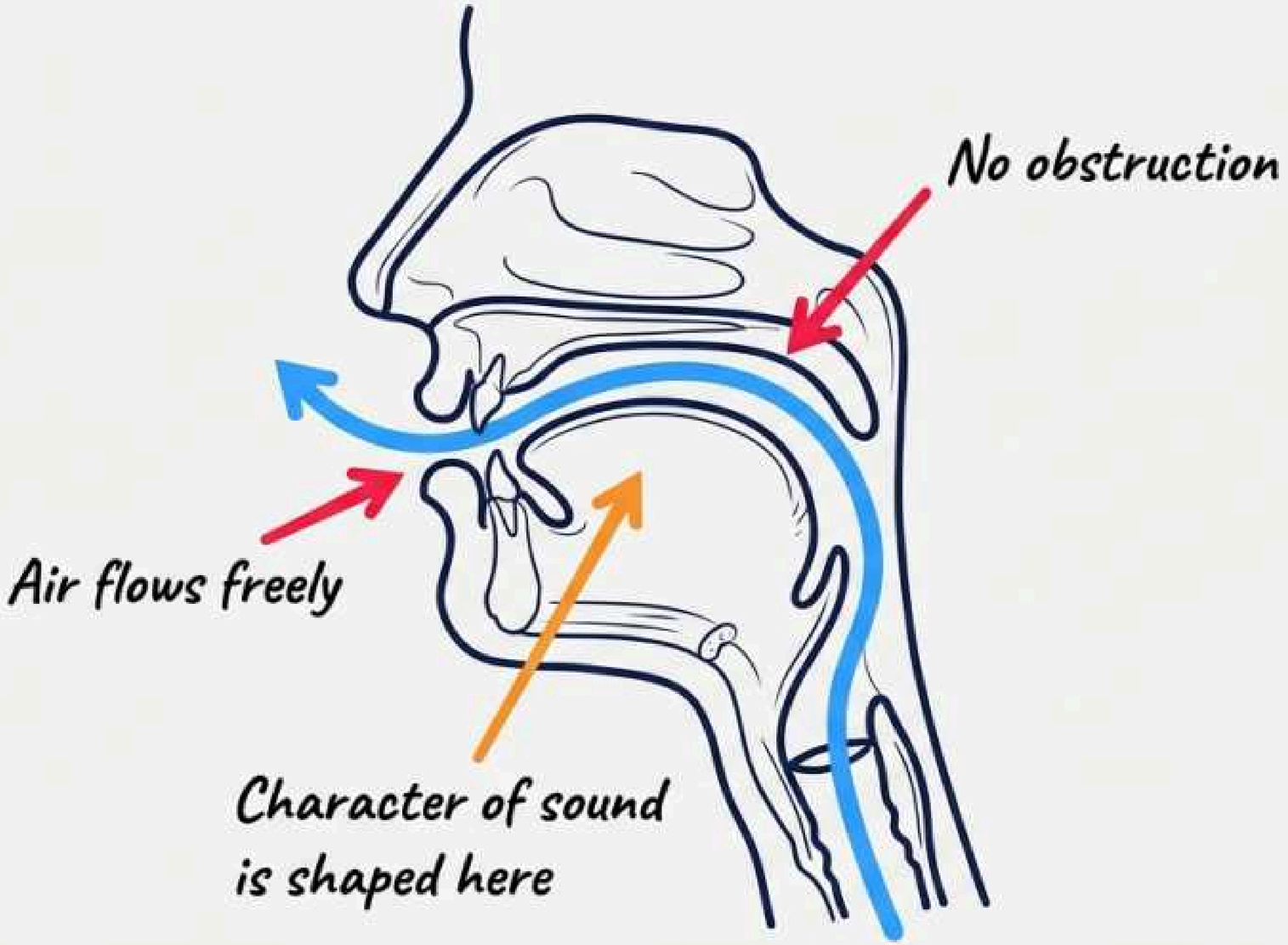
What is a Vowel?

¶ 4.1



Vowel Measurement requires 3 Variables (unlike consonants, which are measured at fixed points).

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Variable 1: Height

¶ 4.2

Close Vowel (Tongue High)



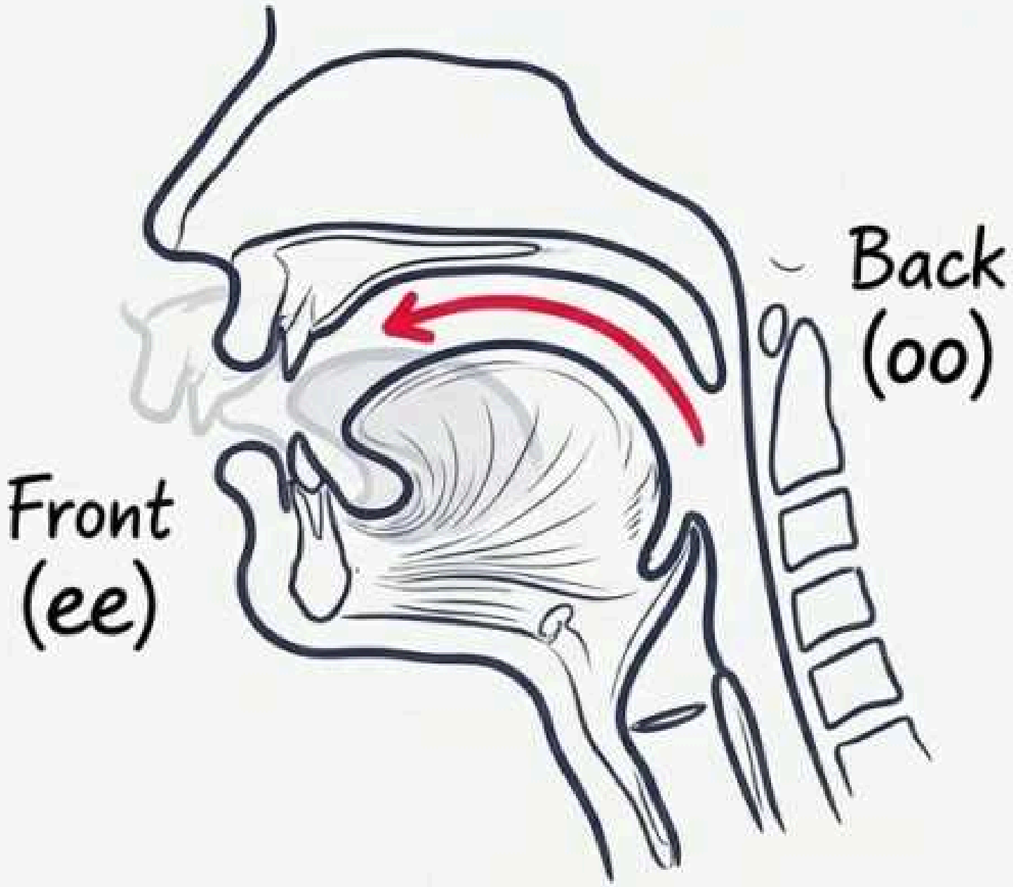
Open Vowel (Jaw Dropped)



