The sounds of language

Phonetics

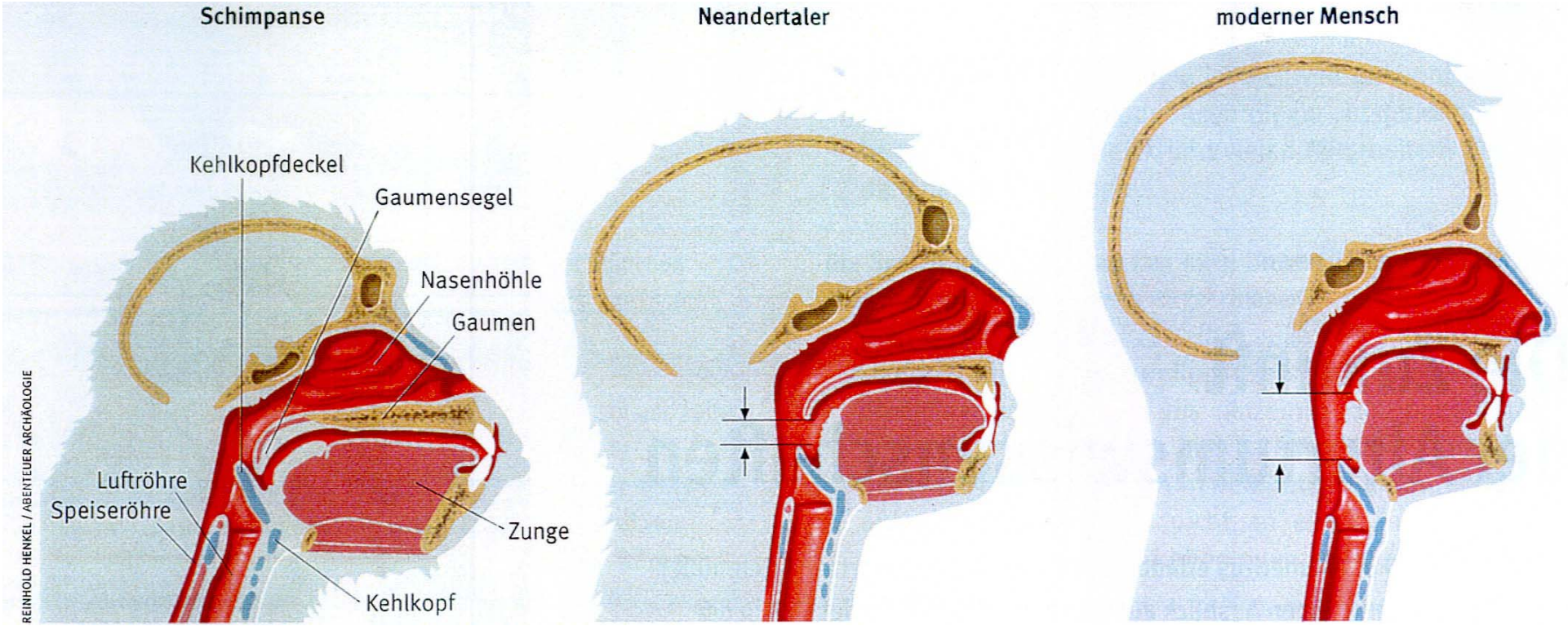
mya
3

~1.1m high, bipedal

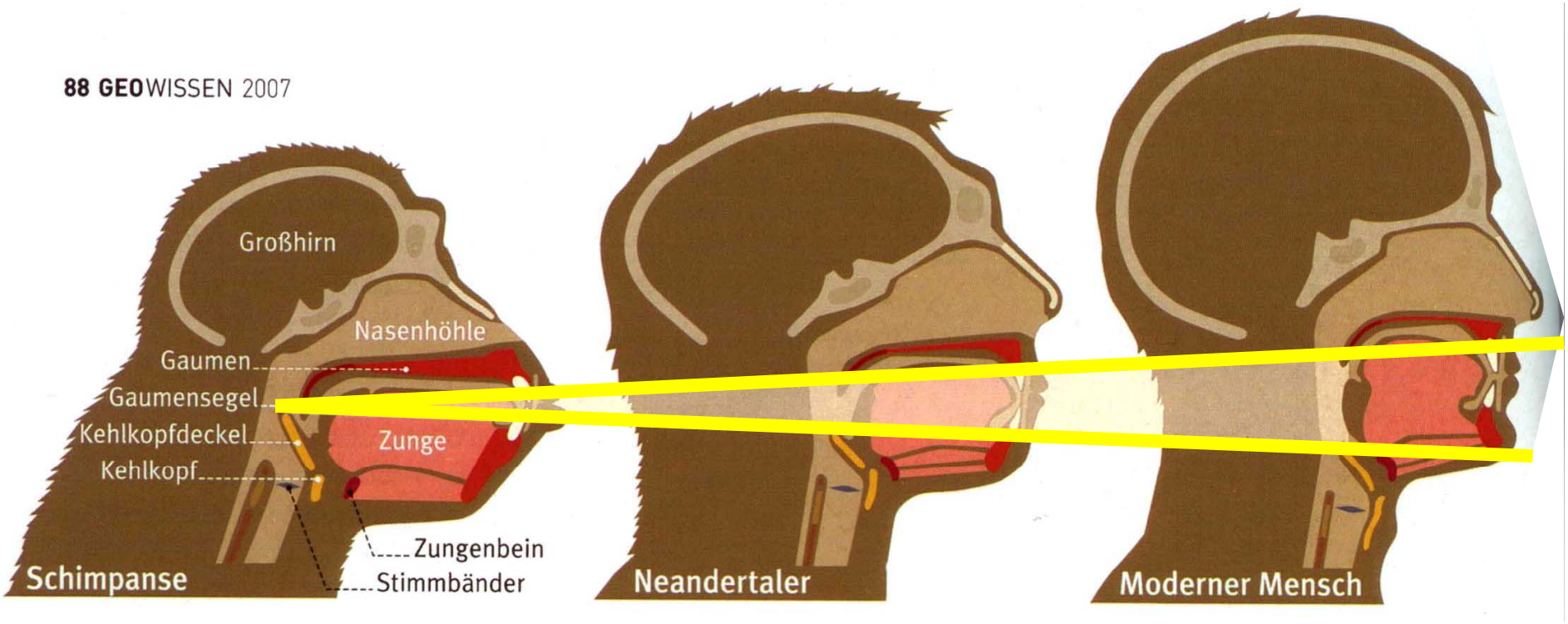
A. afarensis

Genus: Homo

Position of the ‘voice box’



From: Christel Stolz (2004)
“Neandertalisch für Anfänger”
Abenteuer Archäologie .**2:** 80-83.


Großhirn
Nasenhöhle
Gaumen
Gaumensegel
Kehlkopfdeckel
Zunge
Kehlkopf
Zungenbein
Stimmbänder
Schimpanse
Neandertaler
Moderner Mensch

Naïve phonetics…

- Careful with the tongue
- It must go here against the palette
- Then spit it out

- How did you put your tongue?
- Like this, between the teeth.

