CHAPTER-3
ANALYSIS OF SPEECH

3.1 THE SYLLABLE

The concept of a unit at a higher level than that of the sound segment, yet distinct from that of the word or morpheme is useful for analysing speech. Attempts have been made to define the term “syllable”. These attempts fall into two categories.

(i) The Phonetic Approach

(ii) The Linguistic Approach

(i) The Phonetic Approach:

a) The Prominence Theory:

In any utterance some sounds are said to be more prominent than others, i.e., they are felt by listeners to stand out from their neighbours. For example, in the word examination /ɪgˈzæmiˈneɪʃn/ such peaks of prominence are carried by, i,æ,i,e,i,n.

The number of syllables being determined by the number of peaks of prominence, there are in this case five syllables.

b) The Pulse Theory:

This theory is concerned with the muscular activity controlling lung movement which takes place during speech and
which is capable of being investigated by experimental methods. In any utterance, there are a number of chest pulses, accompanied by increases in air pressure, which determine the number of syllables uttered. Such a theory suggests that the syllable rather than the sound is the basic unit of speech. Consonantal sounds act typically as the onset (releasing factor) and closure (arresting factor) of the syllable, while vowel sounds are nucleas to the syllable and render the chest pulse audible. For example, in the word beat /biːt/, /b/ is the releasing consonant, /iː/ is the nucleus and /t/ is the arresting consonant. When a chest pulse is produced by greater muscular action it is called a reinforced chest pulse. A syllable produced by a reinforced chest pulse is called a stressed syllable. For example, the word academic /əˈkædəmɪk/ has four syllables and the second syllable is stressed.

(ii) The Linguistic approach:

A syllable, in this particular approach, is defined in terms of a particular language rather than in general phonetic terms. For example, a sound sequence such as [ŋaː] might be found to consist of three units in one language [ŋ'-ga-a], two in another [ŋ'-ga.] and even one in a third [ŋaː]. So, depending on the structure of a language it may be appropriate to divide a similar sound sequence differently in different languages.
On the other hand, a statement about syllables of a language may refer to the way in which sound segments combine. That is, sound segments have a typically central position while others are more typically marginal in their position. For example, in the word bat /bæt/, /b/ and /t/ are marginal and /æ/ is central.

3.2 ANALYSIS OF THE SYLLABLE

Analysis of the syllable means primarily analysis of the associated articulatory, voicing and nasalizing movements. Such an analysis is not an easy task, and although anyone can divide speech up into syllables quite successfully, it is only with great difficulty that one can split up any further into smaller units. At this point, it might be useful to say something about the difficulties involved in the analysis of the syllable. Given below are a few notable difficulties.

(a) The articulatory movements to be analysed are very complex since, lips, jaw, tongue, velum, vocal cords, lung muscles—all take part in them. A great deal is going on simultaneously.

(b) The movements are very rapid, even when the resulting speech would be considered slow speech. When one talks at normal speed, for instance, the tongue alone may make as many as twelve adjustments of shape and position per second.
The movements are very small. The human ear is sensitive to the effect of tiny adjustments of the tongue, lips and other articulatory organs. The adjustments may be so small that they can be measured only with difficulty, though the differences in the sounds produced are apparent enough.

The movements are continuous; seldom are the articulatory organs maintained, even for a fraction of a second, in anything that could be called a posture.

These difficulties are increased by the fact that any action which is normally performed unconsciously is difficult for the performer to analyse. Most systems of writing invented by man have been syllabic systems, but not all. The invention of a system of writing based on segments of the syllable has taken place once; it was the brilliant discovery of the Greeks, and it gave alphabetic, as distinct from syllabic, writing.

3.3 VOWEL AND CONSONANT

Analysis of the syllable yields segments of the syllable, which are successive points in the complex sequence of movements of which the syllable consists. These segments fall into two classes, vowels and consonants.

A vowel is the nucleus or the central part of the syllable and symbolised by $V$, and a consonant on the other hand is a
marginal part and symbolised by \( C \).

