



Pronunciation of American English Vowels

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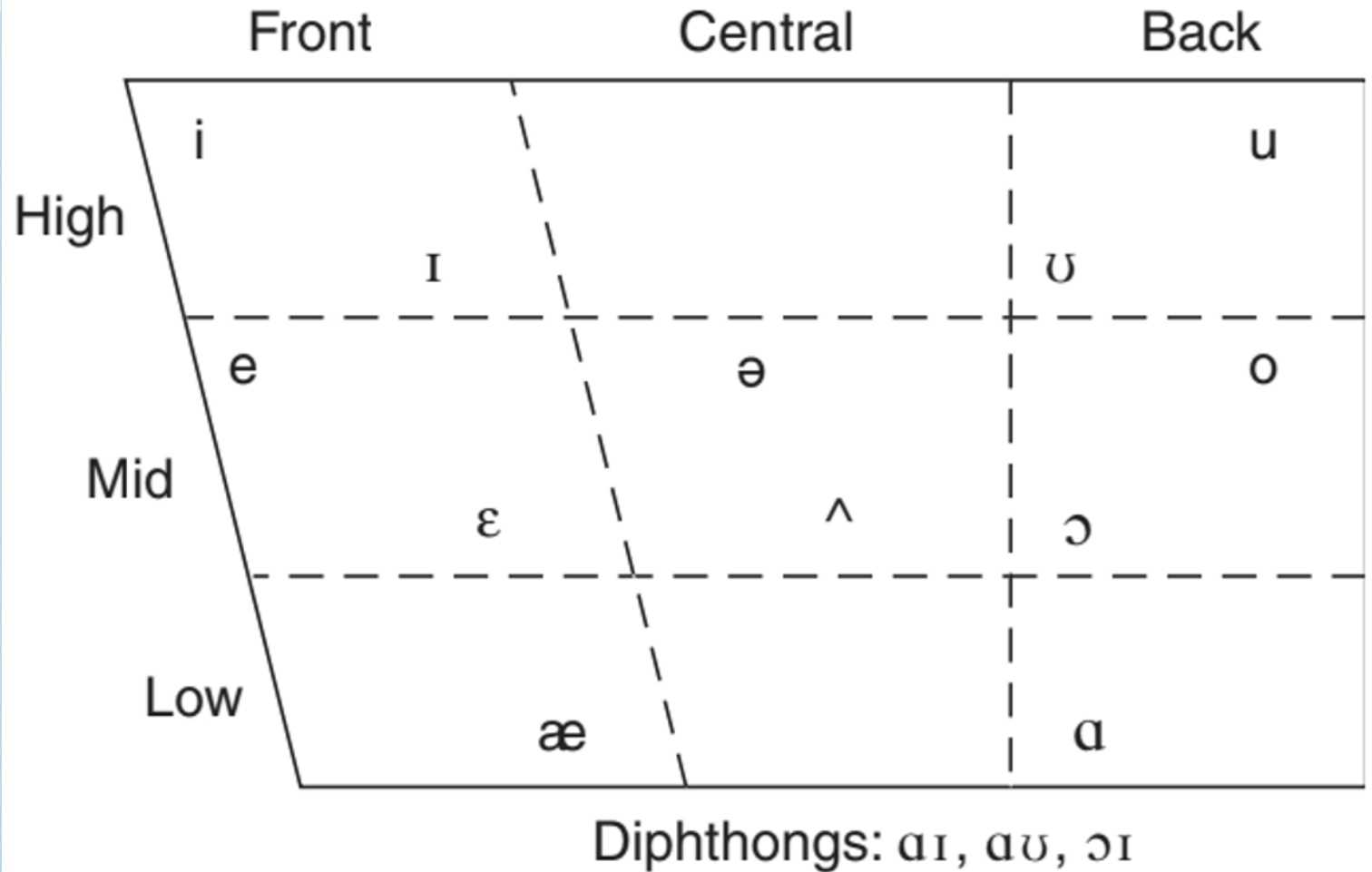
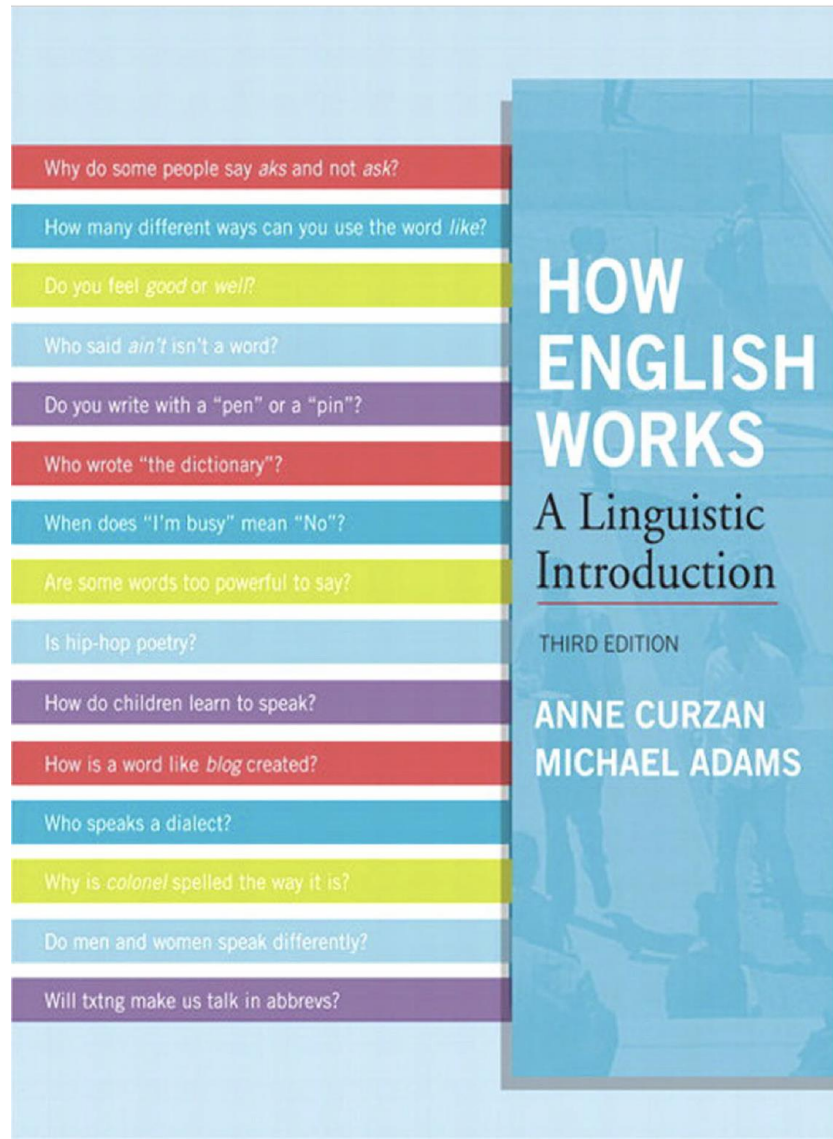
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Goals

- Preliminary: vowels and dialect analysis
- Survey American English (Am Engl) vowels
 - Canonical vowels
 - Variants
 - My take: theory underlying vowels and purpose of variation
- Implications for teaching pronunciation of Am Engl vowels
 - Comparison of Am Engl vowels to other Global Englishes (esp. African English speakers)
 - Recommendations

How the Am Engl vowel chart looks



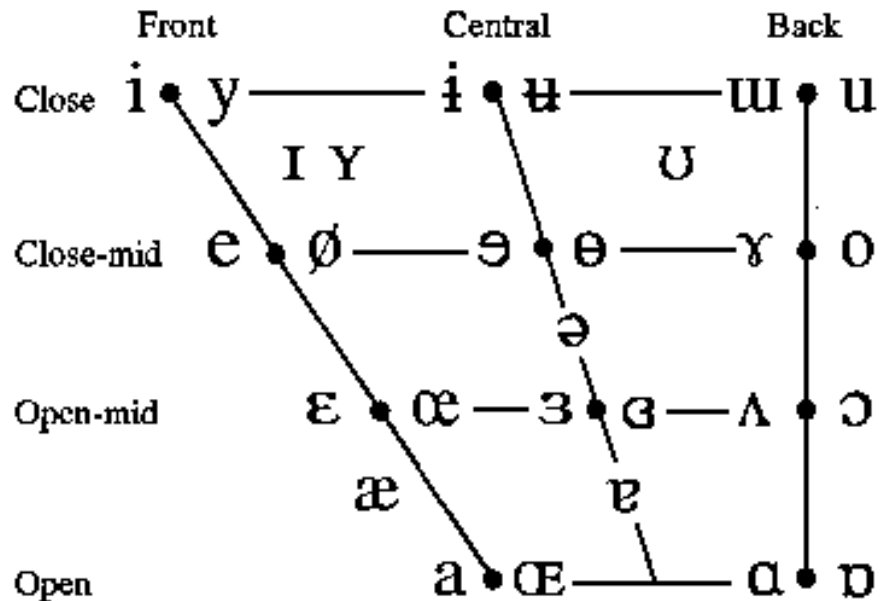
1. Vowels - Preliminary

(Although tongue position is important, there are multiple ways to produce the same sound)

Vowels

- Defined: “A sound produced **without a close obstruction** in the vocal tract and which forms the centre of a syllable.” Ashby & Maidment 2005:200
- Gesture: “Several kinds of articulatory manipulations are available for producing distinctively different acoustic characteristics for vowels. The shape of the vocal tract between the glottis and the lips can be manipulated through **adjustment of the position and configuration of the lips, the tongue blade, the tongue body, and the tongue root.**” (Stevens 1998: 257)
- “The vocal tract can assume different shapes by
 - Raising or lowering the tongue,
 - Advancing or retracting the body of the tongue,
 - Raising or lowering the jaw and
 - Rounding the lips.” (Olive, Greenwood & Coleman 1993: 28)

VOWELS



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

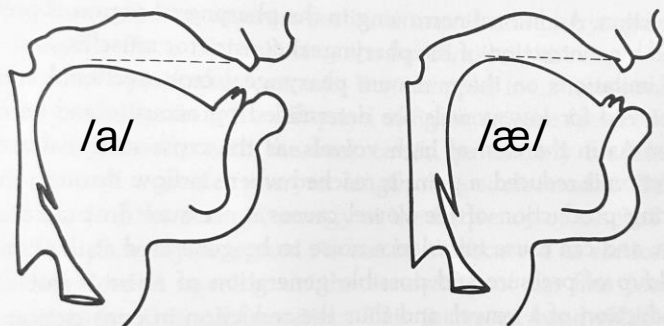


Figure 6.6 Midsagittal vocal tract configurations for the low vowels /a/ (left) and /æ/ (right). The horizontal lines show the approximate location of the plane of the surfaces of the upper teeth. Adult male speaker of English. (From Perkell, 1969.)

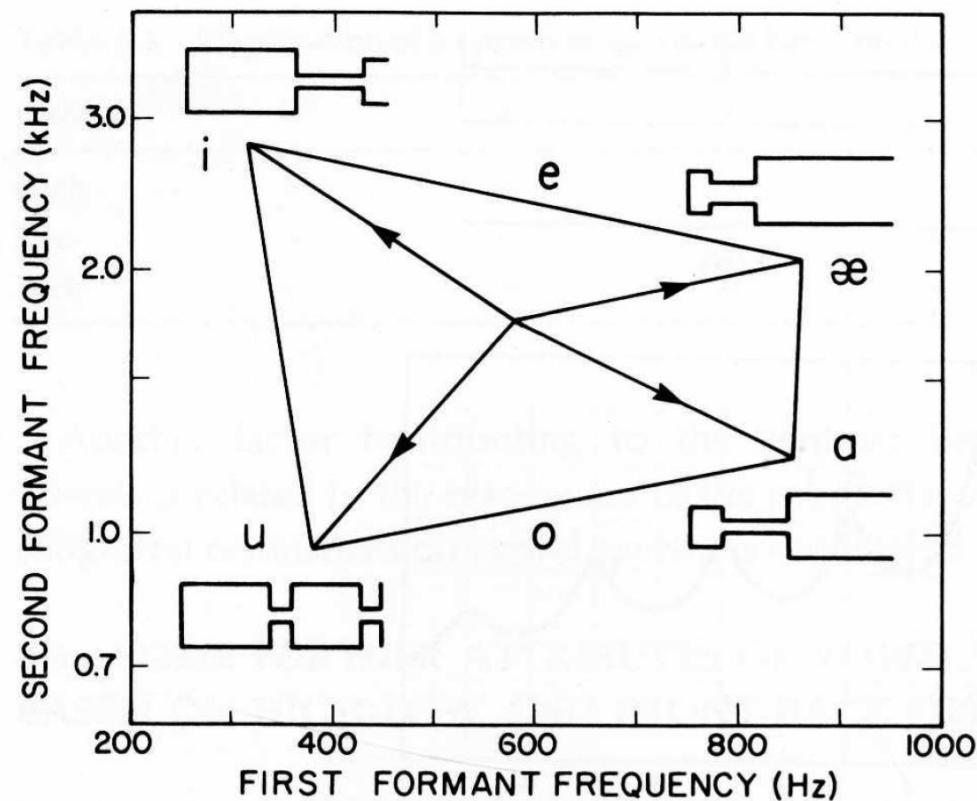
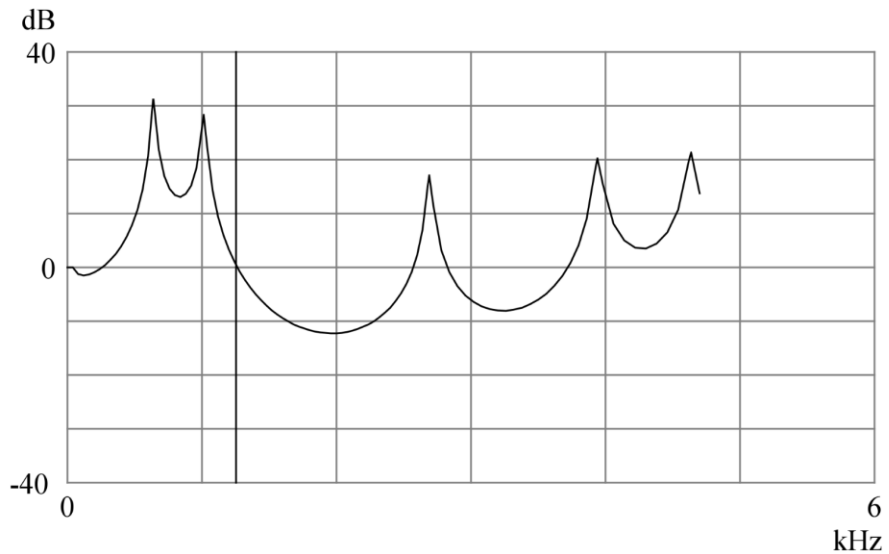


Figure 6.16 Plot of F2 vs. F1 showing how formants shift when the shape of an acoustic tube is perturbed in different ways. The midpoint represents equally spaced formants for a uniform tube of length 15.4 cm. The lines with arrows indicate how the formant frequencies change when the tube is modified as shown by the tube shapes. The corners of the diagram are labeled with vowel symbols corresponding roughly to the tube shapes. Approximate locations for the vowels /e/ and /o/ are also shown. Dimensions are selected to approximate the vocal tract size of an adult female speaker.

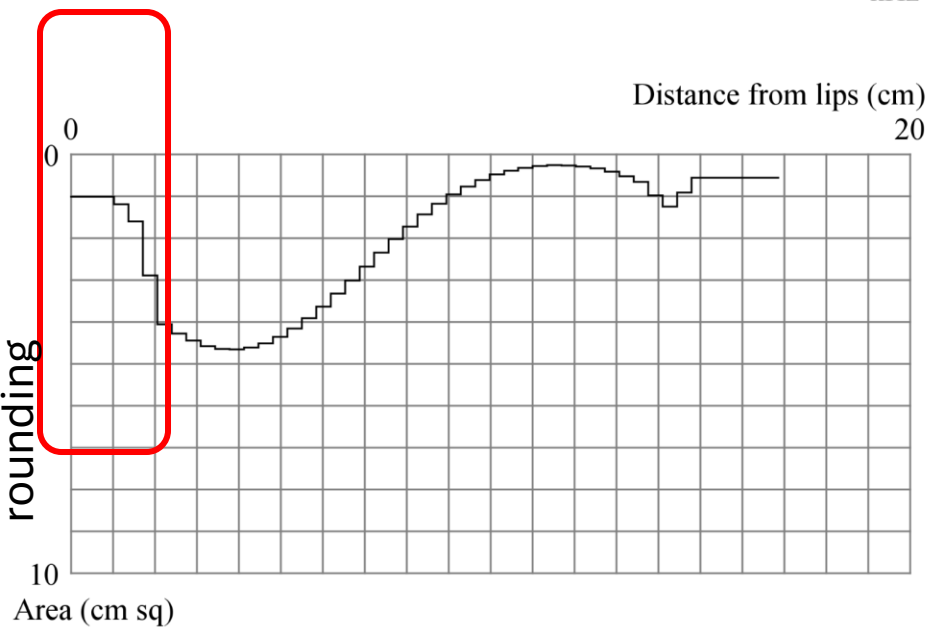
Stevens 1998:286

[ɔ]

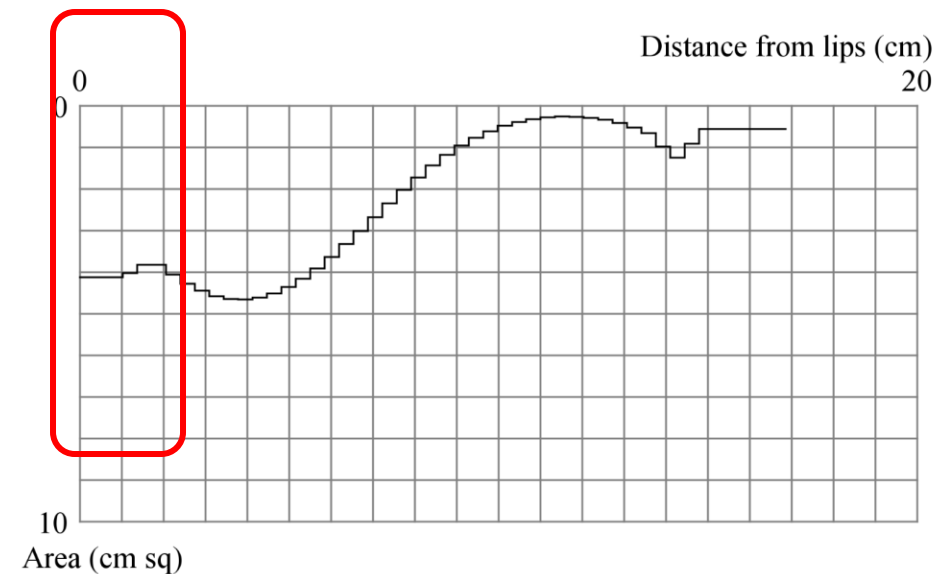
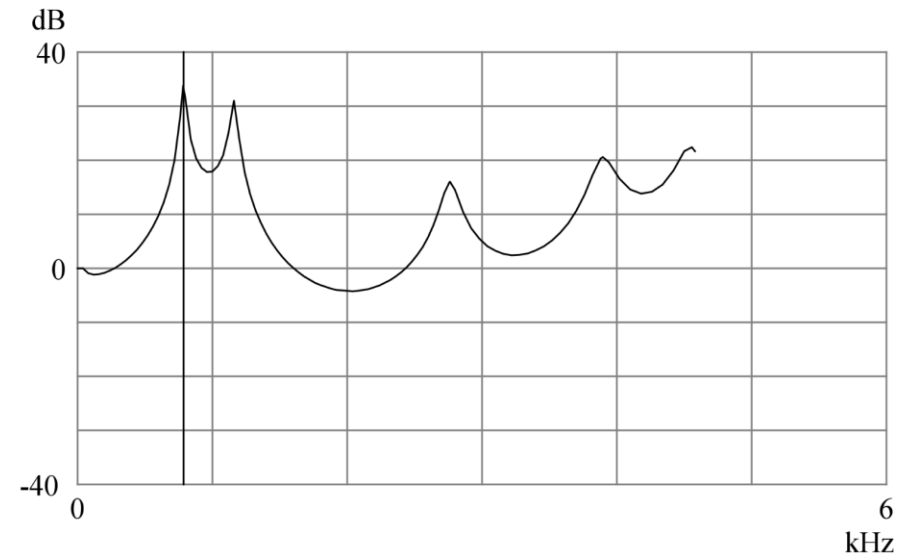


Higher = more lip

rounding



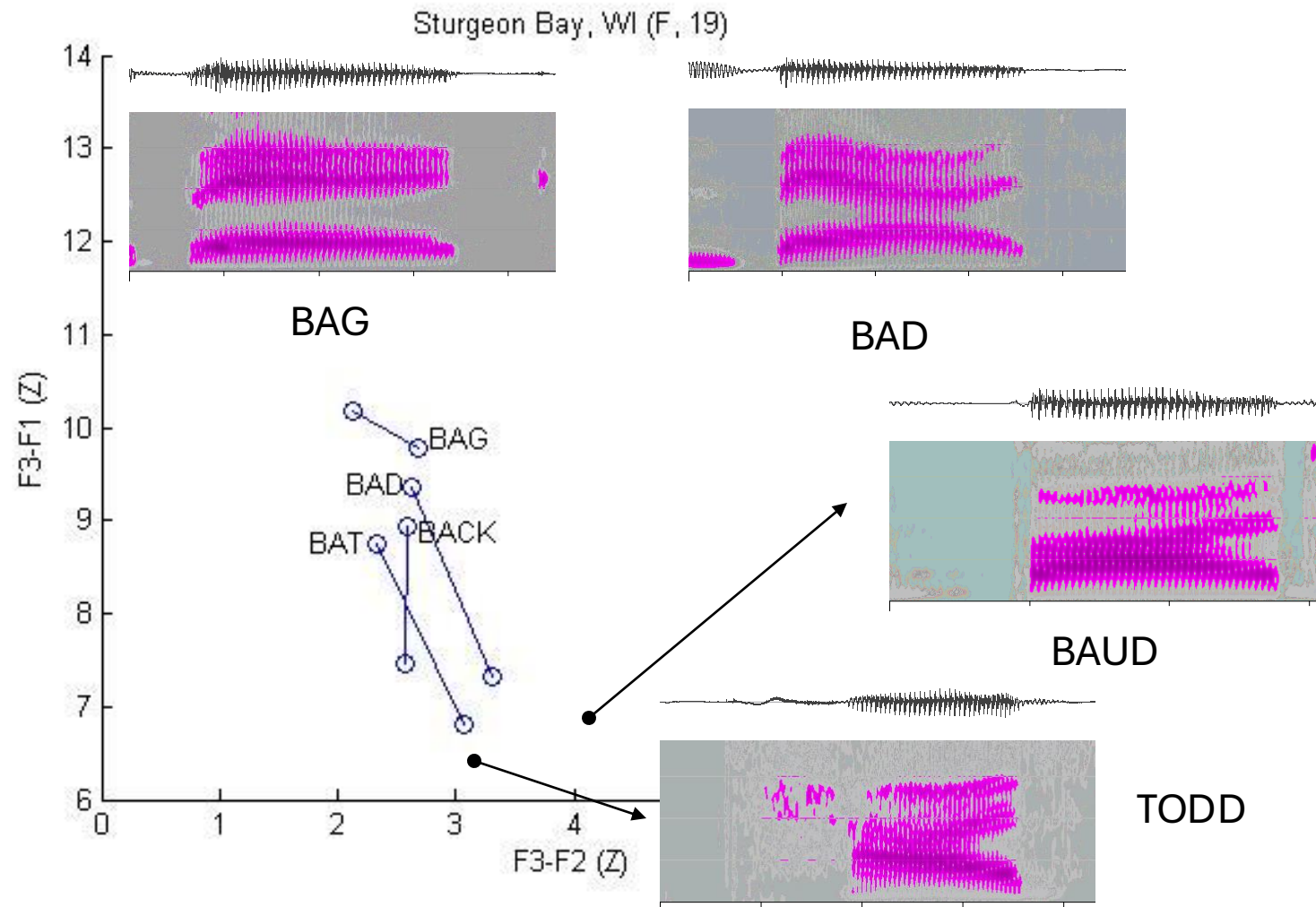
[a]



Cross-section of vocal tract: lips on left, pharynx on right.