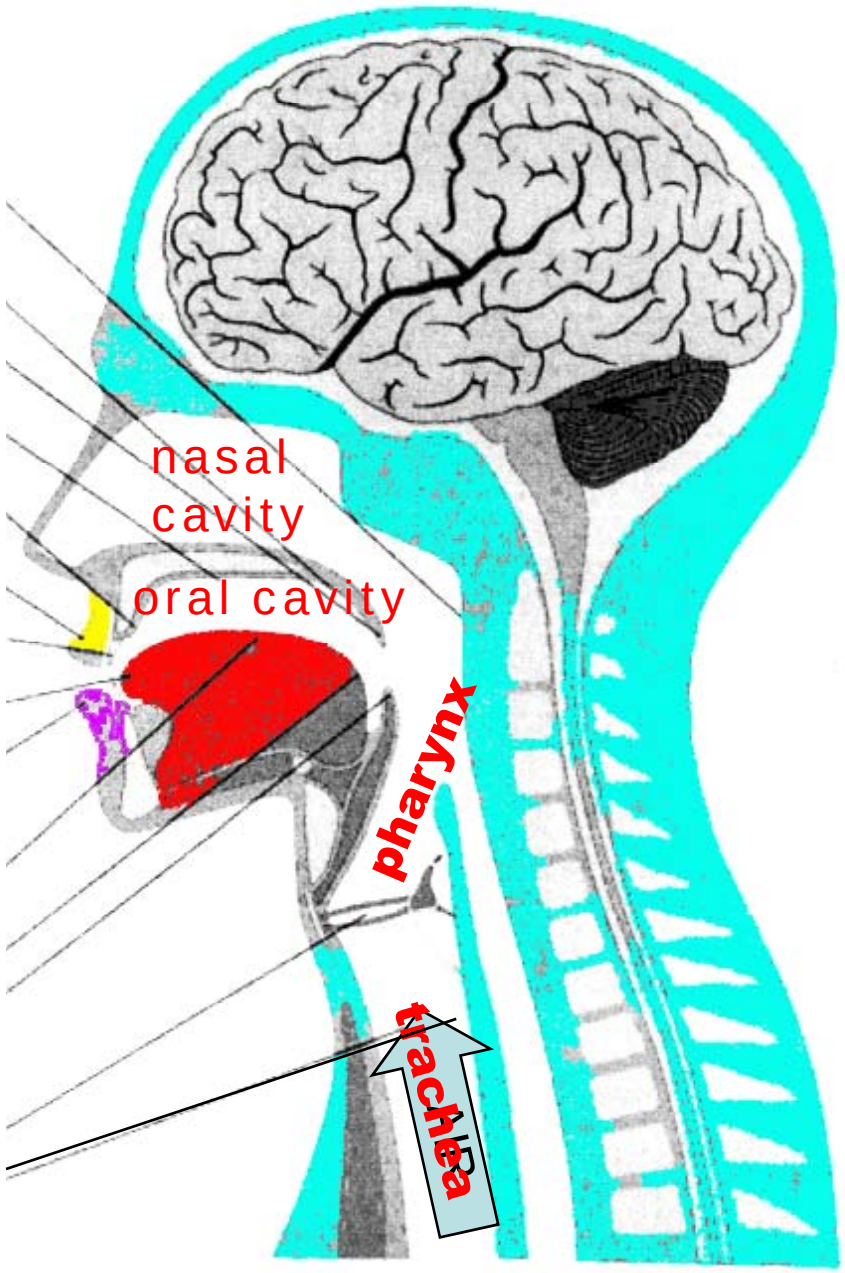
Fellini, *Amarcord*

How the sounds of language are made

articulators
- active
- passive

+

air flow



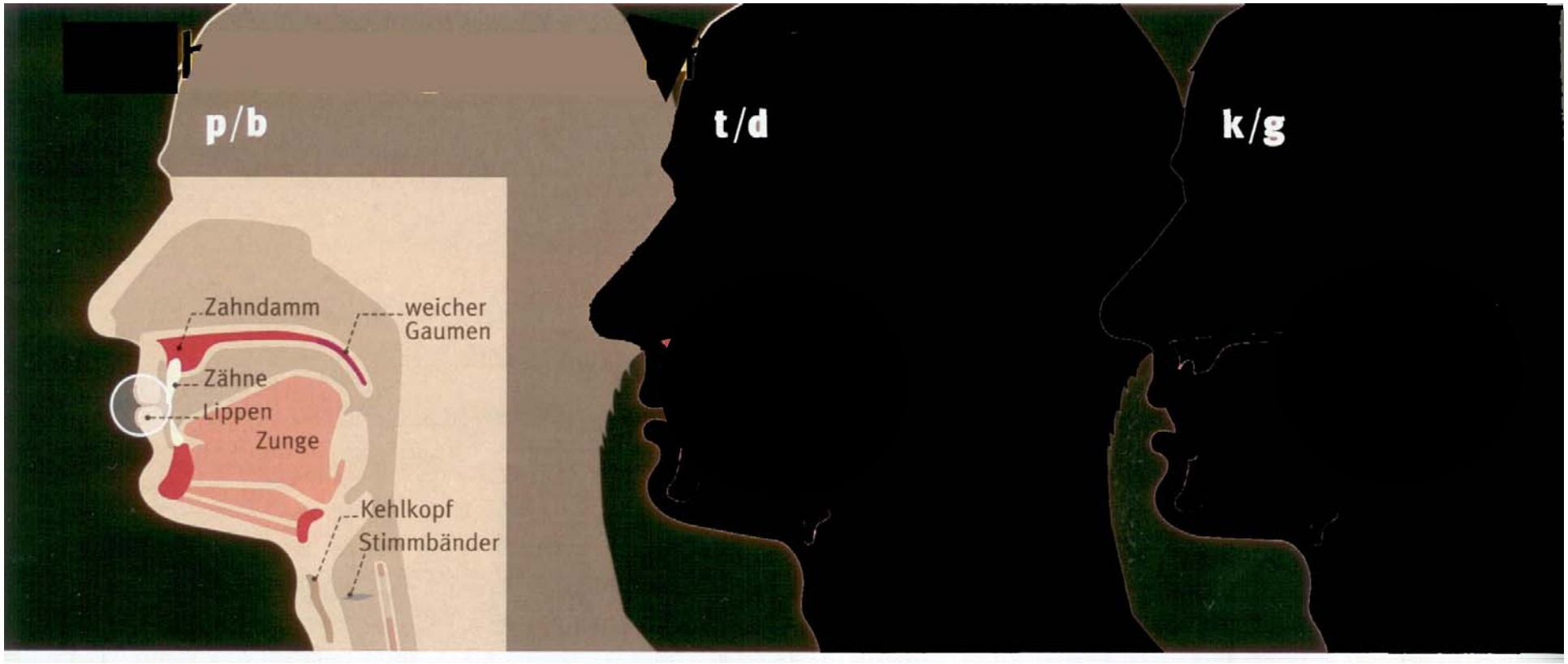
A. Stefanowitsch 2004

Individual sounds are defined by

- Place of articulation
  - lips (labial), teeth (dental), ridge behind the top teeth (alveolar), top of the mouth (palatal), top of the back of the mouth (velar), pharyngeal, glottal
- Manner of articulation
  - obstruents: stops (plosives), fricatives, affricates
  - sonorents: vowels, nasals, approximants
- Voicing
- Nasality

Segmental phonetics

“Voicing” (stimmhaft / stimmlos)



GeoWissen 40 (2007: p114)

Suprasegmental phonetics (intonation / prosody)

- Pitch
- Intensity

Describing segmental phonetics

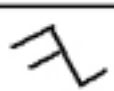
- Voicing
- Nasality
- Place
- Manner
  - **obstruents**: plosives, fricatives, affricates
  - **sonorents**: vowels, nasals, approximants

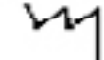
Classifying segments

cat	voicing?	nasality?	place?	manner?

Problem:

lots and lots (and lots) of different sounds, how to represent them?

	Proto-Canaanite	Early Phoenician	Greek	Hebrew
ʾ			A	א
b			B	ב
g			Γ	ג
d			Δ	ד
h			E	ה
w			Y	ו
z			Z	ז
ḥ			H	ח
ṭ			Θ	ט
y			I	י
k			K	כ ך

	Proto-Canaanite	Early Phoenician	Greek	Hebrew
l			Λ	ל
m			M	מ ם
n			N	נ ן
s			Ξ	ס
ʿ			O	ע
p			Π	פ ף
ṣ			M	צ ץ
q			Φ	ק
r			P	ר
š			Σ	ש
t			T	ת

‘Orthography’ – spelling

Beware of heard, a dreadful word
That looks like beard and sounds like bird.
And dead; it’s said like bed, not bead;
For goodness sake, don’t call it deed!
Watch out for meat and great and threat
(They rhyme with suite and straight and debt).
A moth is not a moth in Mother,
Nor both in bother, broth in brother.

Richard Krogh

cited in O’Grady *et al.* (1996) *Contemporary Linguistics: an Introduction.*

Problem:

writing systems based on sounds/pronunciations may depend on the phonological systems of their respective languages


マクドナルド
ハンバーガー

Japanese orthography pushes all sounds to be **syllables**

マク ドナル ドハンバーガー

ma ku do na ru do ha n ba-a ga-a

McDonald’s Hamburger

And

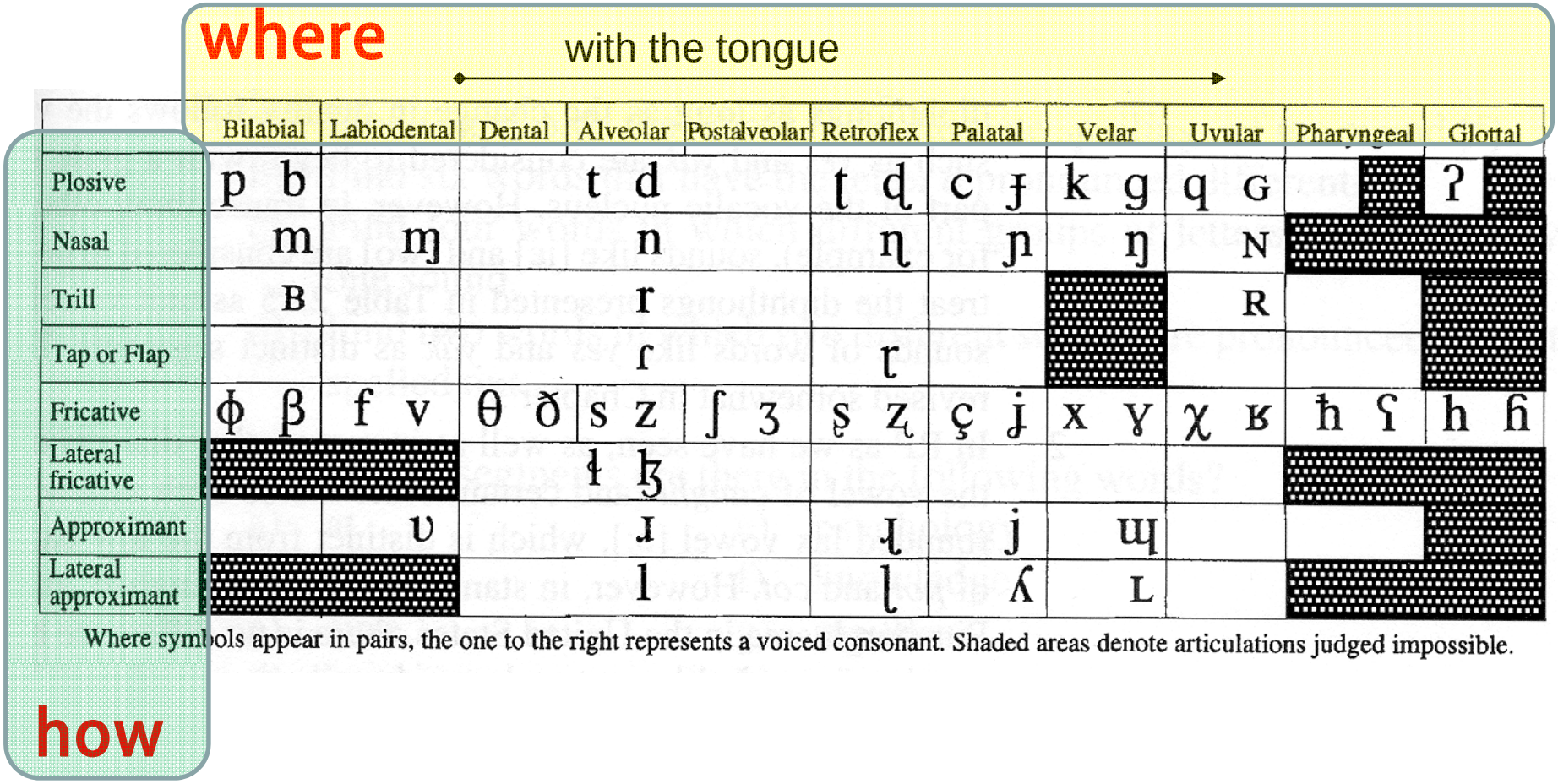
Problem:

however a writing system works,
its users will pronounce things
consistently **with their own**
language

How to solve this problem?

how to obtain a written representation that does **not** depend on the phonological systems of some particular language?

International Phonetic Alphabet (IPA)



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

Sounds of English: IPA

p	**p**a**p**a
b	**b**ravo
t	**t**ango
d	**d**elta
k	**k**ilo
g	**g**olf
f	**f**oxtrot
v	**v**ictor
θ	**th**eatre
ð	**th**at

s	**s**ierra
z	**z**ulu
ʃ	**sh**amble
ʒ	mea**s**ure
h	**h**otel
l	**l**ima
ɹ	**r**omeo
j	**y**ankee
w	**wh**isky

m	**m**ike
n	**n**ovember
ŋ	ri**ng**
t ʃ	**ch**ur**ch**
d ʒ	ju**dg**e

Classifying segments

cat	voicing?	nasality?	place?	manner?
du**n**e	voicing?	nasality?	place?	manner?

IPA
?
?

An IPA symbol is also an instruction for how the sound is produced!

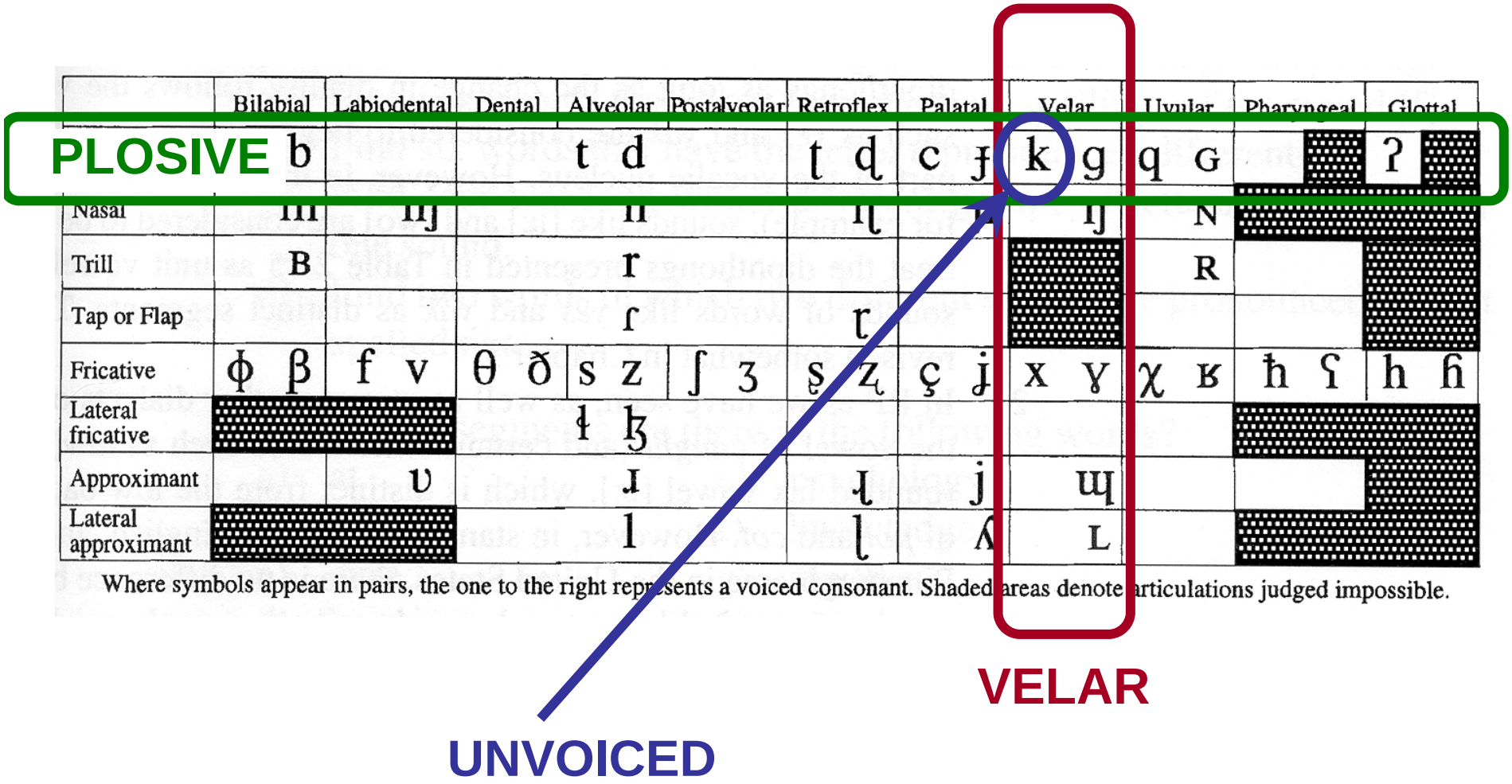
Classifying segments

cat	voicing?	nasality?	place?	manner?

