

Speech Science

WiSe 2023

Speech Sounds (and more)

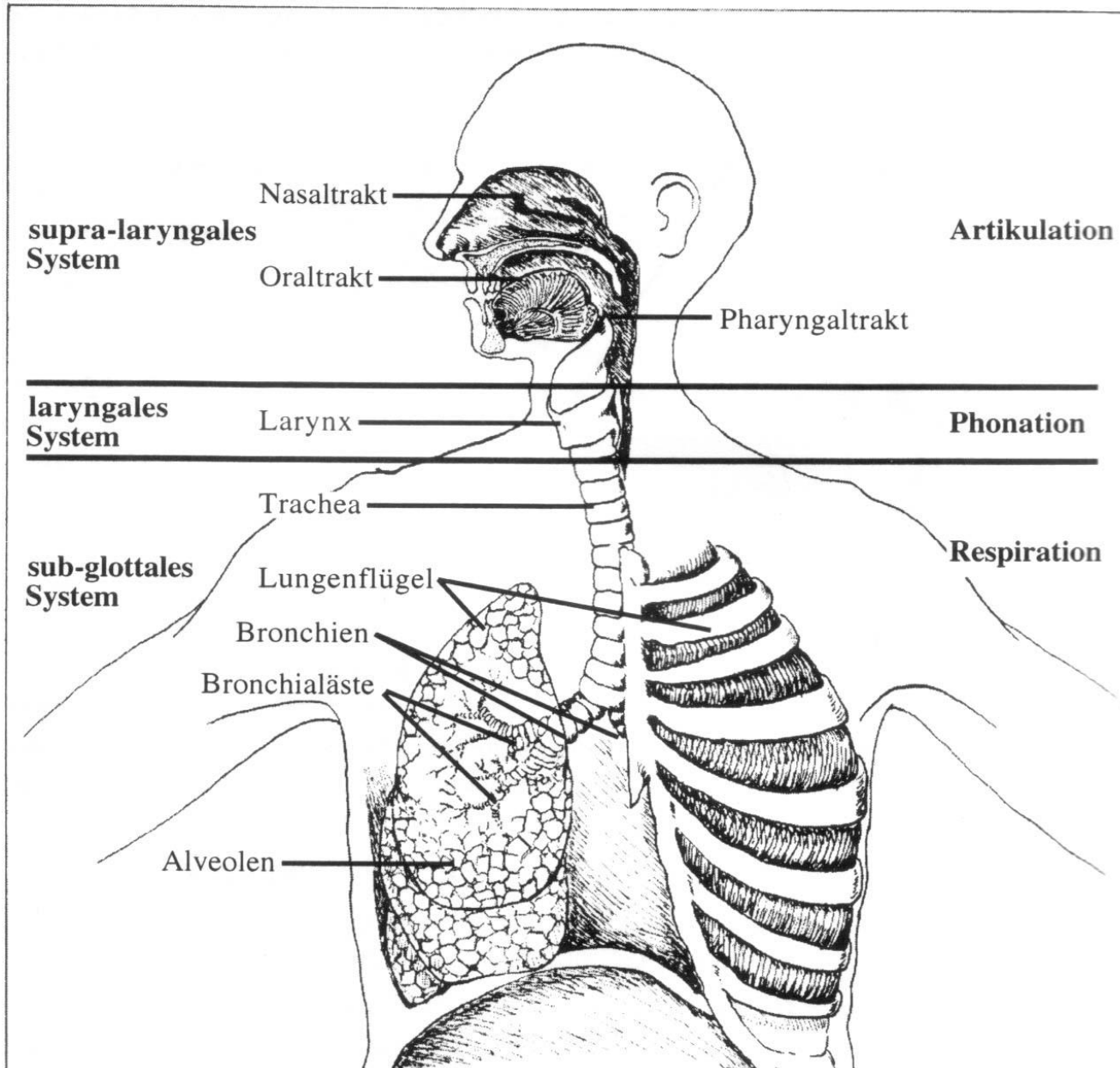
Nov 9, 2023

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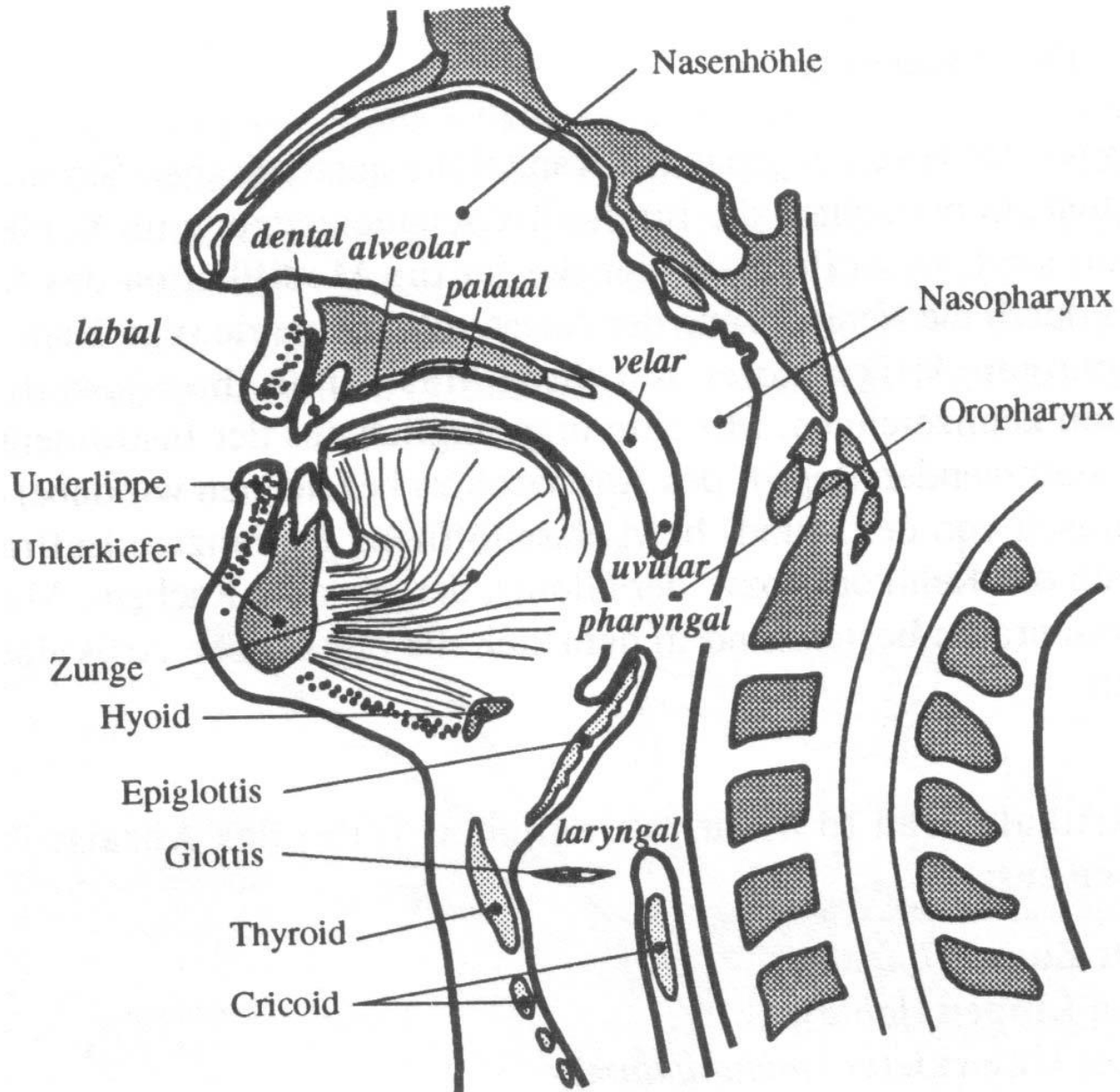


Speech production organs



[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 ɡ | q ɢ | | ʔ |
| Nasal | m | ɱ | | n | | ɳ | ɲ | ŋ | ɴ | | |
| Trill | ʙ | | | ʀ | | | | | ʀ | | |
| 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 | | | |