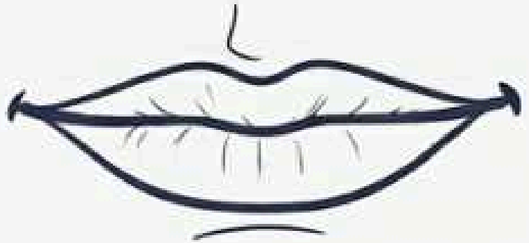
Say *ee* and then *ah*—feel your jaw physically drop.

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Variables 2 & 3: Backness & Rounding ¶ 4.3

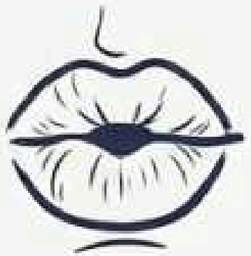


Rounding - Spread



Spread Lips (ee)

Rounding - Rounded

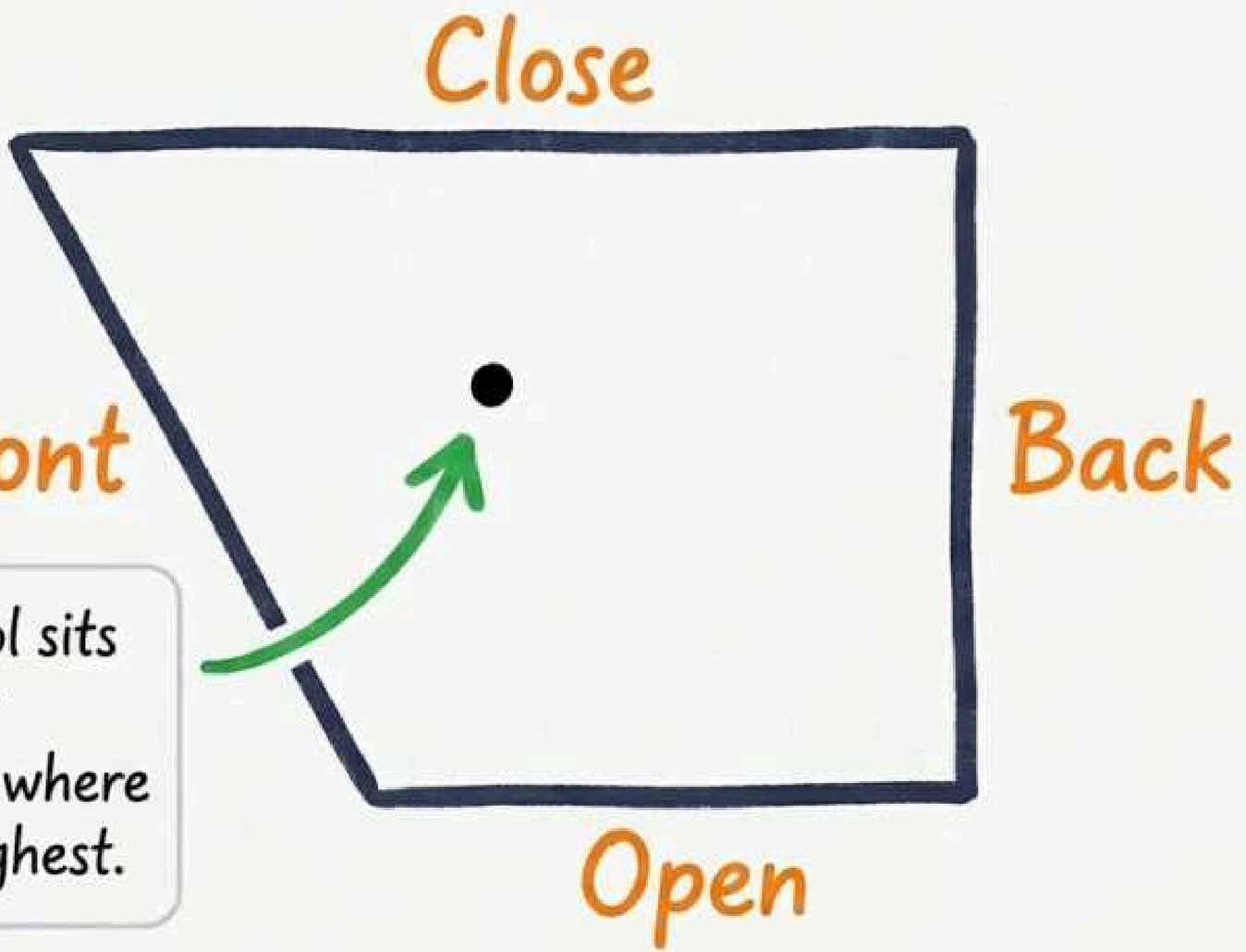


Rounded Lips (oo)

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The Vowel Quadrilateral

¶ 4.4



A vowel's symbol sits sits at the exact geometric point where the tongue is highest.

