

Introduction to Linguistics

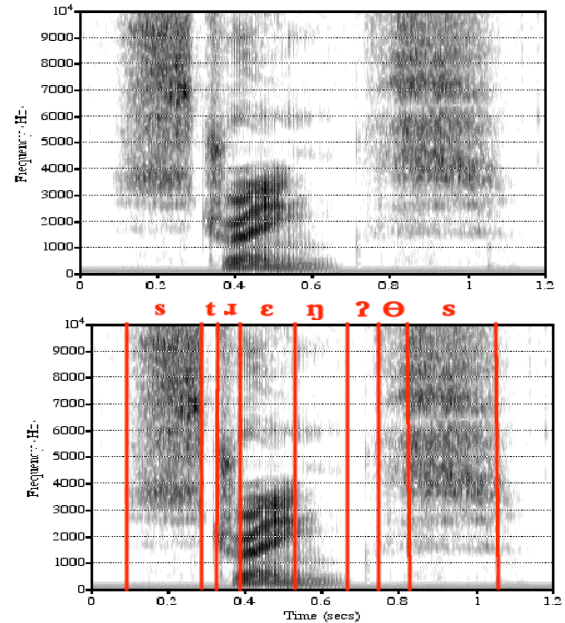
Phonetics 1

Sound Segments

- sounds are continuous, not discrete
- phonetics is concerned with the acoustical and articulatory properties of the sounds we make
- an example of this is the following spectrogram of 'strengths':

Spectrograms

- this kind of representation is made by:
 - recording a word or phrase
 - inputting it into a computer (digitizing the recording)
 - analyzing the nature of the sounds involved
 - generating a graphic representation of the sound(s)
- the spectrogram is the output of this analysis
- as you can see, it does not consist of individual segments, but a continuous stream of sound
- time is marked along the bottom of the spectrogram and frequency along the right side
- it is difficult to work with such representations when describing the regular phonetic system of English
- we reduce this graphic representation to an abstract alphabet, called a phonetic alphabet



English Spelling

- example from the book: Did *he* believe *C*æsar could *see* the *pe*ople *seize* the *seas*?
- all these different vowel symbols have the same phonetic value
- also: The silly *am*œba stole the *key* to the *mach*ine.
- sometimes the same symbol represents different sounds, such as <a> in:
My *f*ather wanted *man*y *a* village dame badly

[a] [ɛ] [ə] [ɪ] [eɪ] [æ]

The Phonetic Alphabet

- the International Phonetic Alphabet (IPA) is the most widely used system
- in the US some symbols are different from the standard IPA, but most are the same

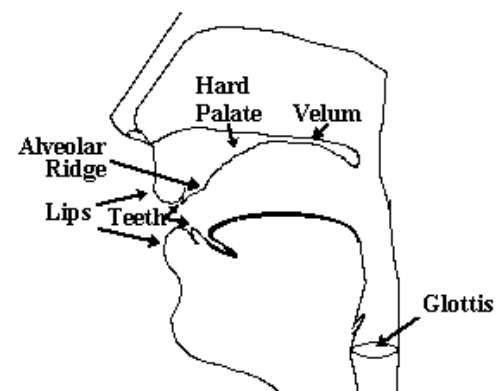
U.S.	IPA
š	ʃ
ž	ʒ
č	tʃ
ǰ	dʒ

Articulatory Phonetics

- what parts of anatomy we use to make speech sounds

Places of Articulation

- Bilabial
- Labiodental
- Dental
- Alveolar
- Post-alveolar/palato-alveolar/alveo-palatal
- Palatal
- Velar
- Glottal



Manner of Articulation

- Voicing
 - vibration of the vocal cords causes voicing
 - vowels are usually voiced
 - consonants may be voiced or voiceless
- Nasal vs. Oral: nasals are produced by lowering the velum and letting air pass through the nose

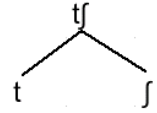
Degree of Closure

- the amount of closure between articulators affects the type of sound produced:

	Degree of Closure	Resulting Sound Type
1.	complete closure	stops/plosives
2.	close approximation	fricatives
3.	open approximation	<u>approximants</u>

Affricates

- complex consonant with two parts: a stop or plosive part and a fricative part
- only two affricates in English, tʃ and dʒ, although there are others in other languages



IPA Consonants

- chart of main consonants
- pulmonic means 'made with the lungs'
- place of articulation across the top
- manner of articulation down the side

CONSONANTS (PULMONIC)

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	Bilabial	Labiodental	Dental	Alveolar	Post-alveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill				ʀ					ʁ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

Non-Pulmonic Consonants

- Non-pulmonic refers to other modes of production:
- Velaric - clicks
- Glottalic - uses the larynx
- Egressive - air goes out
- Ingressive - air goes in

