



**EMERALD**  
CHORAL ACADEMY

**IPA 102: Consonants (kənsənənts̩)**

**Michael Bennett (maɪkl̩ bɛnət)**

**Saturday, June 18, 2022**

# Content Overview

- What is a consonant?
- Vocal Tract Anatomy
- IPA & Chart Refresher
- Place of Articulation
- Manner of Articulation
- Approximants & Affricates
- Diacritics & Suprasegmentals
- Common Foreign Consonants

---

---

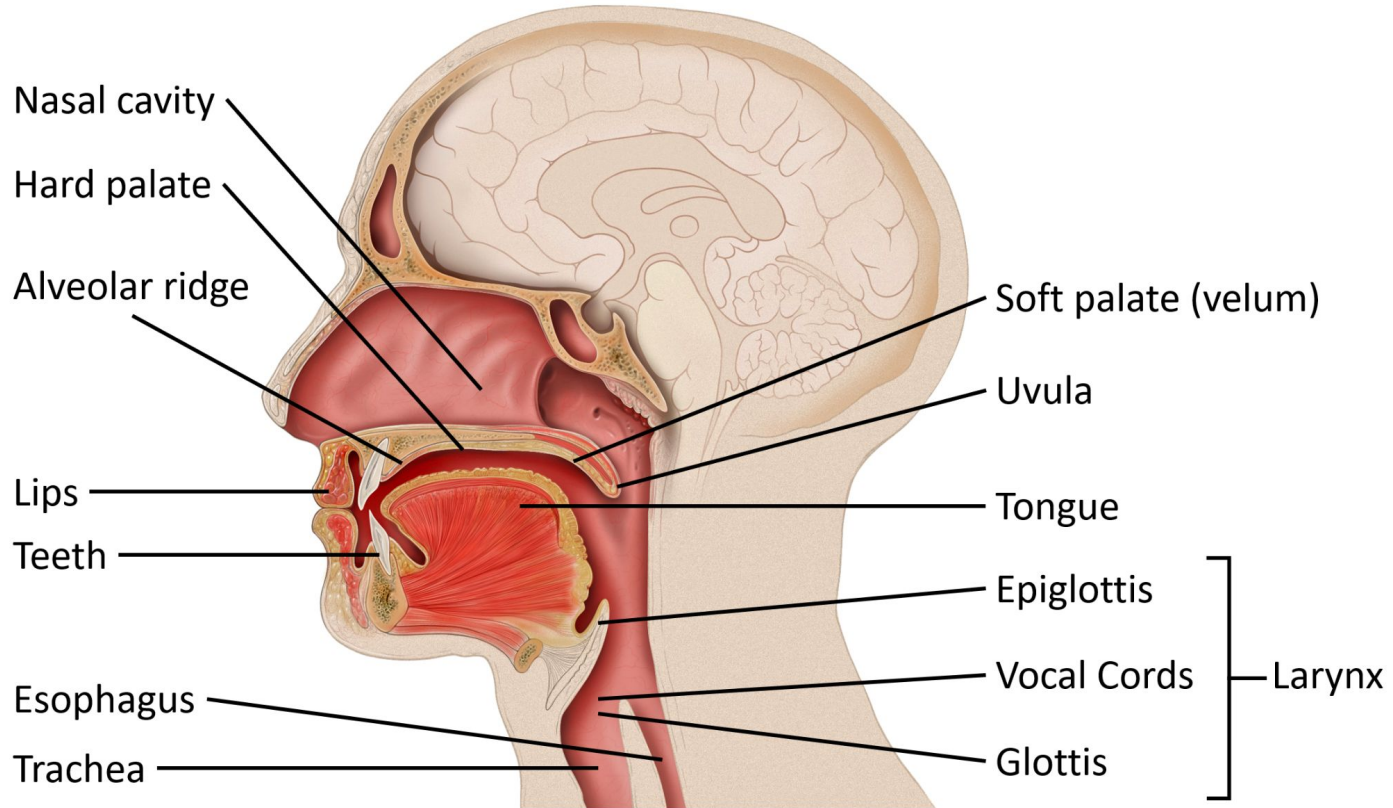
# consonant (n.)

