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Syllable in Phonetic theory

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَاصْبِرْ لِحُكْمِ رَبِّكَ فَإِنَّكَ بِأَعْيُنِنَا

صدق الله العلي العظيم

(الطور: ٤٨)

In the name of Allah, Most Gracious, Most Merciful.

Now await in patience the command of thy Lord: for verily thou art in Our eyes and celebrate the praises of thy Lord the while thou standest forth. (Ali Yusuf, The Meaning of The Noble Qur'an , 2006 :393). (Al Tur: 48)

Dedication

TO

Our Parents

Our Teachers

Our dearest Brothers and Sisters

And everyone supported us

ACKNOWLEDGEMENTS

Firstly, We would like to express my deepest gratitude to the source of our inspiration, the prophet Mohammed and twelfth imams (peace and prayer be upon them). We would like to thank Mr. Kareem my supervisor, for great help , patience , and precious guidance in writing my research paper.

We are deeply grateful to our families. Love and support from our beloved parents and sisters never fail to keep us working on this paper.

We would like to thank our best Friends for giving us constant encouragement. All of them have been our enduring source of strength.

Abstract

Syllable is a linguistic significant unit or building block as it has a binary – branching constituents within the hierarchical prosodic structure just like that of the syntactic tree .

The study is divided into two chapters , the first focuses on definition of syllable, types of the syllable , syllable theory , and syllabification . Chapter two sheds light on how to syllabify, di syllabic words, tri syllabic words and how to syllabify complex and compound words .

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Chapter one

1.1 Introduction

Syllable is a linguistic significant unit or a building block as it is a binary _branching constituent within the hierarchical prosodic structure just like that of the syntactic tree (Selkirk,1982: 329).

Syllable is composed of vowel as its peak and consonant as margins . It is the domain of stress patterns . It influence the linguistic rhythm as well as the poetic meter (Geoffrey , 1993: 81).

There are four types of syllables :Minimum syllable (an only vowel syllable) whether the vowel is pure diphthong or triphthong as its peak such as $\alpha:$, O: , αi . open syllable (syllable that has an onset and peak) cv or vvc or cvv such as $k\alpha:$, $hi:$, $si:$. Closed syllable (that has peak and coda) vc or vvc or vcc such as $i:t$, $i:z$, æt , æm and maxim syllable (syllable that has onset , peak , and coda) cvc , cvcc or cvvc such as buk , $l\text{ʊ}k$, $s\text{æ}d$, $m\text{æ}d$ (Wilson , 1996 :1).

1.2 Theories of Syllable

A number of studies have been made to explain theories of syllable . phonetically speaking one of the most important theories is “the chest pulse theory “ which tackles the syllables , in the context of muscular activities and lung movements in the process of speech . Experiments , which have shown that the number of chest pulses , accompanied by the increase of air pressure ,can determine the number of syllables produced , thus , allowing associate with the number of pulses . This theory can not account for cases when two vowel occur one after another e.g

"Being (bi:In) " The second chest pulse must be almost irrelevant and thus leads erroneously to the conclusion that such English words consist of one syllable only (Roach , 2014 ,p 1).

Another well-known theory is “the prominence theory “ which takes the syllable form a phonological point of view and depends on auditory judgment , I.e. , the number of prominence in the word e.g

"Beautiful ----- (byootəfəl) (bju:tɪf)"

For example , the peaks of prominence are presented by the vowel phonemes (I , u) , respectively . however this theory doesn't

help much in the problem of division of the syllable (Gimson , 1989 : p 52).

Another theory is the “Sonority Theory” in which the pulses of pulmonic air stream in speech corresponds to peak in the flow rate of pulmonic air . Thus , the nucleus elements or syllabic segment are described as intrinsically more sonorant than marginal or non-syllabic segment . speech sounds can be ranked in terms of their intrinsic sonority scale as in e.g

More sonorous	=	Vowels
		Approximants
		Nasals
Less sonorous	=	Fricative
		Affricatives
		Plosives

The sonority scale of the word træ:ning [treiniŋ] in the example above peaks of sonority can be seen in the linear sequence of phonemes /tr – ei – n –i-ŋ / i.g the diphthong /ei/ and the pure vowel /i/ . Thus , the number of the syllable is two (Rogers , 2000: 268).

