

Speech Science

WiSe 2024

Speech Sounds (and more)

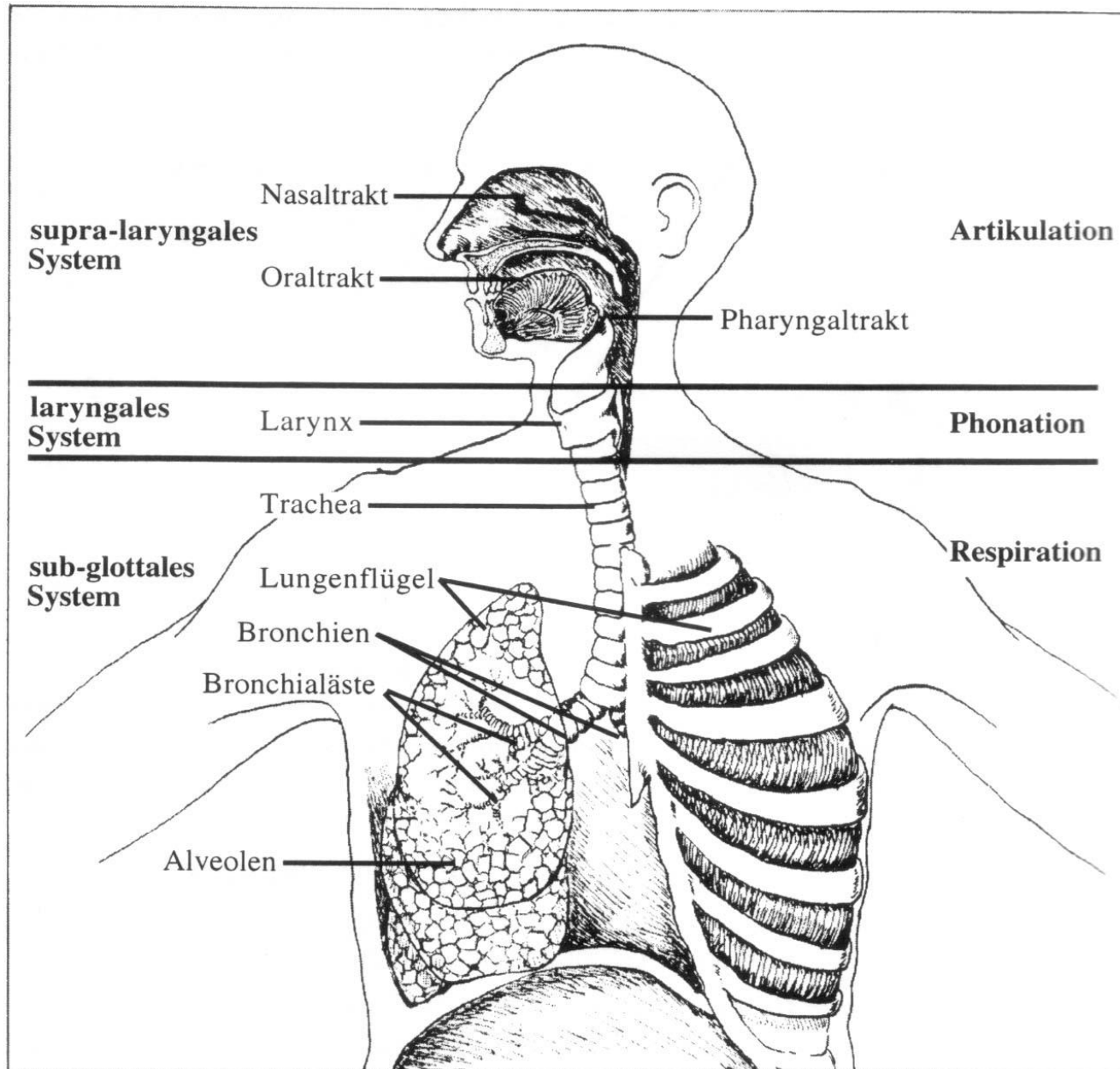
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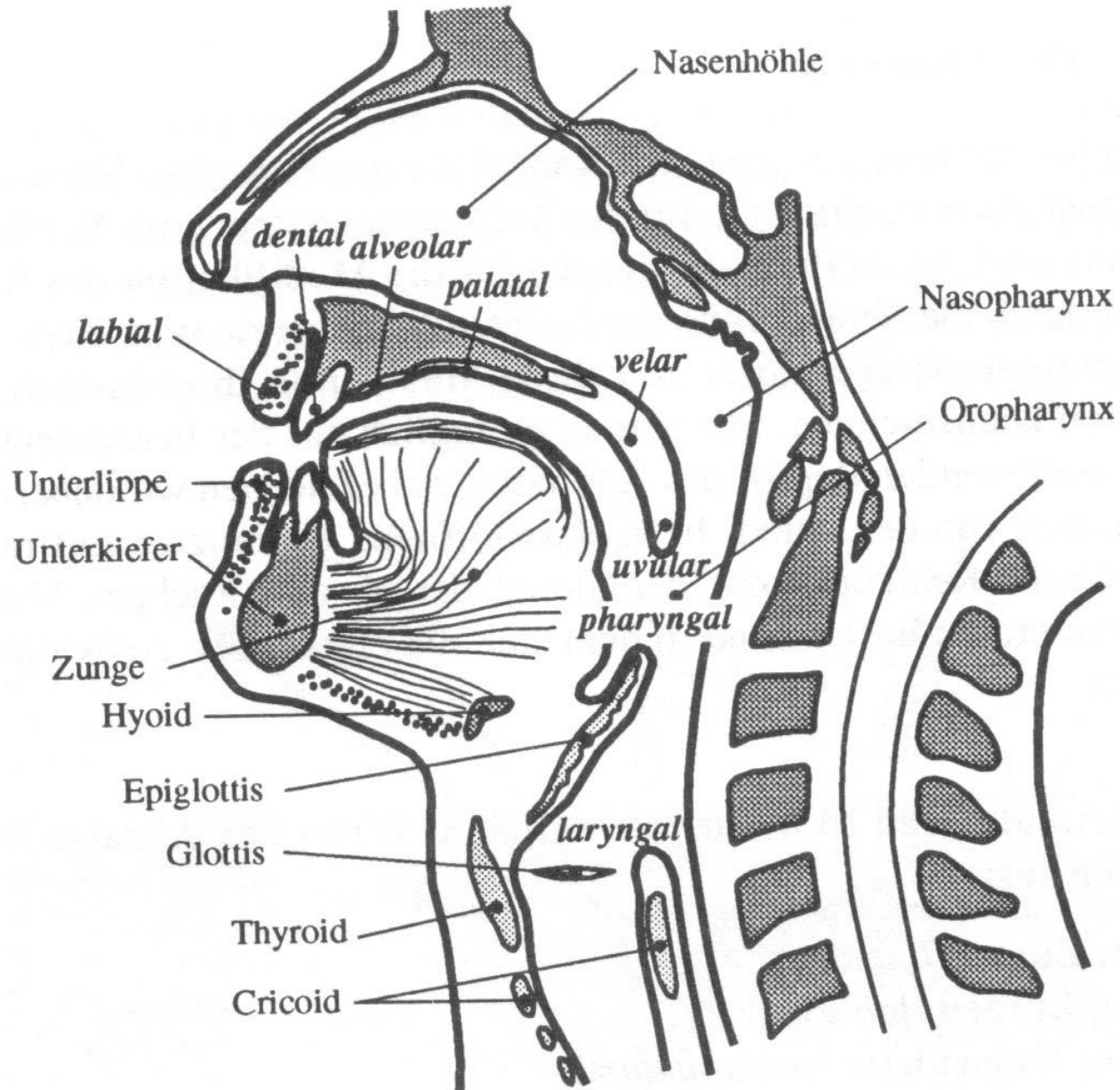


