PHONETICS

PHONETICS

It studies the way speech sounds which are produced, trasmitted, and perceived languages of the world. The study of speech sounds is called phonetics. To describe speech sounds, it is necessary to know what an individual sound is, and how each sound differs from all others. This is not as easy as it may seem, for when we speak, the sounds seem to run together and it isn't at all obvious where one sound ends and the next begins. However, when we know the language we hear the individual sounds in our "mind's ear" and are able to make sense of them.

Branches of Phonetics

- ► Auditory Phonetics
- ► Articulatory Phonetics
- Acoustic Phonetics

Auditory Phonetics

Auditory phonetics is a branch of phonetics concerned with the hearing of speech sounds and with speech perception.

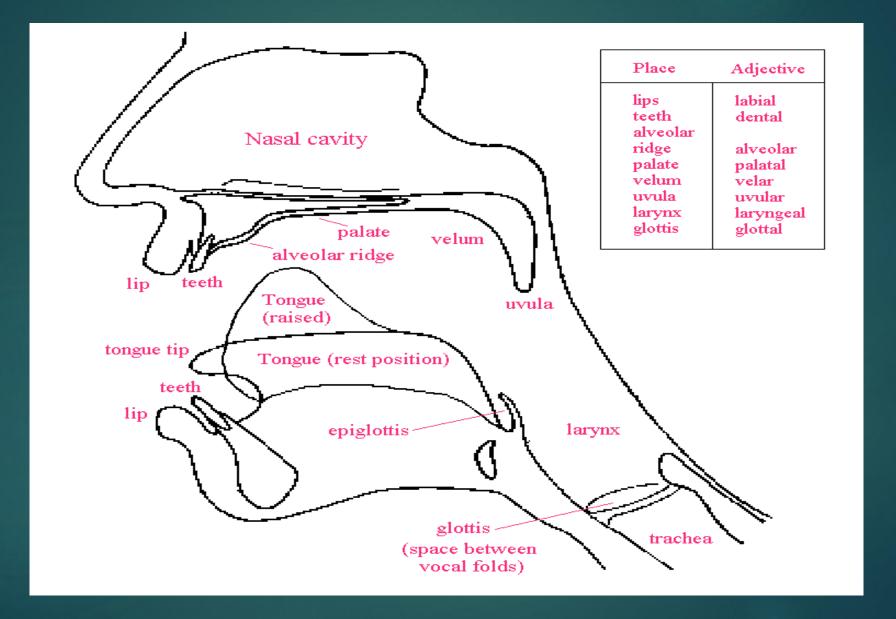
To explain this phenomenon, Turkish has a saying:

Sağır duymaz uydurur.

"A person who has not heard a word properly comes up with an approximation of that Word."

