Consonants

Ling 20: Introduction to Linguistic Analysis

UCLA · Winter 2022

Consonants

Consonants are speech sounds that are articulated with **complete or partial closure** of the vocal tract.

Main parameters for describing consonants

1. ***Manner of articulation:***
   how the gesture in the vocal tract occurs
2. ***Place of articulation:***
   where in the vocal tract the gesture occurs
3. ***Nasality:***
   whether or not the velum is lowered, allowing vibrating air into the **nasal cavity**
4. ***Voicing:***
   whether or not the vocal folds are **vibrating**

Voicing

Voicing refers to whether or not the vocal folds are vibrating while the sound is being made:

- ***Voiced:***
  Vocal folds vibrate while the sound is being made.

- ***Voiceless:***
  Vocal folds don’t vibrate while the sound is being made.

Voicing in English

English has many pairs of consonants that only differ in voicing:

[s]	vs.	[z]	(*sip* vs. *zip*)
[f]	vs.	[v]	(*fan* vs. *van*)
[θ]	vs.	[ð]	(*thigh* vs. *thy*)
[ʃ]	vs.	[ʒ]	(*mission* vs. *vision*)
[tʃ]	vs.	[dʒ]	(*chump* vs. *jump*)
[p]	vs.	[b]	(*pat* vs. *bat*)
[t]	vs.	[d]	(*tip* vs. *dip*)
[k]	vs.	[g]	(*cap* vs. *gap*)

Nasality

Nasality refers to whether or not the velum is raised during the production of the sound:

- ***Nasal:***
  The velum is lowered so the air flows into the nasal cavity.

- ***Oral/Nonnasal:***
  The velum is raised so the air does not flow into the nasal cavity.

Nasality

The nasal sounds of English:

[n]	(*ba<u>n</u>*)
[m]	(*ba<u>m</u>*)
[ŋ]	(*ba<u>ng</u>*)

Manner of articulation

How the gesture in the vocal tract occurs:

1. **Stops**
2. **Fricatives**
3. **Approximants**

Stops

Stops are sounds that create a **complete blockade** in the oral tract.

We now take a look at some of them (primarily ones that occur in English or which we will encounter again later in the quarter).

Bilabial stops

[p]	bilabial, voiceless, oral	“pan”
[b]	bilabial, voiced, oral	“ban”
[m]	bilabial, voiced, nasal	“man”

Alveolar stops

[t]	alveolar, voiceless, oral	“tan”
[d]	alveolar, voiced, oral	“Dan”
[n]	alveolar, voiced, nasal	“Dan”
[ɾ]	alveolar, voiced, oral, flap	“letter”
[r]	alveolar, voiced, oral, trill	“perro” (*in Spanish*)

Velar stops

[k]	velar, voiceless, oral	“can”
[g]	velar, voiced, oral	“get”
[ŋ]	velar, voiced, nasal	“sing”

Glottal stop

[ʔ]	glottal, voiceless, oral	_uh-_oh, Hawai’i

Fricatives

Fricatives are produced by creating a **radical narrowing** in the oral tract.

Through that radical narrow, a turbulence in the air-flow is created that makes a characteristic “hissing” sound.

Bilabial fricatives

[ɸ]	bilabial, voiceless, oral	“Fuji” (*in Japanese*)
[β]	bilabial, voiced, oral	“deber” (*in Spanish*)

Labio-dental fricatives

[f]	labiodental, voiceless, oral	“f̲an”
[v]	labiodental, voiced, oral	“v̲an”

Dental fricatives

[θ]	dental, voiceless, oral	“th̲igh”
[ð]	dental, voiced, oral	“th̲e”

Alveolar fricatives

[s]	alveolar, voiceless, oral	“s̲ip”
[z]	alveolar, voiced, oral	“z̲ip”

Postalveolar fricatives

[ʃ]	postalveolar, voiceless, oral	“mission”
[ʒ]	postalveolar, voiced, oral	“vision”

Glottal fricative

[h] glottal, voiceless, oral “heap”

Affricates

Affricates are produced as a **stop** that is released into a **fricative.**

They are sometimes treated as a single speech sound. In this class, we will treat them as the combination of **two sounds.**

English affricates

[tʃ]	alveopalatal, voiceless, oral	“chump”
[dʒ]	alveopalatal, voiced, oral	“jump”

Approximants

Approximants involve a **less radical narrowing** in the oral tract than is found with fricatives, but greater than is found with vowels.

