorously and scientifically. The 'analytical' or 'referential' approach seeks to grasp the essence of meaning by resolving it into its main components. According to this theory, there is no direct connection between words and the things they stand for; the word 'symbolizes' a thought or 'reference' which in its turn 'refers' to the feature or event we are talking about.

This approach has its weaknesses too. It gives an account of how the word acts on the hearer but seems to neglect the speaker's point of view. For the hearer, the sequence of events will be different and reverse. Hearing the word, say, **dog**, he will think of a dog and thus understand what the speaker was saying. And this will make him pronounce the word. There is therefore 'a reciprocal and reversible relationship between name and sense' which Stephen Ullmann calls meaning : if one hears the word one will think of the thing, and if one thinks of the thing one will say the word. The choice of terms is, of course, of secondary importance as long as the analysis itself is accepted. The analytical approach ignores this reciprocal and reversible relationship between sound and sense.

Furthermore, by excluding the 'referent', the non linguistic feature of event referred to, semantics will 'fall prey to an extreme esoteric formalism'. The structuralists are unwilling to assume that 'prior to the utterance of a linguistic form, there occurs within the speaker a non-physical process, a thought, concept, image, feeling, act of will, or the like, and that the hearer, likewise, upon receiving the sound-waves, goes through an equivalent mental process.' (Bloomfield, *Language*). According to Bloomfield, human utterances are connected with certain situations and accompanied by certain responses. But Bloomfield's modification too is untenable, which virtually equates 'response' with the 'referent'. It takes no account of the innumerable cases where the thing referred to is not present at the time of speaking—not to mention statements about abstract phenomena. According to Bloomfield then, how will a person understand a statement about an earthquake thousands of miles away, if he understands the meaning of a term by corresponding to something in the hearer's memory. Lastly, referential theories of meaning are inspired by the old metaphysics of body and soul. Hence they need to make a provision for multiple meaning, and should remember that words are not associated with situations alone; they are also associated with other words.

The Distributional Approach

The distributional analysis of meaning is the structural treatment of linguistic meaning. To facilitate a scientific study of meaning some linguists favour the study of meaning as phenomenon isolated from outside world of human experience, that is to say, the meaning of word is to be understood as the range of its occurrences in sentences consisting of other words. 'Just as there are probably no words exactly like in meaning in all context, so there will probably be no two words in any language sharing exactly the same lexical environment (distribution). This approach studies meaning as syntagmatic relations (collocations) and paradigmatic relations (sets). 'It uses statistical methods and computer techniques (the mechanical collection and sorting of data) with considerable precision and exhaustiveness in the study of semantics. But the distributional approach to meaning fails to 'save the phenomena.' Meaning is everywhere understood as involving the relation of

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language to the rest of the world, and such meaningfulness is an essential part of any definition of language. So this approach is inadequate as a complete treatment of meaning.

Meaning of words in dictionary entries is derived on the basis of their relation to the whole of human experience, on the basis of extra-linguistic criterion and unsystematized commonsense. For this reason some linguists have tried to redefine or reconsider meaning in so far as it is relevant to linguists as equivalent to distribution.' That is to say, the meaning of a word, as far as it concerns the linguist within the strict confines of his subject, is to be understood as the range of its occurrences in sentences consisting of other words. Just as there are probably no words exactly alike in meaning in all contexts, so there will probably be no two words in any language sharing exactly the same lexical environment (distribution)'

Operational (Contextual or Functional) Approach

In the 1950s, a new and entirely different conception of meaning began to take the shape inside and outside linguistics. It received its most pointed and most provocative formulation in L. Wittgensten's *Philosophical Investigations*, which was published posthumously in 1953. This theory was also advocated by Malinowski and J. R. Firth. It emphasized purely operational character of scientific concepts like 'length', 'time', or 'energy'. The contextual theoreticians said that meaning or concept was a set of operations : 'the true meaning of a word is to be found by observing what a man does with it, not what he says about it.' So the meaning of a word is its use in the language. From this emerged substitution method. And Firth defined the word as a 'lexical substitution-counter'. So the words were to be studied according to their functions, in the contexts they occurred. As a matter of fact, the operational theory is concerned with meaning in speech, the referential theory with meaning in language. The functional approach treats words as tools. It incorporates the speaker and hearer, the actions they are performing at the time and various external objects and events. It studies meaning in space and time along with not only the relevant objects and actions taking place at the time, but also the knowledge shared by the speaker and hearer of what has been said earlier. It must also be taken to include the tacit acceptance by the speaker and hearer of all the relevant conventions, beliefs and presuppositions 'taken for granted' by the members of the speech-community to which the speaker and hearer belong.