— a speech sound that is articulated with complete or partial closure of the vocal tract —

---

---

# Vocal Tract Anatomy



# IPA: the International Phonetic Alphabet

## THE INTERNATIONAL PHONETIC ALPHABET (revised to 2015)

CONSONANTS (PULMONIC)

© 2015 IPA

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

# English Consonants

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			ɾ					ʀ		
Tap or Flap		ⱱ		ɽ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

# Describing Consonants

- **Voice** - are the vocal folds engaged?
- **Place** (of Articulation) - where in the vocal tract?
- **Manner** (of Articulation) - how is the sound made?
- Examples:
  - /b/ - voiced bilabial plosive
  - /s/ - voiceless alveolar fricative
  - /ŋ/ - voiced velar nasal

# Voice

## THE INTERNATIONAL PHONETIC ALPHABET (revised to 2015)

CONSONANTS (PULMONIC)

© 2015 IPA

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d			ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ	n			ɳ	ɲ	ŋ	ɴ		
Trill	ʙ		r						ʀ		
Tap or Flap		ⱱ	ɾ			ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative			ɬ ɮ								
Approximant		ʋ	ɹ			ɻ	j	ɰ			
Lateral approximant			l			ɭ	ʎ	ʟ			

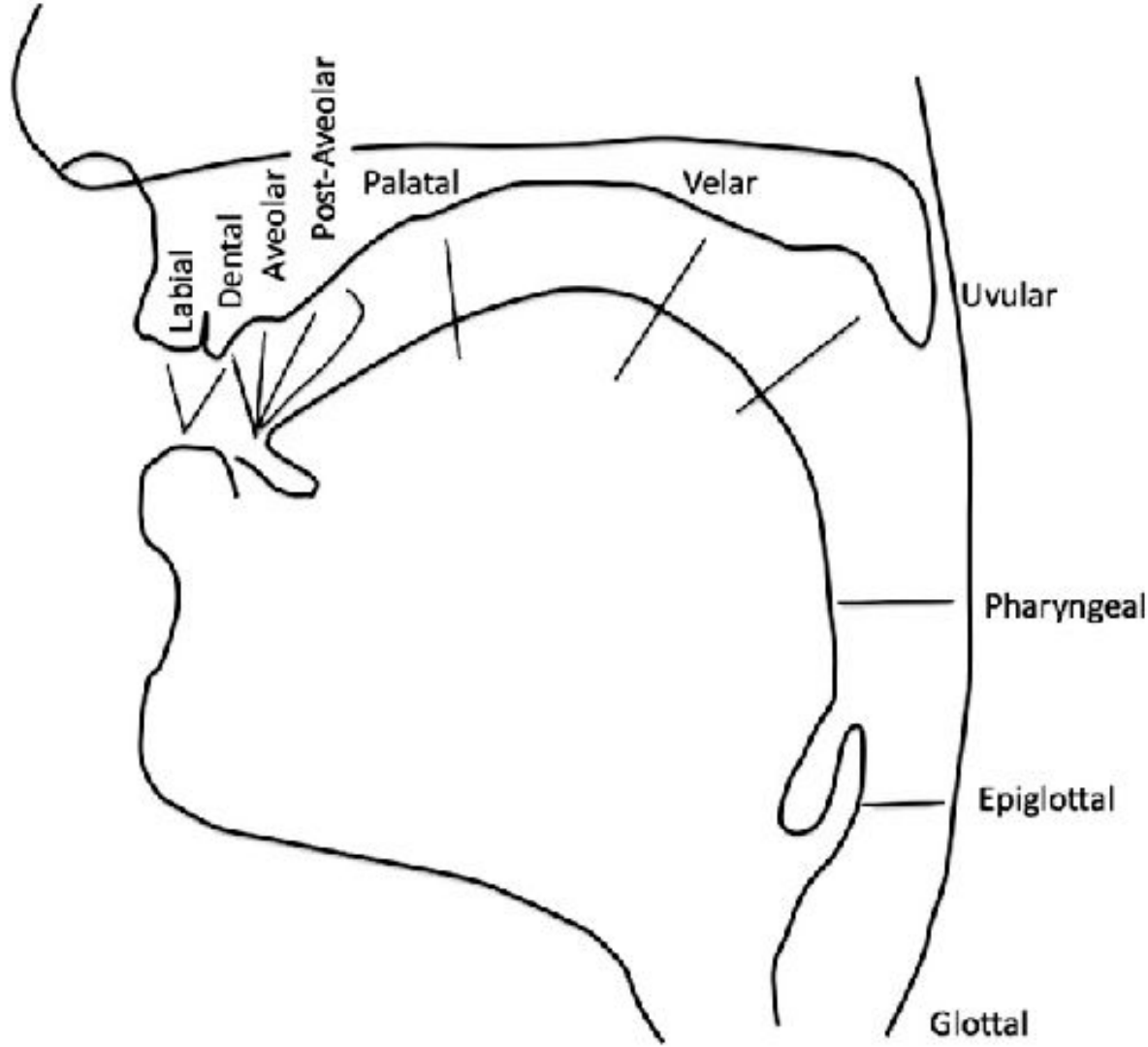
Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.



