

Phonetics III:

English Phonemes – Vowels & Consonants

January 16th, 2023

English Phonemes in IPA

Coursebook 2.7

Familiar IPA Symbols, consonants:

- | | | |
|-----------------|-----------------|----------------|
| 1. [p] 'pot' | 7. [f] 'fought' | 11. [m] 'man' |
| 2. [b] 'bought' | 8. [v] 'vote' | 12. [n] 'not' |
| 3. [t] 'tot' | 9. [s] 'sot' | 13. [l] 'lot' |
| 4. [d] 'dot' | 10. [z] 'zit' | 14. [w] 'walk' |
| 5. [k] 'kit' | | 15. [h] 'hot' |
| 6. [g] 'got' | | 16. [j] 'you' |

Unfamiliar IPA Symbols, consonants:

17. [θ] 'thought'

18. [ð] 'though'

19. [ʃ] 'shot'

20. [ʒ] 'vision'

21. [ŋ] 'ring'

22. [ɹ] 'rot'

23. [tʃ] 'chop'

24. [dʒ] 'jot'

Familiar IPA Symbols, vowels:

25. [i]

'heed'



26. [ɑ]

'hod'



27. [u]

'who'd'



Familiar IPA Symbols, vowels:

28. [ej]

'hayed'



29. [ow]

'bode'



30. [aj]

'bide'



31. [aw]

'bowed'





32. [oj]


'Boyd'





Unfamiliar IPA Symbols, vowels:

33. [ɪ] 'bid' 

34. [ɛ] 'bed' 

35. [æ] 'bad' 

36. [ʌ] 'bud' 

37. [ʊ] 'hood' 

38. [ə] 'about'

Also

- The following alphabetic symbols do not represent any English sound:

c q r x y

Consonants & Vowels

A Basic Distinction

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Vowels and Consonants

- Vowels: flow of air through vocal tract (above the larynx) is not constricted.
- Consonants: flow of air through vocal tract is completely or severely constricted.

Consonants

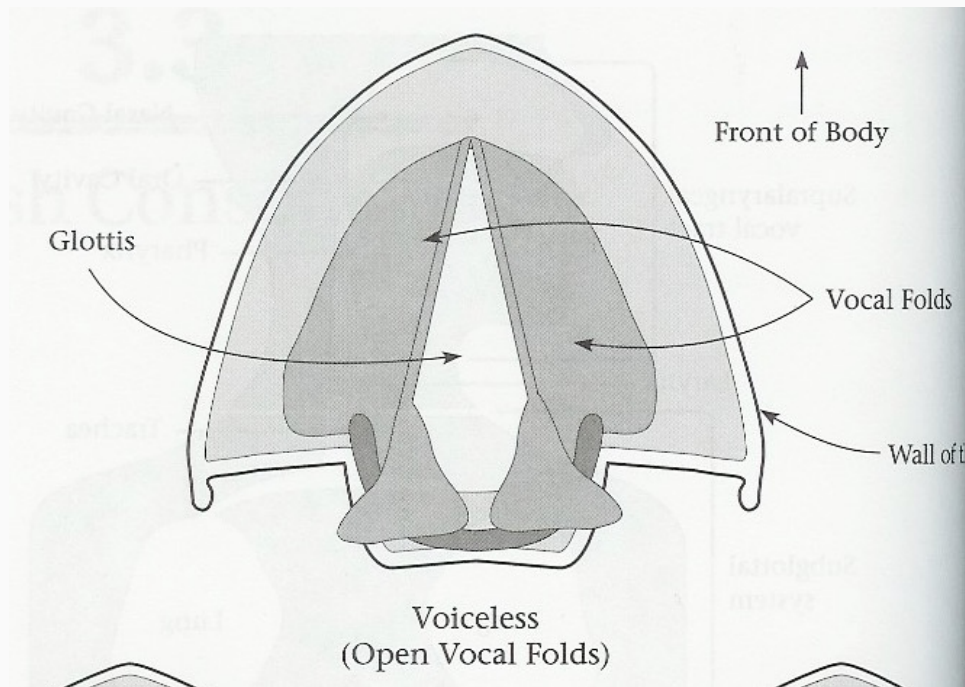
- Consonants are produced with more obstruction of the airflow through the vocal tract than vowels
- They are characterized by the following set of attributes:
 1. Voicing
 - vocal folds position and movement
 2. Place of Articulation
 - location of constriction in the vocal tract
 3. Manner of Articulation
 - type of constriction made in the vocal tract