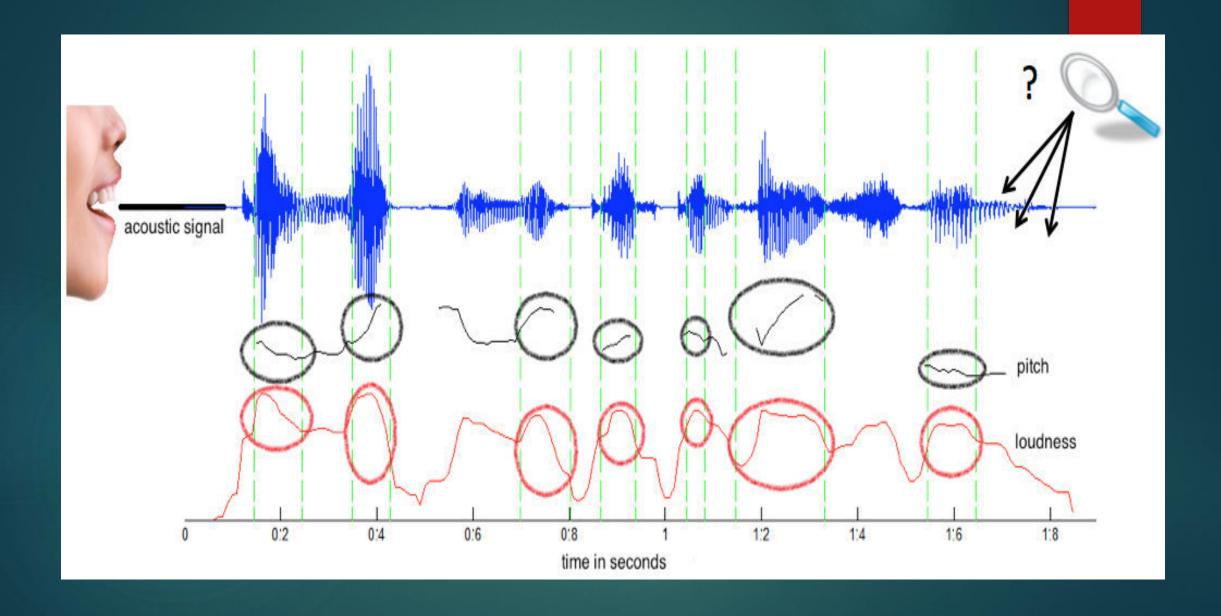
Articulatory Phonetics

- ► The field of articulatory phonetics is a subfield of <u>phonetics</u>. In studying <u>articulation</u>, phoneticians explain how humans produce speech <u>sounds</u> via the interaction of different <u>physiological</u> structures.
- In addition, it studies the operations involved in the vocal tract(mouth,nose)

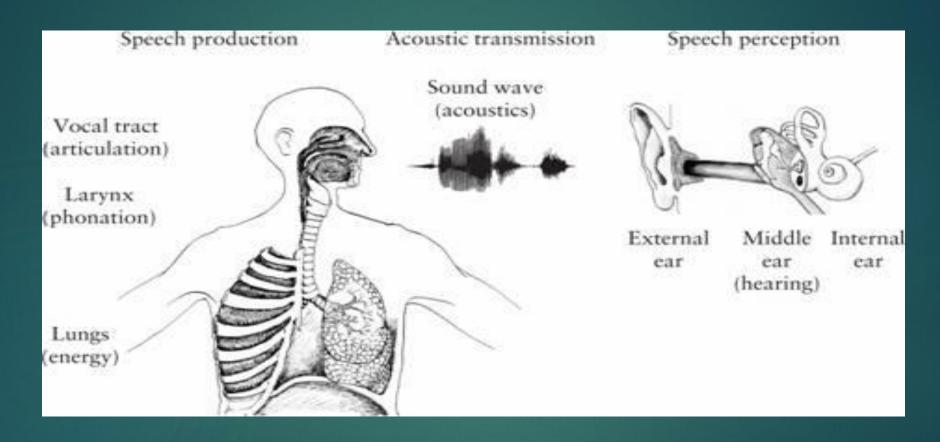


Acoustic Phonetics

It examines the physical properties of speech sounds as well as the physical conditions through which sounds travel.

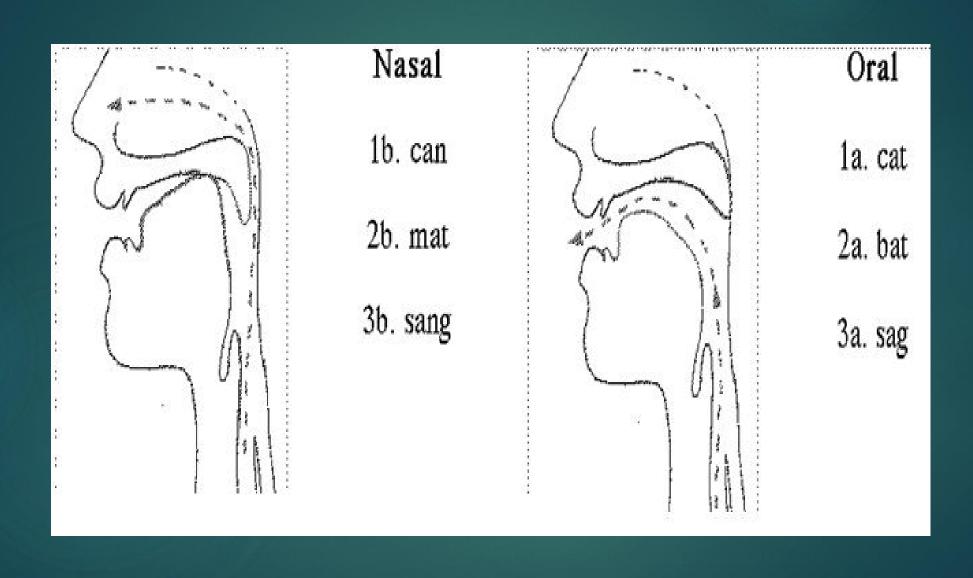


Graphic



Oral Sound and Nasal Sound

- ▶ Oral Sound: It is releasing the airflow through the lips while uvula is raised to block the nasal passage. Sounds produced in this way are classified as ''oral''.
- Nasal Sound: It is blocking the airflow at a particular point in oral cavity with the uvula lowered to open the nasal passage, and release a very slight airflow through the nostrils. Sounds produced in this way are classified ''nasal''



International Phonetic Alphabet:IPA

As is common knowledge, various languages of the world are represented by radically different writing symbols. In the writing of English, 21 letters for consonants and 5 letters for vowels are used, pronounced with theseletters is far greater: a total of 44. Of these, 24 are consonants, 12 are vowels, and 8 diphtongs.