IPA
?

International Phonetic Alphabet (IPA)

VELAR, PLOSIVE, UNVOICED



	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	b			t d		ʈ ɖ	c ɟ	k	g	q ɢ		ʔ	
Nasal	m	ɱ		n		ɳ		ŋ		N			
Trill	B			r						R			
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					

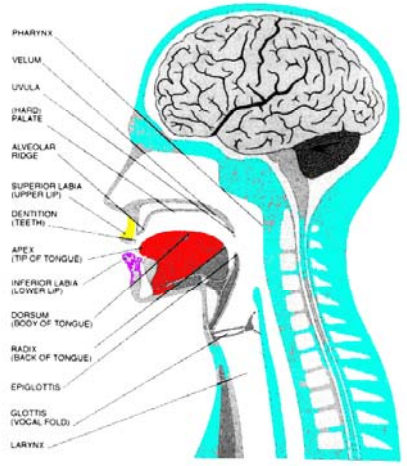
Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

Classifying segments

cat	voicing?	nasality?	place?	manner?
	NO	**NO**	**VELAR**	**STOP**

IPA

k



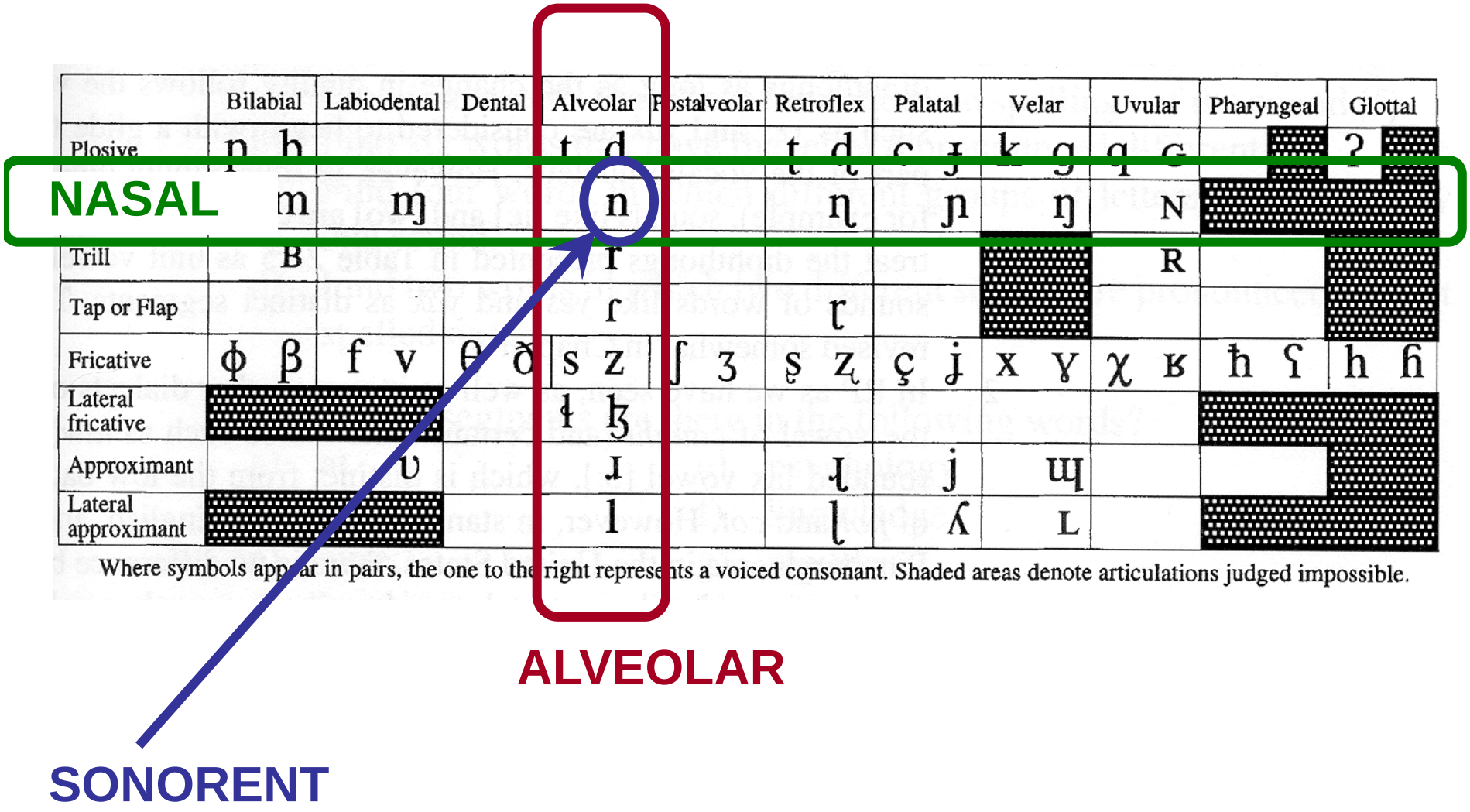
Classifying segments

du**n**e	voicing?	nasality?	place?	manner?

IPA
?

International Phonetic Alphabet (IPA)

ALVEOLAR, NASAL, CONTINUANT

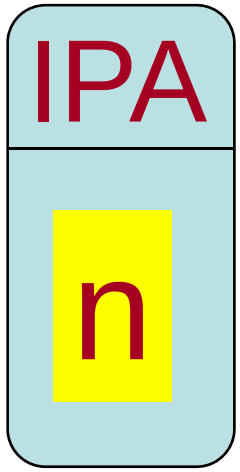


	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant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

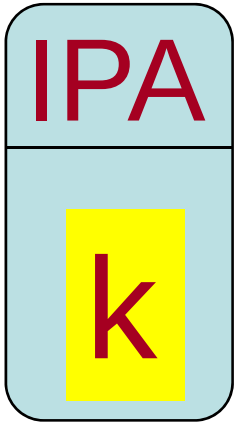
Classifying segments

du**n**e	voicing?	nasality?	place?	manner?
	YES	**YES**	**ALVE-OLAR**	**SONO-RENT**



An IPA symbol is also an instruction for how the sound is produced

Describing Sounds



voicing?	nasality?	place?	manner?
NO	**NO**	**VELAR**	**STOP**

a ‘bundle’ of
phonetic features

[k]

$$\begin{bmatrix} -\text{voiced} \\ -\text{nasal} \\ +\text{velar} \\ +\text{stop} \end{bmatrix}$$

Linguistic features

- We always use linguistic features
  - phonetic features
  - syntactic features
  - phonological features
  - morphological features

to make **generalisations**

The tongue has a lot of work to do!

