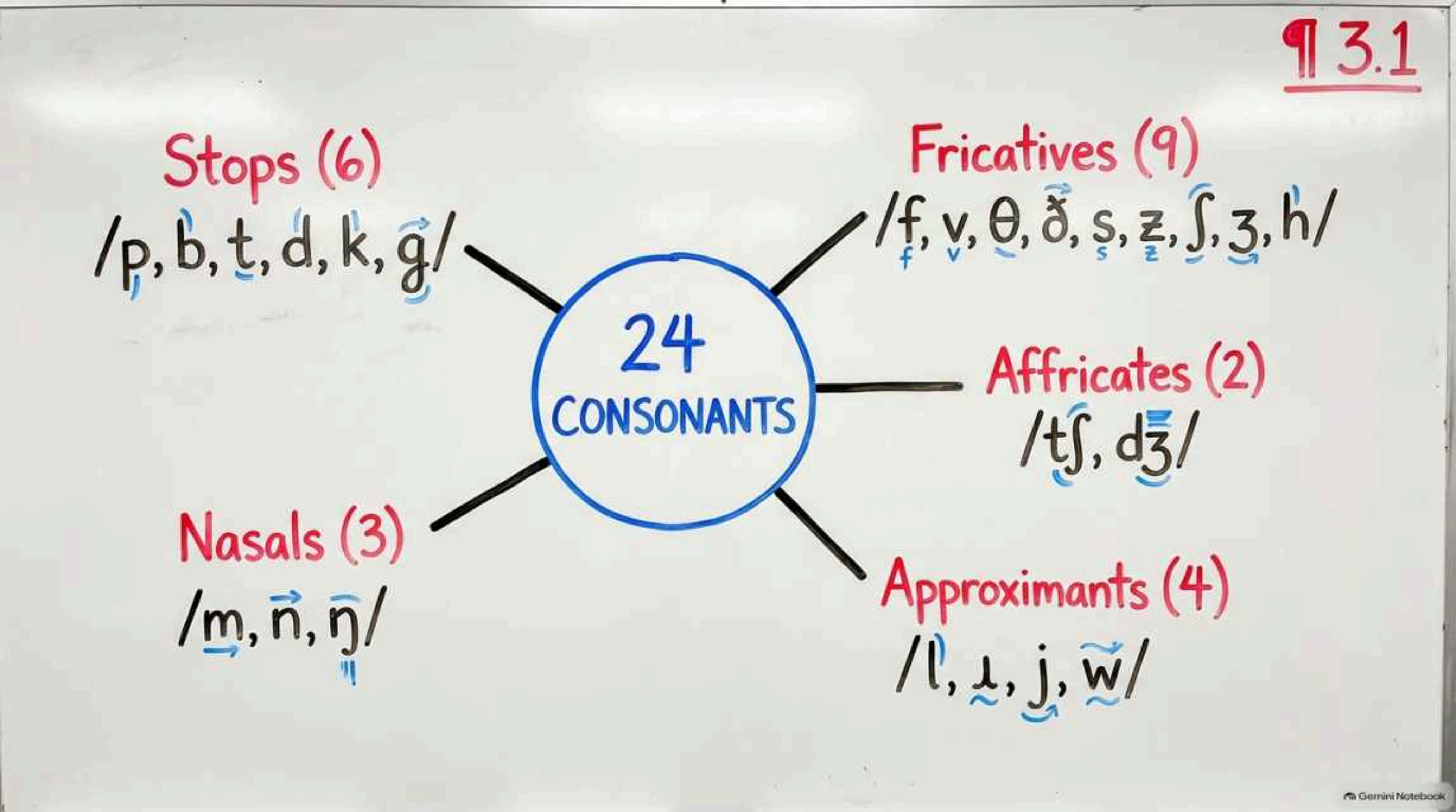
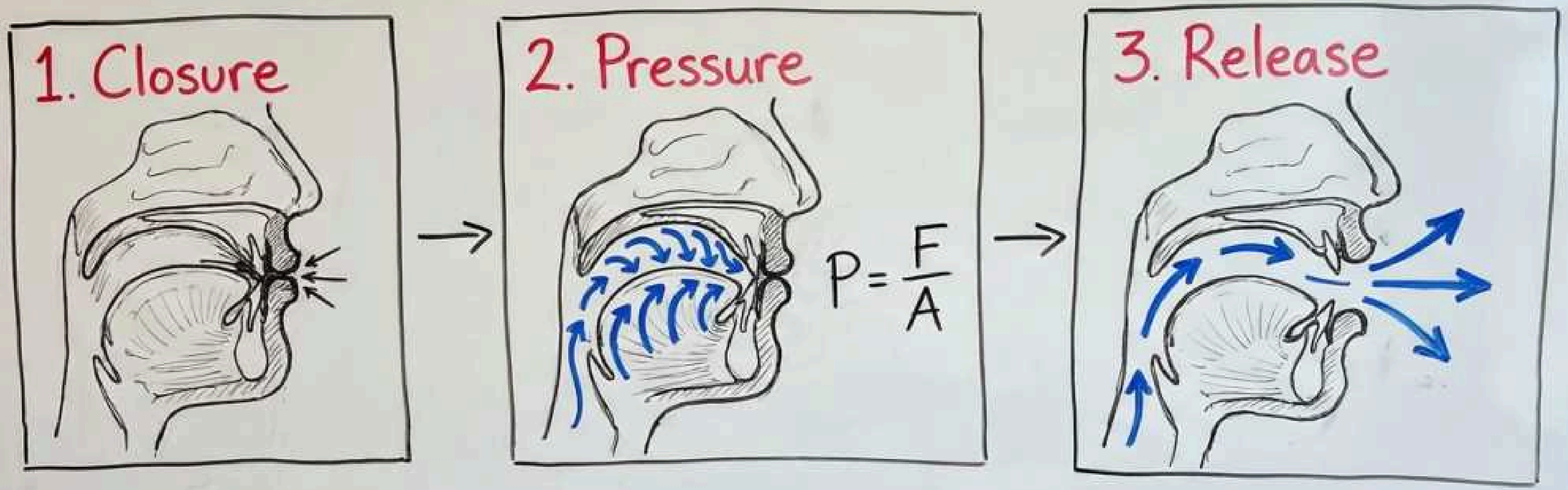
¶ 3.1