Sound and Phoneme

Sounds

- What is a minimal pair test?
- ► The test requires two words (which should not be borrowed from other languages) having the same number and sequence of sounds except for one sound.
- ► For instance:
- ▶ pin / Bin
- ▶ /pin / /bin/
- Pin:a tiny metal used to bind two objects together.
- ▶ Bin:a cylindrical box of metal to keep rubbish

Phoneme

- ▶ A phoneme is the smallest unit of sound that can bring about a change in the meaning of a word when it replaces a sound in that word.
- Phoneme Inventory of English: Phonemic Description
- ▶ There is a list or inventory of phonemes. These are:
- 1.Consanant phonemes
- 2. Vowel phonemes
- 3. Diphtong phonemes

Consonant Phonemes

- ▶ A consonant is a sound that is produced when the airflow though the oral or nasal cavity is restricted, shaped, obstructed in some from or another.
- We obtain three main criteria to classify consonants:
- 1.Place of Articulation
- 2.Manner of Articulation
- Voicing

Place of Articulation for Consonants

- ► Eight areas in the oral cavity are observed to play a significiant role in categorizing consonants in English.
- ▶ Bilabials [p] [b] [m] When we produce a [p], [b], or [m] we articulate by bringing both lips together
- /pen/ /bay/ /my/

Labiodentals [f] [v] We also use our lips to form [f] and [v]. We articulate these sounds by touching the bottom lip to the upper teeth.

```
/fan/ /very/
```

- Interdentals [θ] [ð] These sounds, both spelled th, are pronounced by inserting the tip of the tongue between the teeth. However, for some speakers the tongue merely touches behind the teeth, making a sound more correctly called dental.
- /three/ /they/
- ▶ Alveolars [t] [d] [n] [s] [z] [l] [r] All seven of these sounds are pronounced with the tongue raised in various ways to the alveolar ridge.
- ▶ /tip/ /nap/ /lip/

Palata-Alveolar sounds are produced with the central part of the tongue being raised to touch the roof of the mouth, in the other words 'palate'.

/child/ /gentle/ /rain/

Palatal is articulated when the central part of the tongue is hightened close to the palate with sides of the tongue are lowered to let the air escape.

/yes/

Velar sounds are produced as the back of tongue touches velar, an area between the palate and the soft palate.

/go/ /sing/ /go/

- ▶ Glottal sound is produced at the very back of the mouth. The body of the tongue is pushed backwards to restrict the airflow.
- ▶ /hill/

ľ		Labio-	Inter-		Alveo-			
	Bilabial	Dental	Dental	Alveolar	Palatal	Palatal	Velar	Glottal
Stop (oral)		20	93 203	20		20 20		
voiceleess	p	3	39	t		3: 8	k	
voiced	b			d			g	
Nasal (stop)	m		8	n		8 8	ŋ	
Fricative								
voiceless		f	θ	S	J	3 8		h1
voiced		V	ð	Z	3			
Affricate	Ÿ			88		8		
voiceless					tʃ	5-		
voiced		8	3	3	d3	8		
Glide								
voiceless	M					8	M	h1
voiced	W			20	5	j	W	
Liquid		3	8	58-	l r	8 8		

PHONETICS:The Sounds of Language

MANNER OF ARTICULATION
IN CONSONANTS

Stops (plosives) are sounds produced as the airflow in oral cavity is blocked, compressed and then released.

There are six stops in English/p/,/b/,/t/,/d/,/k/,and /g/.

FRICATIVES(f)(v)(Θ) (δ) (s)(z)(\int) (\Im) (x) (\Im)(h)

Consonant produced by forcing air through a narrow channel made by placing two articulators close together.

This turbulent airflow is called **frication**.

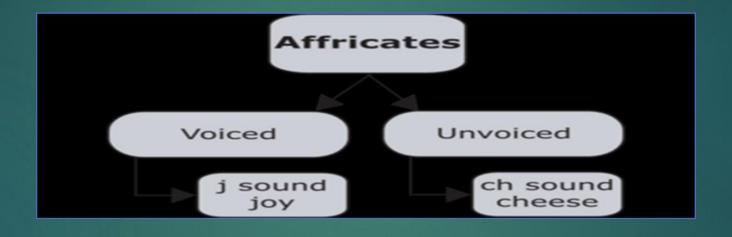
Fricatives may be voiced or voiceless.