Homework

IPA exercises in Chapter 1 of the Set Book

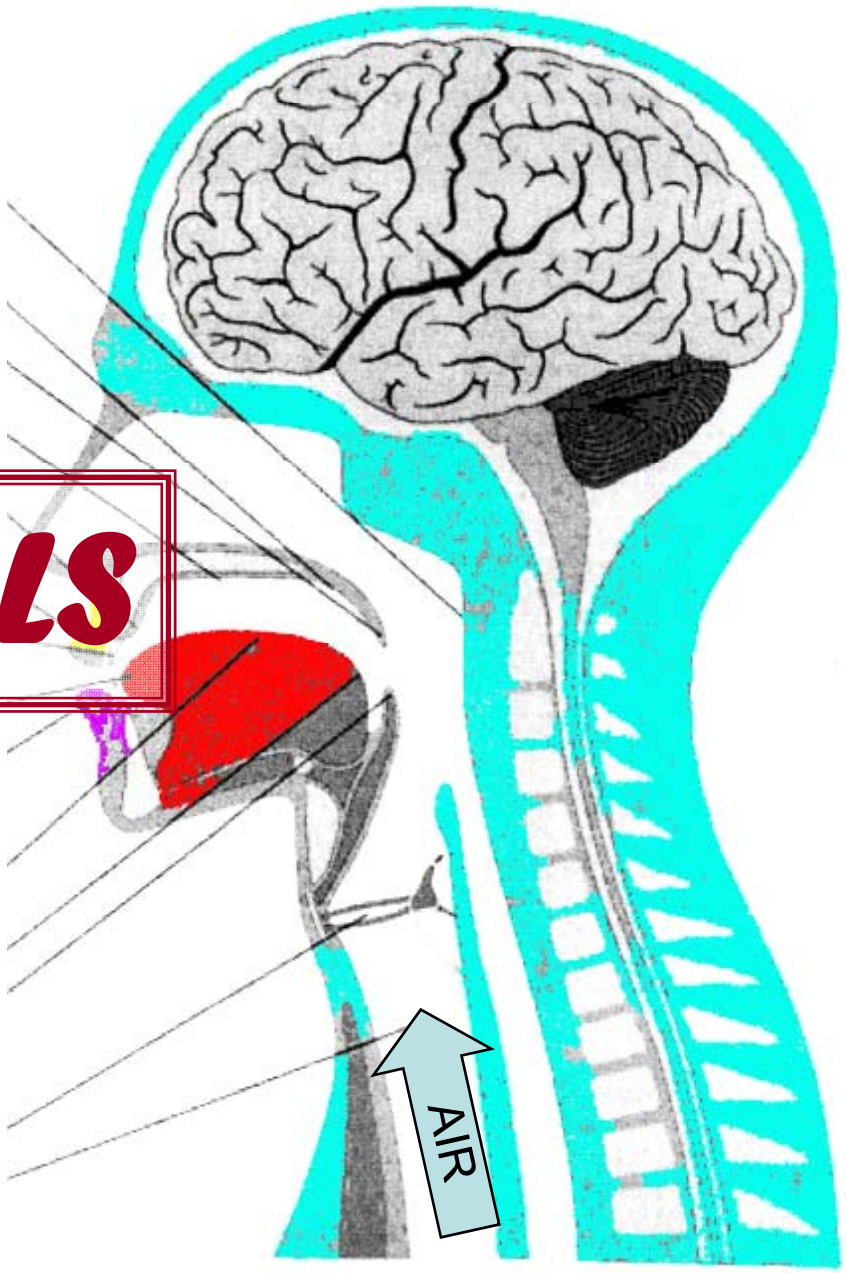
How the sounds of language are made

VOWELS

articulators
- active
- passive

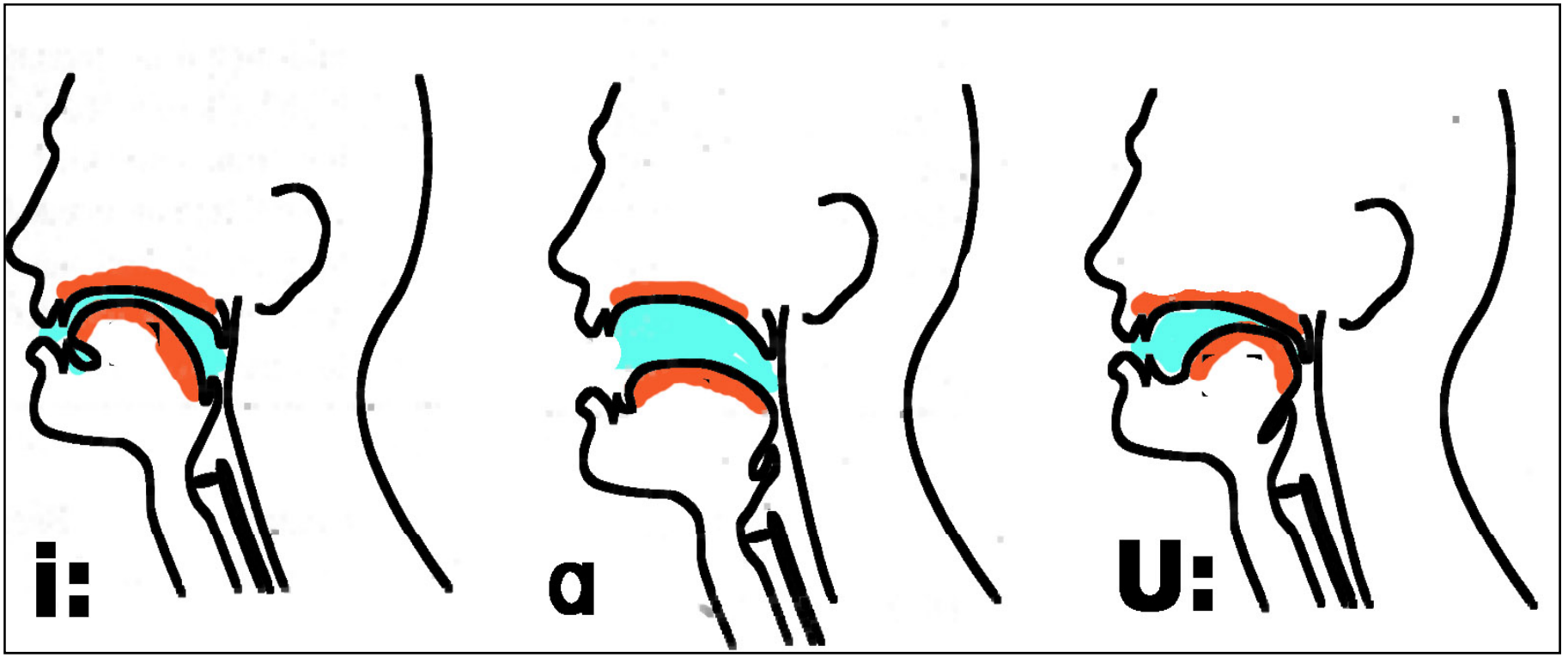
+

air flow

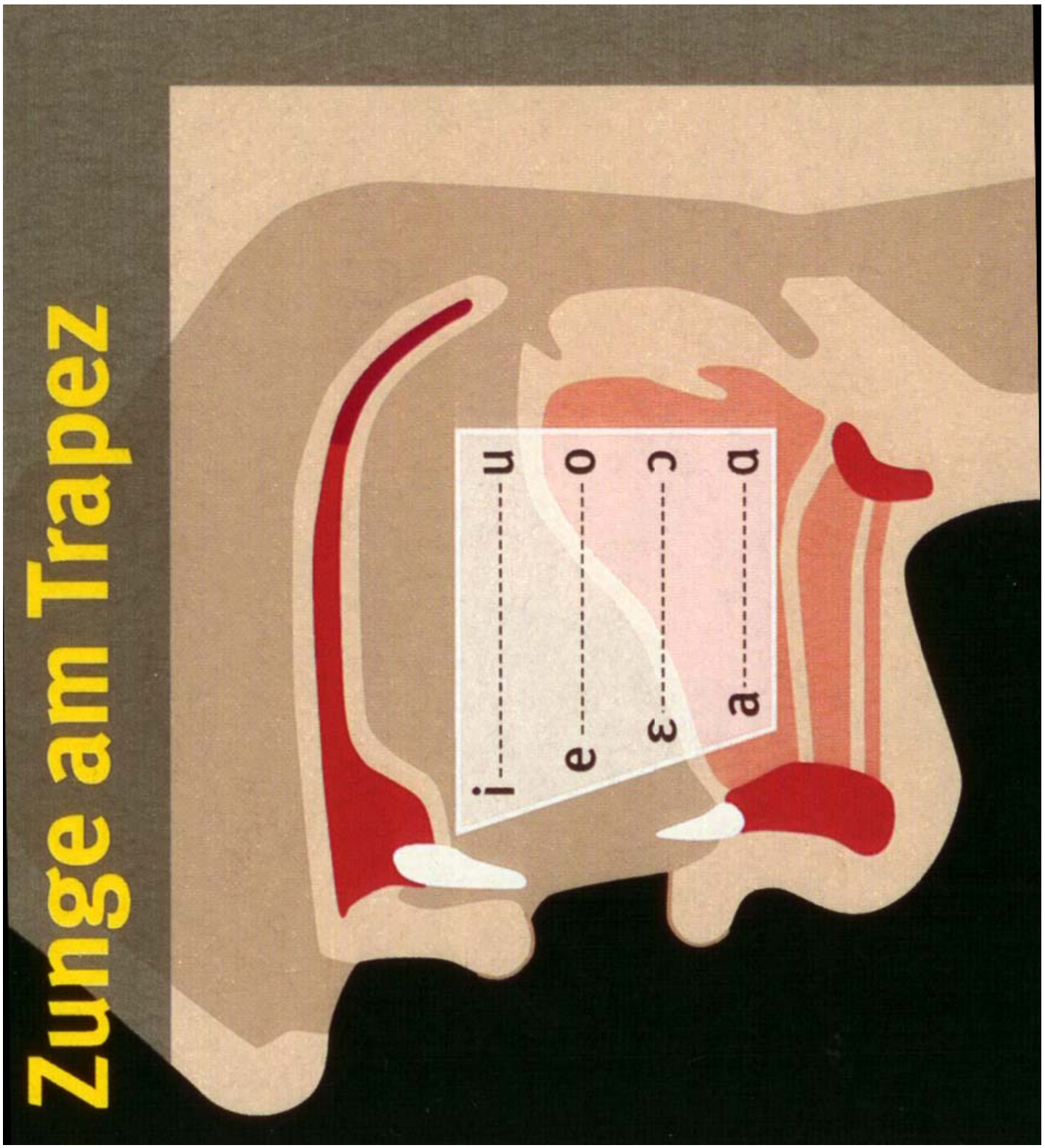


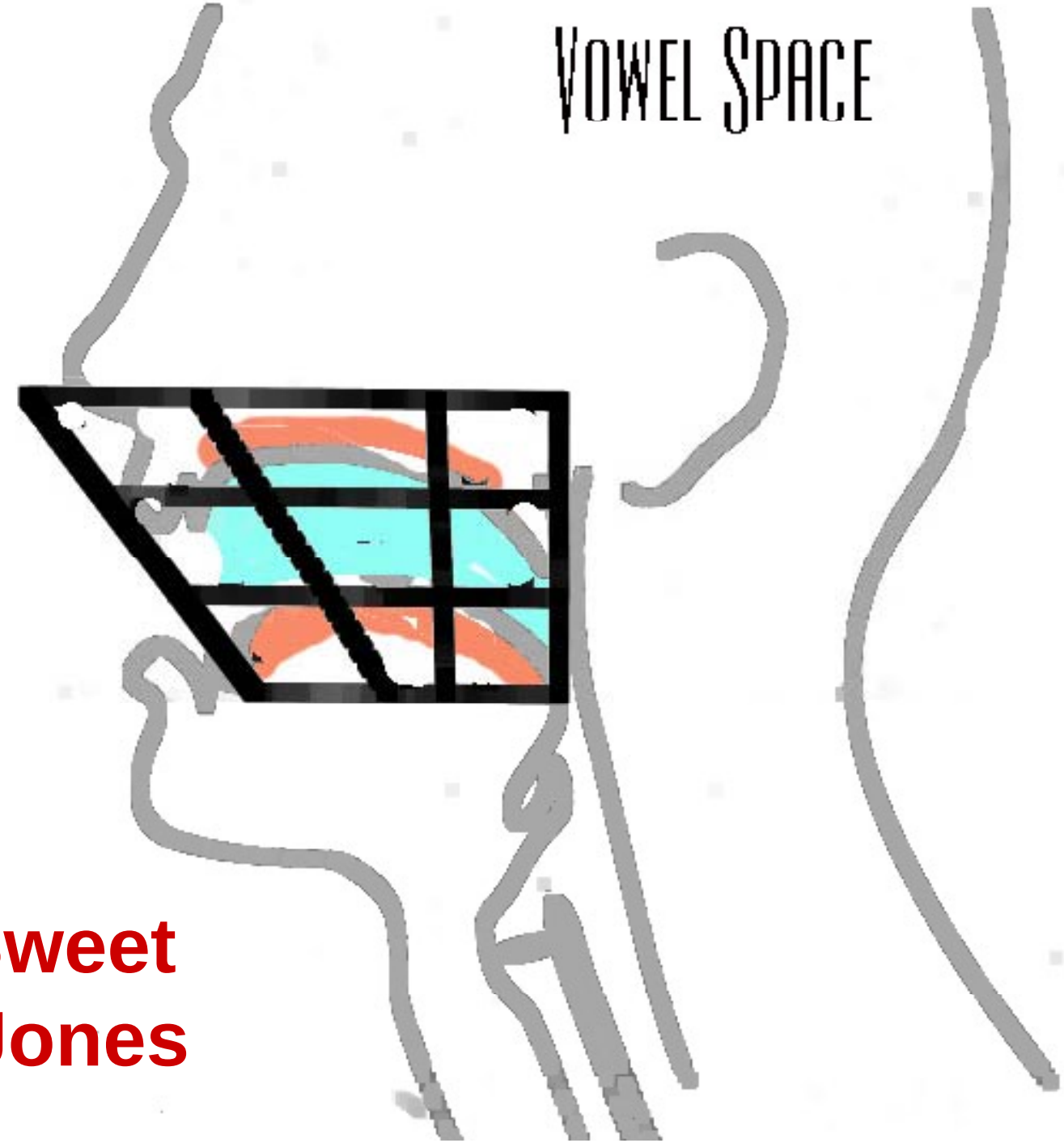
A. Stefanowitsch 2004

Vowels: how they are made...



GeoWissen 40 (2007: p115)