Gemini Notebook

¶ 3.2



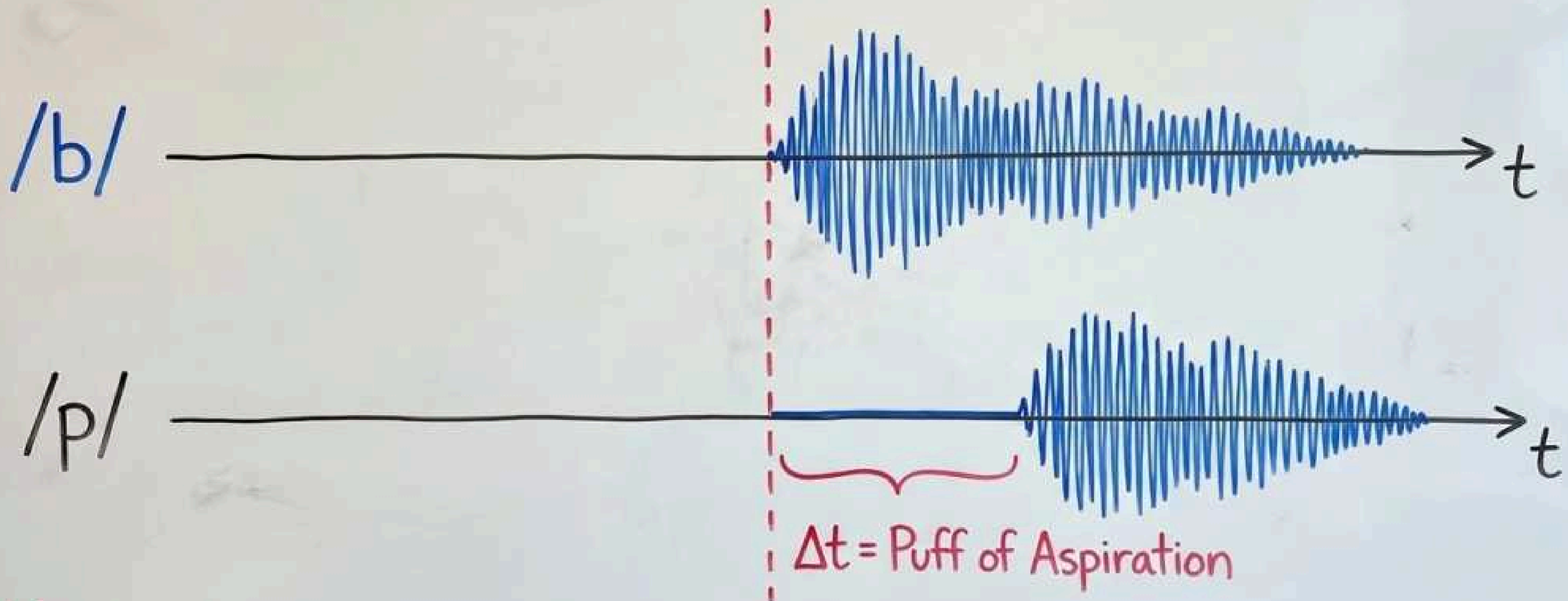
pat, bat, tap, dad, kick, gag

p/b t/d k/g

Same physical place.
Differ only in voicing.

Voice Onset Time (VOT)

¶3.3



Voicing is a matter of timing.

/p, t, k/ → [pʰ, tʰ, kʰ] / at start of stressed syllable

¶ 3.4

pin [pʰɪn]



tin, kin

spin [spɪn]



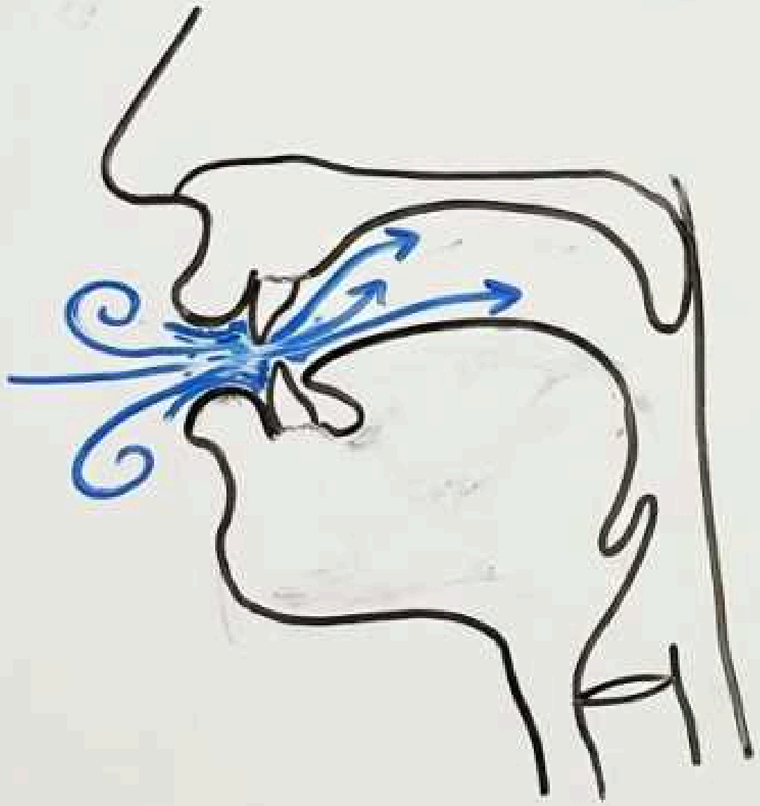
stin, skin

After /s/, the aspiration disappears.

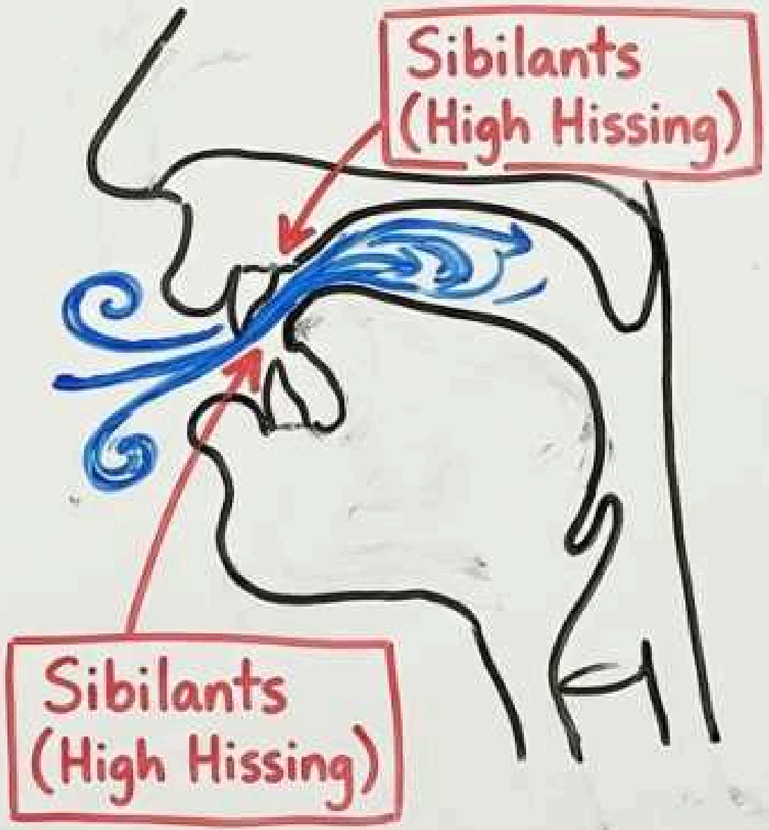
The Nine Fricatives

¶3.5

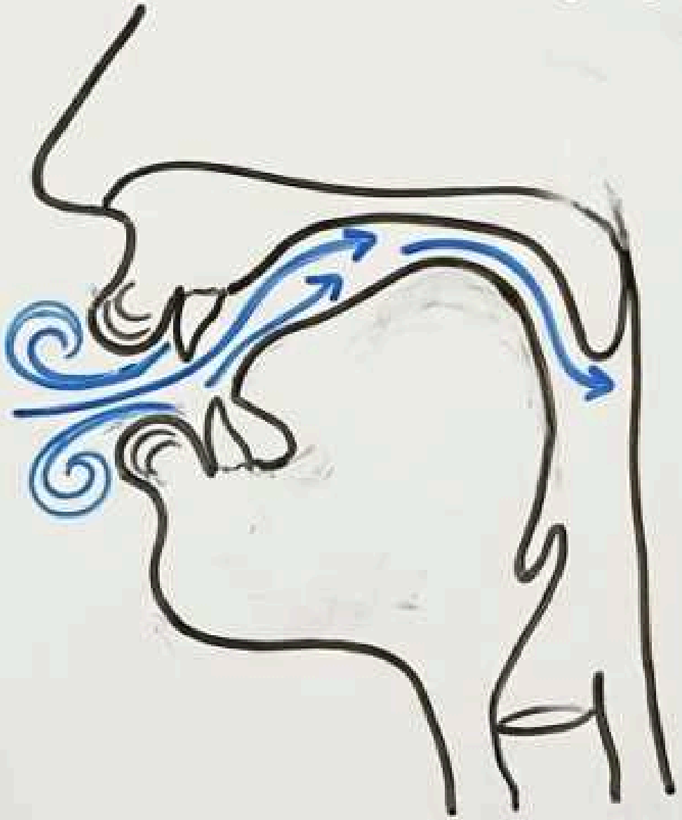
Labiodental (/f, v/)



Alveolar (/s, z/)

