

Theoretical Phonology: Suprasegmental Phonology

Consonants: Voice & Place of Articulation

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Outline

- 1 Speech Sounds
- 2 Airstream Mechanisms & Airflow Direction
- 3 Phonation
- 4 Place of Articulation
 - Articulators
 - Bilabial
 - Labiodental
 - Dental
 - Alveolar
 - Post-alveolar
 - Palatal
 - Velar
 - Uvular
 - Pharyngeal
 - Glottal

Sound Classification

① initiation

- ① airstream mechanism
- ② airflow direction

② phonation

③ articulation

- ① place of articulation
- ② degree of stricture
- ③ aspect of articulation

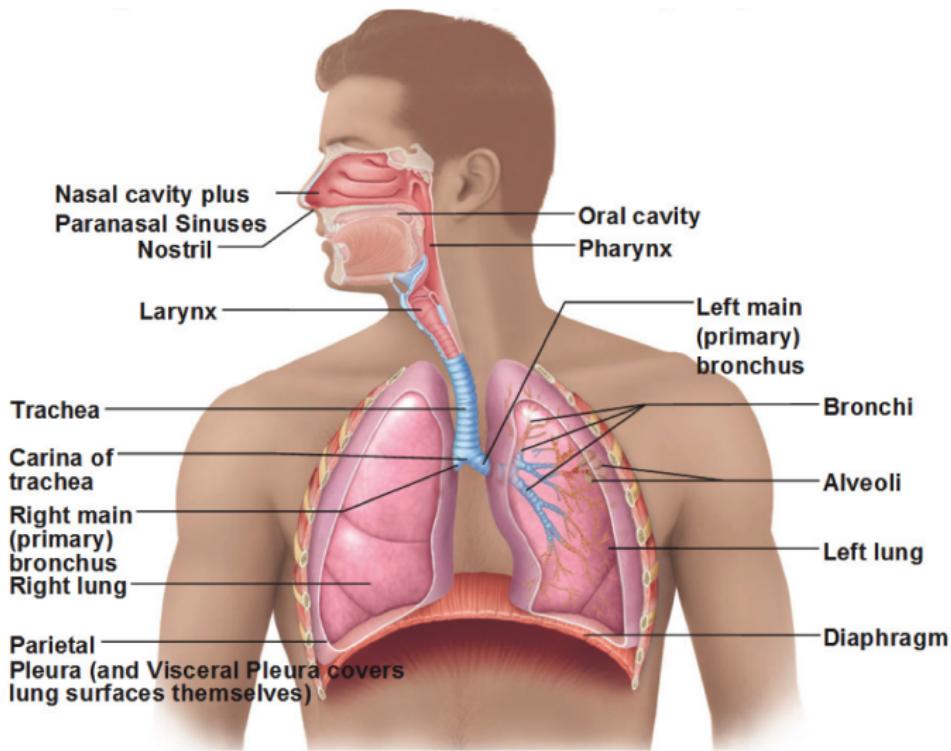
④ co-ordination

Airstream Mechanisms

Source of Energy

- Pulmonic: the source of their energy is the lungs.
- Glottalic: source of energy the glottis and the
- Velaric: the source of energy the tongue.

Airstream Mechanisms



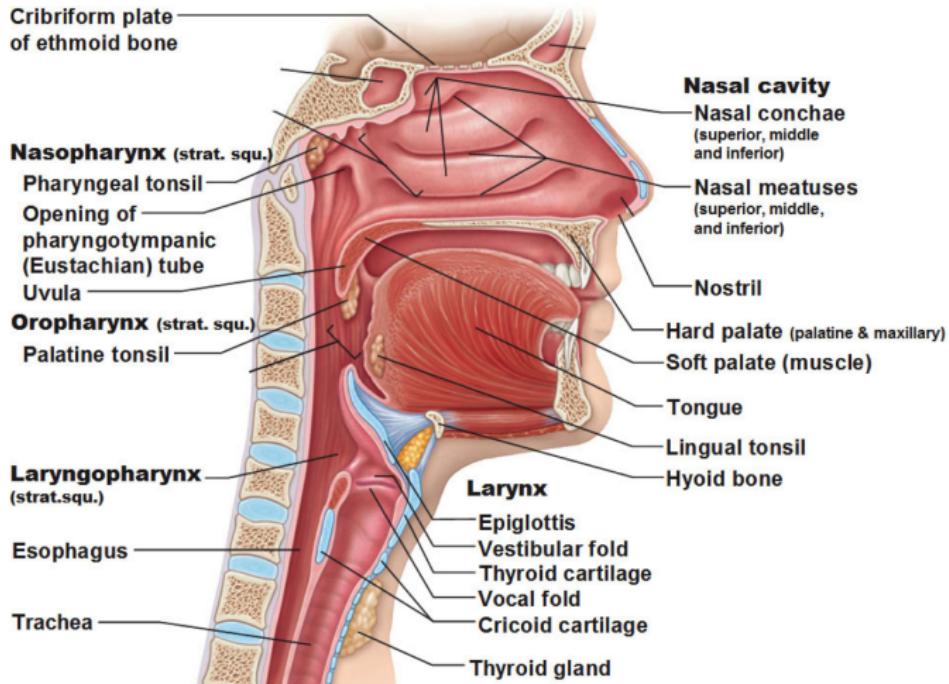
Airflow Direction

- Egressive Airflow. The air goes out of the body.
- Ingressive Airflow. The air goes inward to the body.

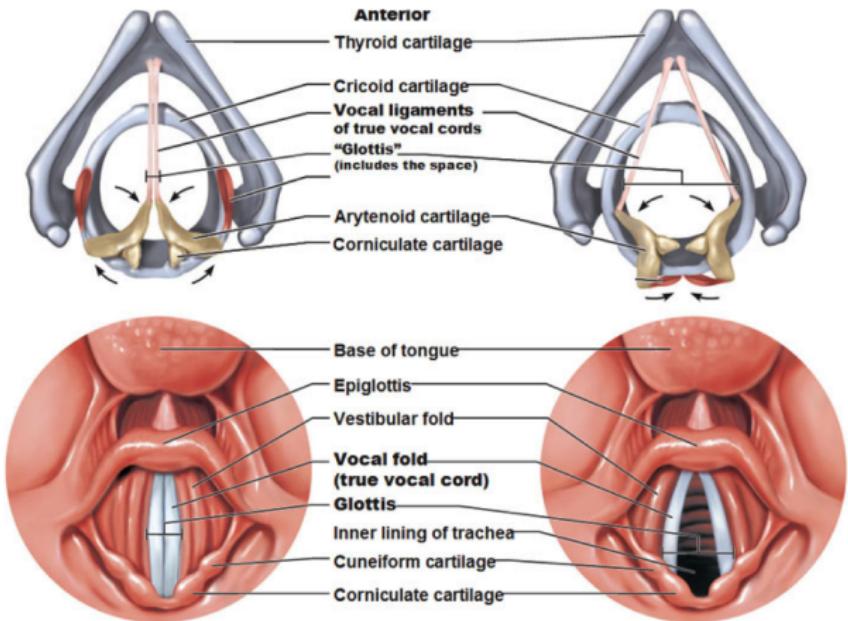
Airstream/Airflow

- Ejectives. Sounds that are made on glottalic egressive airstream.
- Implosives. Sounds that are made on a glottalic ingressive airstream.
- Clicks. Sounds that are made with a velaric ingressive airstream.