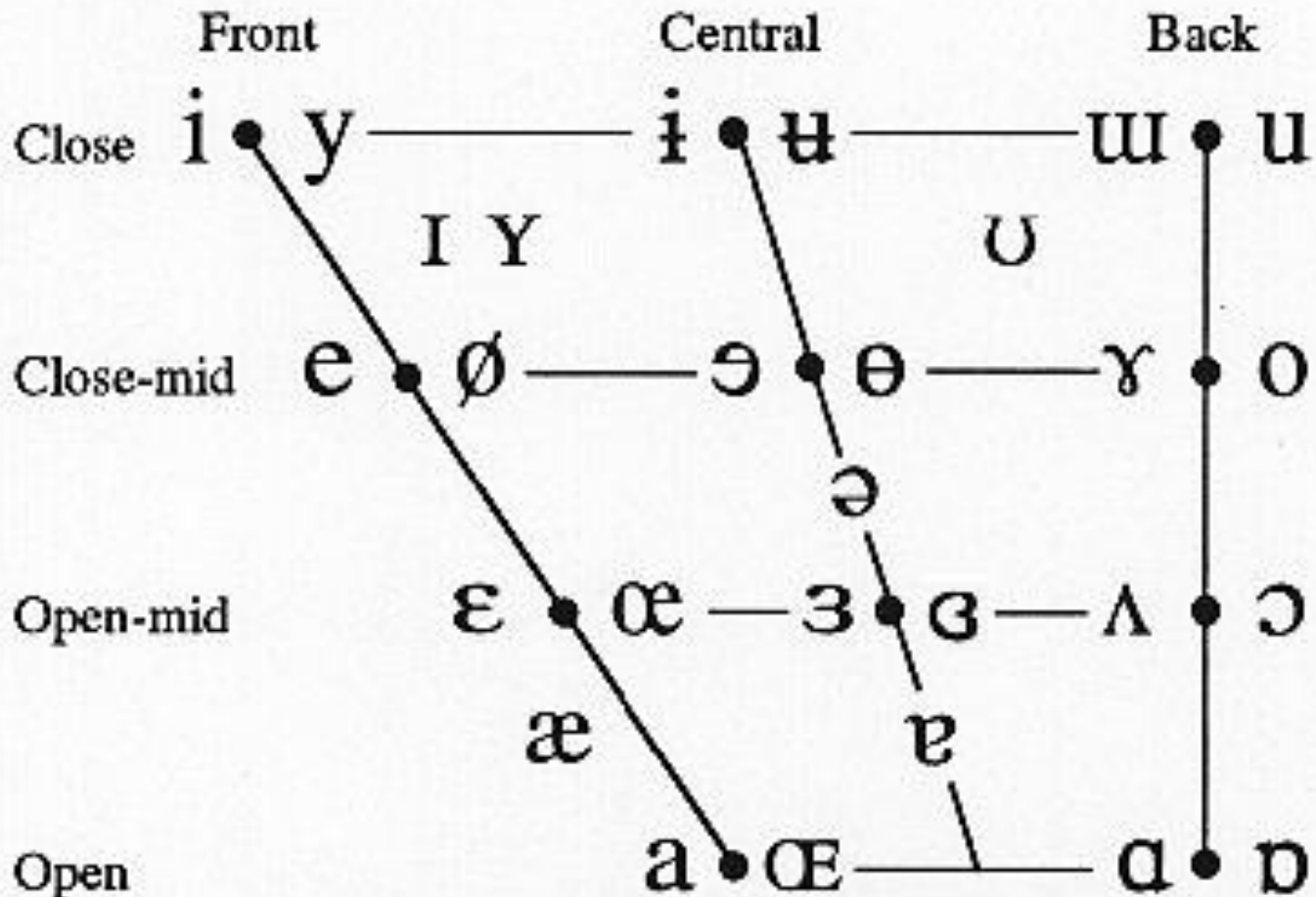
Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

