

Grab an IPA chart and reference guide (also on the syllabus)

Phonetics: The Sounds of Language

Matt Zaslansky - LIGN 101

Today's Plan

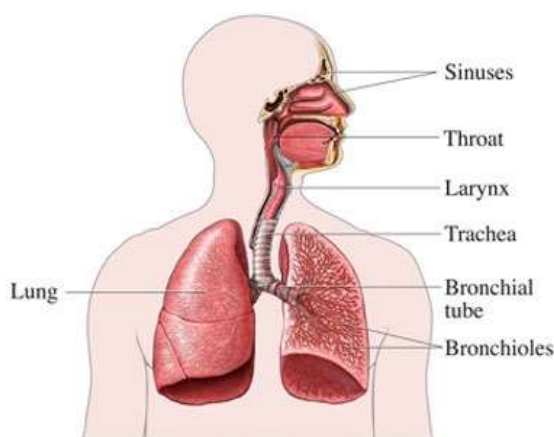
- How does speech work?
 - How can we write down speech?
 - How do we describe consonants?
-

How does speech work?

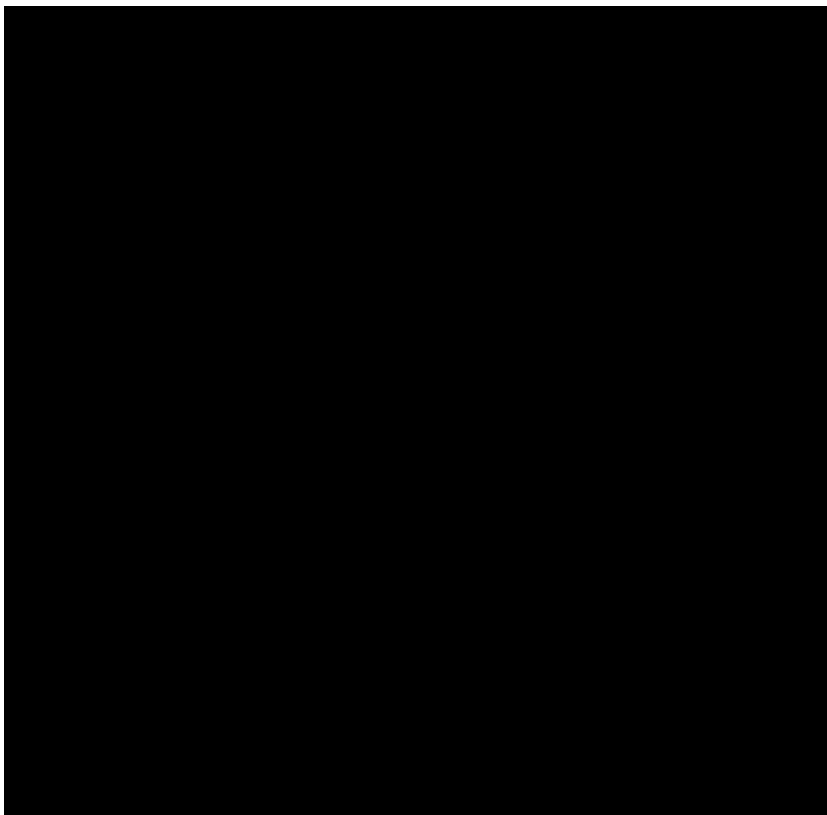
The Speech Process

- Flapping bits of meat inside your head while blowing out air
 - This creates vibrations in the air you're expelling
 - The ear picks these up, and interprets them as speech.
 - This process is studied in **Phonetics**
-

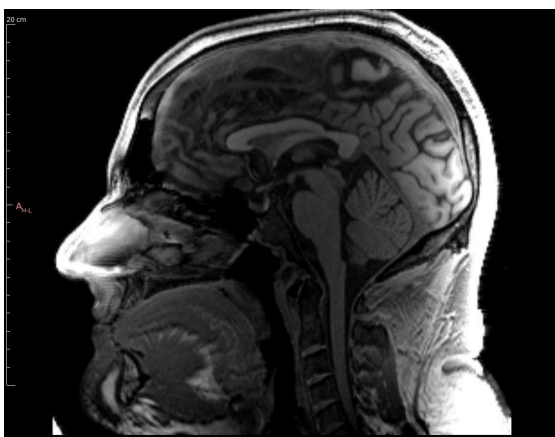
The Lungs



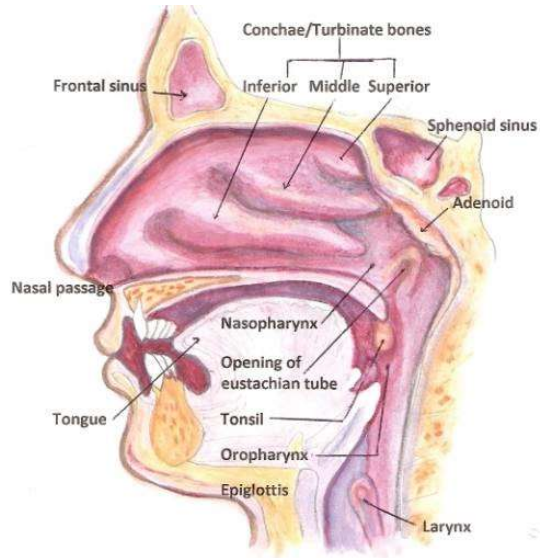
Sagittal Sections



Sagittal Sections



Flapping bits of meat (“articulation”)



Simplified a bit...

