

Phonetics 1.2

The consonants of American English

April 13, 2020

Consonants

Consonant:

A sound articulated with partial or full constriction in the vocal tract.

In contrast to **vowels**:

A sound articulated with little to no constriction in the vocal tract.

Recall — IPA

We typically use the International Phonetic Alphabet to describe the speech sounds of spoken languages.

See video notes for link to full IPA.

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			(ʔ)
Nasal	m		n					ŋ			
Trill											
Tap or Flap			ɾ								
Fricative		f v	θ ð	s z	ʃ ʒ			(x)			h
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate
 [tʃ] – voiceless postalveolar affricate
 [w] – voiced labial–velar approximant

So... how does this table work?

There are (mainly) three dimensions:

- (i) Within cell position
- (ii) Columns
- (iii) Rows

Voicing

Place of articulation

Manner of articulation

(Another dimension pertains to airstream mechanism; in the full IPA, this is cashed out with additional tables.)

(iii) Rows — Manner of articulation

Part from definition: ‘... articulated with partial or full constriction ...’

Consonants are articulated by creating a full or partial closure in the vocal tract

= Bringing an **active articulator** (a flappy bit, like a tongue) close to a **passive articulator** (a less flappy bit, like the palate).

Intuition: degree of closure creates different speech sounds

(ii) Columns — Place of articulation

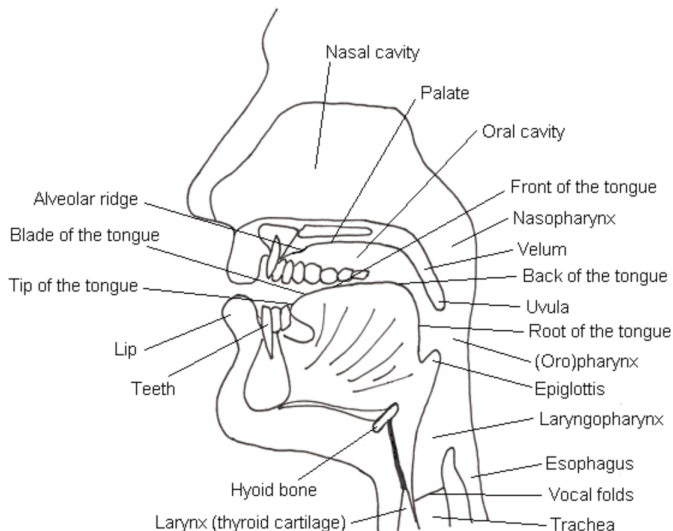
Part from definition: ‘... articulated ... in the vocal tract’

Vocal tract?

The cavity from the top of the vocal folds (\approx larynx \approx glottis \approx “voice box”) to the edge of the lips

Intuition: The space where your tongue operates

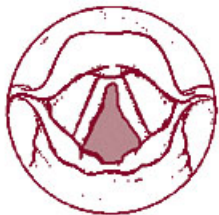
Anatomy of the vocal tract



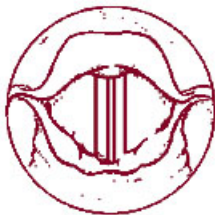
Voicing: '... articulated ...'

The larynx contains two pieces of tissue called **vocal folds**.

We can open and close the vocal folds.



**Vocal cords
abducted
to breathe**



**Vocal cords
adducted
to speak**

Voicing

When the folds are open, air passes through the larynx unimpeded.

When the folds are closed and we expel air through them, they vibrate.

This vibration makes noise, and is the source of our voice.

Voicing... testing testing 1, 2, 3...

Put your hand on your larynx. (externally...)

Alternate between holding out [s] and [z].

You should feel a buzz when you say [z], but not [s].

This is because the vocal folds are closed and vibrating for [z], but open and not vibrating for [s].

We say [z] is **voiced**, and [s] is **voiceless**.

The table as a 'wikiHow' or a 'Sparknotes' description

wikiHow: Each dimension of the IPA gives you (at a high-level) the necessary information on how to produce a particular consonant

- | | |
|--------------------------|----------------------------------|
| (i) Within cell position | What to do with your vocal folds |
| (ii) Columns | Where to place your tongue |
| (iii) Rows | What to do with your tongue |

Sparknotes: by example – [d] is a voiced alveolar stop

Recap

Three variables we'll always mention:

Voicing: Whether the vocal folds vibrate during the articulation of the consonant

Place of articulation: Where in the vocal tract the constriction is located

Manner of articulation: The type/degree of constriction of the airstream

Extra sauce...

Two additional variables we'll only specify when they're not the default:

Centrality: Whether the airstream passes through the center or the sides of the vocal tract.

