



EMERALD
CHORAL ACADEMY

IPA 103: Vowels [vaʊlɪz]

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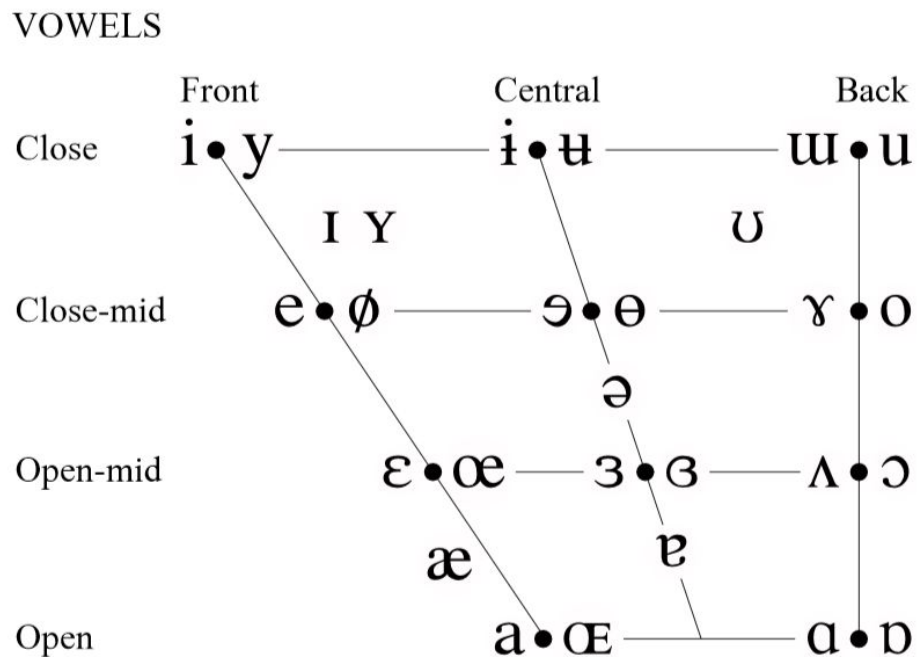
Content Overview

- What is a vowel?
- The IPA Vowel Chart
- Describing Vowels
- Vowel Science! (Formants)
- Monophthongs vs. Diphthongs (or Triphthongs!) of English
- Vowels in Common Choral Languages
- Further Resources

vowel (n.)

— a speech sound which is produced by comparatively open configuration of the vocal tract, with vibration of the vocal cords but without audible friction —

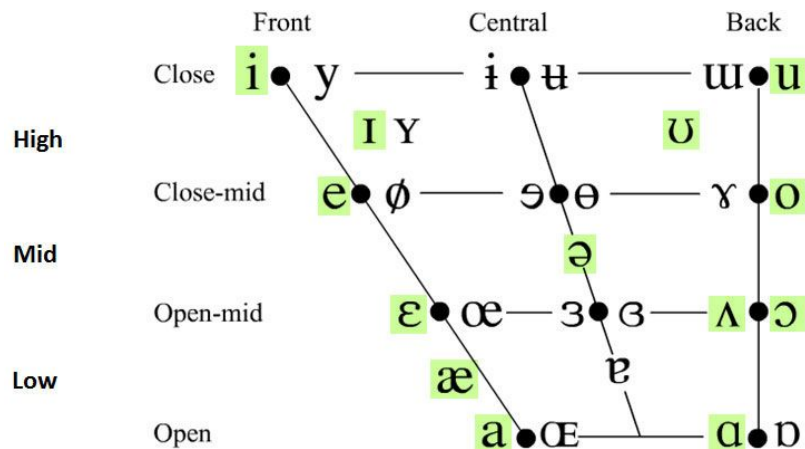
IPA Vowel Chart



Where symbols appear in pairs, the one to the right represents a rounded vowel.