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 |

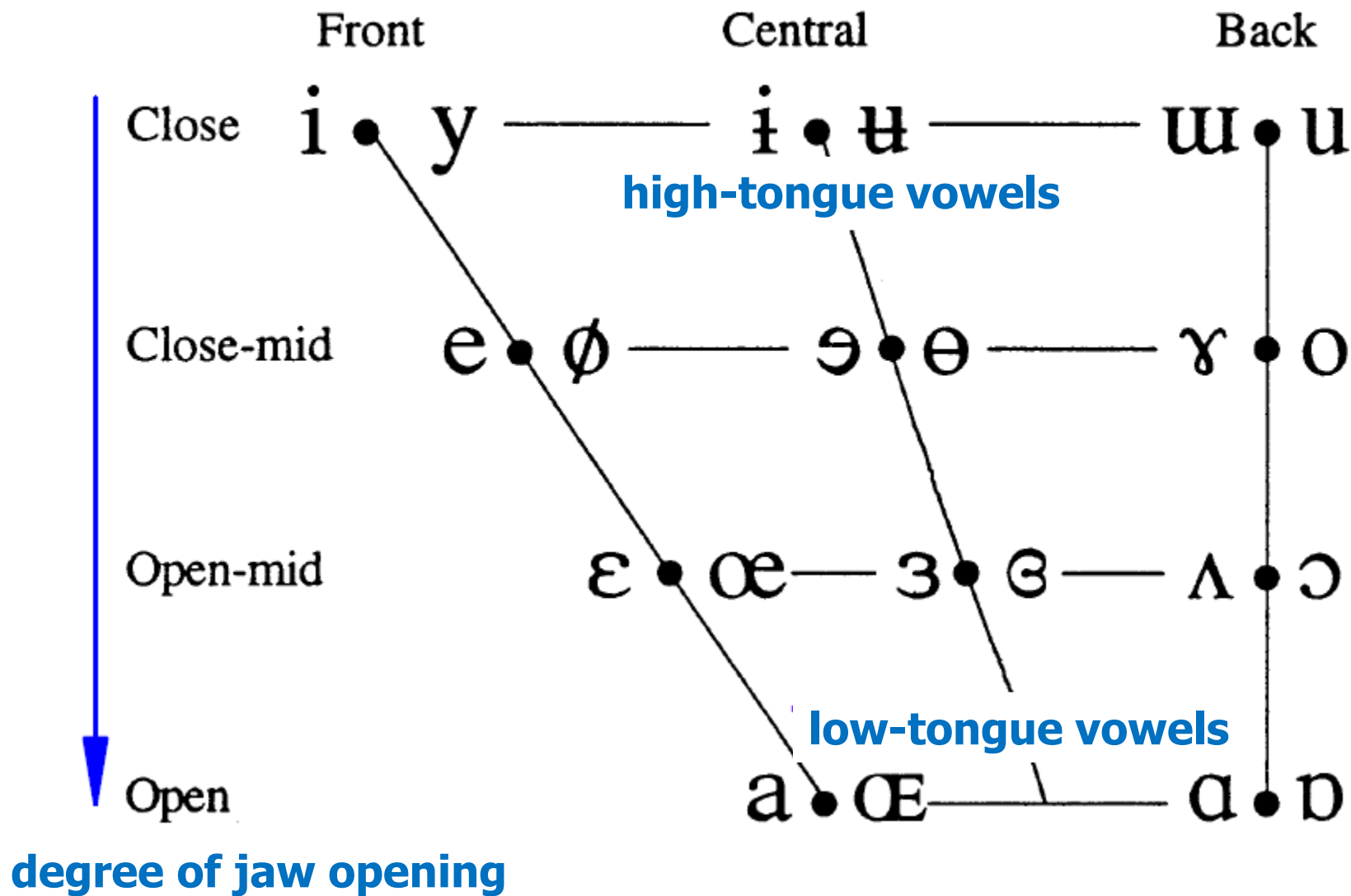
IPA: Vowels

VOWELS

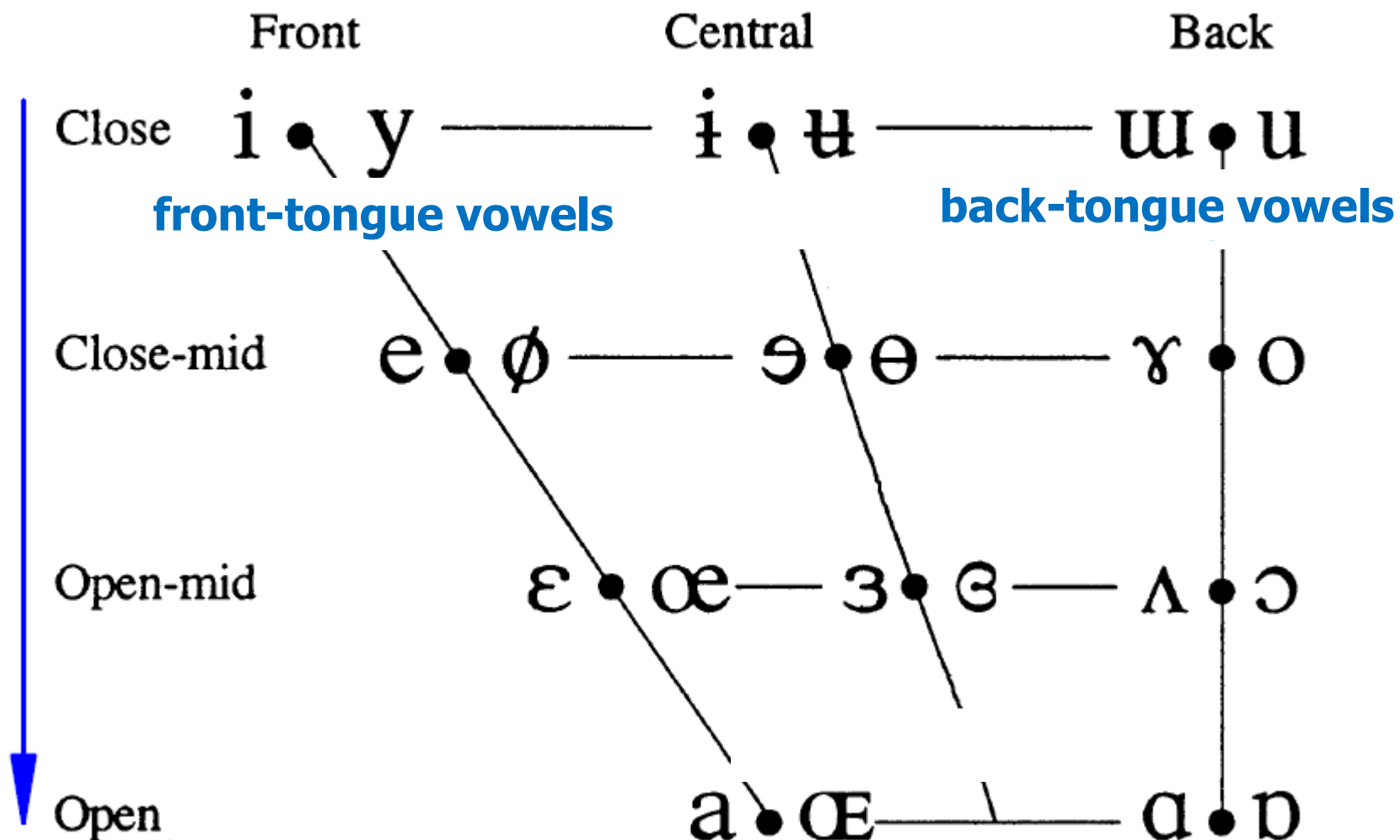


Where symbols appear in pairs, the one to the right represents a rounded vowel.