Voice Box



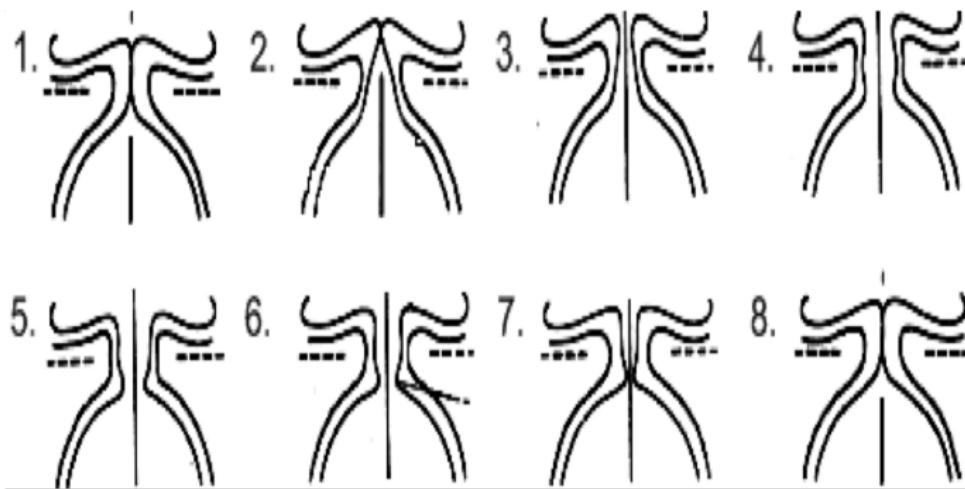
Vocal Folds



(a) Vocal folds in closed position; closed glottis

(b) Vocal folds in open position; open glottis

Phonation Cycle



Voiceless and Voiced Consonants

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d		t̪ d̪	c ɟ	k g	q G			?
Nasal	m	n̪		n		ɳ	j̪ n̪	ɳ	N		
Trill	B			r					R		
Tap or Flap		v̪		f		t̪					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ɟ	x y	χ ʁ	ħ ʕ	h f̪
Lateral fricative				ɬ ɭ							
Approximant		v̪		ɹ		ɻ	j̪	w̪			
Lateral approximant				ɬ		ɻ	ɻ̪	ɬ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

Voiced and Voiceless Consonants

Task

To get awareness of voicing, cover your ears with your hands and pronounce [fvfvfv szszsz] multiple times. What do you feel?

Voicing in languages

- Some languages such as the Dyribal, an Australian language, do not distinguish between voiced and unvoiced sounds [t] and [d] in the word /tibən/ or /dibən/.
- Other languages like English and Greek have context-sensitive voicing (that functions similarly to the Dyribal language).

Articulation

- Oral Articulation: the air flows exclusively through the mouth.
- Nasal Articulation: the air flows through the nasal cavity.¹

¹The soft palate functions as a valve: when it is raised the air flows exclusively through the mouth, when it is lowered the air can escape through the nasal cavity.

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Articulators

Active Articulators:

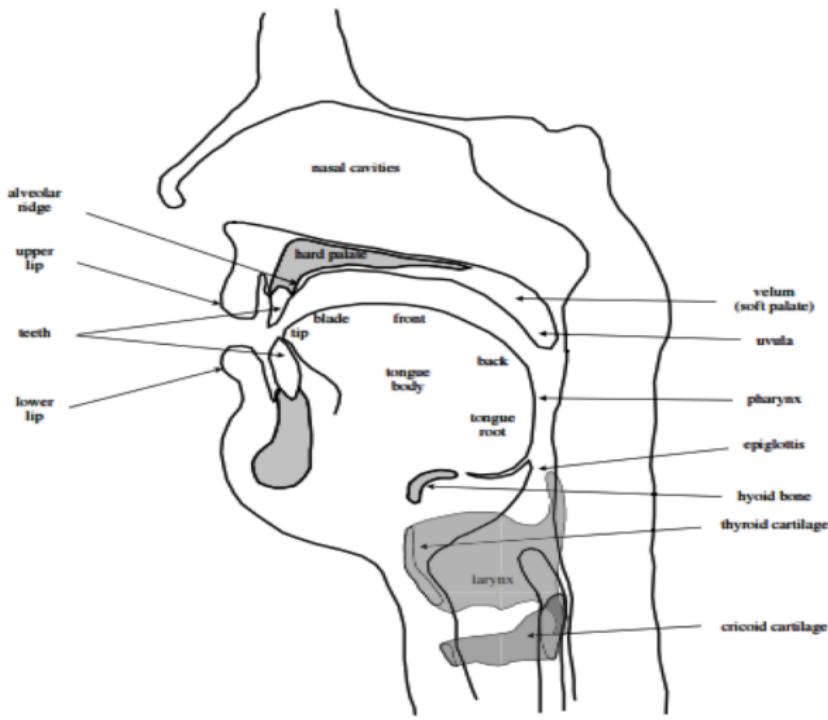
The articulator that moves; it is usually the lower lip or some part of the tongue.

Passive Articulators:

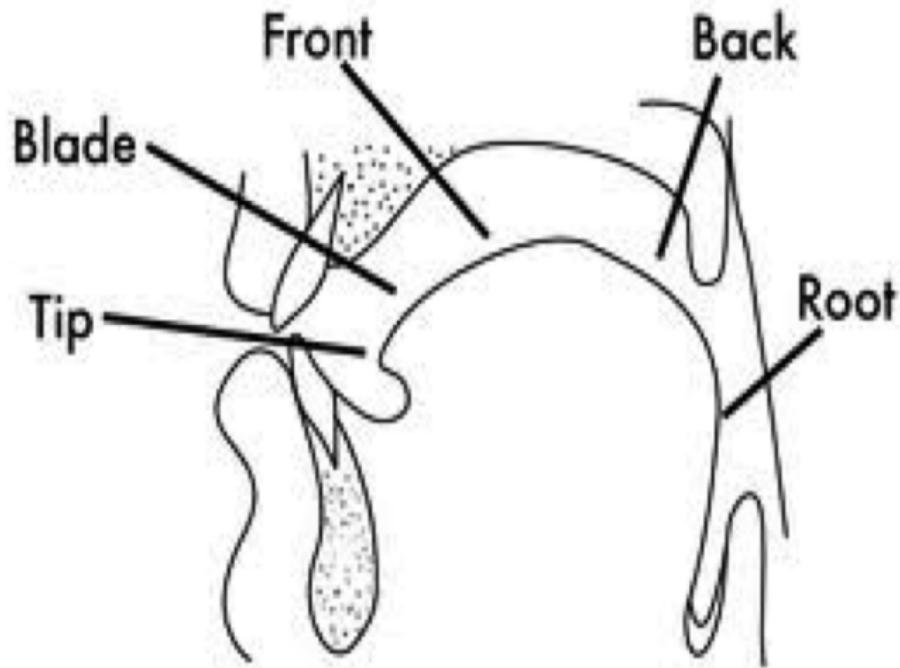
The articulator that makes little or no movement during a speech gesture. Passive articulators include the upper lip, the upper teeth, the various parts of the upper surface of the oral cavity, and the back wall of the pharynx.

Note: In bilabial sounds, since both articulators—passive and active—move, the distinction between active and passive articulators is neutralised.

Place of Articulation



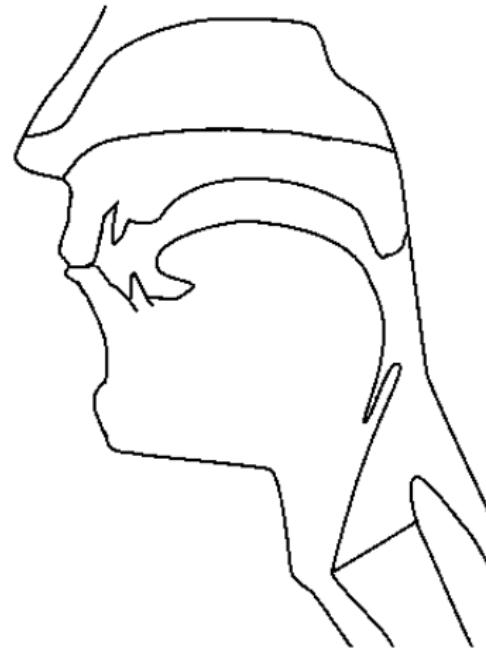
Tongue



Outline

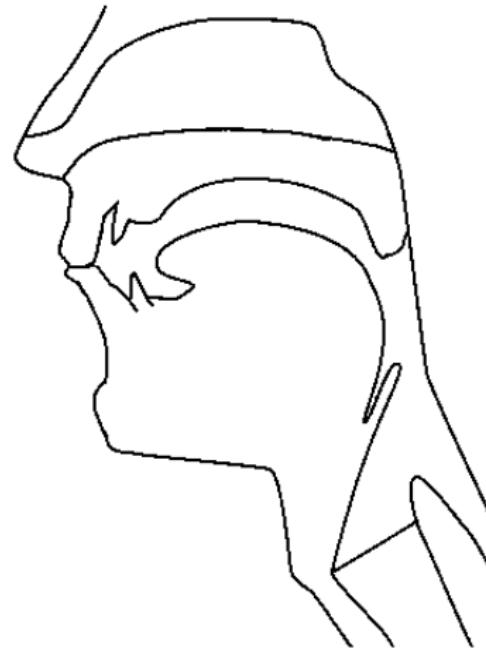
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Bilabial [p]



created by using Daniel Hall's Interactive Application.