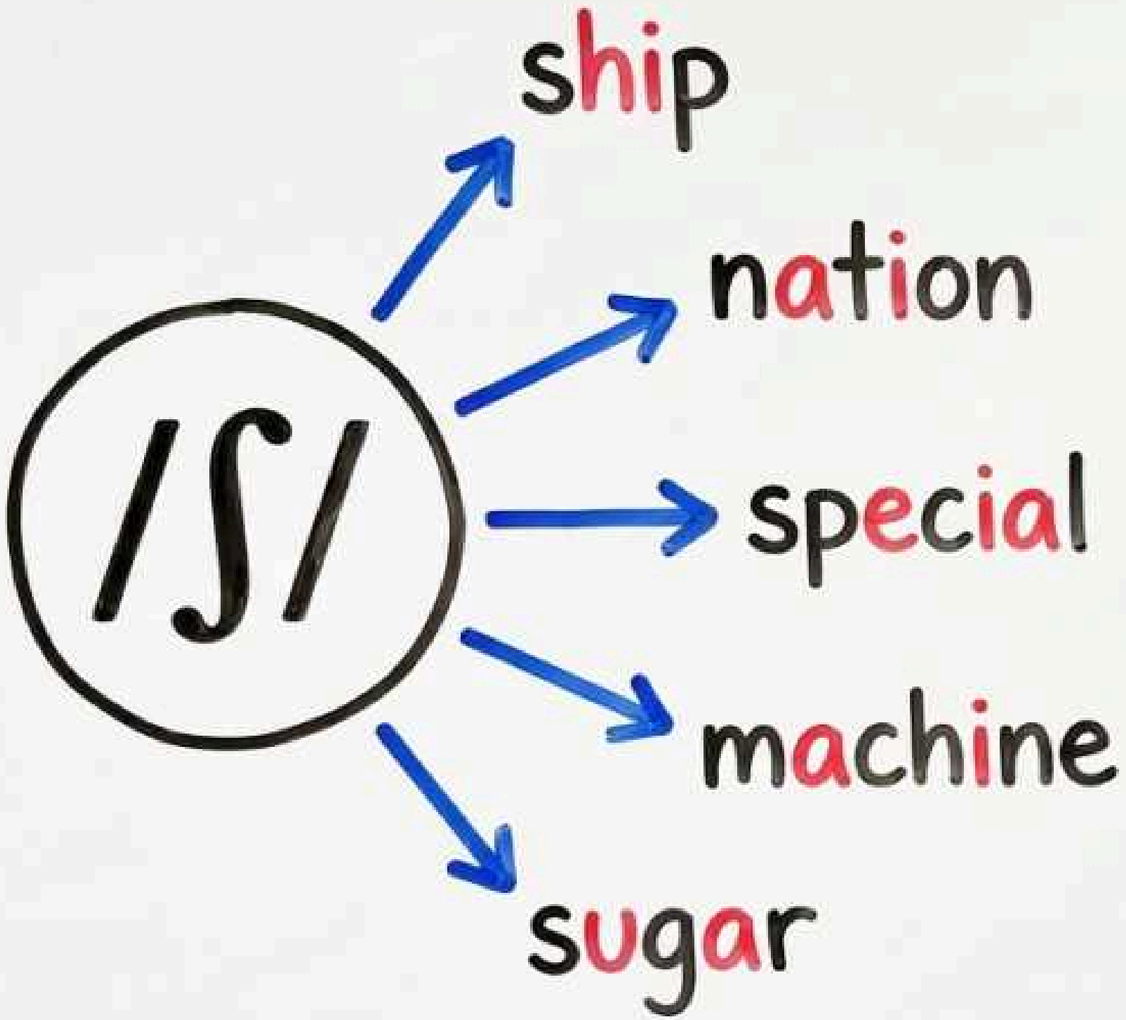


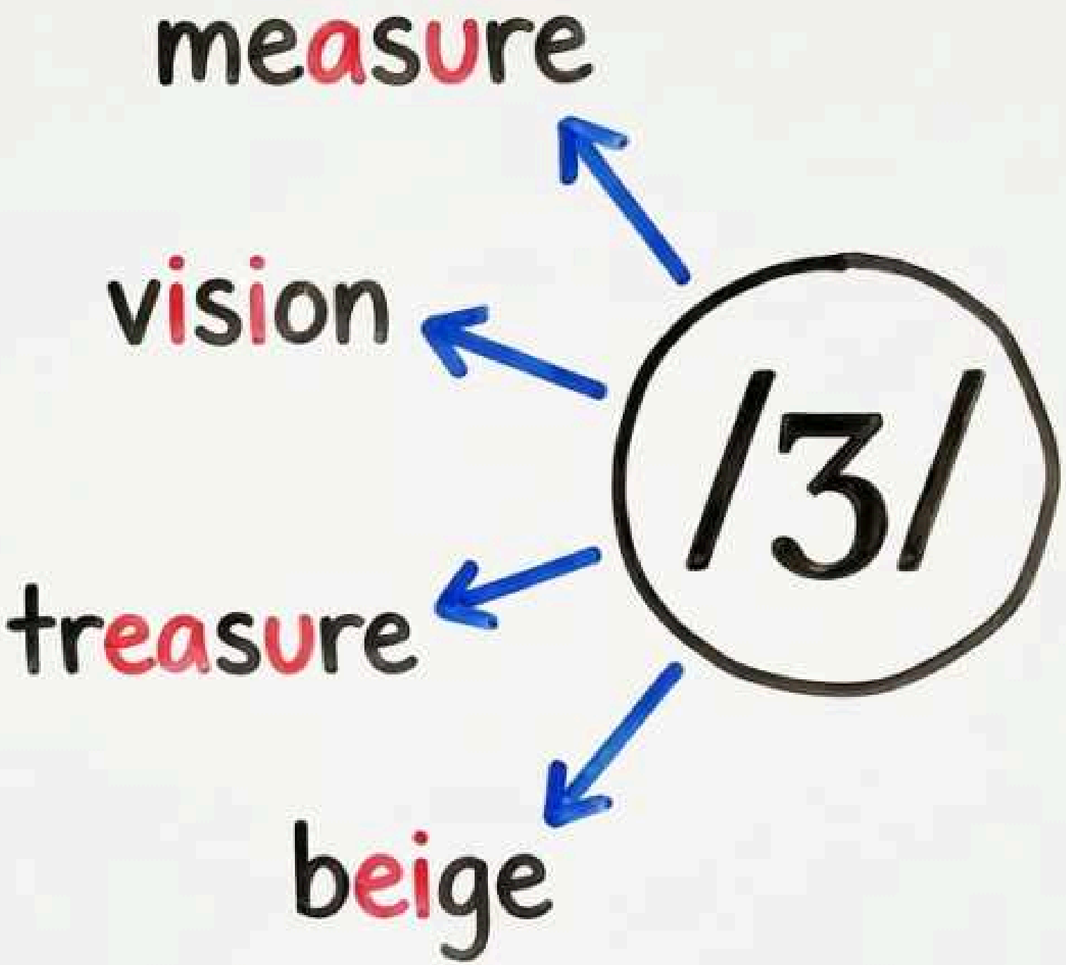
Postalveolar (/ʃ, ʒ/)



Gemini Notebook

¶ 3.6



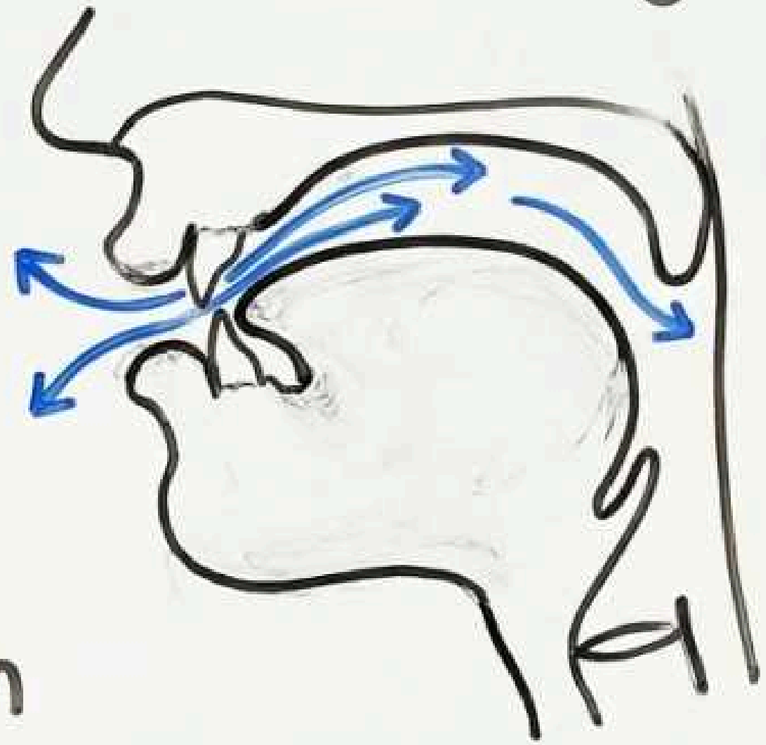


Multiple spellings → One physical sound.