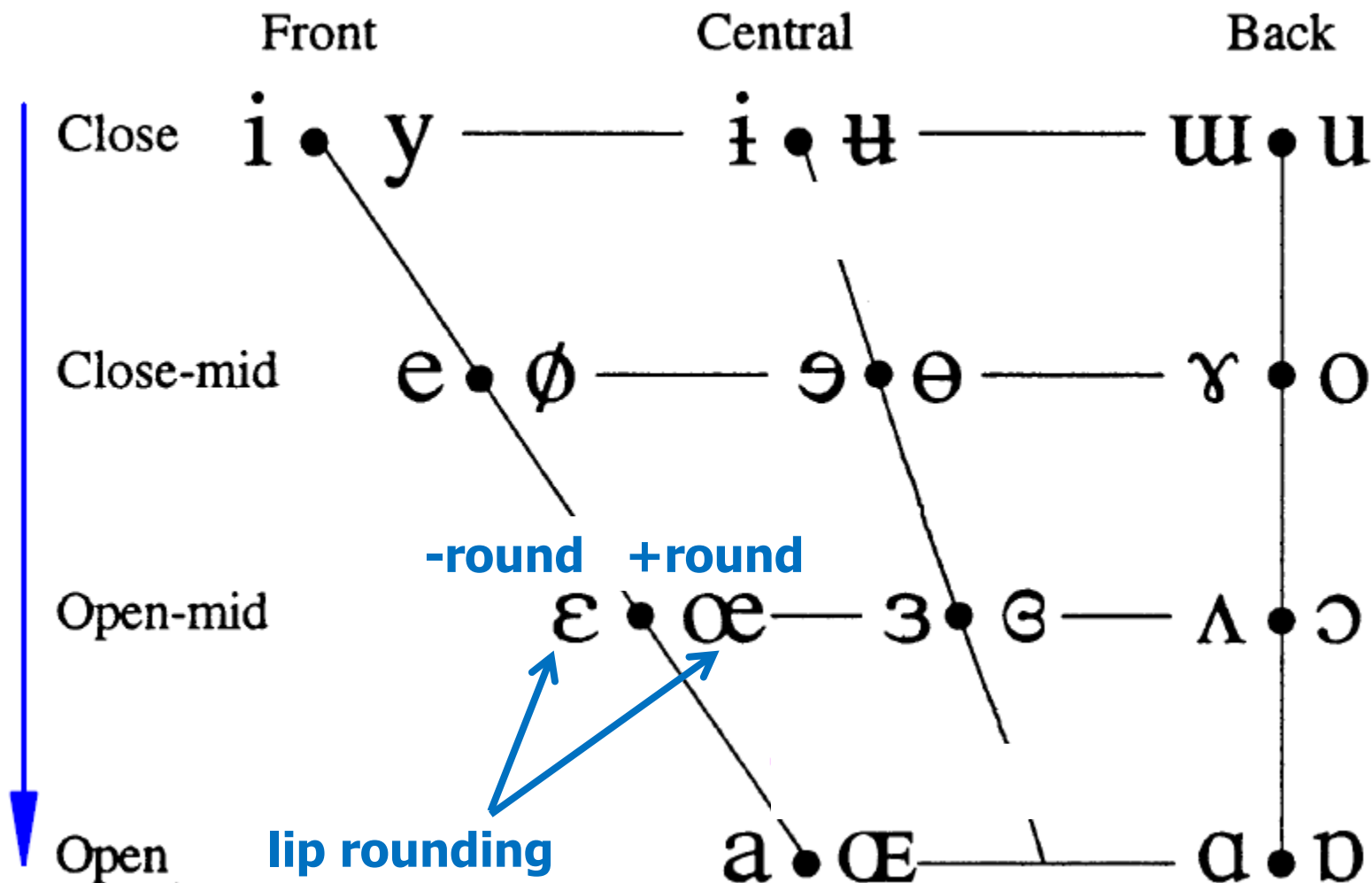
Vowels: high vs. low, open vs. closed



Vowels: front vs. back

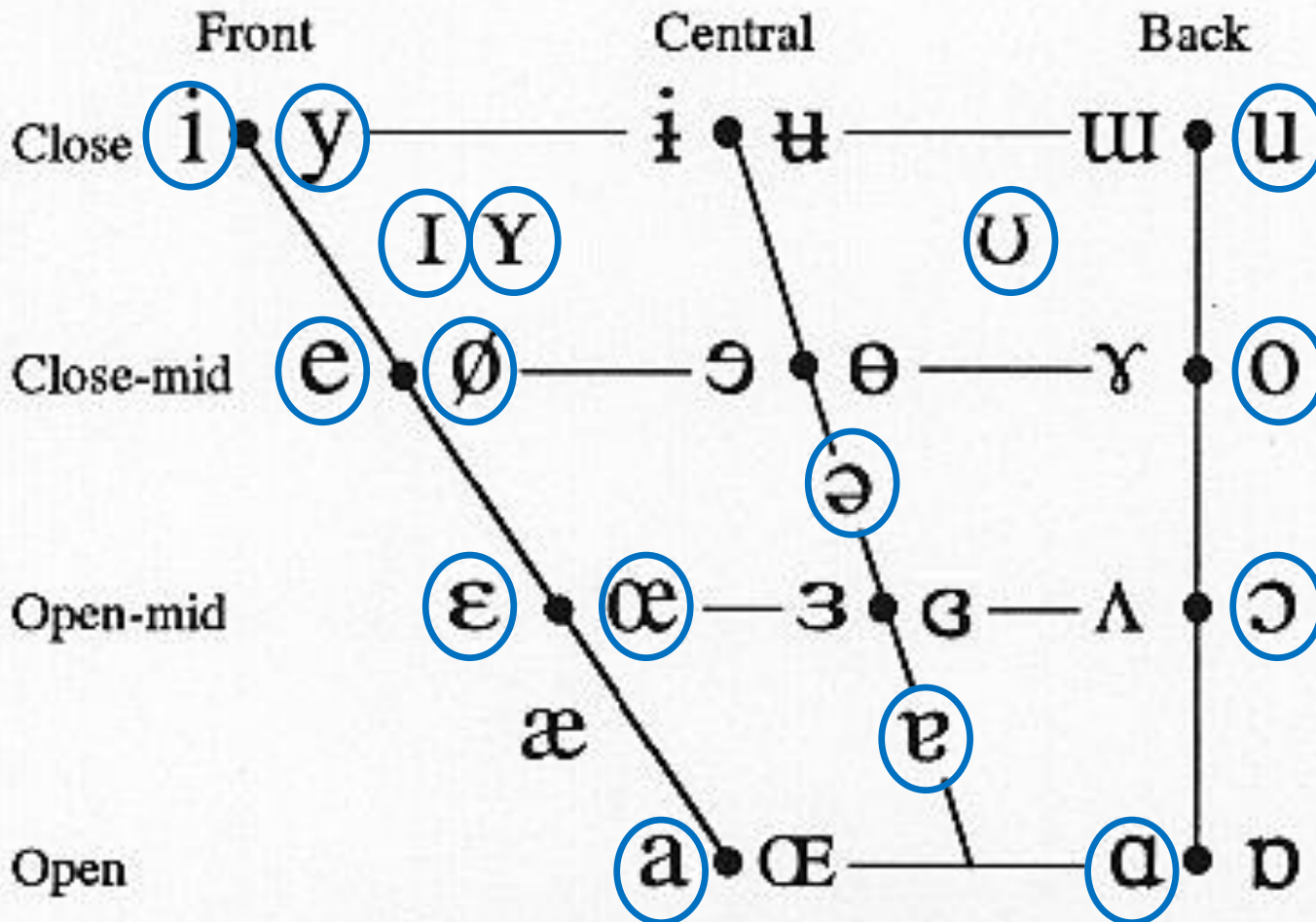


Vowels: unrounded vs. rounded