Speech production organs



[Reetz, 1999]

Speech production organs



[Reetz, 1999]

Phonetic transcription - IPA

- Phonetic transcription (standard text)
 - "The north wind and the sun..."
- IPA = International Phonetic Association
 - aim: universal phonetic alphabet, suitable to transcribe all speech sounds of the world's languages
 - aim: universal classification system for all speech sounds
 - founded 1886 in Paris
 - most recent major revision: Kiel 1989 (alphabet: 2015)
- Online resources
 - UCLA index of languages / speech sounds
 - UPSID database
 - UdS Audio demo of sounds and languages

IPA: Consonants

THE INTERNATIONAL PHONETIC ALPHABET (revised to 2005)

CONSONANTS (PULMONIC)

© 2005 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			

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

Consonants of German

THE INTERNATIONAL PHONETIC ALPHABET (revised to 1993)

CONSONANTS (PULMONIC)

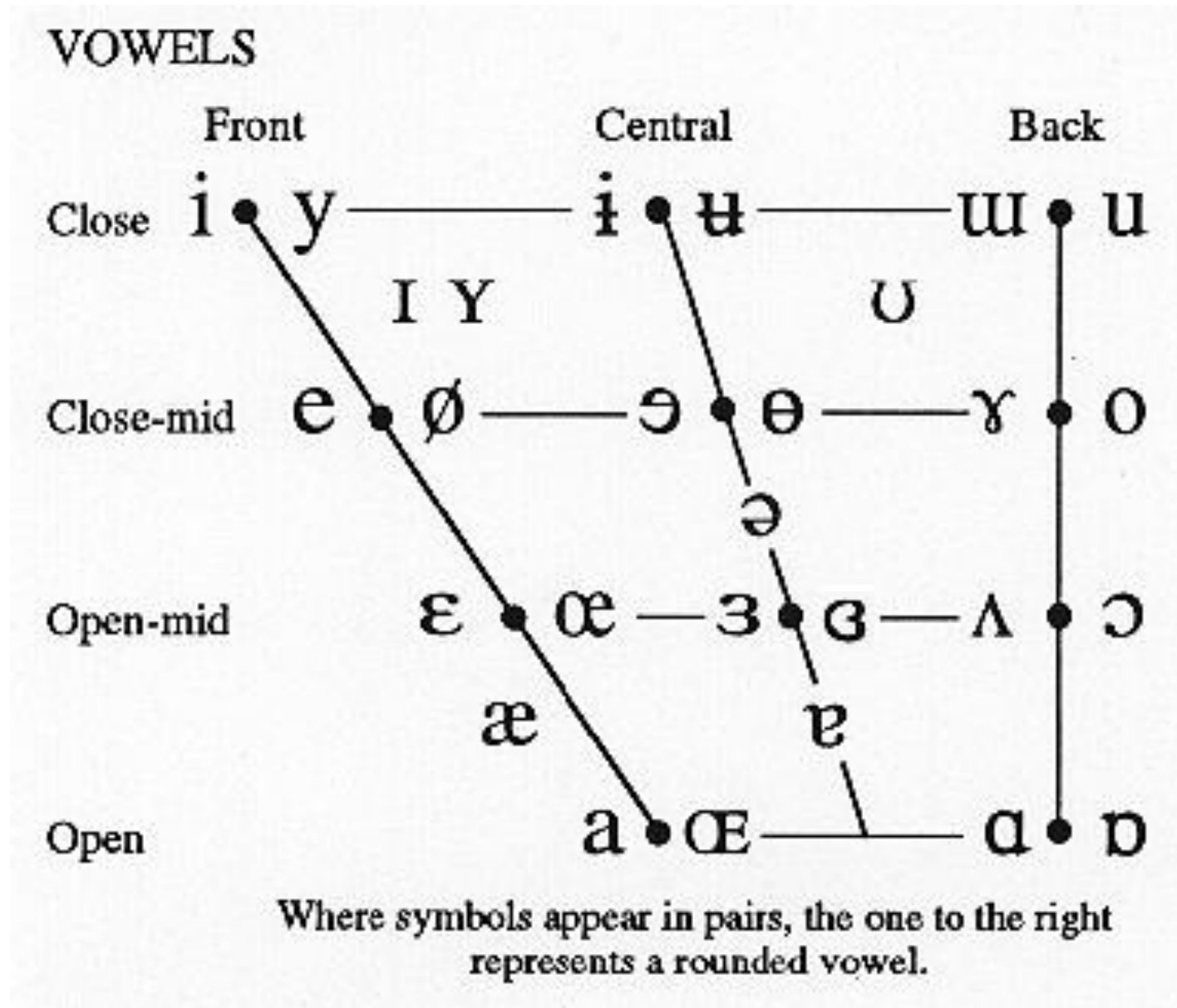
	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			ʀ					ʁ		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant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