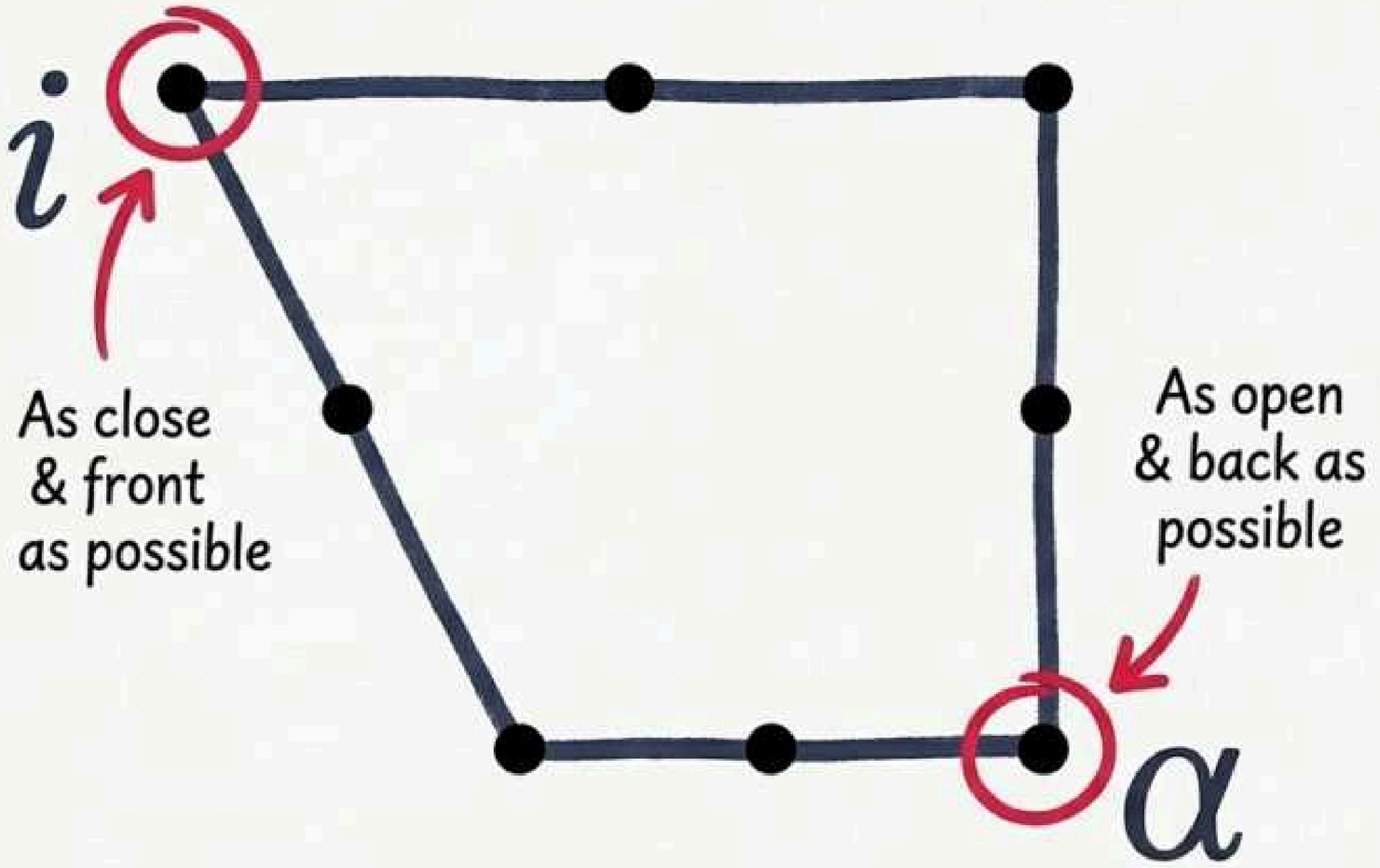
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The Cardinal Vowels

¶ 4.5

Historical Context: Defined by phonetician Daniel Jones (Early 20th Century).

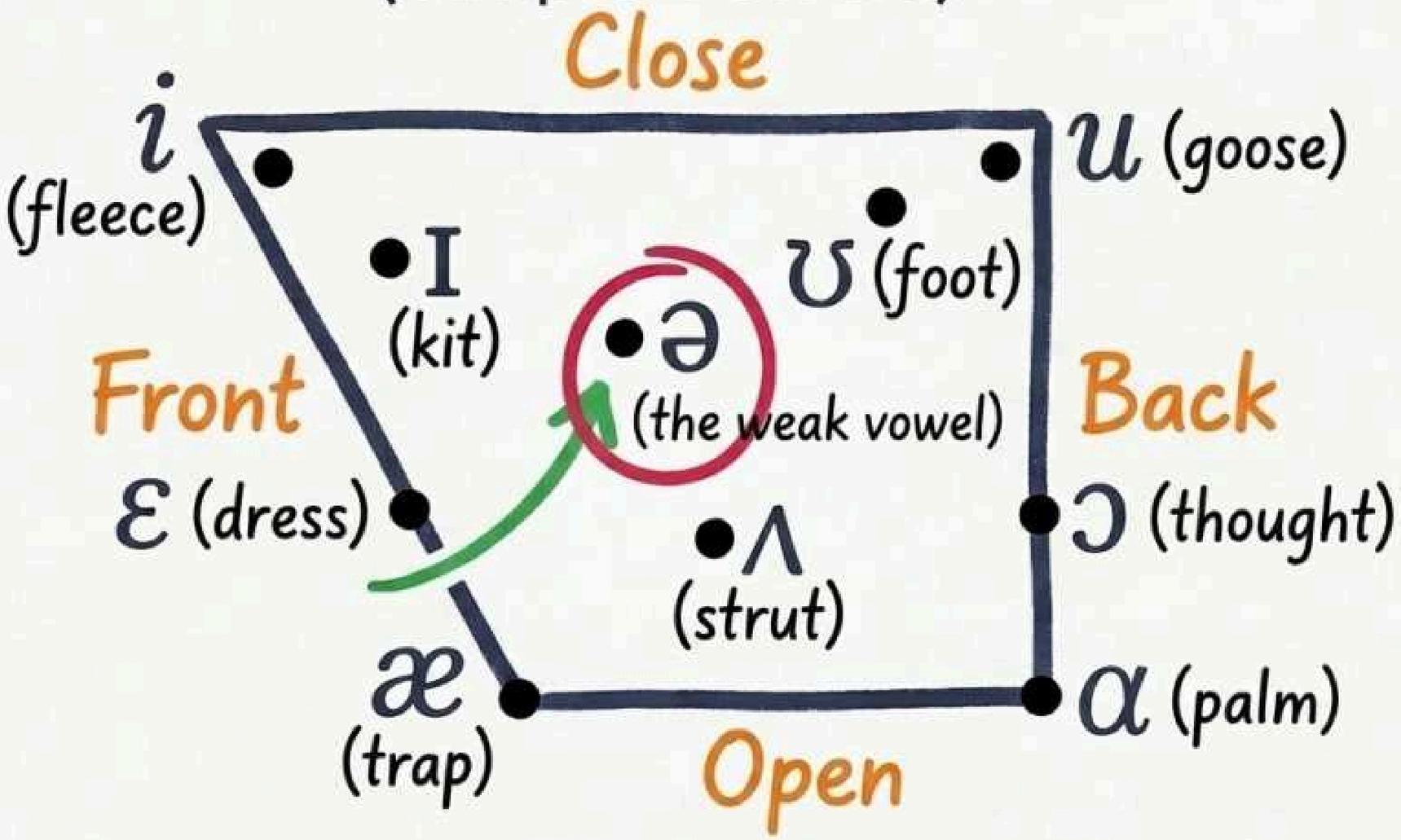
These are 8 fixed reference points around the edge of the vowel space—like the corners of a map.