Paul Milenkovic's VT Scan program (cited in Purnell 2008)

WI EAE /æ/: phonetic variation within category

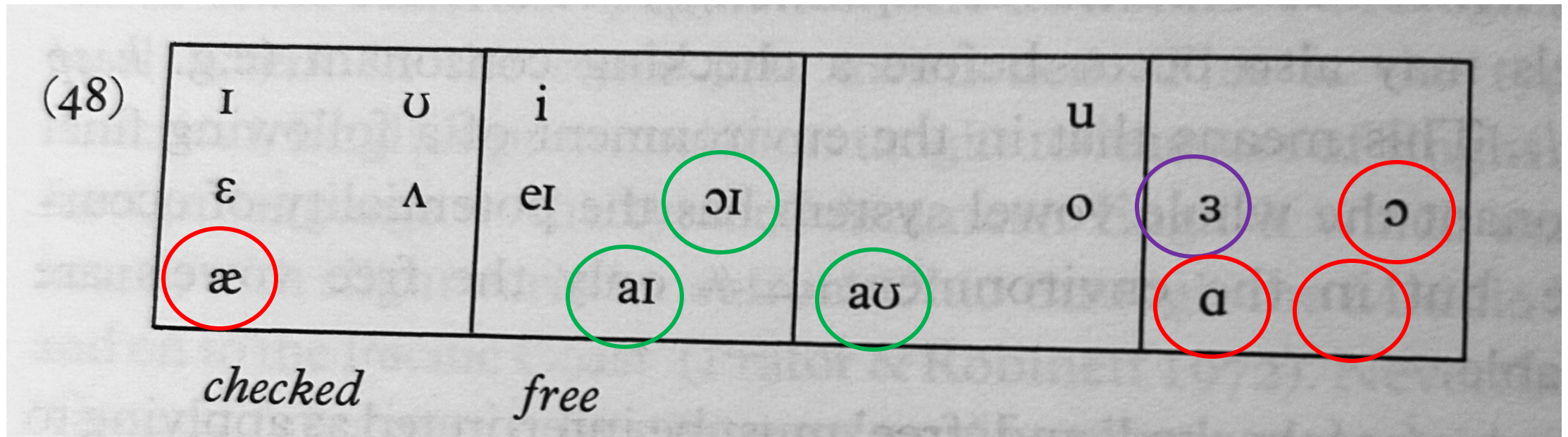


Vowel variation

- Gesture and phonological environment: “... the vowels of English are distinguished from each other by three features: (1) the quality produced by the resonance of the oral-pharyngeal cavity as determined by the position of the tongue and the lips; (2) the drift in quality resulting from the shift in the position of the tongue and/or the lips during the articulation of the vowel; and (3) phonotactic behavior, ...” (Kurath 1964: 17)

Am Engl vowel (Wells 1982:120-2, modified)

FLEECE	[i]			GOOSE	[u]
FACE	[eɪ]			GOAT	[ou]
TRAP	[æ]	LOT	[a]	THOUGHT	[ɔ]
KIT	[ɪ]			FOOT	[ʊ]
DRESS	[ɛ]			STRUT	[ʌ]
PRICE	[aɪ]	MOUTH	[aʊ]	CHOICE	[ɔɪ]



Assumptions about vowel space

#1 Acoustics follows lingual gestures only

- F1 = tongue height
- F2 = tongue backness

Effect of lip rounding and jaws

#2 Acoustic space only has external boundaries and no internal boundaries

- all vowels “compete” with each other

Phonology

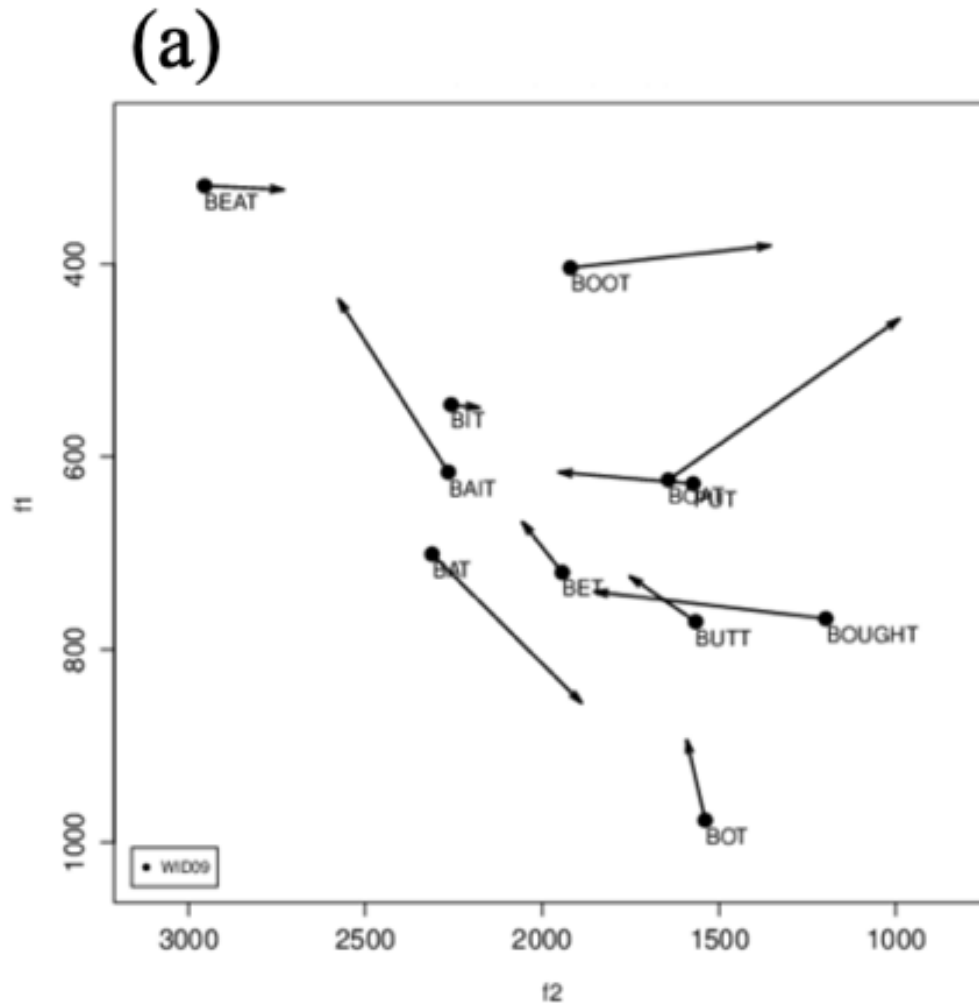
#3 vowels can be simplified to single points

- Nucleus/head
- Midpoint (50%)

Movement can be a characteristic

#4 mathematical change in placement signifies a change in phonology

Change is contrastive



“nearing completion”

- We know when a merger happens because two vowels that were separate in the past are now one
- Labov et seq has a notion of “nearing completion”
 - Presumes knowledge of a boundary
 - Presumes knowledge that movement over time in a direct must continue in that direction
- Problem with “near completion”
 - What does it mean for a vowel to shift near completion?
 - What are the boundaries of the vowel space and is the gesture compelled to go all the way?
 - Know that over time, movements in Am English have fallen apart or vowels have “shifted back”
- Example: /æ/ (TRAP) raising in 18th c. England (higher in the mouth towards /e/) then lowers over time (see citations in Hickey 2020: 554-555); analogous with reversal of Northern Cities Shift (Nesbitt 2021).

Pronunciation Payoff

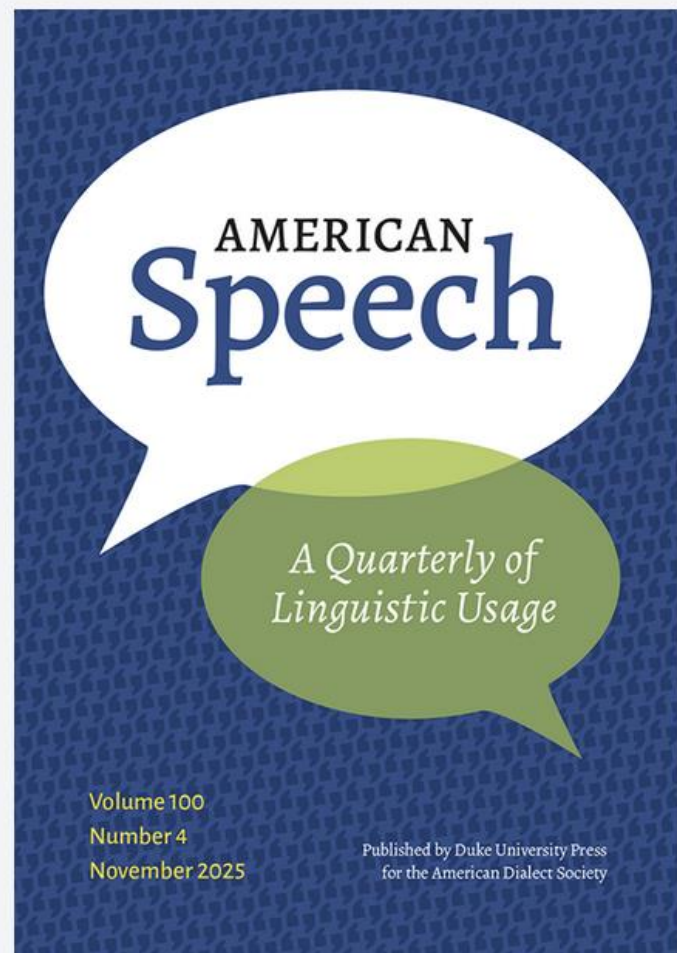
1. More than one way to produce or fine-tune vowels (e.g., /a, ɔ/)

2. Am Engl Vowel Variation - Description

(Lots of movement, little loss of comprehension)

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American Dialect Society



Major Vowel Activity

1. Northern Cities
2. Southern Cities
3. Low Back Merger
4. Canadian Raising
5. Prevelar Raising
6. Californian/Canadian/Elsewhere

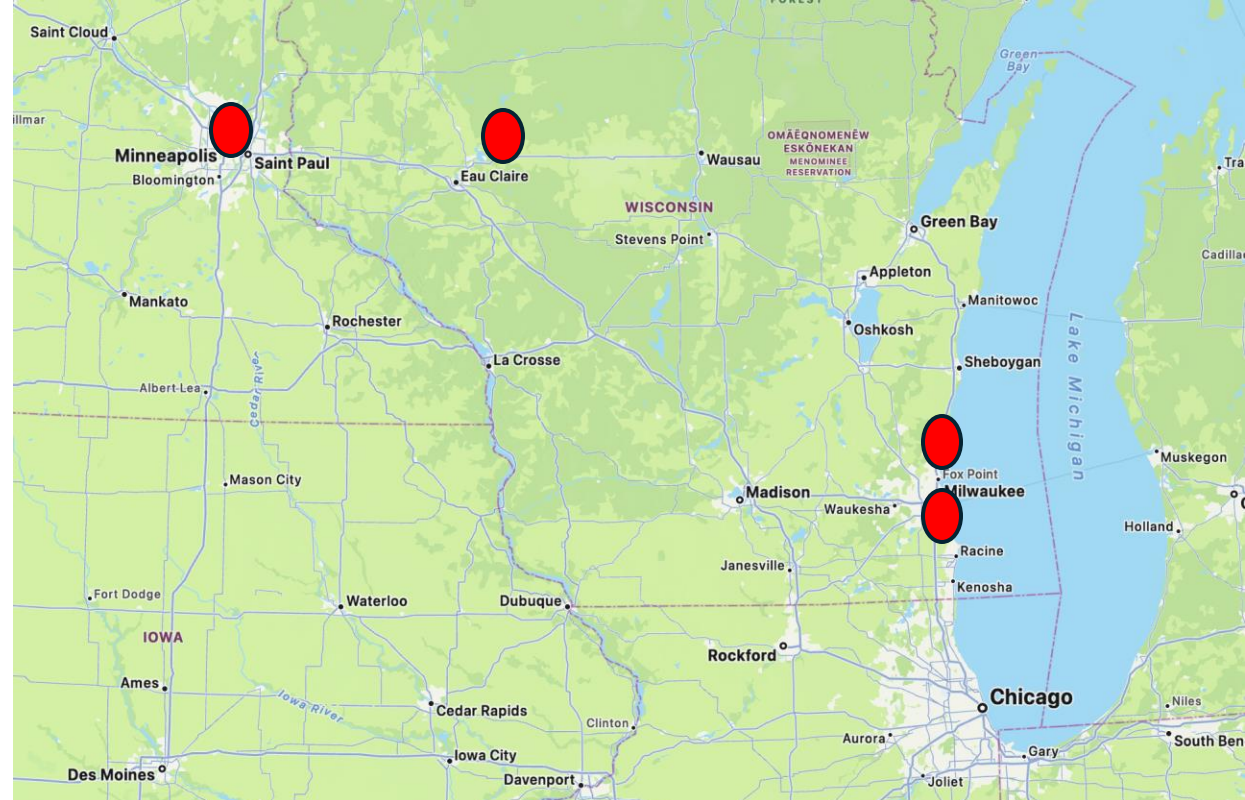
Additional issues

1. African American English - local patterns, but traditionally more standard (with exception of monophthongization)
2. Chicano English – more vowels than Spanish, but tend towards Spanish positions
3. **Accommodation to speakers**

Upper Midwestern Variation

LOT THOUGHT same and different

BAG BAT same different



Eau Claire, WI

Minneapolis, MN

Fox Point, WI

Oak Creek, WI



caught



bat



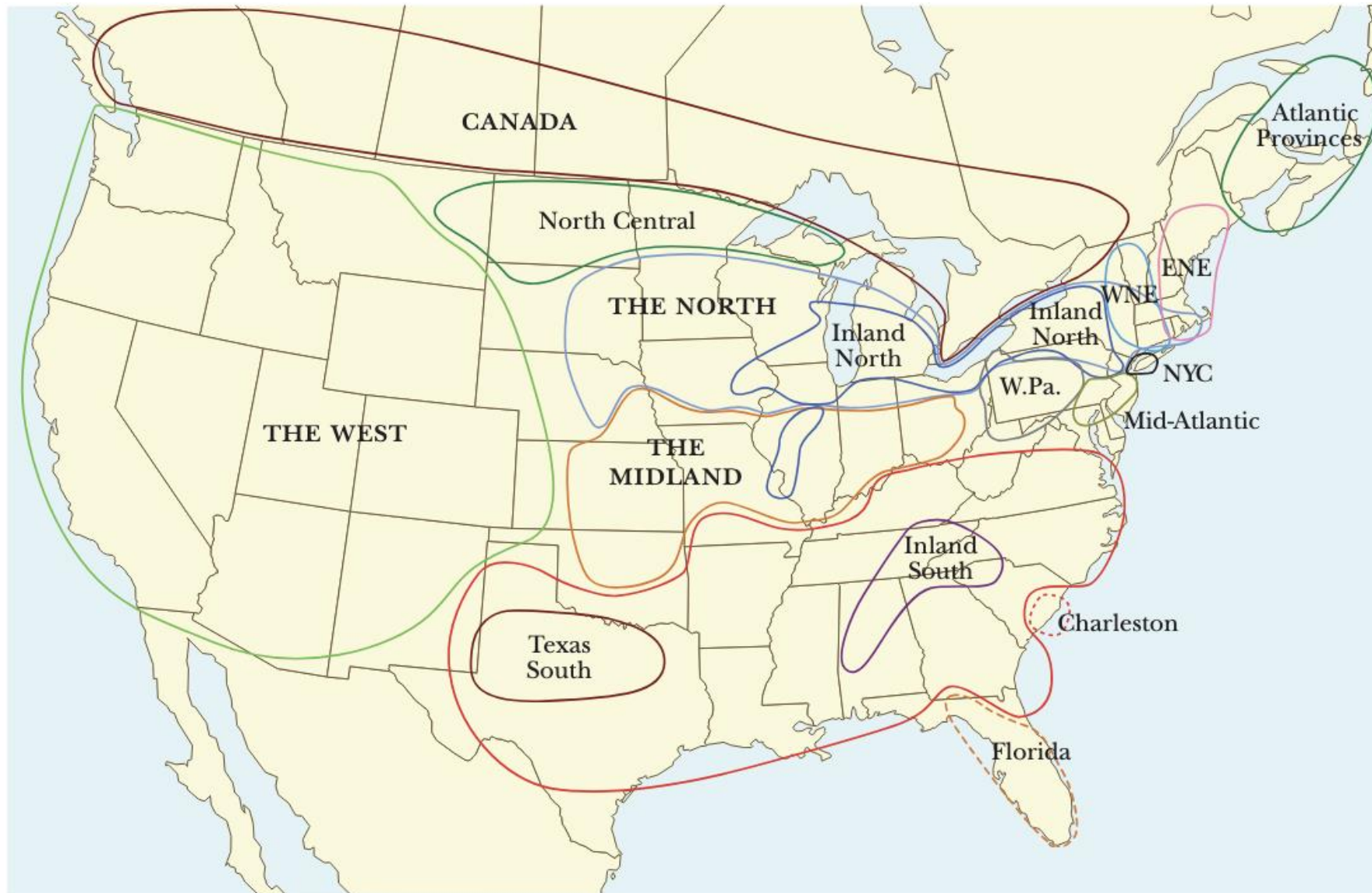
cot



bag



Dialect regions (*Atlas of N Am Engl*)



Part B: Chain shifting

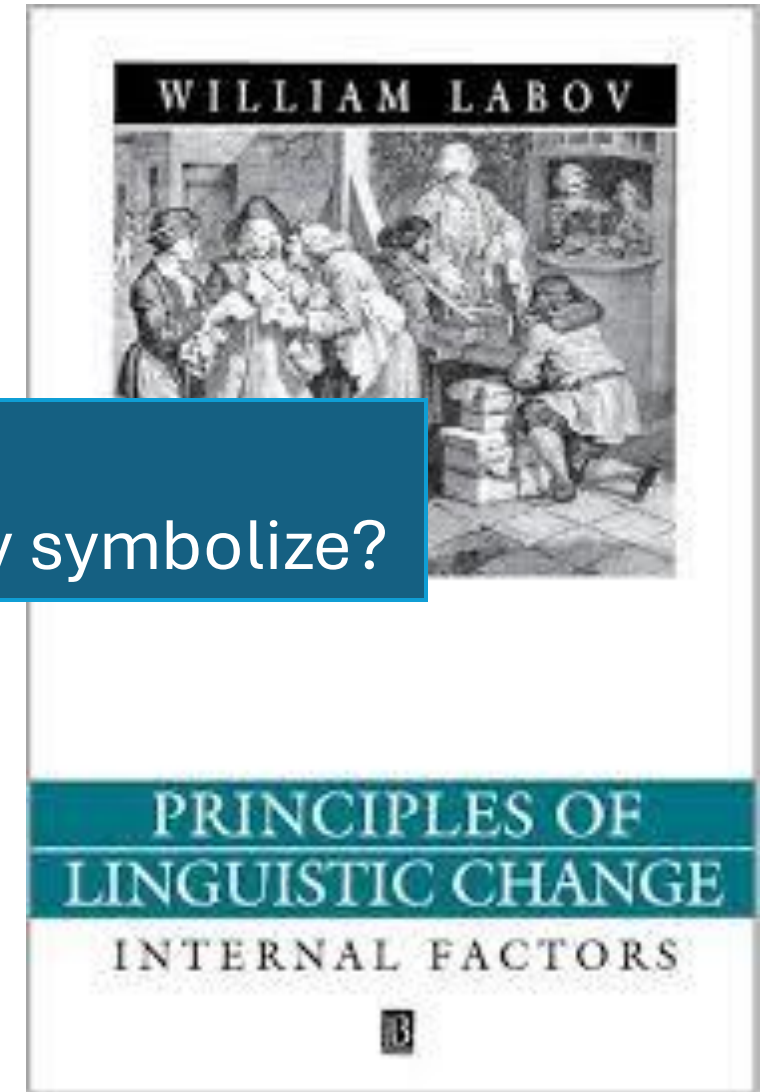
The first problem to be faced in describing sound change is whether all types of change are possible, or whether there are limitations on what types of change can take place. The search for possible constraints on linguistic change is almost as broad an area as linguistics itself. An overview of recent work would include the study of semantic change, syntactic development, changes in word order, and the grammaticalization of morphological elements as well as phonological and phonetic change. A broad view of

What are the boundary conditions on shifts?

Are shifts substantive, that is, why and what do they symbolize?

The attack on the constraints problem that is presented in part B is confined to a small part of this field: it is limited to phonetic and phonological change, and within that area, it focuses on stressed vowels. This is partly because the most detailed data on change in progress derive from instrumental studies of English vowel shifts. Among the languages of the world, English is one of the few that have developed or maintained complex systems of more than 10 vowels. This is not the most promising base for developing general principles of linguistic change. Nevertheless, the rotations, shifts, and mergers of vowels are among the major forces that lead to linguistic diversity throughout the world, and the changes that characterize the history of English appear to follow principles that can be traced across many language families.

p. 30



Labov.1994. *Principles of Linguistic Change: Internal Factors*. Blackwell.