Default specification is *central*.

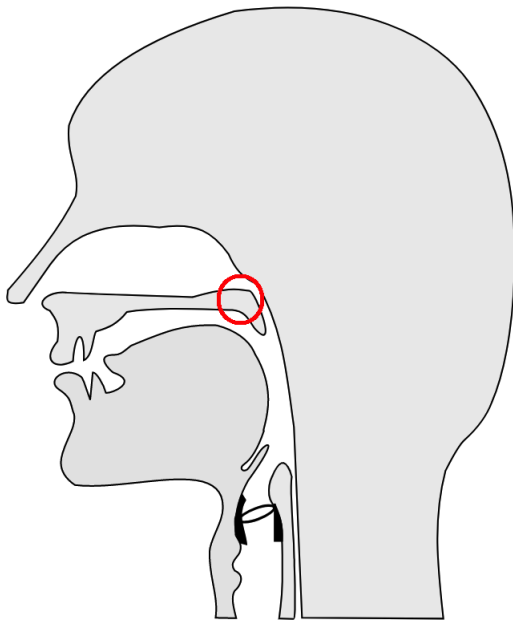
Nasality: Whether the air primarily passes through the oral cavity or the nasal cavity.

Default specification is *oral*.

Nasality

We can control whether air escapes through our nasal cavity by raising or lowering a flap called the **velum** (or **soft palate**).

Nasality



Nasality

velum raised → air in oral cavity only

velum lowered → air escapes through nasal cavity

Guided practice

Let's practice a couple of the sounds.

We'll write sounds in square brackets []. This indicates a phonetic transcription.

Voiceless velar (oral) stop

kick

cry

chameleon



trusting spelling



transcribing it
myself

Voiceless velar (oral) stop

kick

cry

chameleon

Voicing: voiceless

Place: velar

Manner: stop

Voiceless velar (oral) stop

[k]

voiceless velar stop

Voiceless velar (oral) stop

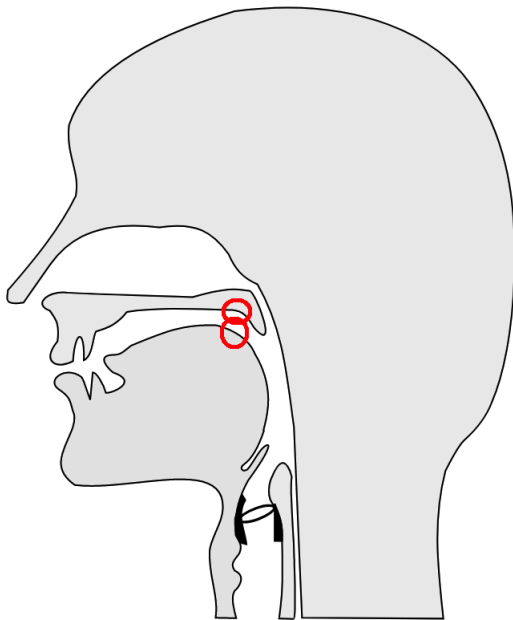
CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			(ʔ)
Nasal	m		n					ŋ			
Trill											
Tap or Flap			ɾ								
Fricative		f v	θ ð	s z	ʃ ʒ			(x)			h
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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[dʒ] – voiced postalveolar affricate
 [tʃ] – voiceless postalveolar affricate
 [w] – voiced labial–velar approximant

Consonants of English



Consonants of English

never
need
nag

Voicing: voiced

Place: alveolar

Manner: stop

Nasality: nasal

[n]

voiced alveolar nasal stop

Voiced alveolar nasal stop

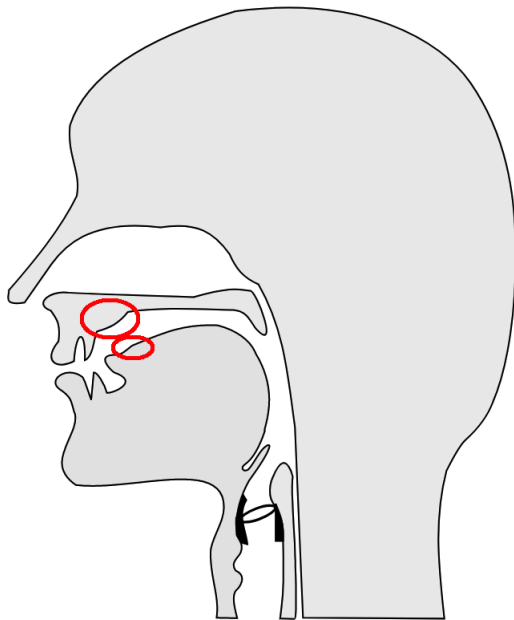
CONSONANTS (PULMONIC)

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- [dʒ] – voiced postalveolar affricate
- [tʃ] – voiceless postalveolar affricate
- [w] – voiced labial–velar approximant

Consonants of English



End of video material. The rest is for practice on English IPA.