Varying Inventory by Language

English Vowels

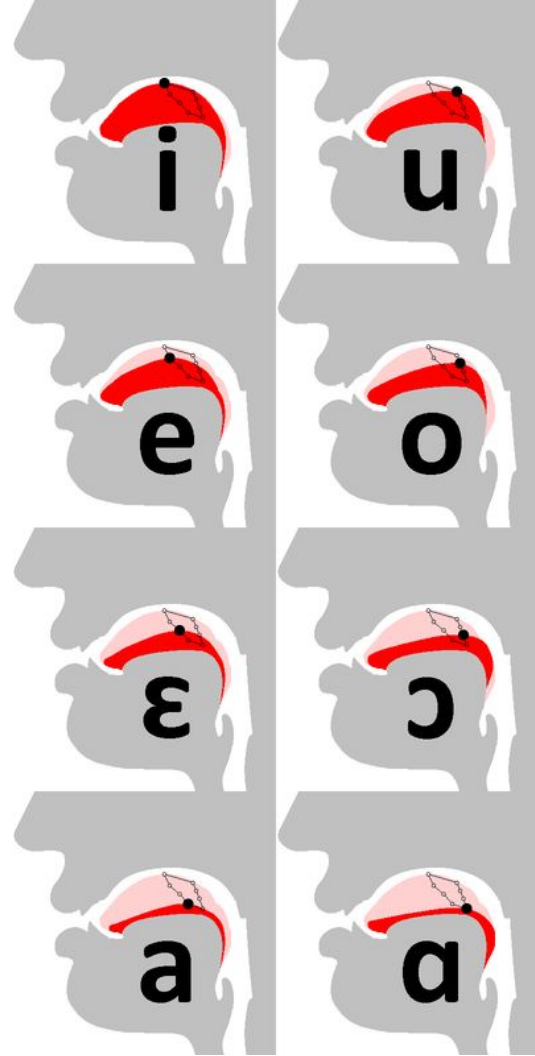
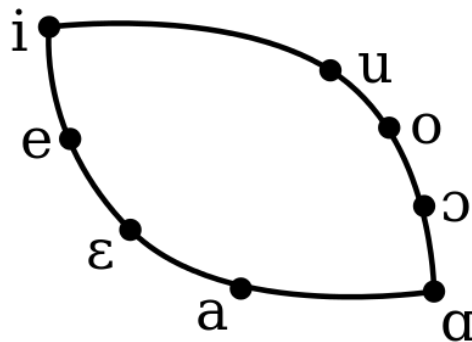


Spanish Vowels



Describing Vowels

- **Close/Open** (High/Low) - tongue position relative to roof of mouth
- **Front/Back** - highest point of tongue?
- **Rounding** - are the lips rounded or not
- Examples:
 - /i/ - close, front, unrounded
 - /o/ - close-mid, back, rounded
 - /a/ - open, front, unrounded



MRI of Vowel Sounds (a, e/ε, i, o, u)



formant (n.)

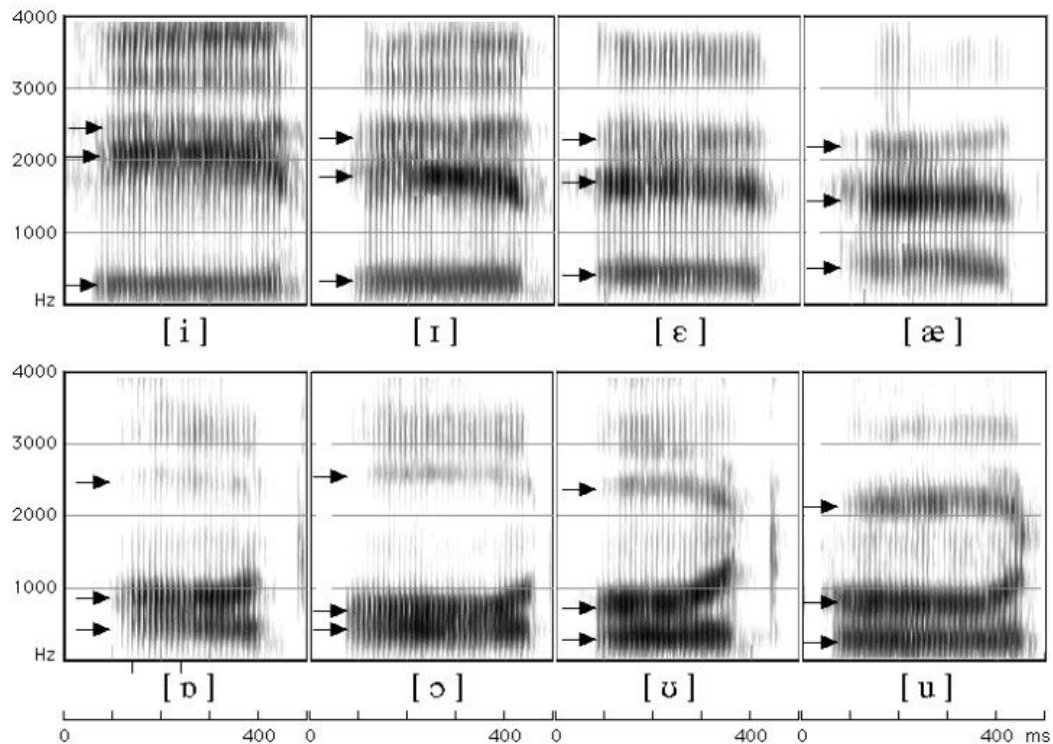
— each of several prominent bands of frequency —
that determine the phonetic quality of a vowel.