Bilabial [p]

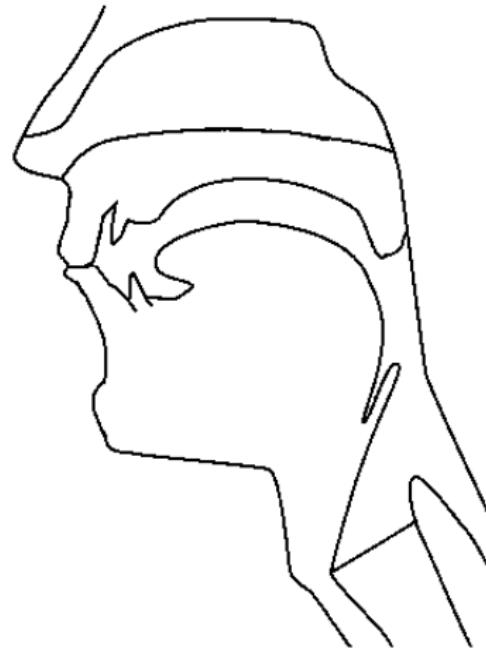


Observation 1

Lips: Closed. The articulators are the two lips. English bilabial sounds include [p], [b], and [m].

created by using Daniel Hall's Interactive Application.

Bilabial [p]



Observation 1

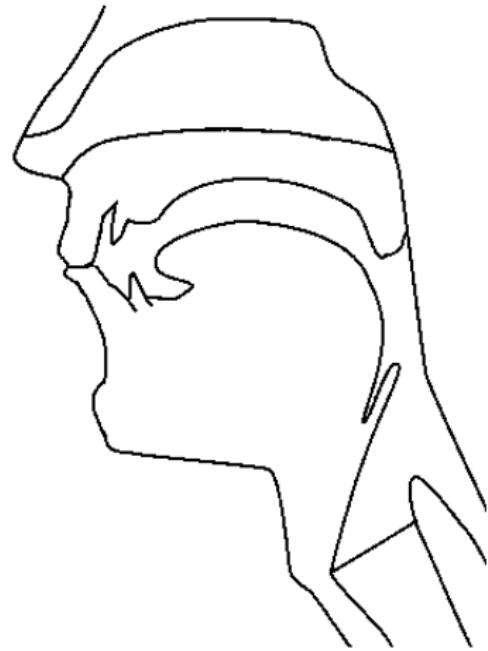
Lips: Closed. The articulators are the two lips. English bilabial sounds include [p], [b], and [m].

Observation 2

Oral Consonant: the air does not escape into the nasal cavity. The soft palate is raised touching the pharynx wall forming a velic closure.

created by using Daniel Hall's Interactive Application.

Bilabial [p]



created by using Daniel Hall's Interactive Application.

Observation 1

Lips: Closed. The articulators are the two lips. English bilabial sounds include [p], [b], and [m].

Observation 2

Oral Consonant: the air does not escape into the nasal cavity. The soft palate is raised touching the pharynx wall forming a velic closure.

Observation 3

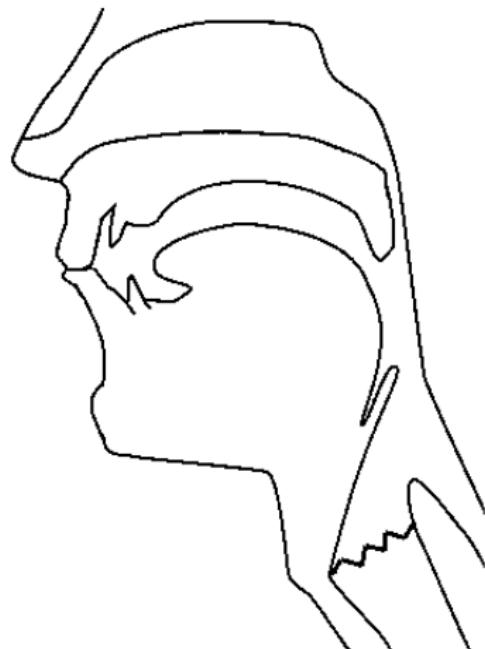
Phonation: Voiceless (vocal folds do not vibrate).

Bilabial [m]



created by using Daniel Hall's Interactive Application.

Bilabial [m]

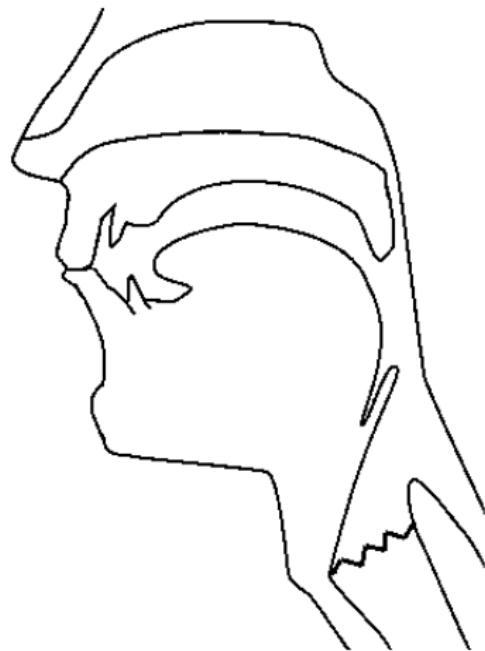


Observation 1

Lips: Closed. The articulators are the two lips. English bilabial sounds include [p], [b], and [m].

created by using Daniel Hall's Interactive Application.

Bilabial [m]



Observation 1

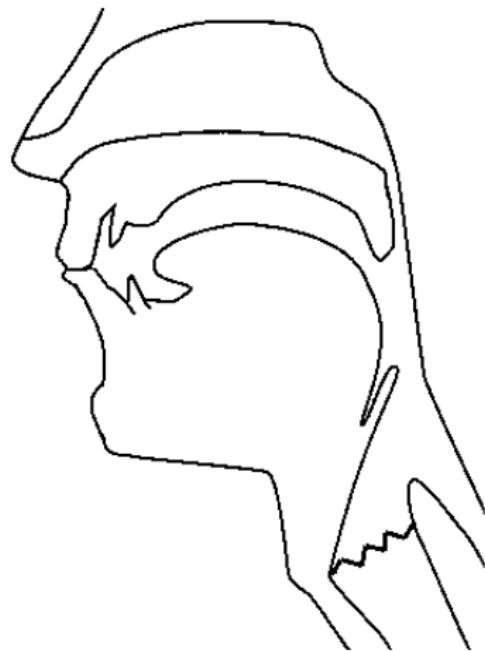
Lips: Closed. The articulators are the two lips. English bilabial sounds include [p], [b], and [m].

Observation 2

Nasal Consonant: The soft palate is lowered and does not touch the pharynx wall. The air escapes into the nasal cavity.

created by using Daniel Hall's Interactive Application.

Bilabial [m]



created by using Daniel Hall's Interactive Application.

Observation 1

Lips: Closed. The articulators are the two lips. English bilabial sounds include [p], [b], and [m].

Observation 2

Nasal Consonant: The soft palate is lowered and does not touch the pharynx wall. The air escapes into the nasal cavity.