A couple of notes

You are responsible for knowing the English IPA (... but not by class on Monday). The next few slides contain a summary of the relevant manner, place, voicing and airflow contrasts. If you understand the table (which amounts to understanding the next three slides), the hardest part will probably just be memorizing the correct symbol.

The velar fricative is marginal, so no need to memorize it. Although glottal stop is in parentheses in the chart, you should know it.

Summary — manners of articulation for English (rows)

stop, aka **plosive**: A consonant articulated by completely constricting the vocal tract and then releasing the closure

fricative: a consonant articulated by passing air across a near-total closure, creating a turbulent and noisy airstream

nasal: a consonant articulated with the velum lowered so that airflow is directed primarily to the nasal cavity

affricate: a consonant formed by first making a full closure, followed by a period of time where air is passed over a narrow constriction to make a turbulent and noisy airstream (notice how the notation reflects this)

approximant: a consonant produced with minimal closure

tap, aka **flap**: a consonant made by quickly tapping the articulators together without building up air pressure behind the closure

Summary — places of articulation for English (columns)

bilabial: a constriction made by closing the lips together

labiodental: closure made by bringing lower lip to upper teeth

interdental: a sound articulated by sticking the tip of the tongue between the teeth

alveolar: a closure formed by bringing the body of the tongue close to the alveolar ridge

post-alveolar: a closure formed by bringing the body of the tongue just behind the alveolar ridge, before the palate

palatal: a consonant articulated with a closure between the tongue and the hard palate

velar: a consonant articulated with a constriction between the back of the tongue and the velum (soft palate)

Summary — voicing (within cell position) and airflow (represented as additional row for lateral)

Voicing: voiced (vocal folds closed and vibrating) / voiceless (vocal folds open and not vibrating)

Airflow: Central (default — airflow is through center of vocal tract) / Lateral (airflow is through side of vocal tract)

English consonant IPA

With the previous few slides in mind, look at chart

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			(ʔ)
Nasal	m		n					ŋ			
Trill											
Tap or Flap			ɾ								
Fricative		f v	θ ð	s z	ʃ ʒ			(x)			h
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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[dʒ] – voiced postalveolar affricate
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 [w] – voiced labial–velar approximant

Grad tips

The rest of the slides is a step-by-step walkthrough of everything on the summary slides. There is a lot, so if you are short on time or have a good grasp on the material, I would at least look at the example words for each sound: I found it pretty helpful to have the sound in mind when memorizing IPA.

Also, check out the labio-velar approximant and alveolar approximant because there are a couple additional notes on them.

Consonants of English

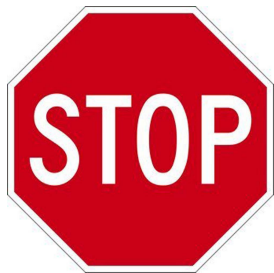
bear

barn

bicycle

: voiced

Consonants of English



What is *voiced*?

Consonants of English

bear

barn

bicycle

Voicing: voiced (vocal folds closed and vibrating)

Place: bilabial

Consonants of English

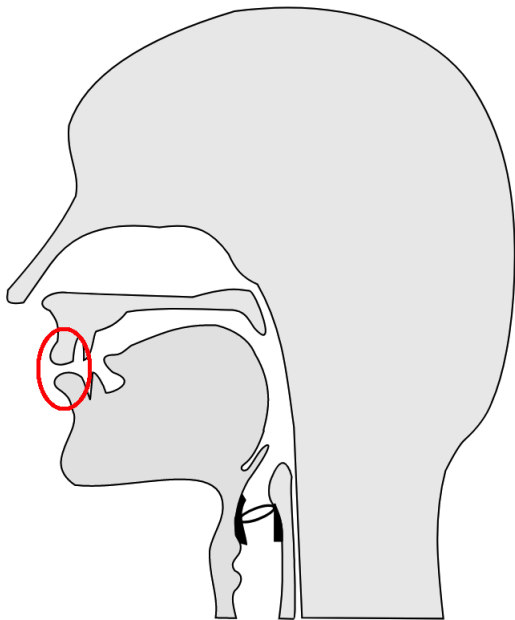


What is *bilabial*?

Consonants of English

bilabial: a constriction made by closing the lips together

Consonants of English



Consonants of English

bear

barn

bicycle

Voicing: voiced

Place: bilabial

Manner: stop

Consonants of English



What is *stop*?