Because of the way the flow of breath is heard in producing fricatives, fricatives are also called **spirants**.

- 1. /f/ (the phoneme spelled f in fine): voiceless labiodental fricative.
- 2. /v/ (the phoneme spelled v in vine): voiced labiodental fricative.
- 3. Θ (the phoneme spelled th in thistle): **voiceless** interdental fricative.
- 4. /ð/ (the phoneme spelled th in this): **voiced** interdental fricative.
- 5. /s/ (the phoneme spelled s in sue): voiceless alveolar fricative.
- 6. /z/ (the phoneme spelled z in zoo): voiced alveolar fricative.
- 7. /ʃ/ (the phoneme spelled sh in shore): **voiceless** alveopalatal fricative.
- 8. /3/ (the phoneme spelled z in azure): voiced alveopalatal fricative.
- 9. /x/ (the phoneme spelled x):voiceless denote velar fricative;on the other hand; it's known as an uvular fricative.
- 10./**Y**/ : **voiced** velar fricative.

11./h/ is a glottal fricative

Affricates (t ʃ) (ʤ): An affricate is a consonant that begins as a stop and releases as a fricative, generally with the same place of articulation. The English affricates, the 'ch sound' /ʧ/ and 'j sound' /ʤ/ are two-part consonant sounds. They begin by fully stopping the air from leaving the vocal tract then releasing it through a constricted opening.



- ► Liquids (1) (r) In the production of the sounds [1] and [r], there is some obstruction of the airstream in the mouth, but not enough to cause any real constriction or friction.
- ► They are articulated differently, as described in the earlier alveolar section, but are grouped as a class because they are acoustically similar.
- ▶ Glides (j) (w) Glides a glide, like a liquid, is a consonant produced when the tongue approaches a point of articulation within the mouth but does not come close enough to obstruct or constrict the flow of air enough to create turbulence.
- ▶ They are always followed directly by a vowel and do not occur at the ends of words.
- ▶ After articulating (j) or (w), the tongue glides quickly into place for pronouncing the next vowel, hence the term glide.

Approximants

- The sounds (w),(j),(r), and (1) may also be called approximants because the articulators approximate a frictional closeness,but no actual friction occurs.
- The first three are central approximants, whereas (1) is a lateral approximant.

Trills and flaps

- The r-sound of many languages may be different from the English (r). A trilled r is produced by rapid vibrations of an articulators.
- Another r-sound is called a **flap** and is produced by a flick of the tongue against the alveolar ridge.

Clicks

• These 'exotic'sounds are made by moving air in the mouth between various articulations.

Phonetic Symbols for American English Consonants

We are now capable of distinguishing all of the consonant sounds of English via the properties of voicing, nasality, and place and manner of articulation.

- ► Here, we can clearly see which is place of articulation.
- ▶ Due to the fact that we learnt these place and manner.

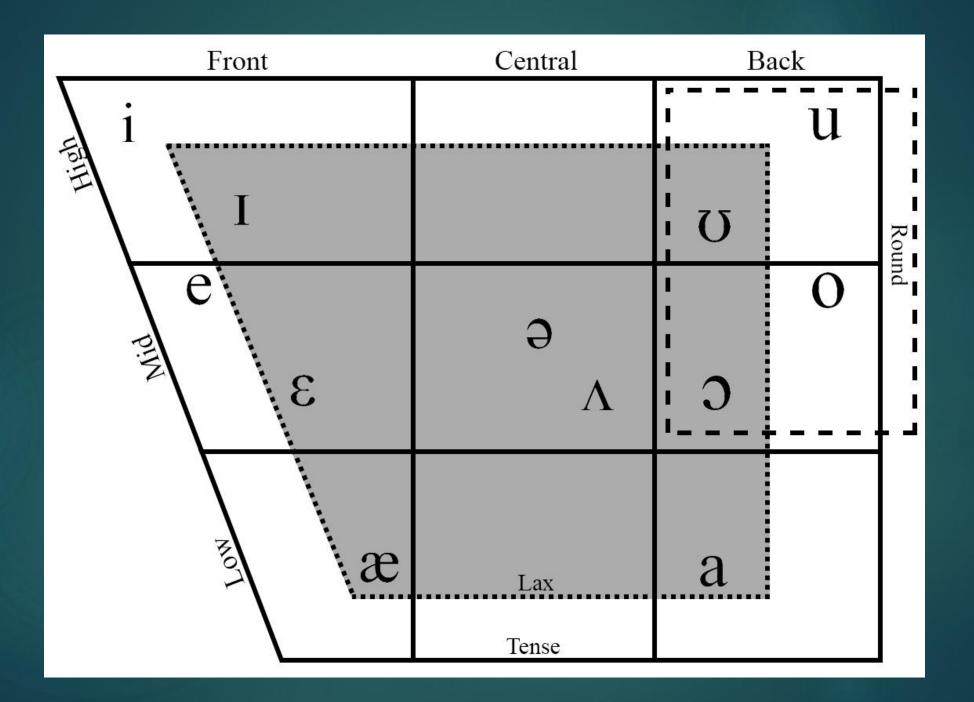
				D1 0 1		_	_					
	Place of Articulation											
MANNER		Labial	Labiodental	Inter dental	Alveolar	Alveo-palatal	V e1ar	G1ottal				
Stop	voiceless	р			t		k	ያ				
		pill			till		kill	uh-oh				
	voiced	b			d		g					
		bill			di 11		gill					
Flap/Tap	voiceless				r							
					butter							
Fricative	voiceless		f	θ	8	š/S		h				
			fine	thin	ship	pressure		hill				
	voiced		V	ð	Z	ž/3						
			vine	then	zip	pleasure						
Affricate	voiceless					č/t∫						
						choke						
	voiced					j/dz						
						joke						
N asal	voiced	Ш			n		ŋ					
		simme	er		sinner		singe	r				
Approximant	voiced	W			r	У						
		wore			roar	your						
Lateral	voiced				1							
					1ore							