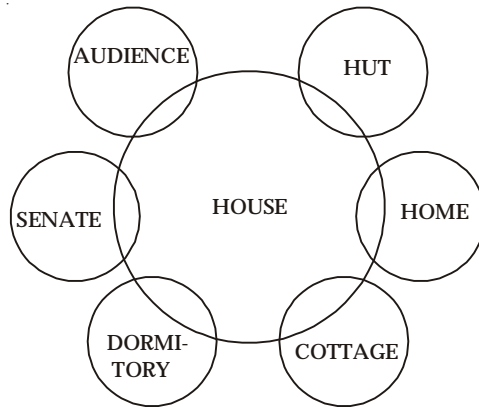
In terms of contexts of situation the meaning of utterance includes both 'reference' (denotation) of individual's words and the meaning of the whole sentences. So it deals with the total utterance as a whole. Differences of personal status, family and social relations, degrees of intimacy, relative age, and other such factors, irrelevant to the considerations of sentences as the expression of logical propositions, are all dealt with under this approach of the context of situations. As Robins explains :

"Meaning in languages is therefore not a single relation or a single sort of relation, but involves set of multiple and various relations holding between the utterance and its parts and the relevant features and components of the environment, both cultural and physical, and forming part of the more extensive system of interpersonal relations involved in the existence of human societies."

Hence sentences are brought into multiple relationships with the irrelevant components of the environment. Language is studied functionally. To mention only a few uses of language, one can distinguish poetry of all kinds, rhetoric, narrative and historical records, ritual and ceremonial utterances, the forms of legal, political, commercial, and administrative operations, the professional intercourse of technical, learned, and academic persons. J. R. Firth has suggested a typical outline context to bring the utterance and its parts into relationship with the following categories :

1. The relevant features of participants (persons, personalities)
 - (a) The verbal action of the participants.
 - (b) The non-verbal action of the participants.
2. The relevant objects.
3. The effect of the verbal action.

Since some words may overlap with others in their possible contexts, as does **house** with **hut**, **home**, etc. It is better to deal with sets of words, rather than with individual word alone. In such study, the words, which fall into a context or set of contexts, are referred to as an “associative field”. This point has been illustrated by Winfred P. Lehmann (*Historical Linguistics*, 1966 : 198) in the diagram given on the followig page :

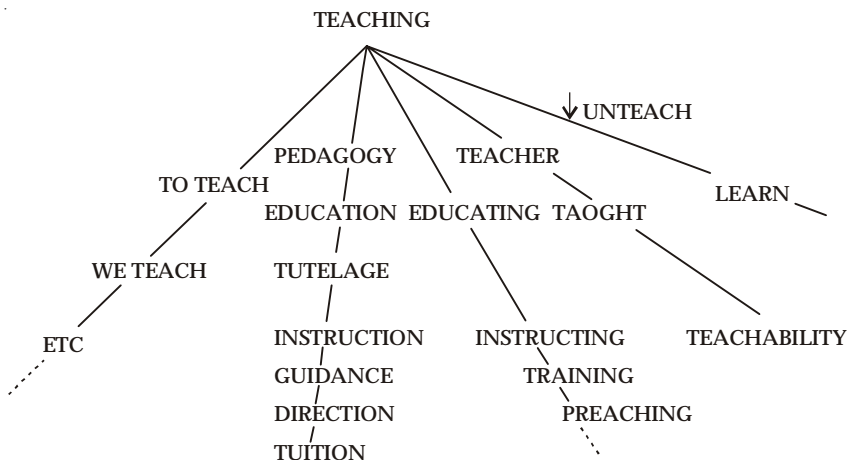


The right section of the circle represent the meaning of house as ‘habitation’; sections on the left represent its meaning as ‘a building belonging to a university,’ ‘a governing body,’ and ‘a group of onlookers,’ leaving space for still other meanings. Similar sets of circles could be produced to represent the meanings of various words and fields throughout the languages.

This approach requires a live and first-hand ‘field’ knowledge of languages as they are actually used; but to date it has produced little to rival the various analytical approaches.

Field Theory of Meaning

Saussure demonstrated that each word in a language is surrounded by a network of associations which connect with still other terms. Some of these connections arise between the five senses (synaesthetic); others between the form or shape of words; while others involve formal and semantic connections. ‘A given term is like the centre of a constellation, the point where other coordinated terms converge, and their sum is indefinite.’ To illustrate this, one can draw up the following diagram :



In the first ‘leg’ of this scheme are the terms ‘to teach’, ‘we teach’, linked by the similarity of grammatical form. Those of the second ‘leg’ (pedagogy, tutelage, education, direction, guidance,

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tuition, instructions, etc.) are linked to the noun **teaching** by synonymy. The words in the third and fourth 'legs' are linked by more than the suffix '-ing', which they all share. The words of the fourth leg are a miscellaneous, accidental grouping, comprising nouns, adjectives, etc. The words of the fifth 'leg' show opposite relationships.

The field theory visualizes the vocabulary as a mosaic on a gigantic scale, which is built up of fields and higher units in the same way as fields are built up by words. The associative field of a word is formed by an intricate network of associations, some based on similarity, others on continuity, some arising between senses, others between names, others again between both. The field is by definition open, and some of the associations are bound to be subjective though the more central ones will be largely the same for most speakers. Attempts have been made to identify some of these central associations by psychological experiments, but they can also be established by purely linguistic methods. The identification of these associations by linguistic methods is done by collecting the most obvious synonyms and antonyms of a word, as well as terms similar in sound or in sense, and those which enter into the same habitual associations. Many of these associations are embodied in figurative language : metaphors, similes, proverbs, idioms, and the link. The number of associations centred in one word will of course be extremely variable and for some very common terms it may be very high.