Theories of syllable structures often assume a maximal syllable size are in principle good . for example , if the maximal size is ccvcc , then cvcc , ccvc ,cvc and cv are generally good . It’s well –known that word – medial syllable are generally quite simple , but extra consonants can occur at word edges . Therefore the maximal

syllable size is mainly related to how we treat word – edge consonants. Consider words –final consonants in English several approaches e.g . Rhyme size and treatment of word – edge consonants

Analysis	texthelped	maximal
rhyme vcccc	all –in	(tɛksts) (hɛlpt) VCCCC
Suffix –out	(tɛkst)s (hɛlp)t	vccc
Coronals –out	(tɛk)sts (hɛlp)t	vcc
Media –based	(tɛk)sts (hɛl)pt	vc
Two –step	(tɛk)sts) (hɛl)pt)	vcccc

Extra segments are always marginal or word boundary so they must be aligned to prosodic word in the hierarchical prosodic structure (Roach , 2004 :2).

1.3 Syllabification

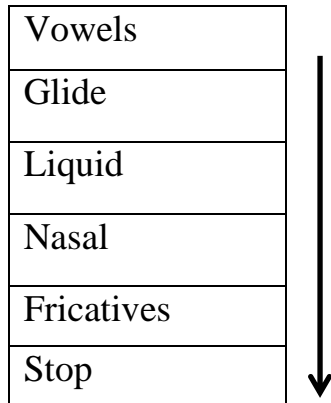
English speakers follow certain principles for syllabification some are universal and others are language specific . The most eminent principles are ssp and mop

1. SSP (sonority sequence principle)

According to this principle we can count number of by counting number of peaks e.g The word “trust” syllabifies as / trʌst \ , there is one syllable because we have one peak according to SSP.

sonority values are changing according to sounds , sounds are in ascending sonority to the vowel and after the vowel they are in descending sonority . vowels are usually in peaks position while

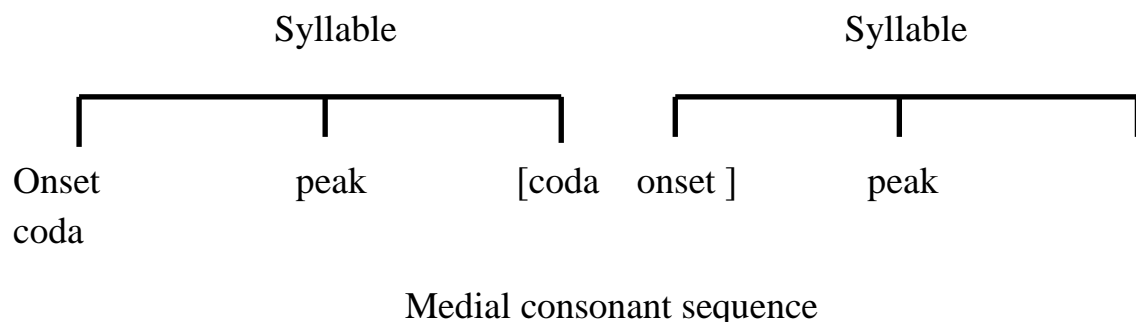
consonants are usually in start and end of syllable (Roach , 2009 , 62).



In the chart above the most sonorous are vowel then the sonorous descending toward other consonants .

SSP problem

In medial consonant sequence , we don't know whether the first one belong to the previous coda or the following onset , so we can't syllabify the word though we count its number of syllables only .



2. MOP (Maximal Onset Principle)

Another principle is the (Maximal Onset Principle) according to this principle , if we have two syllable align the

medial consonant sequence right to maximize the onset . the consonant sequence should be assigned to the syllable onset rather than the syllable coda (Roach , 2009 : 61).

According to maximal onset principle the word “ extra” syllabify into to syllable in this way : \e. kstra\ * But we still have a problem because we don’t know any syllable in English language begin with the cluster \kstr\ .