Gemini Notebook

The TH Enigma

¶3.7



θ thigh

thy ð

Perfect Minimal Pair.

Theta (Voiceless)
think, bath

Eth (Voiced)
this, that, bathe

Gemini Notebook

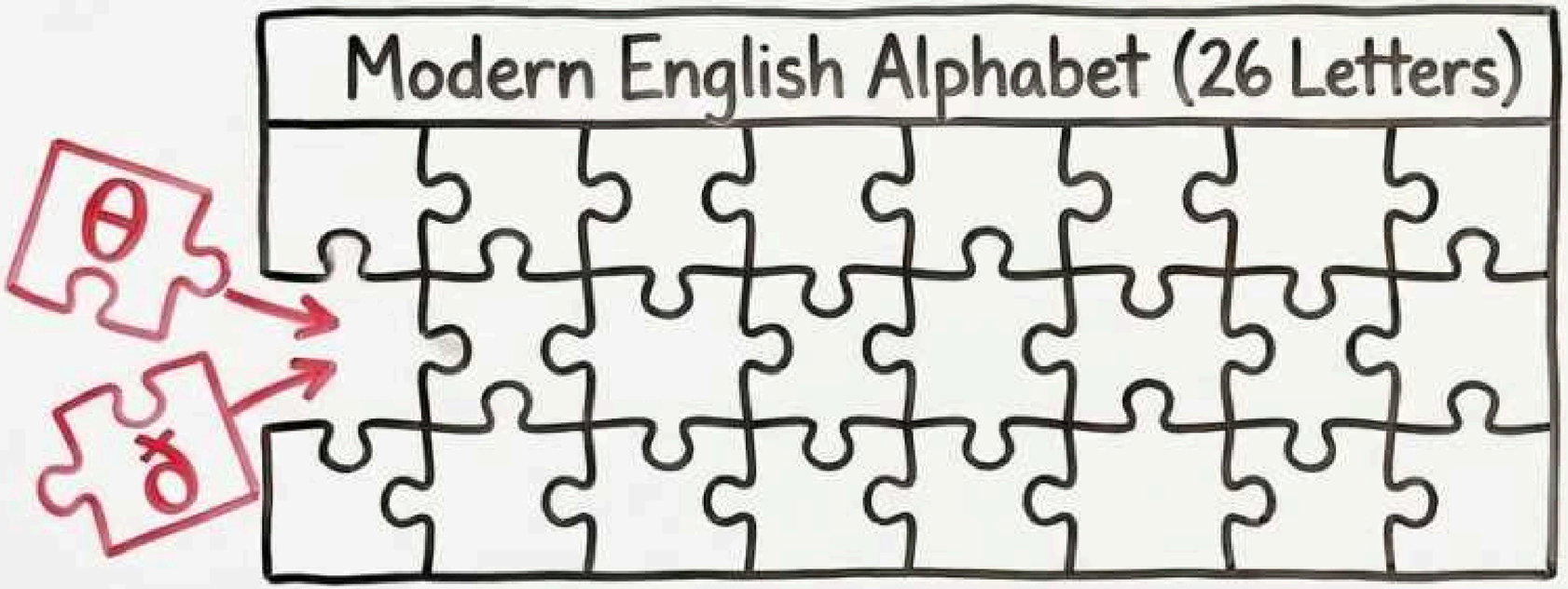
Borrowed Symbols

¶ 3.8

θ = Greek letter Theta (Voiceless)

ð = Old English letter Eth (Voiced)

þ = Old English letter Thorn

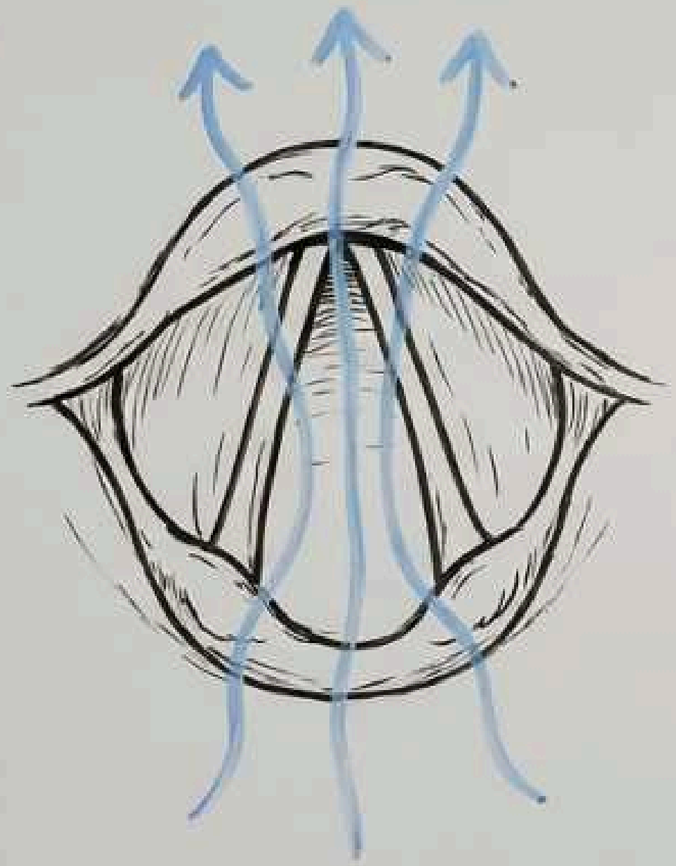


The IPA solves the puzzle at a glance.

Gemini Notebook

¶3.9

The Glottal Fricative /h/



h → hee

h → hah

ɦ → hoo

A voiceless glottal fricative. It changes color to match the vowel.

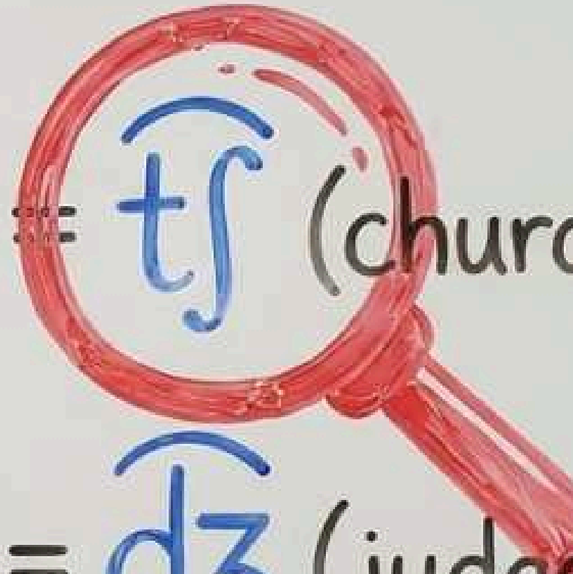
Gemini Notebook

¶3.10

Stop + Fricative = Affricate

t (closure) + ʃ (friction) = t͡ʃ (church)

d (closure) + ʒ (friction) = d͡ʒ (judge)



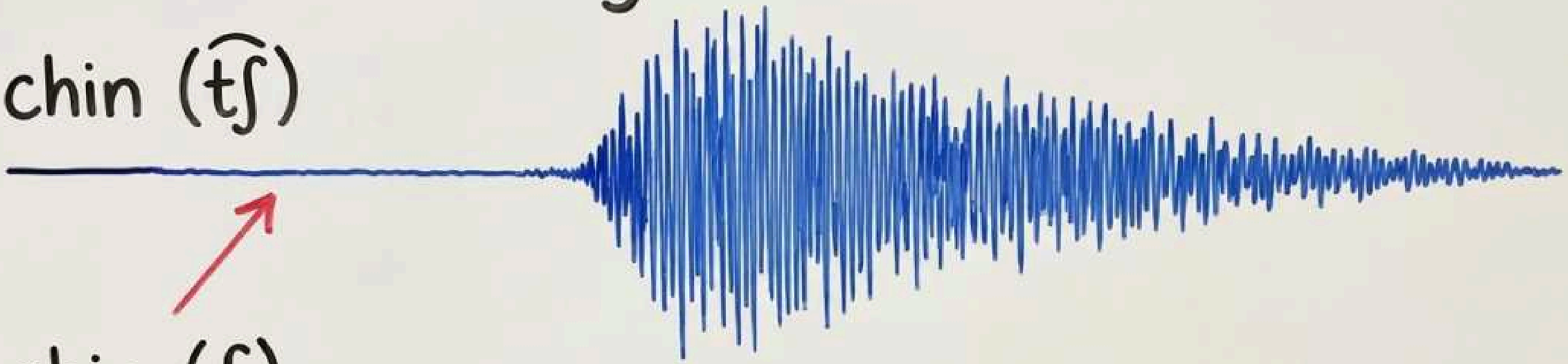
Tie bar: Joined together to behave as a single sound at the postalveolar place.