Voicing

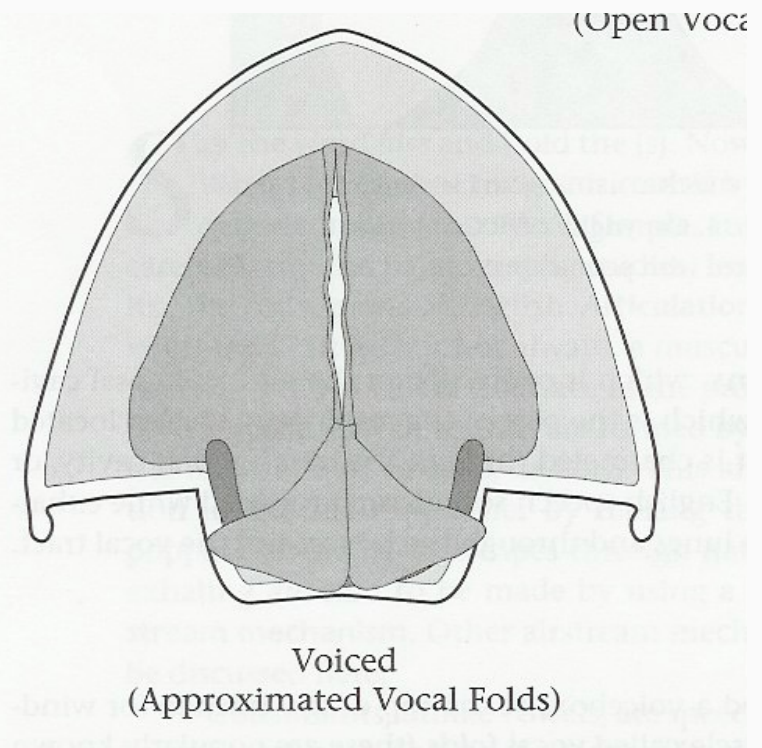
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- On the way out of the lungs
 - Air passes through the trachea
 - Reaches the larynx
- The larynx consists of two “vocal folds” which may be opened and closed. If the vocal folds are:
 1. open: air passes cleanly through
 - = **voiceless** sound
 2. lightly brought together: vocal folds vibrate in passing air
 - = **voiced** sound

Vocal Fold Schematics



Voiceless (folds open)



Voiced (folds together)

The Reality

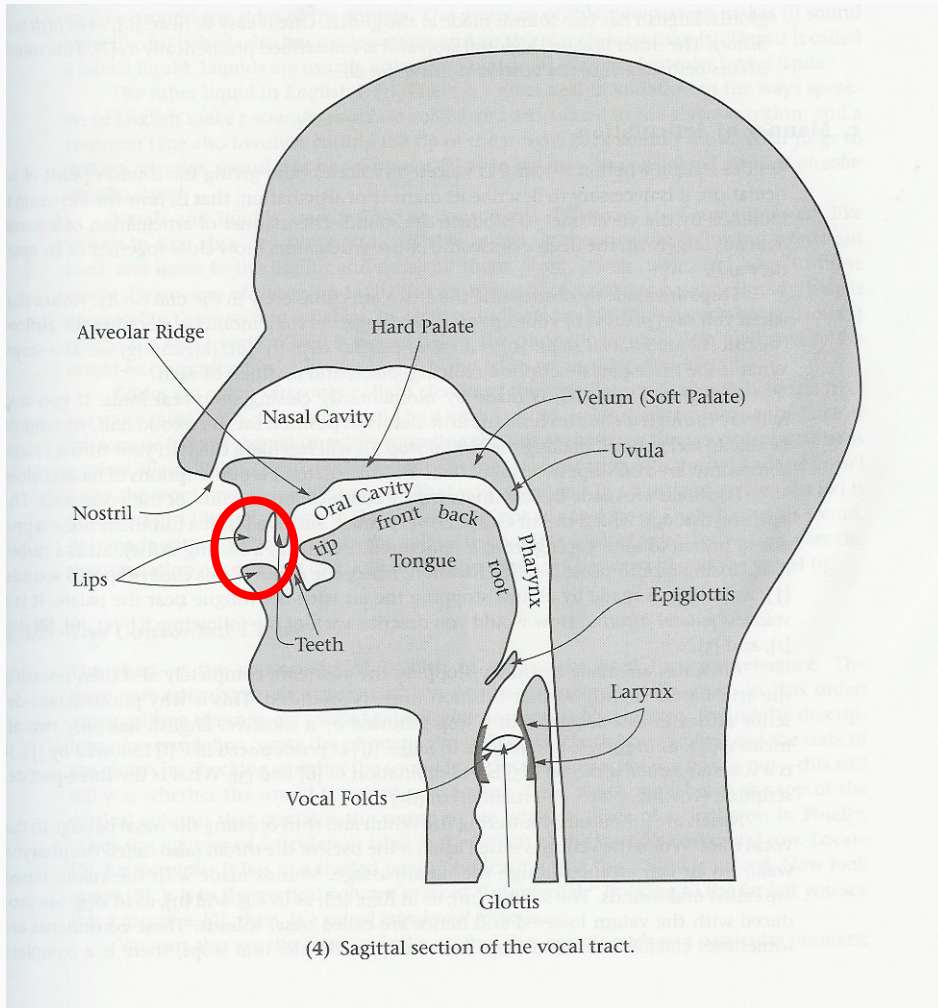
Some Voicing Distinctions

- Among English consonants:

Voiceless	Voiced	Voiceless	Voiced
[f]	[v]	[p]	[b]
[θ]	[ð]	[t]	[d]
[s]	[z]	[k]	[g]
[ʃ]	[ʒ]	[tʃ]	[dʒ]