Consonants of English

stop, aka **plosive**: A consonant articulated by completely constricting the vocal tract and then releasing the closure

Consonants of English

bear

barn

bicycle

Voicing: voiced

Place: bilabial

Manner: stop

[b]

voiced bilabial stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	b										
Nasal											
Trill											
Tap or Flap											
Fricative											
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

pants

pear

pickle

Voicing: voiceless (vocal folds open, not vibrating)

Place: bilabial

Manner: stop

[p]

voiceless bilabial stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b										
Nasal											
Trill											
Tap or Flap											
Fricative											
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

mother
miracle
major

Voicing: voiced

Place: bilabial

Manner: stop

Nasality: nasal

Consonants of English

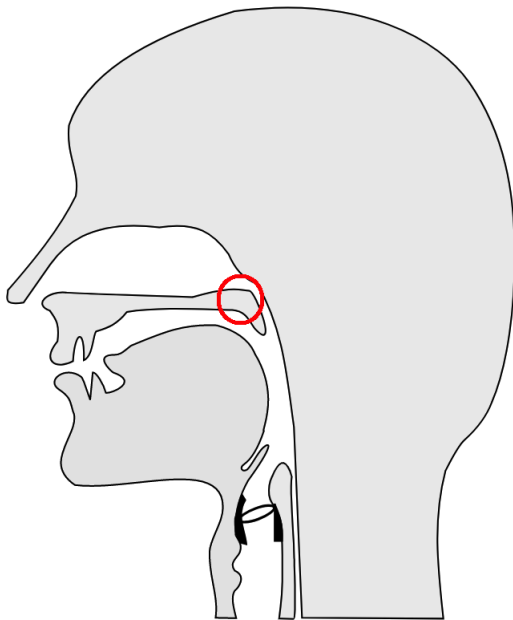


What is *nasal*?

Consonants of English

We can control whether air escapes through our nasal cavity by raising or lowering a flap called the **velum** (or **soft palate**).

Consonants of English



Consonants of English

velum raised → air in oral cavity only

velum lowered → air escapes through nasal cavity

Consonants of English

In [b], air is not allowed to escape through the nasal cavity, so there is a complete closure.

In [m], air is allowed to escape through the nasal cavity.

Consonants of English

mother
miracle
major

Voicing: voiced

Place: bilabial

Manner: stop

Nasality: nasal

[m]

voiced bilabial nasal stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b										
Nasal	m										
Trill											
Tap or Flap											
Fricative											
Lateral fricative											
Approximant											
Lateral approximant											

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

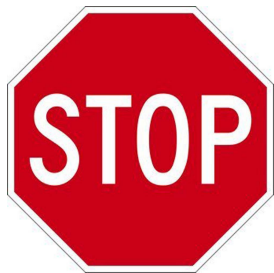
Consonants of English

very
vicious
vole

Voicing: voiced

Place: labiodental

Consonants of English

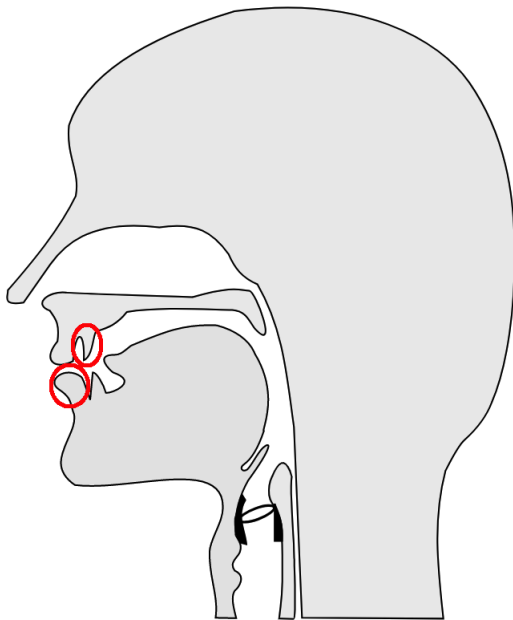


What is *labiodental*?

Consonants of English

labiodental: closure made by bringing lower lip to upper teeth

Consonants of English



Consonants of English

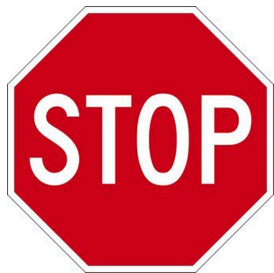
very
vicious
vole

Voicing: voiced

Place: labiodental

Manner: fricative

Consonants of English



What is *fricative*?