Henry Sweet
Daniel Jones

Vowel space: English

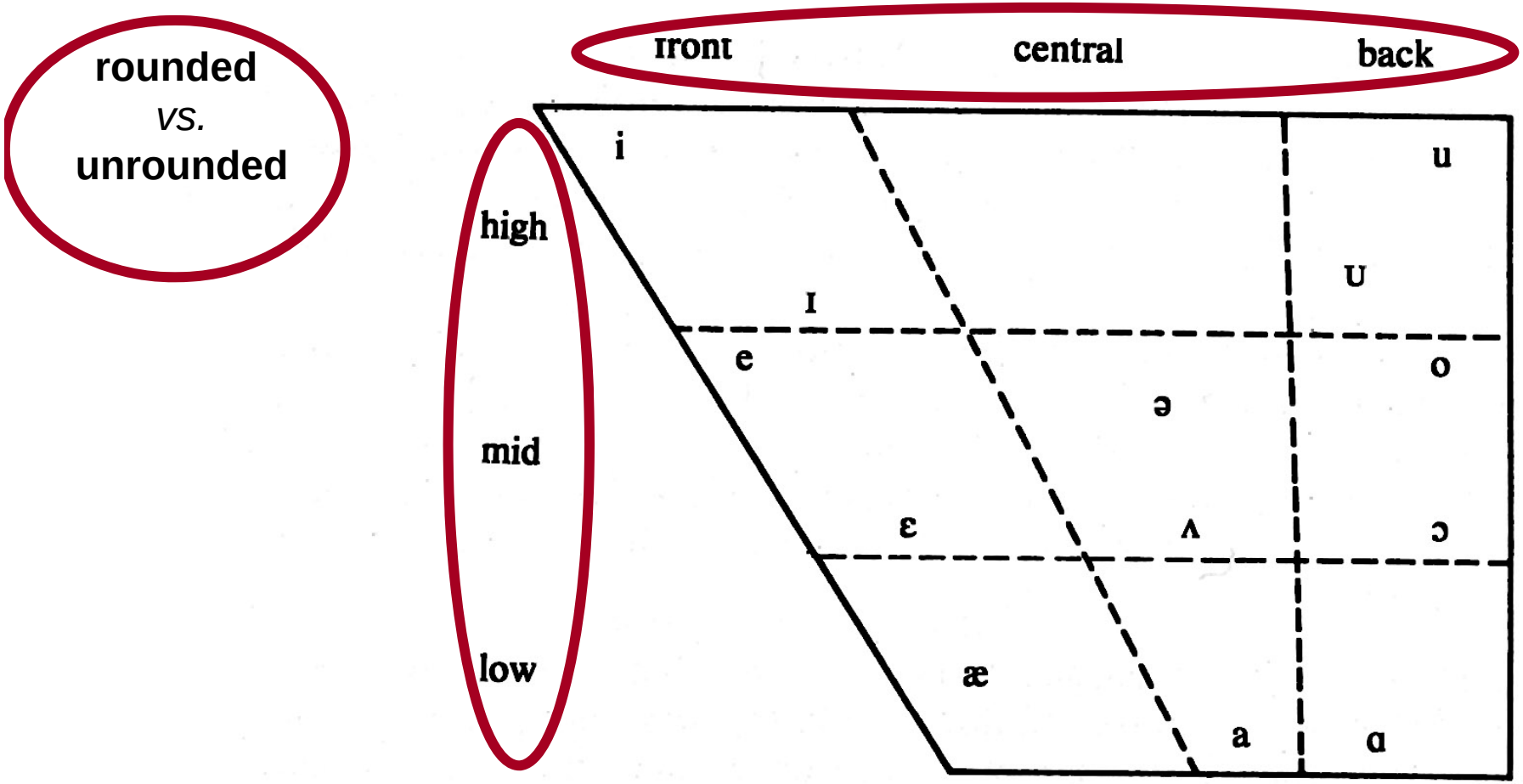


FIGURE 2-4
The Vowels of English

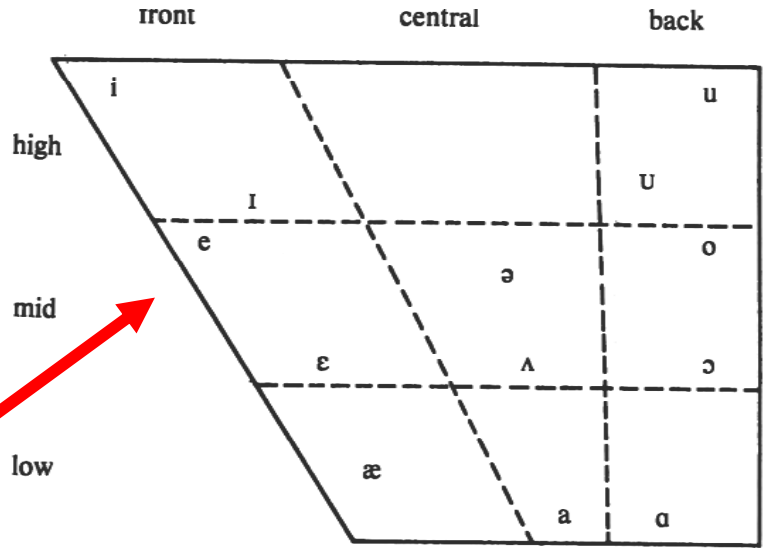
(from Finegan, 1989)

Describing Vowels

- front *vs.* central *vs.* back
- high *vs.* mid *vs.* low
- rounded *vs.* unrounded

Vowel space: example words

(from Finegan, 1989)



i	Pete, beat
ɪ	pit, bit
e	late, bait
ɛ	pet, bet
æ	pat, bat

front

ə	*a*bout, sof*a*
ʌ	putt, but
a	park (in Boston)

central

u	pool, boot
ʊ	put, foot
o	poke, boat
ɔ	port, bought
ɑ	pot, father

back

US pronunciations

Vowel Sounds of English: Exercise

IPA	example	position	height	round
	ch**ee**k	front	high	no
	t**i**p			
	b**e**g			
	b**a**g			
	c**u**rse			
	deliv**er**			
	t**u**ck			
	h**oo**p			
	p**u**ll			

	f**o**rce
	sp**o**t
	m**a**rch

UK pronunciations

Vowel Sounds of English: Exercise

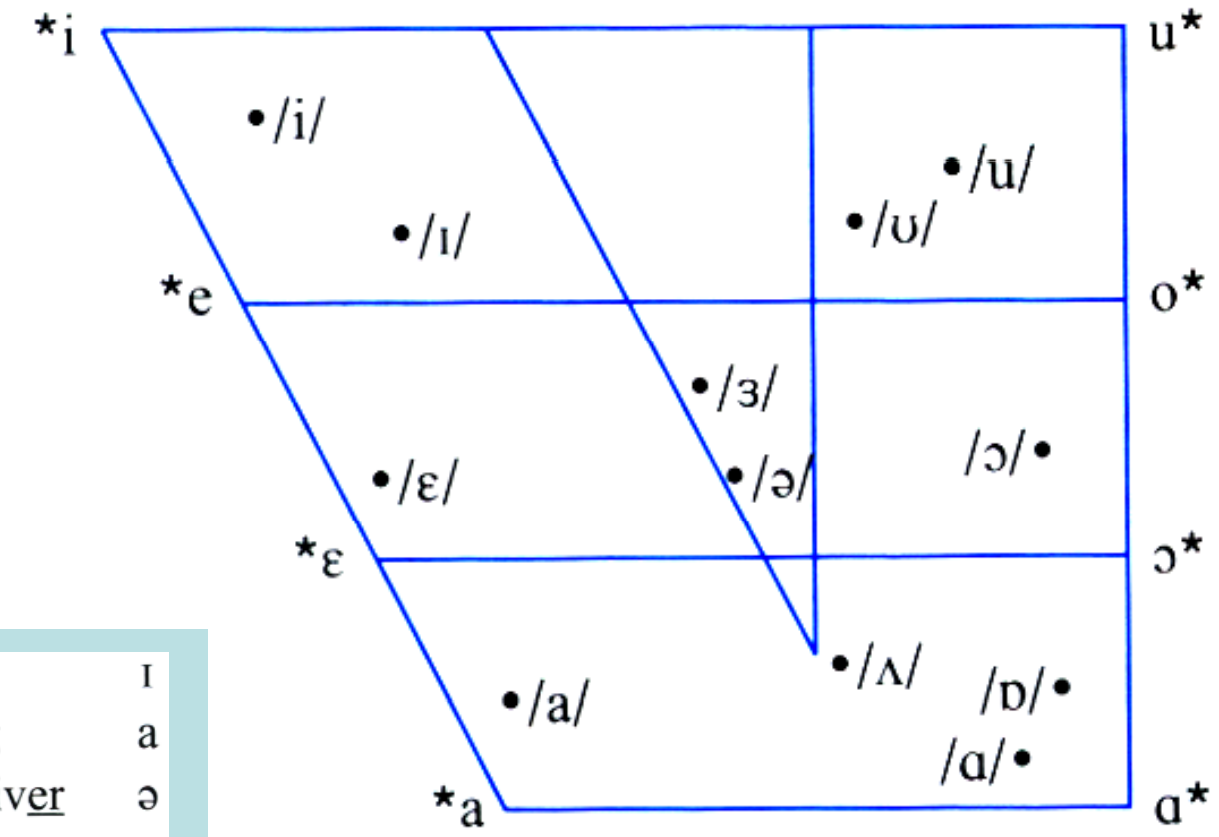
IPA	example	position	height	round
i	ch**ee**k	front	high	no
ɪ	t**i**p			
ɛ	b**e**g			
a	b**a**g			
ɜ	c**u**rse			
ə	deliv**er**			
ʌ	t**u**ck			
u	h**oo**p			
ʊ	p**u**ll			

ɔ	f**o**rce
ɒ	sp**o**t
ɑ	m**a**rch

UK pronunciations

English Monophthongs

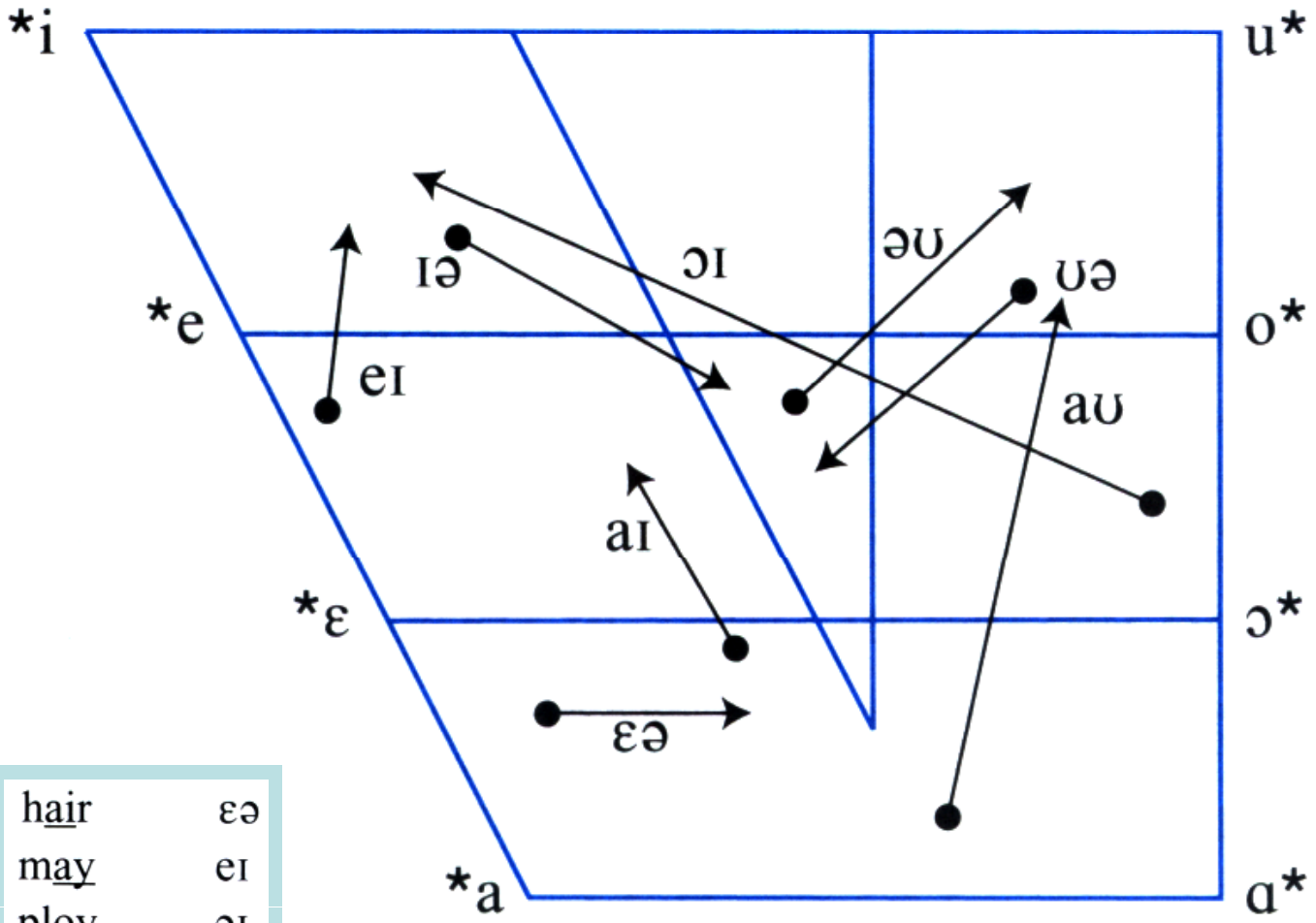
Bloomer et al *Language in use* p256



cheek	i	tip	ɪ
beg	ɛ	bag	a
curse	ɜ	deliver	ə
tuck	ʌ	hoop	u
pull	ʊ	force	ɔ
spot	ɒ	march	ɑ