Place of Articulation

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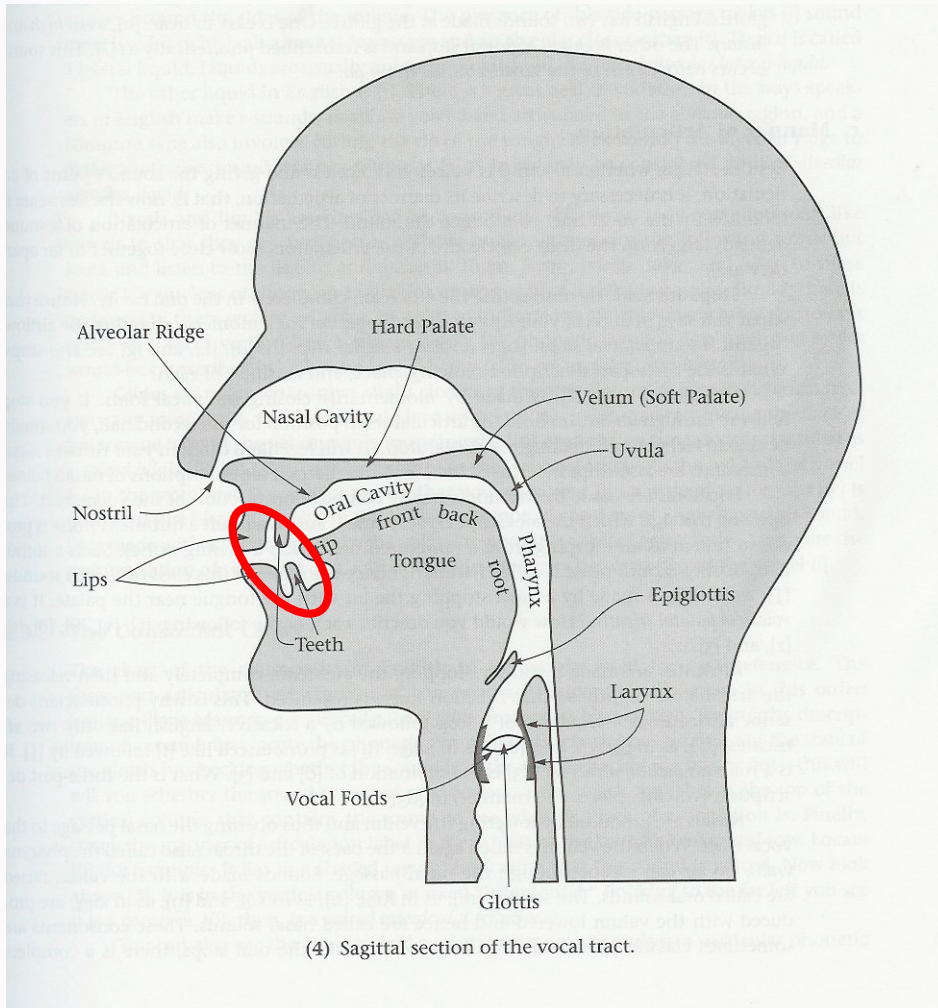


- **bilabial** =
constriction made by both lips
- bilabial consonants in English include:

[p] [b]

[m]

Place of Articulation

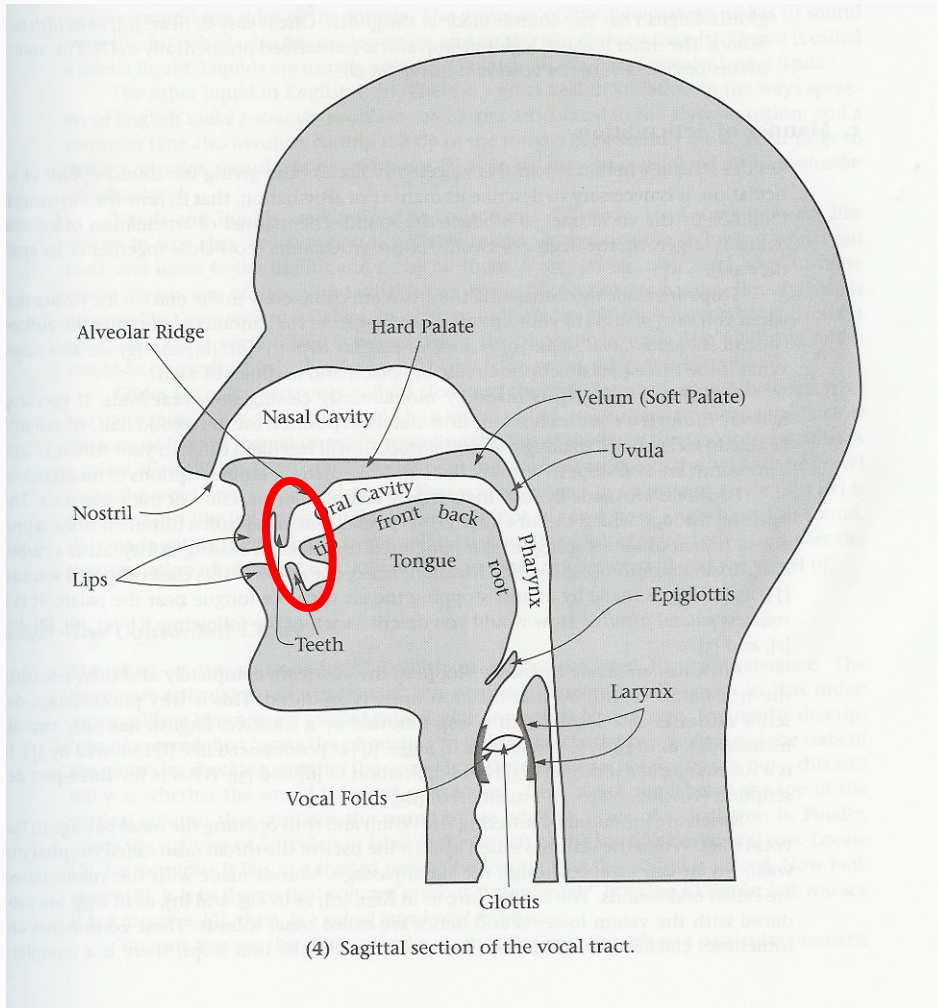


- **labio-dental =**
constriction made by lower lip
and upper teeth

- labio-dental consonants in
English include:

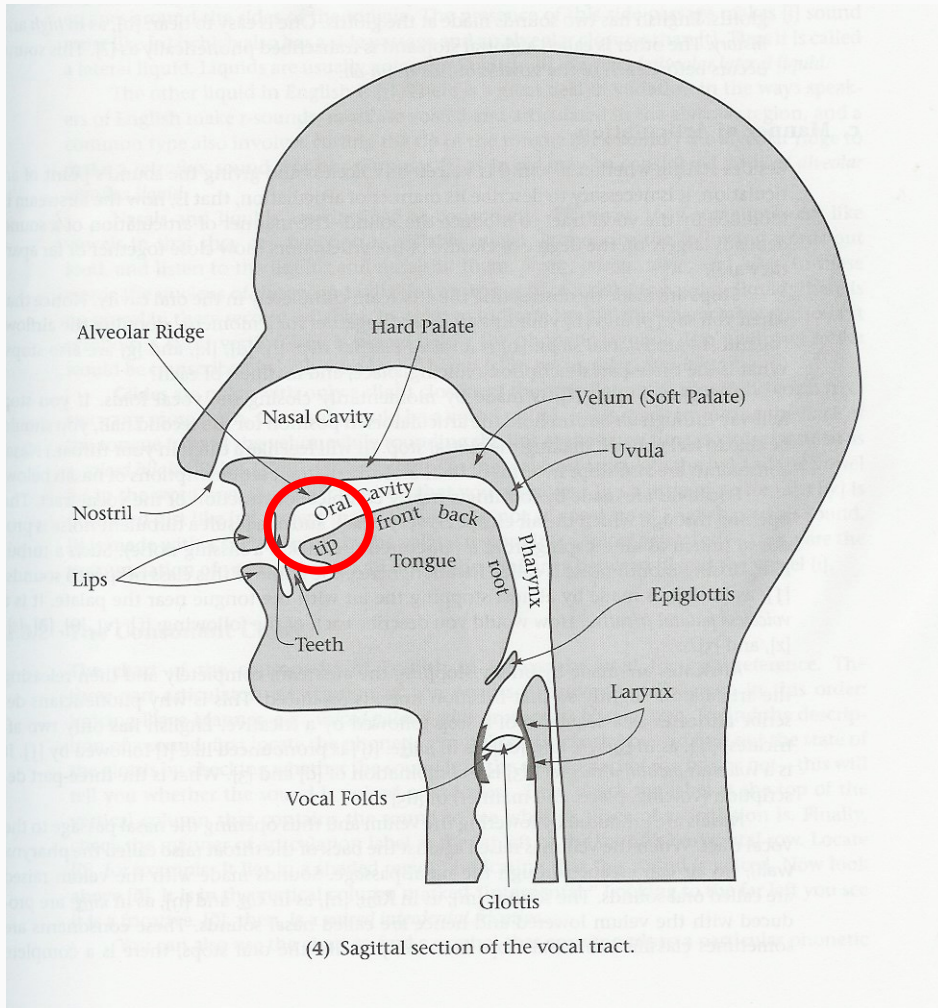
[f] [v]

Place of Articulation



- **dental** =
constriction made by pushing
tip of tongue between the teeth
- dental consonants
[θ] [ð]

Place of Articulation



- **alveolar** =
constriction made by tip of tongue against alveolar ridge

- alveolar consonants in English include:

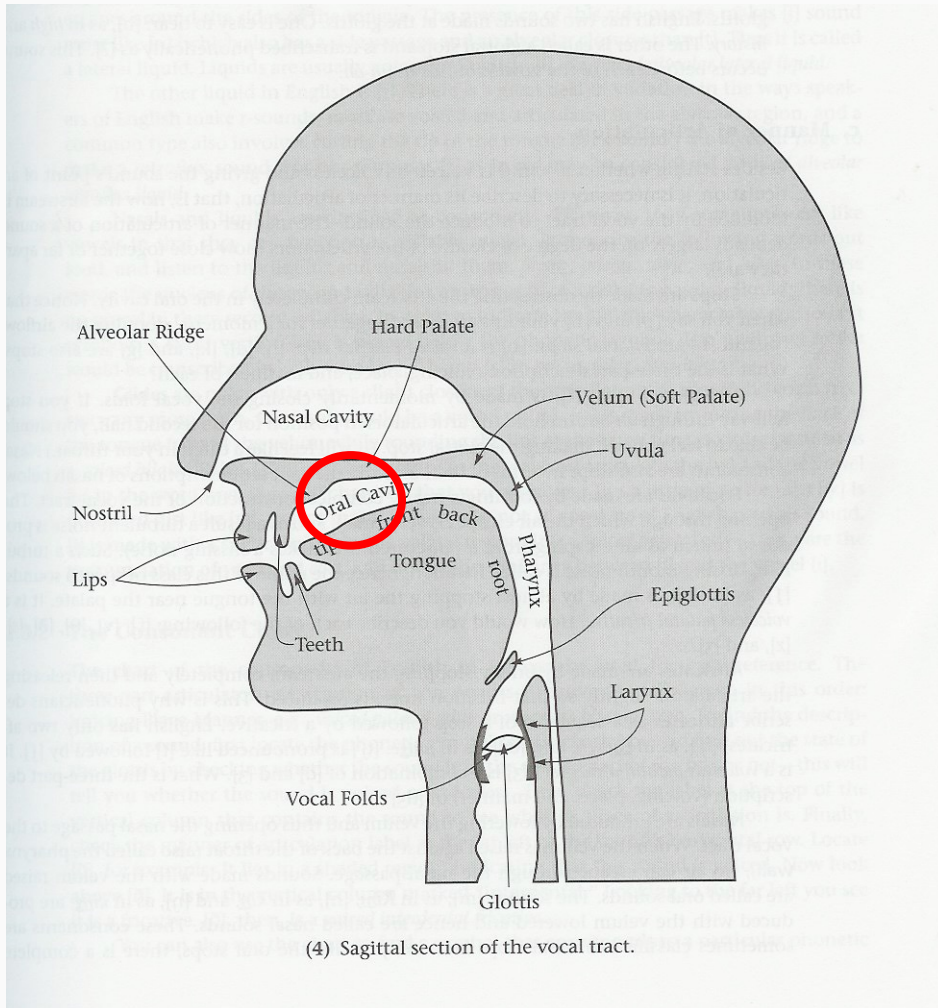
[t] [d]

[s] [z]

[n] [l]

[ɹ] [r]

Place of Articulation



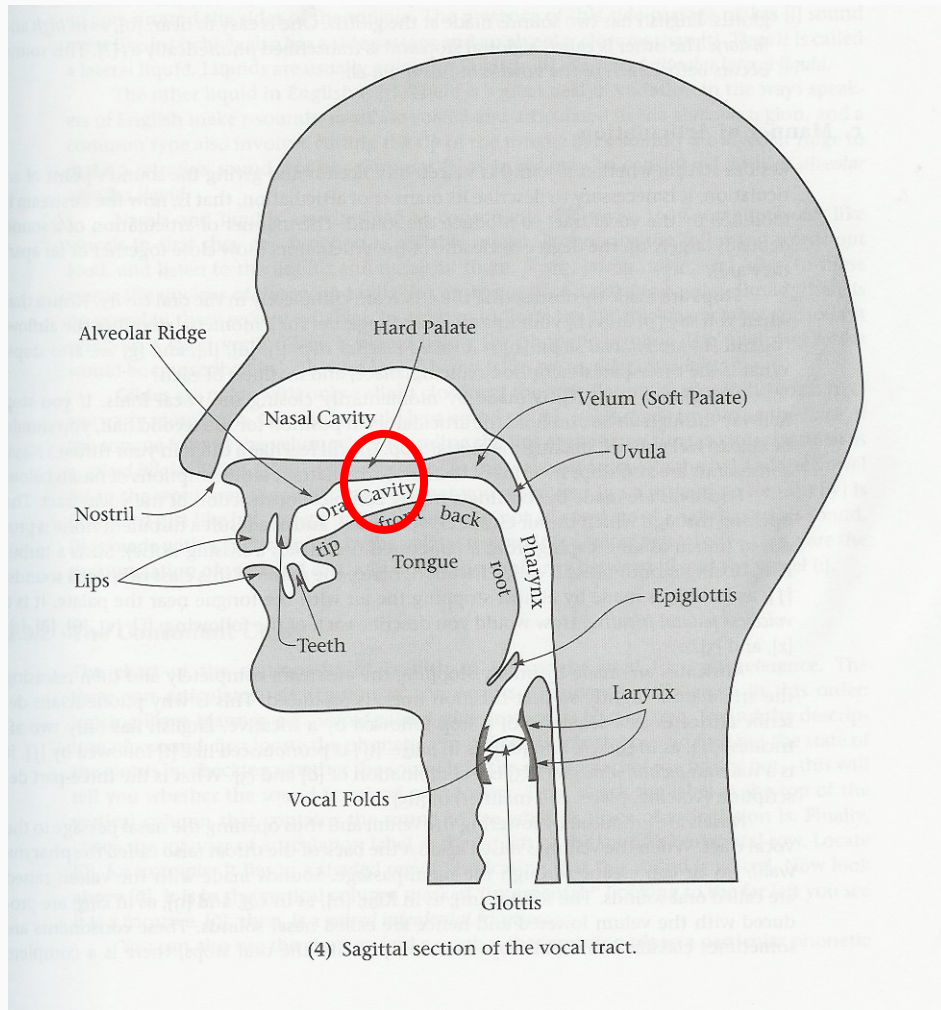
- **alveopalatal =**
constriction made by blade of tongue behind alveolar ridge

- **alveopalatal consonants in English:**

[ʃ] [ʒ]