Vowels Spectrogram (with Formants Indicated →)

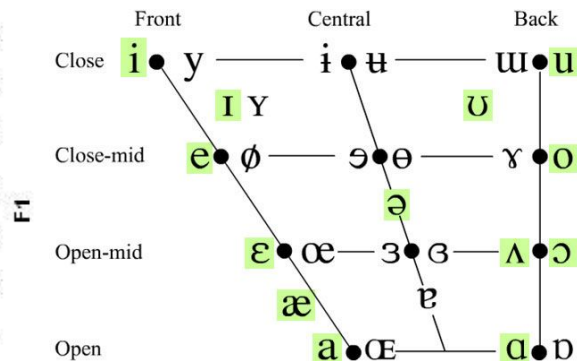
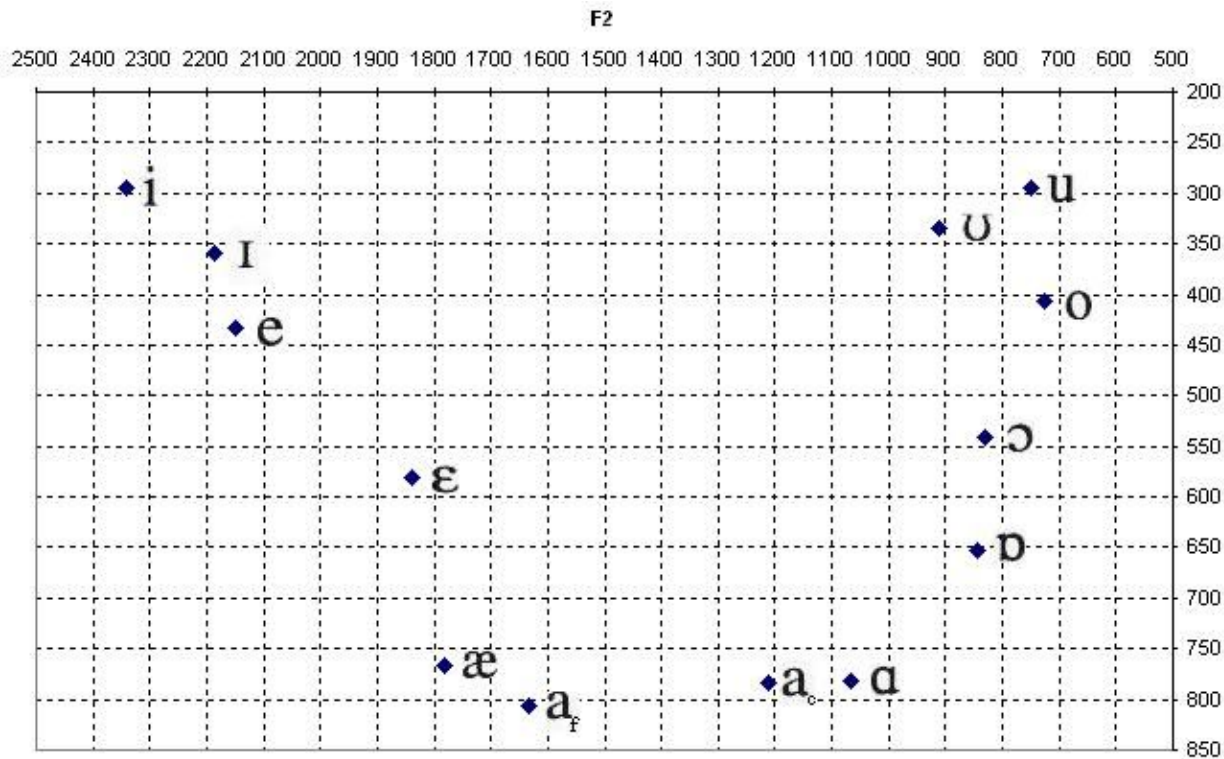
F1 - Height