English Diphthongs

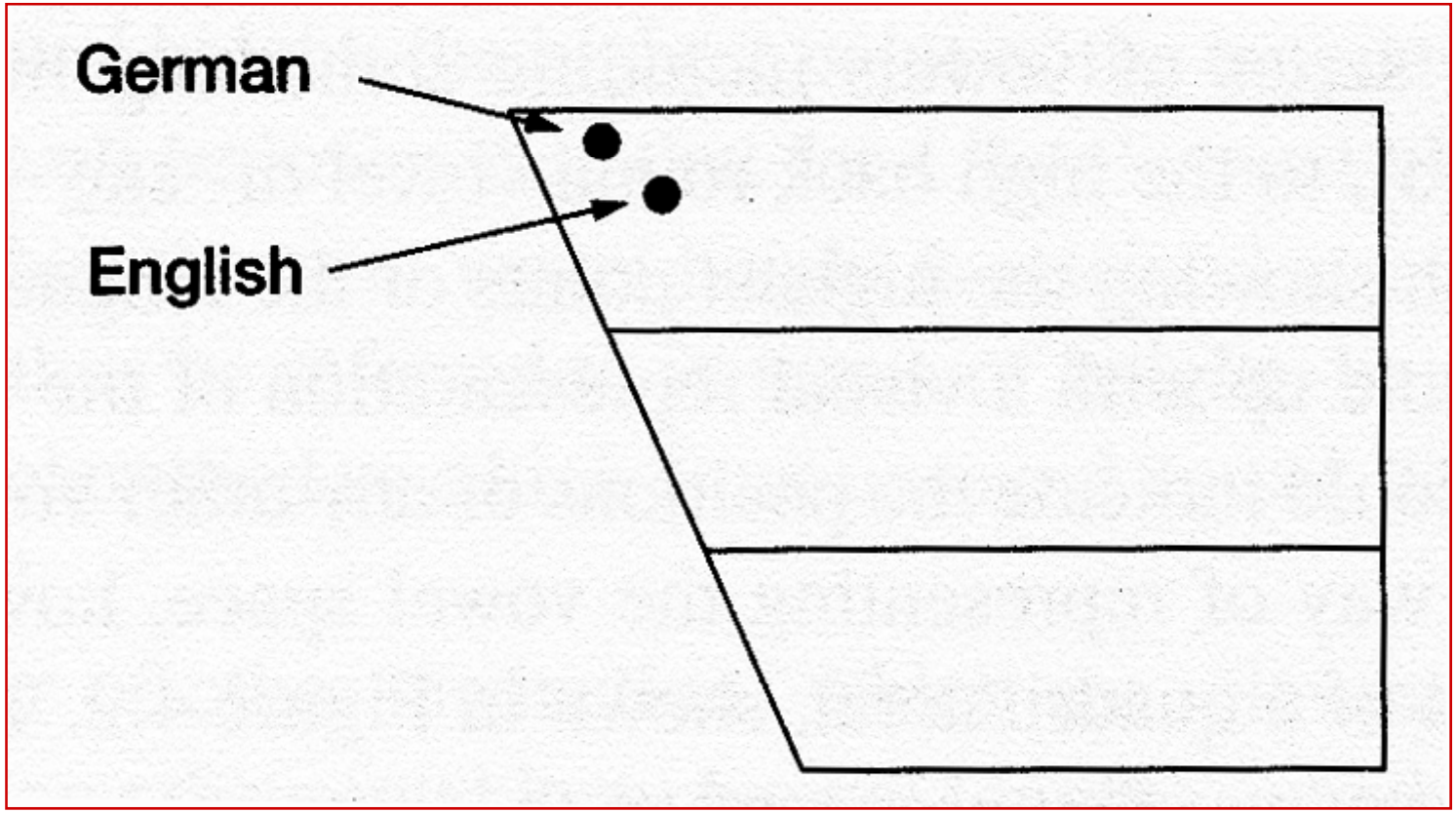
Bloomer et al *Language in use* p256-7



fear	ɪə	hair	ɛə
lure	ʊə	may	eɪ
spy	aɪ	ploy	ɔɪ
dough	əʊ	now	aʊ

Languages are often subtly different – even when they might appear to be the same!

Precise vowel placements

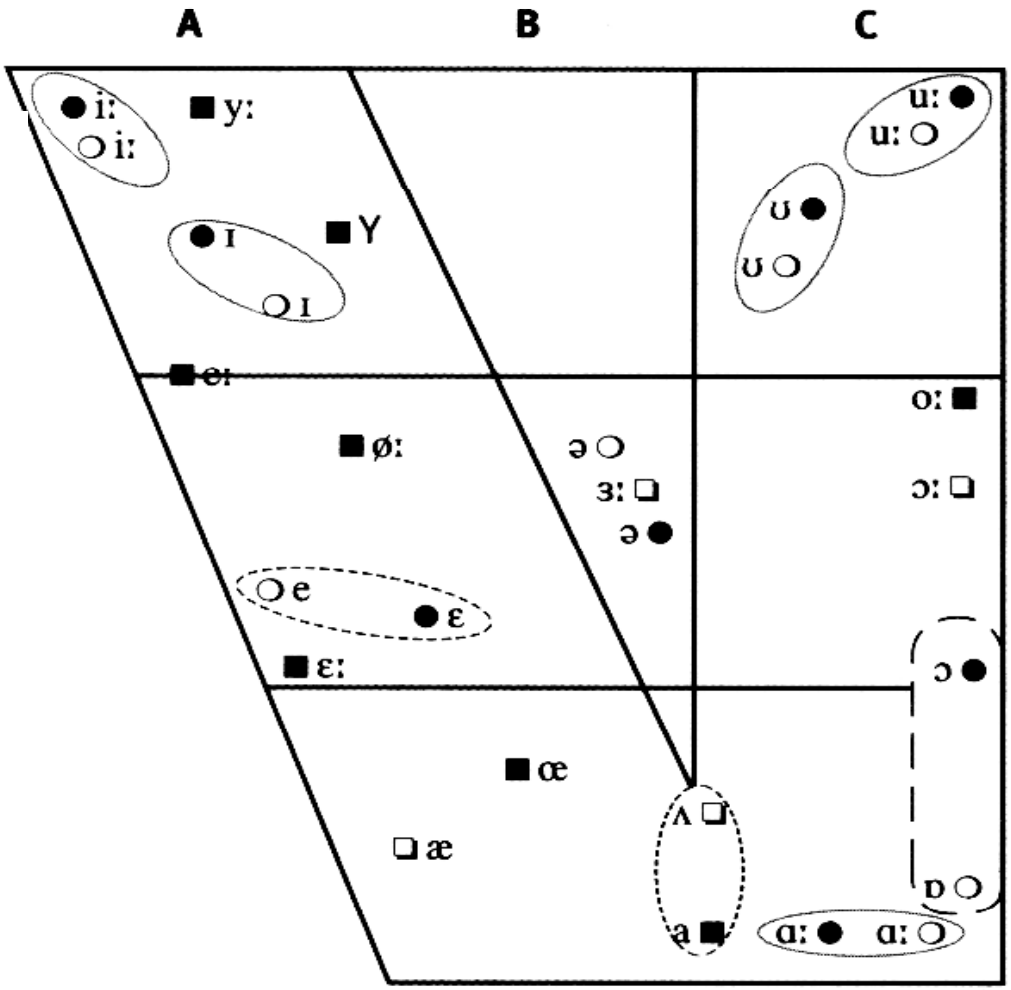


English [i] as in ‘see’ vs. German [i] as in ‘sie’

German & English: in contrast

A. Front vowels

	English	German
/iː/	fee	Vieh
/ɪ/	sin	in
/yː/	–	Mühle
/ʏ/	–	Müll
/eː/	–	Ehre
/e/; /ɛ/	kettle	Kessel
/ɛː/	–	Ähre
/øː/	–	Höhle
/œ/	–	Hölle
/æ/	cat	–



C. Back vowels

	English	German
/uː/	spoon	Huhn
/ʊ/	put	Butt
/oː/	–	Sohle
/ɔː/	caught	–
/ɒ/; /ɔ/	cot	soller