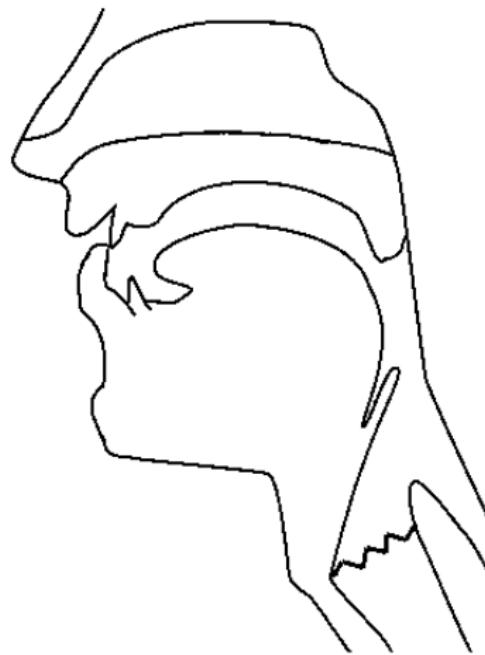
Observation 3

Voiced - vocal folds vibrate

Outline

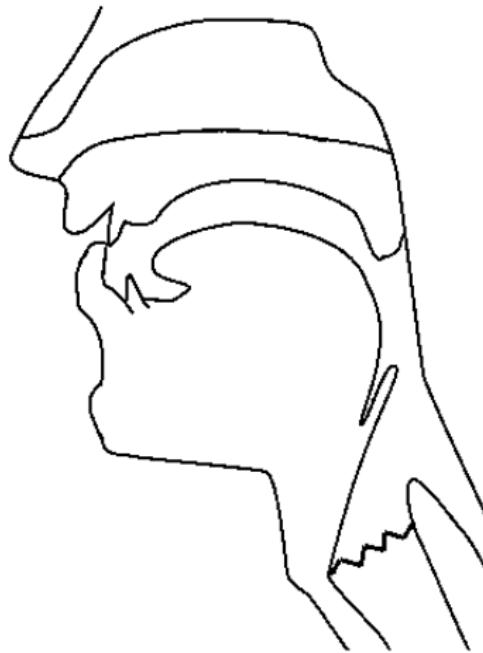
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Labiodental [v]



created by using Daniel Hall's Interactive Application.

Labiodental [v]



Observation 1

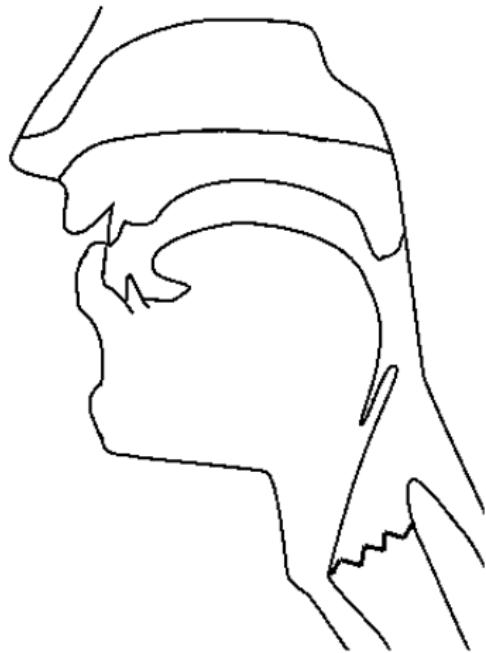
Active Articulator: the lower lip.

Passive Articulator: the upper teeth.

English labio-dental sounds include [f] and [v].

created by using Daniel Hall's Interactive Application.

Labiodental [v]



Observation 1

Active Articulator: the lower lip.

Passive Articulator: the upper teeth.

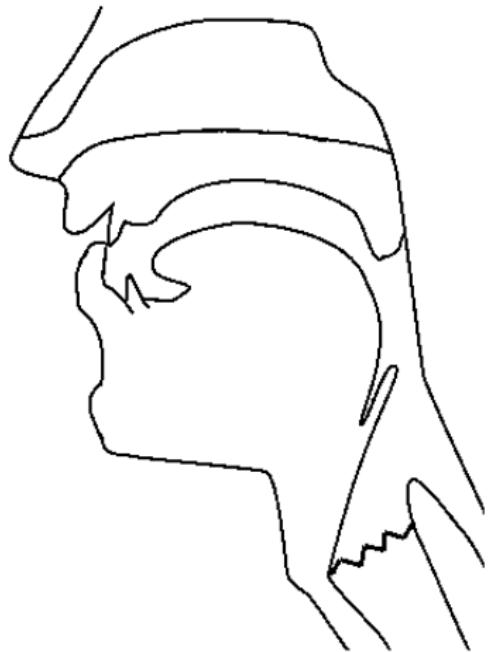
English labio-dental sounds include [f] and [v].

Observation 2

Oral Consonant: the air does not escape into the nasal cavity. The soft palate is raised touching the pharynx wall forming a velic closure.

created by using Daniel Hall's Interactive Application.

Labiodental [v]



Observation 1

Active Articulator: the lower lip.

Passive Articulator: the upper teeth.

English labio-dental sounds include [f] and [v].

Observation 2

Oral Consonant: the air does not escape into the nasal cavity. The soft palate is raised touching the pharynx wall forming a velic closure.

Voicing:

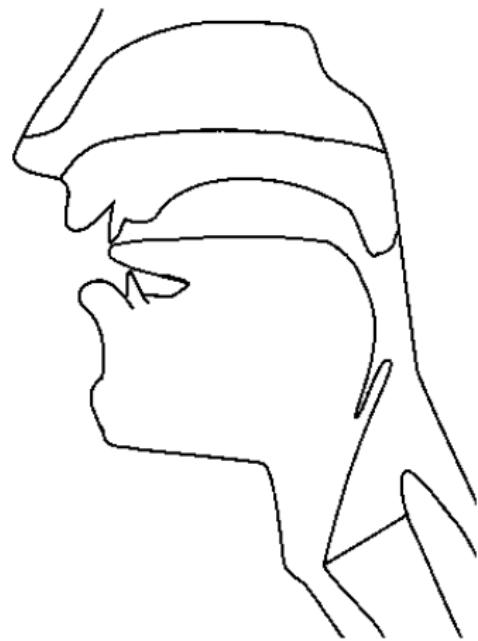
Voiced - Vocal Folds Vibrate

created by using Daniel Hall's Interactive Application.

Outline

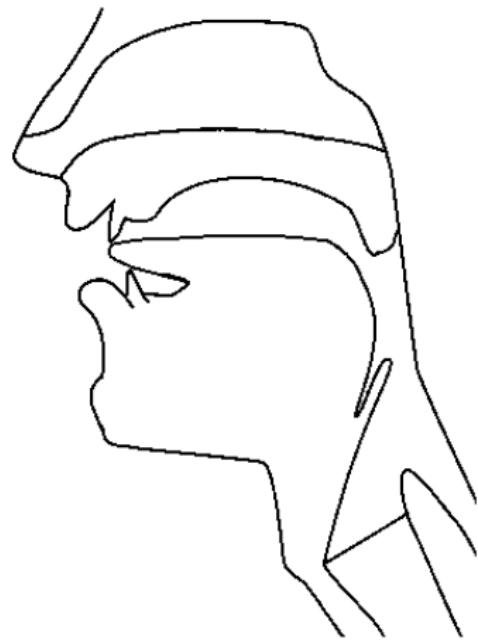
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Dental [θ]



created by using Daniel Hall's Interactive Application.

Dental [θ]



Observation 1

Passive articulators: upper teeth.

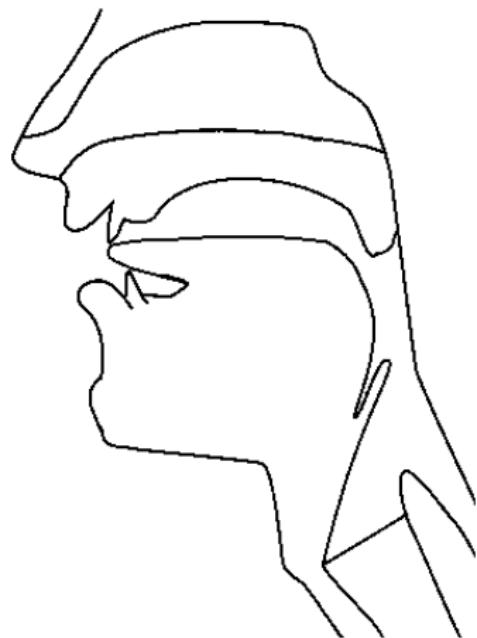
Active articulators: the tongue tip or (usually) the tongue blade.
English includes the [θ] and [ð] dental sounds.

created by using Daniel Hall's Interactive Application.

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Theoretical Phonology (ENG 255)

Dental [θ]



Observation 1

Passive articulators: upper teeth.

Active articulators: the tongue tip or (usually) the tongue blade.

English includes the [θ] and [ð] dental sounds.