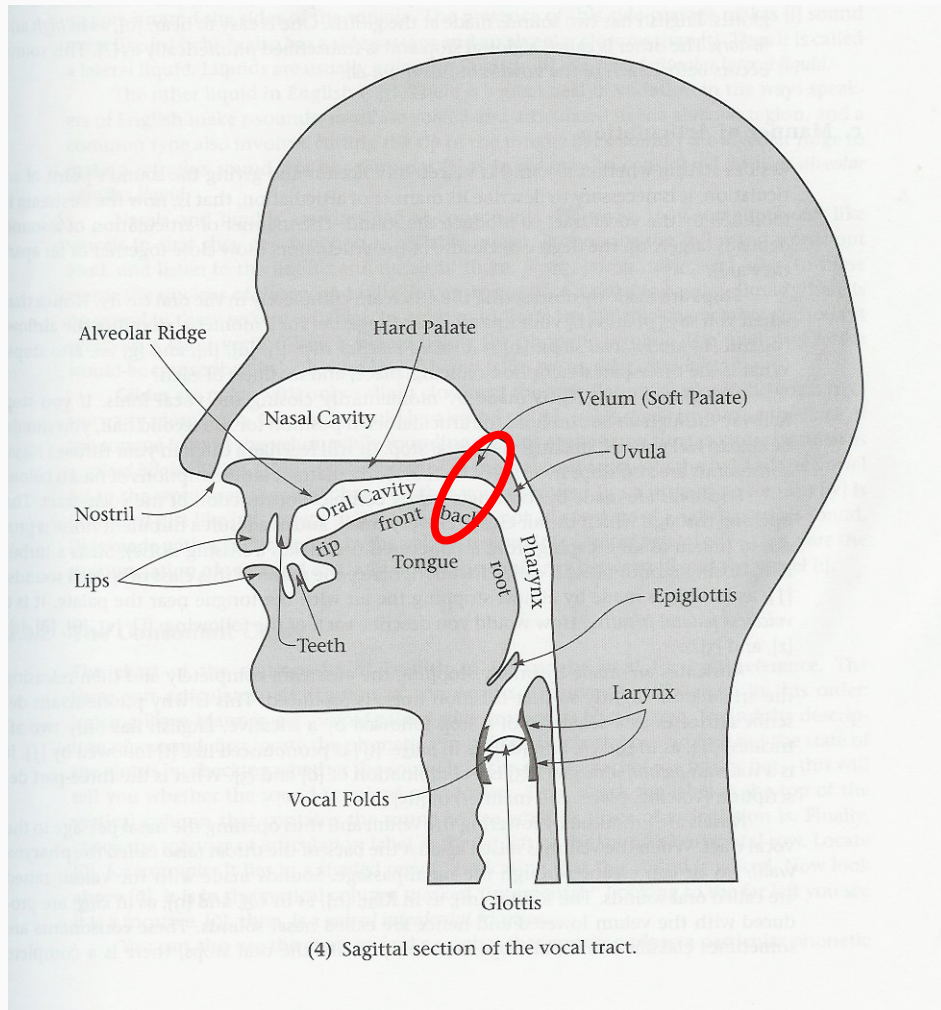
[tʃ] [dʒ]

Place of Articulation



- **palatal** =
constriction made by
body of tongue near top
of the palate
- the only palatal
consonant in English is:
[j]