German
English

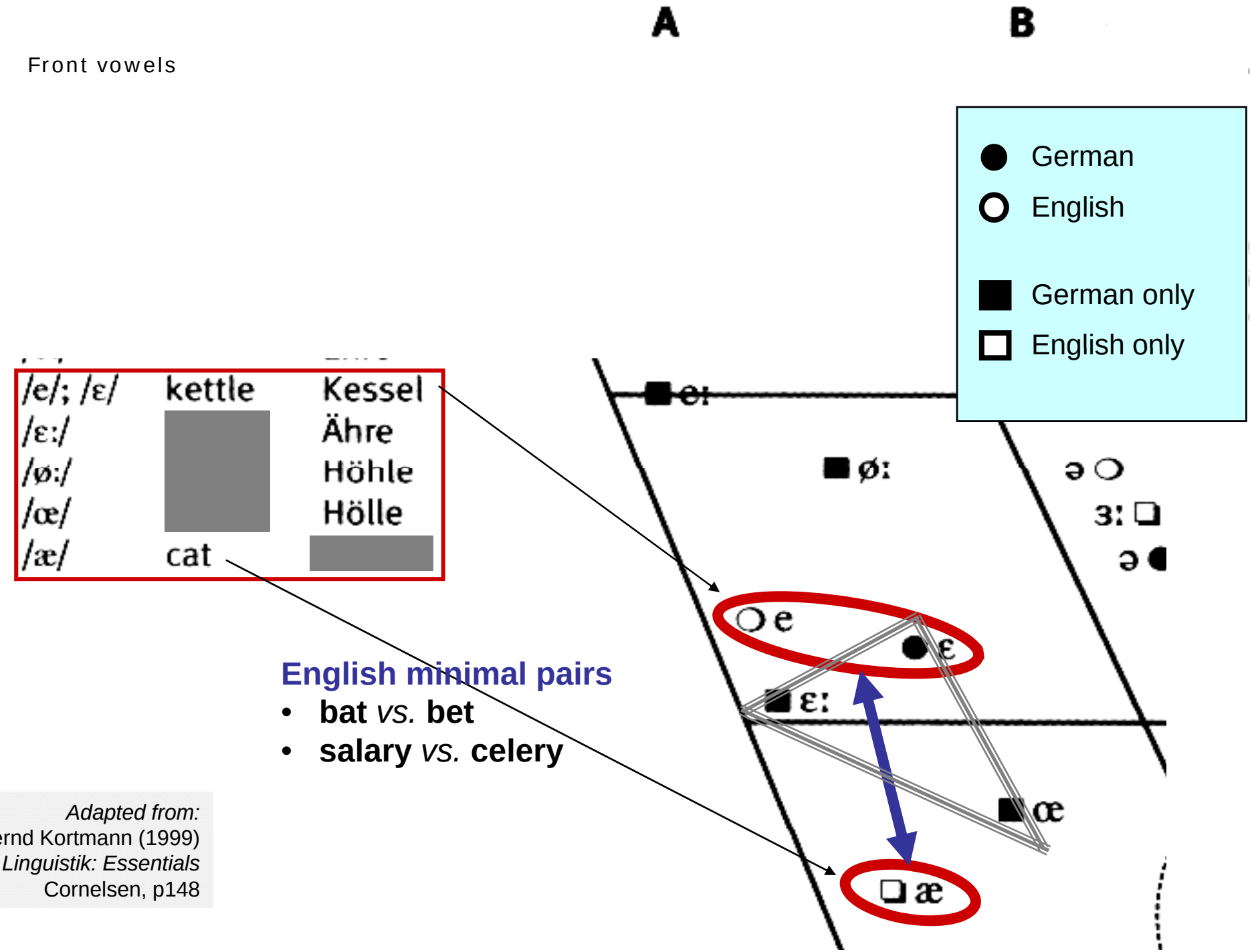
German only
English only

B Mid vowels

	English	German
/ʌ/; /ɑ/	cut	kann
/ɑː/; /aː/	car	Kahn
/ə/	the	Gelenk
/ɜː/	curt	–

Adapted from:
Bernd Kortmann (1999)
Linguistik: Essentials
Cornelsen, p148

Front vowels



English minimal pairs

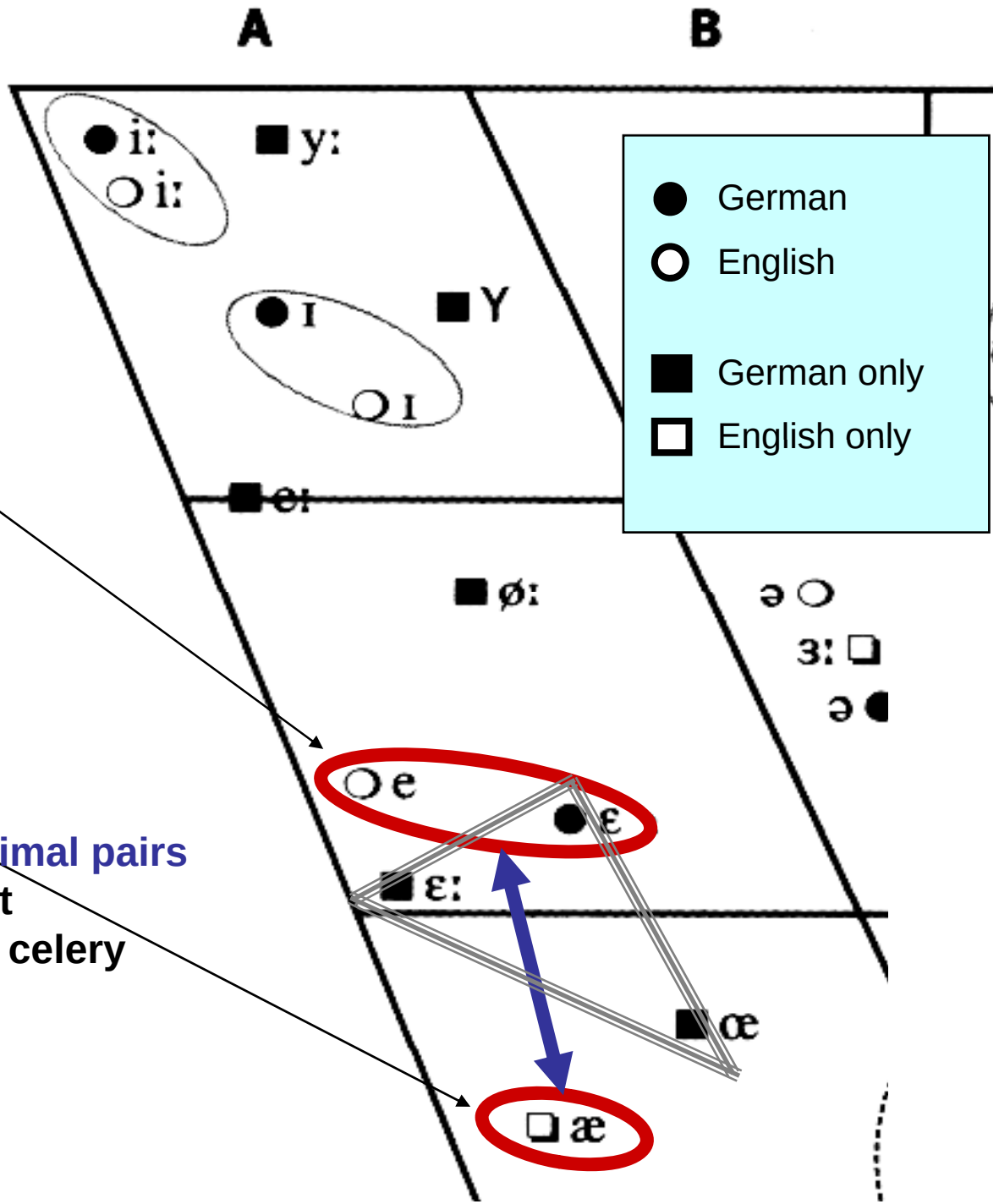
- **bat** *vs.* **bet**
- **salary** *vs.* **celery**

Adapted from:
Bernd Kortmann (1999)
Linguistik: Essentials
Cornelsen, p148

Front vowels

A. Vorderzungenvokale

	Englisch	Deutsch
/i:/	fee	Vieh
/ɪ/	sin	in
/y:/	–	Mühle
/Y/	–	Müll
/e:/	–	Ehre
/e/; /ɛ/	kettle	Kessel
/ɛ:/		Ähre
/ø:/		Höhle
/œ/		Hölle
/æ/	cat	



English minimal pairs

- **bat** *vs.* **bet**
- **salary** *vs.* **celery**

Adapted from:
Bernd Kortmann (1999)
Linguistik: Essentials
Cornelsen, p148

Language change over time

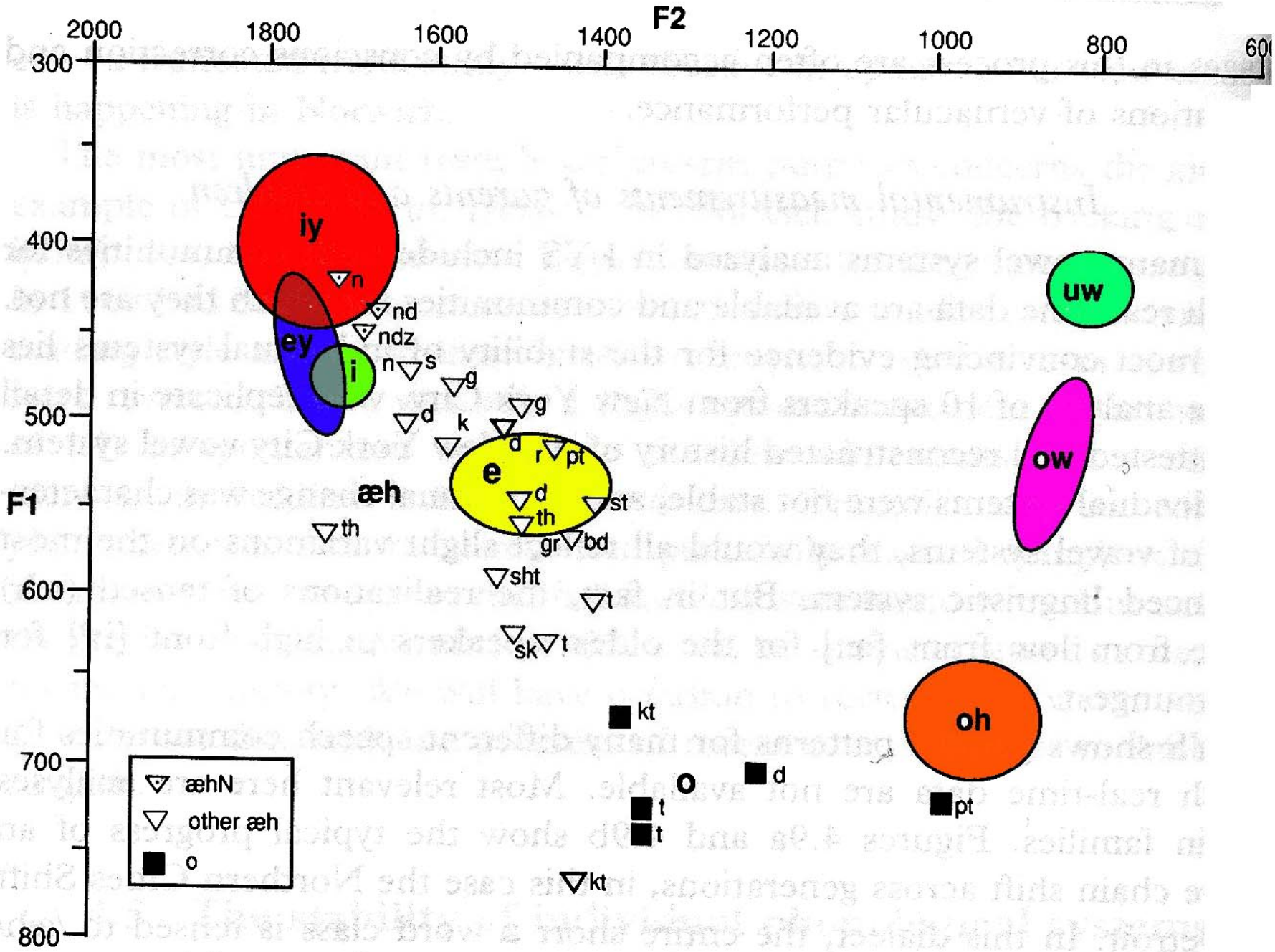


Figure 4.9b. Vowel system of Chris Adamo, 13, Detroit

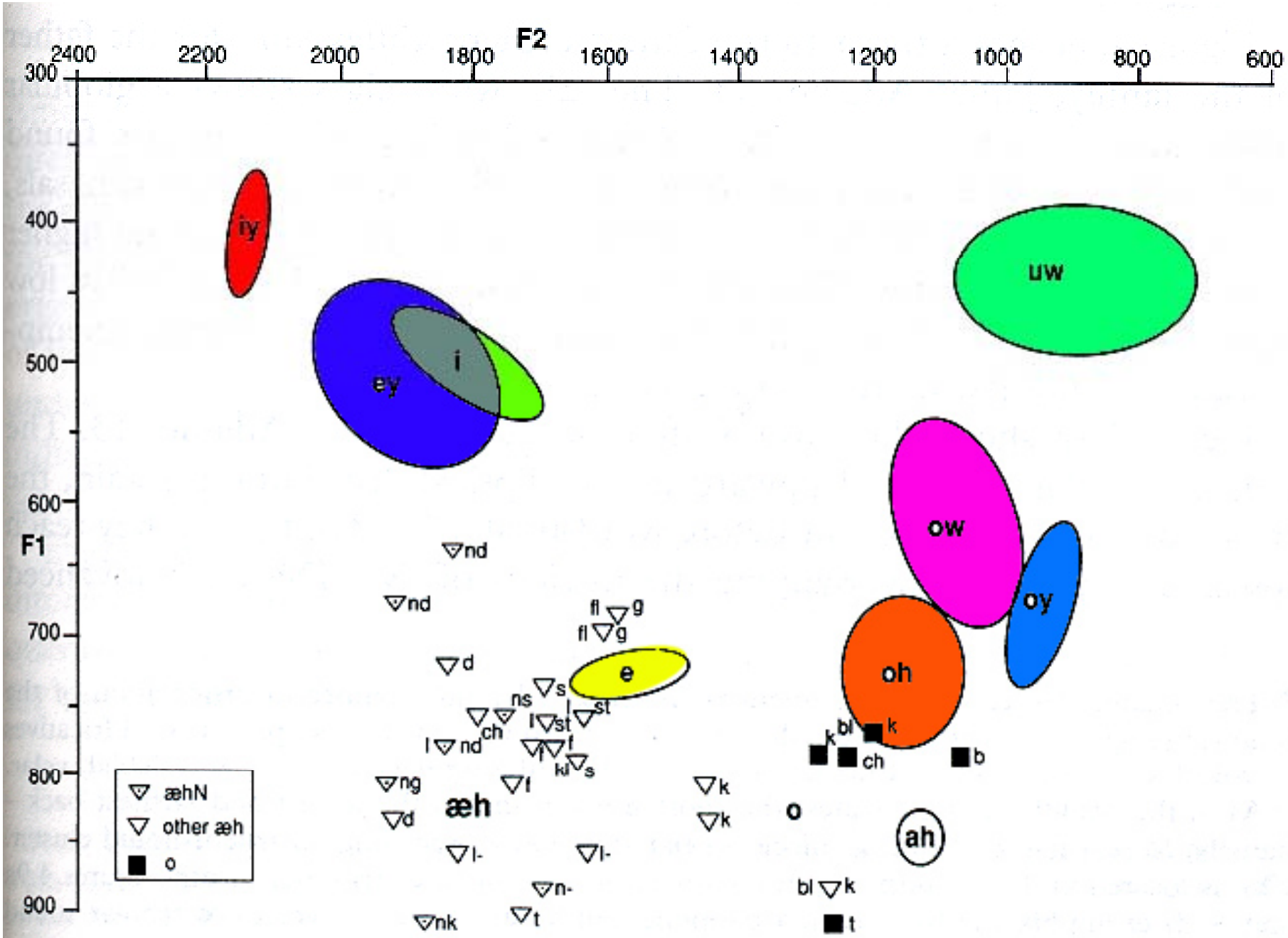
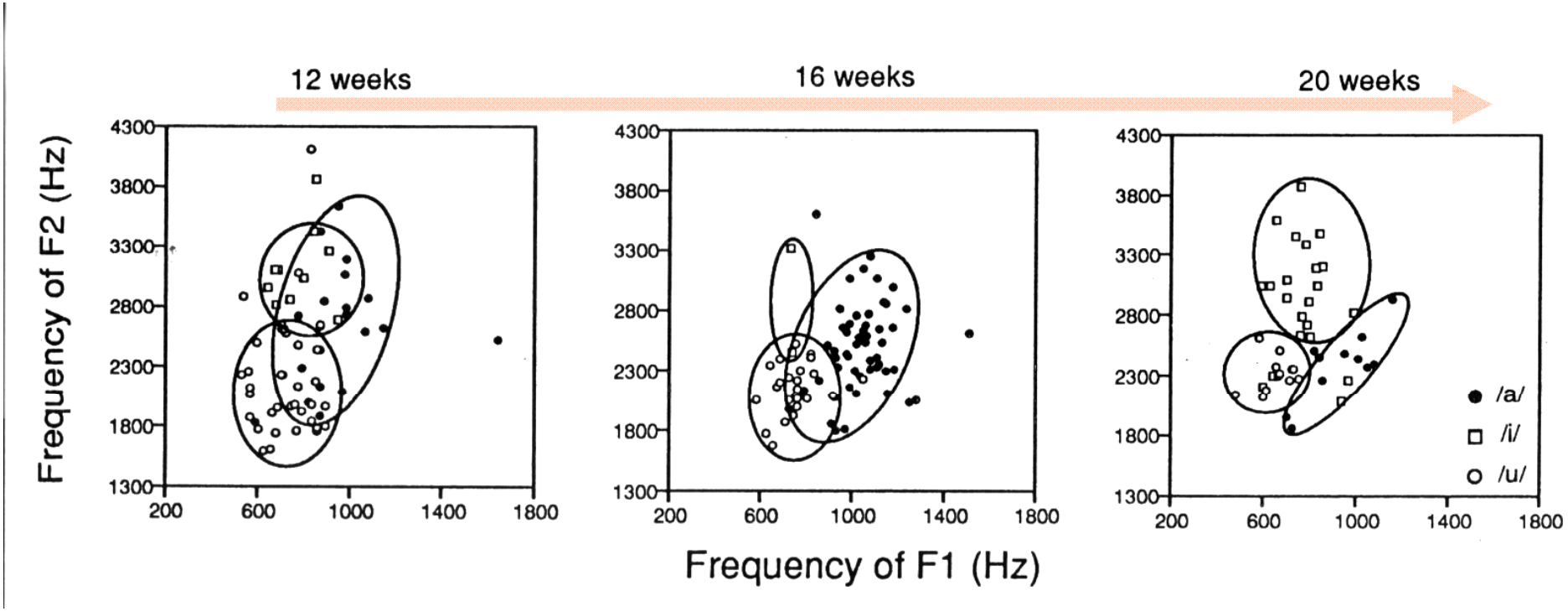