Consonants of English

fricative: a consonant articulated by passing air across a near-total closure, creating a turbulent and noisy airstream

Consonants of English

very
vicious
vole

Voicing: voiced

Place: labiodental

Manner: fricative

[v]

voiced labiodental fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b										
Nasal	m										
Trill											
Tap or Flap											
Fricative		v									
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

freak
favorite
philisophy

Voicing: voiceless

Place: labiodental

Manner: fricative

[f]

voiceless labiodental fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b										
Nasal	m										
Trill											
Tap or Flap											
Fricative		f v									
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

they
there
these

trust spelling.....? Nah.... I'm good.

Consonants of English

they: “th” = ONE SOUND!

there: “th” = ONE SOUND!

these: “th” = ONE SOUND!

Consonants of English

they
there
these

Voicing: voiced

Place: interdental

Consonants of English



What is *interdental*?

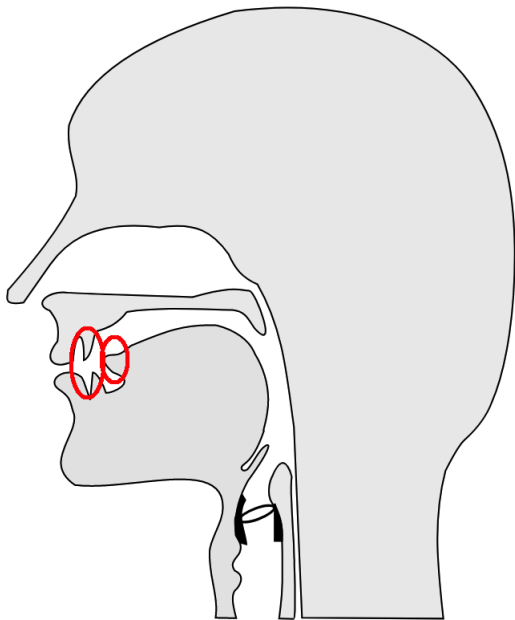
Consonants of English

interdental: a sound articulated by sticking the tip of the tongue between the teeth

Sometimes called **dental**. But, *dental* more properly refers to the tip of the tongue touching the back of the teeth, and *interdental* to having the tip of the tongue between the teeth.

Most English speakers use *interdentals*.

Consonants of English



Consonants of English

they
there
these

Voicing: voiced

Place: interdental

Manner: fricative

[ð]

voiced interdental fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b										
Nasal	m										
Trill											
Tap or Flap											
Fricative		f v	ð								
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

thing
thought
therapy

“th” = ONE SOUND!

Voicing: voiceless

Place: interdental

Manner: fricative

[θ]

voiceless interdental fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b										
Nasal	m										
Trill											
Tap or Flap											
Fricative		f v	θ ð								
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

dig
danger
ding

Voicing: voiced

Place: alveolar

Consonants of English



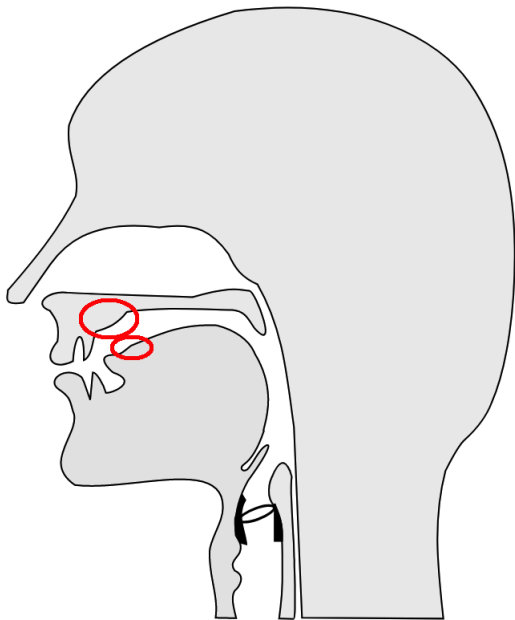
What is *alveolar*?

Consonants of English

alveolar: a closure formed by bringing the body of the tongue close to the alveolar ridge

alveolar ridge: bony protrusion on roof of mouth just behind teeth

Consonants of English



Consonants of English

dig
danger
ding

Voicing: voiced

Place: alveolar

Manner: stop

[d]

voiced alveolar stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		d								
Nasal	m										
Trill											
Tap or Flap											
Fricative		f v	θ ð								
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

tickle

tart

take

Voicing: voiceless

Place: alveolar

Manner: stop

[t]

voiceless alveolar stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m										
Trill											
Tap or Flap											
Fricative		f v	θ ð								
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

never
need
nag

Voicing: voiced

Place: alveolar

Manner: stop

Nasality: nasal

[n]

voiced alveolar nasal stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð								
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

zip

zoo

tsar (for most speakers)

Voicing: voiced

Place: alveolar

Manner: fricative

[z]

voiced alveolar fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	z							
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

sing
sizzle
soft

Voicing: voiceless

Place: alveolar

Manner: fricative

[s]

voiceless alveolar fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z							
Lateral fricative											
Approximant											
Lateral approximant											

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

Consonants of English

labor
literal
left

Voicing: voiced

Place: alveolar

Manner: approximant

Consonants of English



What is *approximant*?