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

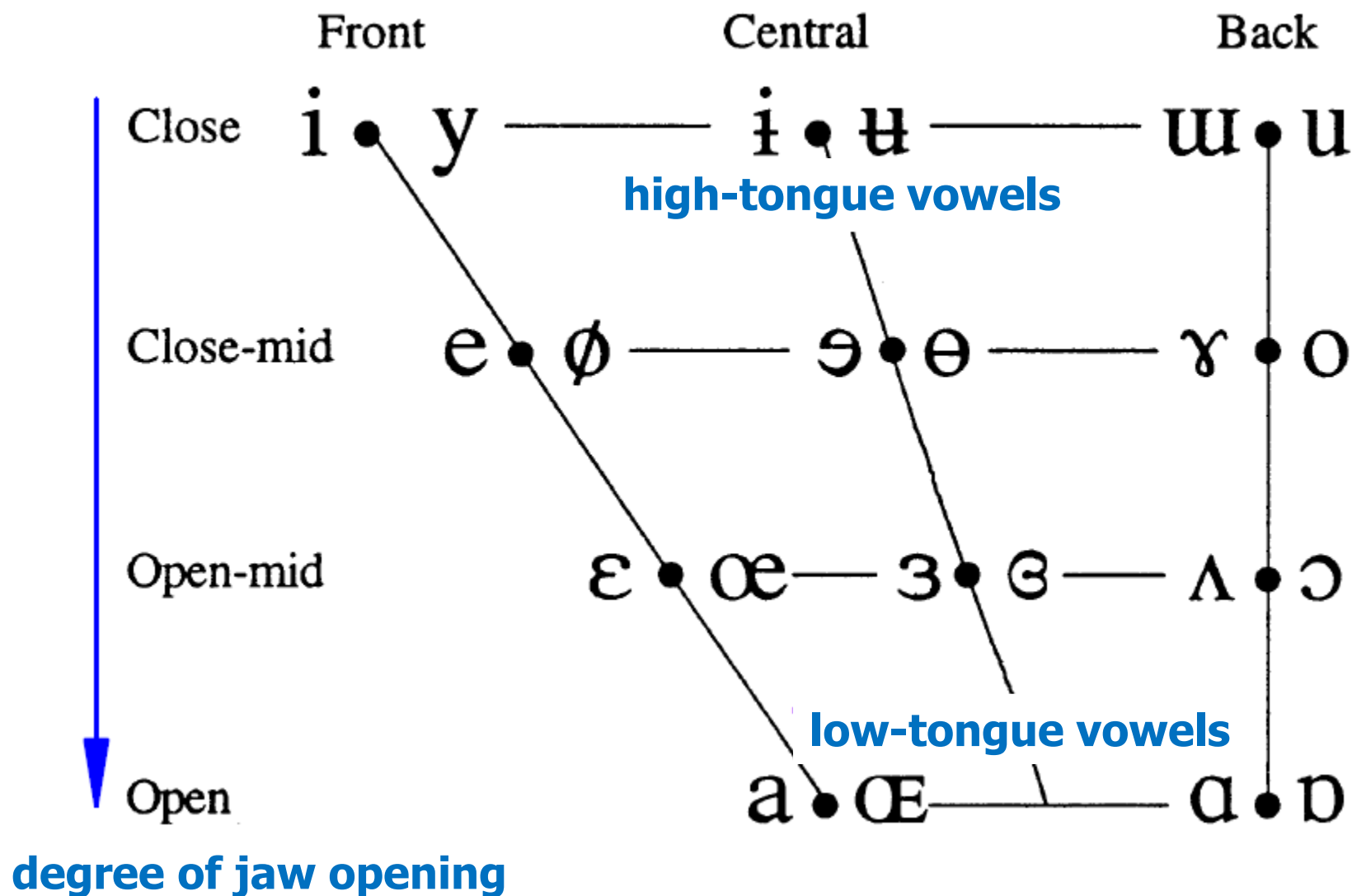
Consonants of German

IPA	SAMPA	Beispiel	IPA	SAMPA	Beispiel
p	p	Panne	b	b	Bank
t	t	Tanne	d	d	Dank
k	k	Kanne	g	g	ganz
ʔ	ʔ	Abend	h	h	Hand
f	f	fein	v	v	Wein
s	s	reißen	z	z	reisen
ʃ	S	Schein	ʒ	Z	Genie
ç	C	dich	x	x	Dach
m	m	Miete	l	l	Leiter
n	n	Niete	r	r	Reiter
ŋ	N	Klang	j	j	jeder