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General American Monophthongs (Simple Vowels)

¶ 4.6



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Learning in Minimal Pairs

¶ 4.7

/i/ vs /ɪ/	/u/ vs /ʊ/
beat / bit	pool / pull
sheep / ship	
seat / sit	

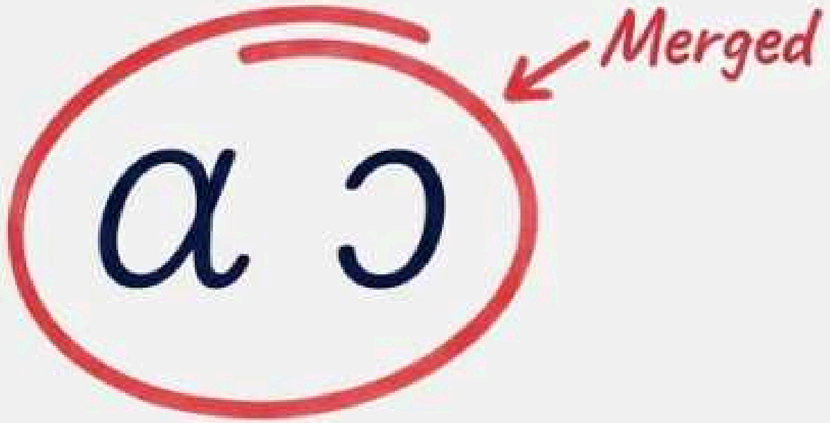
⚠ Merger risk: Learners of English often merge these pairs if their first language has only one vowel occupying that space.

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The ɑ / ɔ Merger

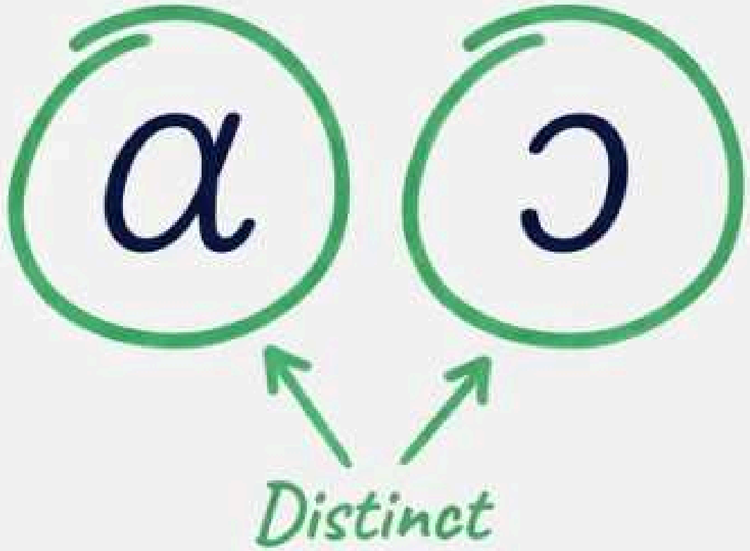
¶ 4.8

American English



cot/caught, Don/dawn
(sound perfectly identical to millions of speakers)

British English



Takeaway Note: Transcriptions may feature both symbols, even if your specific accent merges them into one.

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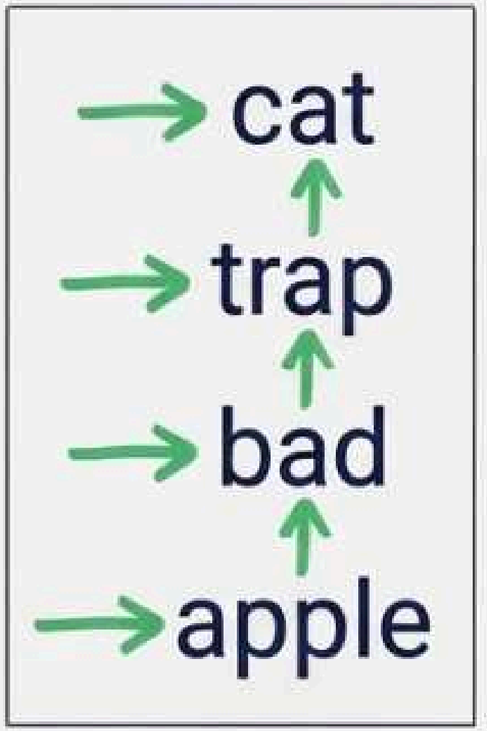
The Special Case of æ (Ash)

¶ 4.9

Name: Ash

a + e = æ

(Ligature from Old English)

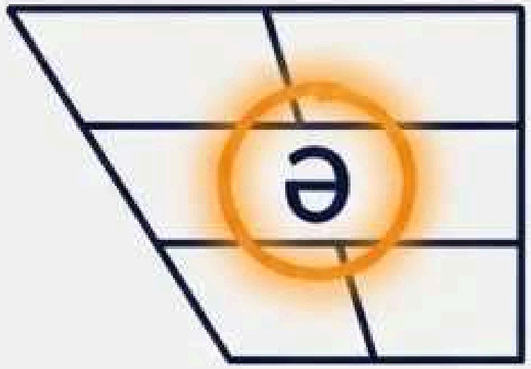


Easily confused with the name of the letter A. It is the first sound in apple and the middle sound in cat.

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The Schwa (ə)

¶ 4.10



- ✓ Short, weak, central.
- ✓ The most frequent vowel in the English language.

banana

/bə'nænə/

Can be spelled with ANY vowel letter at all (e.g., first vowel of about, last of sofa).

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¶ 4.11

Origins of the Schwa

Hebrew mark

(Origin of the name for a very short vowel)