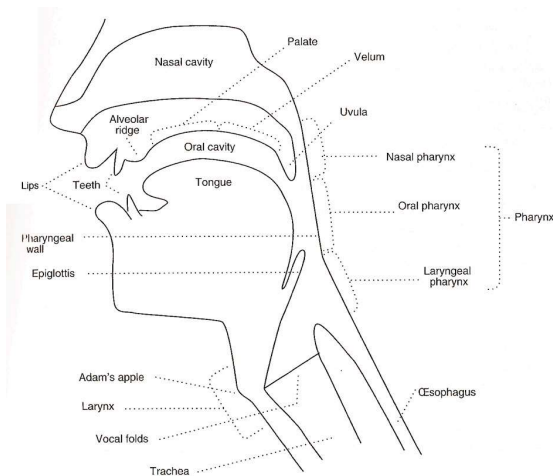
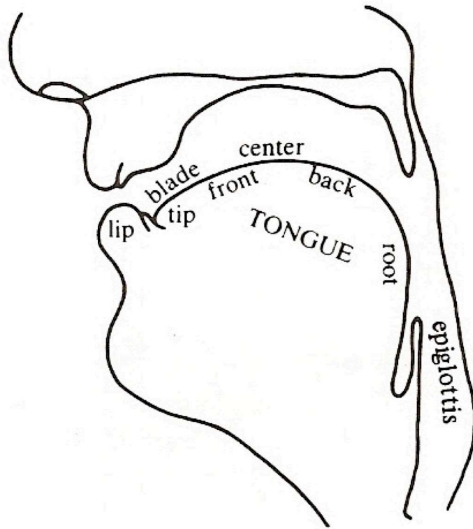


Figure 1.2 The vocal tract

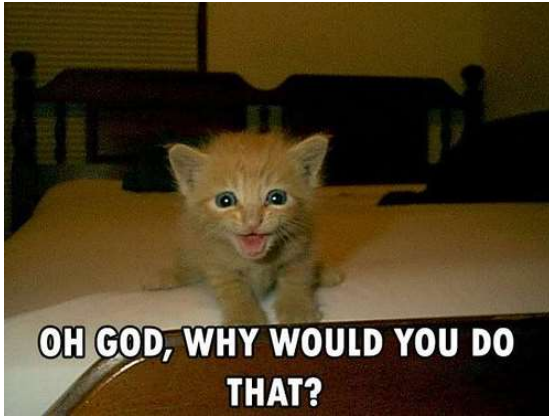
You will not be responsible for any anatomical terms not required for transcription on exams

The Tongue



0:00

0:00 / 1:37



Let's do an experiment

The North Wind and the Sun were disputing which was the stronger, when a traveler came along wrapped in a warm cloak.

Speech is absolutely insane

- It's a series of fluid and overlapping gestures
 - It's amazingly complex
 - ... and it's nothing like we think it is
-

How do we wrap our heads around it?

- First, we break speech into 'segments' or 'phones'
 - Then, we figure out how to describe those phones and their properties
 - This lets us *transcribe* what was said, rather than what words were said
 - But first you need to realize that...
-

Your writing system is a trainwreck



Your writing system is lying to you

- Every minute of every day
 - “They thoroughly and roughly wrought the boughs in the borough, through and through”
 - C doesn’t exist
 - The ‘ee’ in ‘pee’ is silent
 - The ‘e’
 - TH is neither a t nor an h, and represents two different sounds
 - ... and if you start thinking about letters, you’re going to start struggling
 - For this class, consider your writing system with the same skepticism you would normally reserve for a guy with a broken bottle walking towards you in a dark alley.
-

... but wait, speech is super complicated

- Our writing system is lying to us
- Many languages don’t have writing systems
- ... and we still need to write down what was said in them

• Is there no hope?!

The IPA allows us to ‘transcribe’ speech

- You throw away the writing system, and write down the *sequence of sounds* being produced
 - “Black Lives Matter”
 - In Will’s dialect: /blæk lajvz mæɾəʊ/
 - Note the /z/, and the /r/ tap, and the lack of “c”
-

The Entire IPA is shown on the IPA chart

Important Note: Most Online IPA Charts with Sound are awful!

- ipachart.com is bad and should feel bad
 - <https://savethevowels.org/ipa> (<https://savethevowels.org/ipa>) is not
 - [Here’s the International Phonetic Association’s Version](https://www.internationalphoneticassociation.org/IPAcharts/inter_chart_2018/IPA_2018.html) (https://www.internationalphoneticassociation.org/IPAcharts/inter_chart_2018/IPA_2018.html)
 - If you’re just typing IPA, you can use [this tool](https://wstyler.ucsd.edu/intipa/#/keyboard) (<https://wstyler.ucsd.edu/intipa/#/keyboard>)
 - Use the quick reference guide too!
-

We have a new tool!

<http://savethevowels.org/ipa> (<http://savethevowels.org/ipa>)

- Give this a try to see audio and video of IPA sounds!
-

To understand the IPA, you need to understand how sounds work

How do we describe how speech sounds are made?

We break the world into two kinds of speech sounds

- **Consonants:** Constrict, obstruct, or divert air in the vocal tract when being produced
 - **Vowels:** Shape the (unobstructed) vocal tract to change the sound emitted
-

Describing Consonants

###
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des
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* W
to k
thre
thir
* P
Wh
the
ma
* M
Wh
we
the
* V
Are
ma
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Place

Place of Articulation

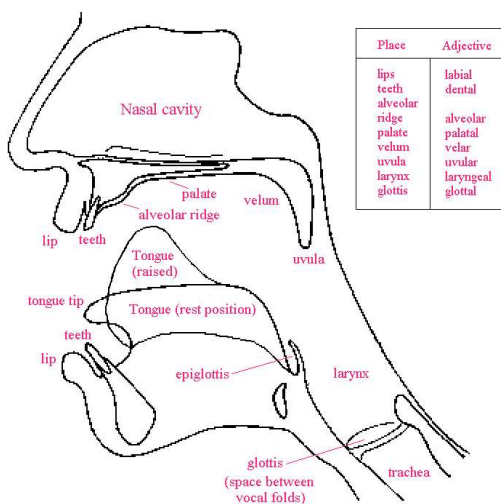
- Where is the sound being made?