Consonants of English

approximant: a consonant produced with minimal closure

Consonants of English

Wait...

How can this sound be an approximant if the tongue is *touching* the roof of the mouth?

Consonants of English

labor

literal

left

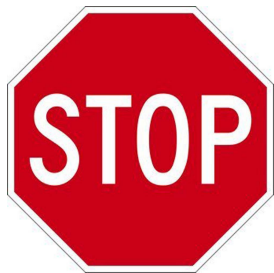
Voicing: voiced

Place: alveolar

Manner: approximant

Centrality: lateral

Consonants of English



What is *lateral*?

Consonants of English

lateral: a consonant where the airstream is forced to pass along the side of the vocal tract instead of over the middle

So this sound is an approximant because there isn't a strong closure at the *side* of the vocal tract, where the air is flowing

Consonants of English

labor

literal

left

Voicing: voiced

Place: alveolar

Manner: approximant

Centrality: lateral

[l]

voiced alveolar lateral approximant

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z							
Lateral fricative											
Approximant											
Lateral approximant			l								

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

Consonants of English

red
radical
roof

Voicing: voiced

Place: alveolar*

*varies by analysis and speaker, but we'll say alveolar

Manner: approximant

[ɹ]

voiced alveolar approximant

NB1: central

NB2: A lot of times people transcribe this sound as [r], but this is technically incorrect. [r] is the symbol for a voiced alveolar trill, like in Spanish “perro.” Please use [ɹ] for this class.

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z							
Lateral fricative											
Approximant			ɹ								
Lateral approximant			l								

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

Consonants of English

pleasure

leisure

garage (for many speakers)

Voicing: voiced

Place: postalveolar

Consonants of English

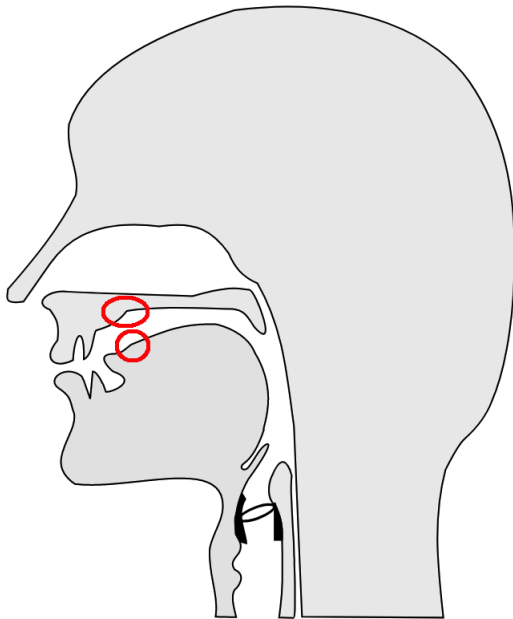


What is *postalveolar*?

Consonants of English

postalveolar: a constriction made by the tongue and the roof of the mouth, slightly behind the alveolar ridge

Consonants of English



Consonants of English

pleasure

leisure

garage (for many speakers)

Voicing: voiced

Place: postalveolar

Manner: fricative

[ʒ]

voiced postalveolar fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ								
Lateral approximant			l								

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

Consonants of English

sure
share
shiver

ne

trustez

pas

le spelling! (or my French)

Consonants of English

sure

share

shiver

“sh” = ONE SOUND!

Voicing: voiceless

Place: postalveolar

Manner: fricative

[ʃ]

voiceless postalveolar fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ								
Lateral approximant			l								

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

Consonants of English

jam

jail

jingle

Voicing: voiced

Place: postalveolar

Manner: affricate

Consonants of English



What is *affricate*?

Consonants of English

affricate: a consonant formed by first making a full closure, followed by a period of time where air is passed over a narrow constriction to make a turbulent and noisy airstream

Kind of like a stop immediately followed by a fricative

BUT, not always the same thing. Speakers tend to view affricates as one sound, and affricates can be pronounced differently than the corresponding stop-fricative sequences

Polish:

trzysta: 300 - sequence. “fricative” part lasts longer

czysta: clean (fem.) - affricate. “fricative” part shorter

Consonants of English

jam

jail

jingle

Voicing: voiced

Place: postalveolar

Manner: affricate

$[\widehat{d}ʒ]$ or $[dʒ]$ (or $[dʒ]$)
voiced postalveolar affricate

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ								
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate

Consonants of English

chive
change
champion

Consonants of English

chive
change
champion

“ch” = ONE SOUND!