The syllable hat \( /hæt/ \) has the structure CVC—the vowel \( /æ/ \) is its nucleus and \( /k/ \) and \( /t/ \) are on either side of the nucleus. There is thus a releasing consonant, the nucleus and an arresting consonant. A syllable which is arrested by a consonant is said to be a closed syllable, and one which has no arresting consonant is said to be an open syllable.

3.4 SYLLABLE STRUCTURE

The symbol \( C \) is used to represent a consonant and \( V \) to represent a vowel. For example, the word book \( /buk/ \) has the structure CVC. The structure of a syllable \( /buk/ \) can be shown thus:

\[
\begin{array}{ccc}
C & V & C \\
\text{releasing} & \text{nucleus} & \text{arresting} \\
\text{consonant} & \text{consonant} & \text{consonant}
\end{array}
\]

releasing, nucleus, arresting consonant. The word eye \( /æ/ \) is made up just one speech sound, the diphthong \( /æ/ \). This is the nucleus of the syllable and it has no consonant before or after it. Thus the structure of the syllable is \( V \).
3.4.1 Monosyllabic words:

Here are a few more examples of the syllable structures:

(i) CVC

hat /hæt/
phone /fəun/
ring /rɪŋ/
gas /gæs/

(ii) V

| /aɪ/
air /eɪə/
ear /iəə/
a /eɪə/

oh /əʊ/
The r in the spelling is not pronounced in RP, except in connected speech when the word is followed by a vowel.

(iii) CV

he /hɪə:/
day /deɪə/

(iv) VC

ls /lɪz/
all /ɔːl/
who /huː/  eat /lːt/  
law /lʌː/  ass /æs/

In monosyllabic words stress is not marked.

3.4.2 Disyllabic Words- (i.e. words of two syllables each)

about /əˈbɔːt/  V-CVC  
study /ˈstʌ-də/  CCV-CV  
letter /ˈle-tə/  CV-CV  
effect /ɪˈfɛkt/  V-CVCC  
expert /ˈeks-pɜːt/  VCC-CVC

3.4.3 Trisyllabic words- (i.e. words of three syllables each)

civilize /ˈsɪvəl-əˌlaɪz/  CV-CV-CVC  
episode /ˈe-pɪ-əʊd/  V-CV-CVC  
develop /dɪˈvɛl-əp/  CV-CV-CVC  
usually /ˈjuːʒuə-li/  CV-CV-CV  
linguistics /ˌlɪŋ-ˈgwɪs-tɪks/  CVC-CCVC-CVCC

3.4.4. Words of more than three syllables each

photographic /ˈfəʊ-tə-ˈgræ-fɪk/  CV-CV-CCV-CVC  
electricity /ˈɛl-ɪk-ˈtrɪs-tɪt/  V-CVC-CCV-CV-CV
laxicographer /læk-sɪ-ˈkɒ-grə-fə/ CVC-CV-CV-CCV-CV
luxuriously /ˈlʌg-ˈʒʊd-riˈdəs-li/ CVC-CV-CVC-CV
tantalizing /ˈtæn-təl-ˈlaɪz-ɪŋ/ CVC-CV-CVC-VC

A careful look at the structure of the above syllables indicates that in English, 0-3 consonants can occur in the beginning of a syllable and 0-4 consonants at the end. It is also clear that the V element is obligatory and C element optional. The nucleus of a syllable is a vowel or a syllabic consonant.

3.5 SYLLABIC CONSONANTS

A syllable consists of vowels and consonants. The nucleus or the central of a syllable is normally a vowel sound and the marginal elements are usually consonants. There are however, some syllables in which the nucleus is a consonant. Consider the following examples:

settle /sæ-tl/ CV-CV
kettle /ˈke-tl/ CV-CV
cattle /kæ-tl/ CV-CV
little /lɪ-tl/ CV-CV
cotton /ˈkɒ-tn/ CV-CV
sudden /sʌdn/ CV-CV
rhythm /ri-dm/ CV-CV
battle /bæ-tl/ CV-CV
mutton /mʌtn/ CV-CV

The second syllable of each of these words is marked CV, though the final sound in these words is /n,l/, /m/ which are consonants. These consonant sounds constitute the nucleus of the syllable and known as syllabic consonants and can be phonetically represented as [m n l].