Phonetics

Darrell Larsen

Linguistics 101

Outline

What Is Phonetics?

Definition

the study of speech sounds

The Branches of Phonetics

1. acoustic (the physics of sound)
2. auditory (how the ear processes sound)
3. articulatory (how we produce speech sounds)

Articulatory Phonetics

- We will examine the following questions:
  - How can we accurately transcribe speech sounds?
  - What speech organs are involved in speech production?
  - How do we manipulate the flow of air to produce sounds?

Why Do We Need a Phonetic Alphabet?

- Linguists use a phonetic transcription system to record speech sounds.
- In this class, we will use the International Phonetic Alphabet (IPA)

Question

Why not just use the Roman alphabet?

Why Do We Need a Phonetic Alphabet?

Why Do We Need a Phonetic Alphabet?

English

⟨c⟩	[k]
	cat
	cord
	cup

Czech

⟨c⟩	[ts]	
	co	'what'
	Václav	(name)
	třicet	'thirty'

Why Do We Need a Phonetic Alphabet?

⟨a⟩	b<u>a</u>ll
	s<u>a</u>nd
	m<u>a</u>ke

⟨t⟩	<u>t</u>all
	s<u>t</u>op
	la<u>t</u>er
	pa<u>t</u>ience
	<u>t</u>rain

Why Do We Need a Phonetic Alphabet?

⟨ea⟩	h<u>ea</u>lth
	w<u>ea</u>lth
	st<u>ea</u>lth

⟨ck⟩	ba<u>ck</u>
	bu<u>ck</u>et
	cra<u>ck</u>ed

Why Do We Need a Phonetic Alphabet?

⟨e⟩	late science
⟨h⟩	hour blah blah blah
⟨k⟩	knee knife

Why Do We Need a Phonetic Alphabet?

English Vowel Letters

⟨a, e, i, o, u⟩

English Vowel Sounds

beat	bit	bought
bet	boot	bull
but	bulemic	bog
*bird		
bow	bout	bide
bike	boy	bate
boat		

International Phonetic Alphabet (IPA)

About the IPA

- Contains symbols to represent all sounds from all languages
- 1-to-1 correspondence between sounds and symbols
- Includes diacritics to indicate tone, stress, etc.
- Many symbols from or based on Latin and Greek alphabets
- Not the only phonetic alphabet in use

International Phonetic Alphabet (IPA)

IPA Pulmonic Consonant Chart

CONSONANTS (PULMONIC) © 2005 IPA

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
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.

Full IPA chart available at: http://www.langsci.ucl.ac.uk/ipa/IPA_chart_(C)2005.pdf

*Note that *Language Files* has slightly different categories in some cases. We will follow the book.

Transcription Examples

Transcriptions

'ways'	[weɪz]	'Sprite'	[spɹɑɪt]	'that'	[ðæt]
'achieve'	[ətʃiv]	'energetic'	[ɛnɻdʒɛrək]	'spelling'	[spɛlɪŋ]
'use'	[jus]	'cowboy'	[k^hɑʊbɔɪ]	'pudding'	[p^hʊrɪŋ]

Free Variation

- In some instances, there can be some variation in the pronunciation.
  'cat' [k^hæt] or [k^hæt˞] or [k^hæʔ]

Aspiration

- Some English sounds are *aspirated* in certain environments.

Transcriptions

'pet'	[pʰɛt]	'tea'	[tʰi]	'cat'	[kʰæt]
'bet'	[bɛt]	'deep'	[dip]	'gift'	[gɪft]
'spot'	[spɑt]	'stuck'	[stʌk]	'scar'	[skɑɹ]
'whip'	[wɪp]	'sat'	[sæt]	'beak'	[bik]

Question

- Which sounds in English can be aspirated?
- What do these sounds have in common?
- In which phonetic environment(s) are these sounds aspirated?