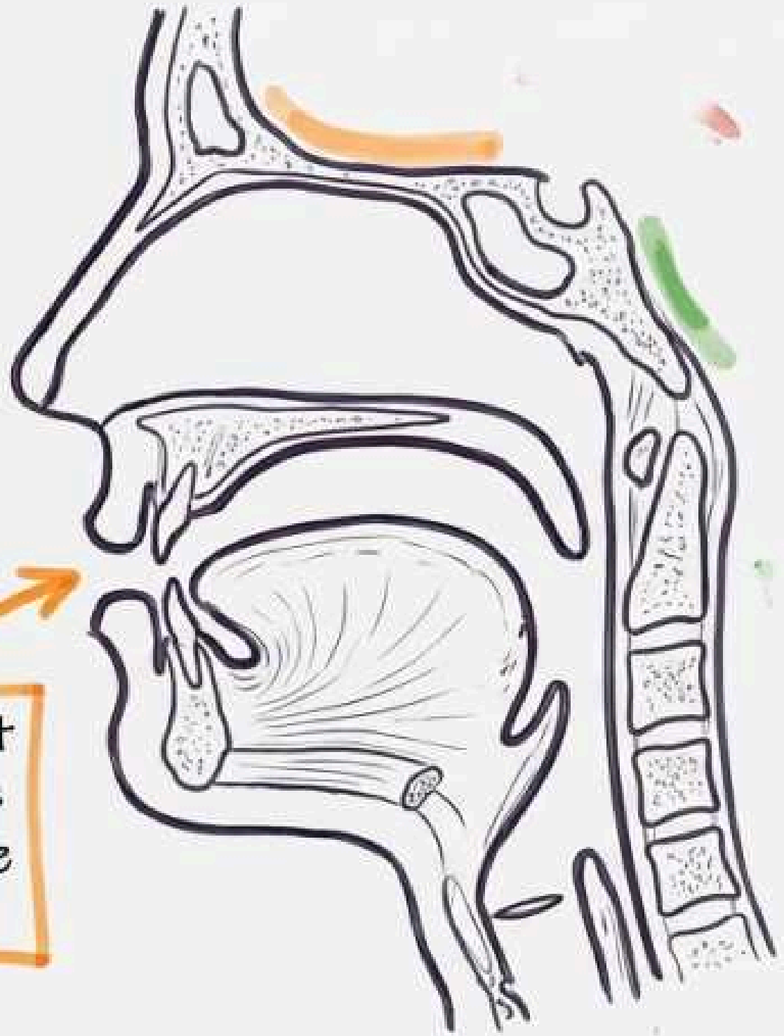
↓

Johann Andreas Schmeller (1800s)

(Used the upside-down "e" for a weak vowel in a German dialect)

↓

Adopted globally by the IPA



The quickest, laziest mouth position. The relaxed middle of the entire vowel space.

R-Colored Vowels

¶ 4.12

American English

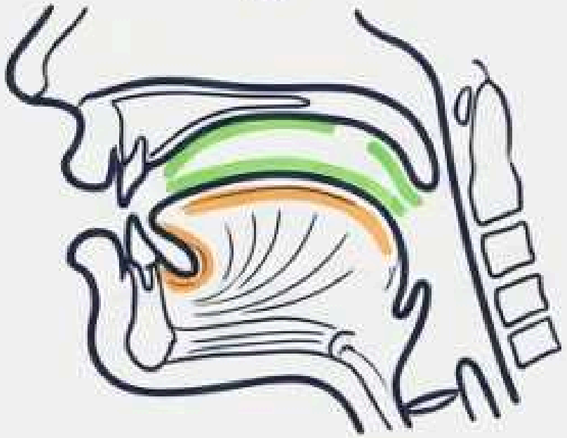


American:
Tongue colored by "R"

Unstressed (ɚ) = butter, teacher

Stressed (ɜ) = bird, nurse

British English



British:
No "R" pronounced

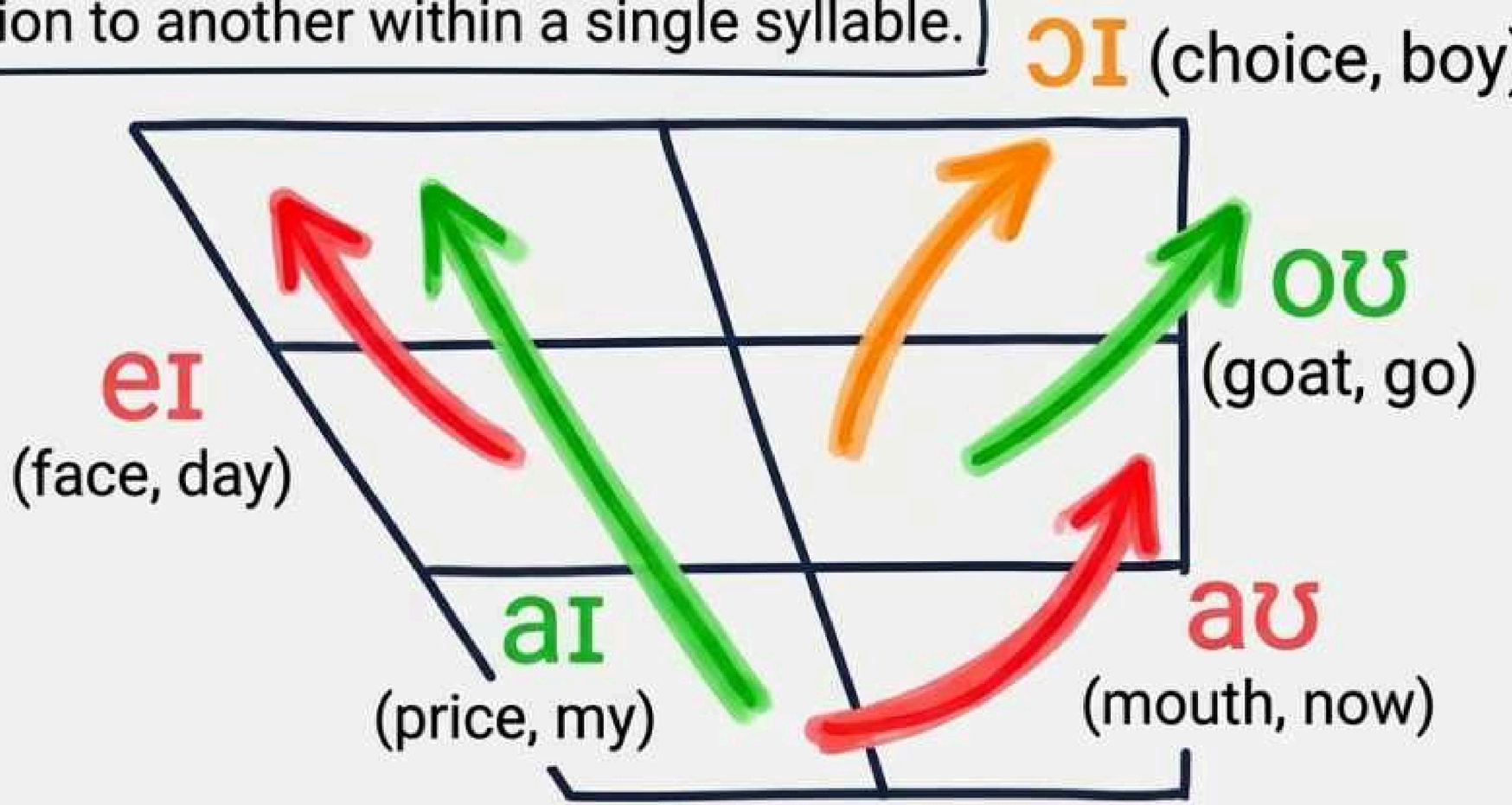
Same words use a plain schwa or a standard long vowel instead.