For this reason, approximants are sometimes also called **semi-vowels.**

Labial approximants

[w]	labio-velar, voiced, oral	“win”

Alveolar approximants

[l]	alveolar, voiced, oral, lateral	“l̲ed”
[ɹ]	alveolar, voiced, oral	“r̲ed”

Palatal approximants

[j] palatal, voiced, oral “yes”

Consonants: The IPA

CONSONANTS (PULMONIC) © 2018 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			

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

A note on consonant classifications

IPA:		***Articulatory properties:***
plosive	↔	oral stop
nasal	↔	nasal stop
trill	↔	oral trill stop
tap/flap	↔	oral tap/flap stop
fricative	↔	oral fricative
approximant	↔	oral approximant

Vowels

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Vowels

A vowel is a speech sound that is articulated while the vocal tract is completely **open.**

There is no air pressure build-up at any point above the glottis.

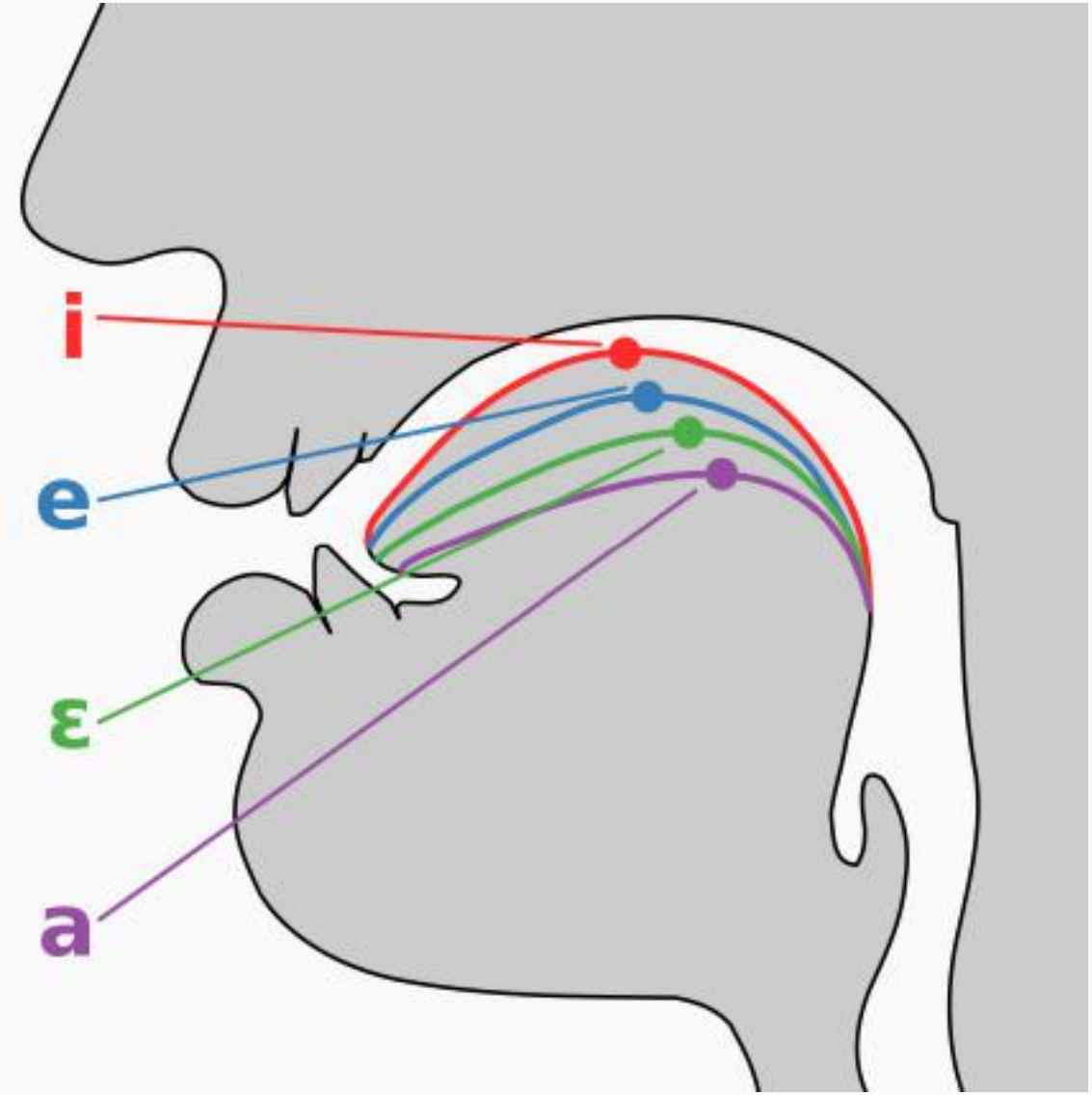
Parameters for describing vowels

1. ***Tongue position:***
   - **Height**
   - **Backness**

2. ***Rounding of lips:***
   rounded vs. unrounded

3. ***Tenseness:***
   tense vs. lax

Tongue position



(https://en.wikipedia.org/wiki/Vowel#Height)

Vowel height

Height of the tongue's highest point in the mouth
↛ distance between the tongue and the roof of the mouth

"h<u>ea</u>t" (*high*) vs. "h<u>a</u>t" (*low*)

Vowel backness