Flapping

- What we spell with ⟨t⟩, ⟨tt⟩, ⟨d⟩, ⟨dd⟩ is often not [t] or [d], but rather the flap [ɾ]

Question

- In which phonetic environment(s) does the flap appear?

Transcription Notes

- Phonetic transcriptions are written in square brackets [ ].
- Transcribe words based on *sound*, not spelling.
- Don't use a schwa ([ə]) in stressed syllables.
- Upper- and lowercase letters are *not* interchangeable.
- Some morphemes, like past tense -*ed*, are not always pronounced the same.
- When a syllable lacks a vowel, be sure to use a syllable marker (e.g. 'kitten' [kʰɪʔn̩])

How Consonants Are Articulated

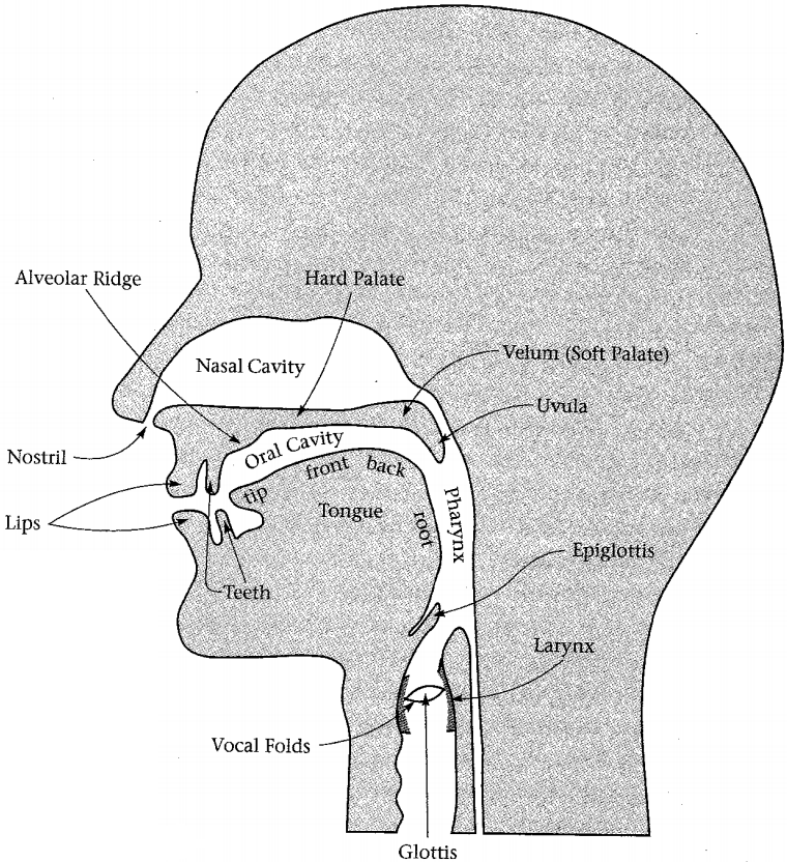
- The articulation of consonants involves the complete or partial constriction of airflow within the vocal tract.