Philadelphia pattern circa 1990s (not including patterns with rhoticity; Labov 1994: 57)

- Front Tense vowels
 - /i/: raising and fronting
 - /e/: raising and fronting of nucleus (in checked syllables)
 - /æ/: raising and fronting of nucleus
 - Before nasals (esp. /m n/), voiceless fricatives, before /d/
- Front Lax vowels
 - /ɪ/: lowering
 - /ɛ/: lowering
 - /æ/: lowering
- Back Tense vowels
 - /u/: fronting nucleus (not before liquids)
 - /o/: fronting nucleus (not before liquids)
 - /ʌ/: raising and backing
- Diphthongs
 - /aw/: raising and fronting of nucleus
 - /aj/: raising and backing of nucleus

Principles of Chain Shifts

I. Long vowels rise.

II. Short vowels fall.

III. Back vowels front.

/æ/ raising (short-a tensing)

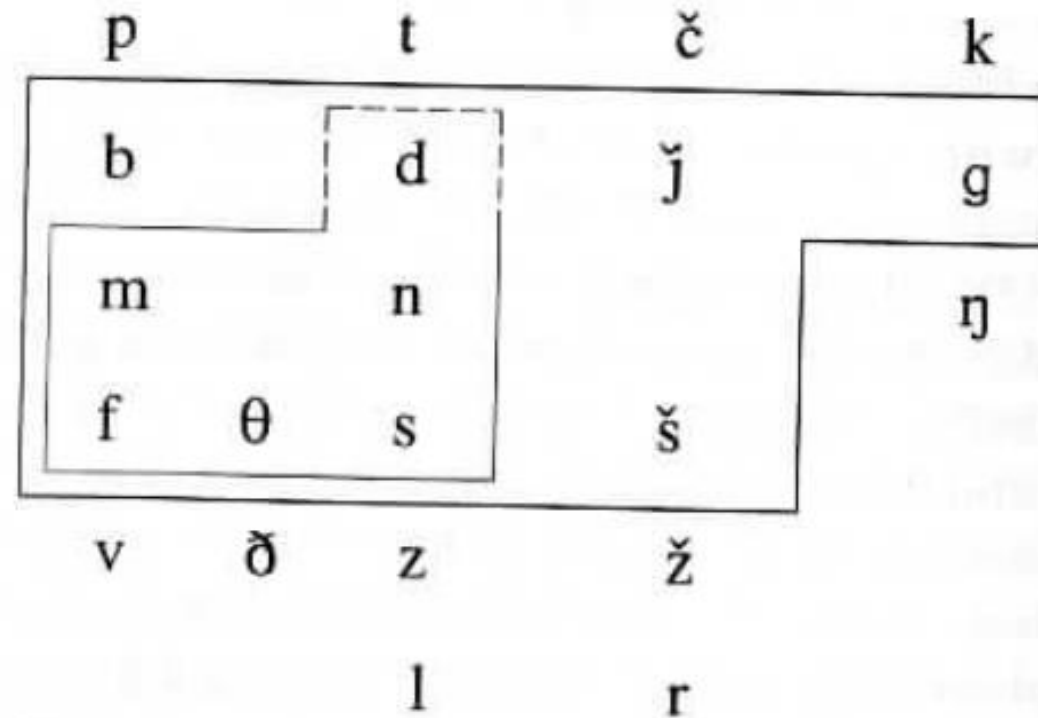


Figure 15.1. Consonants following short **a** that condition tensing in Philadelphia (inner line) and New York City (outer line)

Shifts (and LBM) in Modern American English

Podesva 2011: 33

Nesbitt 2021: 336

FIGURE 4
Low-Back-Merger Shift Vowel Configuration

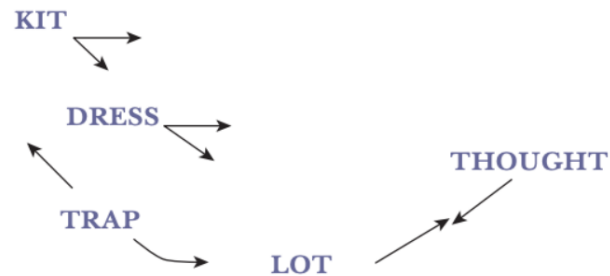


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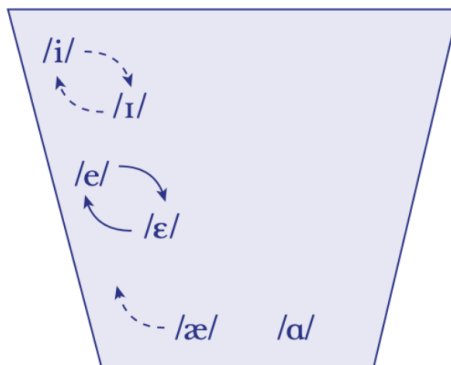


FIGURE 1
The California Vowel Shift
(based on Eckert 2008c, 34)

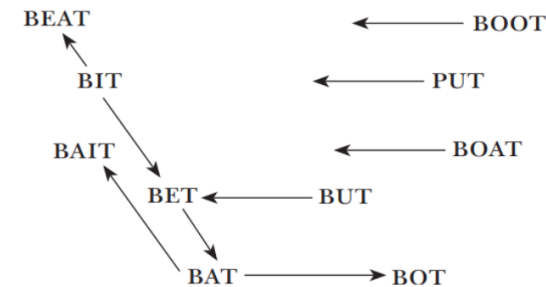
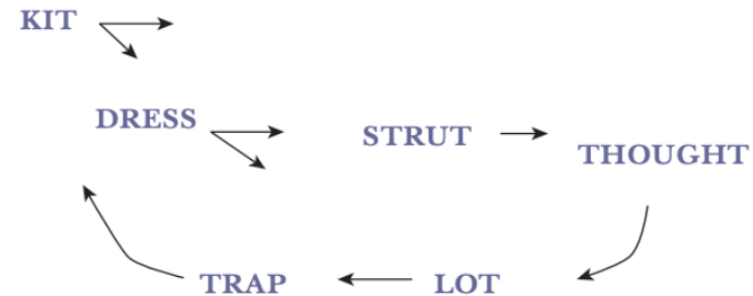


FIGURE 2
A Typical Northern Cities Shift Vowel Configuration



Nesbitt 2021: 334

Pan-AA Vowel Patterns

- Nonparticipation in low back merger (BOT, BOUGHT)
- Phonetic conditioning of /æ/ only before nasals (BAN)
- Raised /ɛ/ with lowered /eɪ/ (BET, BAIT)
- Restructuring (generally fronting) of /ə, ʊ, u/ (BUT, PUT, BOOT)
- Monophthongization of /aɪ/ before voiced obstruent (BITE, BIDE)
- Monophthongization of /oʊ/ (BOAT)
- Rhoticity in /Vɹ, əɹ, ʒɹ/ not pronounced

**Southern Cities Chain Shift in red

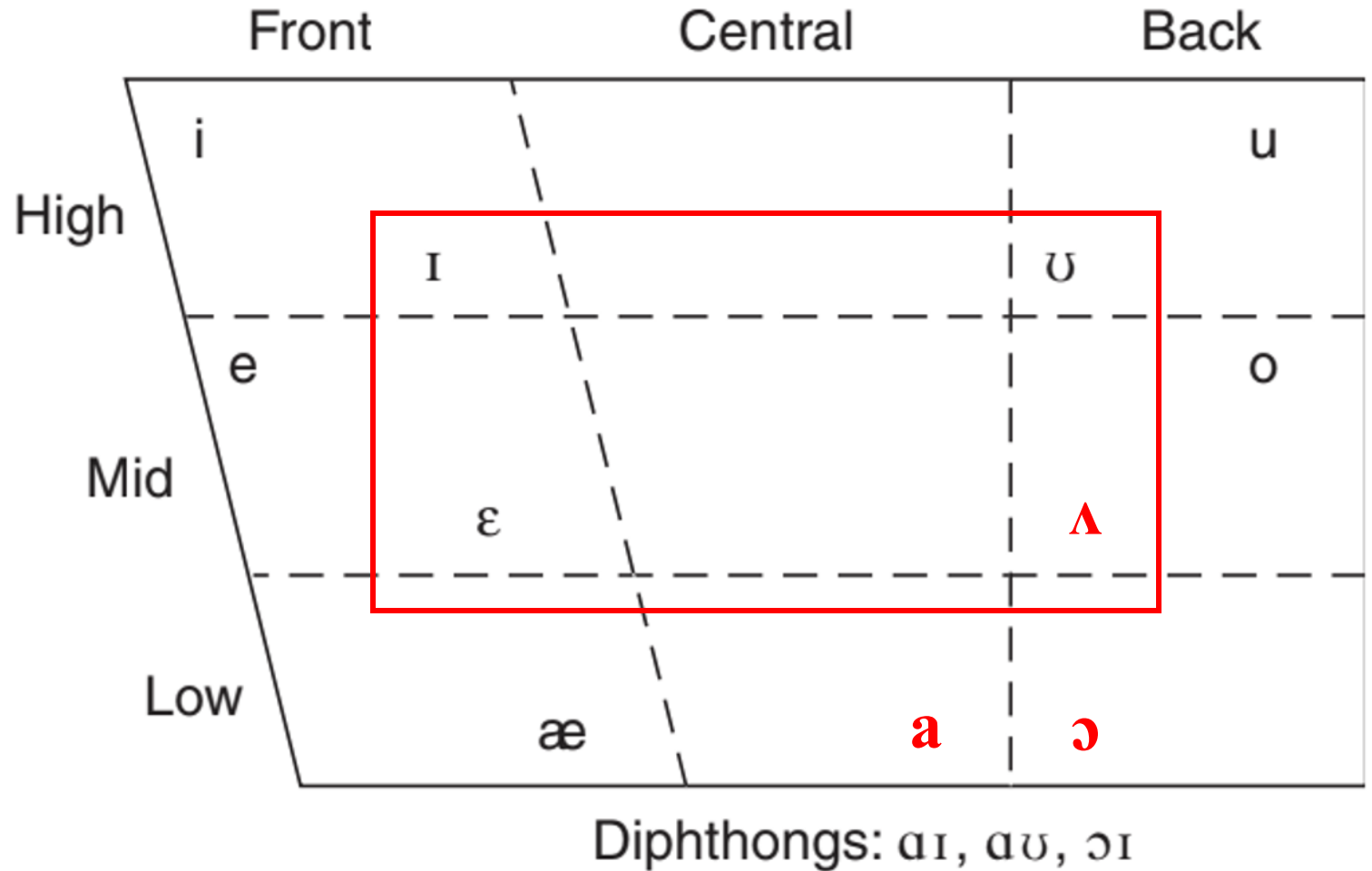
Pronunciation Payoff

1. More than one way to produce or fine-tune vowels (e.g., /a, ɔ/)
2. In spite of shifts and low back merger, most of the native and nonnative speakers of Am Engl can communicate with each other (relax!—see next point)

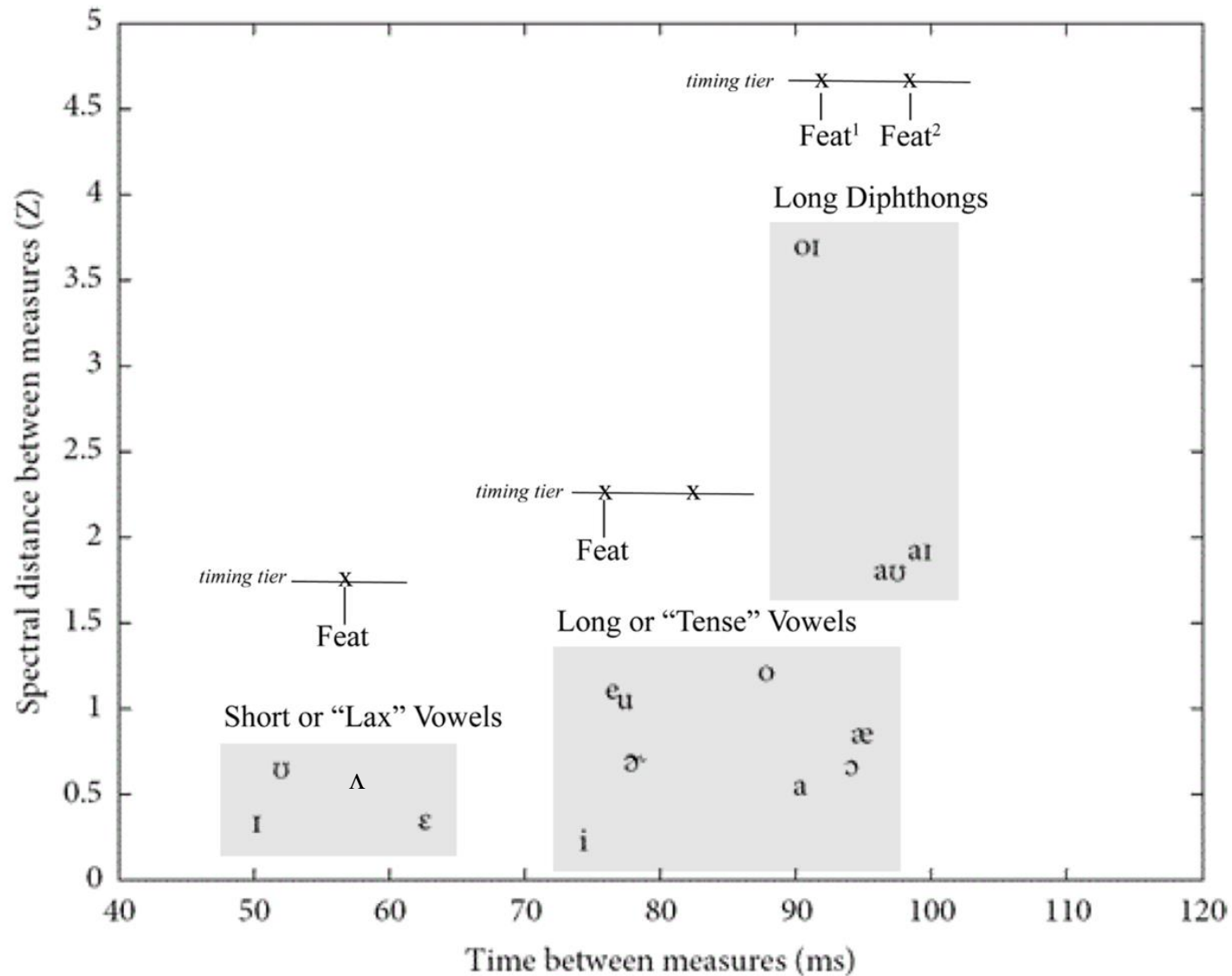
3. Am Engl Vowels - Theory

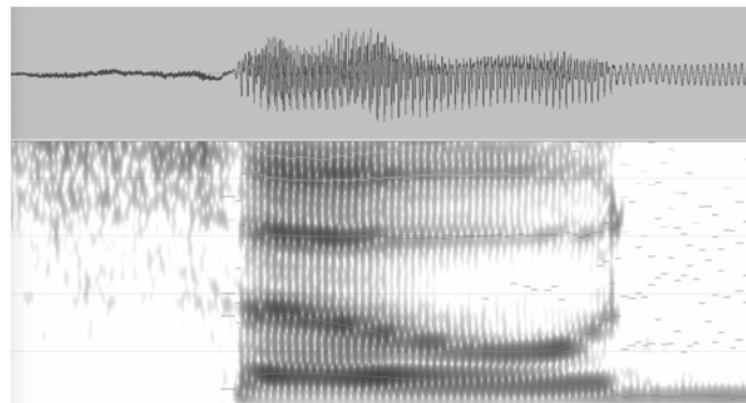
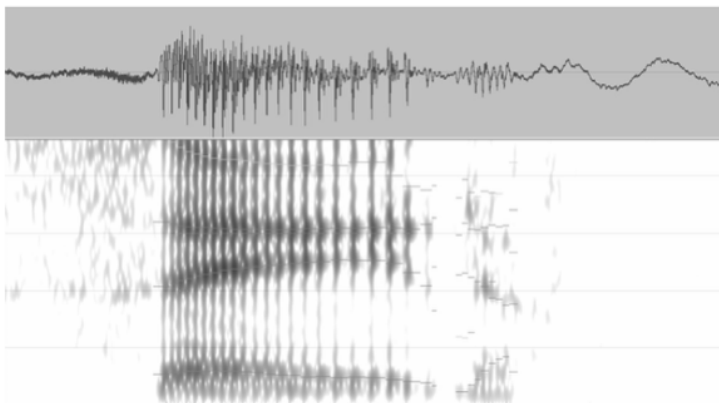
(Phonetic variation respects Phonology)

How the Am Engl vowel chart should look



Tense/Lax or Duration?





(beginning of
Arthur, the Rat)

Figure 1. Waveforms and spectrograms of *saved* [seɪd] and *sowed* [soʊd] spoken by a female speaker from Columbus, WI, born in 1990, recorded in 2006 as part of the x-ray microbeam project described below.

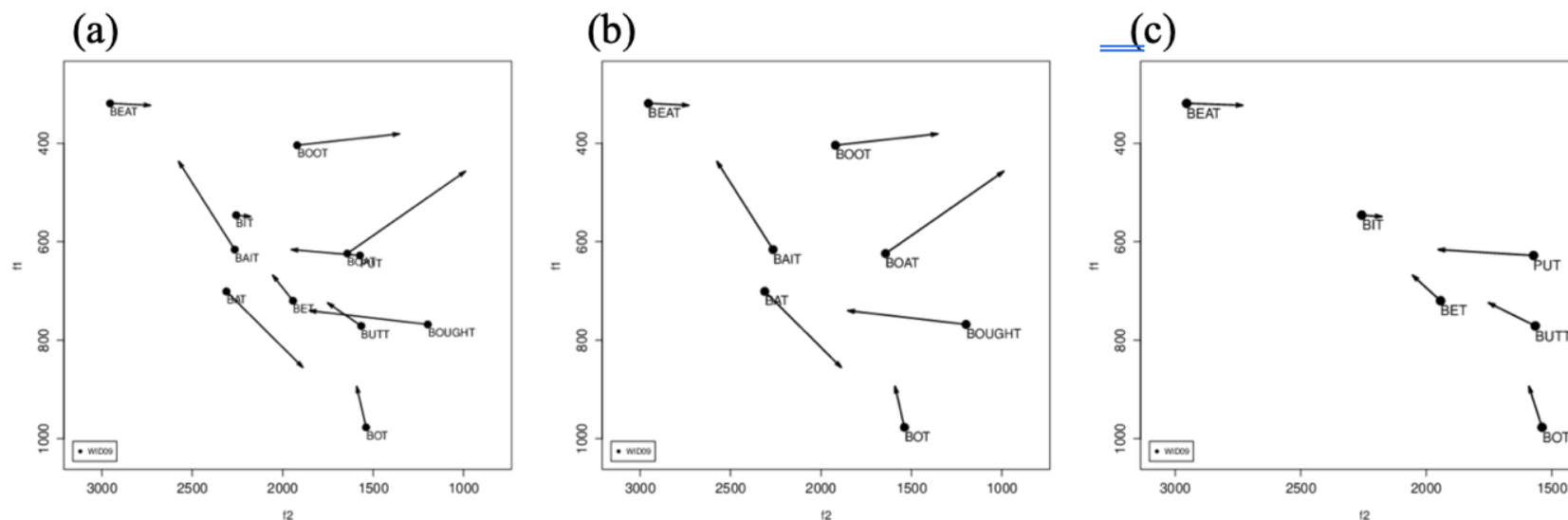
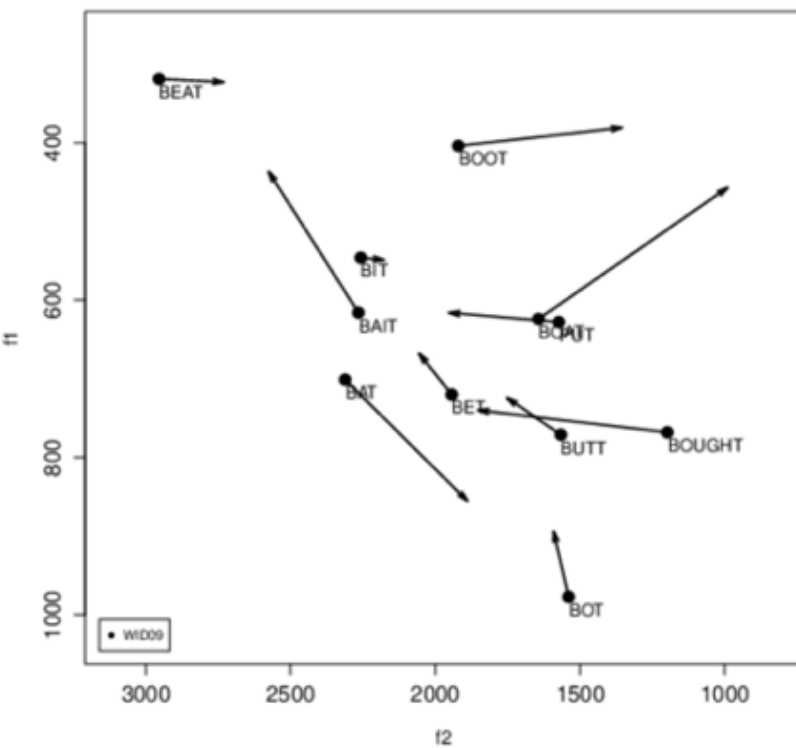
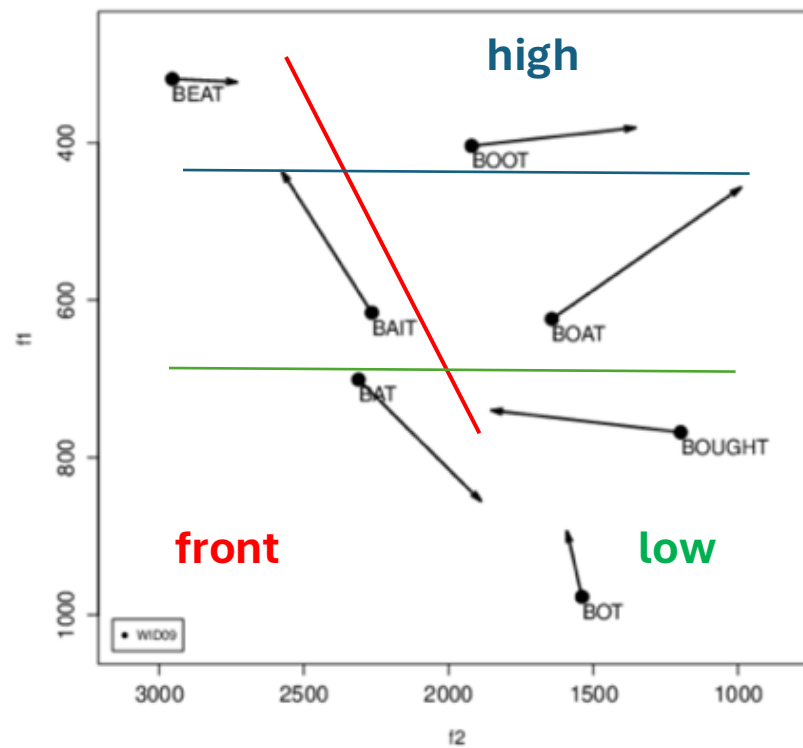


Figure 2. F2 x F1 vowel spaces for the speaker in Figure 1, plotted without normalization in NORM (Thomas & Kendall 2007): (a) eleven phonological monophthongs produced in the frame [s d]; (b) seven long phonological monophthongs produced in the frame [s d]; (c) four short phonological monophthongs with two long reference vowels produced in the frame [s d].