As one of Saussure's pupils expressed it, 'the associative field is a halo which surrounds the sign and whose exterior fringes become merged.' This field is formed by an intricate network of associations : **similarity, contiguity, sensation, name**. The associative field is by any definition open, that is, no finite limits can be assigned to any given field. Hence the aptness of the concept 'field', which serves an analogous purpose in physics.

According to this approach, words begin to be conceived of as concentrations within a linguistic field, with direction and momentum but with no isolated identity other than that capable of dictionary definition. Words belong in never ending chain-sequences of phrases, sentences, contexts, and to the fabric of the entire language. The analogy is a limited one, but 'they are crudely similar to what is known about the individual atoms of a complex molecule, displacement of a single one of which will affect the nature of the entire complex to a greater or lesser degree'.

In recent years, a lot of work has been done in relation to semantic field. Scholars have investigated lexical systems in the vocabularies of different languages, with particular reference to such **fields** (or **domains**) as kinship, colour, flora and fauna, weights and measures, military ranks, moral and aesthetic evaluation, and various kinds of knowledge, skill and understanding. They have amply demonstrated the value of structural approach to semantics, and have confirmed the pronouncements of such earlier scholars as Von Humboldt, de Saussure and Sapir that the vocabularies of different languages (in certain fields at least) are 'non-isomorphic', that there are semantic distinctions made in one language which are not made in another, and that particular fields may be categorized in a totally different way by different languages. As an illustration of this notion we may take the field of colour or of kinship terms and see how it is determined, or 'informed', in English. The field of colour has been illustrated by a number of scholars.

The etymologist, the lexicographer, and the student of semantic change stand to benefit most from this approach to meaning. This theory has been described as 'Neo-Humboldtian'. Some of its ideas are surely from Humboldt according to whom "each separate language.....should be looked upon as organic whole, different from all the rest and expressing the individuality of the people speaking it; it is characteristic of one nation's psyche, and indicates the peculiar way in which that nation attempts to realize the ideal of speech"

The term 'semantic field' was introduced by G. Ipsen in 1924. According to Duchacek, the term had been used before Ipsen by A. Stohr in 1910. Trier also did some useful work on semantic fields. The progress of the field theory was delayed by the war and its aftermath. In the 1960s, however, there was a considerable revival of interest in it, and in the 1960s it was one of the most active branches of semantics.

Meillet was among the first to argue that one cannot know the exact shade of meaning of a word of even a century ago in one's own language without a close study of the period concerned. An

etymologist has to be steeped in social history and history of ideas, as well as in the literature of the period under consideration.

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Componential Analysis Approach

Componential analysis approach underlies the linguistic theories developed by Katz and Fodor, Weinreich, Beirwisch and others. It is a technique for the economical statement of certain semantic relations between lexical items and between sentences containing them. It is an attempt to describe the structure of vocabulary in terms of a relatively small set of very general elements of meaning called 'components', 'markers', or 'sememes', and their various possible combinations in different languages. It tries to discover the ultimate meaning units out of which a particular set of words appears to be composed in some systematic way. Some segments of vocabulary can be better analysed by this method, for example, kinship systems, pronoun systems, colour terms, and sometimes words for discussing various kinds of flora and fauna. Through componential analysis, we can find out how speakers use the vocabulary of a language in order to classify reality by referring to certain parameters of meaning and can establish how parameters such as sex, sanguineness, and generation are used to provide componential meaning.

The term 'componential analysis' in semantics is best explained by means of a simple example by linguists :

- | | | | |
|----|-------|-------|----------|
| 1. | man | woman | child |
| 2. | bull | cow | calf |
| 3. | ram | ewe | lamb |
| 4. | drake | duck | duckling |

When we consider these sets of English words we can, on the basis of our intuitive appreciation of the sense of these words, set up such proportional equations as the following

"man : woman : child :: bull : cow : calf"

This equation bears proof to the fact that, from the semantic point of view, the words **man**, **woman** and **child**, on the one hand, and **bull**, **cow** and **calf**, on the other have something in common. What **man** and **bull** have in common is not shared by **woman** and **cow**, and what **calf** and **child** have in common is not shared by either **bull** and **man** or **cow** and **woman**. What these different groups of words have in common is called a **semantic component** (other terms used for it are 'plereme', 'sememe', 'semantic marker', 'semantic category'). Thus the sense of **man**, according to componential analysis is the product of the component (male), (adult), (human); that the sense of **cow** is the product of (female), (adult) and (equine); and so on.

In order to understand the meaning of a sentence and its semantic relations to other expressions, one must know not only the meaning of its lexical elements, but also how they interrelate. Besides commonness of components, the elements of the vocabulary are connected to each other by other relations such as 'pertinence relation', 'selection restrictions'.

Basic assumptions of componential theories of semantics : The assumption upon which current componential theories of semantics are based or with which they are frequently associated, the first is the assumption that the semantic components are 'language-independent, or universal'. The semantic components may be combined in various ways in different languages, yet they would be identifiable as the 'same' components in the analysis of the vocabularies of all languages. As Katz says :

"Semantic markers (i.e. semantic components) must.....be thought of as theoretical constructs introduced into semantic theory to designate language invariant but language linked components of a conceptual system that is part of the cognitive structure of the human mind".