F2 - Front/Back

F3 - Rounding



Vowel Formants on Scatter Plot



Speaker Variability



vowel tuning (v.)

— the task of unifying vowel pronunciation —
across a choral ensemble

Monophthongs of English

Sample words:

Front Vowels	Central Vowels	Back Vowels
<i>/i/</i> beet	<i>/ə/</i> <u>a</u> bout (<i>unstressed</i>)	<i>/u/</i> boot
<i>/ɪ/</i> bit	<i>/ə/</i> moth <u>e</u> r (<i>unstressed</i>)	<i>/ʊ/</i> book
<i>/ɛ/</i> bet	<i>/ʌ/</i> b <u>u</u> t (<i>stressed</i>)	<i>/ɔ/</i> c <u>a</u> ught*
<i>/æ/</i> bat	<i>/ɜ/</i> b <u>i</u> rd (<i>stressed</i>)	<i>/ɑ/</i> c <u>o</u> t*

*Some dialects of American English pronounce *caught* and *cot* with the same vowel /ɑ/. This is called the *caught-cot merger*.

Notice that /e/ /o/ and /a/ are missing!

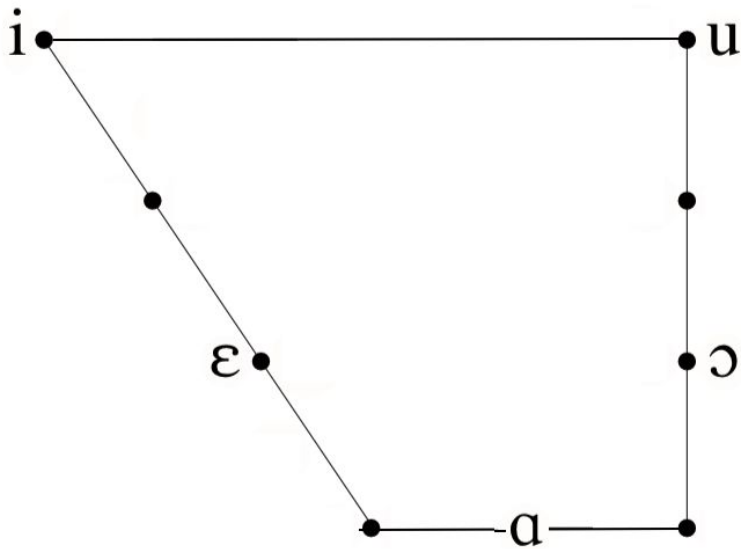
Diphthongs (English Examples)

Sample words:

/eɪ/ bait, late
/aɪ/ bite, high
/aʊ/ bough, how
/oʊ/ boat, coat
/ɔɪ/ boy, toy

Vowels in Foreign Languages

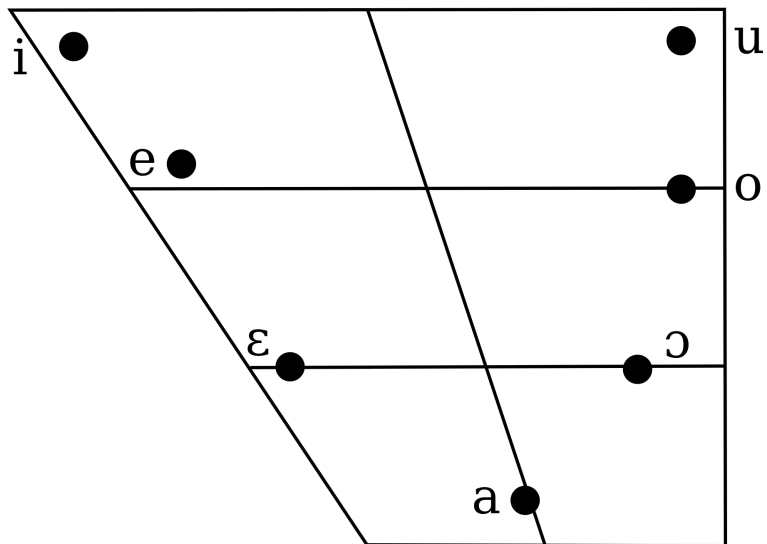
Latin Vowels



Notes:

- 5 vowels (vocal warm-ups)
- “y” = [i] (“hymnus”)
- “æ” and “œ” [ɛ] (“cœli”)