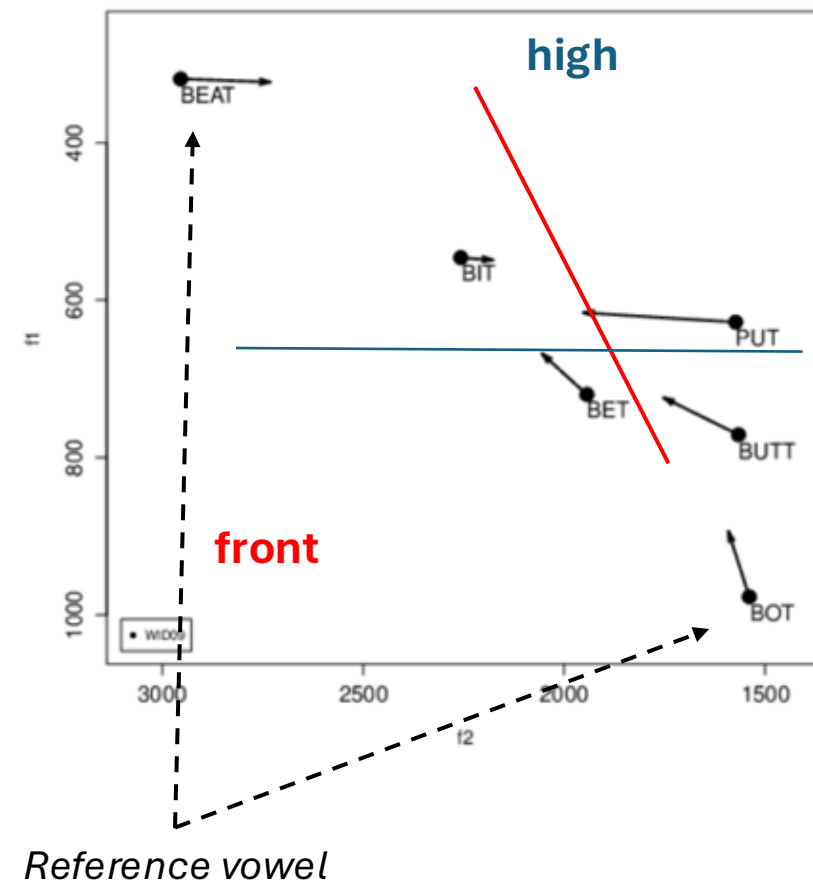
(a)



(b) Long vowels



(c) Short vowels



Dimensional Phonology (Avery & Idsardi 2001)

- Articulatory muscles work in oppositional pairs
- Control of those muscles can be modeled at a higher level (= Dimensions)
- Phonology manipulates the Dimensions and completes them with one of the gestural pair (aka privative distinctive features)

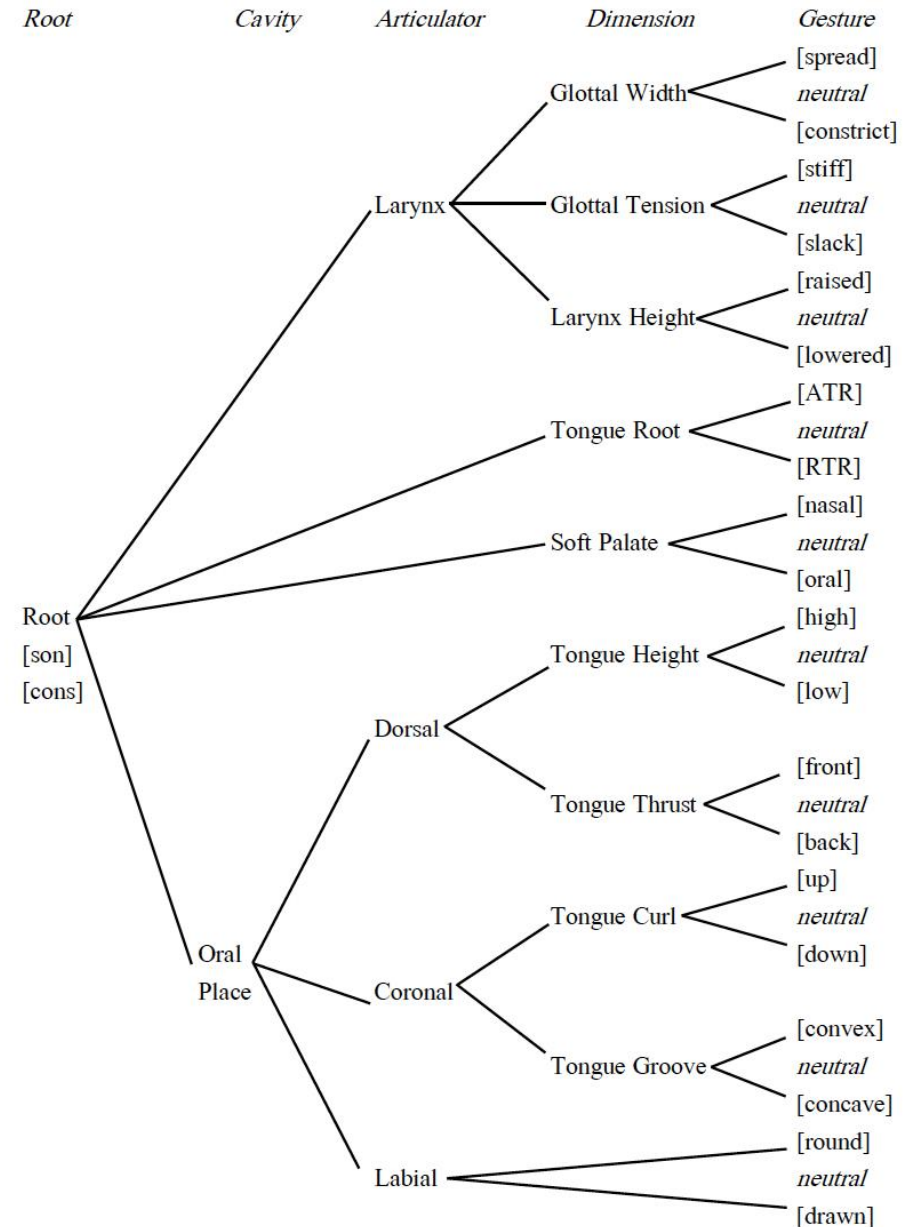


FIGURE 1. Modified feature system from Avery & Idsardi 2001:66 (see also Purnell & Raimy 2015:526).

Dimensions for vowels

“The vocal tract can assume different shapes by
Raising or lowering the tongue,
Advancing or retracting the body of the tongue,
Raising or lowering the jaw and
Rounding the lips.” (Olive, Greenwood & Coleman 1993: 28)

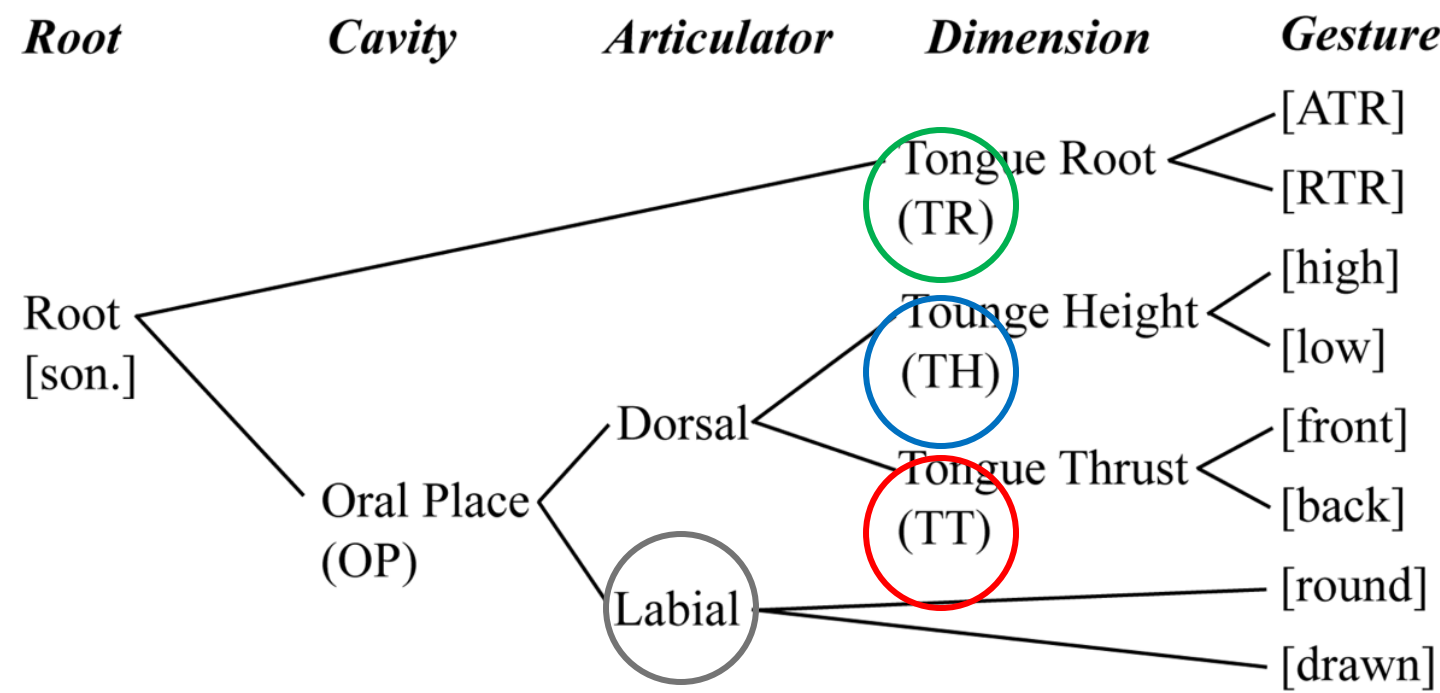


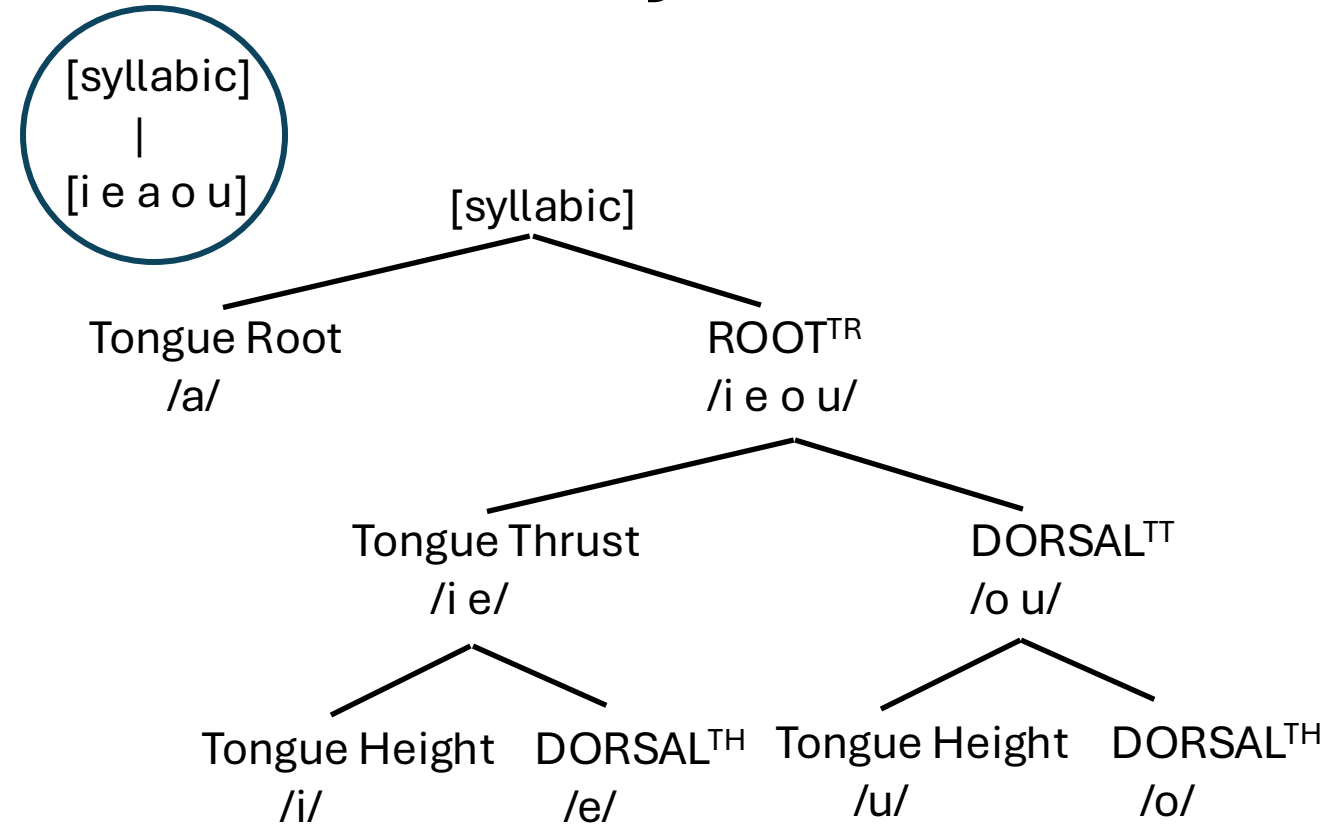
Figure 4. Vowel dimensions and gestural model of Avery & Idsardi (2001:66), adapted from Purnell & Raimy (2016:526, Figure 30.1)

Successive Division Algorithm (SDA, Drescher 2009)

- a) In the initial state, all tokens in inventory I are assumed to be variants of a single member. Set $I = S$, the set of all members.
- b) i) If S is found to have more than one member, proceed to (c).
ii) Otherwise, stop. If a member, M , has not been designated contrastive with respect to a dimension, G , then G is redundant for M .
- c) Select a new n -ary feature, F , from the set of dimensions. F splits members of the input set, S , into n sets, $F_1 - F_n$, depending on what value of F is true of each member of S .
- d) i) If all but one of $F_1 - F_n$ is empty, then loop back to (c).
ii) Otherwise, F is contrastive for all members of S .
- e. For each set F_i , loop back to (b), replacing S by F_i .

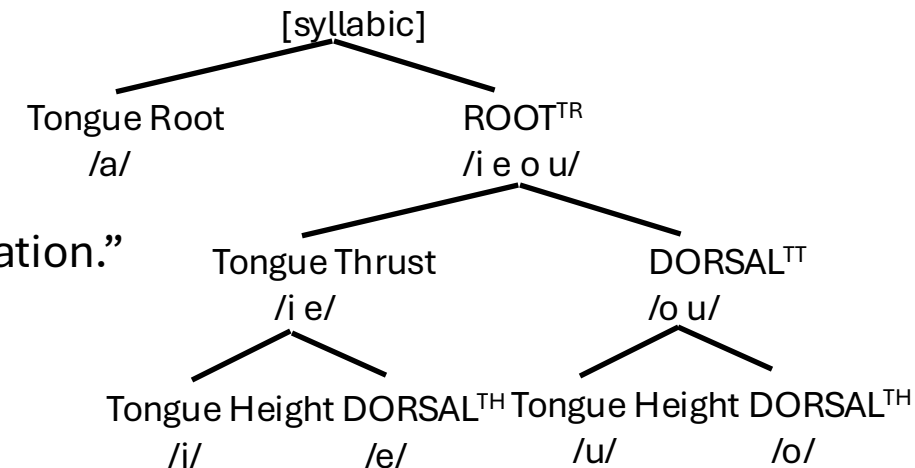
Example: Acquisition of five vowel system

- Assume all vowels are same category
- Notice /a/ different than others > assign TR while the other vowels are not TR
- Notice, of the remaining gestures, /i, e/ are different from /u, o/ > assign TT
- Notice, within pairs, /i/ different than /e/ and /u/ different than /o/ > assign TH

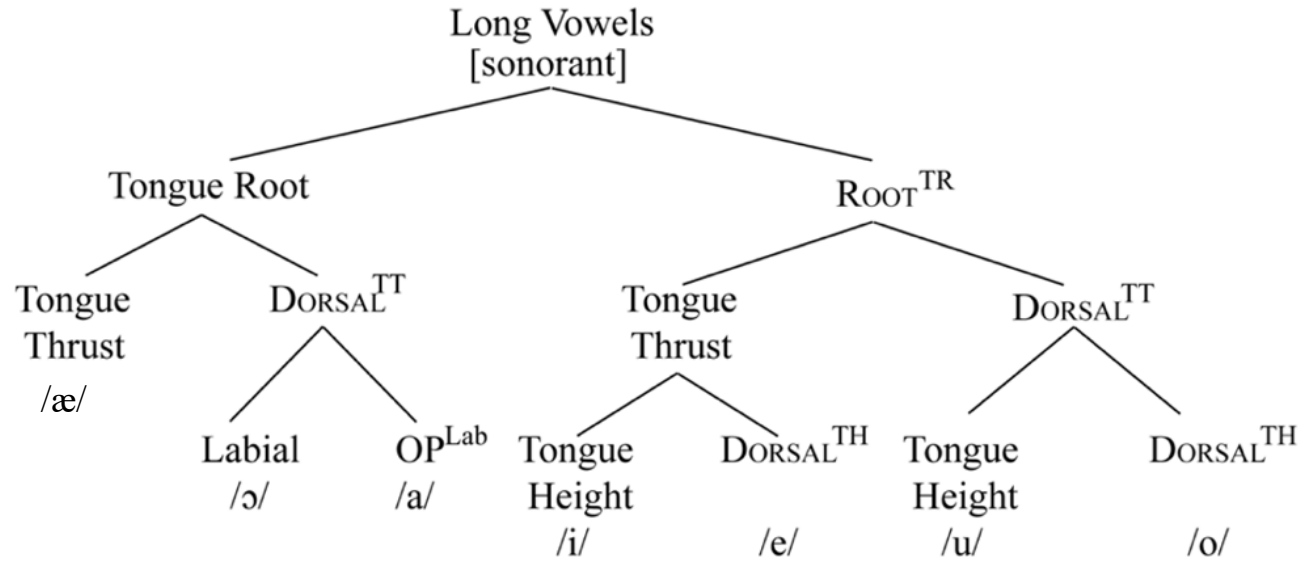


Featural Objects

- **DISTINCTNESS OF PHONEMES** (modified wording of Halle 1959:32, cited in Dresher 2008)
 - Segment-type {A} will be said to be different from segment-type {B}, if and only if at least one phonemic dimension for {A} has a parallel superordinate for {B}, or vice versa.
- Gestural Typology from the "Distinctness of Phonemes" principle
 1. Specified gestures (active dimension)
 - Mark a contrastive gesture (GW, LABIAL, TT, TR, etc.)
 2. Unspecified gestures (active stub)
 - Unmarked with respect to a contrastive gesture (LARYNX^{GW}, OP^{LAB})
 - Refers to the last node in a "stub"(an organizing node lacking some gestural information)
 3. Noncontrastive gestures
 - Unnecessary (invisible?) for a particular contrast (the real Ø), unreferred to
 - Latent: because universal set of features for all languages
- Dresher et al. 1994 and Neorealism: “Contrast influences representation.”



- (a) American English Long Vowel Hierarchy: TONGUE ROOT > TONGUE THRUST > TONGUE HEIGHT > LABIAL



- (b) American English Short Vowel Hierarchy: TONGUE THRUST > TONGUE HEIGHT

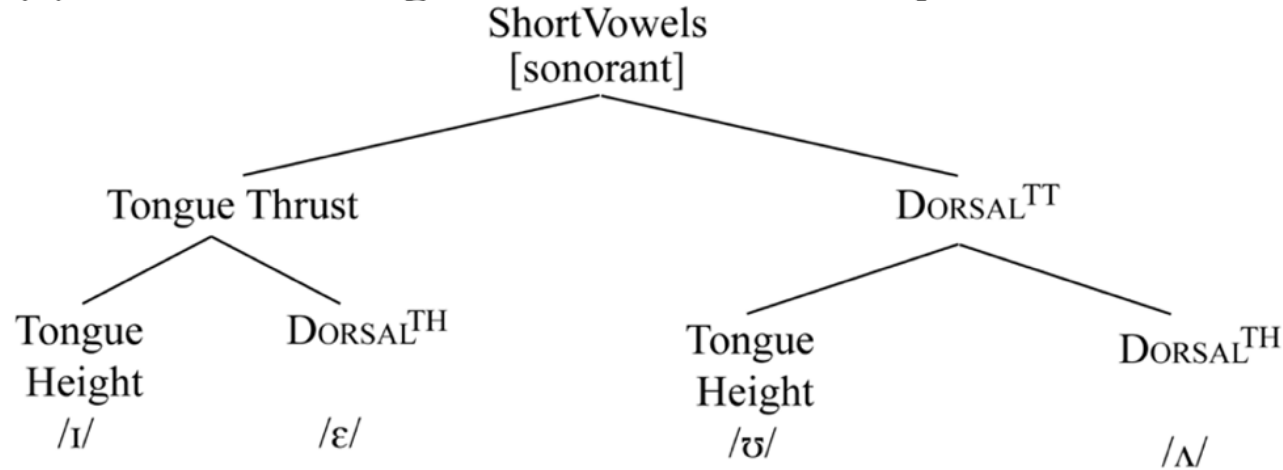
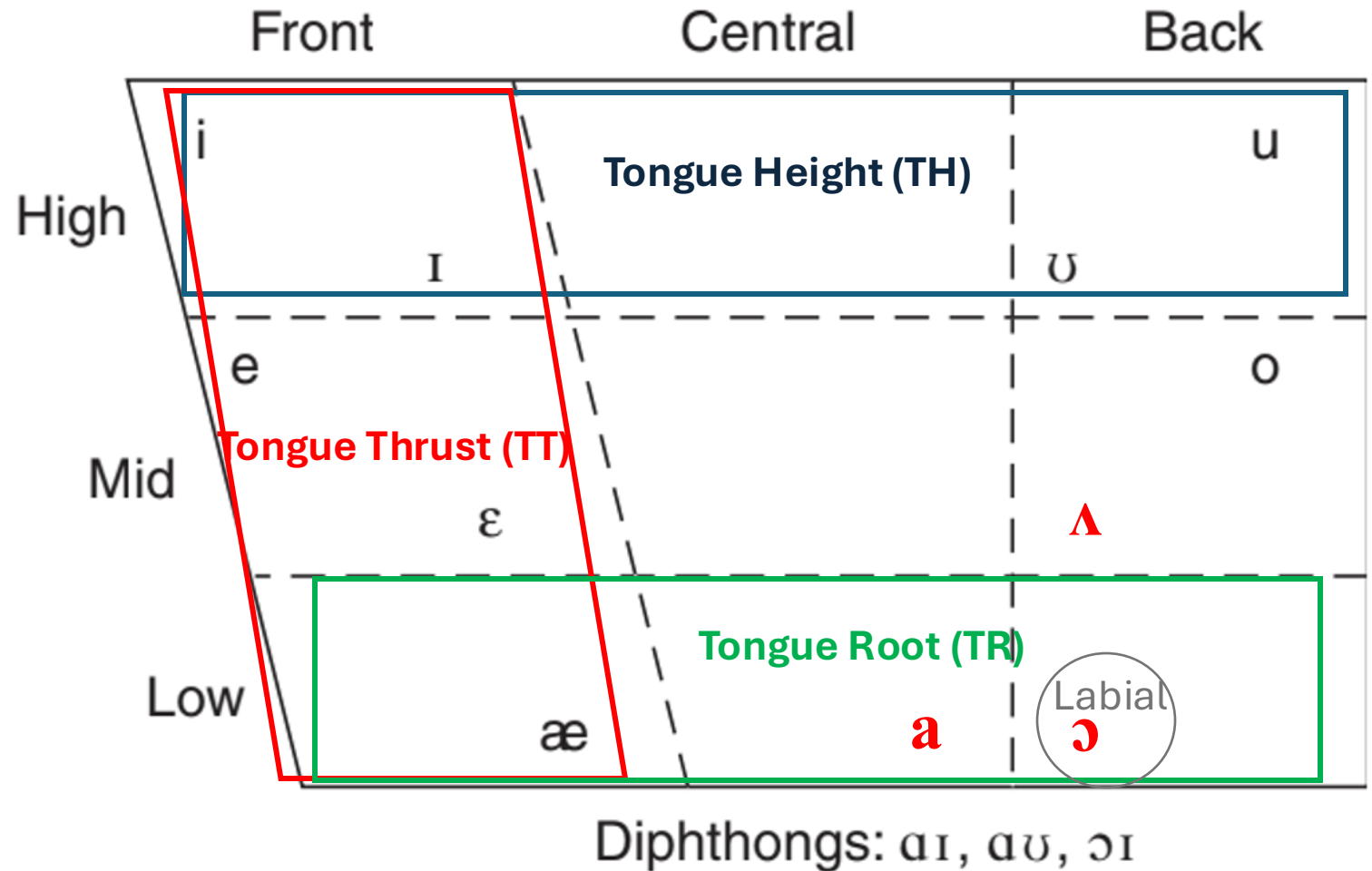
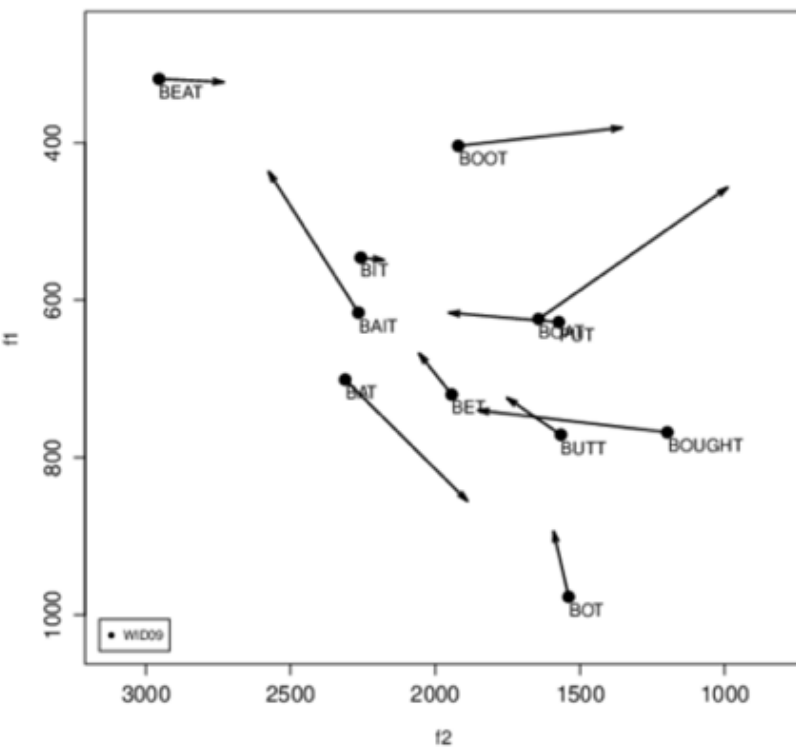


Figure 5. Long (a) and short (b) vowels and their dimensions for American English, based on Purnell, Raimy & Salmons (2019).