English phonotactic; According to maximal Onset Principle we syllabify the word “extra” is this way : \e.kstrə\ but we still have a problem because tow reasons , first , in English language we never find any syllable stand alone with one of these vowels (ə , æ , ʌ , ɒ , u , i) , second , there is no any English syllable start with this cluster \kstra\ . However , any medial consonant preceded by \ æ , ɒ , ʌ , e \ the first one should by assigned left to be a coda of the first syllable . If the consonant sequence preceded by other vowels the consonant sequence assigned right to be onset of the next syllable . so the word “extra” should by syllabify in this way \ ek.strə\ it’s most satisfactory . (Roach , 2009 : 61)

If the first syllable of the word in question begin with vowel (u is rare) , there is no onset in that syllable . If the syllable starts with one consonant (ŋ , ʒ is rare) . If we have a syllable which has two or more consonants we call them a consonants cluster (Roach ,1991 : 68)

1.4 CV theory

Syllable are divided into open and closed by the consummation

of the syllable , open syllables are those end with cores (nucleus) , closed syllables are those that have no less than one consonant after the vowel . Closed syllables are those which have the structure CVC structure \haw\ , Open syllables which is the most regular structure as CV structure \hau \ , isn't shut by another consonant . (Duanmu , 2008 : 7).

The CV – tier is not only or primarily , a constituent of morphological analysis but serves in phonological representation to identify functional position within the syllable . The distinction between C and V was accurately speaking , excessive , since the distinction can be independent determined from the hierarchical syllable structure (involving binary branching and s/w labeling) imposed on the CV –tier.

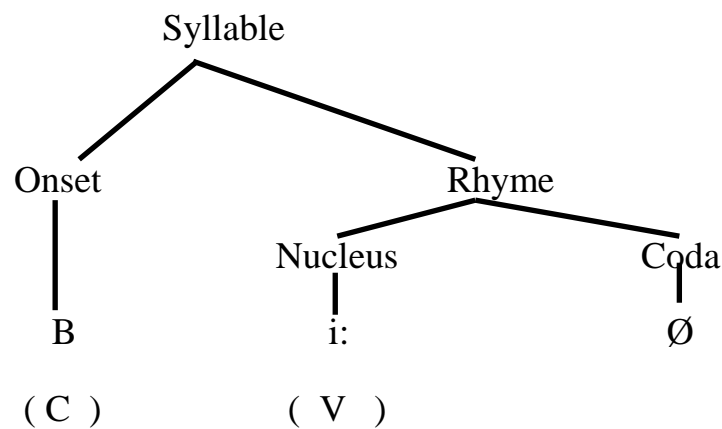
The distinction between C and V is no longer redundant since the units of the CV –tier themselves acquaint function position (peak versus nonpeak) during the syllable . the elements of the CV –tire are not only analogues of the features [+ syllable] and [– syllable] but serve the addition important function of defining the primitive units of timing at the sub- syllable level of phonological representation (Clements and Keyser , 1983 : 10_11).

CV syllable : A syllable comprising of a solitary consonant in the onset position and a solitary vowel in the peak (core) position with no coda consonant . syllables of this sort are regularly thought to be most essential or basic kind of syllable . this sort of syllables are used in all language in the world in the chattering phase of youngster improvement . A few languages

have phonotactic constraints which permit just cv syllable (Philip , 2008 , 37).

CV syllable is a basic phonological unit in all languages since relative all languages have it in their structure . most English words have cv syllable in its structure e.g

The word “be” \ bi: \ is cv syllable and open as it appeared in its hierarchically structure



"All languages have syllables , the structure of syllables are different but almost all languages have cv syllable . First , a lot of languages permit words to start with a vowel or consonant e.g English , Hungarian , French , Japanese , Swahili , however ther are many languages that necessitate a consonant word – initially e.g German , Czech , standard Arabic , therefore we don't know any language to necessitate that all word begin with vowel . () English language has simple syllable like (v) as I \ ai \ , (cv) as “go” \go\ , (vc) as it \ it \ , (cvc) as sit \ sit\ , and it has a lot of complex syllables like (ccvc) , (cvcc) , (cvv) etc . In classical Arabic , there are a lot of cv syllables as in the word ka.ta.ba (wrote) the syllable structure of this word is cv.cv.cv".