###

Pla

◀ ▶

Place



Place

- **Bilabial:** As in “*boy*”
- **Labiodental:** As in “*Vote*”
- **Interdental:** As in “*Those*”
- **Alveolar:** As in “*Totes!*”
 - Your alveolars may be *dental*
- **Postalveolar:** As in “*Judge*”
 - Your textbook calls these ‘palatal’
 - We’ll accept either for this class
- **Velar:** As in “*Clamking*”
- **Glottal:** As in “*Uh-oh!*”

The first and last sounds in “King” are...

- A. **Bilabial**: As in “*Batman* isn’t *me*!”
 - B. **Labiodental**: As in “*Vowels* aren’t *foul*!”
 - C. **Alveolar**: As in “*Totes lit*!”
 - D. **Postalveolar**: As in “*Judgy Cheetahs*”
 - E. **Velar**: As in “*Go call young carpenters*”
-

The first and last sounds in “King” are...

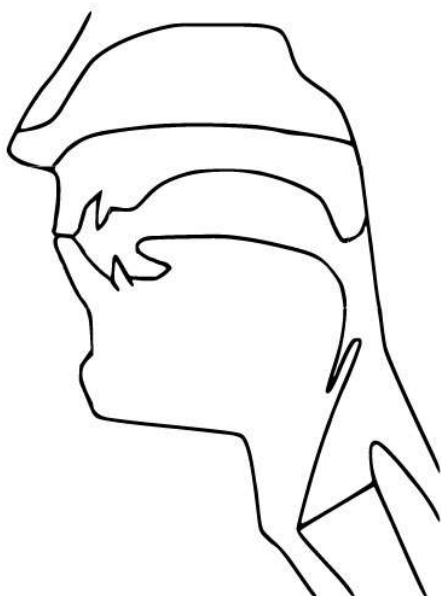
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-

There are other places English doesn’t use

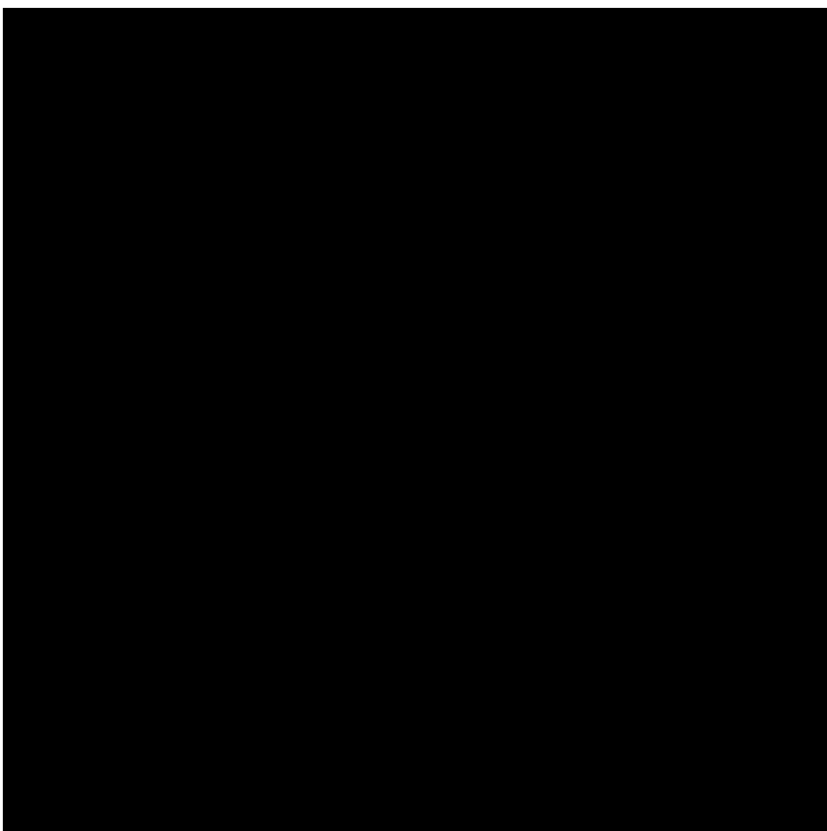
- ‘Uvular’ sounds are made involving the uvula
 - As Cardi B says, ‘that little dangly thang that swang in the back of my throat’
 - The French “r” sound in ‘rouge’
 - ‘Retroflex’ sounds curl the tongue up and back
 - Present in Hindi/Urdu, as well as many other languages!
-