Distinguishing Features of English Consonants

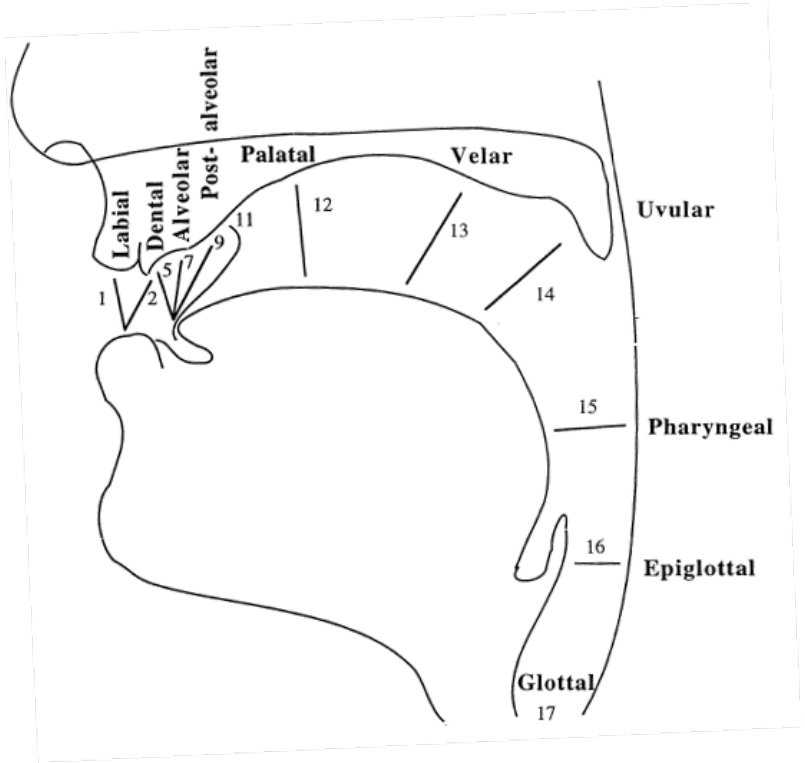
1. place of articulation (place of airflow obstruction)
2. manner of articulation (manner of airflow obstruction)
3. voicing (vibration/nonvibration of vocal cords)

Charts are available on the back cover or your book. Be sure to note the additions I make.

Places of Articulation



Source: [Bergmann et al., 2007, p. 49]



Source: [Ladefoged & Maddieson, 1996, p. 13]

Places of Articulation

Places of Articulation Used in English

1. bilabial
2. labiodental
3. interdental
4. alveolar
5. postalveolar
6. palatal
7. velar
8. glottal

Manners of Articulation

Manners of Articulation Used in English

1. plosive (= stop)
2. fricative
3. affricate
4. flap *(add this row to your book's chart!)
5. nasal
6. liquid (lateral and retroflex)
7. glide

Voicing

Voicing Parameters Used in English

1. voiced (vibration)
2. voiceless (no vibration)

How Vowels Are Articulated

- Vowels are produced with a relatively open vocal tract, lacking any significant constriction.

Distinguishing Features of English Vowels

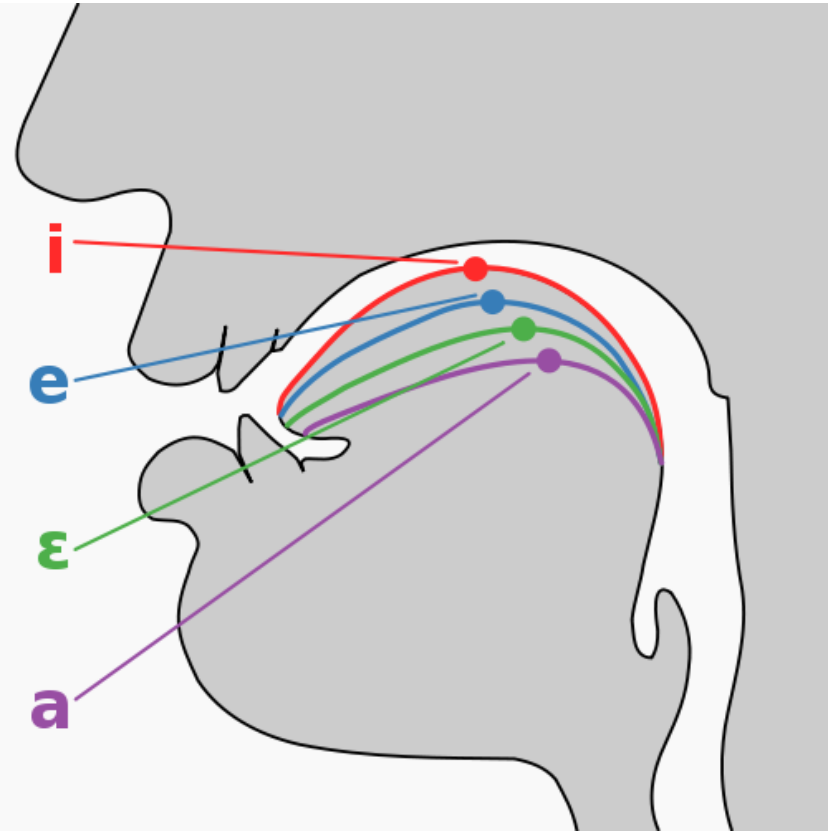
1. height
2. tongue advancement
3. tenseness