Observation 2

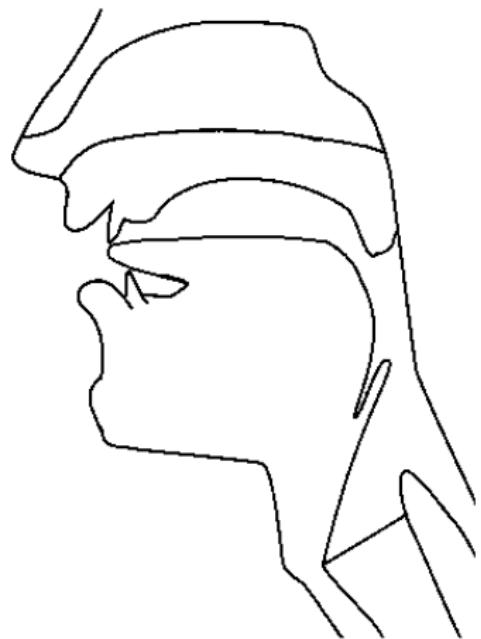
The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

created by using Daniel Hall's Interactive Application.

Charalambos Themistocleous (UCY)

Theoretical Phonology (ENG 255)

Dental [θ]



Observation 1

Passive articulators: upper teeth.

Active articulators: the tongue tip or (usually) the tongue blade.
English includes the [θ] and [ð] dental sounds.

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

Voicing:

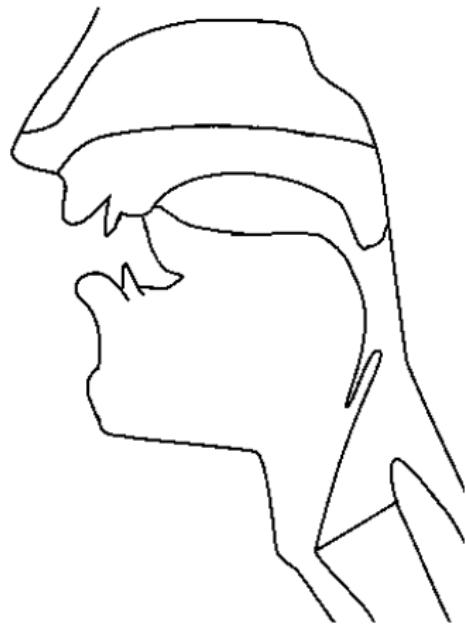
Voiceless - Vocal Folds do not vibrate

created by using Daniel Hall's Interactive Application.

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Alveolar [t]

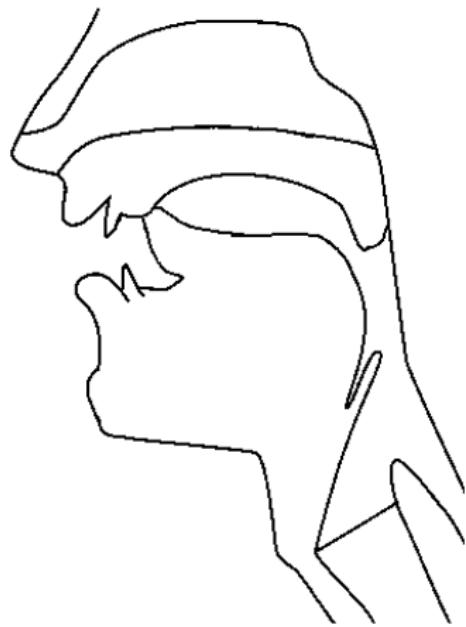


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Theoretical Phonology (ENG 255)

Alveolar [t]



Observation 1

Passive articulator: alveolar ridge.

Active articulator: the tongue blade or the tongue tip.

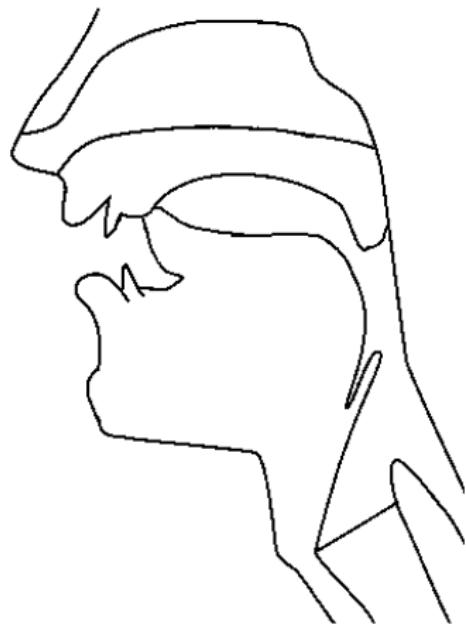
English alveolar sounds include [t], [d], [n], [s], [z], [l].

created by using Daniel Hall's Interactive Application.

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Theoretical Phonology (ENG 255)

Alveolar [t]



Observation 1

Passive articulator: alveolar ridge.

Active articulator: the tongue blade or the tongue tip.

English alveolar sounds include [t], [d], [n], [s], [z], [l].

Observation 2

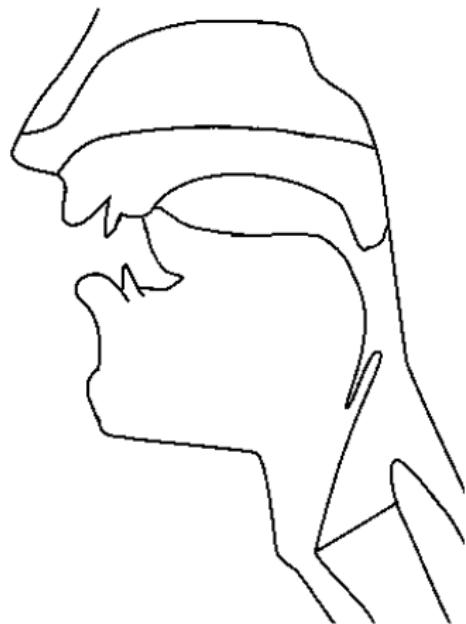
The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

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Theoretical Phonology (ENG 255)

Alveolar [t]



created by using Daniel Hall's Interactive Application.

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Theoretical Phonology (ENG 255)

Autumn, 2014

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Observation 1

Passive articulator: alveolar ridge.

Active articulator: the tongue blade or the tongue tip.

English alveolar sounds include [t], [d], [n], [s], [z], [l].

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

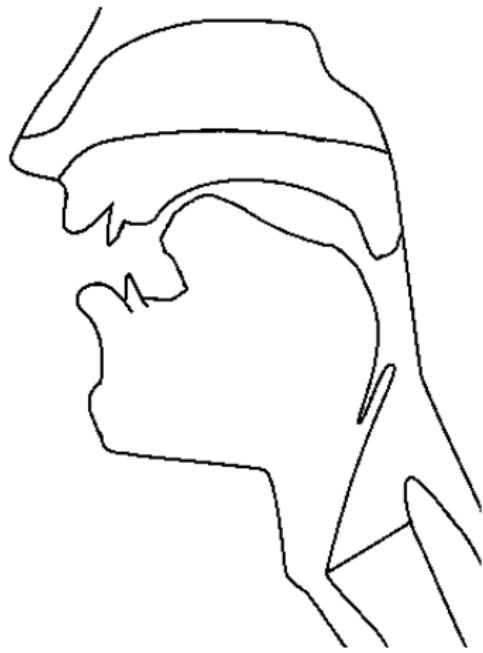
Voicing:

Voiceless - Vocal Folds do not

Outline

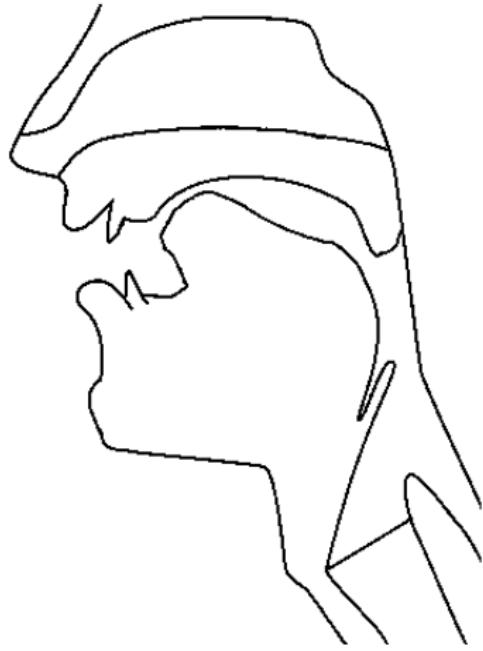
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Post-alveolar [ʃ] shy



created by using Daniel Hall's Interactive Application.