In matters of kinship, colour, artifacts, artifices, needs and functions of physical qualities, semantic components may be universal, but they are not universal in many other areas.

The second assumption is that propositional equations with respect to the sense of lexical items should be established. These propositions are cognitively valid, and can be set up on the basis of

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introspection. As Bierwisch says, 'all semantic structure might finally be reduced to components representing the basic dispositions of the cognitive and perceptual structure of the human organism'. Whereas other semantic approaches regard the meanings of lexical items as unanalysable or undefinable wholes, this approach defines the meaning of a lexical element explicitly in terms of semantic components.

These components or categories are not a part of vocabulary of the language itself, but rather theoretical elements 'postulated in order to describe the semantic relationship between the lexical elements of a given language.' These components are connected again by 'logical constants.' For example, Bierwisch's following analysis :

1. boy : ANIMATE and HUMAN and MALE and NOT ADULT.
2. girl : ANIMATE and HUMAN and FEMALE and NOT ADULT.
3. Man : ANIMATE and HUMAN and MALE and ADULT.
4. Woman : ANIMATE and HUMAN and FEMALE and ADULT.

A system of such explicitly defined lexical elements, as suggested by Bierwisch, might be supplemented by a set of implicational rules of the following type :

1. HUMAN ANIMATE
2. MALE not FEMALE
3. FEMALE not MALE
4. MALE ANIMATE
5. FEMALE ANIMATE

These implicational rules automatically complete a redundancy free entry like the (1a) to its fully specified (1b)

1a. boy : HUMAN and FEMALE and not ADULT.

1b. boy : ANIMATE and HUMAN and MALE and not FEMALE and not ADULT.

'Rules of this type', remarks Bierwisch, 'not only simplify the necessary dictionary specifications; they also express relevant generalization about the semantic structure of the vocabulary described'.

Semantic Features

Within generative-transformational theory meaning is studied through semantic features where the deep syntactic structures of a sentence and the meaning of words used in that structure **together** represent the total meaning of the sentence. Features mention the permissible relationships among words. For example, in the following sentences :

That's a fond hope
The house remained empty
The cat died
The man spoke

a linguist may chose to assign at least the following semantic features to the nouns :

[hope]	house]	[cat]	[man]
[+noun]	[+noun]	[+noun]	[+noun]
[—concrete]	[+concrete]	[+concrete]	[+concrete]
<—animate>	<—animate>	<+animate>	<+animate]
[—human]	[—human]	[—human]	[+human]
[—count]	[+count]	[+count]	[+count]
[—definite]	[+definite]	[+definite]	[+definite]

31.7 Summary

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- The study of meaning and its manifestation in language is normally referred to as semantics from the Greek noun **sema** 'sign', signal; and the verb **semains** 'signal, mean, signify'. The *Shorter Oxford Dictionary* glosses the term semantics as 'relating to signification or meaning'. Broadly speaking, semantics is that aspect of linguistics which deals with the relations between referents (names) and referends (things)—that is, linguistic levels (words, expressions, phrases) and the objects or concepts or ideas to which they refer—and with the history and changes in the meaning of words. Diachronic (historical) semantics studies semantic change, whereas synchronic semantics accounts for semantic relationship, simple or multiple.
- Although the structuralists tried to study language without meaning, the importance of meaning has been recognized since time immemorial. In the *Vedas*, meaning is treated as the essence of language, and the speech without meaning has been called 'the tree without fruits and flowers.' Ancient Indian scholars such as Katyayana, Patanjali, Vyadi, Vyas, etc. regard the relationship of word and meaning as **eternal**.
- There is a good number of semantic theories. Each of them defines meaning in its own manner. Ogden and I.A. Richards in their book *Meaning of Meaning* cite no less than sixteen definitions of meaning. To Ludwig Wittgenstein (*Philosophical Investigations*) the meaning of a word or expression is neither more nor less than its use. Usage, not meaning, is the right basis. Bloomfield defines meaning as 'the situations in which the speaker utters it and the response which it calls forth in the hearer' (*Language*, New York : 1933 : 139). According to Harris, "the meaning of an element in each linguistic environment is the difference between the meaning of its linguistic environment and the meaning of the whole utterance.
- Linguists and earlier scholars of language often had very clear ideas about the importance of meaning and the need for its study. There were, to begin with, numerous preconceptions and false ideas about the nature of meaning which hindered clear thinking, but which it was difficult to get rid of because of their separable ancestry. One was the tendency to identify words and things or to think that meaning were somehow concrete entities— words would be called 'dirty', 'dangerous', 'beautiful', and so on, instead of the objects or events being referred to. This conception goes back to Plato.