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Diphthongs: Vowels in Motion

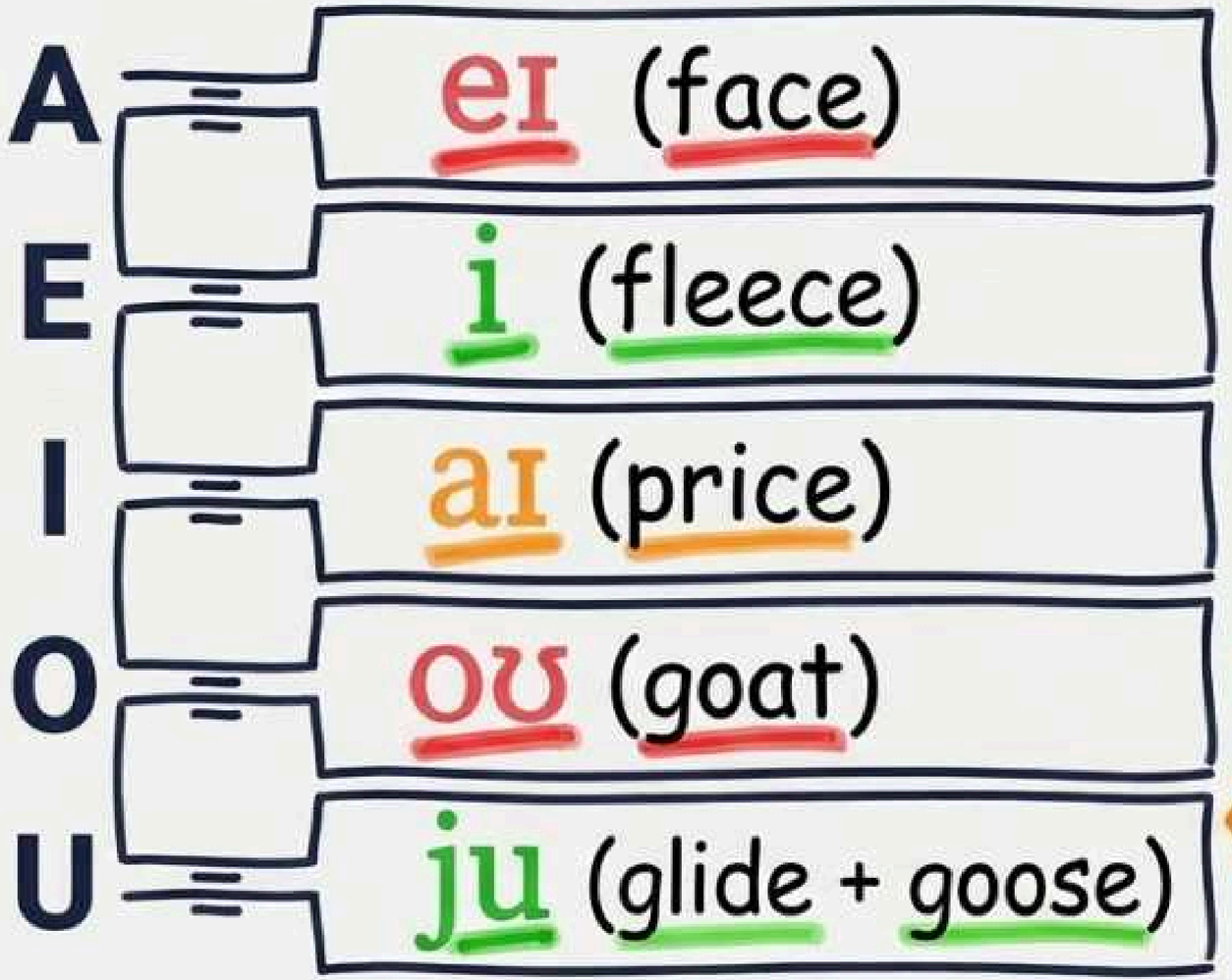
¶ 4.13

Definition: A vowel that physically glides from one position to another within a single syllable.



The Letter-Name Puzzle

¶ 4.14



These are what grade-school teachers traditionally call the “long vowels”.

Rethinking ‘Long’ vs. ‘Short’

¶ 4.15

OLD TERMINOLOGY	PRECISE PHONETIC REPLACEMENT
~~Long A~~ →	**New Term: Name Sound** Reality: It is fundamentally a glide/diphthong (e.g., face).
~~Short A~~ →	**New Term: Typical Sound** Reality: Does not glide (e.g., cat).

They differ in phonetic quality, not just in length.
A "long A" and "short A" are entirely different mouth shapes.

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¶ 4.16
Accent Mergers

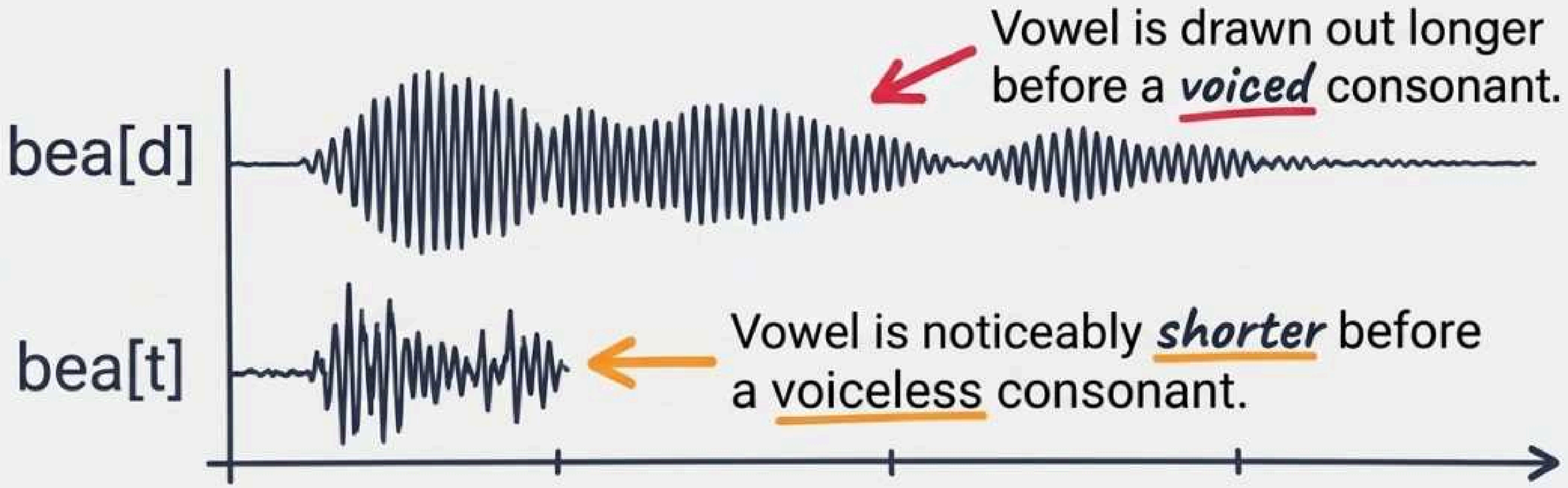
Southern US	Much of Scotland	Many US accents
pin* = *pen	***pool* = *pull***	***cot* = *caught***
(Merged; sound alike)	(Merged; sound alike)	(Merged; sound alike)