Post-alveolar [ʃ] shy



Observation 1

Passive Articulator: the area just behind the alveolar ridge as.

Active articulator: the tongue tip or (usually) the tongue blade.

English Post-alveolars are [ʃ] and [ʒ].

created by using Daniel Hall's Interactive Application.

Post-alveolar [ʃ] shy



Observation 1

Passive Articulator: the area just behind the alveolar ridge as.

Active articulator: the tongue tip or (usually) the tongue blade.

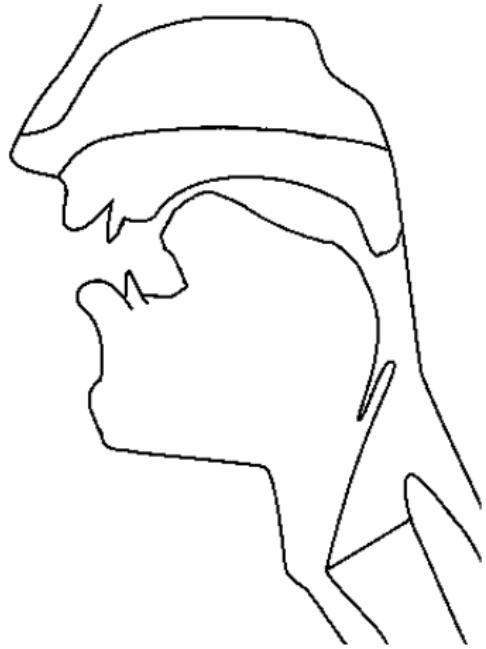
English Post-alveolars are [ʃ] and [ʒ].

Observation 2

The air does not escape to the nasal cavity: the soft palate touches the pharynx wall.

created by using Daniel Hall's Interactive Application.

Post-alveolar [ʃ] shy



created by using Daniel Hall's Interactive Application.

Observation 1

Passive Articulator: the area just behind the alveolar ridge as.

Active articulator: the tongue tip or (usually) the tongue blade.

English Post-alveolars are [ʃ] and [ʒ].

Observation 2

The air does not escape to the nasal cavity: the soft palate touches the pharynx wall.

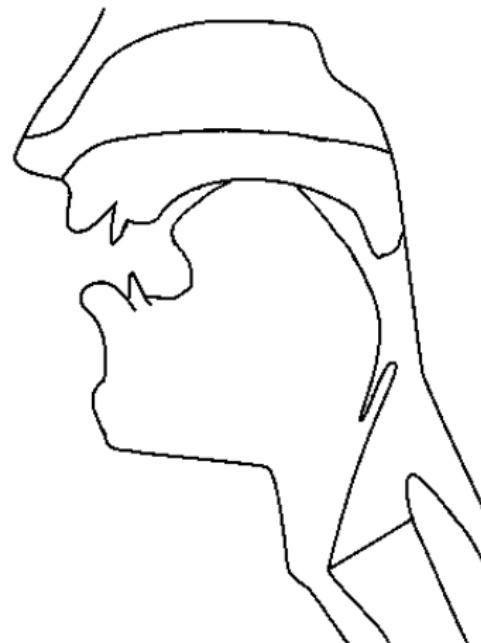
Observation 3

Voiceless - Vocal Folds do not Vibrate

Outline

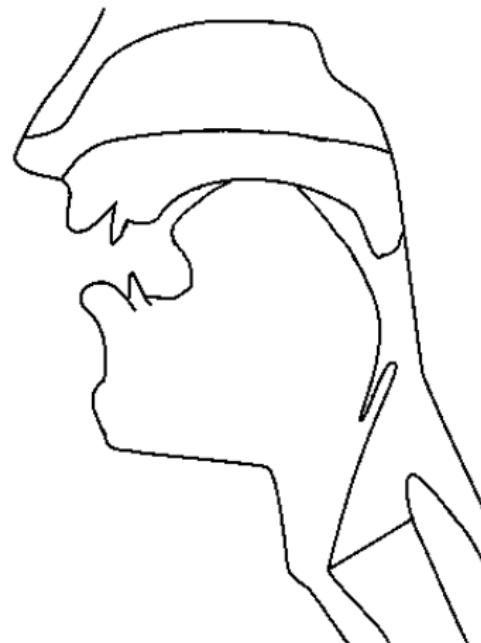
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Palatal [c]



created by using Daniel Hall's Interactive Application.

Palatal [c]



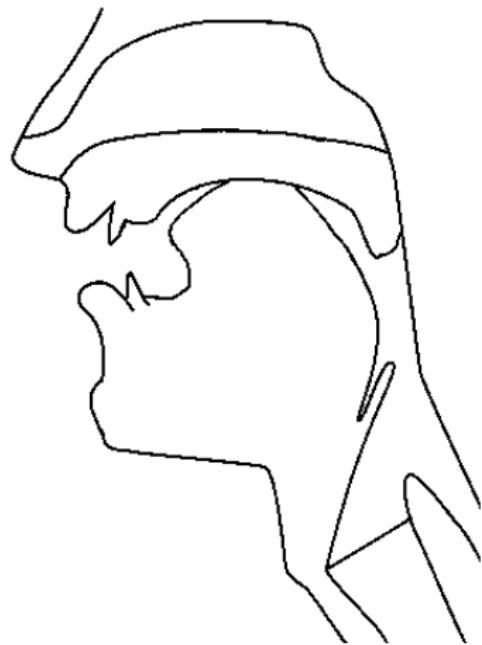
Observation 1

Active articulators: the middle or back part of the tongue.

Passive articulator: the hard palate.
The English glide [j] is a palatal.

created by using Daniel Hall's Interactive Application.

Palatal [c]



Observation 1

Active articulators: the middle or back part of the tongue.

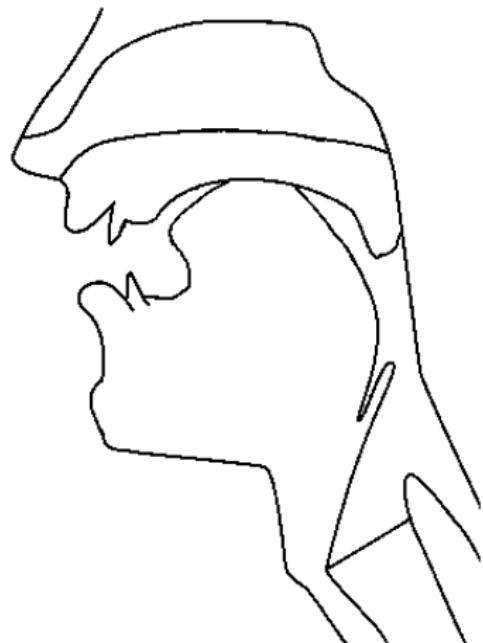
Passive articulator: the hard palate. The English glide [j] is a palatal.

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

created by using Daniel Hall's Interactive Application.

Palatal [c]



created by using Daniel Hall's Interactive Application.

Observation 1

Active articulators: the middle or back part of the tongue.

Passive articulator: the hard palate. The English glide [j] is a palatal.