VOWELS

- Vowels are produced with little restriction of the airflow from the lungs out through the mouth and/or the nose.
- ► The quality of a vowel depends on the shape of the vocal tract as the air passes through.
- Different parts of the tongue may be high or low in the mouth, the lips may be spread or pursued, the velum may be raised or lowered.
- Vowel sounds may be longer or shorter in duration.

TONGUE POSITION

- ▶ Here we can clearly see that tongue position is high and low in the mouth.
- For example, the tongue is high in the mouth in the production of the vowels (i) and (u) in the words he (hi) and who (hu).
- ► These are both high vowels, and the (i) is a high front vowel while the (u) is a high back vowel.
- ▶ To produce the vowel sound (a) of hah (ha), the tongue is low in the mouth.
- The vowels (1) and (υ) in the words hit (hit) and put ($p^h \upsilon t$) are similar to those in heat (hit) and hoot (hut) with slightly lowered tongue position.



English vowels have a much more complicated characterization structure. There are four properties that must be described when distinguishing the vowels from one another.

HIGH, MID, or LOW

The height of the tongue during production of the sound.

FRONT, CENTRAL, or BACK

The part of the tongue involved in producing the sound.

ROUNDED or UNROUNDED

The position of the lips when producing the sound.

TENSE or LAX

The duration and muscle effort used to produce two otherwise identical sounds.

STRESSED or UNSTRESSED

The difference between ϑ and Λ .

LIP ROUNDING

- Vowels also differ as to whether the lips are rounded or spread.
- The back vowels (u),(v),(o),and(s) in boot,put,boat,and bawd are the only rounded vowels in English.

DIPHTHONGS

- A diphthong is a sequence of two vowel sounds "squashed" together.
- Dipthongs are present in the phonetic inventory of many languages, including English.
- The vowels we have studied so far are simple vowels, called monophthongs.
- Another diphthong that occurs in English is the vowel sound in boy (bo1), which is the vowel (b) of bore followed by (I) resulting in (b).

NASALIZATION OF VOWELS

- ▶ A **nasal vowel** is a vowel that is produced with a lowering of the velum so that air escapes both through the nose as well as the mouth.
- When the nasal passage is blocked, or all vowels results, when the nasal passage is open, nasal vowels results.
- The words bean,bone,bingo,boom,bam,and bang are examples of words that contain nasalized vowels.
- ► To show the nasalization of a vowel in a narrow phonetic transcription, an extra mark called a **diacritic**-the symbol ~ (tilde) in this case is placed over the vowel, as in bean [bīn] and bone [bŏn].

Tense and Lax Vowels

- English phonology traditionally classifies these vowels into types known as lax and tense.
- The key difference between lax and tense vowels is that tense vowels are longer than the lax vowels of the same height when all other factors affecting the vowel length remains unchanged.

```
tense ("free")
Front
            lax
            tense ("day")
             lax
            lax
            tense ("shoe")
Back
            lax
       U
            tense ("go")
             tense ("law")
            tense ("spa")
Central
             lax
            lax
            lax
             tense ("fur")
tense:
lax:
```

Major Phonetic Classes

- ▶ All sounds are consonant sounds or vowel sounds, though some play dual games.
- ▶ Within consonants, all are voiced or unvoiced, and so on.