Voicing: voiceless

Place: postalveolar

Manner: affricate

$[\text{tʃ}]$ or $[\text{tʃ}]$ (or $[\text{tʃ}]$)

voiceless postalveolar affricate

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ								
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate

[tʃ] – voiceless postalveolar affricate

Consonants of English

yay
yuppie
yellow

Voicing: voiced

Place: palatal

Consonants of English

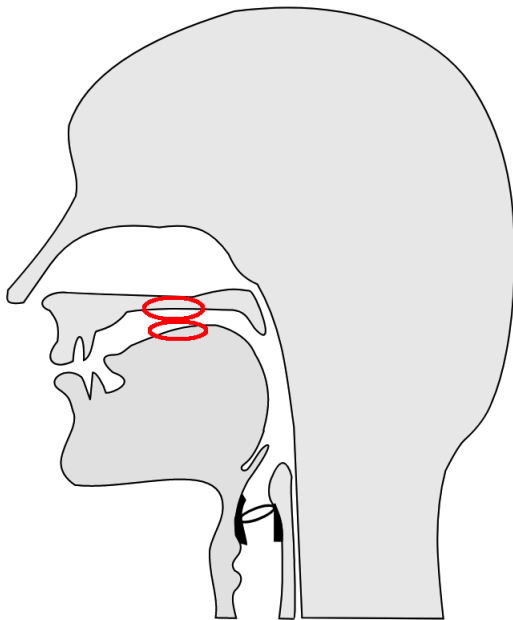


What is *palatal*?

Consonants of English

palatal: a consonant articulated with a closure between the tongue and the hard palate

Consonants of English



Consonants of English

yay
yuppie
yellow

Voicing: voiced

Place: palatal

Manner: approximant

[j]

voiced palatal approximant

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d								
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate

[tʃ] – voiceless postalveolar affricate

Consonants of English

grouch

get

gutter

Voicing: voiced

Place: velar

Consonants of English

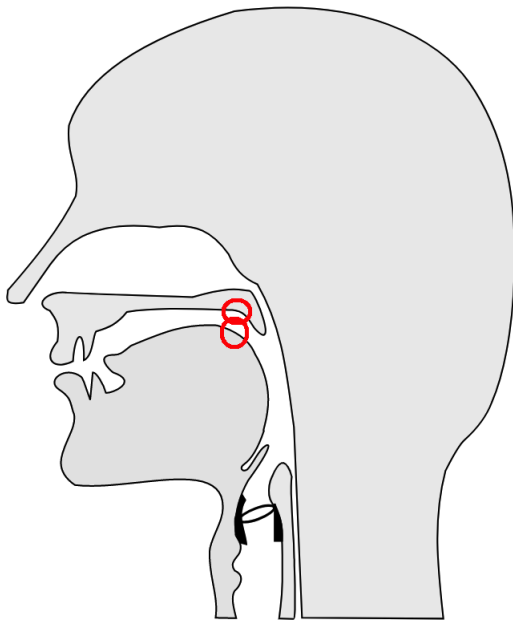


What is *velar*?

Consonants of English

velar: a consonant articulated with a constriction between the back of the tongue and the velum (soft palate)

Consonants of English



Consonants of English

grouch

get

gutter

Voicing: voiced

Place: velar

Manner: stop

[g]

voiced velar stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					g			
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate

[tʃ] – voiceless postalveolar affricate

Consonants of English

kick

cry

chamomile

~~trusting~~ spelling

Consonants of English

kick

cry

chamomile

Voicing: voiceless

Place: velar

Manner: stop

[k]

voiceless velar stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			
Nasal	m		n								
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate

[tʃ] – voiceless postalveolar affricate

Consonants of English

sing
rung
diving

Consonants of English

sing
rung
ding

“ng” = ONE SOUND!

Voicing: voiced

Place: velar

Manner: stop

Nasality: nasal

[ŋ]

voiced velar nasal stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			
Nasal	m		n					ŋ			
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate

[tʃ] – voiceless postalveolar affricate

Consonants of English

with
weather
wonder

Voicing: voiced

Place: labial-velar*

Manner: approximant

[w]

voiced labial-velar approximant

*[w] is weird. There's an obvious constriction at the lips, but also a second, harder to detect one at the velum. We'll treat it like it belongs at both places of articulation.