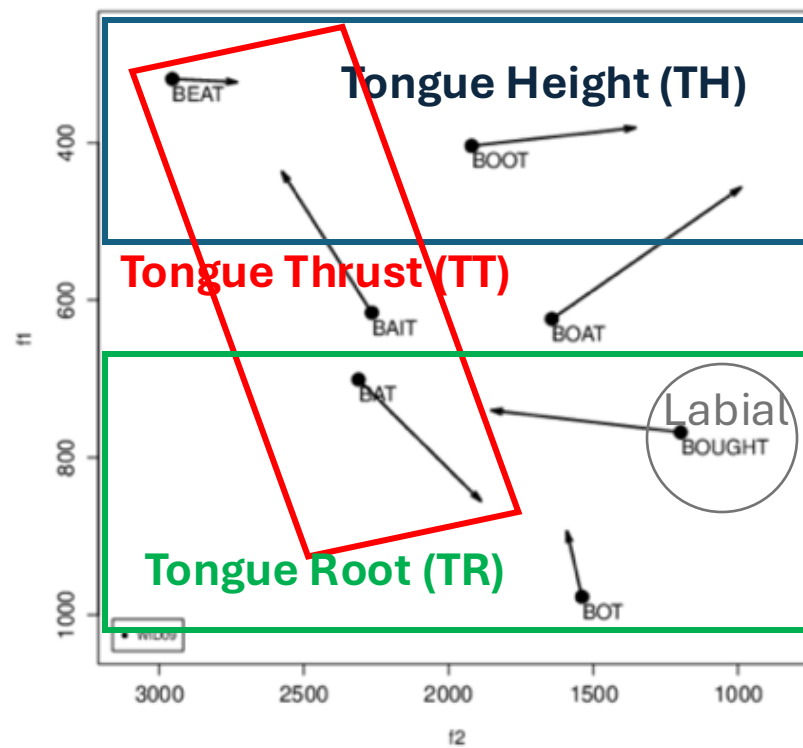
Dimensions of Am Engl vowels



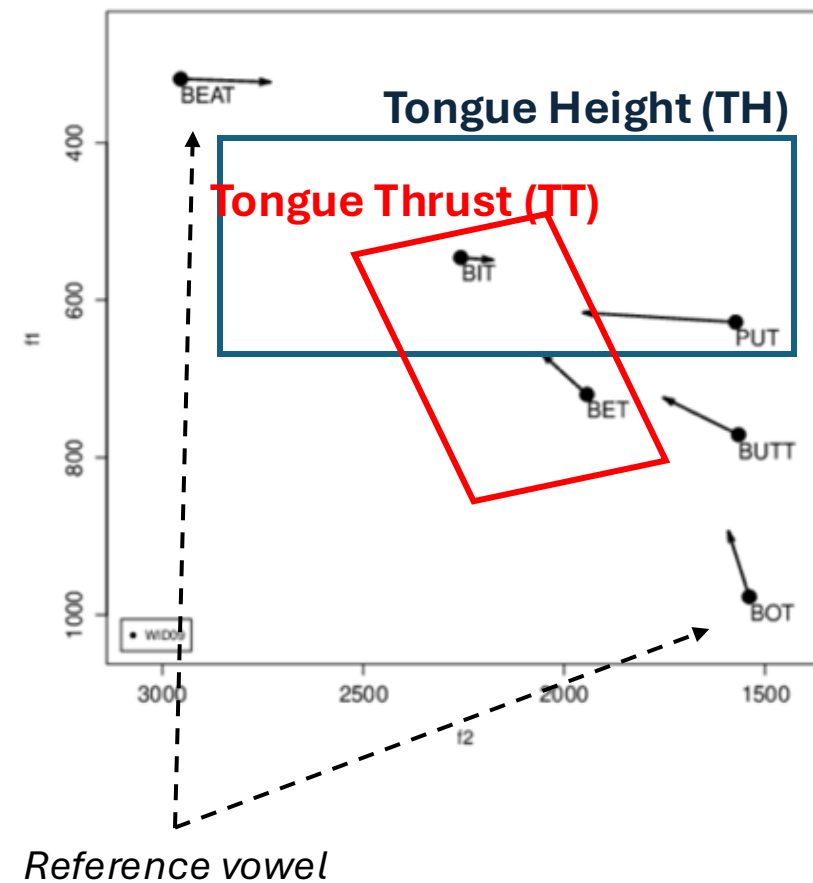
(a)



(b) Long vowels



(c) Short vowels



Predictions of Realism

- Most marked vowels are most stable (/i/: TT, TH;)
 - Most specified gestures (dimensions)
- Least marked vowels
 - Least specified gestures (dimensions)
- Variability
 - Respects contrastive phonology
 - Unmarked are more variable (Trubetskoy)
 - /u/ moves horizontally because TH
 - Other vowels don't seem to cross boundaries
 - /i, I/ and /e, ε/ in SCCS is a mirage because of length; i.e. no change as long as length doesn't change and cross competitors
- System issues
 - Should **not** see the front vowels moving into the back, but we can see the back vowels moving front [we do: SCCS]
 - Should **not** see the high vowels lowering into the non-high vowels, but we could see the non-high vowels moving towards the high vowels [we do: æ tensing]

Why is all this phonology important to sociophonetics?

- **Speech is a brokered agreement** (Lieberman 1996) so we need some agreement on what is in the signal; presumes a fixed set of privative aspects (A&I's feature set); actual phonetic characteristics make a family of cues which can offset each other (trading relations of Repp 1981, 1982; see Purnell, et al. 2005a, b)
- **Contrasts** (Dresher and rest of TSC) must signal distinctiveness and be preserved in act of speech
- Outside of that, **do anything for your group that doesn't violate contrasts**
 - e.g., /u/ fronting in vowel space does not violate TH; /u/ lowering in vowel space below /o/ would violate TH (caveat that other phonetic features aren't going on)
 - /o/, being fairly underspecified (shown later) could go wherever it wants [but note that it often anchors the back limits of vowel space]

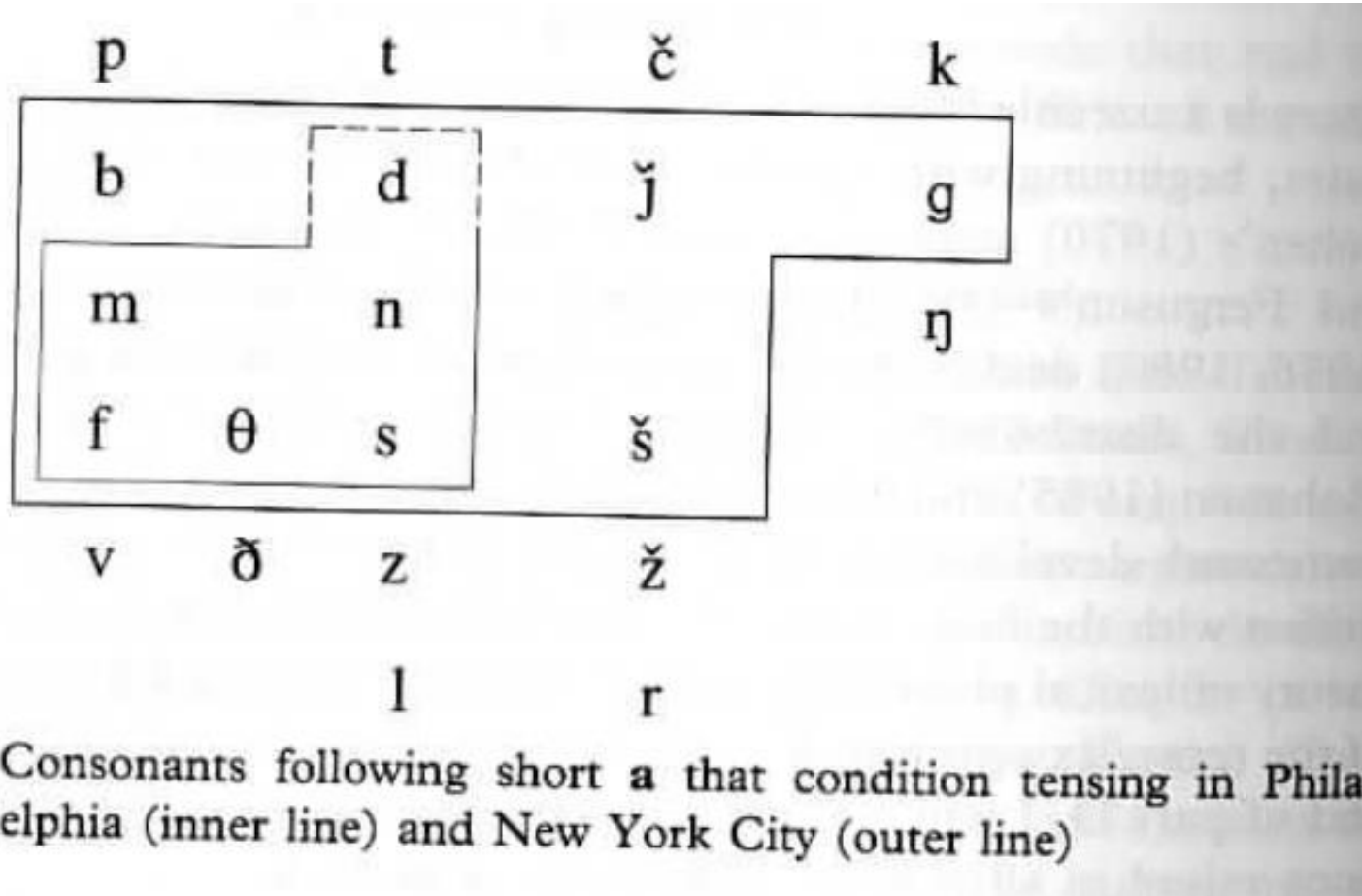
Pronunciation Payoff

1. More than one way to produce or fine-tune vowels (e.g., /a, ɔ/)
2. In spite of shifts and low back merger, most of the native and nonnative speakers of Am Engl can communicate with each other (relax!—see next point)
3. Contrasts are important but variation within contrasts more about groups

4. Analysis

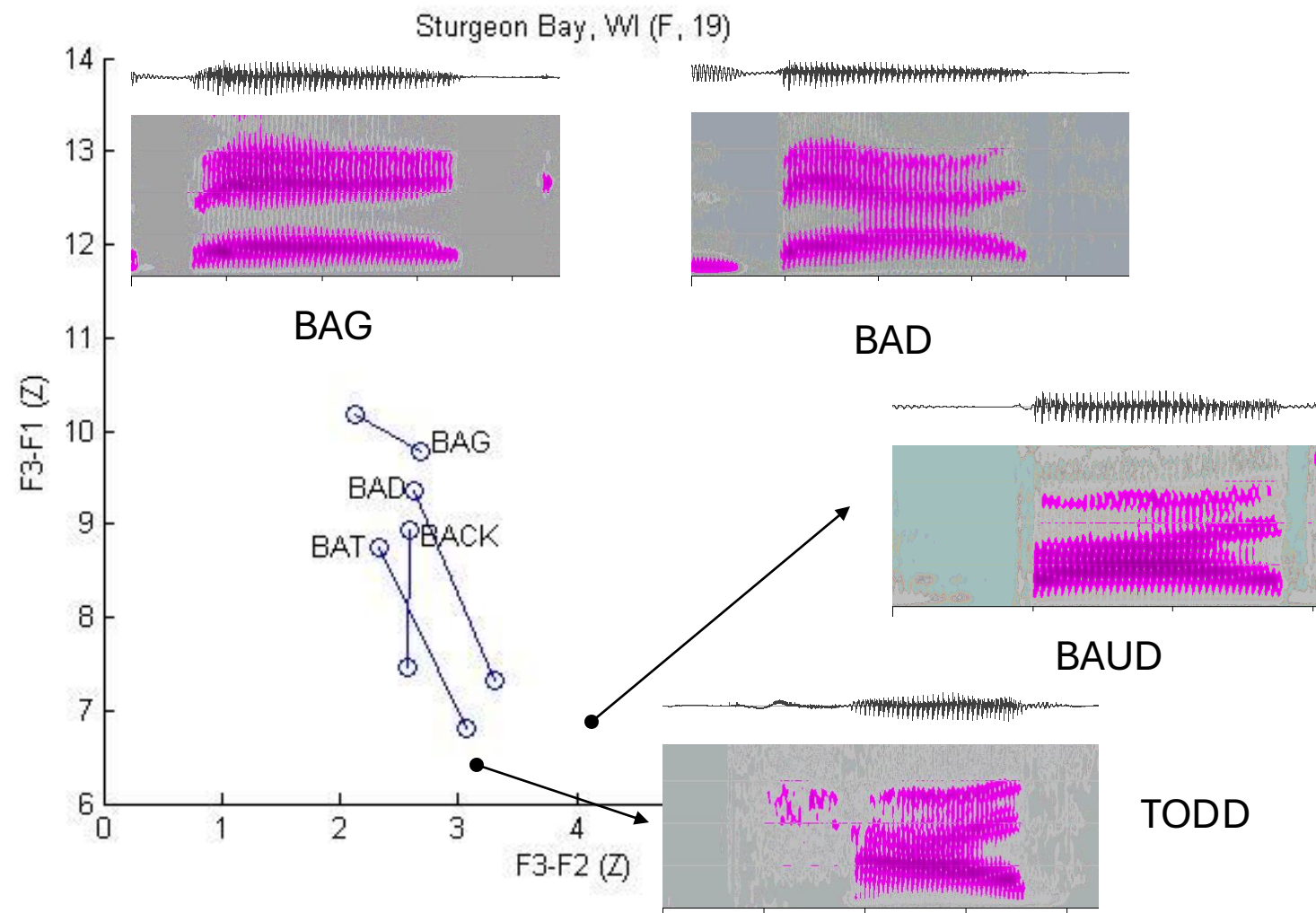
(Dimensional hierarchy makes predictions)

Regional /æ/ raising (short-a tensing)



Other areas such as Upper Midwest have /æ/ tensing only + “Prevelar Raising”

WI EAE /æ/



Shifts (and LBM) in Modern American English

Podesva 2011: 33

Nesbitt 2021: 336

FIGURE 4
Low-Back-Merger Shift Vowel Configuration

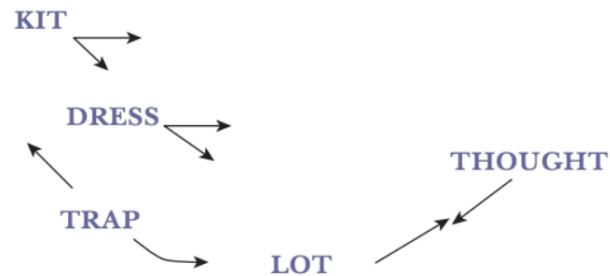


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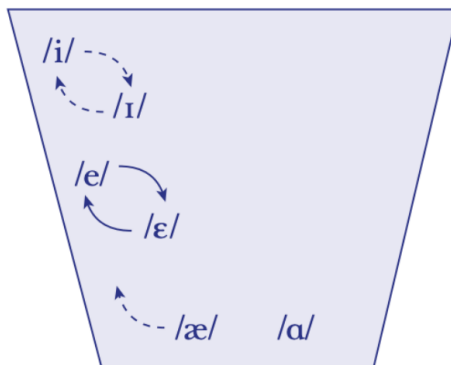


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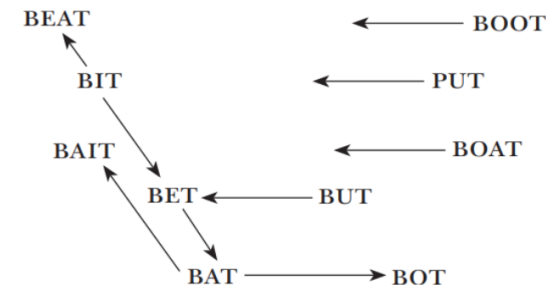
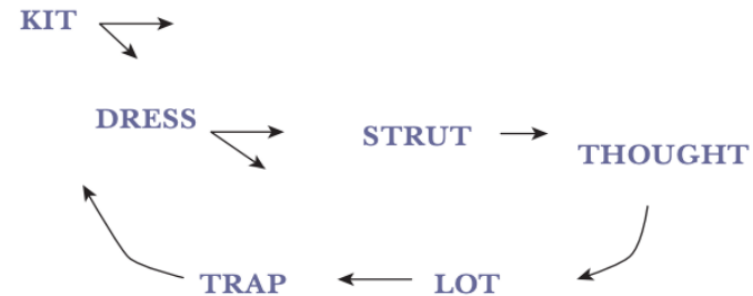


FIGURE 2
A Typical Northern Cities Shift Vowel Configuration



Nesbitt 2021: 334

Summary: Pan-AAE in WI AAE? (Purnell 2009)

- Nonparticipation in low back merger **yes**
- Phonetic conditioning of /æ/ only before nasals **yes**
- Raised /ɛ/ with lowered /eɪ/ **no**
- Restructuring (generally fronting) of /ə, ʊ, u/ **some fronting**
- Monophthongization of /aɪ/ before voiced obstruent **no**
- Monophthongization of /oʊ/ **variable**
- Rhoticity in /Vɹ, əɹ, ʒɹ/ not pronounced **no**

Variation of WI AAE speakers

TABLE 8.2
African American Subjects

	<i>Gender</i>	<i>Birth Year</i>	<i>Age</i>	<i>Dialect City</i>	<i>Interviewer</i>
Group 1 (lowest contact)					
WAAE001	M	1985	22	Racine	AA
WAAE002	F	1986	21	Milwaukee	AA
WAAE003	F	1988	19	Milwaukee	AA
Group 2					
WAAE007	F	1978	23	Milwaukee	W
WAAE008	F	1980	22	Milwaukee	W
WAAE009	F	1977	24	Milwaukee	W
Group 3 (highest contact)					
WAAE004	F	1985	22	Milwaukee	W
WAAE005	F	1983	19	Milwaukee	W
WAAE006	F	1981	21	Wauwatosa	W

TABLE 6
Comparisons of Select Features by WAAE Subject

<i>Speakers</i>	<i>01</i>	<i>02</i>	<i>03</i>	<i>07</i>	<i>08</i>	<i>09</i>	<i>04</i>	<i>05</i>	<i>06</i>
BET lowering	–	?	–	–	–	–	–	+	?
BAN raising	–	–	+	+	+	+	+	+	+
BAG raising	–	–	+					+	+
Canadian raising	–	–	–	–	?		+	+	–
BIDE	cent.	cent.	cent.	back	cent.	back.	cent.	for.	for.
BAR (<1500)	+	+	+	–	–	+	+	+	+
BOOT, BOAT (<1400)	–	–	–	BOOT	BOAT	+	+	–	–
BOOK, BUT (>1400)	+	+	+	+	+	+	+	+	+
BOUT tail < BOUGHT	–	–	–	at	at	at	at	above	above

Shifts (and LBM) in Modern American English and Short Vowels

FIGURE 4

Low-Back-Merger Shift Vowel Configuration

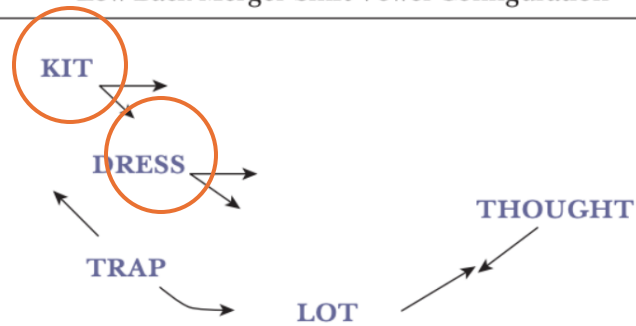


FIGURE 1

The California Vowel Shift
(based on Eckert 2008c, 34)

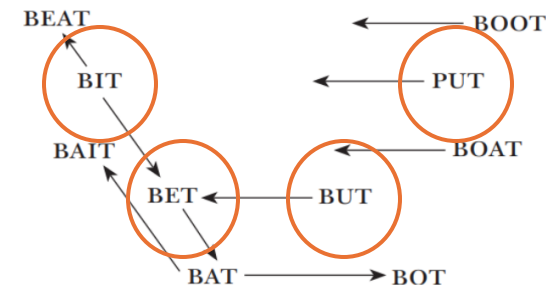


FIGURE 1

Front and Low Vowels of the Southern Vowel Shift

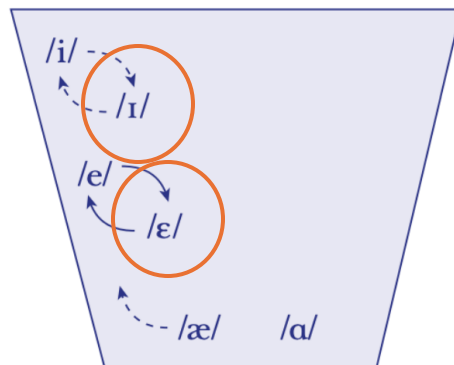


FIGURE 2

A Typical Northern Cities Shift Vowel Configuration

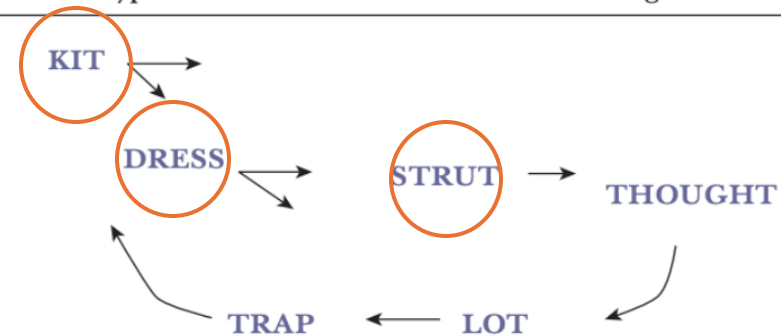


FIGURE 7

Selected Mean Vowel Measurements for 53-Year-Old Woman
from Rutland, Vermont (TS 434)

