
 Welcome to Unit 2. This unit will discuss the various aspects of phonology. The **aim of this unit** is to learn the rules governing the possible phonemes of the English language. It is recommended that you spend **15 hours studying this unit**.

 The **objectives of this unit** are:

- ❖ to assess inventory of English phonetic sounds.
- ❖ to study the possible combinations of sounds in English.
- ❖ to differentiate phonetics from phonology.
- ❖ to discuss the different types of phonology.
- ❖ to study the prominent phonological rules applicable in English.
- ❖ to discuss syllabification in English.

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2.1 INTRODUCTION

Phonology is the study of the sound system of a language; the component of a grammar which includes the inventory of sounds (phonetic and phonemic units) and rules for their combination and pronunciation; the study of the sound systems of all languages.

2.2 PHONETICS VS PHONOLOGY

The prerequisite to studying phonology is to have a phonetic study first: the study of the production of speech sounds by speakers, their perceptions by hearers and their acoustic properties. Whilst phonetics simply describes the articulatory and acoustic properties of phones (speech sounds), phonology studies how sounds interact as a system in a language. Phonetics studies which sounds are present in a language, while phonology studies how these sounds combine and how they change in combination, as well as which sounds can contrast to produce differences in meaning. Phonology starts where phonetics leaves off. As such, phonology involves the ascertaining of different phonemes of a language and how these combine to form acceptable phonotactics of a language.

2.3 VARIATIONS OF MINIMAL PAIR DRILLS - PHONOLOGY

In unit one we covered the definition of a phone, a phoneme and an allophone. Apart from the variation of a phoneme, there are three more ways in which an allophone can be presented: a) Tonal variation, b) Length, and c) Nasalization.

(a) **Tonal Variation:** In Bantu tone can be shown as a distinctive feature. Since allophone is defined as one of the variant of a phoneme, allophonic variants can be shown in tone. This is commonly so in tone languages for both distinctive and grammatical purposes.

	Word + Tone Marking	Meaning
i)	ìntìpà n. ìntípá n.	mud knife
ii)	ìnsèkè n. ìnsékè n.	hen seed
iii)	lùkà v. lúkà v.	plait 'vomit!'

iv)	ukunona	‘to be fat’
	ukunona	‘to sharpen’

(b) **Length:** It can be vowel or consonant lengthening.

With the suprasegmental, just as tone produces distinctive meaning to words vowel length does too. The next exercise shows how vowel lengthening, which denotes a long sound, also yields to different meanings when contrasted to words of the same composition but with a short vowel:

	Word	Phonetic transcription	Meaning
a)	Kaamba	[Ká:mbà]	small hoe
	kamba	[kámbà]	clap
b)	kaano n.	[Ká:nò]	tale
	kano demo.	[kánò]	this one
c)	luka v.	[lùkà]	weave
	luuka n.	[lù:kà]	tsetse fly
a)	bin n.	[bin]	
	been v.	[bi:n]	

(c) Variation by **nasalization**: [i] in *bead* and [ĩ.] in *bean*.

2.4 TYPES OF PHONOLOGY

Phonology has as its main goals, first, to discover the universals concerning sound patterns in language, i.e., the common elements of all phonological systems, and second, to place these elements in a theoretical framework that will describe sound patterns that occur in speakers' minds, and also predict what sound patterns do not occur. Current phonological theory is sharply divided into two areas:

(a) **Segmental analysis:** This involves ascertaining of the sound inventory using minimal pair drills and allophonic rules. It focuses on “melody”: speech sounds (*segments*), their internal composition and external interactions. One of the greatest discoveries in this area is that segments consist of *features*, and it is through these that segments interact with each other (Trubetzkoy 1939, Jakobson 1941). Segmental phonology is therefore concerned with phonological features: what are they, and how are they organized inside segments and between segments?

(b) **Suprasegmental (prosodic) analysis:** This involves tone, pitch, and stress. It focuses on aspects of the sound system “above” the level of segments, such as timing, stress and rhythm. Research into the nature and patterning of these phenomena suggests that speech sounds are not just arranged linearly, but are hierarchically organized into prosodic structure: segments into *moras* and *syllables*, syllables into *metrical feet*, metrical feet into *prosodic words*, prosodic words into *phonological phrases*, and so on.