Phonotactic rule; English language has its phonotactic, some permit consonant clusters at word edges. Some clusters at word-edge like (nt, lk, mp, rd,) which are not possible to be found in the word-initially but these clusters are possible to be found in word-finally. No English or Hungarian word begins with (nt, lk, mp, rd) but these clusters can be found in word-finally like the words (count, bulk, lamp).

From the phonological point of view syllable 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. 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 looking at how a word ends when it is last word spoken before a pause, it can end with a vowel or with one, two, three, or four consonants. No word ends with more than four consonants. (Roach, 2000 :71).

When a language has words containing syllable that because there are extra consonants at the word-initially position and word-finally position. If that situation happens we expect a very long syllable such as ccccvccc (Duanmu, 2008 : 69).

Chapter Two

2.1 How to syllabify

English isn't one of those languages where words stress can be decided simply in relation to the syllable of the word, as in French (the last syllable is always stressed), Polish stresses syllable before the last, or Czech stresses the first syllable. Most phonologists said that English words stress is so difficult to predicate 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 analyses English stress placement has to recognize that it is highly complex matter. However, it must also be recognized that in most cases an unfamiliar word, that can pronounce it with 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 noun, verb, and adjective is attempt to present a few rules in the simplest possible form. Nevertheless, Racti Caury 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 (Hartmann : 1946).

- 1 – Whether the word is morphologically simple, or complex (containing one or more suffixes) or of being compound word.
- 2 – What the grammatical of word is (noun, verb, adjective etc).

3 – How many syllable the word has .

4 – What is the phonological structure of those syllables is .

2.2 Mono syllabic word

It is possible to divide syllable into two basic category : strong and weak . One component of a syllable is rhyme which contains the syllable peak and coda . A strong syllable has a rhyme with either (i) a syllable peak which is long vowel or diphthong with or without a following consonant (coda) (Rogers , 2000 : 70) .

Die / daɪ /

Heart / hɑ:t /

See / si: /

Or (i i) a syllable peak which is a short vowel , one of (ɪ , e , æ , ʌ , u) consonant e,g

Bat / bæɪ /

Much / mʌtʃ /

Pull / pʊl /

A weak syllable has a syllable peak which consists one of the vowel (ə , ɪ , u) and no coda except when the vowel is ə , syllabic consonants are also weak e.g

'fa' in 'sofa' /səʊ. Fə /

'zy' in " lazy " / leɪ . zi /

'en' in " sudden " /sʌd . n /

The vowel ɪ may also be the peak of a weak syllable if it occurs before a consonants that is initial in the syllable that follow it e.g

"bi" in " herbicide " / hɜ: . bl . saɪd /

" e " in " event / ɪ. Vent /

The most important point to remember is that , inspite of we do find unstressed strong syllable (dialect / daɪəlekt/) , only strong syllable can be stressed . weak syllables are always unstressed . (Rogers , 2000, 78).

2.3 Di – syllable

In this case , either the first or the second syllable will be stressed –no both . There is a general tendency for verbs to 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 , e.g

" enter " / en. Tə /

" envy " / en. Vi /

" open " / əʊ. Pən /

" equal " / ɪ:. Kwəl /

A final syllable is also unstressed if it contains əʊ follow / fol. əʊ / if the final syllable is strong , then that syllable is also strong e.g

" apply " / əp. laɪ /

" arrive " / ər. aɪv /

" attract " / ət. rækt /

" assist " / əs. ɪst /

Two – syllable simple adjectives are stressed according to the same rule giving e.g

" lovely " / lʌv. li /

" even" / ɪ:vən /

" hollow" / hol. əʊ /

As with most stress rules there are exceptions e.g

" honest " / ɒn. əst /

" perfect " / pɜː. fɪkt /

Both of which end with strong syllable but are stressed on the first syllable . Nouns require different rule , stress will fall on the first syllable unless the first syllable is weak and second syllable is strong e.g

" money " / mʌn. I /

" product " / prɒ.dʌkt /

" divan " / dɪ. væn /

two syllable words like adverbs seem to act like verbs and adjectives other

2.4 tri – syllable

Here we find a more complicated picture . One problem is that difficulty of identifying three syllable words which are indisputably simple . In simple verbs if the final syllable is strong , then it will receive primary stress e.g

"entertain" / en. tə. teɪn /

" resurrect " / rez. ə. rekt /

If the last syllable is weak , then it will be unstressed and stress will be placed on the preceding syllable , if the syllable is strong .