Additional Vowel Features

- lip rounding

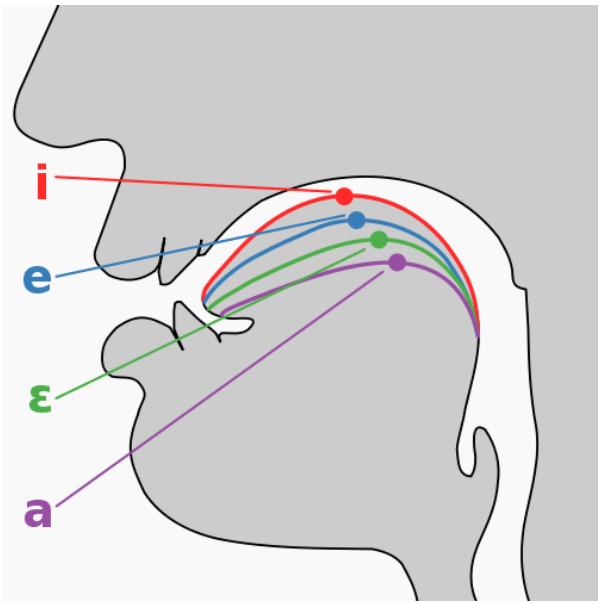
Height

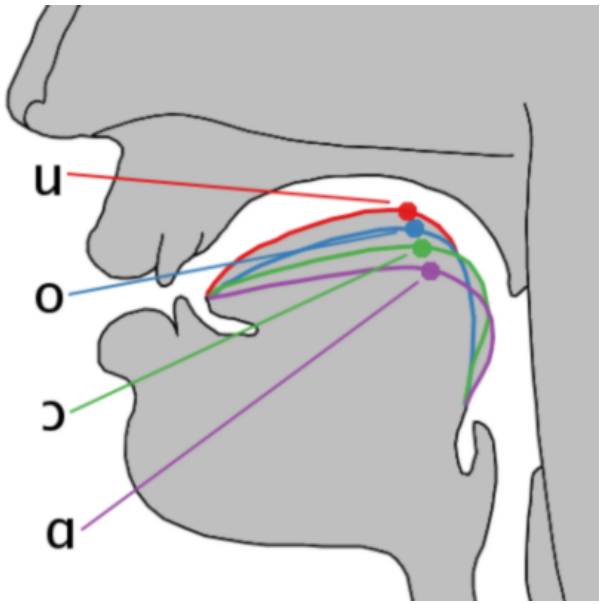
- Refers to the relative height of the relevant part of the tongue
- Vowels may be:
  1. high
  2. mid
  3. low



Tongue Advancement

- Refers to relative advancement of the tongue body
- Vowels may be:
  1. front
  2. central
  3. back