2.4.1 SEGMENTAL ANALYSIS

In segmental phonology, the vertical relations between segments (p, s, a m, etc.) represent paradigmatic alternatives, and the horizontal relations between segments – i.e., the various ways in which they can be combined into speech strings – representing syntagmatic alternatives. Segmental phonology can be organized into two dimensions: a) **Intrasegmental phonology** with a paradigmatic approach by examining phonological features inside segments, and b) **Intersegmental phonology** with a syntagmatic approach by examining the interactions (of features) between segments.

2.4.1.1 SEGMENTAL FEATURES

Features are psychological entities defined in terms of acoustic and/or articulatory realization which provide the link between cognitive representation of speech and its physical manifestation. Below are a few segmental features¹.

- 1) **Major Class Features:** These are necessary to account for large natural classes like sonorants, obstruents, approximants, and consonants. In combination with manner features, major class features define other large groupings as well. Two of the most well-known major class features are consonantal and sonorant. According to Sound Pattern of English (SPE), **Consonantal sounds** are produced with a radical obstruction in the midsagittal region of the vocal tract; nonconsonantal sounds are produced without such an obstruction. **Sonorants sounds** produced with a vocal tract cavity configuration in which spontaneous voicing is possible; obstruents are produced with a cavity configuration that makes spontaneous voicing impossible. **Approximants** are those segments which have a constriction of the vocal tract which allows a frictionless escape of air.
- 2) **Laryngeal features:** these features account for contrasts in voicing, aspiration and breathy voice. They are also required to capture contrasts between plain sounds vs. the corresponding ejectives and implosives.
- 3) **Manner features:** these are usually assumed to subsume continuant, nasal and lateral. Strident is sometimes included as a manner feature as well although some linguists prefer treating it as a place feature. **Continuants** are necessary to distinguish stops from corresponding fricatives (e.g. /k/ vs. /x/). Continuants are formed with a vocal tract configuration allowing the airstream to flow through the midsagittal region of the oral tract. (+) continuants include fricatives, rhotics, vowels and glides while (-) continuants describe stops and nasals and lateral approximants like /l/, which are realized in such a way that air escapes through the side. This definition of continuants is illustrated in the table below.

¹ For more information on segmental features you can refer to 'The Cambridge Handbook of Phonology edited by Paul de Lacy <http://www.cambridge.org/9780521848794>. This section is adapted from the above-mentioned textbook.

	stops	fricatives	nasals	laterals	rhotics	glides	vowels
[continuant]	-	+	-	-	+	+	+
[sonorant]	-	-	+	+	+	+	+

Nasal sounds are produced by lowering the velum and allowing the air to pass outward through the nose; oral sounds are produced with the velum raised to prevent the passage of air through the nose. (+) nasal therefore includes nasal consonants (/m n ŋ.../) and nasal vowels (/ã/...). Obstruents, liquids and oral vowels are (-) nasal.

Lateral is necessary to distinguish /l/ from /r/, even though these two segments also differ in terms of continuant. Lateral sounds are produced with the tongue placed in such a way as to prevent the airstream from flowing outward through the centre of the mouth, while allowing it to pass over one or both sides of the tongue; central sounds do not involve such a constriction. Laterals are almost always coronal sounds from the phonetic perspective: i.e. dental/alveolar /l/, retroflex /ɭ/ and palatal /ç/. The one noticeable exception is the velar lateral /ɮ/, which one would expect to be dorsal and not coronal.

Strident accounts for the contrast between interdental and alveolars. Strident sounds are marked acoustically by greater noisiness than their nonstrident counterparts. Some authors use strident to distinguish palatoalveolars from palatals. Strident is also often employed to distinguish oral stops from corresponding affricates: e.g. /t/ vs. /tʃ/. Affricates are ‘strident stops’: i.e. stops are (-) continuant, (-) strident and affricates are (-) continuant, (+) strident.

Place features dominate the class nodes *labial*, *coronal* and *dorsal*. These three articulators are required for segments pronounced with the lips, the tongue front and the tongue dorsum respectively. The features relating to the lips are considered labial and round (p^w t^w k^w...). The features relating to the tongue front are considered coronal, anterior and distributed. The features relating to dorsum are considered dorsal, back, high, low as well as advanced tongue root (ATR). Features pertaining to the tongue root are considered pharyngeal.