How far back in the mouth is the tongue positioned?

“h<u>ea</u>t” (*front*) vs. “h<u>oo</u>t” (*back*)

Lip rounding

Are the lips rounded while the vowel is produced?

“h<u>oo</u>t” (*rounded*) vs. “h<u>ea</u>t” (*unrounded*)

Tenseness

- ***Tense vowels:***
  - produced with greater muscle tension
  - usually longer

- ***Lax vowels:***
  - produced with less muscle tension
  - usually shorter

Front vowels

[i]	high, unrounded, tense	“b<u>ee</u>t”
[ɪ]	high, unrounded, lax	“b<u>i</u>t”
[e]	mid, unrounded, tense	“d<u>e</u>ber” (*in Spanish*)
[ɛ]	mid, unrounded, lax	“r<u>e</u>d”
[æ]	low, unrounded, lax	“r<u>a</u>d”
[a]	low, unrounded, tense	“c<u>a</u>r” (*in Boston English*)

Central vowels

[ɨ]	high, unrounded, lax	“ros̲es”
[ə]	mid, unrounded, lax	“Ros̲a’s”

Back vowels

[u]	high, rounded, tense	“f<u>oo</u>d”
[ʊ]	high, rounded, lax	“p<u>u</u>t”
[o]	mid, rounded, tense	“perr<u>o</u>” (*in Spanish*)
[ɔ]	mid, rounded, lax	“<u>o</u>range”
[ʌ]	mid, unrounded, lax	“c<u>u</u>t”
[ɑ]	low, unrounded, tense	“c<u>o</u>t”

Diphthongs

- All the vowels we have seen so far are **pure vowels.**
  - There is no noticeable change in the quality of the vowel over the course of the production.

- A second group of vowels is called **diphthongs.**
  - The vowel ends differently than it starts.
  - Diphthongs are basically a combination of two vowels, or a vowel and a glide, with a gradual transition between them.