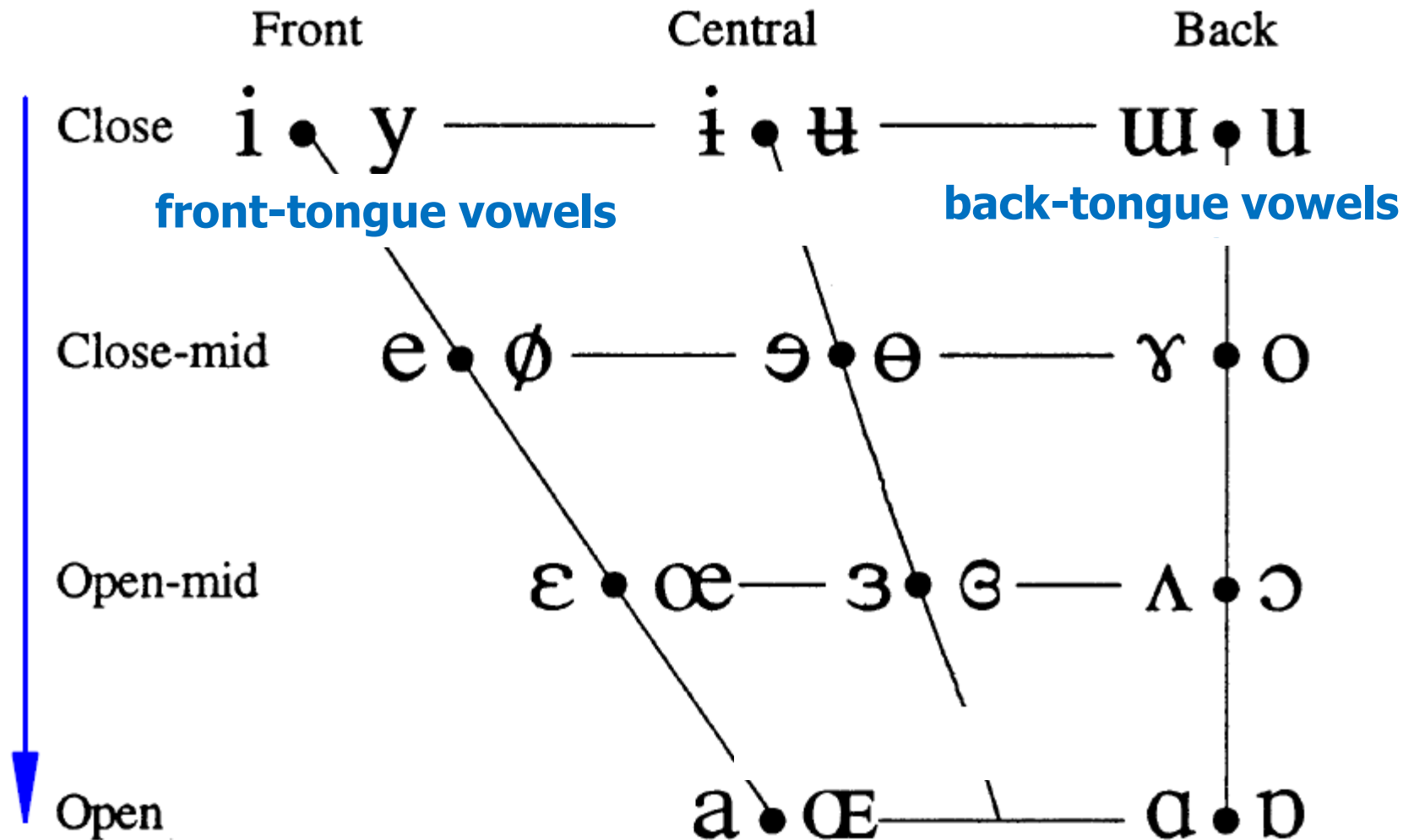
IPA: Vowels



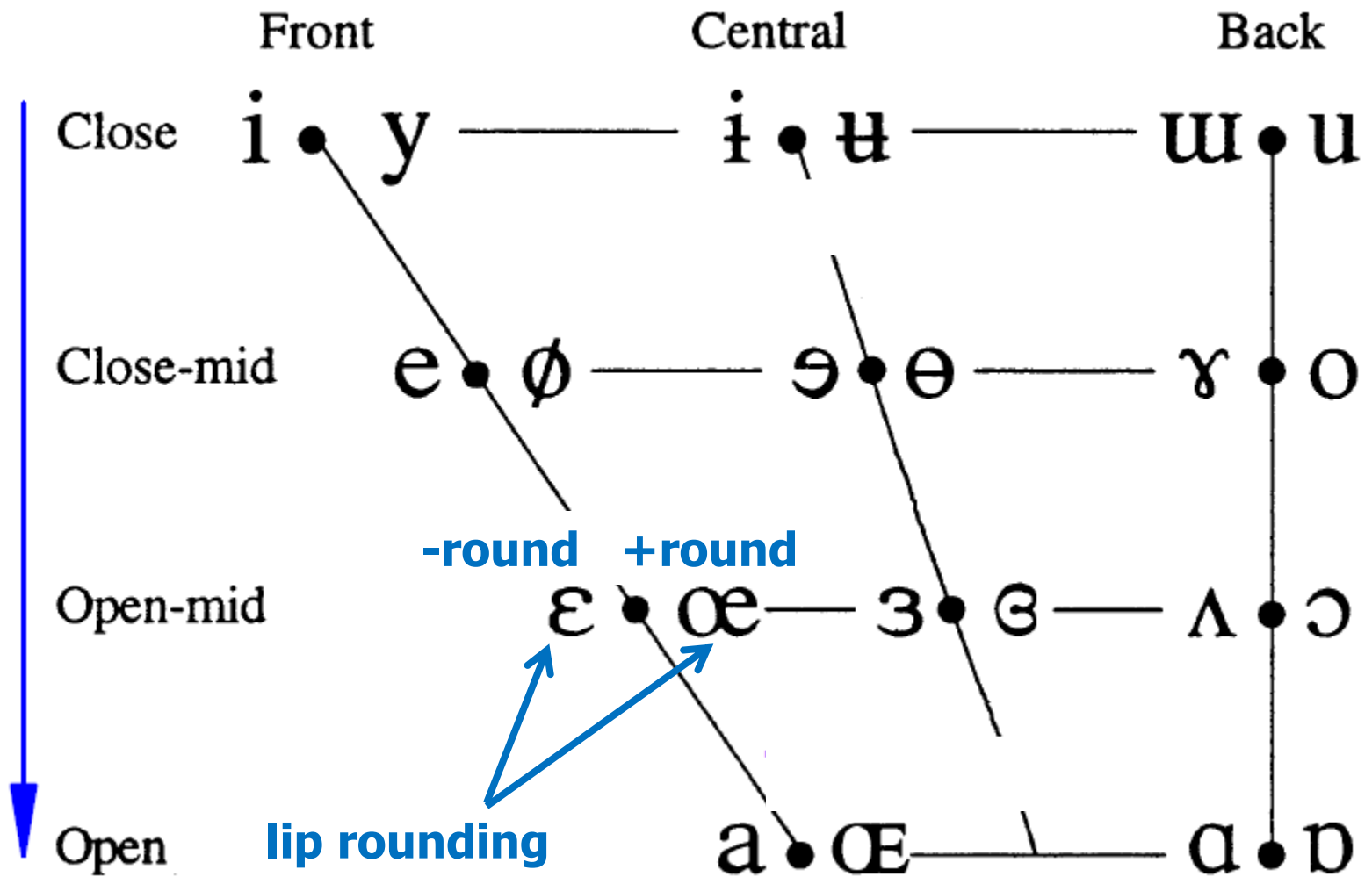
Vowels: high vs. low, open vs. closed



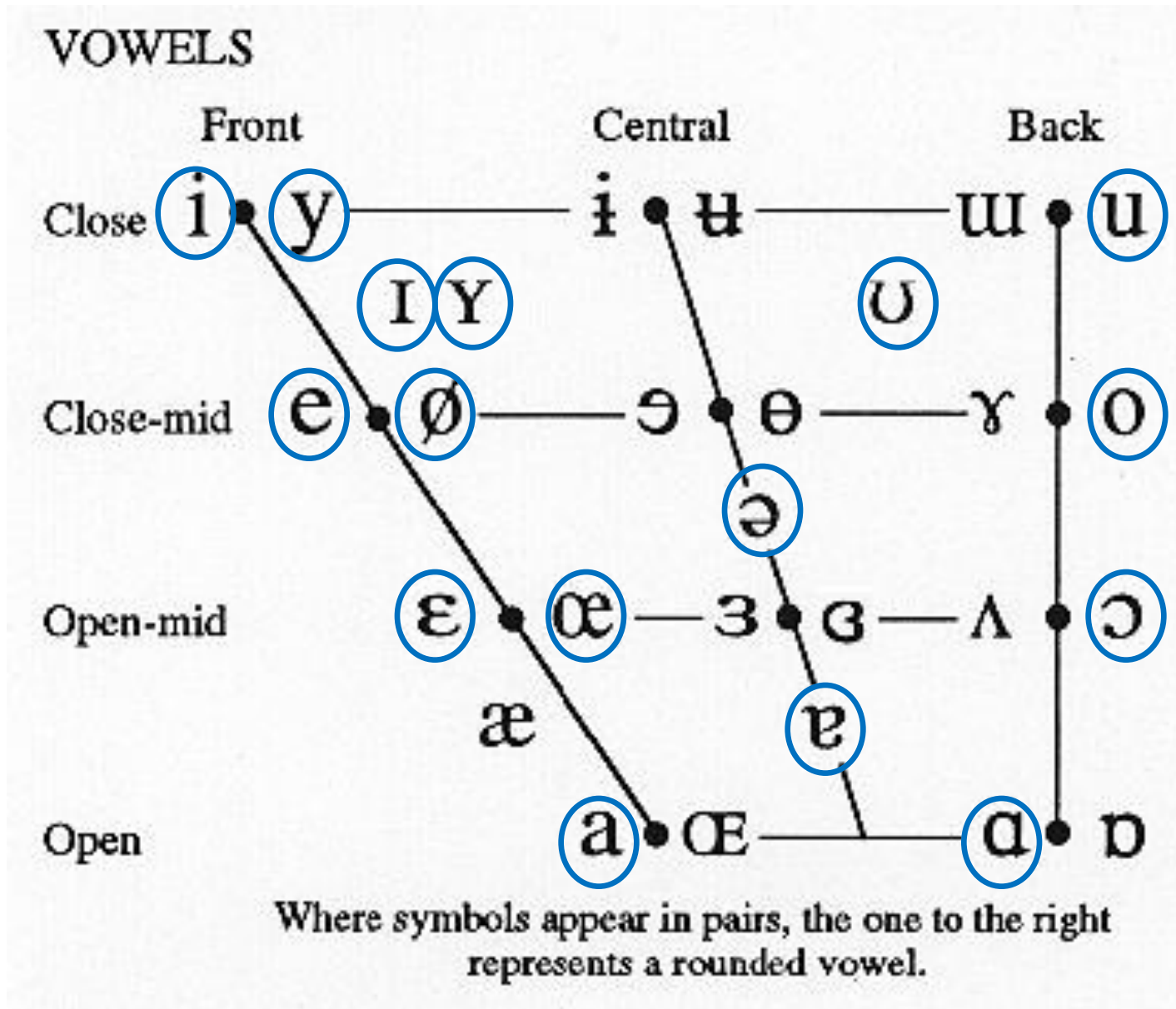