- 4) **Complex vs Contour Segments.** A simple segment consists of a root dominating at most one articulator (e.g. /k/ is simple because it is dorsal only). A complex segment is a root node characterized by at least two or more simultaneous oral tract constrictions. There are three complex segments namely, labio-coronal, labio-dorsal, and coronal-

dorsal. The labio-coronal occurs in Margi and the labio-dorsal in Yoruba. The third articulation is used in Zulu as a coronal-dorsal click.

2.4.1.2 GENERATIVE PHONOLOGY

Generative phonology is a component of generative grammar that assigns the correct phonetic representations to utterances in such a way as to reflect a native speaker's internalized grammar. The following are some of the crucial components of generative phonology:

- ❖ **Levels of phonological representation.** Generative phonology posits two levels of phonologic representation. An underlying representation is the most basic form of a word before any phonological rules have been applied to it. Underlying representations show what a native speaker knows about the abstract underlying phonology of the language. A phonetic representation is the form of a word that is spoken and heard.
- ❖ **Phonological rules.** Phonological rules map underlying representations onto phonological representations. They delete, insert, or change segments, or change the features of segments.
- ❖ **Derivations**
- ❖ **Distinctive features.** These make it possible to capture the generalities of phonological rules.
- ❖ **Linearity.** A stream of speech is portrayed as a sequence of discrete sound segments. Each segment is composed of simultaneously occurring features.

2.4.2 SUPRASEGMENTAL (PROSODIC) ANALYSIS

Tone, stress and intonation fall under suprasegmental (prosodic) studies. The 'segments' of spoken language are the vowels and consonants, which combine to produce syllables, words and sentences. At the same time as we articulate these segments, our pronunciation varies in other respects. We make use of a wide range of tones of voices, which change meaning of what we say in a variety of different ways. Suprasegmental analysis therefore is the study of (1) length, stress, and tone in relation to the syllable and (2) intonation in relation to phonetic phrases and sentences.

2.4.2.1 SUPRASEGMENTAL FEATURES

The suprasegmental features of interest are length (long/short), stress and tone².

- **Long – short (\pm long).** This feature deals with the duration of a sound. It is always relative. Length is not regarded as a basic phonetic property but rather as an incidental attribute of the feature (tense), which is binary. The feature (\pm long) is equally applicable to vowels and consonants. The feature (long) is multi-valued and a language could contrast more than two degrees of vowel length. For example:

Kóla ‘cough’

Kòóla ‘to cool down’

In some Southern African languages length is extra-long [ba:ba] ‘father’. This is on the penult syllable (second last). E.g. in Zulu, Xhosa and Sotho: Indaba ‘a matter for discussion’ [inda:ba].

- **Stress (\pm stress)** is an elusive concept. All stressed (or accented) syllables in a word are more salient than their unstressed counterparts but the phonetic manifestation of stress varies. Stress is made prominent by mixing a raised pitch, greater length and increased intensity of the signal which is perceived as loudness. In English, stressed vowels retain their full vowel quality while unstressed vowels are reduced to some muffled vowel sound like schwa /ə/.
- **Tone.** It is imperative to distinguish tone from pitch. Pitch is the quality of a sound governed by the rate of vibrations producing it; the degree of highness or lowness of a tone – the higher the rate of vibration of the vocal cords, the higher the resulting pitch becomes. Tone is a particular pitch pattern on a syllable used to make semantic distinctions. It is intonation on a word or phrase used phonemically either to differentiate between word meanings or convey grammatical distinctions.

For tone marking, the following symbols were once used but are no longer in use:

´ [acute accent] high tone á

’ [mid accent] mid tone á

` [grave accent] low tone à

^ [circumflex] falling tone â

˘ [rising tone] fall rise ċ

² The notes under this subheading are adapted from Francis Katamba (1996), *An Introduction to Phonology*, 8th ed., London: Longman.

What is in use are the following:

H (acute high) e.g. bá

LH bă

L (grave) e.g. bà

M (Mid) ba

HL e.g. bâ



Enumerate the main differences between segmental and suprasegmental analysis.

2.4.2.2 AUTOSEGMENTAL PHONOLOGY

Autosegmental phonology is a non-linear approach to phonology that allows phonological processes, such as tone and vowel harmony, to be independent of and extend beyond individual consonants and vowels. As a result, the phonological processes may influence more than one vowel or consonant at a time.