31.8 Key-Words

1. Flat/plain : Flat sounds are those in the pronunciation of which there is a gradual widening of the resonator either in the front or the back of the oral cavity. When the resonator is narrow, we have plain sounds.
2. Sharp/plain : Palatalisation occurs in sharp sounds when there is an 'upward shift of some of the upper frequency components'. Back part of the mouth resonator is dilated, while palatalisation restricts the cavity. This is not distinctive in English.
3. Diaphone : The term diaphone is suggested to denote a sound used by one group of speakers together with other sounds which it consistently in the pronunciation of other speaker". Again, Jones says - "A family of sounds consisting of an 'average' sound used by many speakers in a given word together with deviations from this used as equivalents by other speakers may be called a "diaphone"

31.9 Review Questions

1. What is semantics ?
2. State the major difficulties faced in the study of meaning.
3. Distinguish between lexical meaning and grammatical meaning.

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4. Discuss briefly the major semantic theories.
5. Comment on semantic Features. What do you understand by componential theories of semantics?
6. “There have been, in recent years, notable attempts to study all the various relationships of meaning which exist between words in particular language, an approach known as structural semantics”.
Referring to some of the relationships mentioned in the above statement, discuss the problem of meaning.
7. “When we discuss linguistic forms that is the two levels of grammar and lexis, we are describing the meaningful internal patterns of language : the way in which a language is internally structured to carry contrasts in meaning.” Discuss.

31.10 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
2. An Introduction to Linguistics, John Lyon.
3. Peter Roach: English phonetics and phonology. Cambridge University Press.
4. Encyclopedia of Linguistic Science Edited By V. Prakasam, Allied Pub., New Delhi.

Unit 32: Synonymy, Antonymy, Polysemy, Homophony and Ambiguity

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Objectives

After reading this Unit Students will be able to:

- Discuss synonymy, antonymy
- Understand polysemy, homophony of ambiguity

Introduction

Sometimes a lexical word appears to have more than one meaning. But the additional meanings are seen as derived from the basic meaning of the word through metaphorical or figurative extension. This situation is defined as polysemic.

Homonymy, on the other hand, occurs when two or more lexical words are represented by the same phonological or orthographic word (*i.e.* same pronunciation, same spelling but entirely different meanings.)

In short, if the same word-shape belongs to two different lexemes (*i.e.* has two different meanings), it is a case of homonymy. If the meanings are related, *i.e.* one meaning can be derived from another by metaphorical or figurative extension, it is a case of polysemy. Examples of homonymous words are Bat, Bank, Port etc. They allow one-many relationship between the phonological/orthographical word and lexical word. Examples of polysemic words are: mouth (child's mouth or river's mouth).

Both polysemy and homonymy, essentially mean formation of new words without involving any morphological change or change in grammatical category of the word.

It only involves modification (extension or narrowing) of the meaning of already existing words. Both create new words in the sense that they create new uses from old words. Sometimes it results

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in the creation of a new lexical word, adding to **homonymy**, but mostly it just adds another sense to the words and leads to more **polysemy**.

The vocabulary of a language contains a number of **lexical systems** the semantic structure of which can be described in terms of paradigmatic and syntagmatic sense-relations, or name-sense relationship which can be divided into five categories :

1. Synonymy
2. Hyponymy and Incompatibility
3. Antonymy, Complementarity and Converseness
4. Polysemy
5. Homonymy

32.1 Synonymy

One sense with several names is synonymy, that is two items are synonymous when they have the same sense. Lexical items can be regarded as synonymous if they can be interchanged without altering the meaning of an utterance :

e.g. I saw a **madman**.

I saw a **lunatic**.

I saw a **maddy**.

I saw a **bedlamite**.

According to John Lyons, the term 'synonymy' has two interpretations—a stricter and a looser. The looser interpretation has been illustrated by him by means of a quotation from Roget's **Tesaurus** : "Suppose we take the word 'nice'. Under it (in the Index) we will see..... various synonyms representing different shades of meaning of the word 'nice' ". The 'synonyms' given for nice in die Index are **savoury, discriminative, exact, good, pleasing, fastidious** and **honourable**. All these words and expressions are 'synonymous' with **nice** under the looser interpretation of the notion of synonymy.

32.2 Qualification of Synonymy

It is often suggested that synonymy is a matter of degree; that any set of lexical items can be arranged on a scale of similarity and difference of sense, so that, for example a and b might be shown to be identical in sense (strictly synonymous), a and c relatively similar in sense (loosely synonymous), a and d less similar in sense, and so on' (Lyons, *Introduction to Theoretical Linguistics*).

32.3 'Total Synonymy' and 'Complete Synonymy'

Dr. Johnson once remarked, 'words are seldom exactly synonymous'. Macaulay also observed : 'Change the structure of the sentence; substitute one synonymy for another and the whole effect is destroyed'. To quote Ullmann : 'it is almost a truism that total synonymy is an extremely rare occurrence, a luxury that language can ill-afford'. "Only those words", says Ullmann, "can be described as synonymous which can replace each other in any given context without the slightest change either in cognitive or emotive import". The two conditions for '**total** synonymy' are therefore (i) interchangeability in all contexts, and (ii) identity in both cognitive and emotive import. We will discuss the validity of the distinction between 'cognitive' and 'emotive' below. On the basis of this distinction, Lyons restricts the term **total** synonymy to those synonyms (whether complete or not) which are interchangeable in all contexts; and used the **complete** synonymy for equivalence of both cognitive and emotive sense. This scheme of classification allows for four possible kinds of synonymy :

32.4 'Cognitive' and 'Emotive' Meaning

1. complete and total synonymy;
2. complete, but not total;
3. incomplete, but total;
4. incomplete, and not total.