Figure 4.9a. Vowel system of James Adamo, 55, Detroit

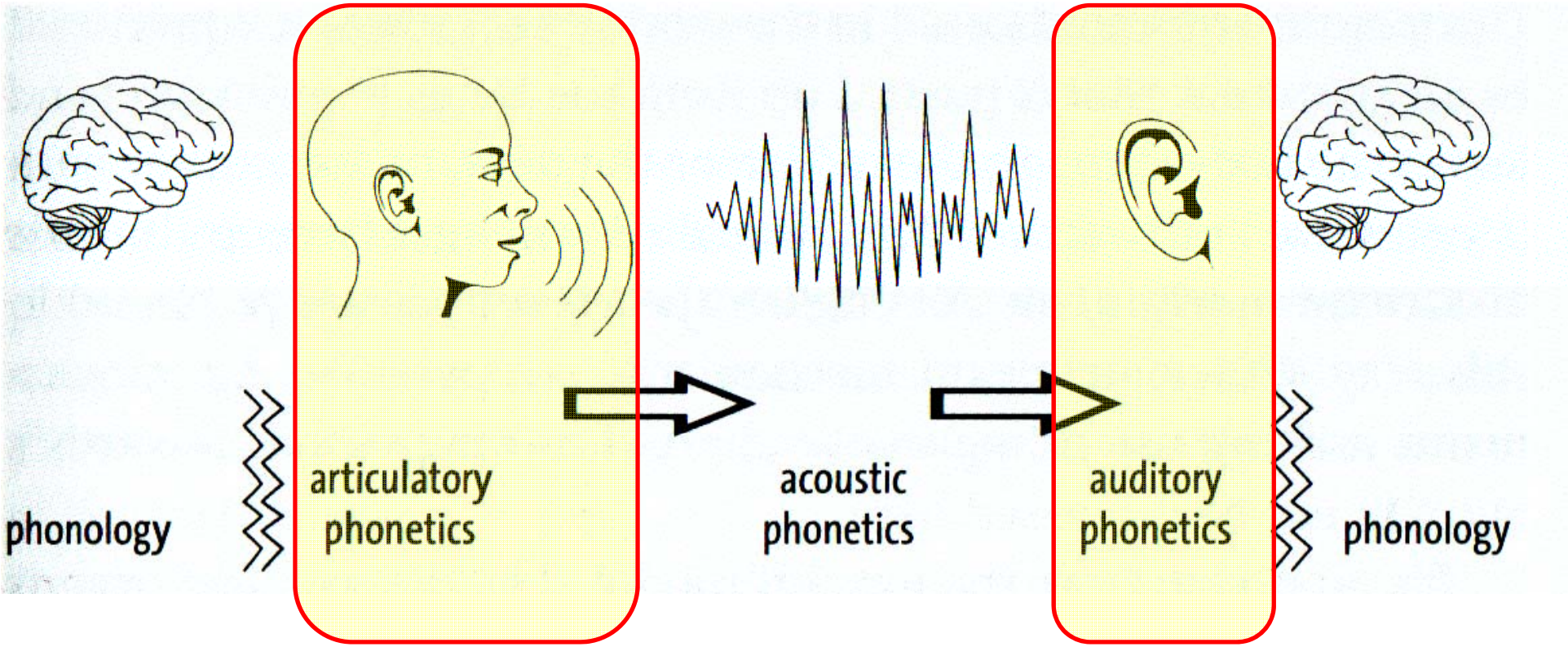
Language development

Location of /a/, /i/, /u/ vowels produced by infants



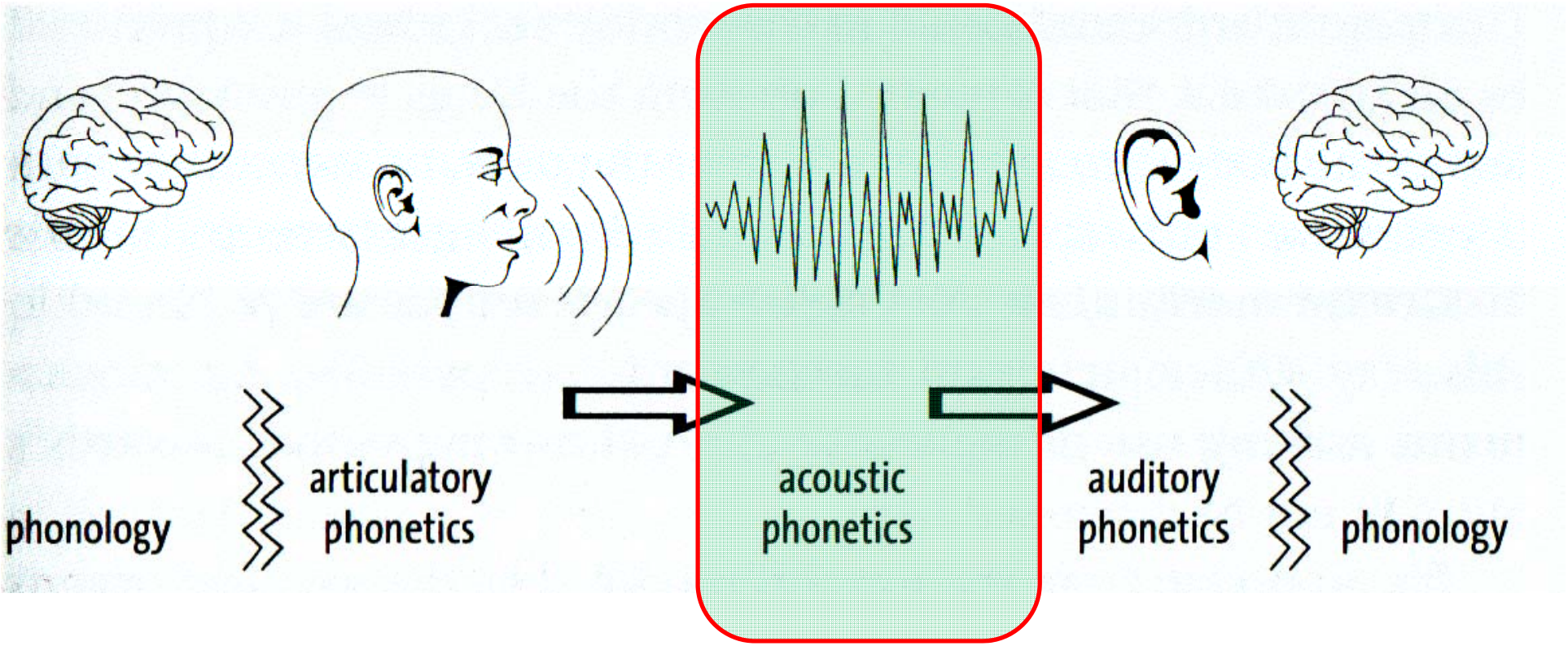
Patricia Kujhl (1999) “Speech, language and the brain: innate preparation for learning” In: *The Design of Animal Communication* (eds. Hauser/Konishi), MIT Press.p435

What have we done today?



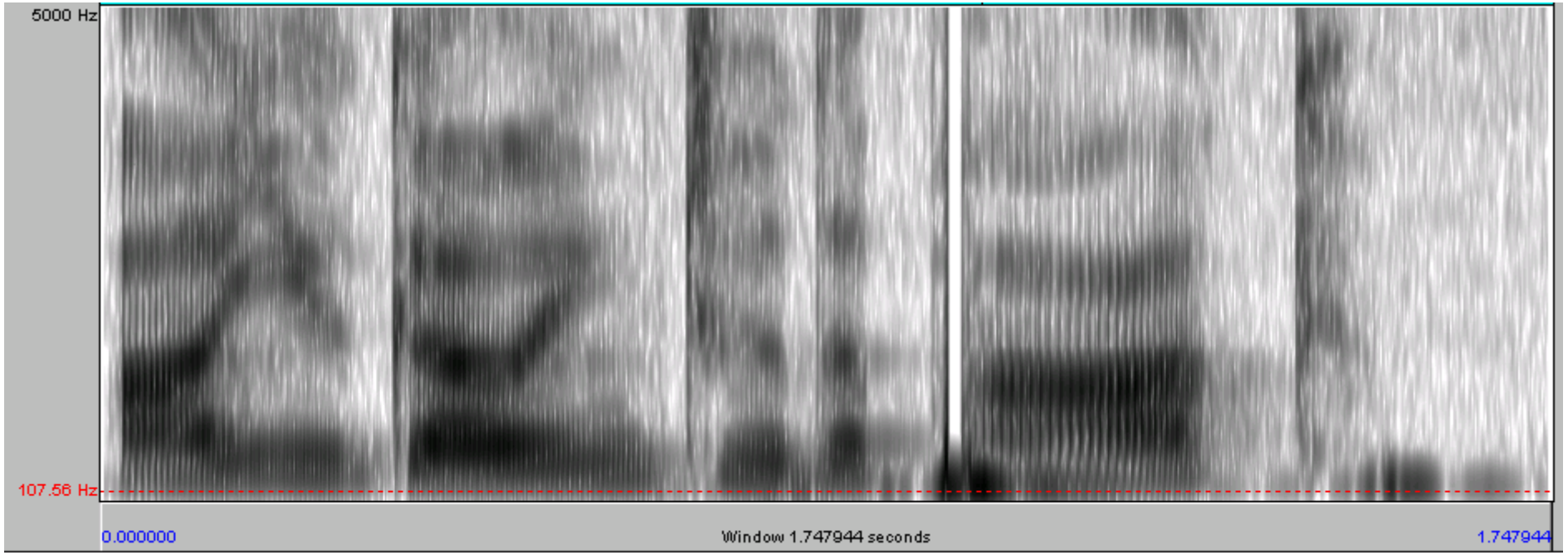
Introduction to English Linguistics
(Bieswanger / Becker)

Fig. 3.2
The speech chain



Introduction to English Linguistics
(Bieswanger / Becker)

Fig. 3.2
The speech chain



Are you g o ing to the p a r k ?