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

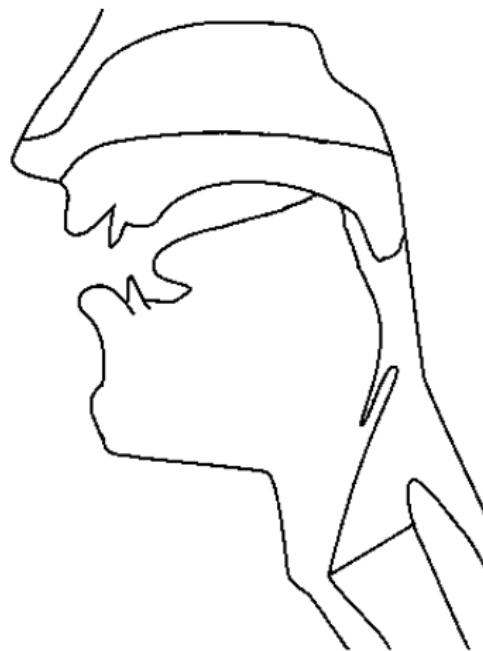
Observation 3

Voiceless - Vocal Folds do not Vibrate

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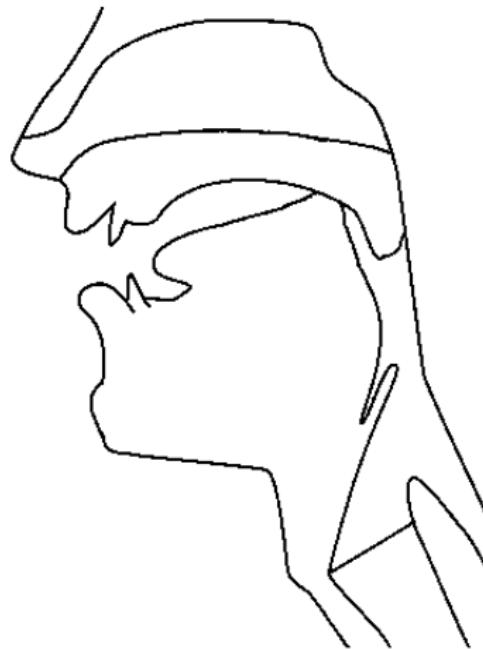
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Velar [k]



created by using Daniel Hall's Interactive Application.

Velar [k]



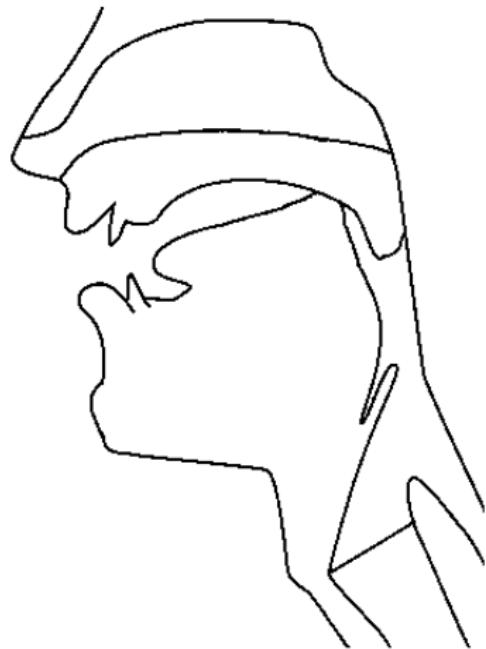
Observation 1

Active articulators: the back of the tongue.

Passive articulator: the soft palate.
English velars include [k], [g], [].

created by using Daniel Hall's Interactive Application.

Velar [k]



Observation 1

Active articulators: the back of the tongue.

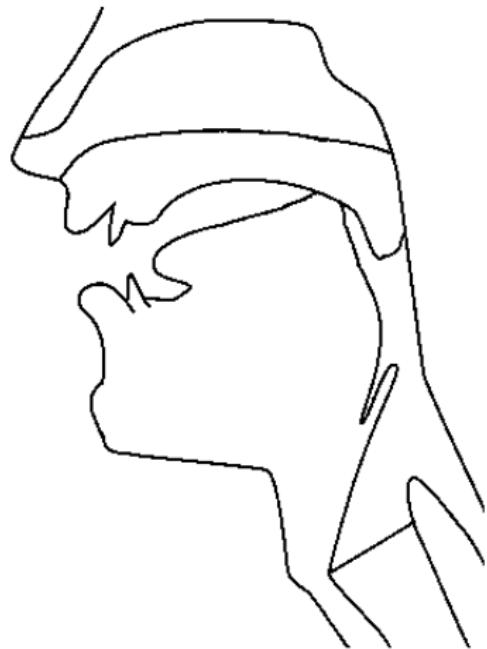
Passive articulator: the soft palate. English velars include [k], [g], [].

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

created by using Daniel Hall's Interactive Application.

Velar [k]



created by using Daniel Hall's Interactive Application.

Observation 1

Active articulators: the back of the tongue.

Passive articulator: the soft palate. English velars include [k], [g], [].

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

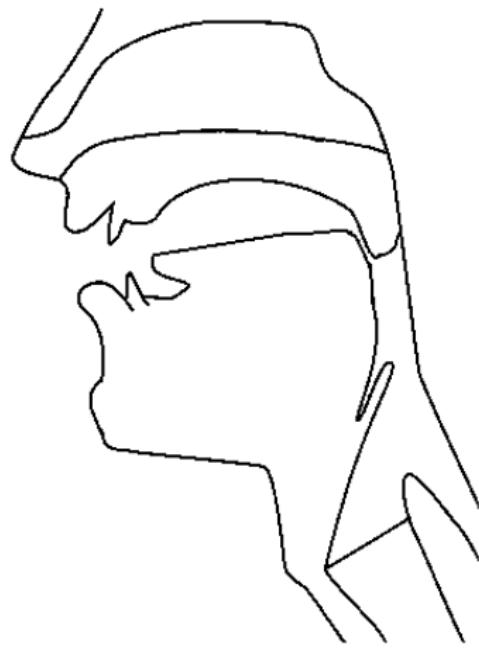
Observation 3

Voiced - Vocal Folds Vibrate

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Uvular [χ]



created by using Daniel Hall's Interactive Application.

Uvular [χ]



Observation 1

Active articulators: the back of the tongue (dorsum).

Passive articulator: the uvula.

created by using Daniel Hall's Interactive Application.

Uvular [χ]



Observation 1

Active articulators: the back of the tongue (dorsum).

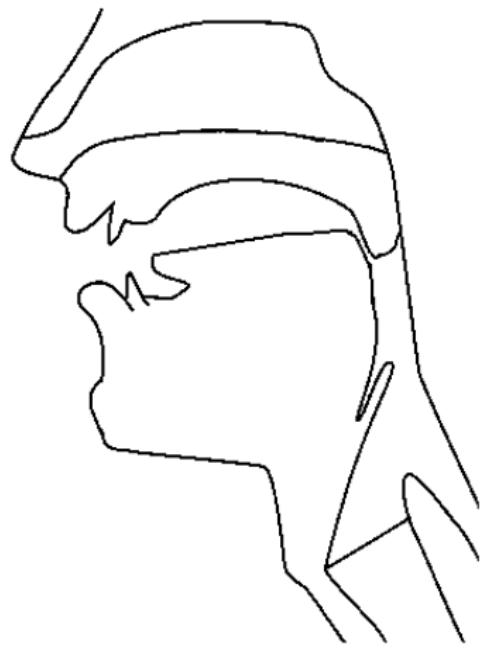
Passive articulator: the uvula.

Observation 2

The air does not escape to the nasal cavity.

created by using Daniel Hall's Interactive Application.

Uvular [χ]



Observation 1

Active articulators: the back of the tongue (dorsum).

Passive articulator: the uvula.

Observation 2

The air does not escape to the nasal cavity.

Observation 3

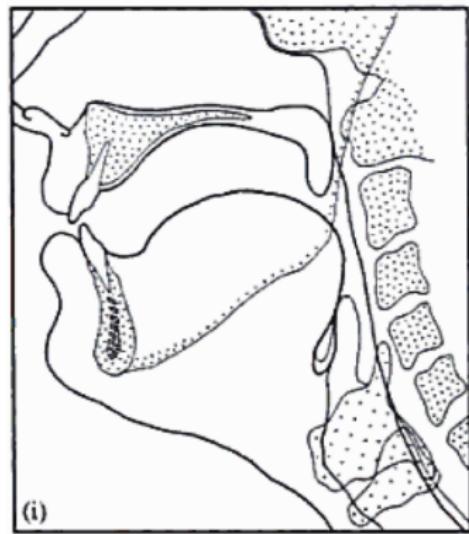
Voiced. Vocal folds vibrate

created by using Daniel Hall's Interactive Application.