Gemini Notebook

Hearing the Closure

¶ 3.11

chin (t͡ʃ)



shin (ʃ)



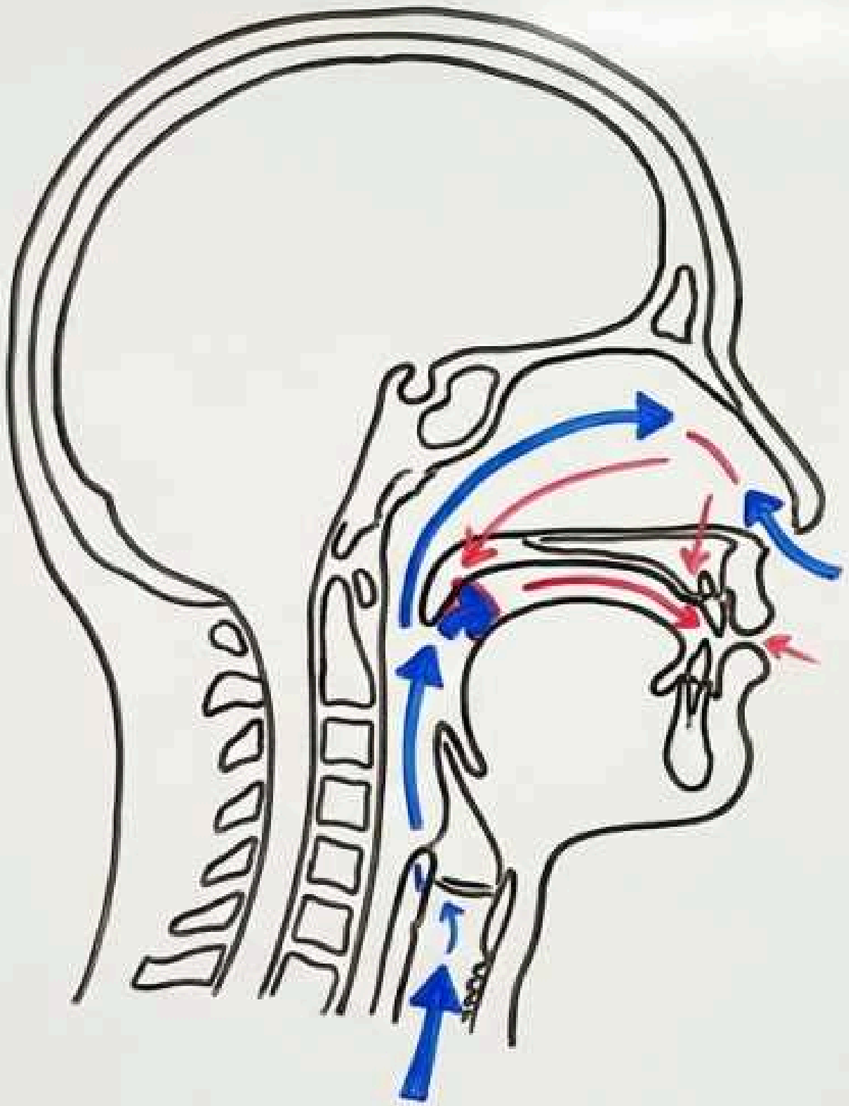
Hearing the closure is the key difference.

Jeep begins with a closure; zeep does not exist.

Gemini Notebook

Nasals

¶ 3.12



Lips (bilabial) = /m/
Ridge (alveolar) = /n/
Velum (velar) = /ŋ/

The hooked tail. The ng in sing, long, and ring.

Gemini Notebook

The Rules of /ŋ/

¶ 3.13

1. sing → /sɪŋ/ ✓

There is NO separate /g/ at the end.

2. finger → [/'fɪŋgə/] ✓

Here, ŋ is followed by a real /g/.

3. #ŋ_____ ✗

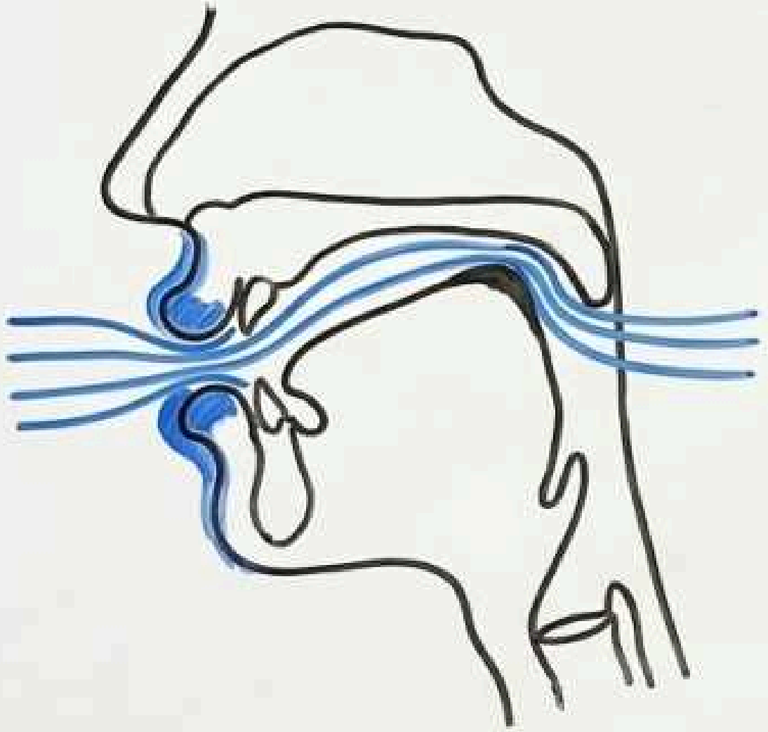
English NEVER begins a word with ŋ.

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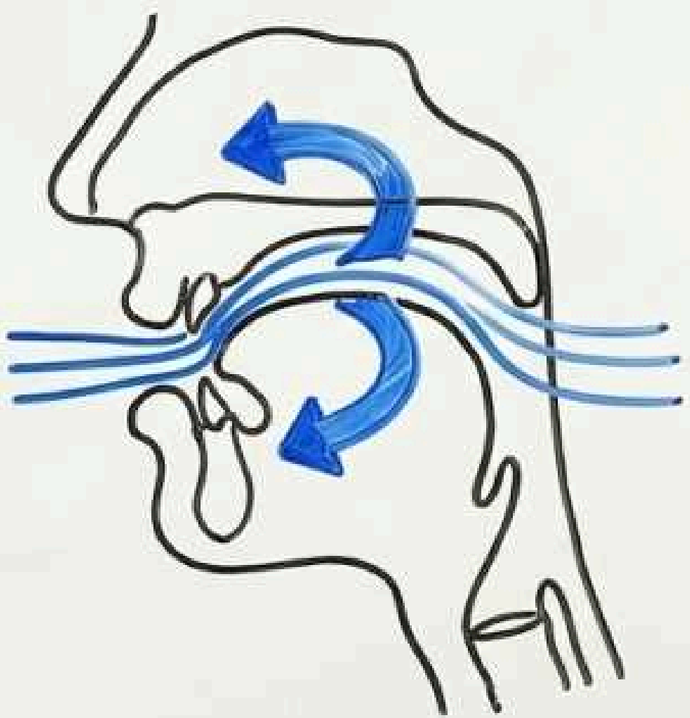
¶ 3.14