Reference Diagrams for Place of Articulation

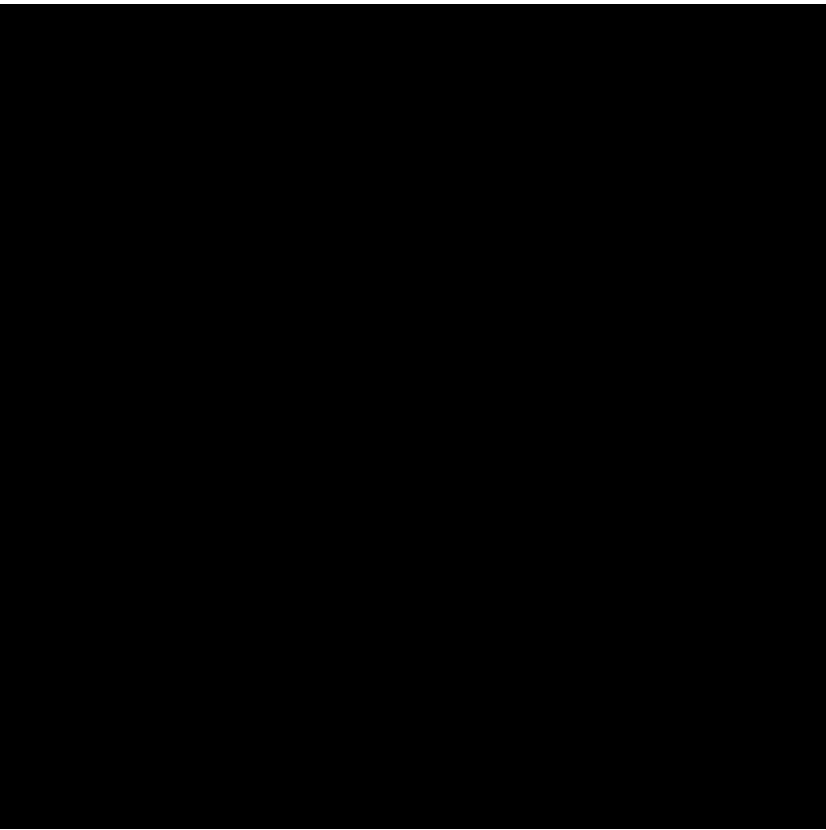
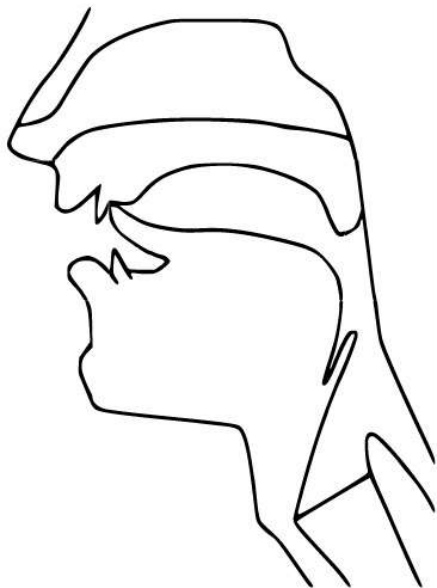
Bilabial