Every accent is internally consistent. Phonetic transcription lets us record exactly which contrasts a specific speaker makes.

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True Vowel Length (:)

¶ 4.17

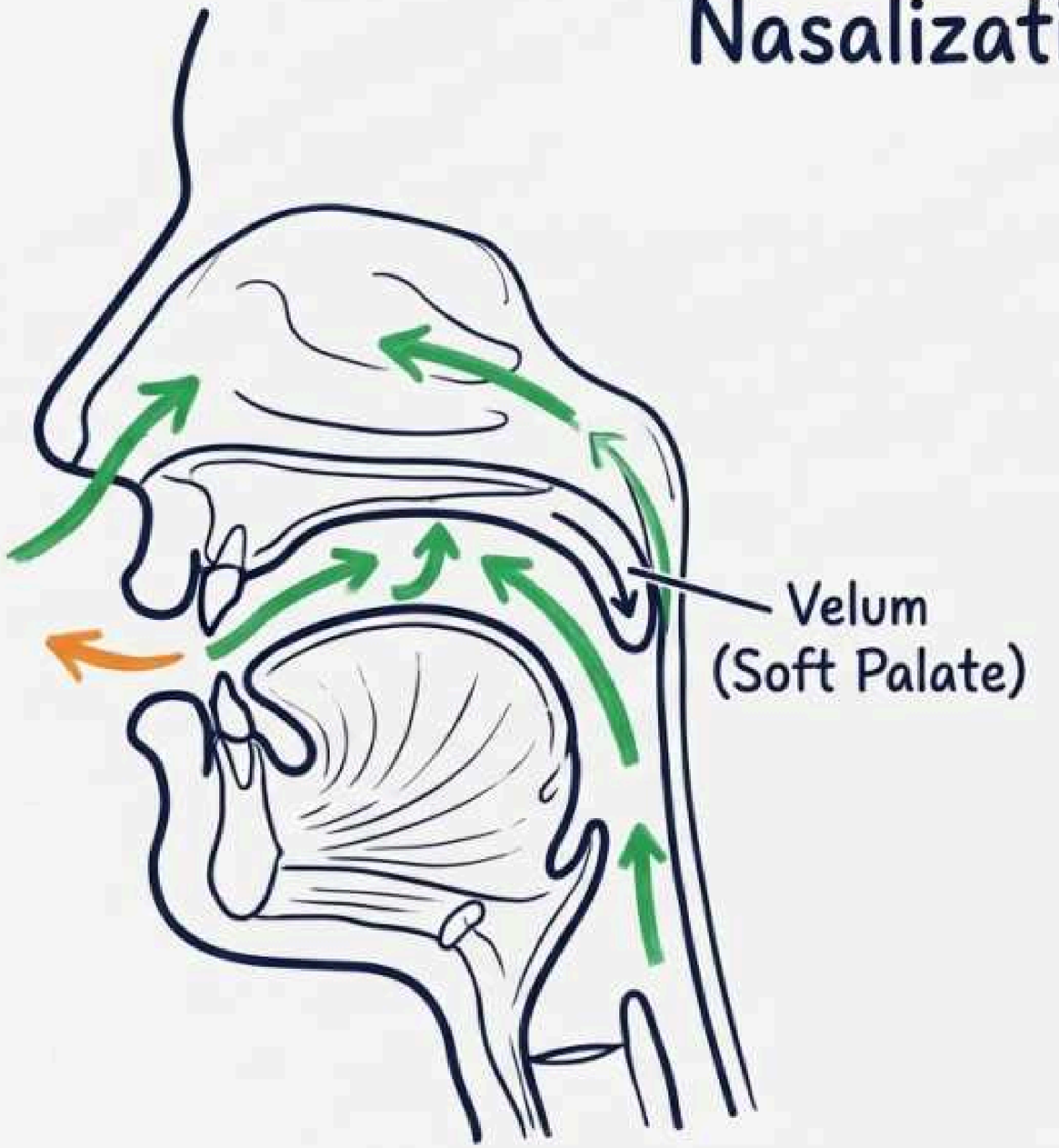


Length mark (:) is context-dependent in General American.
Listeners use this length cue to guess the final consonant.

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Nasalization (~)

¶ 4.18



Mechanism Label:

Velum lowers early; air escapes through the nose.

Symbol Callout:

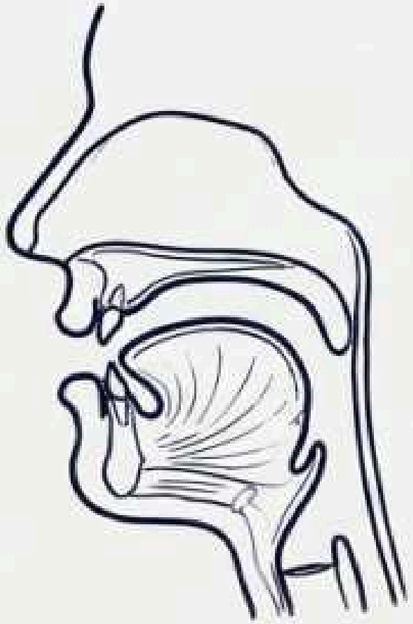
Shown by a tilde above the vowel.