Place of Articulation

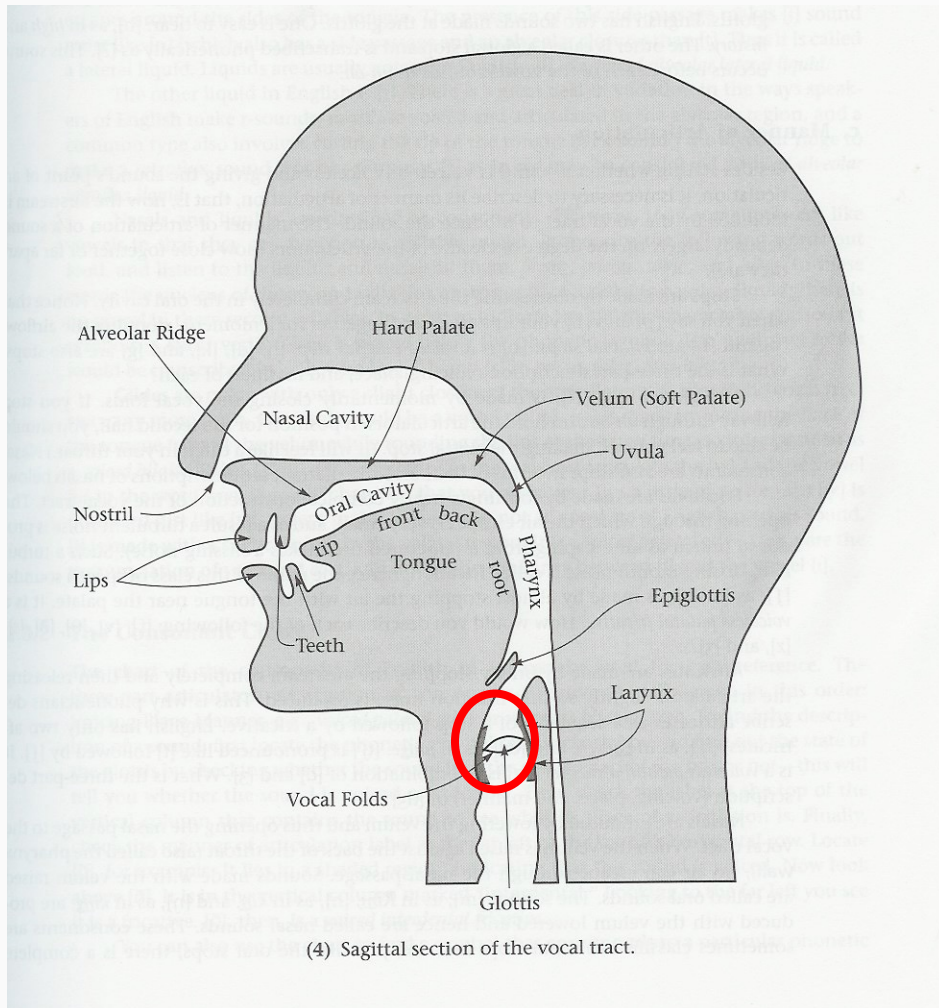


- **velar** =
constriction made by
back of tongue against
the velum
- **velar consonants in
English are:**

[k] [g]

[ŋ]

Place of Articulation



- **glottal** =
constriction made at the
glottis

- glottal consonants in
English include:

[h] [ʔ]

English Place of Articulation

Bilabial	[p]	[b]	[m]					
Labio-dental	[f]	[v]						
Dental	[θ]	[ð]						
Alveolar	[t]	[d]	[s]	[z]	[n]	[l]	[ɹ]	
Alveopalatal	[ʃ]	[ʒ]	[tʃ]	[dʒ]				
Palatal	[j]							
Velar	[k]	[g]	[ŋ]	[w]				
Glottal	[h]	[ʔ]						

Manner of Articulation

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1. **Stop** = complete closure in vocal tract

- English stops:

[p] [t] [k]

[b] [d] [g] [ʔ]

2. **Fricative** - narrow constriction that causes disruption of airflow

- think “friction”
- English fricatives:

[f] [θ] [s] [ʃ] [h]

[v] [ð] [z] [ʒ]

Manner of Articulation

3. Affricate

- = brief closure with a fricated release
- English affricates:

[tʃ] [dʒ]

4. Nasal

- = velum is lowered and allows air to flow through the nose
- English nasals:

[m] [n] [ŋ]

Manner of Articulation

5. **Liquid** = minimal constriction in vocal tract

- lateral = tongue is constricted in center of mouth; air passes out through the sides of mouth

English lateral liquid: [l]

- retroflex = tongue is curled back and bunched up

English retroflex liquid: [ɭ]

- flap/tap = tongue tip quickly strikes the alveolar ridge

English alveolar flap/tap: [ɾ]

* Note: not a liquid per se, but in the coursebook, it is considered one of the liquids.

Manner of Articulation

6. Glide = least amount of constriction without being a vowel

- English glides: [w] [j]

Consonant Chart

Manner of articulation	Place of articulation													
	Bilabial		Labiodental		Dental		Alveolar		Alveopalatal		Palatal	Velar	Glottal	
Stop	p	b					t	d				k	g	ʔ
Fricative			f	v	θ	ð	s	z	ʃ	ʒ				h
Affricate									tʃ	dʒ				
Nasal		m						n					ŋ	
Flap/Tap								r						
Lateral								l						
Retroflex								ɻ						
Glide											j	w		

* All the sounds on the left are voiceless, and all the sounds on the right are voiced.

What about vowels?

Coursebook 2.6

- Vowel articulations can be characterized along four dimensions:
 1. Height (of tongue body)
 - high, mid, low
 2. Frontness (of tongue body)
 - front, central, back
 3. Roundness (of lips)
 - rounded, unrounded
 4. Tenseness
 - tense, lax