Vowels of German

VOWELS

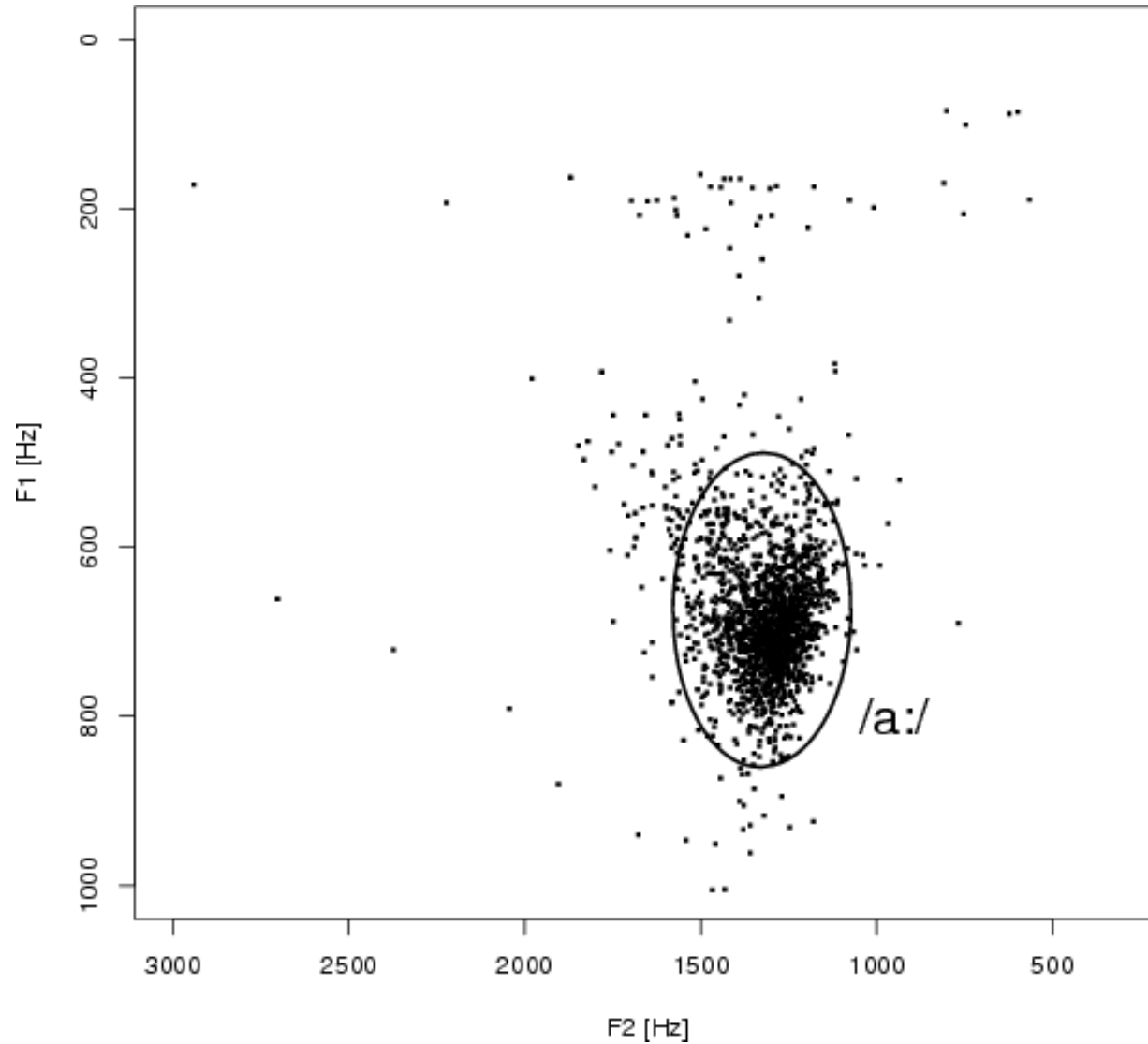


Where symbols appear in pairs, the one to the right represents a rounded vowel.