CONSONANTS (NON-PULMONIC)

Clicks	Voiced implosives	Ejectives
ʘ Bilabial	ɓ Bilabial	ʼ Examples:
ǀ Dental	ɗ Dental/alveolar	ɓ' Bilabial
ǃ (Post)alveolar	ɟ Palatal	t' Dental/alveolar
ǂ Palatoalveolar	ɡ Velar	k' Velar
ǁ Alveolar lateral	ɠ Uvular	s' Alveolar fricative

OTHER SYMBOLS

ɬ	Voiceless labial-velar fricative	ç ʝ	Alveolo-palatal fricatives
ɰ	Voiced labial-velar approximant	ɻ	Voiced alveolar lateral flap
ɰ	Voiced labial-palatal approximant	ɧ	Simultaneous ʃ and x
ħ	Voiceless epiglottal fricative		
ʕ	Voiced epiglottal fricative		Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary.
ʔ	Epiglottal plosive		

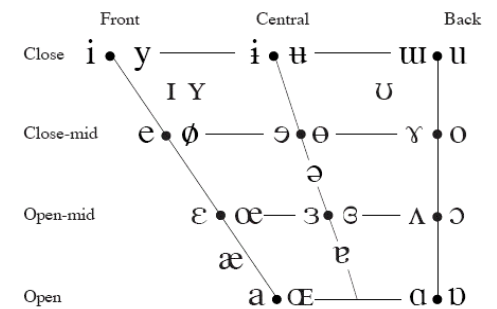
Other Symbols

- no place for these in the chart
- most important for English is: [w] (it has two places of articulation)

Vowels

- vowels distinguished by height, backness and rounding
- other features also possible (see Diacritics)
- IPA Close = High, Open = Low
- Close-mid and Open-mid = Mid

VOWELS



Where symbols appear in pairs, the one to the right represents a rounded vowel.

Diacritics

- Diacritics are added to symbols to provide further information
- E.g., nasalized vowel [õ], palatalized consonant [tʃ], etc.

DIACRITICS Diacritics may be placed above a symbol with a descender, e.g. ɿ̥

Suprasegmentals

- Stress, intonation, length, etc.

Tone

- Symbols to represent a variety of kinds of tones

SUPRASEGMENTALS

	Primary stress	
	Secondary stress	
:	Long	eː
˘	Half-long	eˑ
◌̥	Extra-short	e̥
	Minor (foot) group	
	Major (intonation) group	
.	Syllable break	i.i.ækt
◌̣	Linking (absence of a break)	

TONES AND WORD ACCENTS LEVEL CONTOUR

ē or ˥	Extra high	ẽ or ˨	Rising
é or ˥̄	High	ẽ or ˨̄	Falling
ē or ˥̄	Mid	ẽ or ˨̄	High rising
ē or ˥̄	Low	ẽ or ˨̄	Low rising
ē or ˥̄	Extra low	ẽ or ˨̄	Rising-falling
↓	Downstep	↗	Global rise
↑	Upstep	↘	Global fall

◌̥	Voiceless	ɳ ɖ	◌̤	Breathily voiced	ɓ̤ ɗ̤	◌̦	Dental	ț d̦
◌̤	Voiced	s̤ t̤	◌̥	Creaky voiced	ɓ̥ ɗ̥	◌̣	Apical	ṭ ḍ
◌̥	Aspirated	tʰ dʰ	◌̥	Linguolabial	t̤ d̤	◌̣	Laminal	ṭ ḍ
◌̤	More rounded	ɔ̤	◌̥	Labialized	tʷ dʷ	◌̣	Nasalized	ẹ̃
◌̣	Less rounded	ɔ̣	◌̣	Palatalized	tʲ dʲ	◌̣	Nasal release	ḍⁿ
◌̣	Advanced	ɹ̣	◌̣	Velarized	tˠ dˠ	◌̣	Lateral release	ḍˡ
◌̣	Retracted	ɛ̣	◌̣	Pharyngealized	tˤ dˤ	◌̣	No audible release	ḍ̚
◌̣	Centralized	ẹ̃	◌̣	Velarized or pharyngealized	ɫ			
◌̣	Mid-centralized	ẹ̃	◌̣	Raised	ɛ̥ (ɹ̥ = voiced alveolar fricative)			
◌̣	Syllabic	ɳ	◌̣	Lowered	ɛ̞ (β̞ = voiced bilabial approximant)			
◌̣	Non-syllabic	ɳ̣	◌̣	Advanced Tongue Root	ɛ̠			
◌̣	Rhoticity	ɹ̣ ɹ̣	◌̣	Retracted Tongue Root	ɛ̡			