Approximants: The Smoothest Consonants

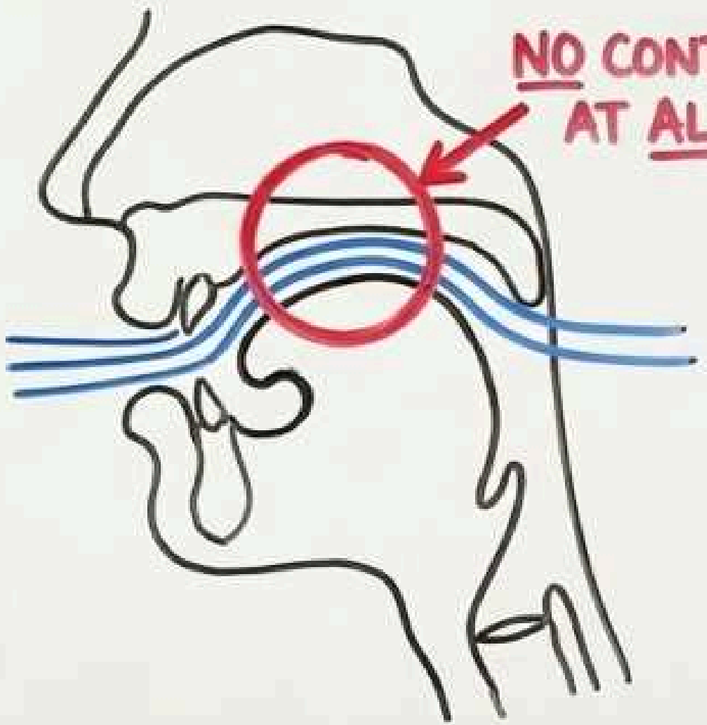
/w/



/l/ (Lateral)



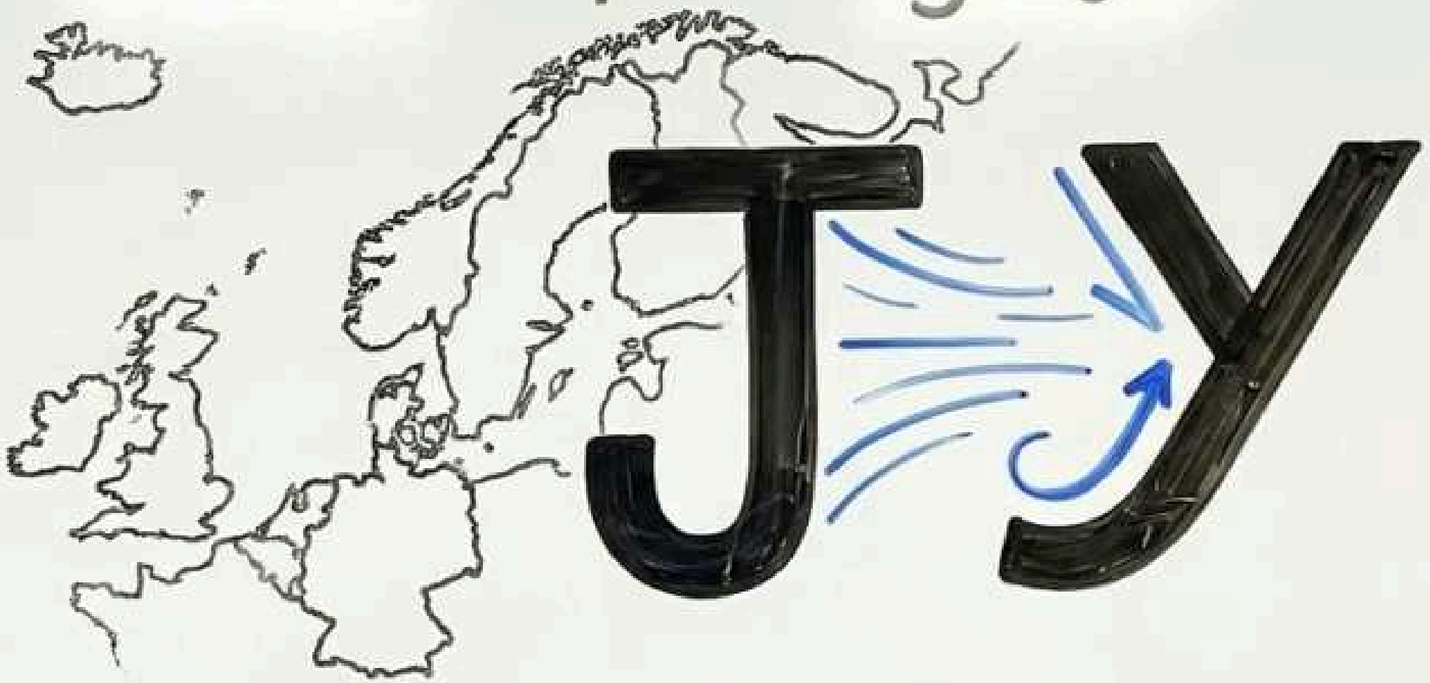
/ɹ/ (English r)



Gemini Notebook

The Surprising /j/

¶ 3.15



In German and Scandinavian languages, the letter J sounds like the English Y. The IPA follows this convention.

yes = /jɛs/ ✓

yes = /yɛs/ ✗

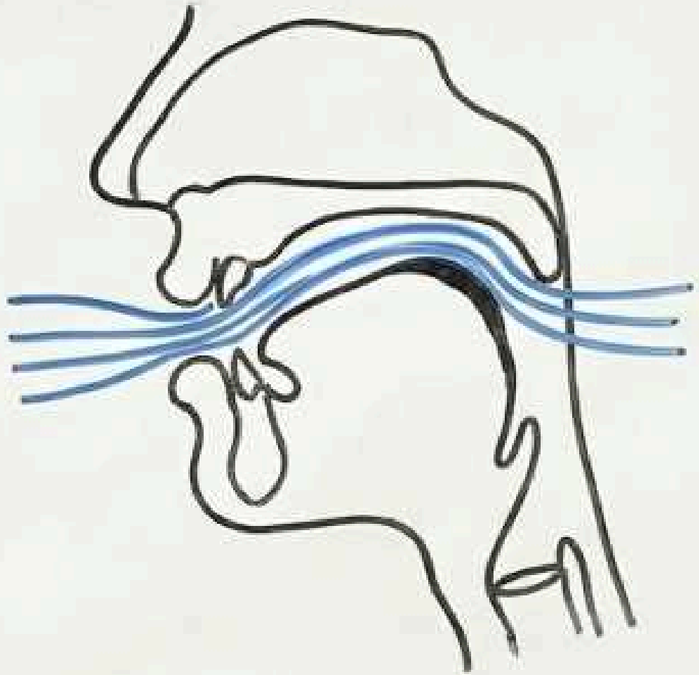
Gemini Notebook

The English r vs. The Trill

¶ 3.16

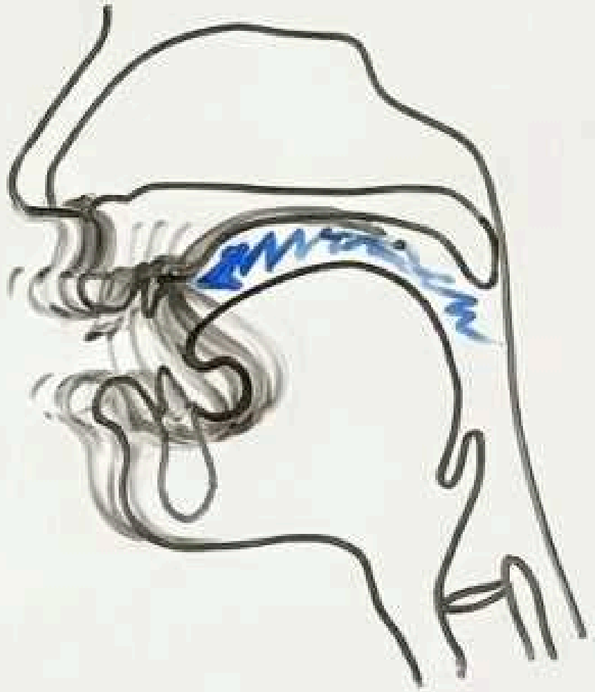
Approximant (English)