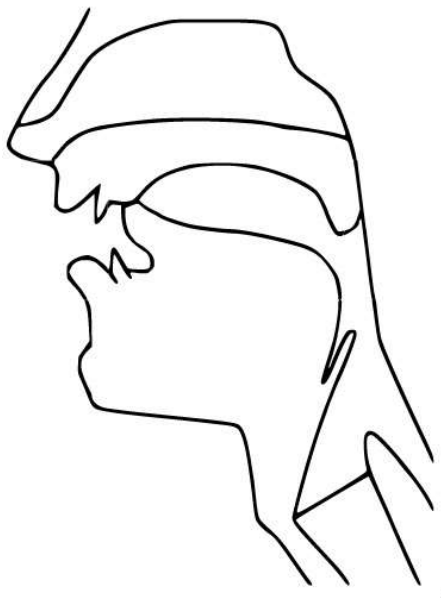
Bilabial



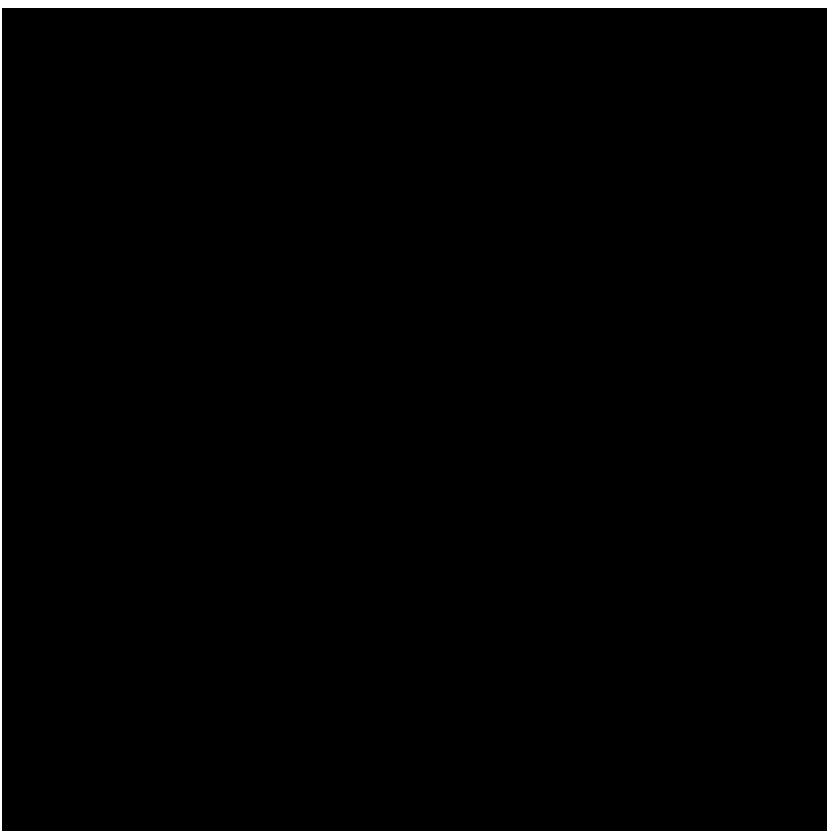
Dental



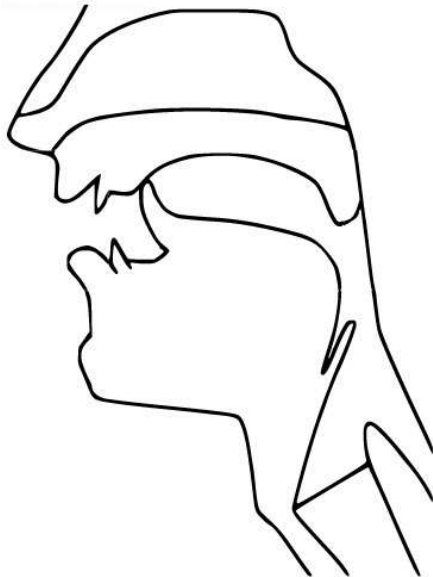
Alveolar



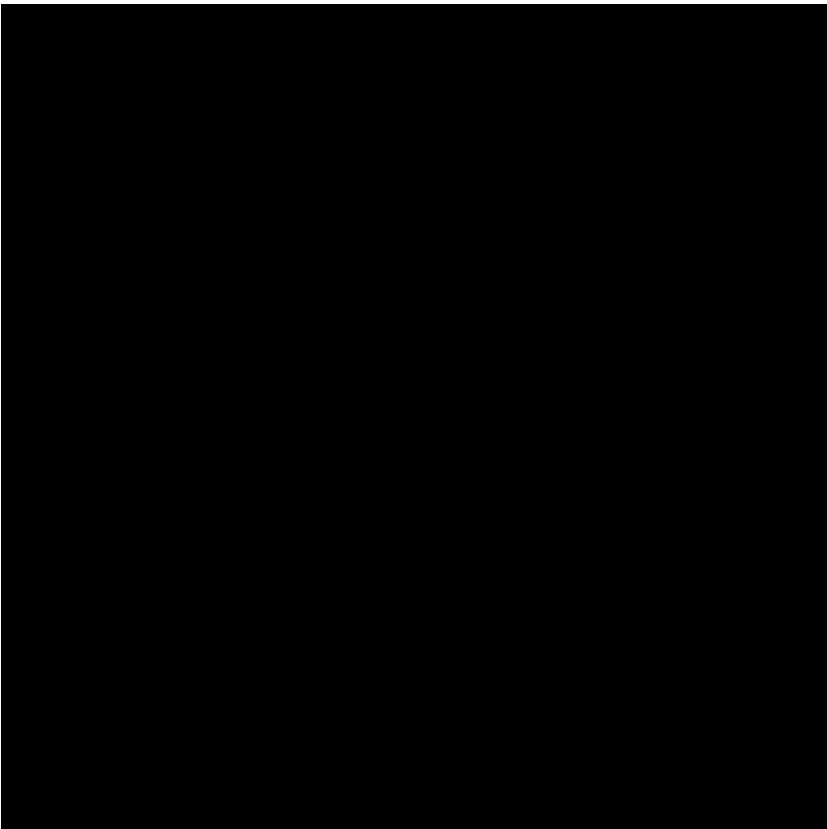
Alveolar



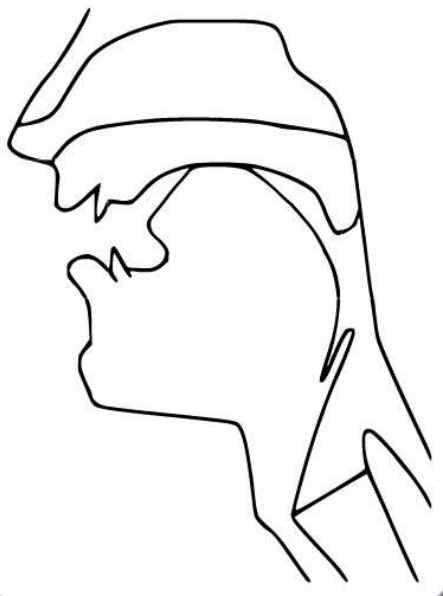
Retroflex



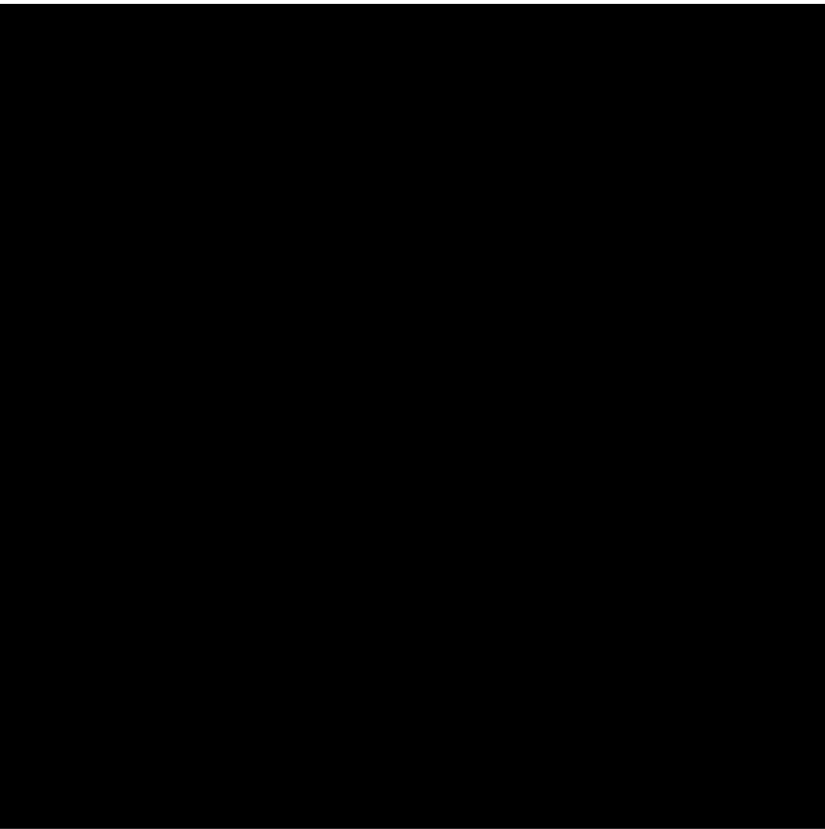