" encounter " / ɪ. kaʊn. tə /

" determine " / dɪ. ʒ:. mɪn /

If both the second and third syllable are weak then the stress falls on the initial syllable

" parody " / pær. ə. di /

" monitor " / mɒn. ɪt. ə /

Nouns require a slightly different rule . The general tendency is for

stress falls on the syllable unless it is weak e.g

" enmity " / en. mə. ti /

" custody " / kʌs.tə. di l

In the words end with a weak syllable or syllable with /əʊ/ as its peak comes on the preceding syllable e.g

"mimosa " / mi 'məʊzə /

" potato " / pə 'teɪtəʊ /

When a three syllable noun has a strong final syllable , that syllable will not usually receive the main stress e.g

" intellect " / ɪn. tə. lekt /

" al kali " / 'æl. kə. laɪ /

Adjectives seem to need the same rule , to produce stress patterns e.g

" opportune " / ɒp .əʃ. u:. n /

" insolent " / ɪn. sə. lənt/

2.5 complex words

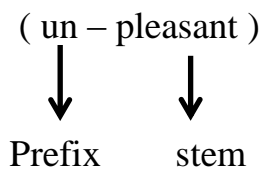
Complex words means composed of more than one grammatical unit for example the word careful and careless being composed of two grammatical unit (care – fully) .

The majority of English words of more than one syllable (play syllabic word) have come from other language whose way of constructing word is easily recognizable for example , we can see how combining " mit , permit – submit- commit " words which have come into English from Latin (Roach , 2004 , 49) .

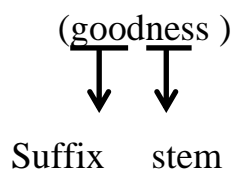
Complex words are of two major types :

1. Words made from the basic word from (stem) with the addition of an affix

2. Compound words which are made of two independent English words . We will look first at the words made with affixes . Affixes are of two before the stem .



And suffixes which come after the stem



Affixes have one of three possible effects on word stress

1 – the affix itself receives the primary stress

Semi + circle → semɪsɜ:kl /.

2 – the word is stressed as if the affixes were not there

Unpleasant → / ʌn. plez. nt / .

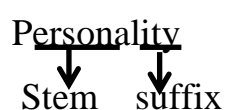
3 – The stress remains on the stem , not the affix , but is shifted to different syllable" magnet " / mæg. nət / , " magnetic " / mæg. net. ɪk /.

2.6 suffixes

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) seem 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 analyses " personality " from the point of view of stress assignment as (p3:sn + æɪəti) or as (p3:sn+ æɪ + əti) (Roach , 2004 : 55)

In the study of English word formation at a deeper level then we can go into were it is necessary for such reasons to distinguish between a stem and a root which is the smallest piece of lexical material that a stem can be reduced to so , in



In this word we can say that the suffix " ity " is attached to the stem " personal " which contains the root " person " which contains the root " person "are the suffix " al "

2.7 suffix carrying primary stress

If the stems consist 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 . e.g

Japan / dʒə. pæn /

The primary stress is on the last syllable but when we add the stress – carrying suffix – " ese " the primary stress on the suffix and the secondary stress is placed not on the second syllable but on the first :

" Japanese " / dʒæp. ə. ni:z /

-ee .	Refuge	/ ref. jʊ. dʒi: /	
-eer .	volunteer	/ vol. ə. ntɪə /	
-ese .	journalese	/ dʒɜ:. nl. I:z /	
-ehē .	cigarette	/ sɪɡrɛt /	
-esque .	picturesque	/ pɪktʃʁesk/	(Chomsky , 1968 :80).