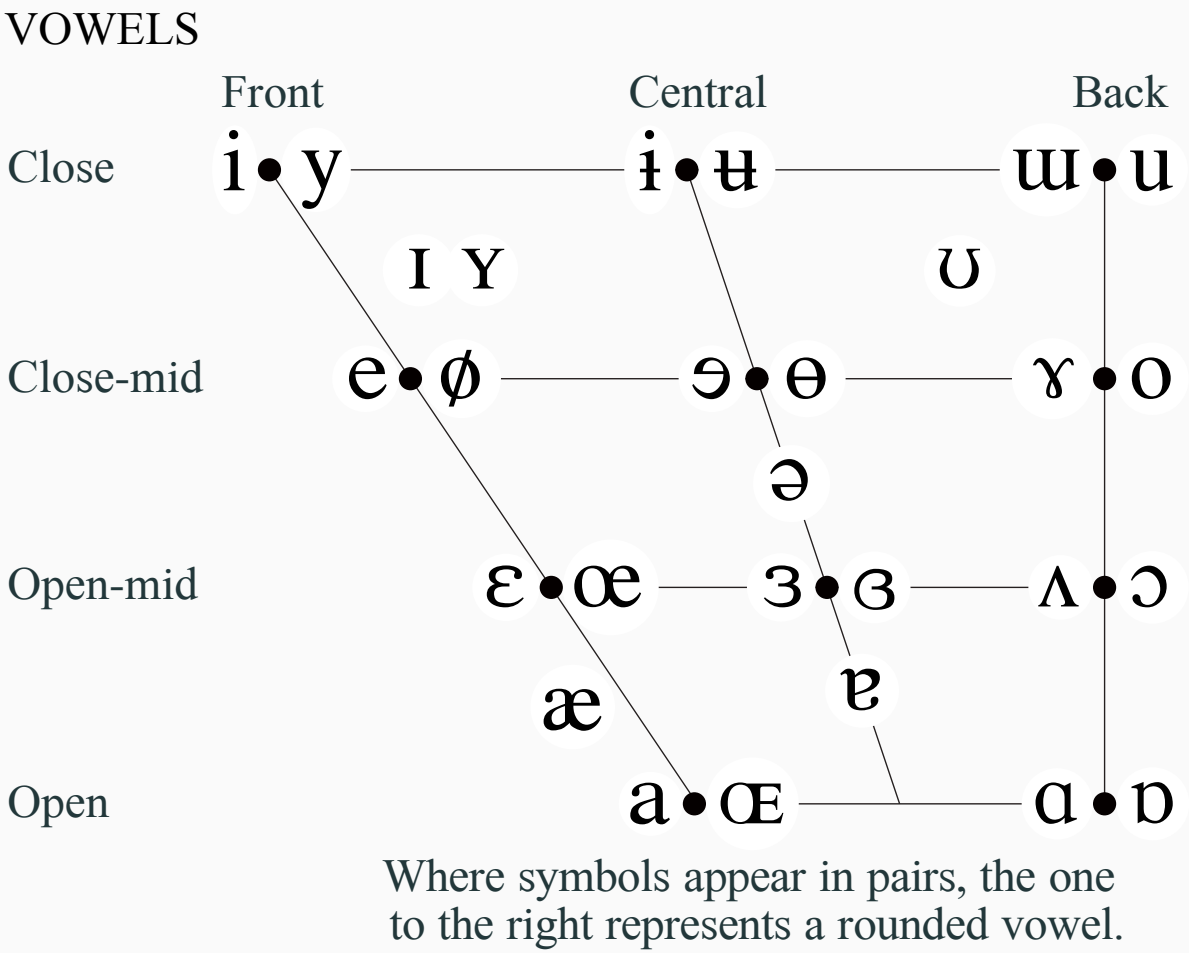
Front diphthongs

[e͡j]	mid, front, unrounded	“b<u>ai</u>t”
[a͡j]	low, front, unrounded	“<u>i</u>ce”
[a͡w]	low, front, rounded	“bl<u>ou</u>se”

Back diphthongs

[o͡w]	mid, back, rounded	“b<u>oa</u>t”
[ɔ͡j]	mid, back, rounded	“b<u>oy</u>”

Vowels: The IPA



Practice 1

[fʌnɑlədʒɪsts mʌst kip ðe̞jɻ ʔiɻz spɛktækjulɬɻli klin]

Practice 2

[ðæt lɪrəl bɐ̯jkəɹi ʔʌp ðə plæzə mɐ̯jks tɐ̯jsti mʌfɪnz ænd kɹimi spɑndʒ kɐ̯jks]

Practice 3

[ʔɑl hæpi kætz ɑɹ əlaj̯k itʃ ʌnhæpi kæt ɪz ʌnhæpi ɪn ɪts ʔo̯wn we̯j̯]

Practice 4

[ʌndəɹ sɨɹtən sɨɹkəmstænsez ðəɹ ɑɹ fju ʔa̰wəɹz ɪn la̰jf mo̰wɹ əgɹiəbəl ðɛn ðɪ a̰wəɹ dɛdike̞jɾɨd tʊ ðə sɛɹəmo̰wni no̰wn əz æftəɹnun ti]

Practice 5

[mɪstɨɹ ænd mɪsɪs dɨɹsli ʌv nʌmbɨɹ foʊ̯wɹ pɹɪvət dɹaɪ̯v wɨɹ pɹaʊ̯wd tu seɪ̯ ðæt ðeɪ̯ wɨɹ pɨɹfəktli nɑɹməl, θæŋk ju vɛɹi mʌtʃ. ðeɪ̯ wɨɹ ðə læst pipəl jud əkspɛkt tʊ bi ɪnvɑlvd ɪn ɛniθɪŋ stʃɹeɪ̯ndʒ əɹ mɪstiɹɪəs bɪkɑs ðeɪ dʒʌst dɪdənt hoʊ̯wld wɪθ sʌtʃ nɑnsəns]