Noncontinuants and Continuants

- Stops and affricates belong to the class of noncontinants.
- ▶ There is a total obstruction of the airstream in the oral cavity.
- Nasal stops are included, although air does flow continously out the nose.

Obstruents and Sonorants

- ► The non-nasal stops, the fricates, and the affricates from a major class of sounds called obstruents.
- The airstream may be fully obstructed, as in non-nasal stops and affricates, or nearly fully obstructed, as in the production of fricatives.
- Sounds that are not obstruents are sonorants.
- ► Vowels,nasal stops [m],[n],[n],liquids [1],and [r],and glides [j],and [w],are all sonorants.
- Nasal stops are sonorants because, although the air is blocked in the mouth, it continues to resonate in the nasal cavity.

Consonantal Sounds

- Obstruents, nasal stops, liquids and glides are all consonants.
- Glides may even be referred to as "semivowels" or "semiconsonants".
- Here are some other terms used to form subclasses of consonantal sounds.
- ► Labials [p],[b],[m],[f],[v],[w],[M] Labial sounds are those articulated with the involvement of the lips.
- ► Coronals ,[θ],[δ],[t],[d],[n],[s],[z],[f],[d],[d],[f],[d],[f],[f] Coronal sounds are articulated by raising the tongue blade.
- Anteriors [p],[b],[m],[f],[v],[θ],[δ],[t],[d],[n],[s],[z] Anterior sounds are consonants produced in the front part of the mouth ,that is,from the alveolar area forward.
- ▶ Sibilants [s],[z],[ʃ],[ʒ],[ʧ],[ʤ] This class of consonantal sounds is characterized by an acoustic rather than an articulatory property of its members. The friction created by sibilants produces a hissing sound, which is a mixture of high-frequency sounds.

Syllabic Sounds

- Sounds that may function as the core of a syllable possess the feature syllabic.
- ▶ Placing a schwa [ə] before the syllabic liquid or nasal also shows that these are separate syllables.
- ➤ Similarly,the vowel sound in words like bird and verb are sometimes written as a syllabic r: [brd] and [vrb]. For consistency we shall transcribe these words using the schwa [bərd] and [vərb] —the only instances where a schwa represents a stressed vowel.
- Destruents and glides are never syllabic sounds because an obstruent or glide is always accompanied by a vowel, and that vowel functions as the syllabic core.

Prosodic Features

- ▶ Length,pitch,and stress are prosodic or suprassegmental features.
- Speech sounds that are identical in their place or manner features may differ in lenght(duration).
- ▶ In some languages when a vowel is prolonged to around twice its normal lenght, it can make a difference between words.
- In japanese the Word biru with a regular i means 'building',but with the i doubled in lenght as in biiru,spelled phonetically as [bi:ru],the meaning is 'beer'. Japanese, vowel lenght can make the difference between two words.
- ► English is not a language in which vowel or consonant lenght can change a word. You might say 'puleeeeeze' to emphasize your request, but the word is still *please*.
- ▶ When we speak, we also change the pitch of our voices.
- ► English is a 'stress-timed' language.

Tone and Intonation

Length and stress can make sounds with the same segmental properties different. In some languages, these differences make different words, such as the two digests. Pitch, too, can make a difference in certain languages. Speakers of all languages vary the pitch of

their voices when they talk. The effect of pitch on a syllable differs from language to language.

In English, it doesn't matter whether you say *cat* with a high pitch or a low pitch. It will still mean "cat." But if you say [ba] with a high pitch in Nupe (a language spoken in Nigeria), it will mean "to be sour," whereas if you say [ba] with a low pitch, it will mean "to count." Languages that use the pitch of individual vowels or syllables to contrast meanings of words are called **tone languages**.

In Thai, for example, the same string of segmental sounds represented by [na:] will mean different things if one says the sounds with a low pitch, a midpitch, a high pitch, a falling pitch from high to low, or a rising pitch from low to high.

- [`] L low tone [nà:] "a nickname"
- [-] M mid tone [nā:] "rice paddy"
- [´] H high tone [náː] "young maternal uncle or aunt"
- [^] HL falling tone [na:] "face"
- [*] LH rising tone [naz] "thick"

There are two kinds of tones. If the pitch is level across the syllable, we have a **register tone**.

If the pitch changes across the syllable, whether from high to low or vice versa, we have a **contour tone**.

Commonly, tone languages will have two or three register tones and possibly one or two contour tones.