The principal innovation of autosegmental phonology, as presented in Goldsmith 1976, was the idea that tone mapping rules do not merge tonal and segmental representations, but associate their elements by means of formal entities known as Association Lines. In this framework, phonological representations consist of parallel tiers of phonological segments, both tonal and segmental.

2.5 PHONOLOGICAL RULES

Phonological rules translate phonemes to the real sounds (phones).

- a. /pit/ → [p^hit]
- b. /spit/ → [s^hpit]

So we can say:

- a. /p/ → [p^h] at the beginning of the word

b. /p/ → [p] otherwise (rules like this are usually omitted)

We can also state similar rules for /t/ and /k/:

a. /t/ → [t^h] at the beginning of the word

b. /k/ → [k^h] at the beginning of the word

However, /p/, /t/ and /k/ are all English voiceless stops, therefore we can just write one general rule:

Voiceless stop → aspirated at the beginning of the word.

Or in a more “scientific” way:

[-voiced, +stop] → [+aspirated] /#__

Note: # marks word boundary (#__ means word initially, __# means word finally)

In these rules we can refer to classes of phonemes like:

- voiced consonants ([b, d, ʒ, g, ð, z, ʒ, n, m, . . .]),
- rounded vowels ([u, ʊ, o, ɔ]),
- nasals ([m, n, ŋ, ŋ]),
- sibilants (hissy sounds [s, z, ʃ, ʒ, tʃ, dʒ]),
- etc.

2.5.1 KINDS OF PHONOLOGICAL RULES

The following are the typical rules used in phonology:

1. **Assimilation** - a process by which a sound becomes more like a nearby sound.

- ❖ Voicing assimilation. For example, “don’t be silly” where the /n/ and /t/ are assimilated to /m/ by the following /b/, in many accents the natural sound is “dombe silly”.
- ❖ Place assimilation: bit [ɪ] vs. bin [ɪ̃] - /t/ assimilates to the following /n/ (nasal) → [ɪ̃]

Reason: easier to pronounce; the assimilation level depends on speakers and situation

2. **Dissimilation** - the opposite of assimilation, two nearby sounds become less alike. A frequent example in present-day standard English is the omission of one of two [r] sounds

from words like *cater(r)pillar*, *Canter(r)bury*, *rese(r)voir*, *terrest(r)ial*, *souther(r)ner*, *gove(r)nor*, and *su(r)prised*.

3. **Insertion** – a new sound is inserted.

- ❖ *hamster* /hæmstr/ → [hæm(p)str]: [p] is sometimes inserted
- ❖ *prince* /prɪns/ → [pʰrɪn(t)s]: [t] is sometimes inserted

4. **Deletion** – a phoneme is not pronounced in certain environments.

- ❖ *okay* [okey] → [ʔkey] (optional)
- ❖ *forgotten* [fə'gɒtɪn] → [fə'gɒʔn]

Reason: easier and faster to say.

1. **Metathesis** – two sounds (usually adjacent) switch their place.

- ❖ *ask* [ɑ:sk] → [ɑ:ks]

Rules may be **obligatory** (all speakers do it; e.g. final nasalization of vowels in English) or **optional** (some speakers do it; e.g., insertions/deletions above).

2.6 THE SYLLABLE AND PHONOTACTIC CONSTRAINTS

A syllable is a unit in terms of which phonotactic rules are best stated. These rules reflect the speaker's knowledge of what combinations of sounds are allowed in each language. A syllable shows how phones combine to produce some typical, meaningful, acceptable sequences. A syllable must contain a vowel (or vowel-like) sound. The most common type of syllable in language also has a consonant before a vowel, often represented as CV. Other frequent sequences include CCCV, CCV and CVV. The basic elements of the syllable are the onset (one or more consonants) and the rime. The rime (also written as 'rhyme') consists of the vowel, which is treated as nucleus, plus any following consonant(s), treated as the coda.

The syllable (represented by the symbol **σ** which is called the **sigma**), has constituents namely:

a) Nucleus (Nu)

This is the vowel or vowel-like segment in the syllable. It is the **compulsory segment** in the syllable and is sometimes called **The Peak**. The Nucleus can exist alone but can be accompanied with other units namely the Onset (before it) and Coda (after it). Thus,

(Onset) **Nucleus** (Coda)

E.g. In the word ‘put’ /pʊt/, the Nucleus of the syllable /put/ is /ʊ/.