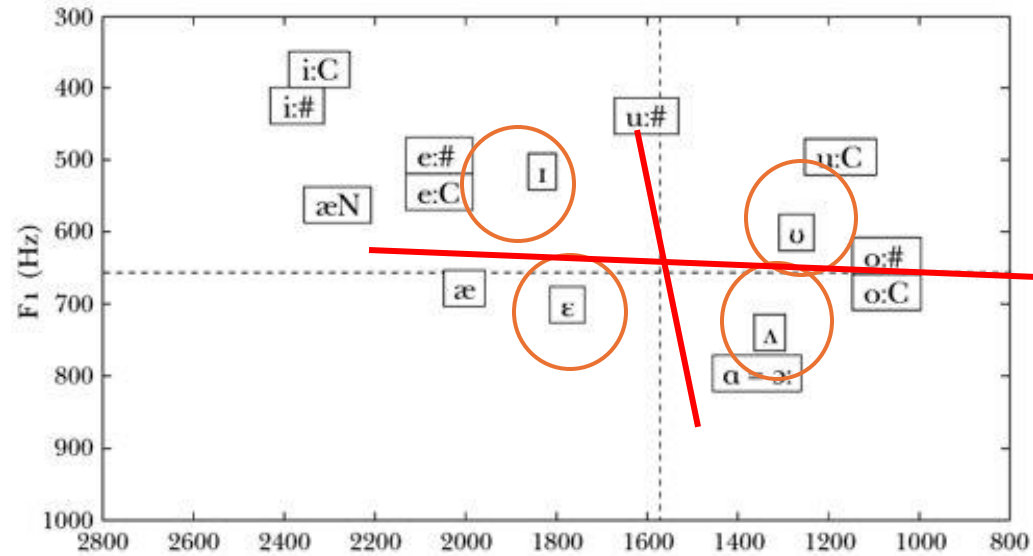
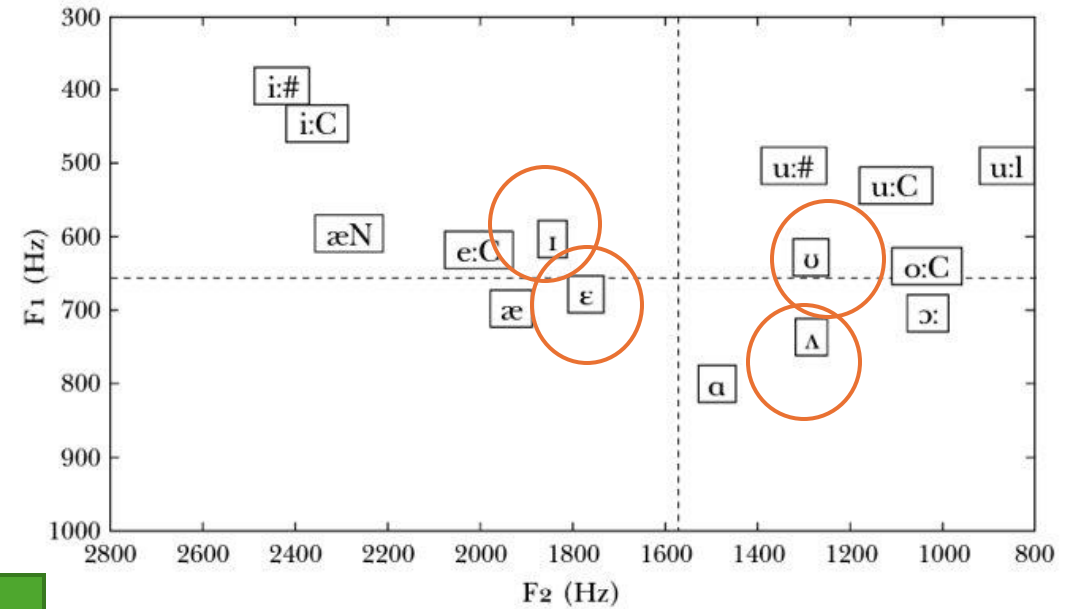


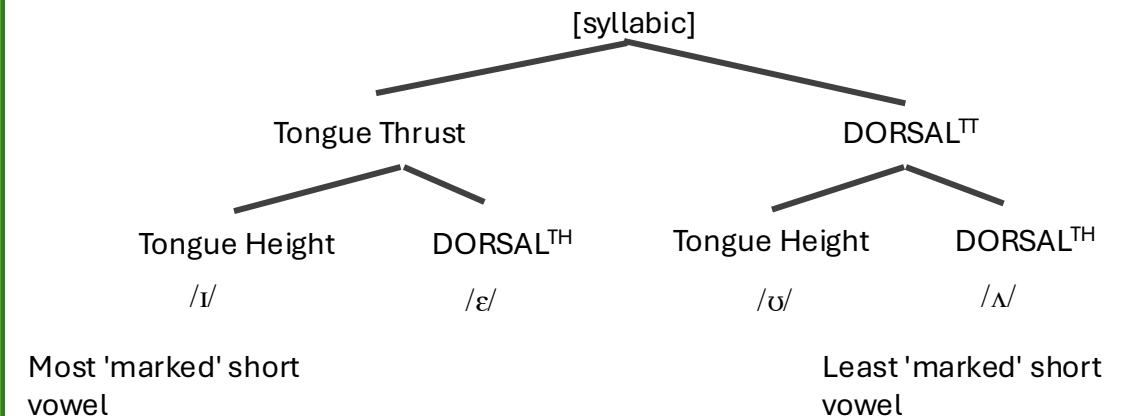
FIGURE 5

Selected Mean Vowel Measurements for 57-Year-Old Man
from New Britain (Hartford), Connecticut (TS 465)



Expectations:

- 1a. TT and DOR^{TT} to be further apart than between TH and DORTH (higher in the hierarchy)
- 1b. /I/ most stable (TT, TH) and /Λ/ least stable (only superordinates)
- 1c. /ε/ moves up (TT), not back; /o/ moves front (TH), not down
- 2a. DOR^{TT} front; TT do not back (Labov Principle III; DOR^{TT} are unmarked and free to move)
- 2b. DORTH raise; TH do not lower (Contra Labov Principle II)



Lansing, Michigan Vowels

FIGURE 3

Combined Normalized Vowel Means for Six Lansing Anglo Women
(b. 1985–90, interviewed in 2007) Based on Word-List Data Taken

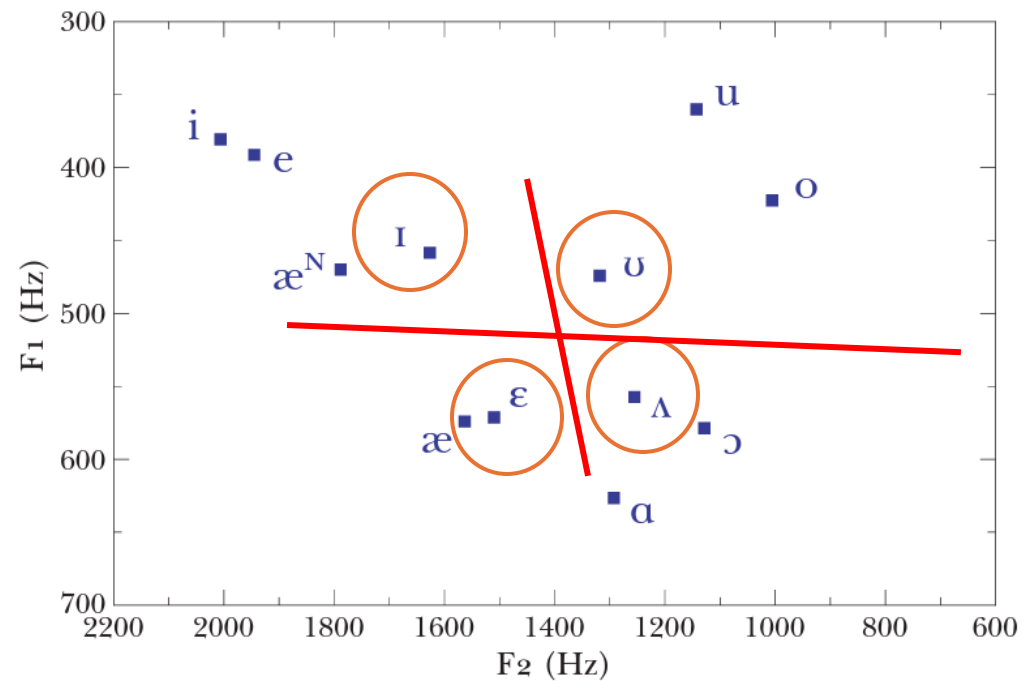
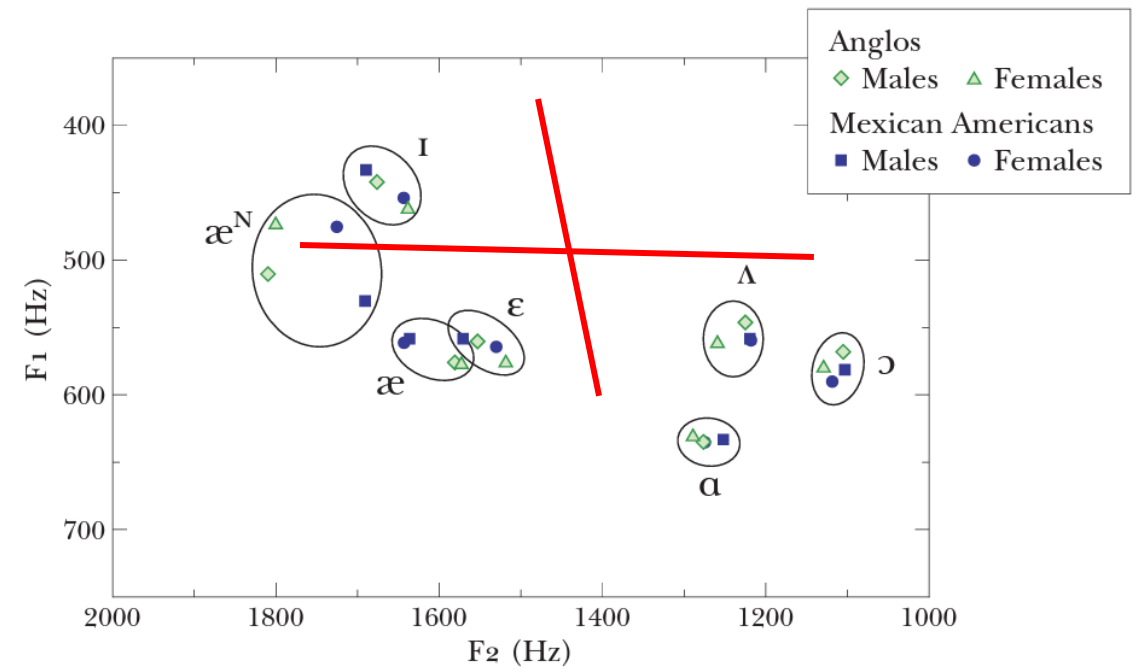


FIGURE 4

Vowel Chart Showing Mexican American and Anglo Pronunciation of NCS Vowels
Based on Word List Data (Lobanov Normalization)



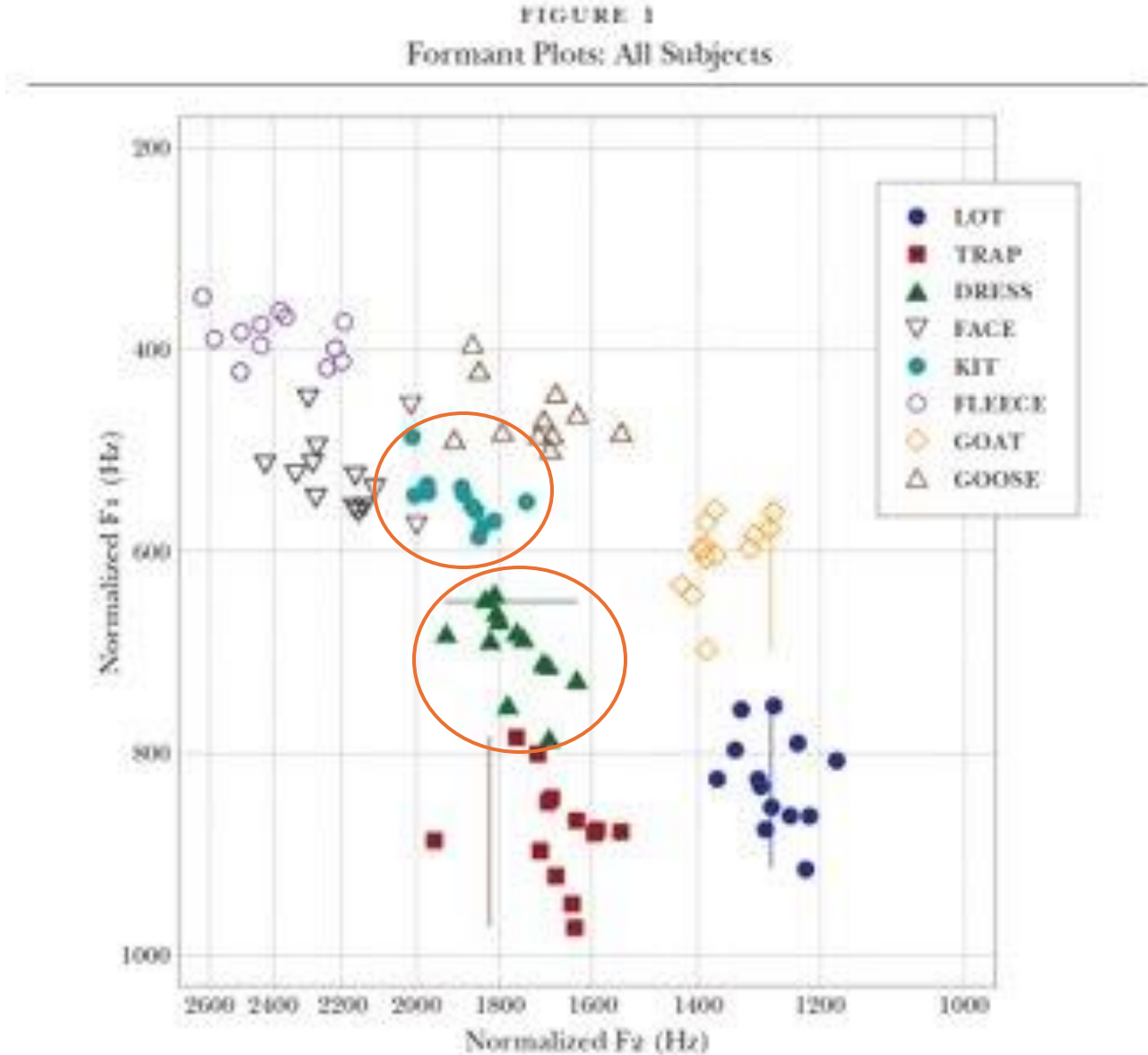
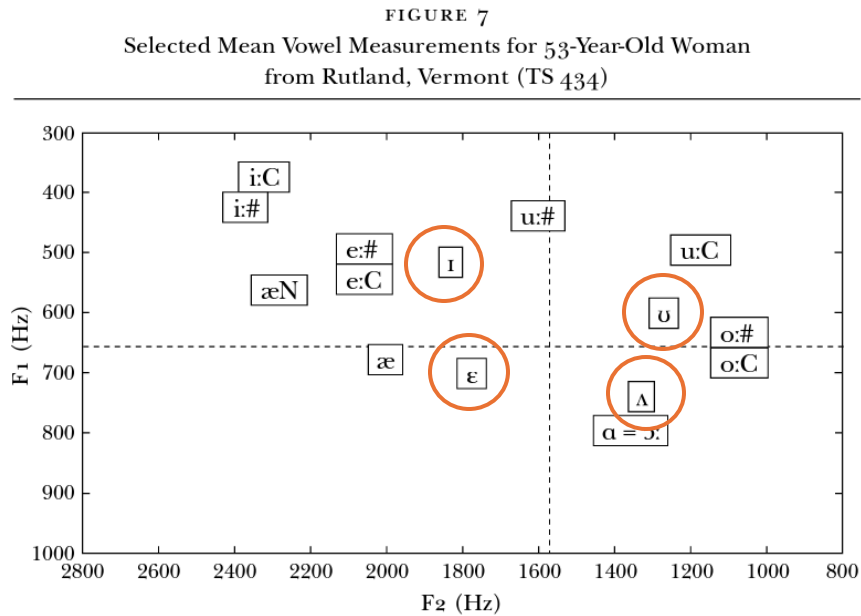
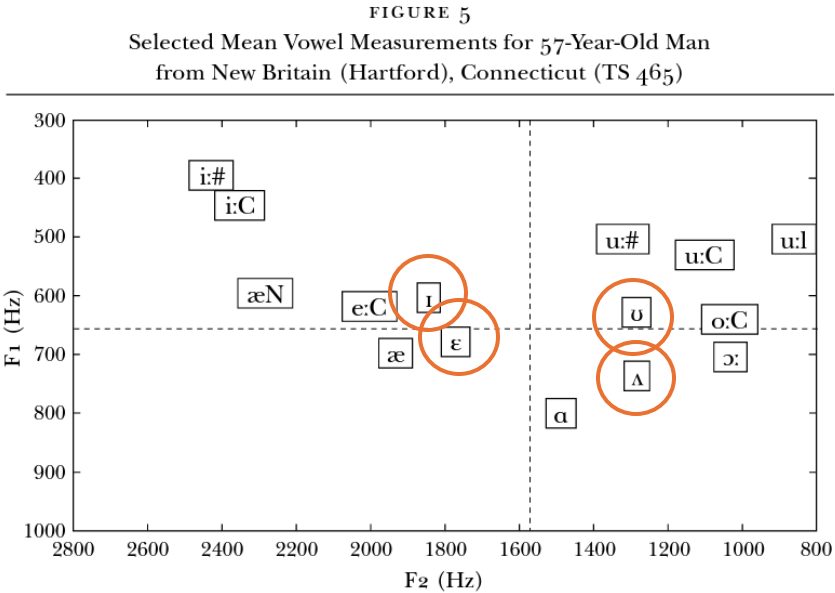


FIGURE 3

Vowel Plot of African American Female, Born 1909,
from Swan Quarter in Hyde County

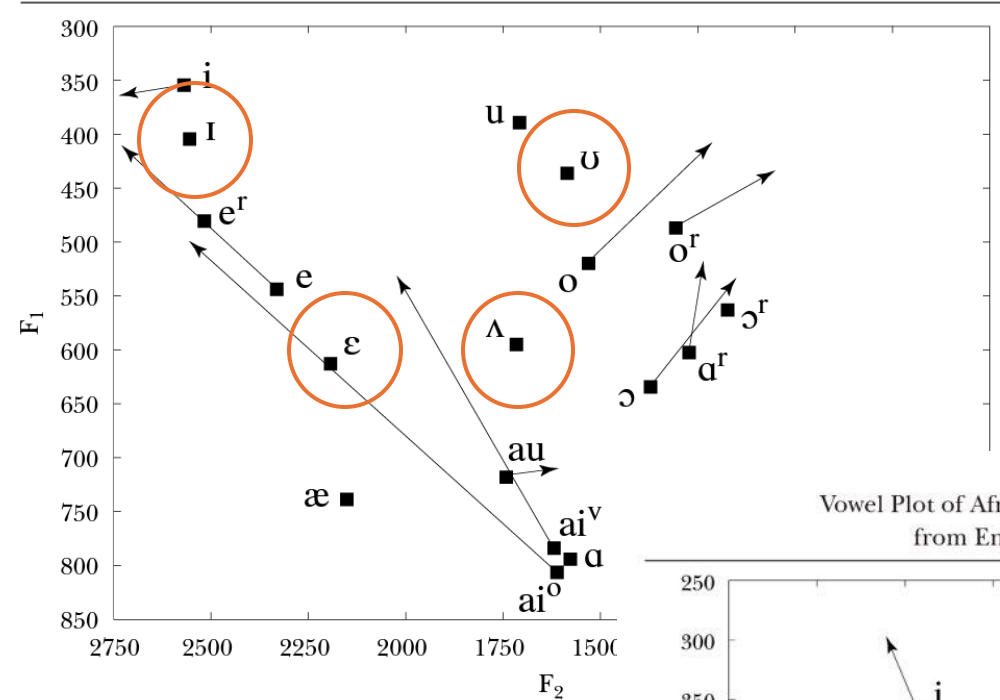


FIGURE 2

Vowel Plot of African American Female, Born 1906,
from Englehard in Hyde County

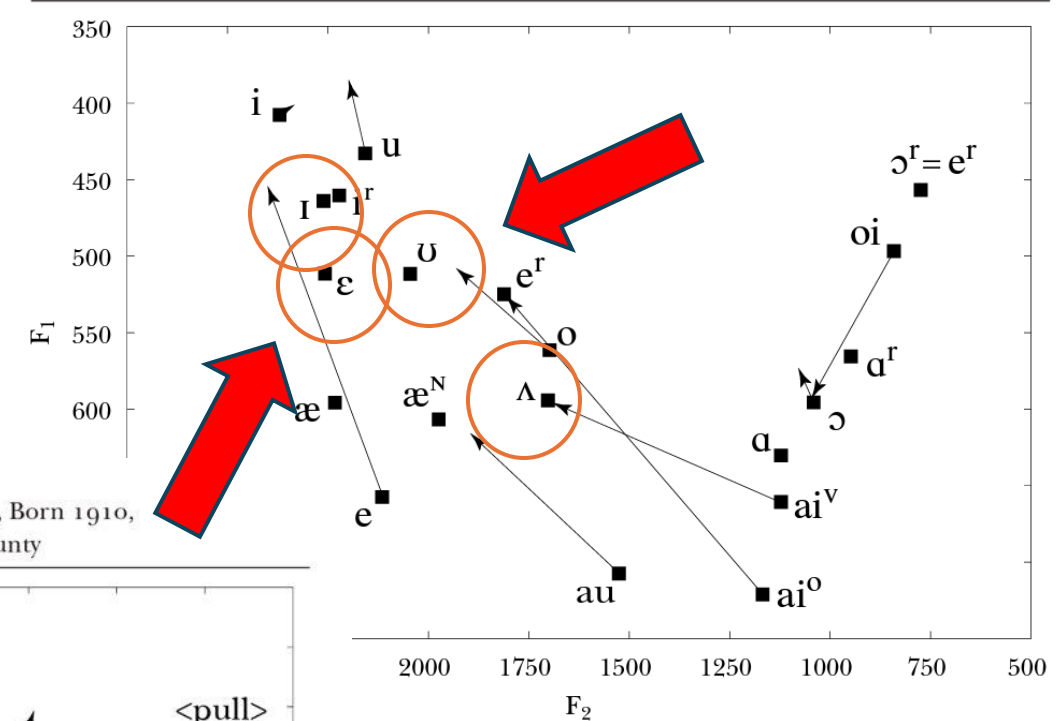


FIGURE 4

Vowel Plot of African American Male, Born 1910,
from Englehard in Hyde County

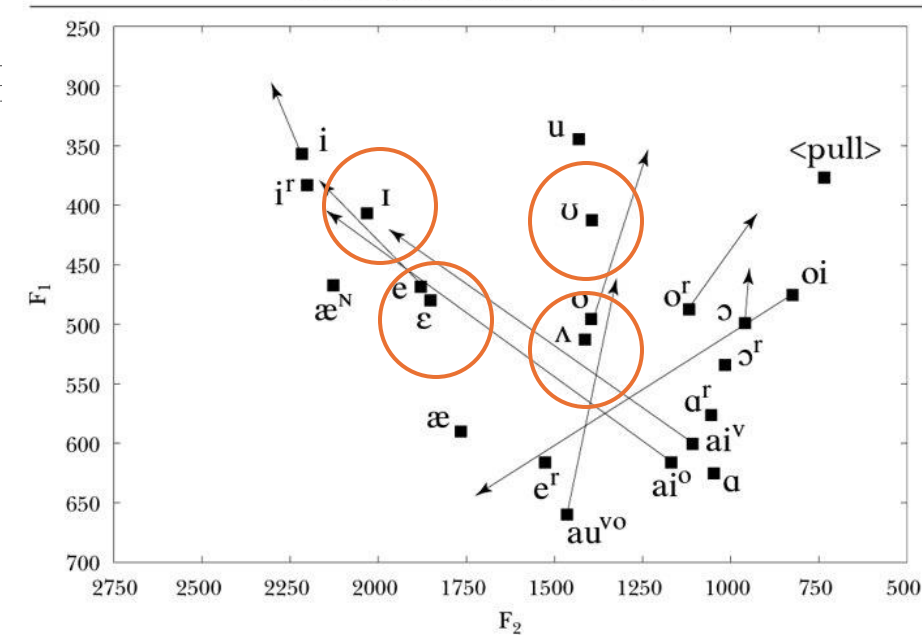
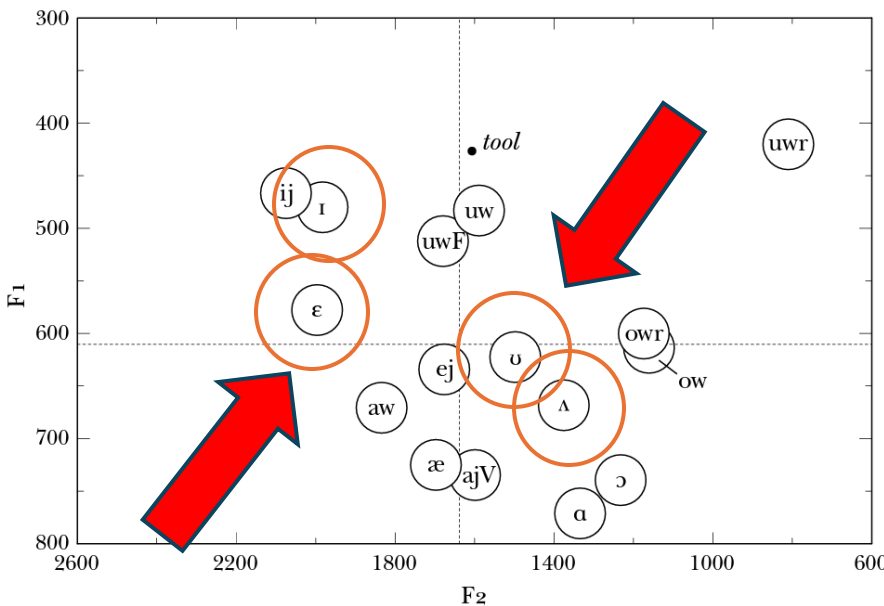