The distinction between 'cognitive' and 'emotive' meaning is based on mental faculties such as intellect, on the one hand, and the imagination and the emotions, on the other. It is often said that by contrast with the vocabulary of scientific and technical discourse, the words of 'everyday language' are charged with emotional 'associations' or 'connotations', over and above their primary, purely 'intellectual' meaning. As cited by Ullmann, **liberty-freedom**, **hide-conceal** are cognitively synonymous. One word may be preferred to another because of its different emotive or evocative associations. But the extent to which this is of importance varies considerably from one style or situation to another. Since we are concerned with the moral general principles of semantic structure, we would not discuss various factors responsible for the acceptability of particular forms rather than with their sense or reference. Rather we would prefer to restrict the term 'synonymy' to 'cognitive synonymy'.

32.5 Hyponymy and Incompatibility

32.5.1 Hyponymy

Hyponymy is frequently referred to as 'inclusion' or 'classification'. For example, the 'meaning' of **scarlet** is said to be 'included' in the 'meaning' of **red**; the 'meaning' of **red** is 'included' in the 'meaning' of **blood**; the 'meaning' of **rose** is said to be 'included' in the 'meaning' of **flower**; and so on. This formulation of the relationship of 'inclusion' rests upon the notion of reference.

The way of examining vocabulary is to note the ways in which a language classifies units. In English, for, example, **dogs** and **cats** are classified as **domestic animals**. **Lions** and **tigers** are classified together under the general heading of **animals**. And **animals** and **human beings** both come under the heading of **animate beings**.

The vocabulary of English is classified in this way in Roger's **Thesaurus**. Each entry has under it a list of hyponyms (i.e. things classified under it).

32.5.2 Incompatibility

Incompatibility is generally defined on the basis of the relationship of contradictoriness between sentences. For example, the following simple, and familiar example from the colour-terms in English. If someone says **John was wearing a red hat**, this will be understood as implicitly denying **John was wearing a green (blue, white, yellow, etc.) hat**. And the substitution of any one of the terms in the set **green, blue, white, yellow, etc.** for **red** would also be taken as implying the denial of **John was wearing a red hat**. The colour-terms therefore form a set of incompatible lexical items.

32.6 Antonymy, Complementarity and Converseness

Oppositeness of meaning has been one of the most important semantic relations. In many languages there are dictionaries of synonyms and antonyms, the study of opposites is quite complex. Some writers use the term **antonym** for all types of opposite, others divide 'oppositeness of meaning' into three sub-categories :

1. complementarity.
2. antonymy, and
3. converseness.

32.6.1 Complementarity

Complementarity is the relation of oppositeness in pairs of lexical items where the denial of the one implies the assertion of the other and the assertion of the one implies the denial of the other. Thus **James is not married** implies **James is single**; and **James is married** implies **James is not single**. In the case of those terms for which Lyons reserves the term ‘antonymy’ (e.g. **good-bad**; **high-low**). Only the second of these implications holds **James is good** implies the denial **James is bad** but **James is not good** does not imply the assertion of **James is bad**.

32.6.2 Antonymy

Antonymy is the relation of oppositeness in pairs of lexical items where the assertion of one implies the denial of the other. For example, **big** and **small**, **little** and **much**, **few** and **many**. These are ‘opposites par excellence.’ They are regularly gradable, that is, bound up with the operation of comparison : e.g.

Our house is bigger than yours used to be both implies, and is implied by, **your house used to be smaller than ours is**; **Our house is bigger than yours** implies and is implied by **your house is smaller than ours**; and **our house is bigger than it used to be** implies and is implied **our house “used to be smaller than it is (now).**

32.6.3 Converseness

“The third sense-relation which is frequently described in terms of “oppositeness” is that which holds between **buy** and **sell** or **husband** and **wife**. We will use the term **converseness** to refer to this relation. The word **buy**, is the converse of **sell**, and **sell**, is the converse of **buy**.” (John Lyons) Since parallelisms exist between antonymy and complementarity, a number of linguists do not make such distinctions and regard all relations of oppositeness as ‘antonyms’.

32.7 Polysemy

Polysemy or poly semantic is generally defined as “having several, often quite different, meanings, all derived from the basic idea or concept” (*Dictionary of Linguistics*, 1954). The lexicographer lists homonyms as different words, whereas polysemy is a term used in traditional semantics for the words having multiple meaning but given under one entry by the lexicographer. For example, ‘human head’, ‘head of department’, ‘bridgehead’. Hence polysemy means that one word can have more than one sense. The distinction between homonymy and polysemy is by and large indeterminate and arbitrary, resting upon either the lexicographer’s judgment about the plausibility of the assumed ‘extension’ of meaning or some historical evidence that the particular ‘extension’ has in fact taken place.

The most prevalent type of polysemy is the result of ordinary contextual **shifts in application**. Adjectives are particularly prone to this kind of shift. For instance the different meaning of **red in red ink, red deer, red cabbage and Red Indian**.