Therefore, a **syllable** can be made up of:

- a. Nucleus only e.g. are [a:]
- b. Onset + Nucleus e.g. fur [fɜ:]
- c. Nucleus + Coda e.g. eat [i:t]
- d. Onset + Nucleus + Coda e.g. bet [bet]

NB: The Nucleus can be a **vowel** (e.g. /a/ and /e/); a **nasal** (/m/ in **me new**); or liquid /l/ (e.g. /l/ in little [litl]).

b) Onset (On)

This is the **sound that comes before the Nucleus**. In the word ‘put’/pʊt/, the Onset of the syllable /put/ is /p/.

b) Coda (Cd)

It consists of the **consonant that occur after the Nucleus**. In the word ‘put’/pʊt/, the Coda of the syllable /pʊt/ is /t/.

c) Rhyme (Rh)

This comprises of **the Nucleus and the Coda**. So then, **Rh = Nu + (Cd)**. In the Rhyme, **the presence of a Coda is optional (that is why it is put in brackets) while the presence of the Nucleus is compulsory**. Therefore, we can have a Rhyme just made up of the Nucleus but we can never have a Rhyme made up of the Coda only. In the word ‘put’ /pʊt/, the Rhyme of the syllable is /ʊ/ and /t/. When the Coda is missing in the Rhyme, the empty Coda slot in the tree diagram is **optionally** represented by the theta notation called a **Null sign** whose symbol is **θ**. This will be illustrated later when discussing the tree structure of a syllable.

A syllable may be defined both phonetically and phonologically. Phonetically: In relation to the way we produce them and the way they sound e.g. Christ [kraɪst] or *[krʌst]. Phonologically: Looking at the possible combinations of the languages' phonemes. For example, what comes word initial: a word can begin with a vowel, a consonant or two or three consonants. In this context, we shall look at English Syllable structure and Bantu languages syllable structure.

2.6.2 THE STRUCTURE OF THE ENGLISH SYLLABLE

An English syllable can:

- Begin with a vowel (any vowel may occur, though *ʊ* is rare). When this occurs, we say the syllable has a *zero onset*.
- Begin with a consonant (this can be any consonant phoneme except *ŋ*, and *ʒ*: these are rare)
- Begin with a syllable of two consonants or more – we call them a ***consonant cluster***.

Initial two-consonant clusters are of two sorts in English:

- Composed of *s* followed by one of a small set of consonants; e.g. stand [stænd], sweat [swet], smooth [smu:ð]. The *s* in these clusters is called pre-initial consonant and the other consonant (*t*, *w*, *m* in above examples) the initial consonant:
- Composed of one of the fifteen consonants, followed by one of the set, *l*, *r*, *w*, *j* as in, for example: play [pleɪ], try [traɪ], quick [kwɪk], few [fju:]: We call the first consonant of these clusters the initial consonant and the second the post-initial consonant.

In a three-consonant cluster, the relationship between them is clearly recognized as follows:

		Post-initial				
		l	r	w	j	
S Plus	p	{	‘splash	‘spray’	-	spew’
	t		-	‘string’	-	‘stew’
	k		sclerosis	screen	squat	‘skewer’

The ‘*s*’ is the pre-initial consonant, the ‘*p*’, ‘*t*’ and ‘*k*’ that follows in the three example words are the initial consonants and the ‘*l*’, ‘*r*’, and ‘*w*’, are post initial consonants. It must be noted that there must be a vowel in the centre of the syllable.

A syllable structure which has the vowel and the coda (if there is one) are known as the rhyme: The rhyme is divided into the peak (normally the vowel) and the coda (but not that this is

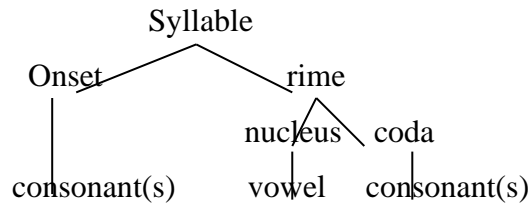
optional- the rhyme may have no coda, as in a word like 'me'). The syllable may also have an onset although it is not obligatory.

2.6.2.1 OPEN AND CLOSED SYLLABLES

An **open syllable** is a syllable that ends in a vowel. For example: me /mi/ (Consonant-Vowel – CV Syllable structure). Another name for open syllable is **unchecked syllable**.