Suffixes that don't affect stress placement ;

able as :	comfort	/ kʌmfət / , comfortable	/ kʌmfətəbl-
-age as :	anchor	/ æŋkə / , anchorage	/ æŋkrɪdʒ /
-al as ;	refuse	/ rɪfju:z / , refusal	/ rɪfju:zl /
-en as :	wide	/ waɪd / , widen	/ waɪ. dn /
-y as :	fun	/ fʌn / , funny	/ fʌn. i /
-ly as :	hurried	/ hʌrɪd / , hurriedly	/ hʌr. ɪdli /
-ful as :	wonder	/ wʌndə / , wonderful	/ wʌndəfl /

2.8 suffixes that influence stress in the stem

In these examples primary stress is on the last syllable of the stem .

-eous as	advantage	/ advɑ:ntɪdʒ / , advantageous	/ ædvanteɪdʒəs /
-gta as	photo	/ fəʊtəʊ / , photography	/ fəʊtəgræfi /
-ial as	proverb	/ prɒvɜ:b / , proverbial	/ prɒvɜ:biəl /
-ic as	climate	/ klaimət / , climatic	/ klamætɪk /
-ion as	perfect	/ pɜ:fɪkt / , perfection	/ pəfɛkʃn /
-ty as	tranquil	/ trænkwɪl / , tranquility	/ trænkwɪləti /

Finally when the suffixes (ance – ant – ary) are attached to single

syllable stem , the stress is almost always placed on the stem .
When the stem has more than one syllable , the stress is on one of
the syllables in the stem . If the final syllable of the stem is strong
, that syllable receives the stress

Importance / ɪmˈpɔːtns /

Otherwise the syllable before the last one receives the stress .

Inheritance / ɪnˈherɪtəns / (Chomsky , 1968 :86).

Prefixes

Prefixes effect on stress doesn't have the comparative regularity ,
independence and predictability suffixes , are there is no prefix of
one or two syllables that always carries primary stress .

Consequently , the best treatment seems to be say that stress in
words with prefixes is governed by the same rules (Chomesky ,
1968 : 101) .

2.9 Compound words

Compound words can be analyzed into two words both of them
which can be exist independently as English word . Some
compound are made more than two words , they are written in
different ways , sometimes they are written as one word (
sunflower , armchair) , sometimes with the words separated by
hyphen (open-minded) and sometimes with two words separated
by 6 pace (desk lamp , battery charger) . In the last case

there would be no indication to the foreign learner that the pair of words was to be treated as compound .

When is primary stress placed on the first consonant word of the compound and this example of combines two nouns and the stress on the first element

Typewriter / taɪp. raɪt. ə /

Teacup / ti:. kʌp /

Sunrise / sʌn. raɪz/

A number of compounds receive stress instead on the second element . The first words in such compounds often have secondary stress (Randford , 1999 : 48)

For example compound with an adjectival first element and the (ed) morpheme at the end this pattern

Bad - " tempered "

Heavy – " handed "

Compound in which the first element is a number in some form also tend to have final stress

Three - " wheeler "

Five – "finger it "

Compound function as adverbs ,are usually final stressed

Head – " first "

North – " east "

Finally compounds which function as verbs have an adverbial first element take final stress

"down" grade

"it " treat

Conclusion

Syllable is an important linguistic unit in the prosodic structure . It has an internal binary branching structure with labeled nodes . It can be minimum when it is only peak . It can be CV or VC and it can be maximum CVC.

Syllabification is a phonotactic operation which is performed in conformity with the distributional criteria of the language under analysis . Poigram sets set of principle for the syllabification and there are many theories of the syllable . The mora theory depends on the kind of vowels , long vowel represents two mora , while the short one represent one mora .

By SSP we can count the number of the syllables by medial consonants belongs to the previous coda or the following onset .

By medial phonotactic rules . the first consonant of medial sequence aligns left if its preceded by (ɪ, e, æ, ʌ) and aligns right if its doesn't.

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