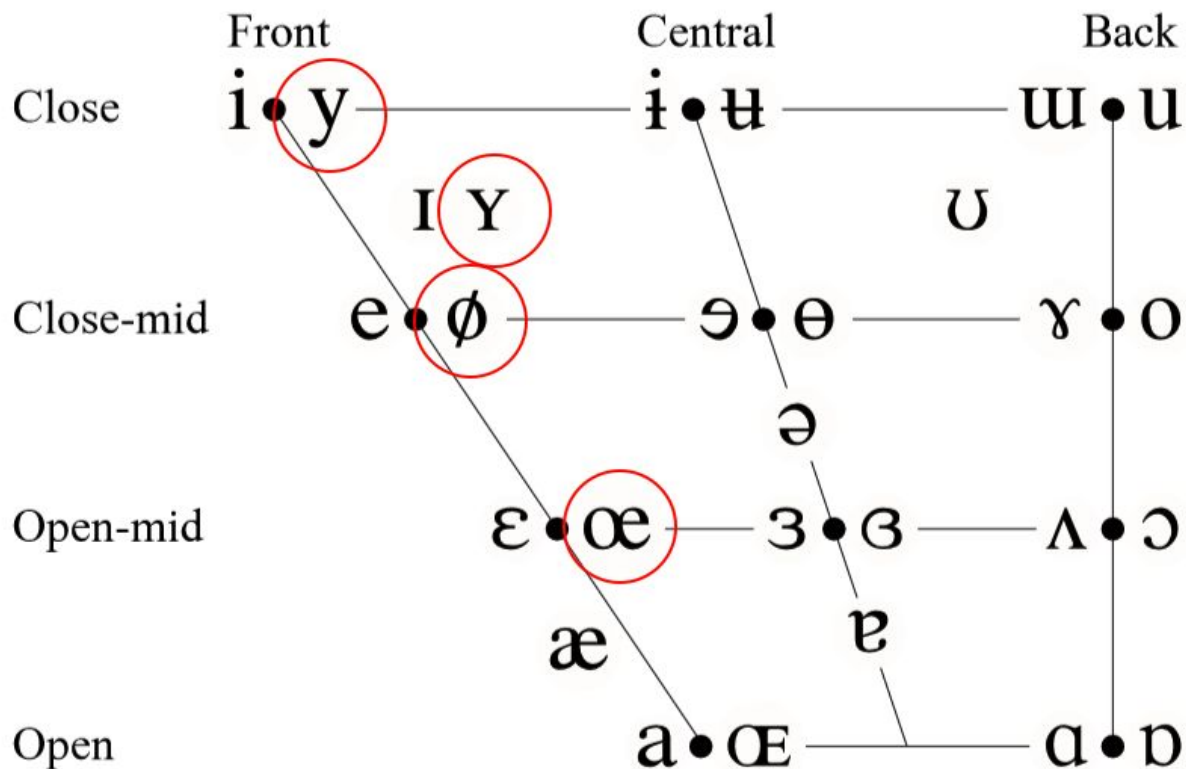
Italian Vowels



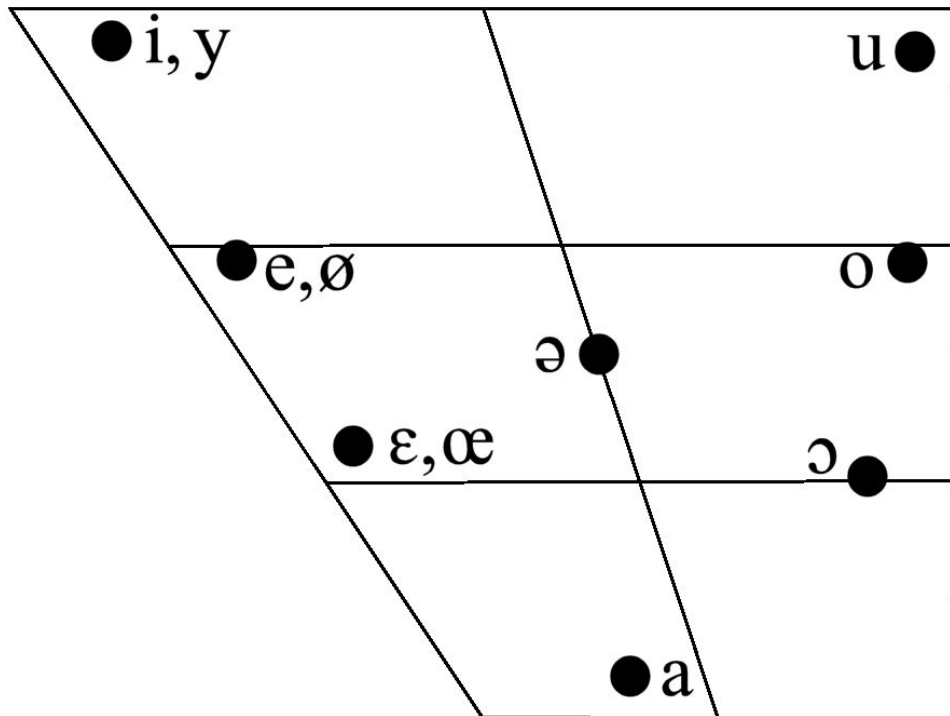
Notes:

- Expansion of Latin
- Largely “what you see is what you get”
 - Written letters match IPA symbols
 - ε (“e”) and ɔ (“o”) are the exceptions
 - “i” is often not pronounced but modifies the consonant “c” or “g” before or becomes [j] intervocalically
 - “gioia” [dʒɔja]
 - “baciare” [batʃare]
 - “u” can also be [w]
 - “uomo” [wɔmo]

Trickier Foreign Vowels - Rounded Front Vowels!



French Vowels



Les voyelles orales Oral vowels in French					
[i] si	[e] pré	[ɛ] père	[a] mal	[y] tu	[ø] peu
[ə] je	[œ] sœur	[u] cou	[o] zéro	[ɔ] sort	

French Nasal Vowels (~) - Open Velar Port

[ɛ̃]

[ɑ̃]

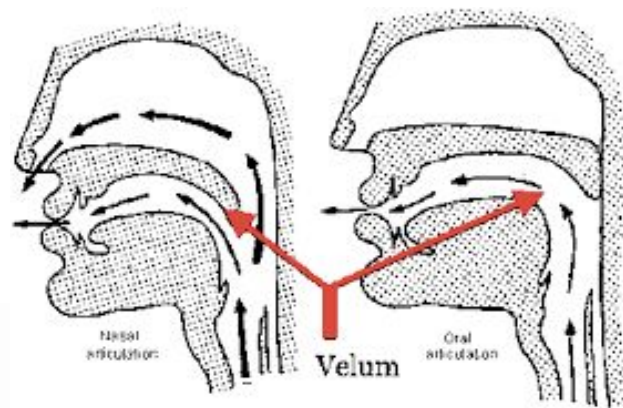
[ɔ̃]