Specialization in milieu is another common cause of polysemy, e.g. **partner**, in **business partner, marriage partner, partner in crime, room partner**. **Partner** contains the basic meaning of a type of a relationship between two (or more) people. But a **business partner** is not what a **marriage partner** is.

Another, and very frequent type of polysemy, is that created by **metaphor**, e.g. **human body, heavenly body, body politic, body (of a liquid)**, etc.

32.8 Collocation

While studying the structure of the vocabulary, **collocation** can be defined as the association of a lexical item with other lexical items. It refers to the syntagmatic, horizontal relationship of lexical items (derived from the **Latin colloco** to be in same place with). **Ink**, for example, collocates with (is found with) words such as **pen, paper, letter, note-book, inkpot, blue, red, green, royal blue,**

etc. **Red** collocates with **roses, blood, ink, apple, tomato**, etc. **Sea** collocates with **rough, cruel, raging blue**, etc. **Climb** collocates with **mountain, hill, tree, peak**.

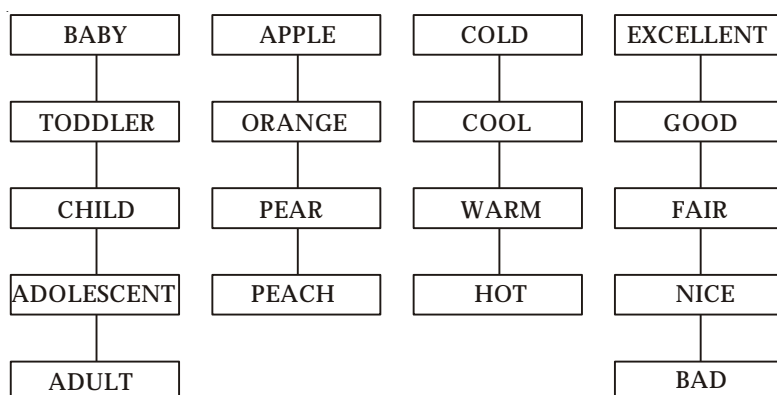
Collocation (Syntagmatic)

The mountaineer climbed to the top of the mountain peak.

But care should be taken while studying idioms, cliches and compound words which pose problems, and cannot be dissected satisfactorily.

32.9 Sets

The relationship of collocation enables us to group items into lexical sets. The lexical set is formally defined as a grouping of words having approximately the same range of collocations, having the same contextual range, functioning in the same situation types. Whereas collocation refers to the syntagmatic relationship, set refers to paradigmatic, vertical relationships of lexical items. A lexical set, therefore, is 'a group of lexical items from a similar class which seem to belong together'. Each item in set is defined by its place in relation to the other members of the set. **Adolescent**, for example, is the stage of growth between **child** and **adult**. **Cool** is the temperature between **cold** and **warm**. Similarly **good, bad, nice, excellent, fair** are items of a set.



From the above table the impression should not be formed that a semantic field is divided up like a smooth mosaic. In fact, the items overlap, leave gaps and have fuzzy edges.

Furthermore, in two sets such as (1) **dog, ran, stairs**; and (2) **a, the, down** the, the first set (dog, ran, stairs) is of **content** words and the second one (a, the, down) is that of **structure** words. The content words refer to 'things', 'actions' or 'events' in the real world, whereas the **structure** words do not have this quality. In the former set, all the words can be inflected; **dog** and **stair** for 'plural' (**dogs** and **stairs**) and **run** for past tense; (ran). But in the latter set, **a, the,** and **down** cannot be inflected. Thirdly, the first set is an 'open' set whereas the second set is a 'closed set', that is words capable of taking inflections are being added to the language continually as new nouns and verbs are created, but, no new determiners (**a, the**) or prepositions (**down**) are being created in the same manner. A closed set of items is one of fixed and usually small membership : e.g. the set of personal pronouns, tense, genders, etc. An open set is one of unrestricted, indeterminately large, membership, e.g. the class of nouns or verbs in a language. Thus grammatical items belong to closed sets, and lexical items to open sets.

Difference between Collocation and Set

Collocation is outside grammar; it has no connection with the classes of the word. It is syntagmatic. Set is the closest analogy to the grammatical system; it is a set of possible terms available for choice under the same grammatical conditions. In collocation the choice is limited, in lexical set the choice is not limited. The former is an open system, the latter closed. The one is syntagmatic, horizontal; the other paradigmatic, vertical.