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			
Nasal	m		n					ŋ			
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate
 [tʃ] – voiceless postalveolar affricate
 [w] – voiced labial–velar approximant

Consonants of English

happy

have

hate

Voicing: voiceless

Place: glottal

Consonants of English



What is *glottal*?

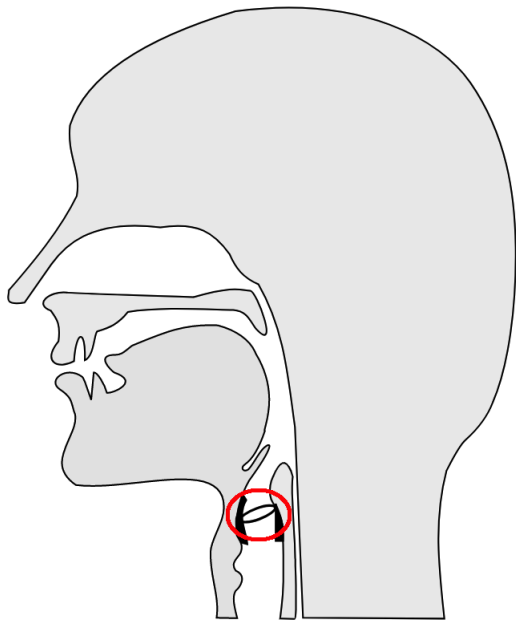
Consonants of English

glottis refers to the vocal folds and the space between them.

Remember that the vocal folds are part of the larynx.

So, a *glottal* sound is articulated with a constriction at the glottis.

Consonants of English



Consonants of English

Remember that all voiced sounds involve a constriction at the glottis, because that's how voicing is produced.

Vowels also require a constriction at the glottis, because they're voiced.

We'll only call something a *glottal* sound if it's a consonant and the *primary* (most important) constriction is at the glottis.

Consonants of English

happy

have

hate

Voicing: voiceless

Place: glottal

Manner: fricative

[h]

voiceless glottal fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			
Nasal	m		n					ŋ			
Trill											
Tap or Flap											
Fricative		f v	θ ð	s z	ʃ ʒ						h
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate
 [tʃ] – voiceless postalveolar affricate
 [w] – voiced labial–velar approximant

Consonants of English

A sort of weird sound:

ladder

butter

These sounds aren't exactly [t] or [d].

Voicing: voiced

Place: alveolar

Manner: tap

Consonants of English



What is *tap*?

Consonants of English

tap, aka **flap**: a consonant made by quickly tapping the articulators together without building up air pressure behind the closure

Like Spanish “pero”

This sound has a special status in English. We won't think about it too much right now, but it will come up again in the Phonology section.

Note that native speakers don't really conceptualize this sound as having its own identity.

But, it's a real sound of English! More on this in Phonology.

Consonants of English

A sort of weird sound:

ladder

butter

These sounds aren't exactly [t] or [d].

Voicing: voiced

Place: alveolar

Manner: tap

[ɾ]

voiced alveolar tap

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			
Nasal	m		n					ŋ			
Trill											
Tap or Flap			ɾ								
Fricative		f v	θ ð	s z	ʃ ʒ						h
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate
 [tʃ] – voiceless postalveolar affricate
 [w] – voiced labial–velar approximant

Consonants of English

A marginal sound:

uh-oh (the gap between them)

..Andrew (before the beginning of a vowel-initial word)

Voicing: voiceless

Place: glottal

Manner: stop

I'm calling this one “marginal” because a lot of speakers aren't even aware they produce it, and it's not clear if it plays an important role in the sound system. (Phonology! It's definitely there re: Phonetics.)

[ʔ]
(voiceless) glottal stop

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			(ʔ)
Nasal	m		n					ŋ			
Trill											
Tap or Flap			ɾ								
Fricative		f v	θ ð	s z	ʃ ʒ						h
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate
 [tʃ] – voiceless postalveolar affricate
 [w] – voiced labial–velar approximant

Consonants of English

One more marginal sound:

loch

Bach

chutzpah

Voicing: voiceless

Place: velar

Manner: fricative

I'm calling this one marginal because not all speakers use it, and it mostly appears in borrowed words.

[x]

voiceless velar fricative

Consonants of English

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d					k g			(ʔ)
Nasal	m		n					ŋ			
Trill											
Tap or Flap			ɾ								
Fricative		f v	θ ð	s z	ʃ ʒ			(x)			h
Lateral fricative											
Approximant			ɹ				j				
Lateral approximant			l								

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

[dʒ] – voiced postalveolar affricate
 [tʃ] – voiceless postalveolar affricate
 [w] – voiced labial–velar approximant