pain

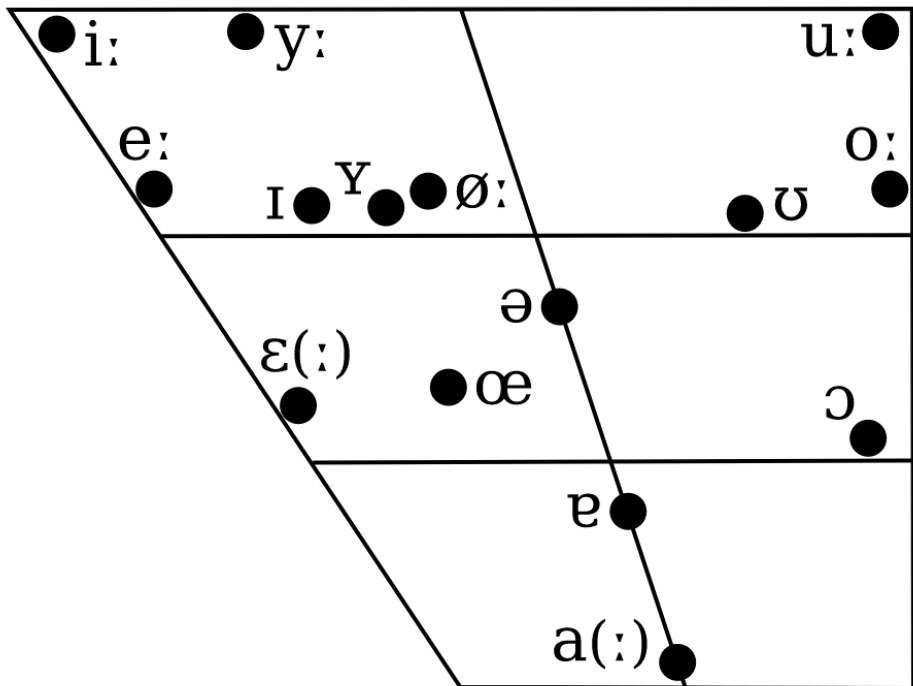
blanc

pont

on vend un lapin
[ɔ̃] [ɑ̃] [œ̃] [ɛ̃]



German Vowels



Notes:

- Vowels, vowels, everywhere!
- Notice movement from Standard/English
- Long and short versions (: diacritic)
- [ɐ] for words ending in “-er”
 - süsser, besser

German Examples

	FRONT				BACK	
	UNROUNDED		ROUNDED			
	LONG	SHORT	LONG	SHORT	LONG	SHORT
HIGH	<i>bieten</i> bi:tən 'to offer'	<i>bitten</i> bitən 'to ask'	<i>wüten</i> vy:tən 'to rage'	<i>Bütten</i> bytən 'tubs'	<i>buhlen</i> bu:tən 'booed'	<i>Butter</i> butə 'butter'
MID-HIGH	<i>beten</i> be:tən 'pray'		<i>böten</i> bø:tən 'offered' (subj)		<i>Boten</i> bö:tən 'boats' (dat,pl)	
MID-LOW	<i>bäten</i> bæ:tən 'asked' (subj)	<i>Betten</i> betən 'beds'		<i>Böttingen</i> bö:tiŋən (town name)		<i>Bottich</i> bö:tiç 'vat'
LOW		<i>Latten</i> latən 'bars'			<i>baten</i> bæ:tən 'asked'	
DIPH THONGS	<i>weiten</i> vai:tən 'to widen'		<i>Beute</i> böytə 'booty'		<i>bauten</i> bau:tən 'built'	

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/>

Further Resources - cont.

VoceVista - overtone analyzer software: <https://www.vocevista.com/>

Demonstration by Chris Munce (Choralosophy): <https://youtu.be/zcDBwKsdlxE>

Interview with Dr. Amanda Quist (Frost SoM): <https://youtu.be/UzKxvrNjj4A>

Praat - phonetics software: <https://www.fon.hum.uva.nl/praat/>