ɹ



Trill (Spanish perro)

r



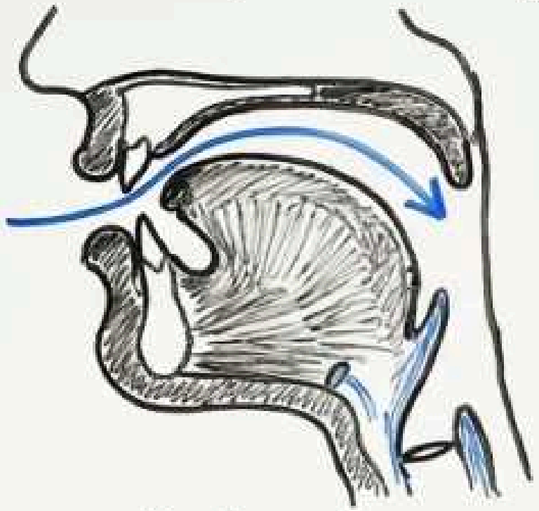
In strict IPA, a plain 'r' is a trill. The English r is an approximant, not a trill.

Gemini Notebook

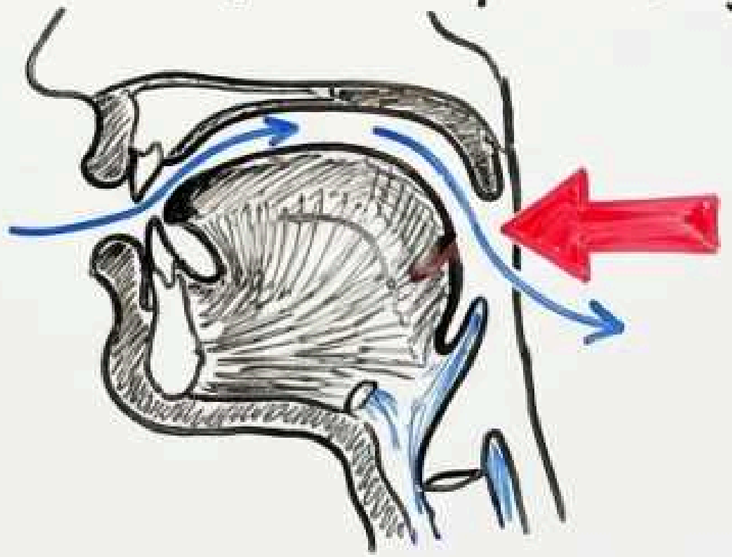
¶ 3.17

Allophones of one phoneme.

Clear l (start of syllable, e.g., light)



Dark l (end of syllable, e.g., full, milk) /t/



Gemini Notebook

The Consonant Chart Matrix

¶ 3.18

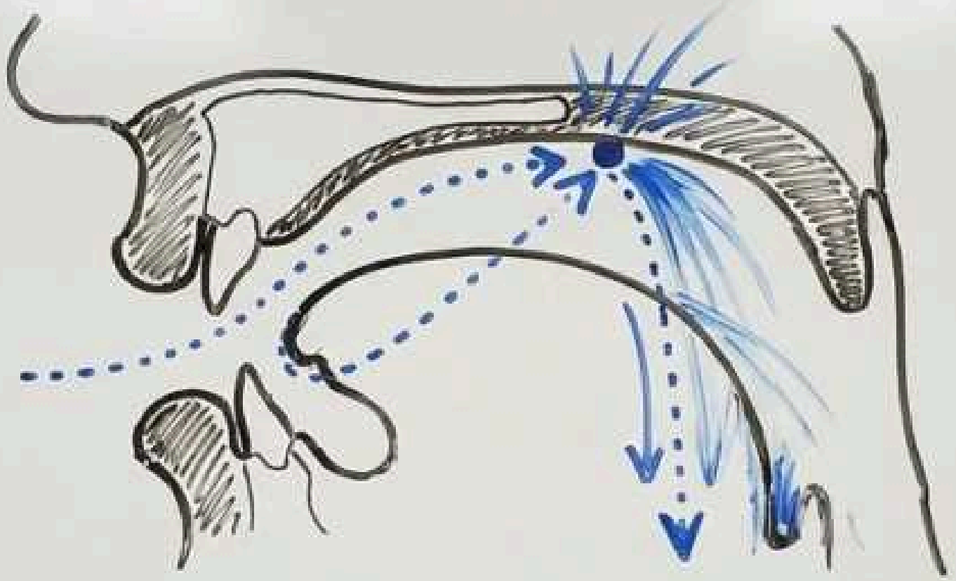
	Lips		Teeth		Ridge		Postalveolar		Palate		Velum		Glottis
Stops	p	b	t	d	t	d			c	ɟ	k	g	ʔ
Nasals	m		n		n				ɲ		ŋ		
Fricatives	f	v	θ	ð	s	z	ʃ	ʒ	ç	j	x	ɣ	h
Affricates							tʃ	dʒ					
Approximants	ʍ	w	ɹ		r	l			j		w		

Find the row + column + voicing = The 3-Part Label.

Gemini Notebook

¶3.19

The American Flap /r/



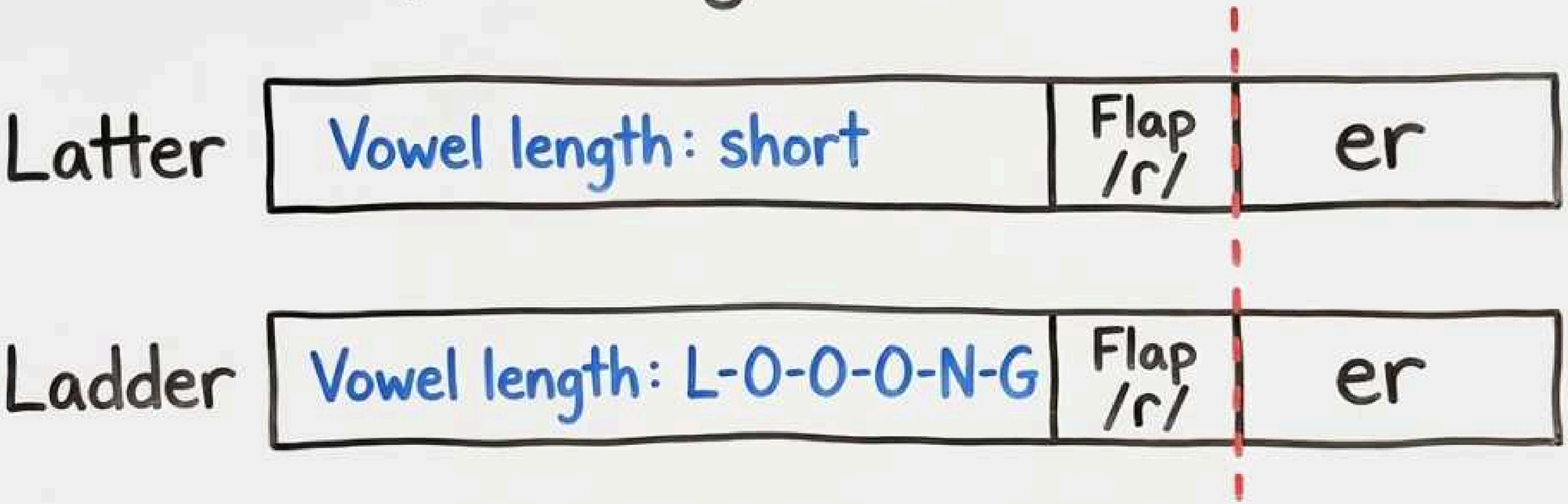
/t/ or /d/ between vowels (second vowel unstressed) → /r/ (The Flap).

butter, water, city, ladder

Gemini Notebook

¶ 3.20

Flap Timing: Latter vs. Ladder



Listen for the length of the vowel, not the t or d.