32.10 Componential Analysis

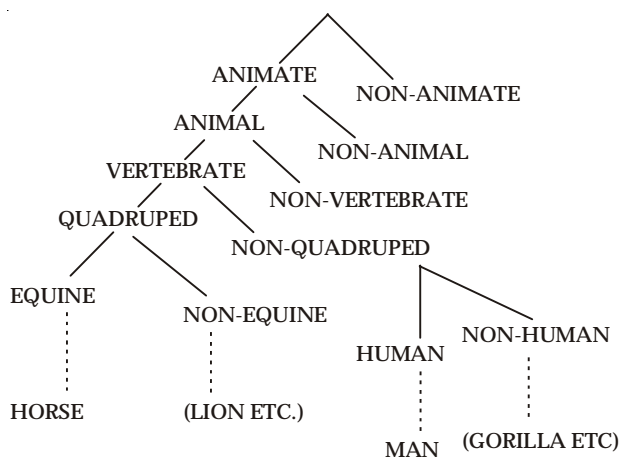
The study of collocation, sets, synonyms, opposites and classification, polysemy, homonymy enables a useful grid of internal relationships between lexical items to be drawn up. But there still remains a problem. How in a semantic analysis, can one account for the fact that lexical items overlap? **Cow**, and **woman** and **tigress**, for example, all contain some element of **femaleness**. **Bull** and **cow** both contain some element of **bovineness**. **Calf** and **puppy** and **baby** all contain an element of **non-adulthood**.

Such reasoning has led to attempts to split items up into their component parts, or features. **Woman**, for example, is said to contain the semantic features of FEMALE, HUMAN, ADULT. **Cow** has the features of FEMALE, BOVINE, ADULT. The list of features is inexhaustive.

This type of analysis is comparable to distinctive feature analysis in phonology. This technique has only been exploited recently by linguists, and is known as componential analysis.

Hierarchical Structure of Semantic Features

Several attempts have been made recently to classify the semantic features in certain fields into a hierarchy, in which more general features appear near the top and more specific ones lower down. The following diagram is widely used to illustrate this point in linguistic circles :



It is obvious from the above drawing that the number of semantic features varies from lexical item to lexical item. Fairly general items such as **human being**, **animal**, **foodstuff** have relatively few components. But more specific items such as **bus-conductor**, **giraffe**, **cheese** have a larger number.

And more specified features (features low down on the tree) imply more general features (features higher up on the tree). So the feature EQUINE implies also the features QUADRUPED, VERTEBRATE, ANIMAL and ANIMATE.

But binary splits are not always possible. In some semantic fields, pairs are difficult to identify—and may be non-existent. A notorious example is the field of colours. Another problem is that features cannot always be organised hierarchically. In features such as MALE and ADULT, there is no reason to suppose that the feature ADULT is more general than the feature MALE or that the feature MALE is more general than the feature ADULT. Neither implies the other, so they cannot be a hierarchy. Features such as these which cannot be hierarchically classified in relation to one another, are known as classifying features.

32.11 Summary

- One sense with several names is synonymy, that is two items are synonymous when they have the same sense. Lexical items can be regarded as synonymous if they can be interchanged without altering the meaning of an utterance :
e.g. I saw a madman.
I saw a lunatic.
I saw a maddy.
I saw a bedlamite.
- Hyponymy is frequently referred to as ‘inclusion’ or ‘classification’. For example, the ‘meaning’ of scarlet is said to be ‘included’ in the ‘meaning’ of red; the ‘meaning’ of red is ‘included, in the ‘meaning’ of blood; the ‘meaning’ of rose is said to be ‘included’ in the ‘meaning’ of flower; and so on. This formulation of the relationship of ‘inclusion’ rests upon the notion of reference.
- Oppositeness of meaning has been one of the most important semantic relations. In many languages there are dictionaries of synonyms and antonyms, the study of opposites is quite complex.
- Antonymy is the relation of oppositeness in pairs of lexical items where the assertion of one implies the denial of the other. For example, big and small, little and much, few and many. These are ‘opposites par excellence.
- Polysemy or poly semantic is generally defined as “having several, often quite different, meanings, all derived from the basic idea or concept” (*Dictionary of Linguistics*, 1954). The lexicographer lists homonyms as different words, whereas polysemy is a term used in traditional semantics for the words having multiple meaning but given under one entry by the lexicographer. For example, ‘human head’, ‘head of department’, ‘bridgehead’.

32.12 Key-Words

1. **Homonymy** : It occurs when two different lexical words share the same word-shape, e.g. when they are represented by the same phonological word: bat, the animal, and **bat**, the cricketer’s implement are an example of a homonymous pair.
2. **Polysemy** : It occurs when the meaning of a lexical word is extended in such a way that it can be applied to another idea or object by some reinterpretation of the original meaning. For example, we can apply the word mouth to a bag, a cave, a bottle, a tunnel, etc., by extending its original meaning to ‘an opening’.

Notes

32.13 Review Questions

1. Distinguish between collocation and set.
2. What is **polysemy** ? Give some illustrations of polysemy.
3. What is synonymy ?
4. Distinguish between **total synonymy** and **complete synonymy**.
5. Define and illustrate **hyponymy**. How does it differ from incompatibility ?
6. Distinguish three types of **opposites** found in language.
7. What is **componential analysis** ?
8. What is meant by the **hierarchical structure** of semantic features ?

32.14 Further Readings



1. Verma, S.K., V.N. Krishnaswamy. Modern Linguistics: An Introduction.
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3. Peter Roach: English phonetics and phonology. Cambridge University Press.
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LOVELY PROFESSIONAL UNIVERSITY

Jalandhar-Delhi G.T. Road (NH-1)

Phagwara, Punjab (India)-144411

For Enquiry: +91-1824-300360

Fax.: +91-1824-506111

Email: odl@lpu.co.in