Retroflex



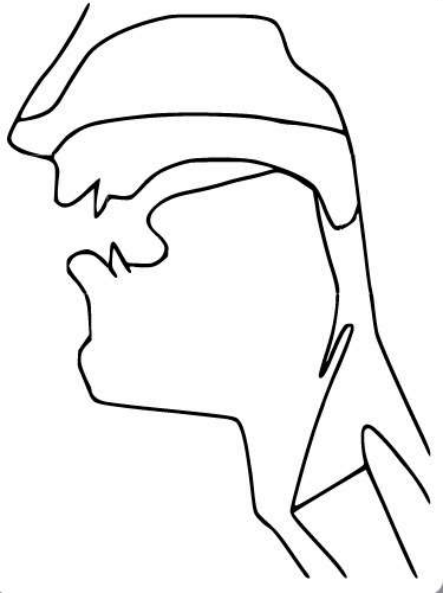
Palatal



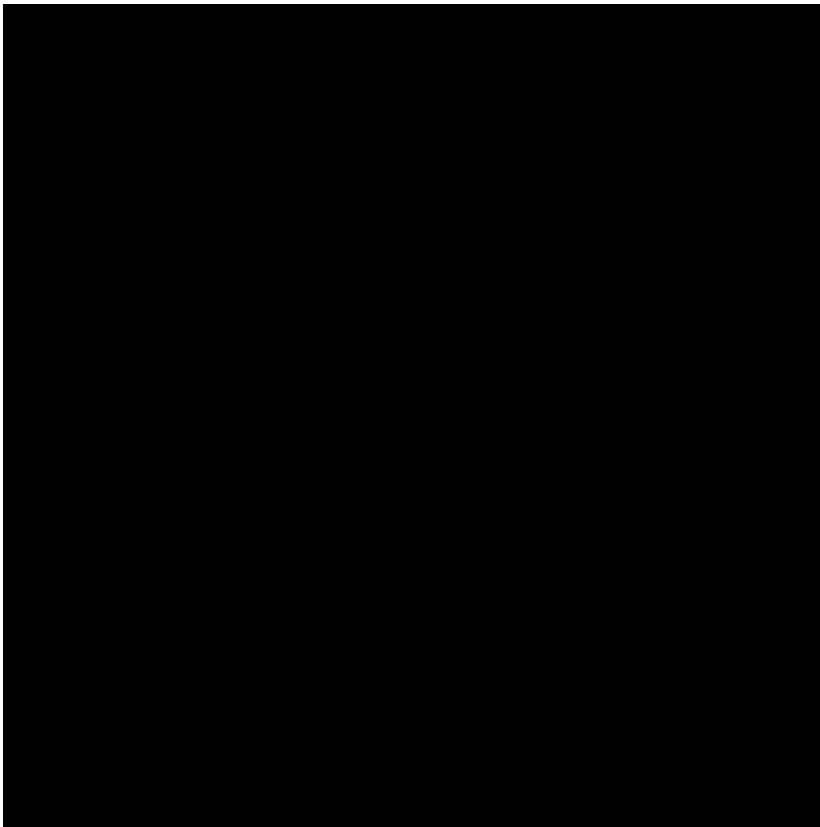
Palatal



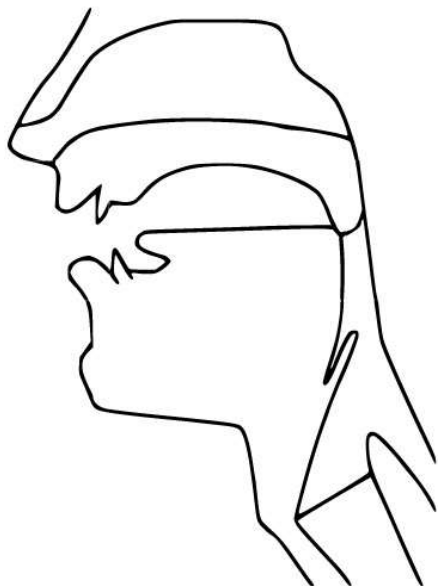
Velar



Velar



Uvular



Uvular



Manner of Articulation

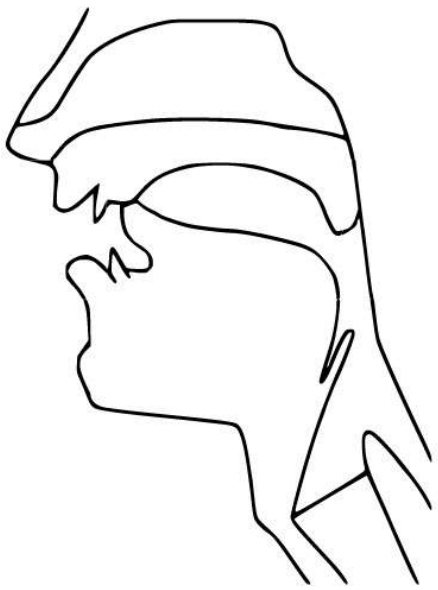
Manner

“So what are you doing with the articulators?”