Tones generally have a lexical function, that is, they make a difference

between words. But in some languages tones may also have a grammatical function, as in Edo spoken in midwestern Nigeria. The tone on monosyllabic verbs followed by a direct object indicates the tense and transitivity of the verb.

Low tone means present tense, transitive; high tone means past tense, transitive, as illustrated here:

ò tà gbề è bé

Ota write+PRES+TRANS book

Ota writes a book.

ò tà gbế è bé

Ota write+PAST+TRANS book

Ota wrote a book.

In many tone languages we find a continual lowering of the absolute pitch on the tones throughout an utterance. The relative pitches remain the same, however.

In the following sentence in Twi, spoken in Ghana, the relative pitch rather than the absolute pitch is important.

"Kofi searches for a little food for his friend's child."

				n' ádàmfò	
LH	L H	H L	L H L	LHLL	H

Languages that are not tone languages, such as English, are called intonation languages.

The pitch contour of the utterance varies, but in an intonation

language as opposed to a tone language, pitch is not used to distinguish

words from each other. Intonation may affect the meaning of whole sentences.

Phonetic Symbols and Spelling Correspondences

Some of pronunciations may differ from your own. For example, you may (or may not) pronounce the words cot and caught identically. In the form of English described here, cot and caught are pronounced differently, so cot is one of the examples of the vowel sound [a] as in car. Caught illustrates the vowel [b] as in core.

Consonants

Symbol	Examples
p	spit tip Lapp
p ^h	pit prick plaque appear
b	bit tab brat bubble
m	mitt tam smack Emmy camp comb
t	stick pit kiss ed write
t ^h	tick intend pterodactyl attack
d	Dick cad drip loved ride
n	nick kin snow mnemonic Gnostic pneumatic know
k	s k in sti ck s c at criti que el k
k^h	curl kin charisma critic mechanic close
g	girl burg longer Pittsburgh
ŋ	si ng thi n k fi n ger
f	fat philosophy flat phlogiston coffee reef cough
v	v at do ve gra v el
8	sip skip psychology pass pats democracy scissors fasten deceive descent
Z	zip jazz razor pads kisses Xerox design lazy scissors maize
θ	thigh through wrath ether Matthew
ð	thy their weather lathe either
S	shoe mush mission natlon fish glaclal sure
3	measure vision azure casual decision rouge
t∫	ma tch ri ch righteous
tʃ ^h	choke Tchaikovsky discharge
d ₃	Judge midget George magistrate residual
1	leaf feel call single
r	reef fear Paris singer
j	you yes f eu d u se
w	witch swim queen
M	which where whale (for speakers who pronounce which differently than witch)
h	hat who whole rehash
?	bottle button glottal (for some speakers), (?)uh-(?)oh
ſ	wri t er, ri d er, la tt er, la dd er

	Vowels
i	b ee t b ea t b e rec ei ve k e y bel ie ve am oe ba p eo ple C ae sar Vaseline ser e ne
I	blt consist Injury bln women
е	gate balt ray great elght gauge greyhound
Ε	bet serenity says guest dead sald
æ	pan act laugh comrade
u	boot lute who sewer through to too two move Lou true sult
Ü	put foot butcher could
Λ	cut tough among oven does cover flood
0	coat go beau grow though toe own sew
)	caught stalk core saw ball awe auto
a	c o t f a ther p al m s e rgeant ho nor h o spital mel o dic
ə	sofa alone symphony suppose melody blrd verb the
aı	bite s igh t b y b uy die dye alsie choir liar island height sign
au	ab ou t br ow n d ou bt c ow ard s au erkraut
OI	boy oil

The "Phonetics" of Signed Languages

Signed languages, like all other human languages, are governed by a grammatical system that includes syntactic and morphological rules.

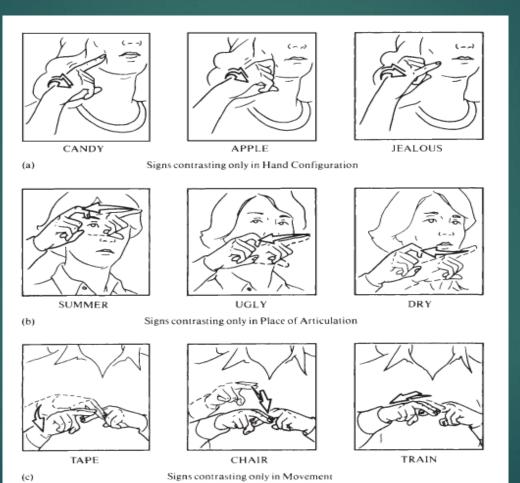
Just as spoken languages distinguish sounds according to place and manner of articulation, so signed languages distinguish signs according to the place and manner in which the signs are articulated by the hands. The signs of ASL, for example, are formed by three major features:

- 1. The configuration of the hand (handshape)
- 2. The movement of the hand and arms toward or away from the body
- **3.** The **location** of the hands in signing space

To illustrate how these features define a sign, the ASL sign meaning "arm" is a flat hand, moving to touch the upper arm. It has three features: flat hand, motion upward, upper arm.