Height & Frontness

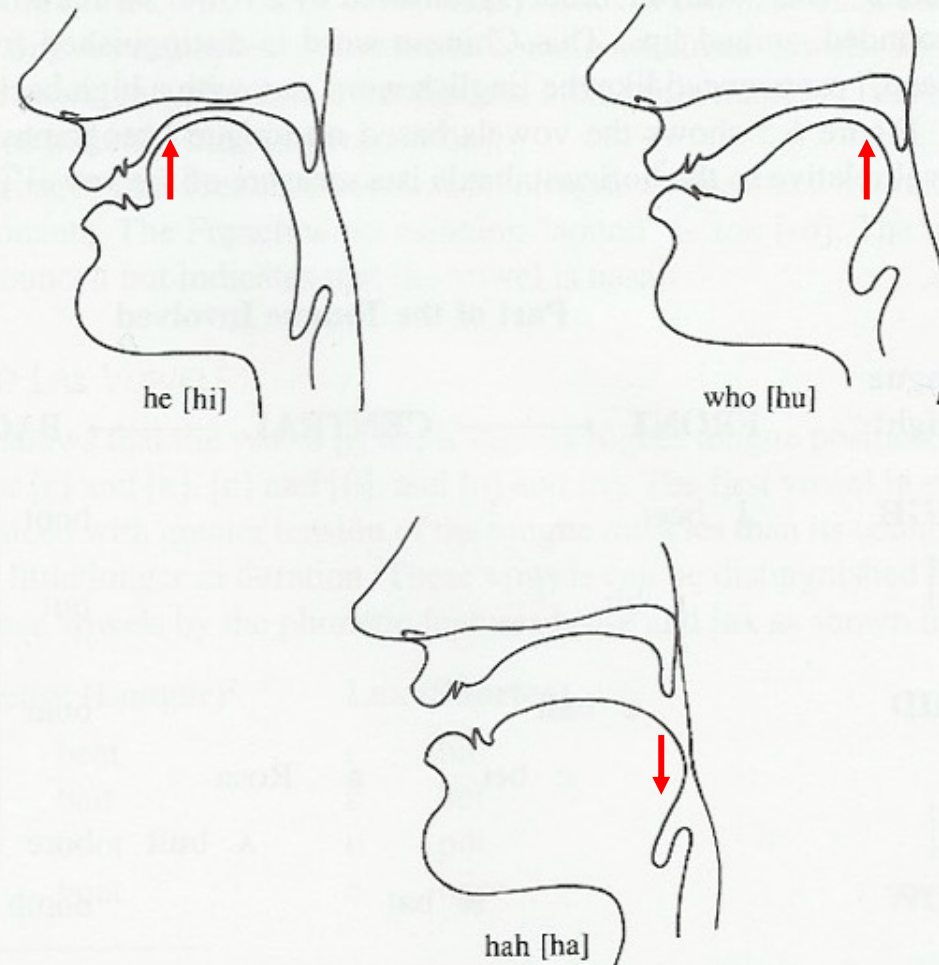


Figure 6.4 Position of the tongue in producing the vowels in he, who, and hah.

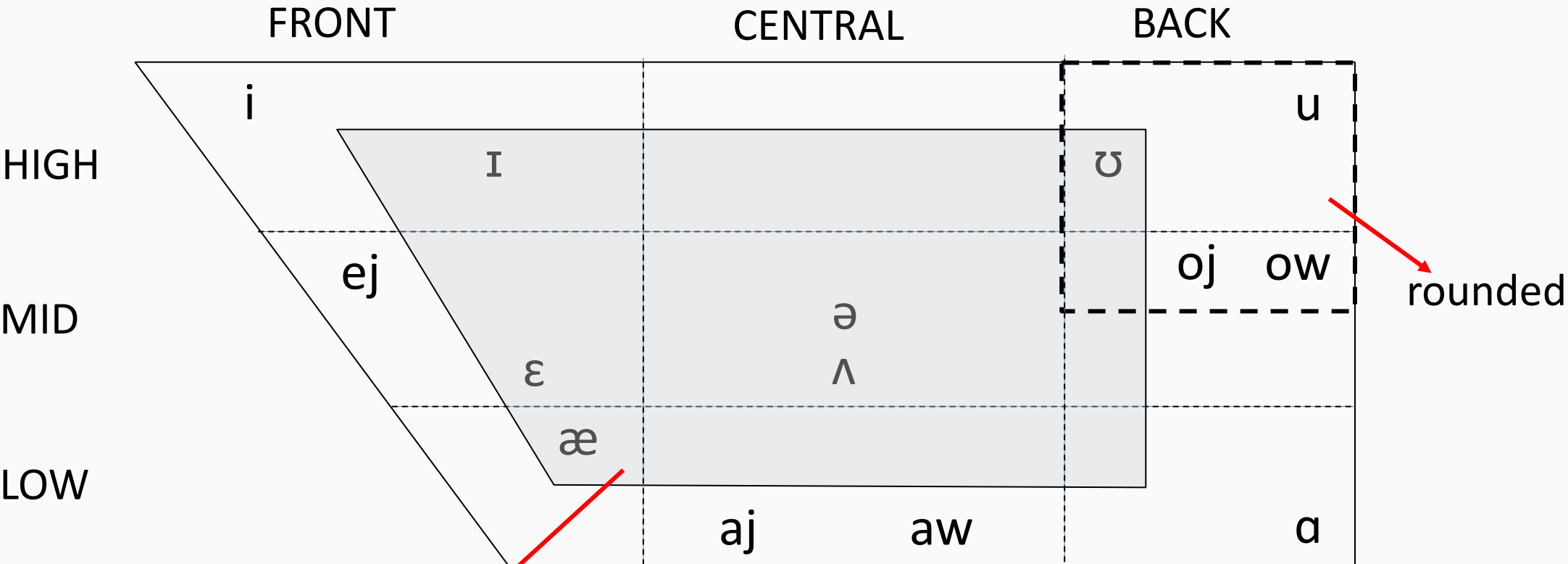
[i] to [a] movement

- Ken Stevens x-ray video

<https://www.youtube.com/watch?v=DcNMCB-Gsn8>

The Vowel Chart

- The dimensions height and frontness define the **vowel space**.



Shaded area – lax vowels
the rest – tense vowels

Other Vowel Features

- Rounding:
 - [u], [ʊ], [o], [ɔ], and [ɔ] are pronounced with rounded lips
 - the other English vowels are not
- “Tenseness”:
 - A “tense” vowel is closer to the edge of the vowel space
 - a “lax” vowel is closer to the center
 - Ex: [i] is tense, [ɪ] is not.
- Note: tense/lax distinctions are **very hard** for non-native speakers of English to hear

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