A **closed syllable** is one that ends in a consonant. For example: met /met/ (Consonant-Vowel-Consonant – CVC Syllable structure). Another name for a closed syllable is **checked syllable**.

[Illustration 1] Structure of a Syllable:



English has many monosyllabic words. Monosyllabic words in English have a single vowel. By examining the legal consonant + vowel sequences in English monosyllabic words, we get a good idea of what types of syllable structure are legal in English.

a) Open syllables

V	"I"	/æ/
CV	"me"	/mi:/
CCV	"spy"	/spæ/
CCCV	"spray"	/spræ/

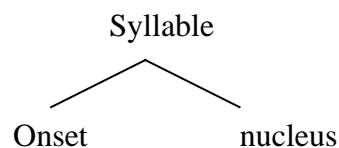
b) Closed syllables

VC	"am"	/æm/
VCC	"ant"	/ænt/
VCCC	"ants"	/ænts/
CVC	"man"	/mæn/
CVCC	"bond"	/bɒnd/
CVCCC	"bands"	/bændz/
CVCCCC	"sixths"	/sɪksθs/
CCVC	"brag"	/bræg/
CCVCC	"brags"	/brægz/
CCVCCC	"plants"	/plænts/
CCCVC	"spring"	/sprɪŋ/
CCCVCC	"springs"	/sprɪŋz/
CCCVCCC	"splints"	/splɪnts/

English has a very flexible syllable structure. There are languages that are not as flexible which only possess CV syllables. It should be noted, however, that there are considerable constraints on which phoneme sequences are permissible in English syllables. Such constraints are referred to as phonotactic constraints or phoneme sequence constraints and these are very language specific. Most phonotactic constraints conform to sonority profile constraints which will be discussed in a subheading below.

2.6.3 STRUCTURE OF BANTU SYLLABLE

A syllable in Bantu languages is composed of an onset (it may be a consonant or a cluster of consonants) and a nucleus (or a vowel) without a coda (consonant ending a syllable). A syllable structure in Bantu languages may be represented as follows:

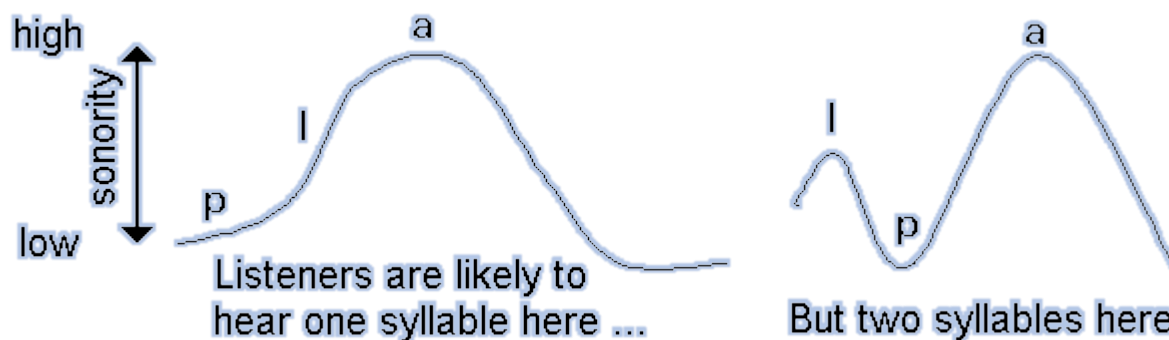


An onset in Bantu languages can be made of a cluster of consonants. Usually, the cluster has a nasal plus other consonant. For example; mp, mb, mb, nk, ng, nt, mbw, ntw, ngw. There are few incidences where an onset cluster is of other consonants other than beginning with a nasal. These clusters reveal that they are of a homogeneous type in that they are generated from the same place:

- mp Bilabial nasal + Bilabial voiceless plosive
- ng Velar nasal [ŋ]+ velar stop [g]
- bb Bilabial voiced stop [b]
- kk Velar voiceless stop [k]

English language as well as Bantu languages has a common sequence of CV syllable structure. This can be represented as:

The onset can be a cluster of consonants or a single consonant. In addition, the syllable does not only regulate the combinations of segments but also controls the combination of features which make up the segments.