# Place of Articulation

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

# Place of Articulation



# Manner of Articulation

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d			ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ	n			ɳ	ɲ	ŋ	ɴ		
Trill	ʙ		r						ʀ		
Tap or Flap		ⱱ	ɾ			ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative			ɬ ɮ								
Approximant		ʋ	ɹ			ɻ	j	ɰ			
Lateral approximant			l			ɭ	ʎ	ʟ			

# Manner of Articulation

- **Plosive** (“stop”) – complete obstruction of airflow in vocal tract
- **Nasal** - air flows only through the nose (not mouth)
- **Trill** - a continuously vibrating articulator in airstream
- **Tap/Flap** - one articulator is thrown against another rapidly (1x)
- **Fricative** - continuous friction caused by close articulators
- **Approximant** - articulators come close but do not make contact

# English Consonants

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			ʀ					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

# Approximants and Affricates

- Approximants
  - Semivowels - /j/ /w/
  - Lateral approximants - /l/ /ɭ/

## OTHER SYMBOLS

**ʍ** Voiceless labial-velar fricative

**W** Voiced labial-velar approximant

- Affricates - combine two consonants into one
  - **ɟʝ** - as in “judge” /ɟʝʌɟʝ/
  - **tʃ** - as in “church” /tʃətʃ/

# IPA Practice (English)

ɪf jɪ lʌv mi ki:p maɪ kəmændmənts

ænd aɪ wɪl pɹeɪ ðə fɑðə

ænd hi ʃal gɪv ju ənəðə kʌmfərtə

maɪ spɪrɪt seɪŋ əl deɪ

oʊ maɪ dʒɔɪ

nʌθɪŋ maɪ tʌŋ kʊd seɪ

oʊnli maɪ dʒɔɪ

If ye love me, keep my commandments

And I will pray the Father

And he shall give you another comforter

My spirit sang all day

Oh, my joy

Nothing my tongue could say

Only my joy.

---

---

**IN THE WEEDS...**

**Broad vs. Narrow Transcription**

— Diacritics and Suprasegmentals —

---

---



# Diacritics

DIACRITICS Some diacritics may be placed above a symbol with a descender, e.g.  $\text{ŋ}^{\text{h}}$

◌ <sup>o</sup>	Voiceless	$\text{ŋ}^{\text{h}}$ $\text{d}^{\text{h}}$	◌ <sup>..</sup>	Breathy voiced	$\text{b}^{\text{h}}$ $\text{a}^{\text{h}}$	◌ <sup>◡</sup>	Dental	$\text{t}^{\text{d}}$ $\text{d}^{\text{d}}$
◌ <sup>∨</sup>	Voiced	$\text{ŋ}$ $\text{d}$	◌ <sup>˜</sup>	Creaky voiced	$\text{b}^{\text{c}}$ $\text{a}^{\text{c}}$	◌ <sup>◡</sup>	Apical	$\text{t}^{\text{a}}$ $\text{d}^{\text{a}}$
<sup>h</sup>	Aspirated	$\text{t}^{\text{h}}$ $\text{d}^{\text{h}}$	◌ <sup>ˆ</sup>	Linguolabial	$\text{t}^{\text{l}}$ $\text{d}^{\text{l}}$	◌ <sup>◡</sup>	Laminal	$\text{t}^{\text{l}}$ $\text{d}^{\text{l}}$
◌ <sup>ɔ</sup>	More rounded	$\text{ɔ}^{\text{ɔ}}$	◌ <sup>ʷ</sup>	Labialized	$\text{t}^{\text{w}}$ $\text{d}^{\text{w}}$	◌ <sup>˜</sup>	Nasalized	$\text{ẽ}$
◌ <sup>ç</sup>	Less rounded	$\text{ɔ}^{\text{ç}}$	<sup>j</sup>	Palatalized	$\text{t}^{\text{j}}$ $\text{d}^{\text{j}}$	◌ <sup>n</sup>	Nasal release	$\text{d}^{\text{n}}$
◌ <sup>+</sup>	Advanced	$\text{u}^{\text{+}}$	◌ <sup>ʏ</sup>	Velarized	$\text{t}^{\text{ʏ}}$ $\text{d}^{\text{ʏ}}$	◌ <sup>l</sup>	Lateral release	$\text{d}^{\text{l}}$
◌ <sup>-</sup>	Retracted	$\text{e}^{\text{-}}$	◌ <sup>ɣ</sup>	Pharyngealized	$\text{t}^{\text{ɣ}}$ $\text{d}^{\text{ɣ}}$	◌ <sup>ˀ</sup>	No audible release	$\text{d}^{\text{ˀ}}$
◌ <sup>˙</sup>	Centralized	$\text{e}^{\text{˙}}$	◌ <sup>˜</sup>	Velarized or pharyngealized	$\text{ɫ}$			
◌ <sup>×</sup>	Mid-centralized	$\text{e}^{\text{x}}$	◌ <sup>˥</sup>	Raised	$\text{e}^{\text{˥}}$ ( $\text{ɹ}^{\text{˥}}$ = voiced alveolar fricative)			
◌ <sup>˩</sup>	Syllabic	$\text{ŋ}^{\text{˩}}$	◌ <sup>˥</sup>	Lowered	$\text{e}^{\text{˥}}$ ( $\text{β}^{\text{˥}}$ = voiced bilabial approximant)			
◌ <sup>◌</sup>	Non-syllabic	$\text{e}^{\text{◌}}$	◌ <sup>◌</sup>	Advanced Tongue Root	$\text{e}^{\text{◌}}$			
◌ <sup>ˠ</sup>	Rhoticity	$\text{ə}^{\text{ˠ}}$ $\text{a}^{\text{ˠ}}$	◌ <sup>ˠ</sup>	Retracted Tongue Root	$\text{e}^{\text{ˠ}}$			