ã

English Usage:	French Usage:
Automatic and unnoticed.	Distinguishes actual meaning.
Example: [kʰæ̃nt] for can't.	Example: bon vs beau bon [bɔ̃] beau [bo]

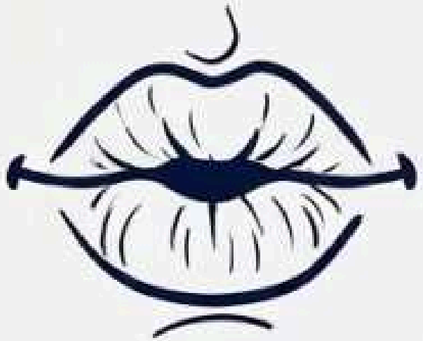
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Front Rounding in Other Languages



[Tongue position of *ee*]

+



[Rounded lips of *oo*]

=

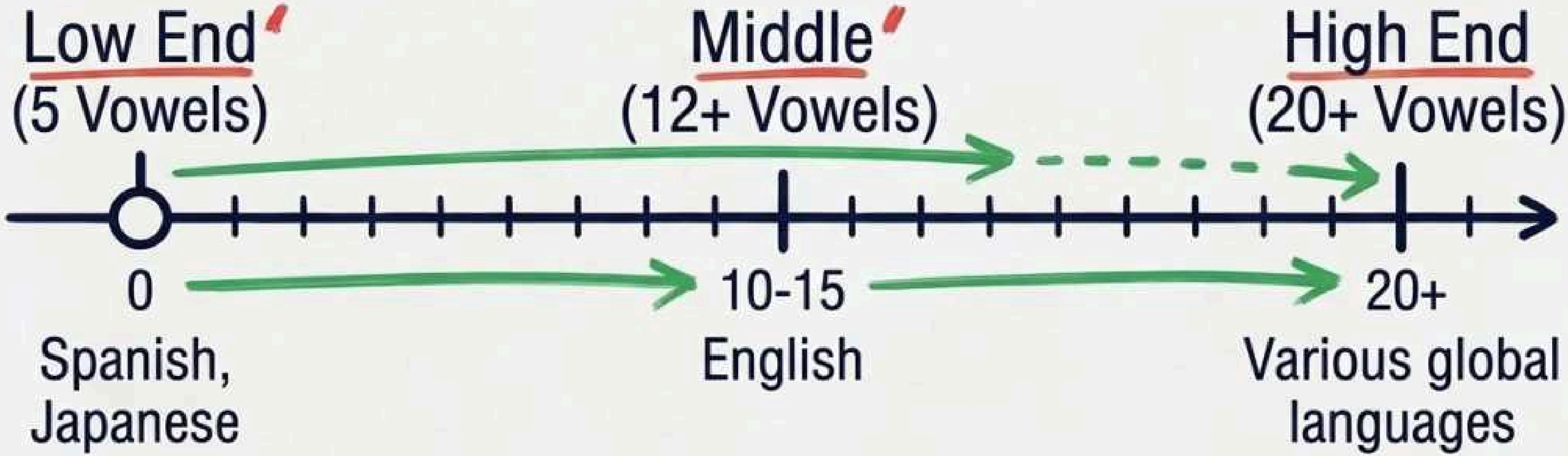
/y/

- French: *tu* (/y/)
- German: *ü*
- French: *eu*

English does not use rounding to separate front vowels, but the IPA provides **dozens** of symbols for languages that do.

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Vowel Inventories Across Languages



Ears sort sounds automatically into native categories. A learner from a 5-vowel language may literally hear *ship* and *sheep* as the exact same word.

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Vowel Acoustics (Formants)

Acoustically, a vowel is a pattern of resonances called **formants**.

Y-Axis (F1): **Height**

First formant frequency rises as the vowel gets more open



X-Axis (F2): **Backness**

Second formant frequency rises as the vowel gets more front

Computers recognize vowels using just these two numbers—they are the *acoustic echo* of *height* and *backness*.

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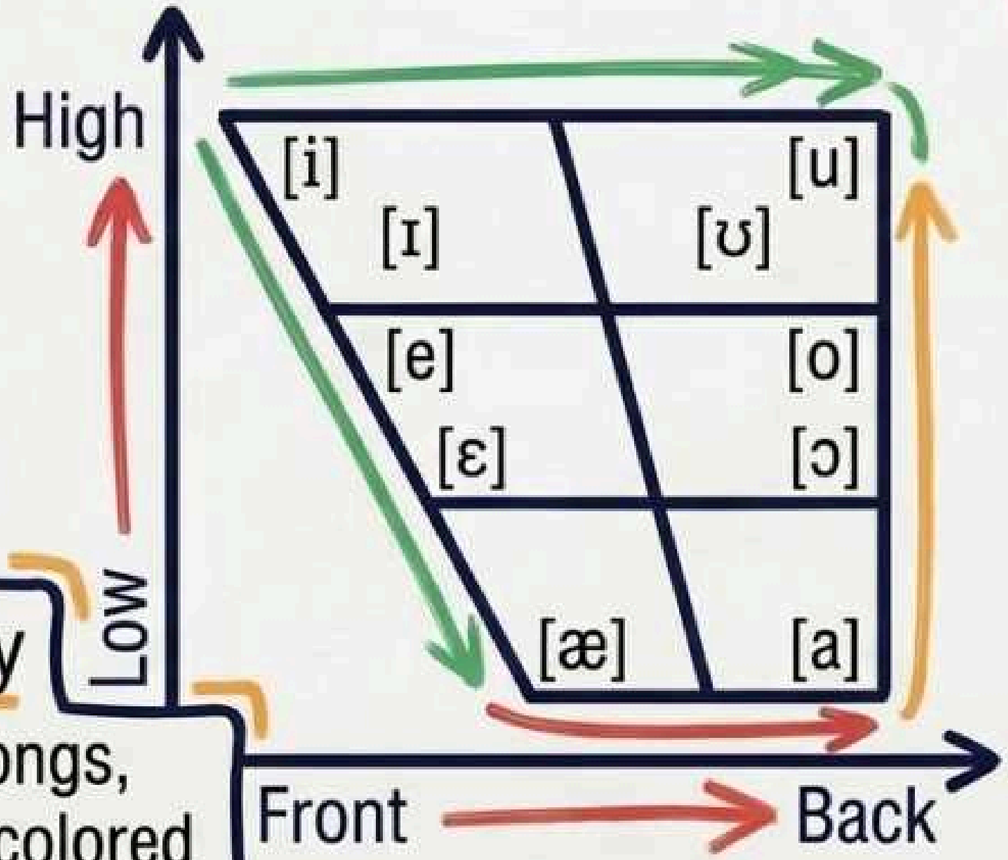
Lecture 4 Summary

1. Articulatory Measurement

Described by Height, Backness, and Rounding.

2. English Inventory

~10 simple monophthongs, 5 main diphthongs, R-colored vowels, and the central schwa.



3. Orthography vs Reality

The names of English vowel letters are actually **diphthongs**. This is why the letter A (named [eɪ]) is **completely different** from the vowels that the letter A **spells** in everyday words.

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