FIGURE 2
Vowel Plot for Sally, a European American Female over 40 Years of Age



Fridland 2003

figure 5
Vowel Plot for Kenisha, an African American Female under 25 Years of Age

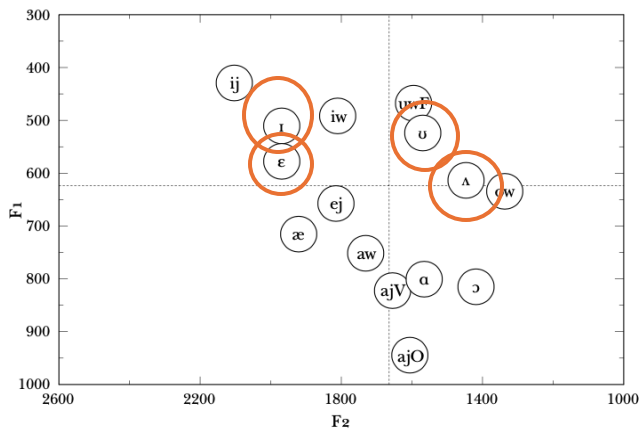


FIGURE 3

Vowel Plot for Valessa, an African American Female over 40 Years of Age

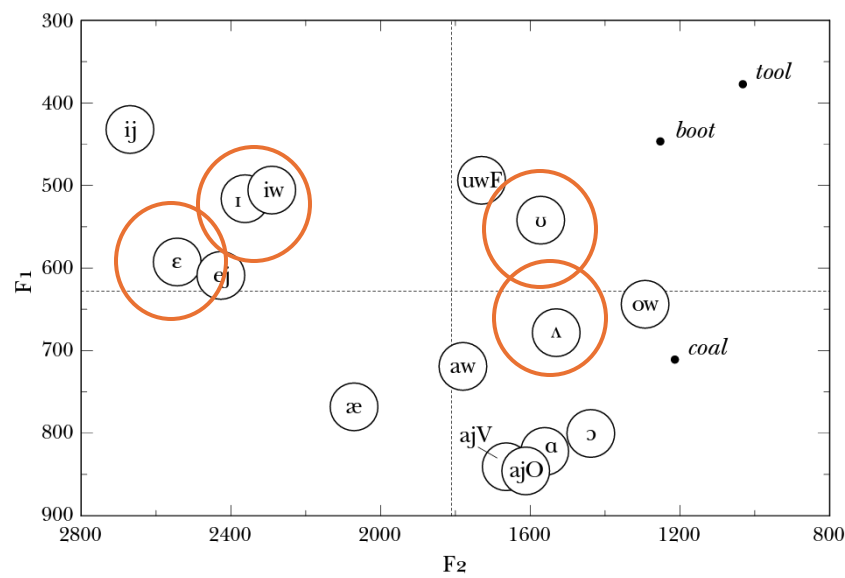


figure 8
Vowel Plot for Mike, a European American Male under 25 Years of Age

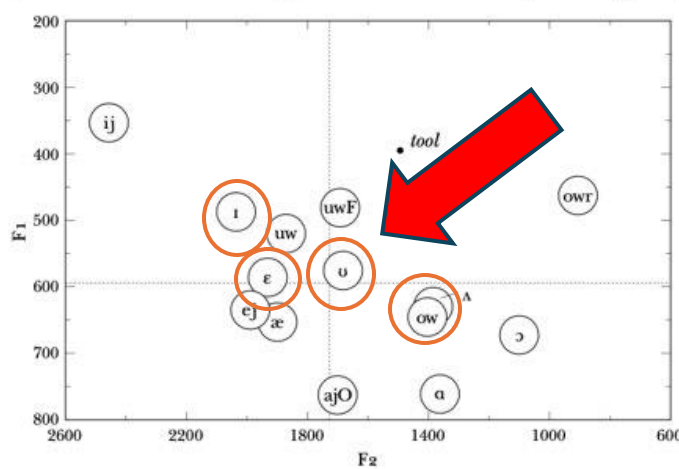


FIGURE 4

Vowel Plot for Cedric, an African American Male over 40 Years of Age

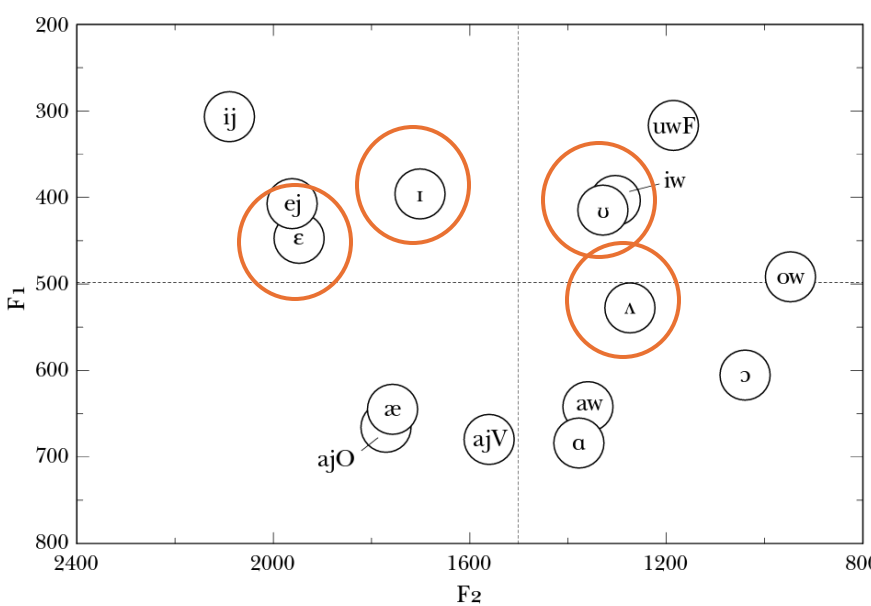
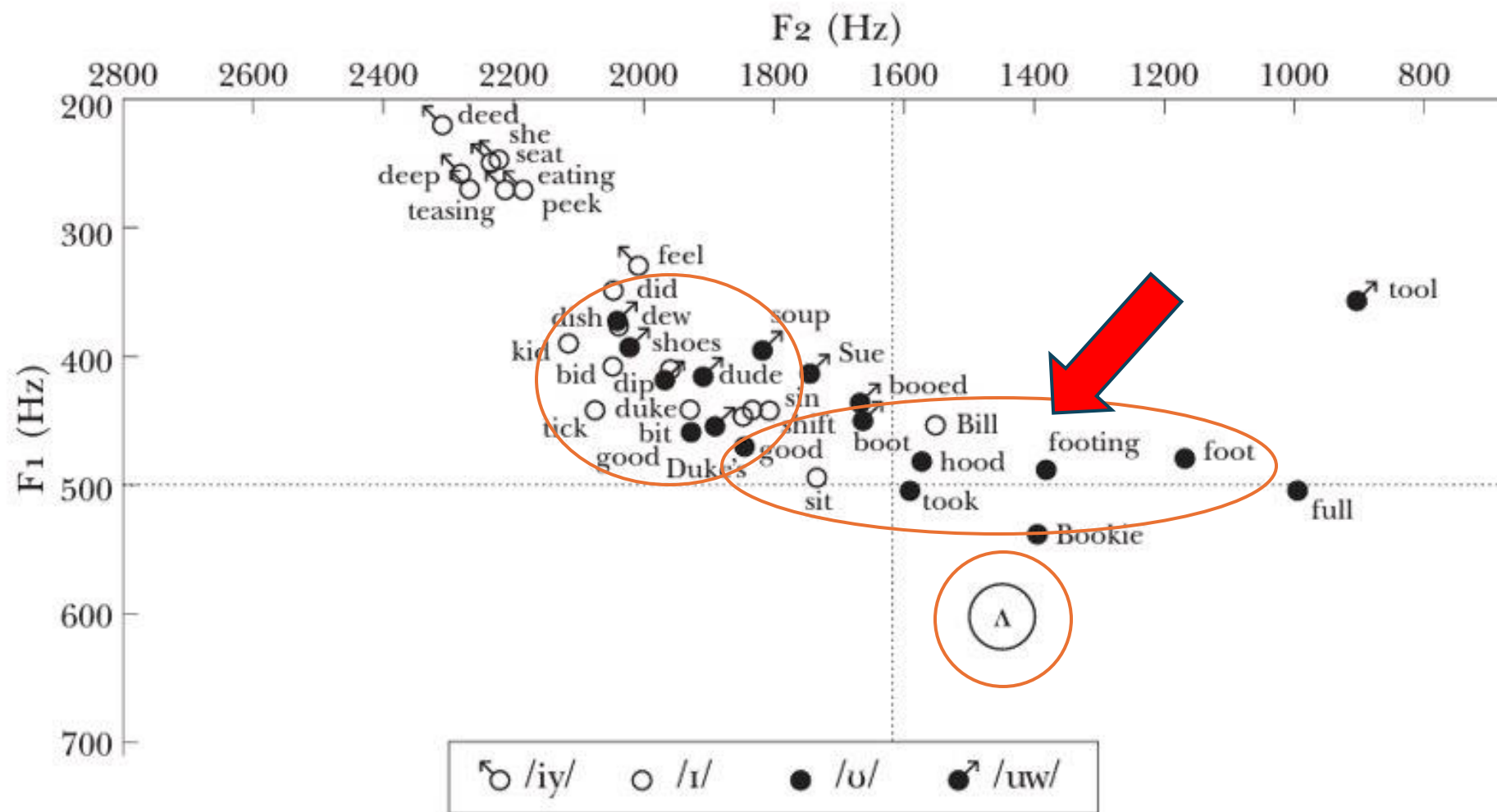


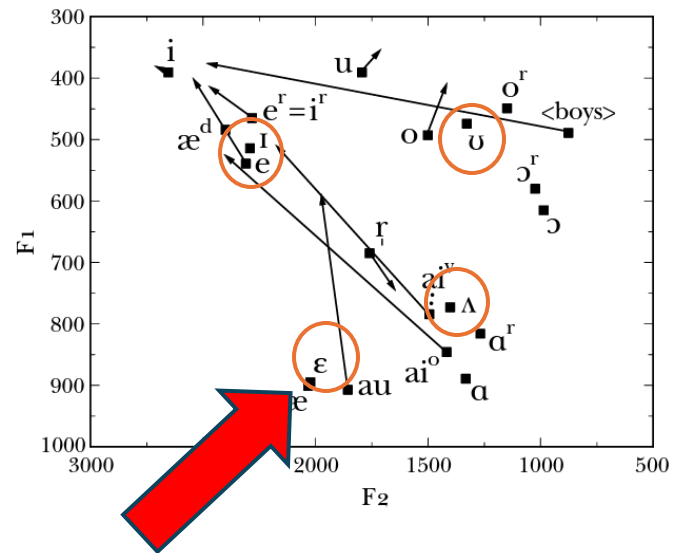
FIGURE 1

High Front and Back Token Distributions for M.H., a Male Reno Native



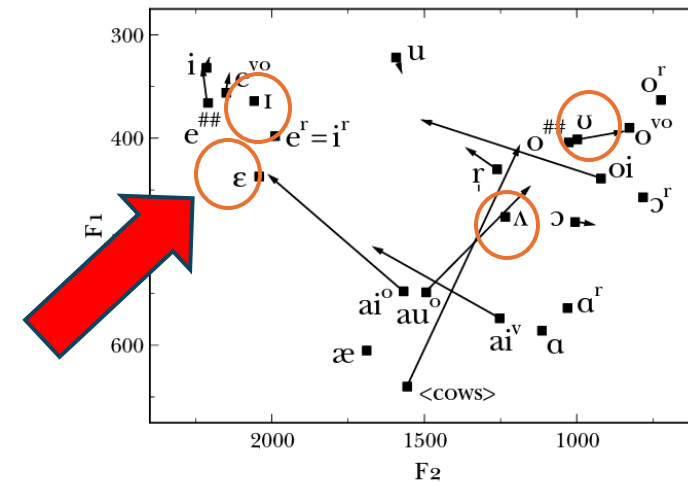
SPEAKER 51

Female, Born 1912, from Cherokee Sound, Abaco Island, Bahamas
(recorded in 1997)



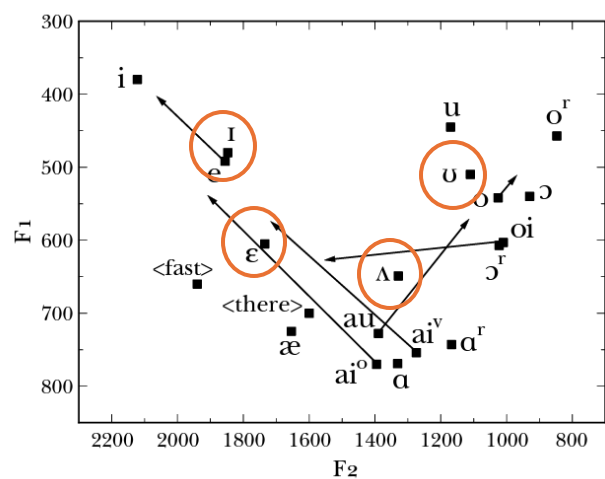
SPEAKER 57

Male, Born 1894, from Cross, South Carolina
(DARE SC 019; recorded in 1966)



SPEAKER 63

Male, Born 1859, from Gatlinburg, Tennessee
(used by Hall 1942; courtesy of Michael Montgomery;
recorded in 1937 or 1938)



SPEAKER 59

Female, Born 1914, from Montgomery, Alabama
(daughter of speaker 58 and sister of speaker 60; recorded in 1981)

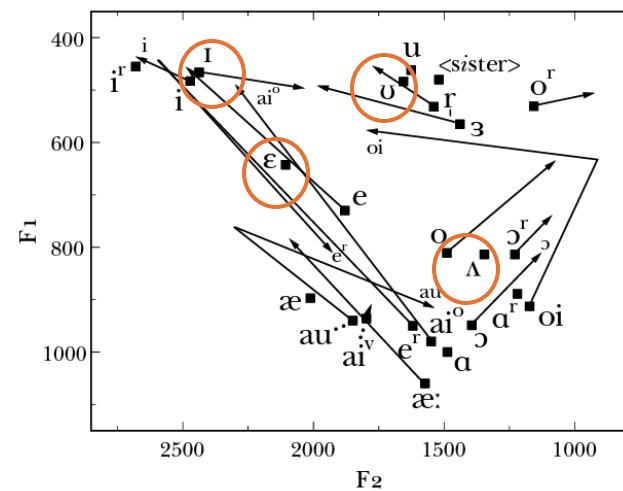
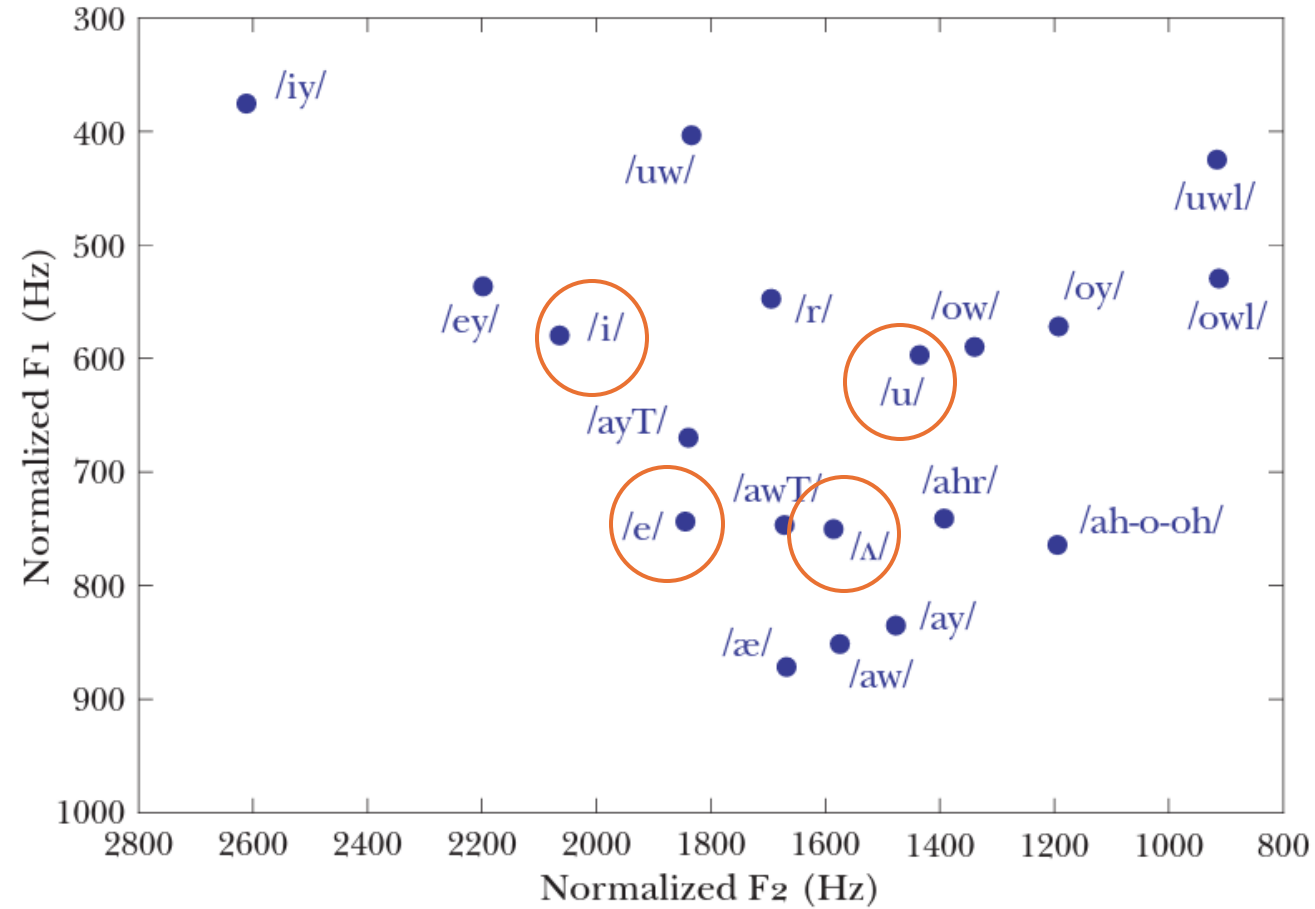
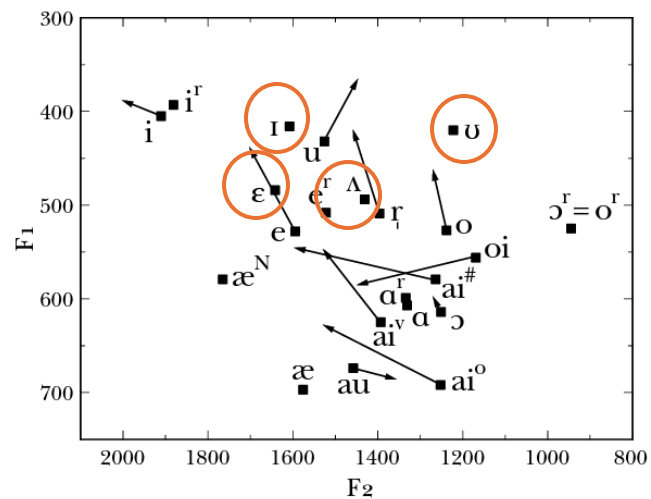


FIGURE 3.1
The Vowels of Canadian English (mean F₁/F₂ values), as Produced
by the Sample of 61 Canadian Participants Shown in Table 3.1



SPEAKER 191
 Cherokee Male, Born 1953, from Snowbird Community,
 Graham County, North Carolina
 (speaks Cherokee fluently; recorded in 1996)



SPEAKER 190
 Lumbee Female, Born 1980, from Lumberton,
 Robeson County, North Carolina
 (recorded in 1995)