Vowels: front vs. back



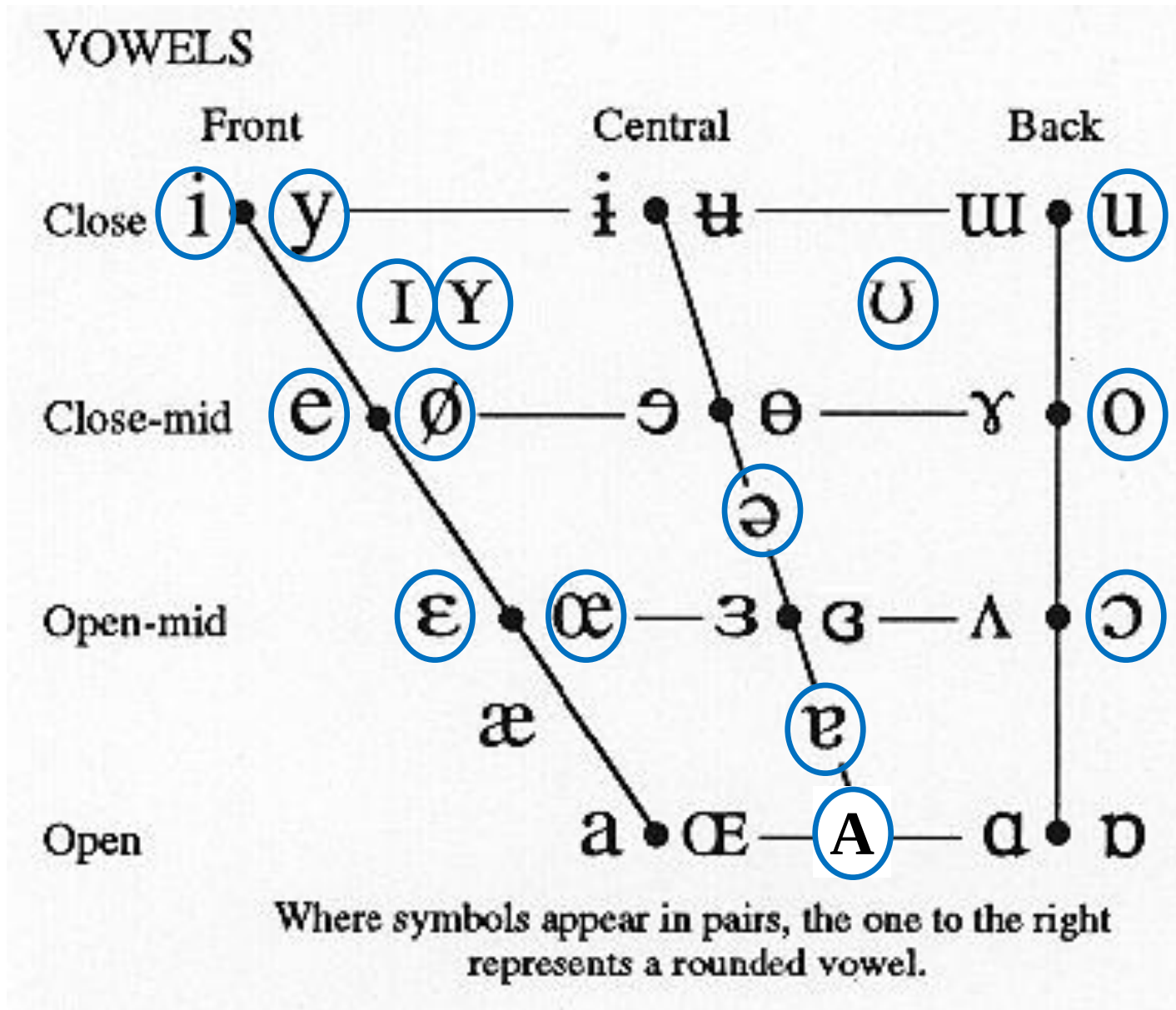
Vowels: unrounded vs. rounded



Vowels of German