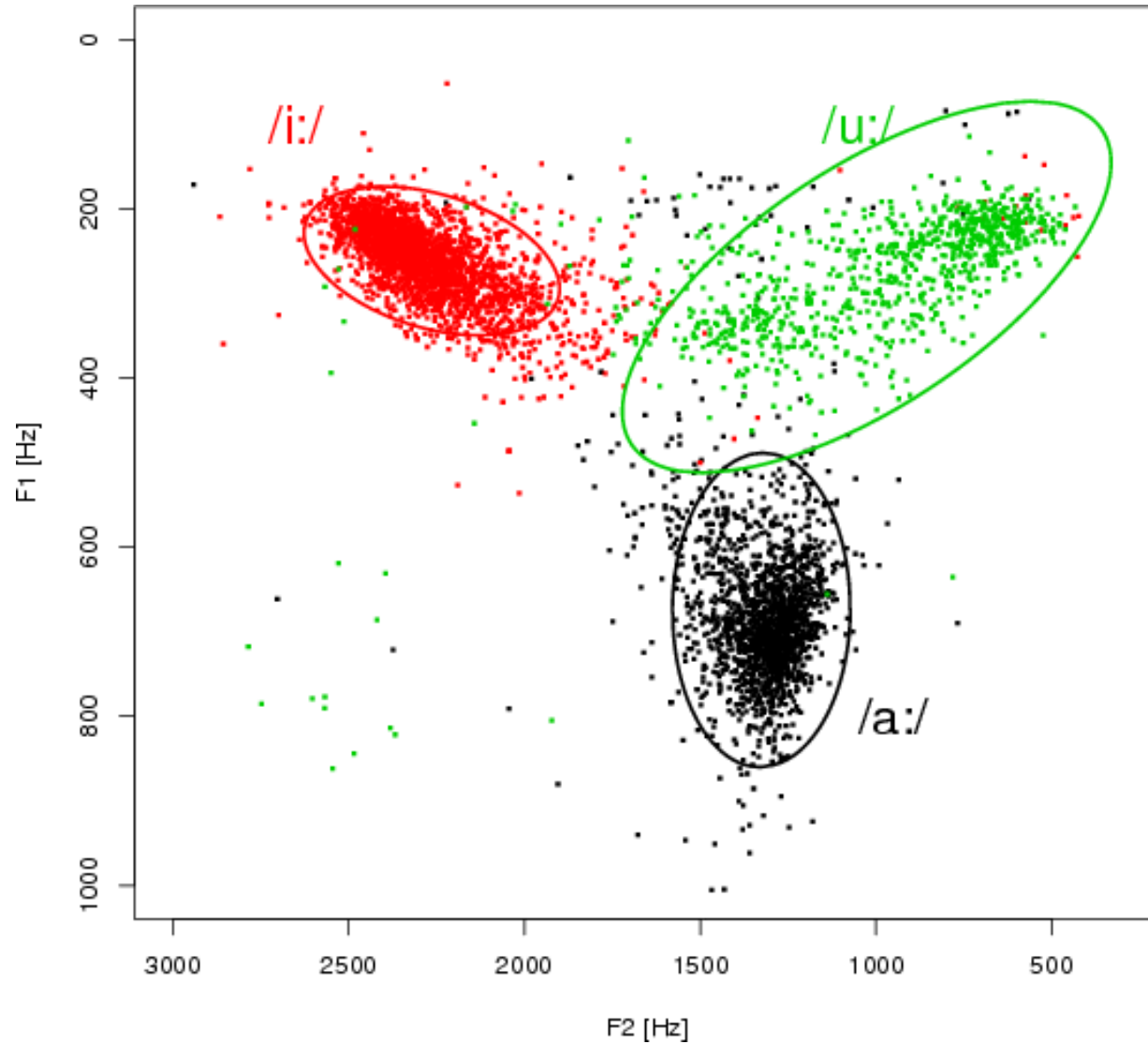
Vowels of German

| IPA | SAMPA | Beispiel | IPA | SAMPA | Beispiel |
|-----|-------|----------|-----|-------|----------|
| i: | i: | Miete | ɪ | ɪ | Mitte |
| y: | y: | Hüte | ʏ | ʏ | Hütte |
| e: | e: | beten | ɛ | E | betten |