# Suprasegmentals

(stress, length, syllabification)

## SUPRASEGMENTALS

- ˈ Primary stress      ˌfounəˈtɪʃən
- ˌ Secondary stress
- ː Long      eː
- ˑ Half-long      eˑ
- ◌̣ Extra-short      ě
- | Minor (foot) group
- || Major (intonation) group
- Syllable break      ɪ.ækt
- ◌̣ Linking (absence of a break)

# Unique Sounds in Foreign Languages

# Italian

- /ʎ/ - Voiced palatal lateral approximant
  - “famiglia” /famiʎʎa/ (also “gli”)
- /ɲ/ - Voiced palatal nasal
  - “cigno” /tʃiɲo/
- /r/ - voiced alveolar trill
- Double consonants!
  - “tutti” /tutti/ or “della” /della/
- Exciting consonant clusters!
  - “sbracciato” /zbraʧʧato/ “sbloccato” /zblokkato/

# Italian IPA Practice

Il bianco e dolce cigno

cantando more,

Ed io piangendo giungo al

fin del viver mio.

il bjaŋkwe dɔlʃe tʃiɲo

kantando mɔre

ɛd jo pjaŋdʒendo dʒuŋgwal

fin dɛl vɪvɛr mio

# French

- /ʒ/ - voiced postalveolar fricative
  - “je” /ʒə/
- /ɥ/ - labio-palatal approximant
  - “lui” /lɥi/
- /ʎ/ - Voiced palatal lateral approximant
  - “papillon” /paʎiʎɔ̃/
- /ʁ/ - voiced uvular fricative (not usually sung, /r/ or /ʀ/ substituted)
  - “mère” (or “mer”!) /mɛʁ/ (spoken), /mɛr/ (sung)
- /ŋ/ - Voiced palatal nasal
  - “agneau” /aɲo/

# French IPA Practice

Mon cœur se recommande à vous,

Tout plein d'ennui et de martyre;

Au moins en dépit des jaloux,

Faites qu'adieu vous puisse dire!

mõ kœr sə rəkõmã da vu

tu plẽ dãnỹ e də martirə

o mwẽ zã depi de zalu

fɛtə kadjø vu pɥisə dirə

# German

- /t͡s/ - voiceless alveolar affricate
  - “zeit” /t͡saɪt/
- /p͡f/ - voiceless labiodental affricate
  - “pfeffer” /p͡fɛfɐ/ and “apfel” /ap͡fəl/
- /kv/ - consonant cluster
  - “quellen” /kvɛlən/
- /ç/ - voiceless palatal fricative
  - “ich” /ɪç/ and “nicht” /nɪçt/
- /x/ - voiceless velar fricative
  - “ach” /ax/ or “nacht” /naxt/
- /ʁ/ (approximant) and/or /R/ (trill)
  - (e.g., “bräutigam” or “kreuz”) not typically sung, usually /r/ is substituted



# German IPA Practice

Wie lieblich sind deine Wohnungen,

Herr Zebaoth!

Meine Seele verlangt und sehnet sich

nach den Vorhöfen des Herrn

vi lipliç zɪnt daɪnə vonuŋən

hɛr t͡sɛbaot

maɪnə zɛlə fɛrlaŋət unt zɛnət zɪç

nax den fɔrhøfən dɛs hɛrn

# Further Resources

- Online tool for typing IPA symbols: <https://ipa.typeit.org/full/>
- Interactive IPA chart with sound examples:  
<https://web.uvic.ca/ling/resources/ipa/charts/IPALab/IPALab.htm>
- Physiological visualisations of IPA symbols (including animation, MRI, and ultrasound imaging): <https://www.seeingspeech.ac.uk/ipa-charts/>
- Subscription IPA transcription database, mostly for art songs and arias:  
<https://www.ipasource.com/>
  - FREE downloads of IPA guides for Latin, Italian, French, German, Spanish, and English
  - <https://www.ipasource.com/diction-help/>