Tenseness

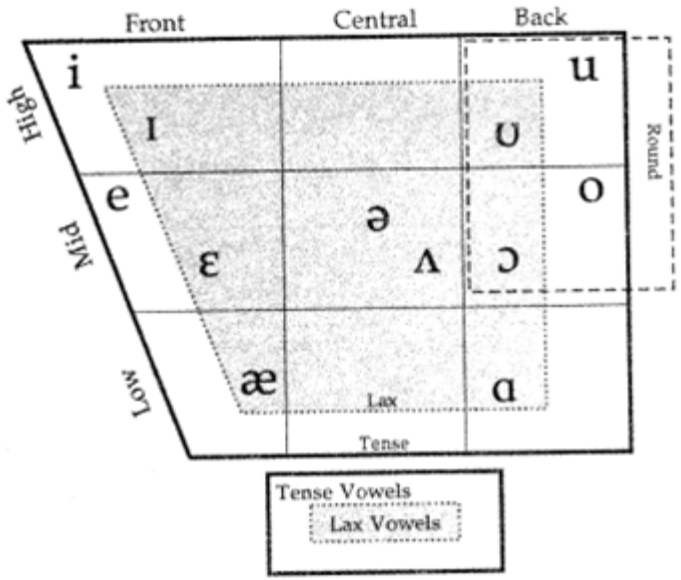
- Refers to relative tenseness of the lip and/or tongue muscles
- Vowels may be:
  1. tense
  2. lax

Lip Rounding

- Refers to whether the lips are rounded or unrounded
- Vowels may be:
  1. rounded
  2. unrounded
- English has rounded and unrounded vowels, but lip rounding is not a *distinguishing feature* in English.

Monophthongs

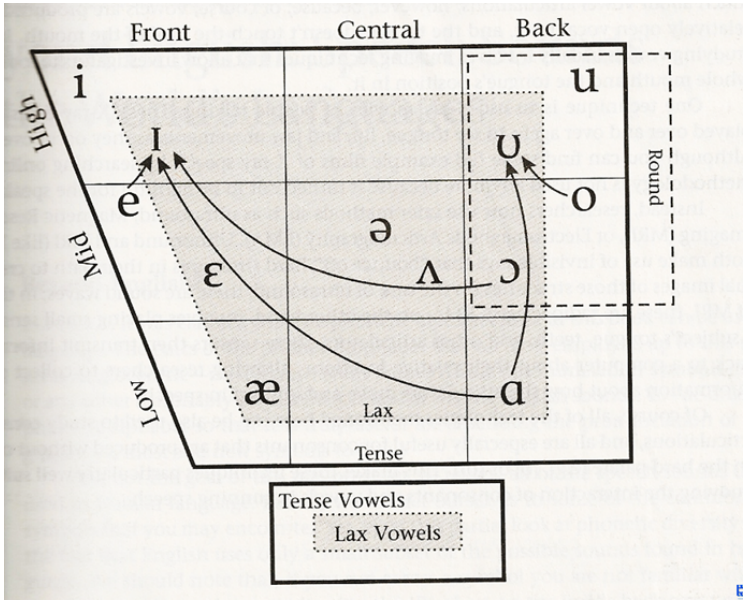
- Monophthongs are simple vowel sounds.
- Excluding [e] and [o], American English contains the following monophthongs:



(Add [e] and [o] to your book's chart. You will need to know their features.)

Diphthongs

- Monophthongs are complex vowel sounds, transitioning from one vowel to another.
- American English contains the following diphthongs:



A Note on Other Languages

- The set of distinctions listed above is not comprehensive.
- The distinctions found in English are not relevant in all languages. For example,
  - Spanish and Korean have no *tenseness* distinction for vowels
  - Japanese and Korean have no *labiodental* consonants
- Other languages may have distinctions that English lacks. For example,
  - *lip rounding* is distinctive for vowels in French and German
  - Vietnamese contains *implosive* consonants
  - Khoisan languages (spoken in southern Africa) contain *clicks*
  - Chinese and Thai contain *tones*

References I


Bergmann, Anouschka, Kathleen Currie Hall, & Sharon Miriam Ross, eds. (2007) *Language Files: Materials for an Introduction to Language and Linguistics*. Columbus: The Ohio State University Press, 10 ed.


Ladefoged, Peter & Ian Maddieson (1996) *The Sounds of the World's Languages*. Oxford: Blackwell Publishers.