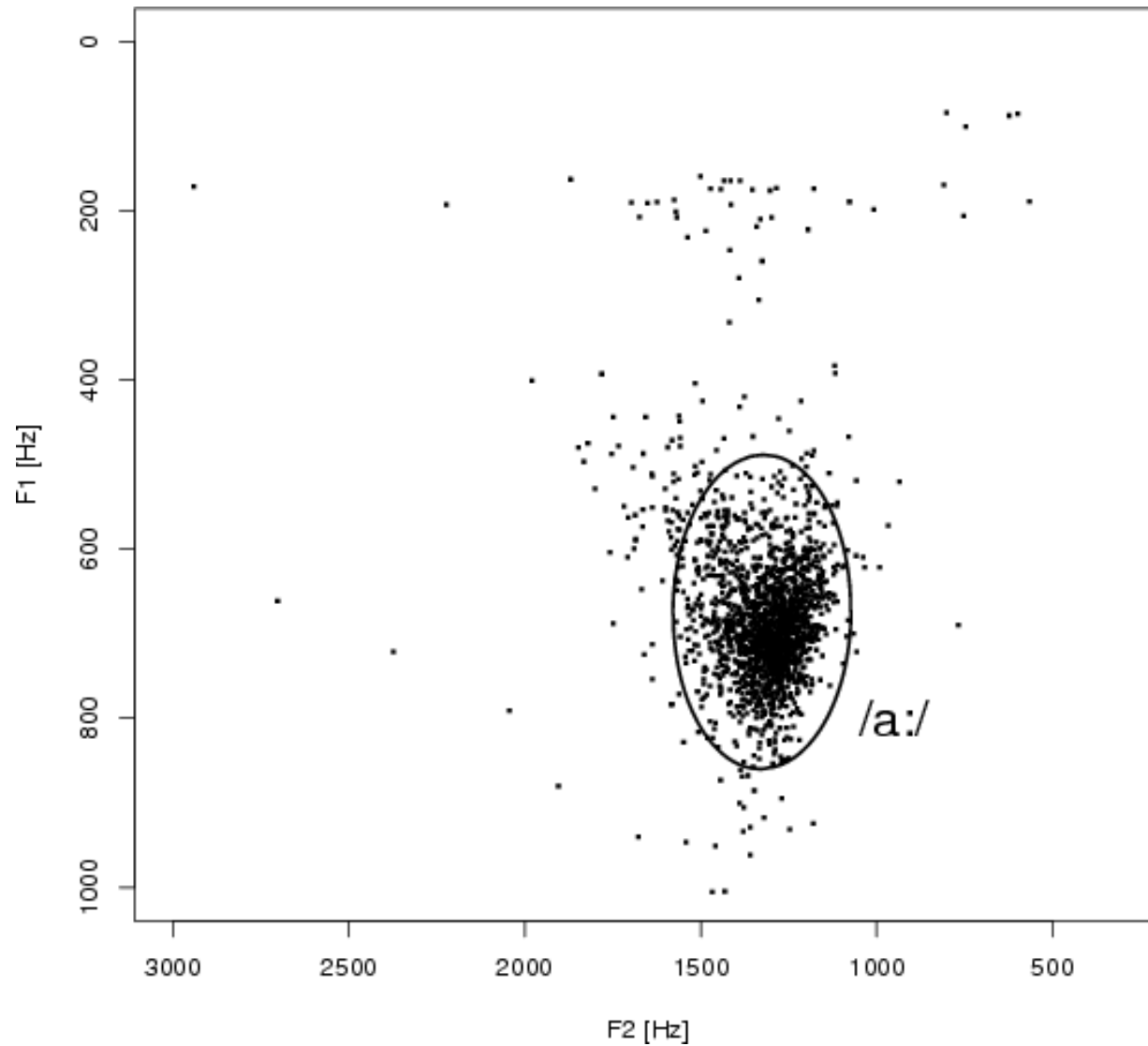
Vowels of German



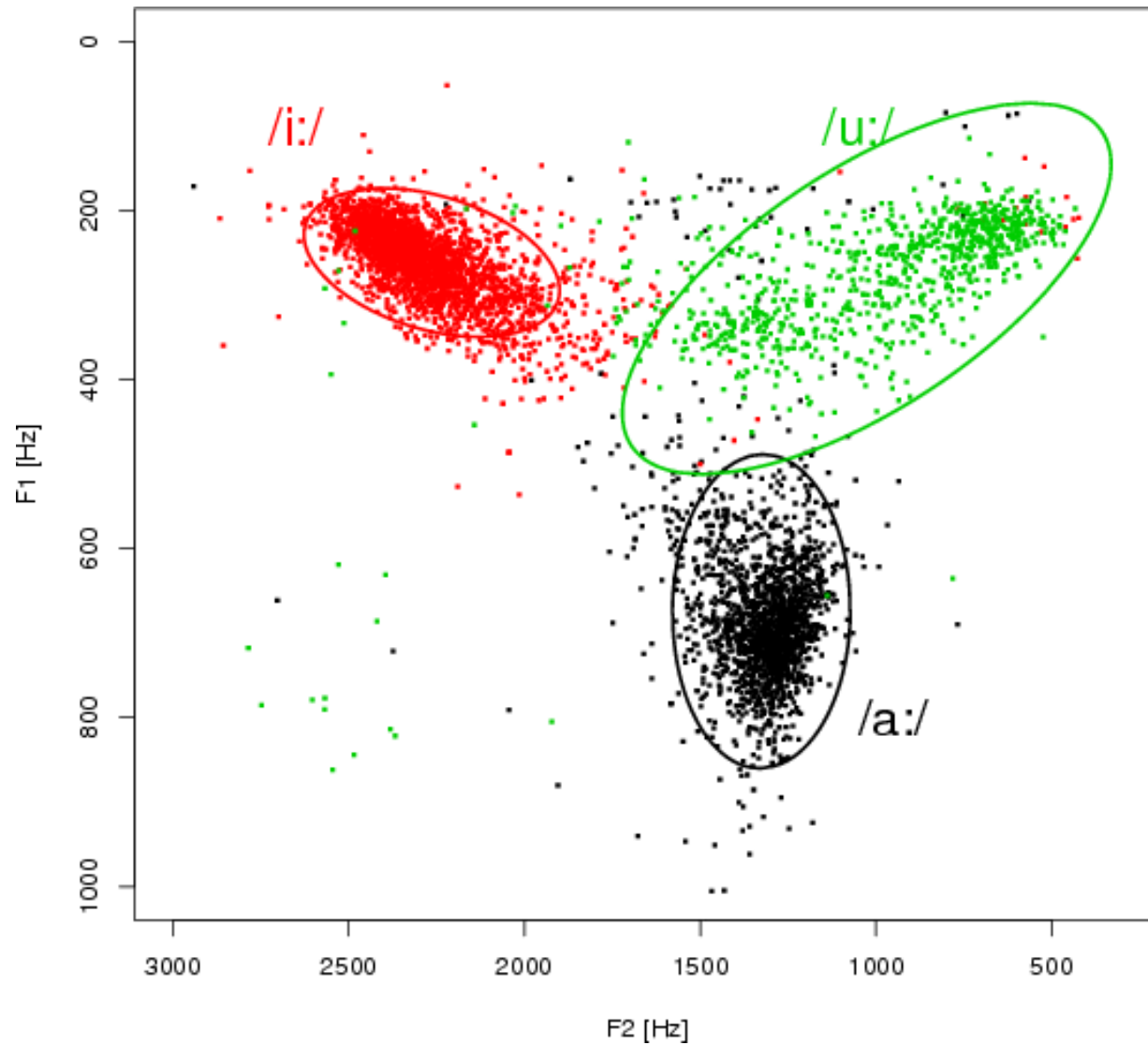
Vowels of German

IPA	SAMPA	Beispiel	IPA	SAMPA	Beispiel
i:	i:	Miete	ɪ	ɪ	Mitte