| ɛ: | E: | 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 | e | 6 | Lehrer |
| aɪ | aɪ | Seite | aʊ | aU | Laube |
| ɔʏ | OY | heute | | | |

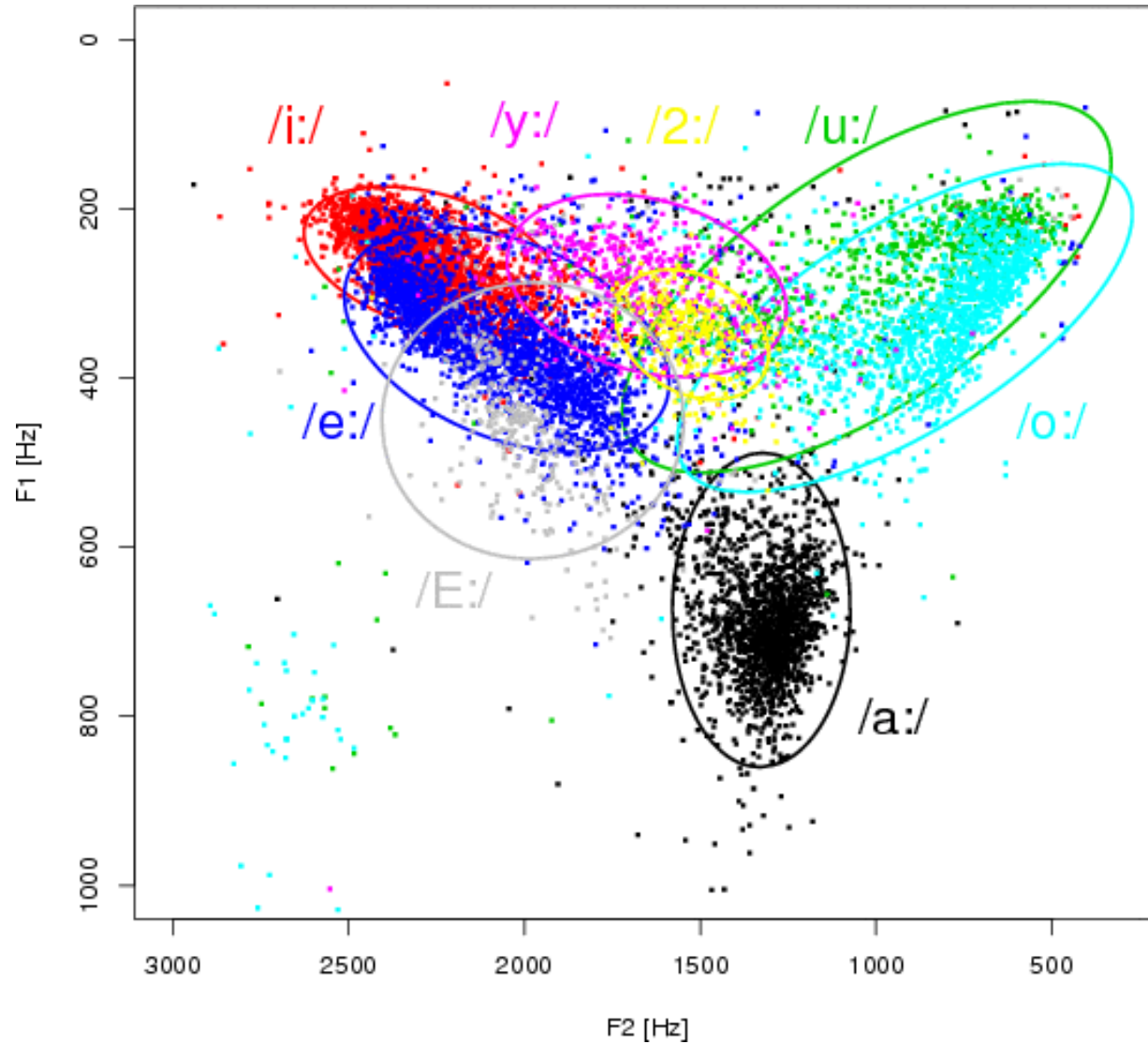
Vowel exemplars



Vowel exemplars



Vowel exemplars





Thanks!