It is worth noting that there is only a tendency for syllables to conform to the sonority profile. So, although most syllables do conform to the sonority profile in English, many syllables that contain a consonantal cluster with /s/ do not. An example of a syllable that does not conform to the sonority profile is ‘flounce’, pronounced as /flæʊns/ in (Australian) English. In the initial cluster, /f/ is less sonorous than /l/ which is less sonorous than the diphthong; in the final consonant cluster, the diphthong is more sonorous than /n/ which is more sonorous than /s/ and so the sonority rises from the left edge of the syllable, reaches a peak at the diphthong, and then falls over the final cluster. The word ‘spin’ also violates the sonority profile because /s/ is more sonorous than /p/. The sonority profile is therefore a general tendency which determines many but not all phonotactic constraints.

2.6.5 PHONOTACTICS CONSTRAINTS IN ENGLISH

Phonotactics is the study of the rules governing the possible phoneme sequences in a language. *Phonotactics* also known as *phoneme sequence constraints* define permissible syllable structure, consonant cluster and vowel sequences by means of *phonotactic constraints*. When discussing phonotactic constraints, it is important to structure the syllable hierarchically in terms of an *onset* and a *rhyme*, and sometimes also the syllable *coda*. Phonotactic constraints can be discussed a) within the **onset** b) within the **coda** c) within the **rhyme**.

The phonotactic constraints with the greatest restrictions occur in the onset. For example, /f/ can only be followed by approximants (as in ‘fly’) and there are no consonant phonemes that can follow affricates.

The phonotactic restrictions in the coda are often a mirror-image of those in the onset. For example, /pl/ is allowed in the onset ‘play’ and /lp/ in the coda ‘help’. /fr/ is allowed in the onset ‘free’ and for rhotic dialects (e.g. General American English), /rf/ in the coda ‘surf’.

There are fewer restrictions in the rhyme; this has to do with the restrictions on nucleus-coda combinations. An example of a rhyme constraint would be there are no long vowel + /ŋ/ sequences (no words like ‘seeng’, ‘flowng’, ‘swimmng’ although the onomatopoeic ‘boing!’ is allowed).

Other phonotactic constraints include³:

- a)** All syllables have a nucleus.
- b)** No geminates (double or repeated speech sound).
- c)** No onset /ŋ/
- d)** No /h/ in syllable coda
- e)** No affricates in complex onsets
- f)** The first consonant in a complex onset must not be a voiced obstruent.
- g)** If the first consonant in a complex onset is not an /s/, the second must be a liquid or a glide.
- h)** Every subsequence contained within a sequence of consonants must obey all the relevant phonotactic rules.
- i)** No glides in codas.
- j)** If there is a complex coda, the second consonant must not be /ŋ/, /ʒ/, or /ð/.
- k)** If the second consonant in a complex coda is voiced, so is the first.
- l)** Non-alveolar nasals must be homorganic with the next segment.
- m)** Two obstruents in the same coda must share voicing.

³ For a more detailed discussion on this with examples, refer to the following textbook: Harley, Heidi (2003). English Words: A Linguistic Introduction. Wiley-Blackwell. Pp. 58-69. ISBN 0631230327.

2.7 UNIT 2: EXERCISE



1. Illustrate the English phonemic contrasts given at the left with minimal pairs, one exhibiting the contrast in initial position and the other in final position, if possible.

		Initial Position	Final position
a)	/p,b/	Pie, buy	Rope, robe
b)	/k,g/		
c)	/f,v/		
d)	/s,z/		
e)	/θ, ð/		
f)	/m/n/		
g)	/t,d/		
h)	/d, ð/		
i)	/ʃ, ʒ/		
j)	/h,w/		
k)	/s, θ/		

2. Discuss the nature of the English syllable.
3. Outline four phonotactic constraints.
4. Elaborate the influence of sonority on building syllable patterns in English.
5. Briefly describe the elements of suprasegmental analysis.



2.8 UNIT 2: SUMMARY

In this unit we differentiated phonetics from phonology. We discussed **tonal variation**, **length** and **nasalization** as ways in which the **variation of a phoneme** can be presented. We differentiated segmental analysis from **prosodic analysis** and tackled **generative phonology**. We further discussed the typical rules used in phonology (**assimilation**, **dissimilation**, **insertion**, **deletion** and **metathesis**). We discussed **sonority** and its influence on building syllables in a language and the **phonotactic constraints** in English.

With this knowledge, we can now move on to discussing the internal structure of words – morphology.

2.9 REFERENCES

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