y:	y:	Hüte	ʏ	ʏ	Hütte
e:	e:	beten	ɛ	ɛ	betten
ɛ:	ɛ:	bäten			
ø:	2:	Höhle	œ	9	Hölle
u:	u:	Stuhl	ʊ	U	Stulle
o:	o:	Robe	ɔ	O	Robbe
a:	a:	Haken	a	a	hacken
ə	@	Lehre	ɐ	6	Lehrer
aɪ	aɪ	Seite	aʊ	aU	Laube
ɔʏ	OY	heute			

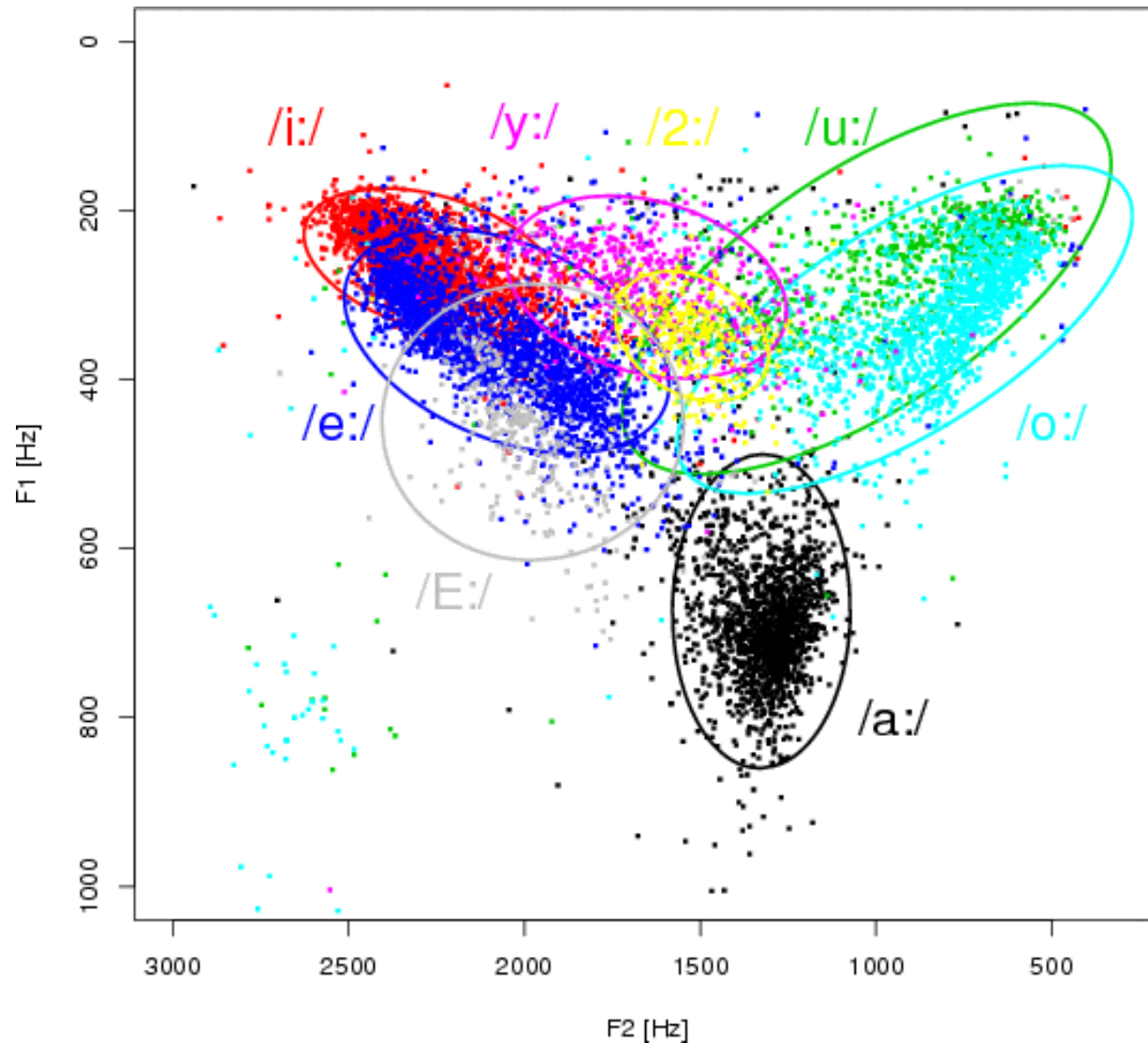
Vowel exemplars



Vowel exemplars



Vowel exemplars





Thanks!