Outline

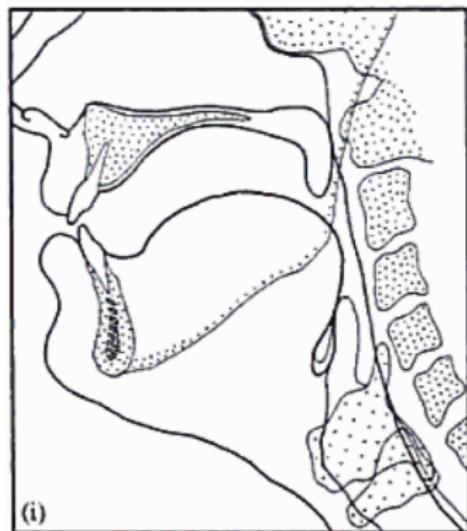
- 1 Speech Sounds
- 2 Airstream Mechanisms & Airflow Direction
- 3 Phonation
- 4 Place of Articulation
 - Articulators
 - Bilabial
 - Labiodental
 - Dental
 - Alveolar
 - Post-alveolar
 - Palatal
 - Velar
 - Uvular
 - Pharyngeal
 - Glottal

Pharyngeal [ħ]



from Laver (1994)

Pharyngeal [h]



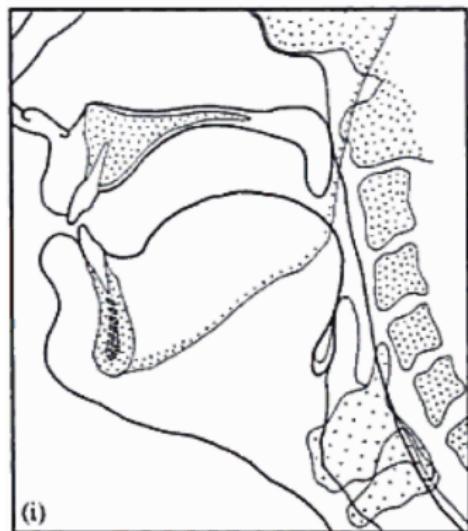
from Laver (1994)

Observation 1

Active articulators: the root of the tongue.

Passive articulator: the pharynx.

Pharyngeal [h]



(i)

from Laver (1994)

Observation 1

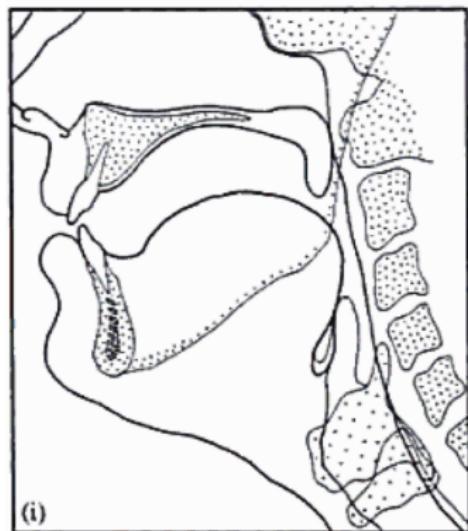
Active articulators: the root of the tongue.

Passive articulator: the pharynx.

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

Pharyngeal [h]



from Laver (1994)

Observation 1

Active articulators: the root of the tongue.

Passive articulator: the pharynx.

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

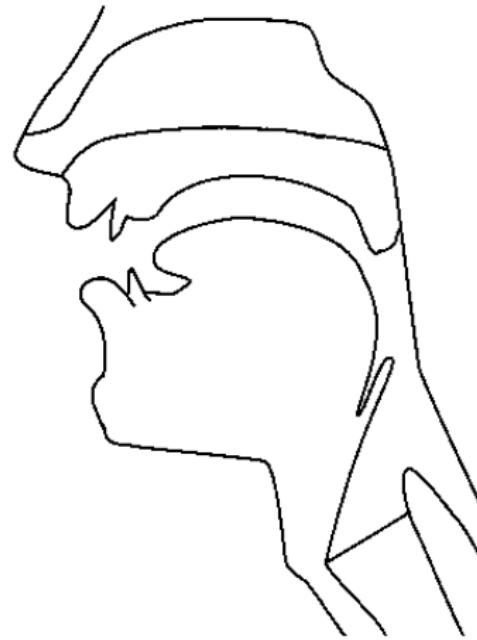
Observation 3

Voiceless. Vocal folds do not vibrate

Outline

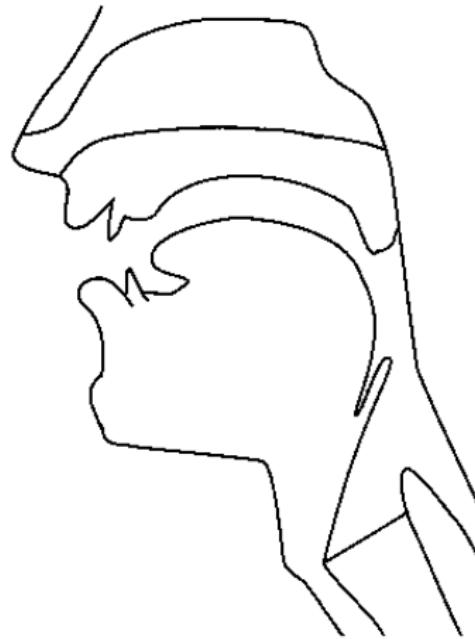
- 1 Speech Sounds
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 - Glottal

Glottal [h]



created by using Daniel Hall's Interactive Application.

Glottal [h]

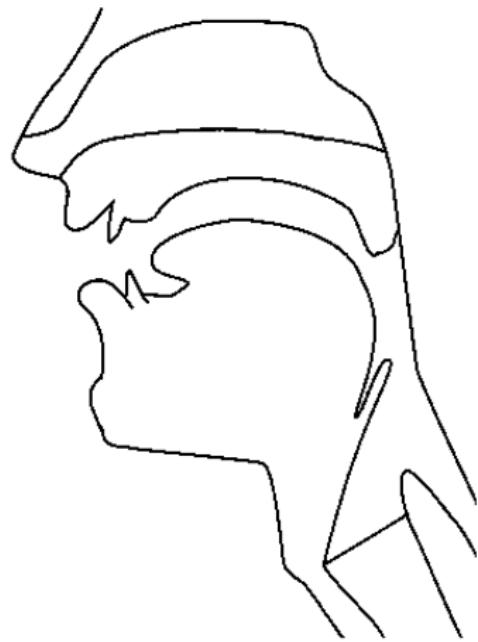


Observation 1

Articulator: glottis (see discussion).

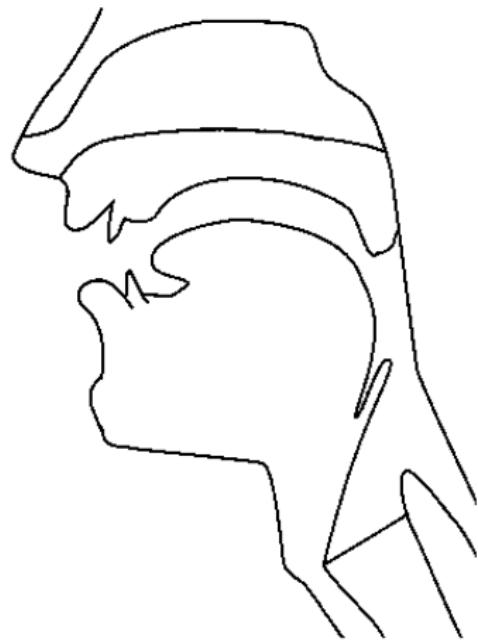
created by using Daniel Hall's Interactive Application.

Glottal [h]



created by using Daniel Hall's Interactive Application.

Glottal [h]



Observation 1

Articulator: glottis (see discussion).

Observation 2

The air does not escape to the nasal cavity: the soft palate is raised touching the pharynx wall forming a velic closure.

Observation 3

Voiceless. Vocal folds do not vibrate

created by using Daniel Hall's Interactive Application.

Transcribing Speech

To transcribe speech we employ the *International Phonetic Alphabet* (IPA). When we transcribe speech in IPA, we can become very specific by using *diacritics*.

- [t̪] = voiceless dental stop.
- [t̬] = voiceless alveolar stop.
- [t̫] = voiceless palato-alveolar (= post-alveolar) stop.

We will learn more about it next week.

Summary

- Sound Classification: place-voice-manner.
- Airstream Mechanisms: pulmonic-glottalic-velaric.
- Airflow Direction: Egressive and Ingressive. We studied pulmonic egressive sounds.
- Outlook
 - In the following week we will study the manner of articulation.
 - Remember to do the assignments.

For Further Reading I

- Ashby, M. and Maidment, J. (2005).
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Arnold, London, 5th ed. edition.
- Ladefoged, P. and Johnson, K. (2010).
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