ASL has over 30 handshapes. But not all signed languages share the same handshapes, just as not all spoken languages share the same places of articulation

(French lacks interdental stops; English lacks the uvular trill of French). For example, the T handshape of ASL does not occur in the European signed languages. Similarly, Chinese Sign Language has a handshape formed with an open hand with all fingers extended except the ring finger. ASL does not have this handshape.



QUESTIONS

...... is a branch of phonetics concerned with the hearing of speech sounds and with speech perception.

Choose the correct branch.

- ► A)Oral phonetics
- ▶ B)Nasal phonetics
- ► C) Articulatory phonetics
- ▶ D)Auditory phonetics
- ► E)Acoustic phonetics

- ▶ Choose the right word which belongs to Bilabial
- ► A)Pen
- ▶ B)Fan
- ► C)Three
- ▶ D)Nap
- ► E)Child

Which of the following concerns "three" word?

- ► A)Bilabial
- ▶ B) Velar
- ► C)Glottal
- ▶ D)Interdental
- ► E)Alveolar

.....is the smallest unit of sound that can bring about a change in the meaning of a word when it replaces a sound in that word.

Choose the correct one.

- ► A)Morpheme
- ▶ B)Phoneme
- ► C)Syllable
- ▶ D)Lexeme
- ► E)Affix

- ► WHAT IS MEANING OF PHONETICS?
- ▶ A) is a discipline of linguistics that focuses on the study of the sounds used in speech.
- ▶ B) is a branch of linguistics concerned with the systematic organization of sounds in languages.
- C) is a field of linguistics focused on the study of the forms and formation of words in a language.
- ▶ D) is the grammatical structure of words and phrases to create coherent sentences.

The sounds [w],[j],[r],and [I] may also be called

- ► A) Glide
- **▶** B Affricate
- ► C) Stop
- ▶ D) Nasal
- ▶ E) Approximants

Sounds that may function as the core of a syllable possess the feature...

Choose the correct word.

A)SYLLABIC

B) ARTICULATION

C)CONSONANTAL SOUNDS

D)NASALIZATION OF VOWELS

E) DIPHTONGS

What kind of vowel is high back vowel?

- ► A)I
- ▶ B)A
- **▶** C)E
- ▶ D)U
- **▶** E) f

Which of the syllabic does not enter the section of lip rounding?

- ► A)m
- **▶** B)∪
- ▶ C)ひ
- **▶** D)o
- **►** (3 **<**

... are produced with little restriction of the airflow from the lungs out through the mouth and /or the nose.

Choose the correct option.

- ▶ A) Articulations
- ▶ B) Tongue Positions
- ► C)Lax Vowels
- ▶ D)Vowels
- ► E)Oral Sounds

Languages that use the pitch of individual vowels or syllables to contrast meanings of words are called ...

Choose the option that completes the sentence.

A) Tone

B) Tone languages

B) Phonetic symbols

D) Register tone

E) Contour tone

If the pitch changes across the syllable, whether from high to low or vice versa, we have a...

Choose the option that completes the sentence.

- A) Contour tone B) Failing tone
- C) Low tone C) Rising tone
 - E) Register tone

Downdrift means...

Choose the option that completes the sentence.

- **A)** the lowering of the pitch.
- B) the pitch which changes across the syllable.
- C) sounds are articulated by raising the tongue blade.
- **D)** stress on the first syllable of a two-syllable Word.
- **E)** a single gesture in the sign languages used by the deaf.

Which word is pronounced as /θo:t/?

- A) Caught
- B) Tooth
- C) That
- **D)** Taught
- E) Thought

Which word is pronounced as /θo:t/?

Caught /ko:t/
Tooth /tu:0/
That /ðæt/
Taught /to:t/
Thought /0:t/

There arein which the rise and fall of pitch may contrast meanings of sentences.

Choose the alternative which best completes the given sentence.

- A) Register tones
- B) Tone languages
- C) Stressed languages
- **D)** Intonation languages
- E) Contour tones

Mahsum ELDEMİR Aysel İÇ Rahmi KARAKAYA