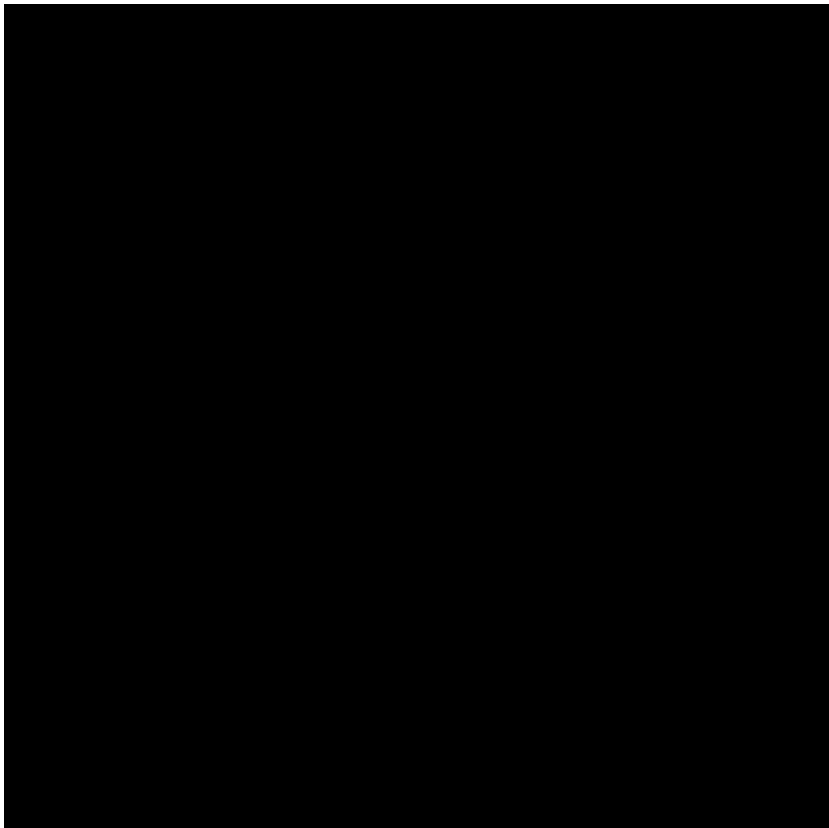
Manner

- **Stops:** Stop the airflow (also called ‘plosives’)
 - As in ‘**cat docket**’
 - **Taps:** Throw your tongue against the roof of your mouth
 - As in ‘later **ladder winners**’
 - **Fricatives:** Constrict the airflow to make sounds
 - As in ‘**flashy soviet shifters**’
 - **Nasals:** Channel the air out the nose
 - As in ‘**wing man**’
-

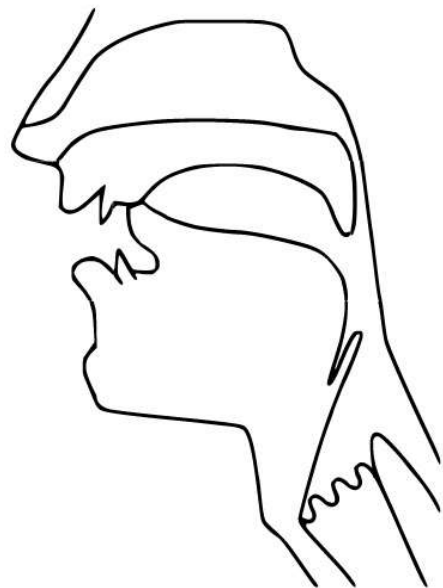
Oral Stop (/d/)



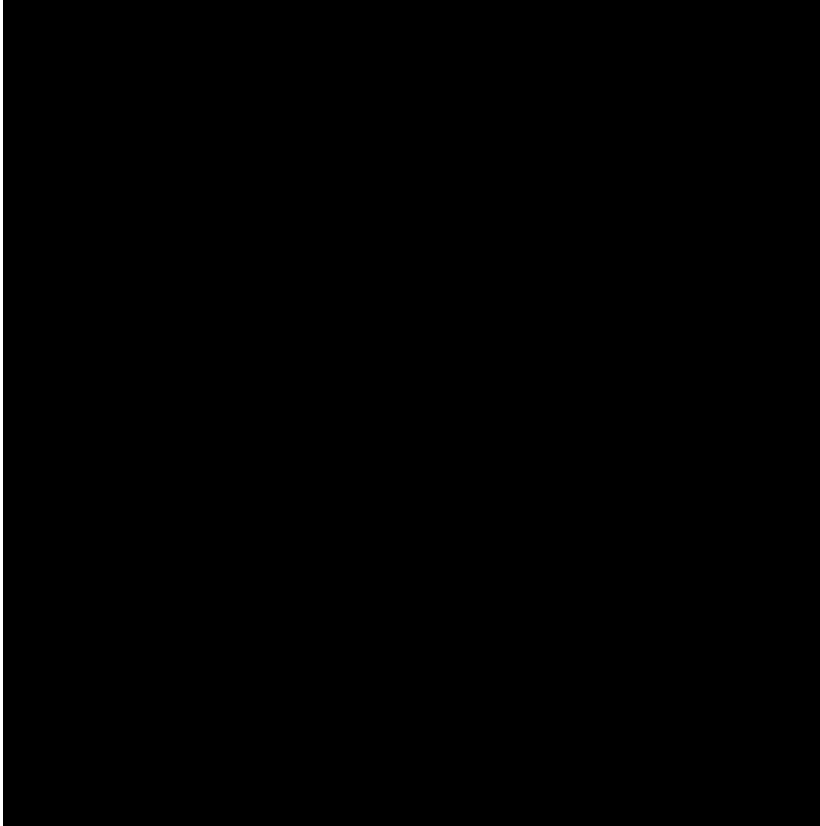
Oral Stop (/d/)



Nasal Stop (/n/)

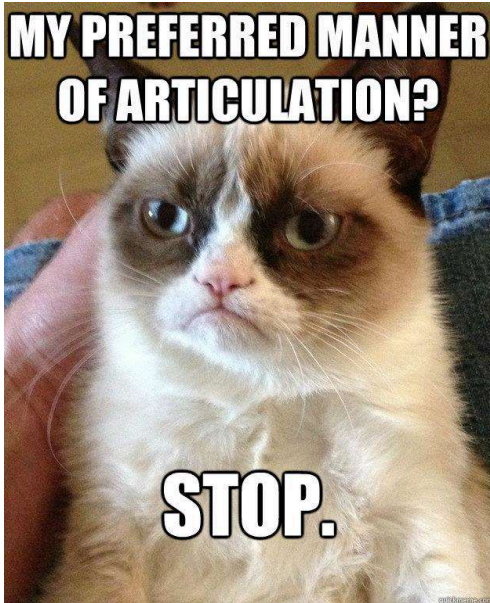


Nasal Stop (/n/)



Manner (Continued)

- **Approximants:** Bring the tongue *toward* the place
 - As in ‘**y**ou **w**ill’
 - **Laterals:** Channel air *around* the tongue
 - As in ‘**l**aterals’
-



The initial sounds in “Taco Bell” are...