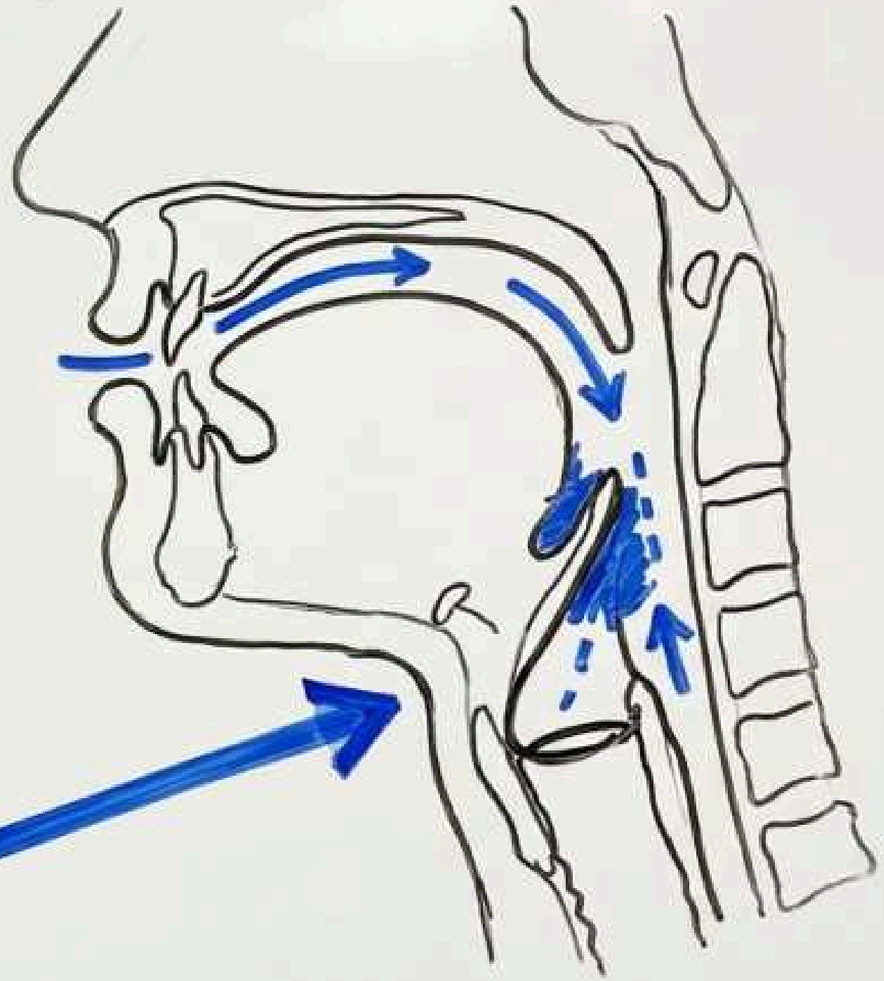
(Applies to writer vs. rider too).

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The Glottal Stop /ʔ/

¶ 3.21

/ʔ/



Uses NO lips. Uses NO tongue.
The stop sits in the throat.

button ['bʌʔn̩]

mountain, Manhattan

Gemini Notebook

Consonant Clusters

¶ 3.22

strengths

[/stɹɛŋkθs/]

Initial Cluster (3)

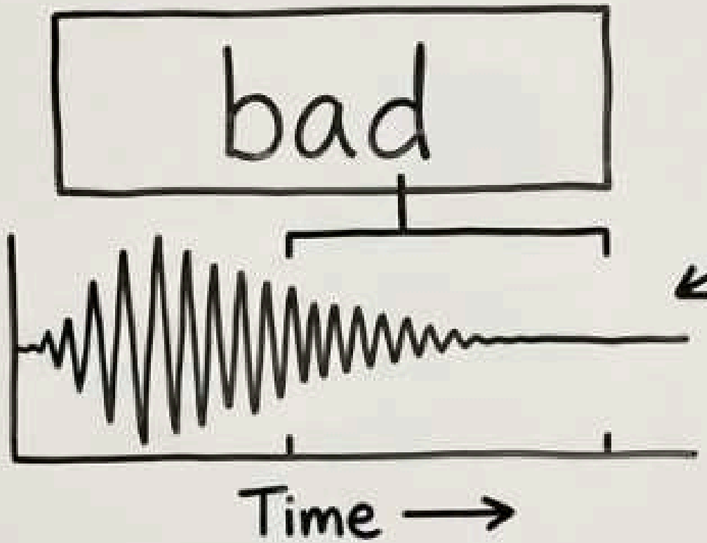
Final Cluster (4)

Permitted	Banned (Ruled Out)
str-	tl-
spl-	ŋ- (at word start)

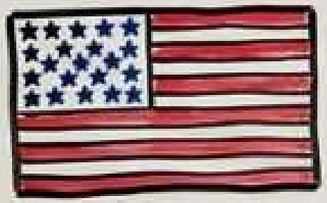
Gemini Notebook

¶ 3.23

Voicing Shifts at the Margins



The "d" in bad is weaker than the "d" in dad.



English compensates by listening to the longer vowel before it.



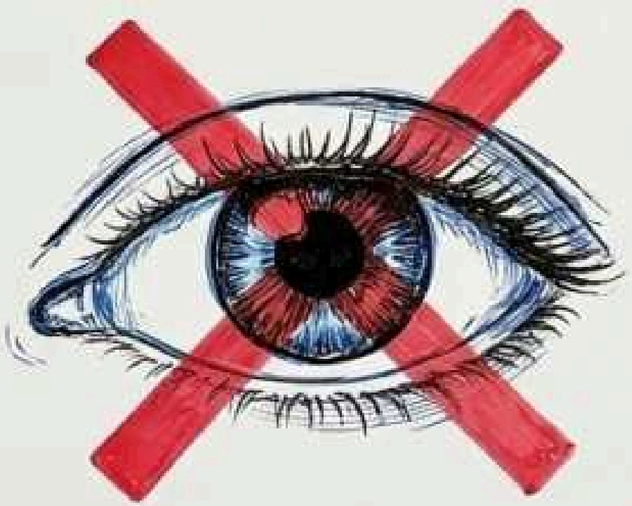
Final voiced consonants become fully voiceless (a German speaker might say bat for bad).

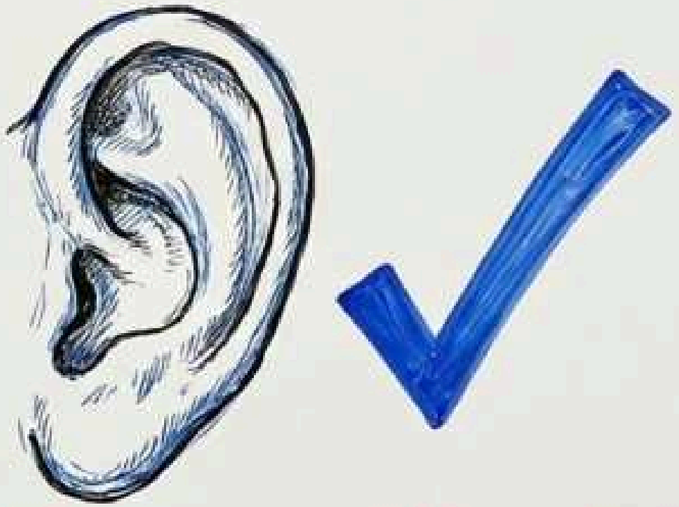
Gemini Notebook

Spelling Hides the Sound

¶ 3.24

1. F, PH, GH (laugh) → /f/
2. C, K, CK, CH, Q → /k/
3. sh, ti, ci, ch, s → /ʃ/





Listen to the sound. NEVER copy the letters.

Gemini Notebook

Summary of the Consonants

¶ 3.25

The 24

Consonant Chart

	·	—	—	‖	—	⁄	⊣	⊩
Travel	p	b		t	d		k	g
Voicing			m		n			
Place	f	v		s	z		h	
Manner								
Hgh				l			r	
Wanner			w		j			

24 Consonants defined by Voicing, Place, and Manner.

The Hidden

θ (th)

ð (th)

ŋ (ng)

j (yes)

ʒ (vision)

ɾ (butter)

Watch for the sounds that spelling hides.

(θ) ð (th) (ng) ʒ (vision) j (yes) ɾ (butter)

The Bridge

NEXT: THE VOWELS.

Gemini Notebook