- A. **Stops:** Stop the airflow
 - B. **Fricatives:** Constrict the airflow to make sounds
 - C. **Nasals:** Channel the air out the nose
 - D. **Approximants:** Bring the tongue *toward* the place
 - E. **Laterals:** Channel air *around* the tongue
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 - E. **Laterals:** Channel air *around* the tongue
-

The initial sounds in “Vaguely Silly Phantom Show” are...

- A. **Stops:** Stop the airflow
- B. **Fricatives:** Constrict the airflow to make sounds

C. **Nasals**: Channel the air out the nose

D. **Approximants**: Bring the tongue *toward* the place

E. **Laterals**: Channel air *around* the tongue

###
sou
“Va
Pha
Sho
A) S
the
B) I
Co
air
ma
C) I
Cha
out
D)
Ap
Brin
ton
the
E) I
Cha
<i>aro</i>
ton
◀ ▶

Voicing

Voicing

- Is the larynx buzzing, or not?
-

Content Warning: Things are about to get weird.

0:00 / 2:19

Video Source (<https://www.youtube.com/watch?v=uwAR7J9471M>)

This is not the only such video

- [Here's one featuring Will Ramos of Lorna Shore \(https://www.youtube.com/watch?v=Ua8SuWNPrLE\)](https://www.youtube.com/watch?v=Ua8SuWNPrLE) getting scoped during heavy metal vocals!
 - The twisting his larynx can do is *incredibly* unusual, and really cool!
-

Let's pretend we're snakes eating bees!



Voiced vs. Voiceless

- Cat
 - Bob
 - Month
 - Those
 - Crash
 - Judge
-

The initial sounds in “Phonetics wins popularity” are...

- A. All Voiced
 - B. All Voiceless
 - C. Voiceless, Voiced, Voiceless
 - D. Voiced, Voiceless, Voiced
 - E. None of the above
-

The initial sounds in “Phonetics wins popularity” are...

- A. All Voiced
 - B. All Voiceless
 - C. **Voiceless, Voiced, Voiceless**
 - D. Voiced, Voiceless, Voiced
 - E. None of the above
-

Three steps to describing Consonants

- We need to know three things:
 - **Place:** Where is the sound made?
 - **Manner:** What are we doing there?
 - **Voicing:** Are we making voicing?
-

All consonants can be described this way

- /m/ - Voiced Bilabial Nasal
 - /t/ - Voiceless Alveolar Stop
 - /g/ - Voiced Velar Stop
 - /f/ - Voiceless Labiodental Fricative
-

There are a couple of weird ones

- /ɹ/ - The English “R”, a voiced ‘alveolar’ approximant
 - “Reed read the wrong resolution”
 - Super weird
- /w/ - A voiced labio-velar approximant
 - “Will would wisely watch the wind”
 - Has a voiceless version (“Cool whip” from Family Guy)

‘Affricates’

If you combine a fricative and a stop, you get an affricate

- **Judge** (dʒʌdʒ)
- **Cheese** (tʃiːz)
- **Cats** (kæts)

Once we’ve organized sounds by place, manner, and voicing, we have...

English Consonants

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	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	ʙ			r					ʀ		
Tap or Flap			ɾ	ɽ		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.

		Front of Mouth ←		→ Back of Mouth		
		Place of Articulation		Place of Articulation		Place of Articulation
Manner of Articulation		Voiceless	Voiced	Voiceless	Voiced	Voiceless
Manner of Articulation		Voiceless	Voiced	Voiceless	Voiced	Voiceless
Manner of Articulation				Voiced	Voiceless	
...	

Closed ↑
↓ Open

THE INTERNATIONAL PHONETIC ALPHABET (revised to 2005)

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 ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ɸ β		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			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.

Can't figure out where in the mouth that is?

Ask Sammy the Interactive Sagittal Section (<http://smu-facweb.smu.ca/~s0949176/sammy/>)!

- Or check UBC's Enunciate (<https://enunciate.arts.ubc.ca/>) site

So, that's consonants.

- We'll talk about vowels next time!
 - But those are described also by thinking about where your tongue is in your mouth
 - And what your lips are doing!

Let's Practice!

Every vowel here is /i/

- BBs
- Meat
- Sheen
- Thief
- Reap
- Cheek
- Weeder

Spoiler alert

Every vowel here is /i/

- BBs /bibiz/
- Meat /mit/

- Sheen /ʃɪn/
 - Thief /θɪf/
 - Reap /ɹɪp/
 - Cheek /tʃiːk/
 - Wheel /wiːl/
-

Every vowel here is /ɛ/

- Wrecked
 - Them
 - Gem
 - Hedge
 - Geth
-

Spoiler Alert

Every vowel here is /ɛ/

- Wrecked /ɹɛkt/
 - Them /ðɛm/
 - Gem /dʒɛm/
 - Hedge /hɛdʒ/
 - Geth /gɛθ/
-

Every vowel here is /ɑ/

- Song
 - Wrought
 - Shop
 - Rot
 - Thought
 - Chop
-

Spoiler Alert

Every vowel here is /ɑ/

- Song /sɑŋ/

- Wrought /ʌt/
 - Shop /ʃap/
 - Rot /ʌt/
 - Thought /θat/
 - Chop /tʃap/
 - Unless, like me, you're not from California... in which case it's /sɒn/, /ɹɒt/, and /θɒt/!
-

So, that's how we describe consonants

- Place, manner, and voicing!
 - Vowels talk about the height of the tongue, the front-backness of the tongue, and the rounding of the lips
 - ... and we have way more of them than the writing system makes you believe!
-

Wrapping it up

- Speech is crazy complicated
 - The English writing system is a large lagoon of lies
 - We describe consonants by talking about place, manner, and voicing
 - The English writing system is a festival of falsehoods
 - You can use your knowledge of articulation to help with transcription
 - The English writing system is a dumpster of deception
 - The IPA can save us!
-

Next time...

- Vowels, more on transcription, and some phonetic pun!
-

Download an IPA chart and reference guide from the syllabus or take one here!

Thank you!