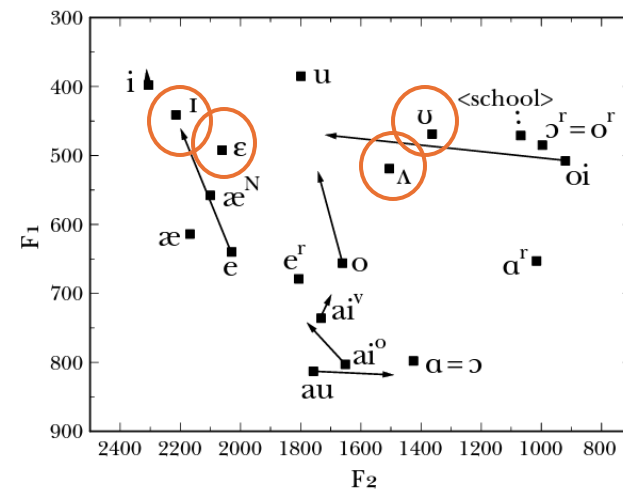
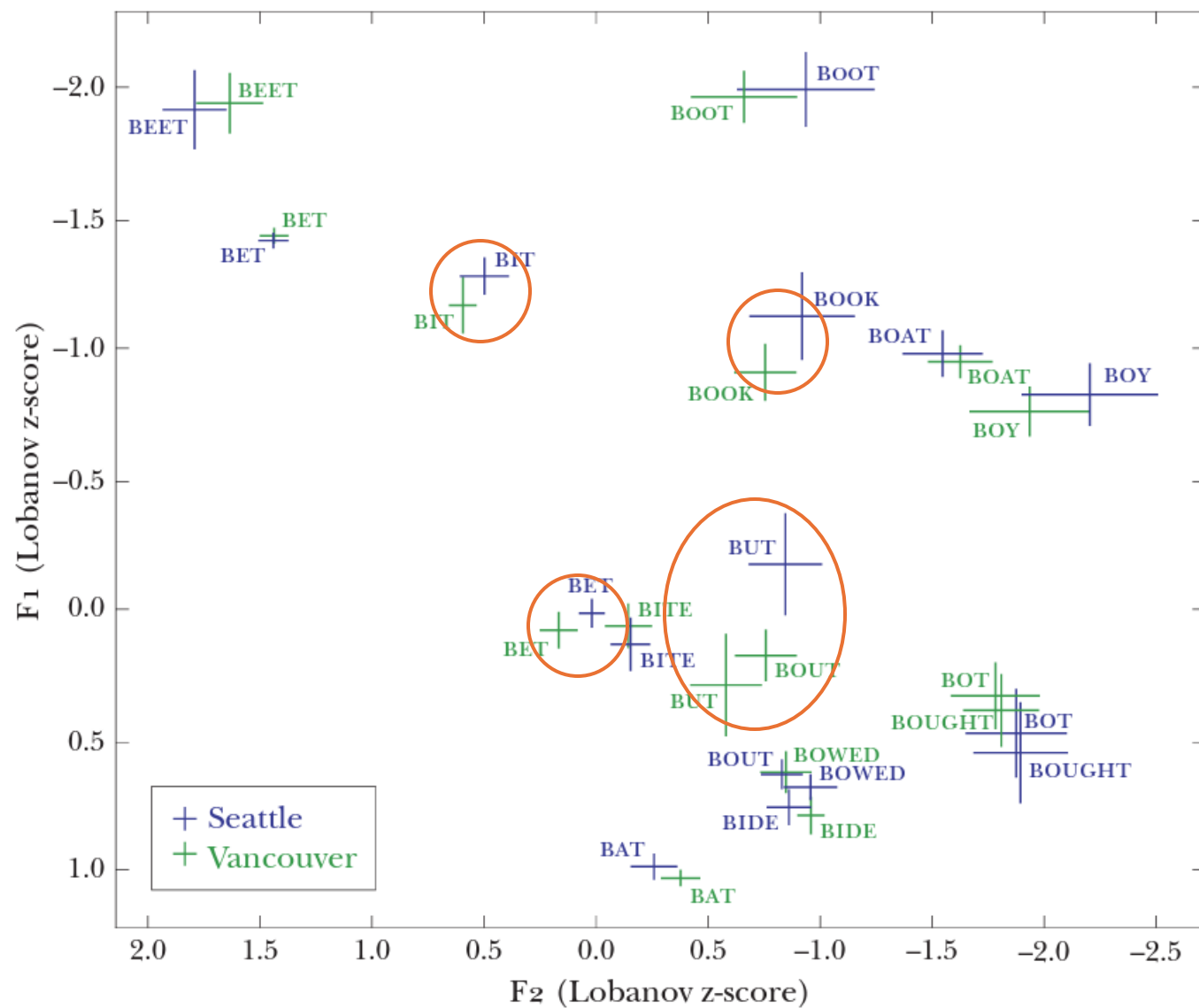
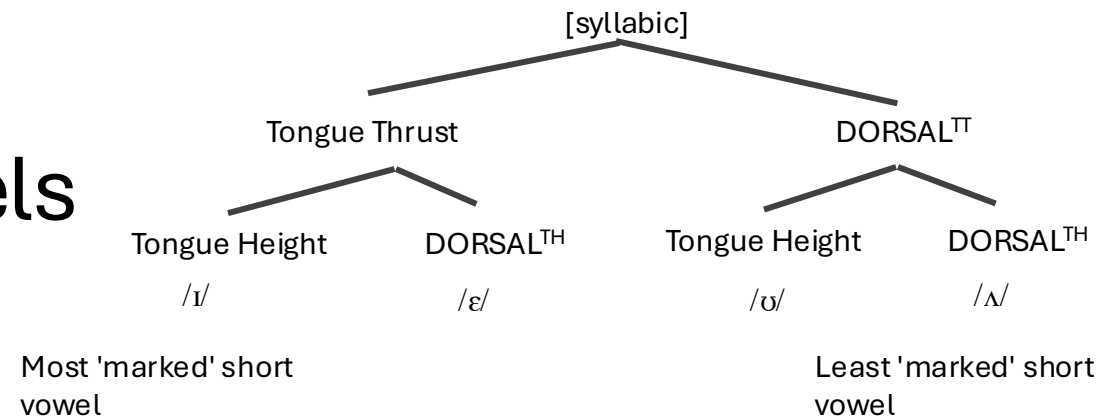


FIGURE 4.4
Vowels at 35% for Speakers in Seattle and Vancouver



Summary: Short Am Engl Vowels



Expectations:

- 1a. TT and DOR^{TT} to be further apart than between TH and DORTH (higher in the hierarchy)
- 1b. /ɪ/ most stable (TT, TH) and /ʌ/ least stable (only superordinates)
- 1c. /ɛ/ moves up or down (TT), not back; /ʊ/ moves front (TH), not down
- 2a. DOR^{TT} front; TT do not back (Labov Principle III; DOR^{TT} are unmarked and free to move)
- 2b. DORTH raise; TH do not lower (Contra Labov Principle II)

• Observations

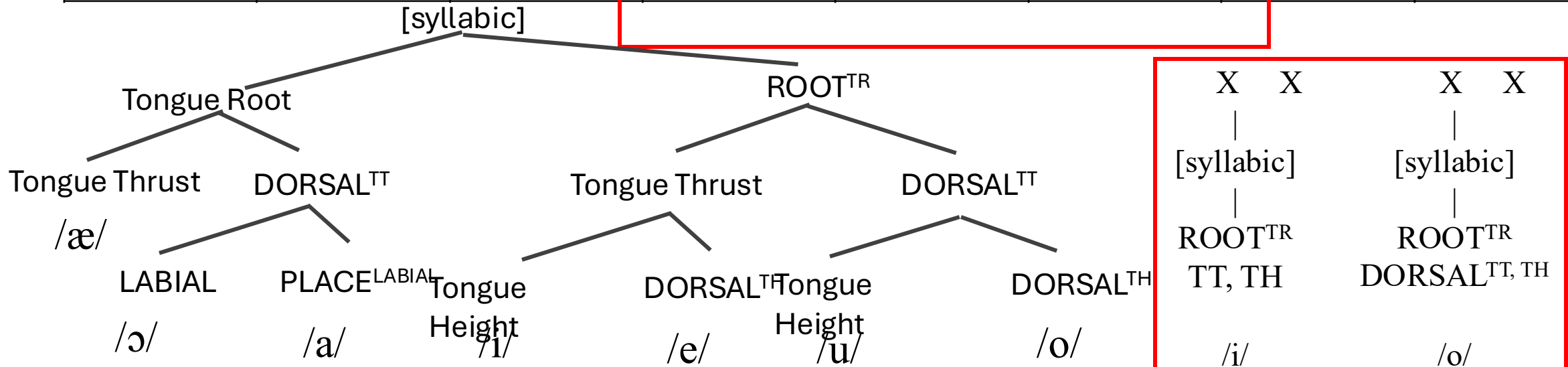
- /ɪ/: TT, TH – typically "reference like" (stable?)
- /ɛ/: TT – raising and lowering, even peripherally, but generally in the front
- /ʊ/: TH – fronting, fronting + slight lowering
- /ʌ/: DORSAL^{TT}, DORSALTH – somewhat stable, albeit both fronts and lowers but stays lower than /ʊ/
- Gradient changes generally respecting TT more than TH so that the 'pairs' are based on TT

• Expectations

- 1a, 1b least stable = /ʌ/can move both directions
- 1c yes, but /ʊ/ does lower some, but stays above /ʌ/
- 2a yes
- 2b 'not lower' = does reverse positions

PRS underlying **long** vowels

	Single		Double-Potential			Double-Actual	
	Front	Back	Front	Central	Back	Front	Back
High	ɪ	ʊ	iX		uX		ju
Mid	ɛ	ʌ	eX		oX		oj
Low			æX	aX	ɔX	aj	aw



Shifts (and LBM) in Modern American English

Podesva 2011: 33

Nesbitt 2021: 336

FIGURE 4
Low-Back-Merger Shift Vowel Configuration

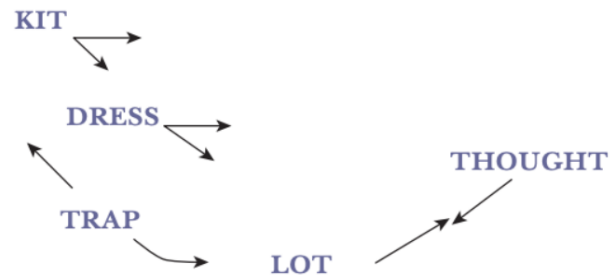


FIGURE 1
Front and Low Vowels of the Southern Vowel Shift

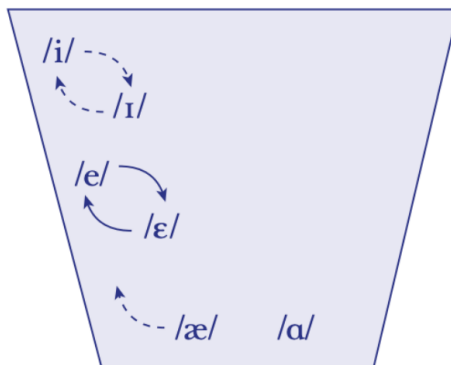


FIGURE 1
The California Vowel Shift
(based on Eckert 2008c, 34)

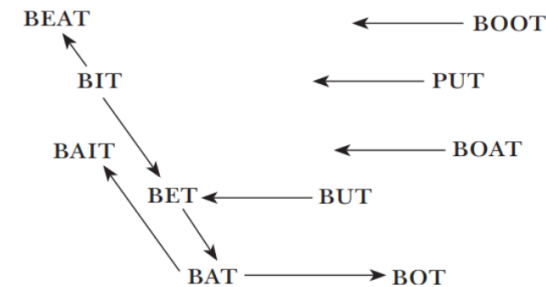
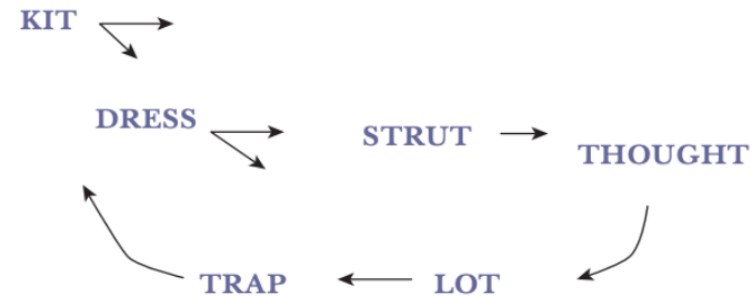


FIGURE 2
A Typical Northern Cities Shift Vowel Configuration



Nesbitt 2021: 334

Shifts (and LBM) in Modern American English

FIGURE 4
Low-Back-Merger Shift Vowel Configuration

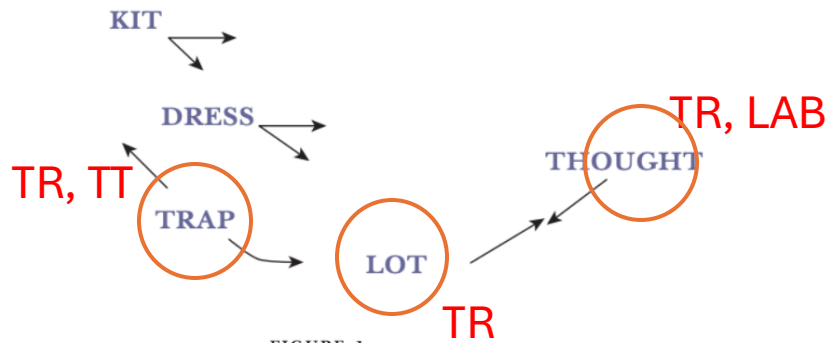
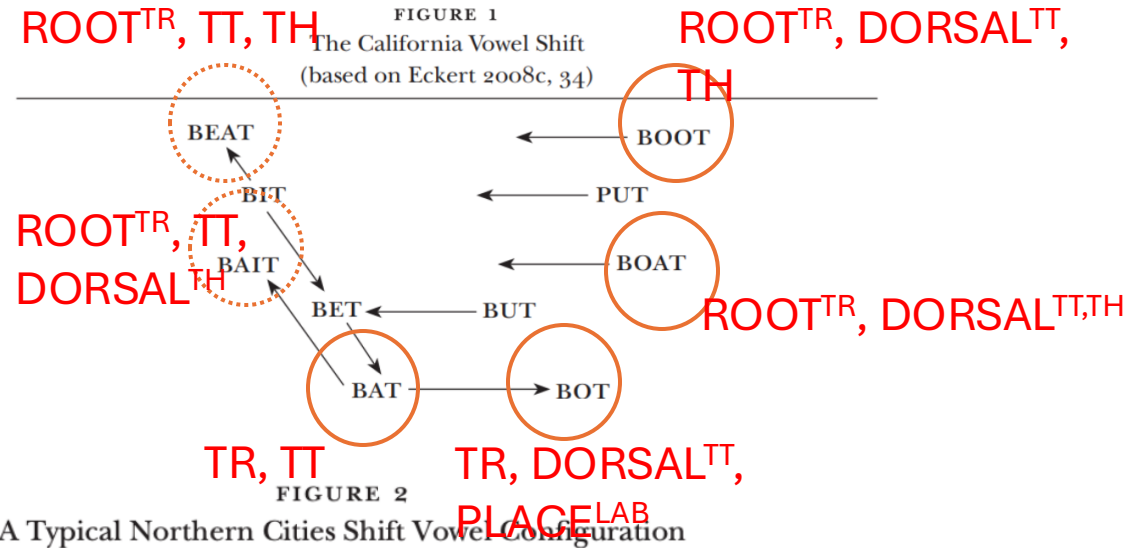
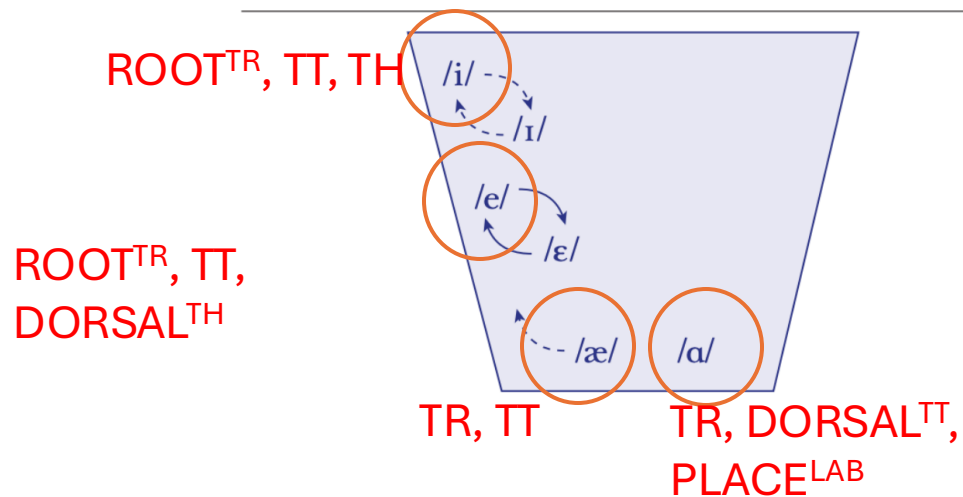


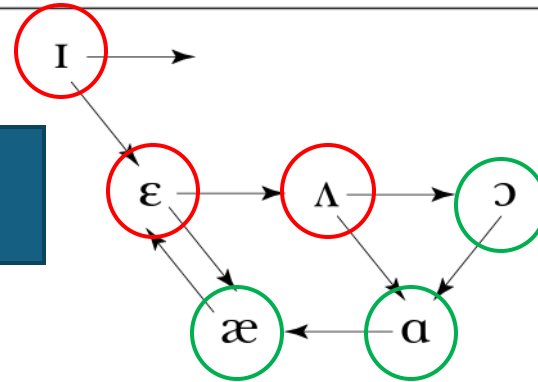
FIGURE 1
Front and Low Vowels of the Southern Vowel Shift



Gordon American Speech
(2000) 75 (2): 115–136.

FIGURE 1
The Northern Cities Shift
(based on Gordon 1997)

Red = short vowels
Green = long vowels



Lax vowels tend to fall or back. Tense vowels tend to rise and not center.

Vowels are not "equal"
E.g., /ɛ/ doesn't affect /æ/
in any way but they may
"hang out" together in F1
x F2 vowel space.

FIGURE 9
Average F2 Values of TRAP by Generational Cohort and Gender in Twentieth-Century Lansing: Lansing Speech Sample plus Millennial Speakers

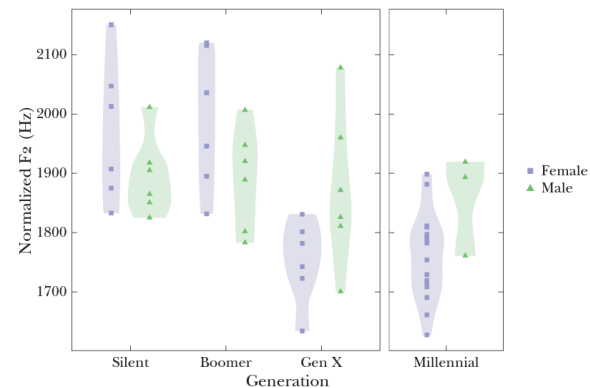
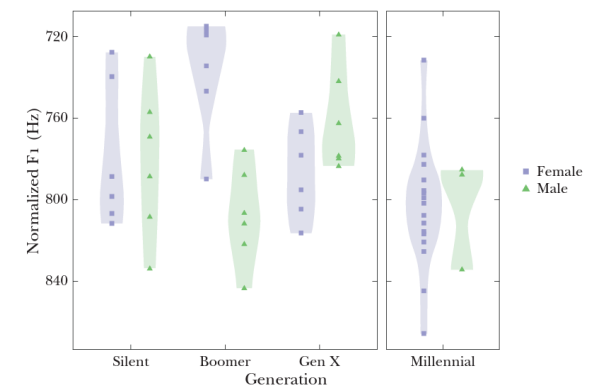


FIGURE 7
Average F1 Values of TRAP by Generational Cohort and Gender in Twentieth-Century Lansing: Lansing Speech Sample plus Millennial Speakers



Why all these reversals? Isn't shifting cool?

- Dialects have always been influenced by
 - Settlement
 - Migration
 - Education and economic ecology
 - Contact
 - Trendiness
- Intersectionality: individual (autonomous) wrt group (heteronomous) identities
- As Am Engl becomes more multilingual, multiethnic, and so on, we expect that there will be plenty to say about how the sociophonetic differences in vowels signal affiliation

Survey + Theory Summary

- Shifts support contrasts
 - Peripherality (Principle I and II) is not a thing if short and long vowels are removed and we look at contrasts at the Dimension level, allowing vowels to "shift" phonetically, not phonologically
- Marking = contrastive Dimensions, phonetics respects relative position
- Should not be surprised at reversals
 - Change would upset lexical access
- Why "reversals" and just movement without ruining contrasts
 - Social and cultural factors
- What should we say about the shifts?
 - Group and individual behavior
 - Identity

Pronunciation Payoff

1. More than one way to produce or fine-tune vowels (e.g., /a, ɔ/)
2. In spite of shifts and low back merger, most of the native and nonnative speakers of Am Engl can communicate with each other (relax!—see next point)
3. Contrasts are important but variation within contrasts more about groups
4. Hierarchy (TT > TH) predicts more back to front movement and sliding upwards

Am Engl Pronunciation Teaching

Global Englishes

- Inner Circle
 - RP (Br English) > Am Engl
- Outer Circle
 - Western African Englishes
 - Nigerian English
 - Ghanaian English
 - Cameroon English
 - Gambian English
 - Eastern African Englishes
 - Kenyan, Tanzanian, Ugandan Englishes
 - Southern African Englishes
 - Lesotho, South African, ... Englishes

Why do we get the patterns that we do?

Can they inform our pronunciation practice of Am Engl?

West African Patterns

- Short di- to mono-; long di- stay (West African: Nigeria, Ghana, Cameroon, Liberia)
- Loss of some tense~lax
 - Nigerian and Cameroonian loss of all (although Hausa has length distinction in vowels)
 - Ghanaian keeps high, front and back
 - Liberia keeps high, front often loses high back distinction
- [ʌ]
 - Nigeria - highly variable as mid and low variants
 - Ghana - young speakers [a]; older speakers [ɔ]
- [ɔ, ɒ]
 - Nigeria – reports vary as to which one is picked, sometimes [a] or [o]; sometimes [o] is [ɔ:]
 - Ghana - [ɔ] > [ɒ]

Nigerian English

- Loss of lax vowels (mentioned high front and back and front mid)
 - High and mid collapse front and back
- Light diphthongs to monophthongs
- Preservation of long diphthongs
- Variability of mid central vowels and [^] as mid or low vowels; generally no vowel reduction by destressing
- /o/ and /ɔ/ collapse (Tiffen 1974; Oluranti 2025), /ɔ:/ > /ɒ/ and sometimes /a/ (Tiffen 1974)
- /æ/ > /a/

Ghanian English

- Ghanian English (Ankomah 2025) ends up with five of the tense qualities and three of the lax qualities: [ɪ, ʊ, ʌ] and [i:, e, a, ɒ, u:]; Simo Bobda (2000) [ʌ] > [a] for younger speakers and [ɔ] for older

Cameroon English

- [o] raises to [u] under influence from Lamso,
- Front high tense lowering and shortening (e.g., from front series, <meat> > [mɛt]) (Mbufong 2013), but Ngeface (2010) notes that this is basilectal form and looked down on; mesolectal forms are preferred
- Length neutralization
- [æ] > [a]
- [ʌ] > [ɔ] (loss of lax)
- Central vowels scarce [ʌ] > [ɔ] and schwa to any vowel, depending on the spelling
- Light diphthongs > monophthongs
- Long diphthongs stay long

Gambian English

- Marong 2019
- [ɛ:, ʌ, ə, ɔ] > [ɔ]
- Occasionally [æ] > [ɛ] (mostly in Liberian English)
- Vowel length distinctions in the high vowels
- Preference for long monophthongs
- Some [u] fronting

Liberian English

- Singler – influence of Am Engl
- Robust distinction between l and l, but less so with the high back pair
- Diphthongs > monophthongs
- [aj, oj] > [aj]
- Five front vowels stay
- [ɛ] > [e] before voiced plosives
- Unstable central vowels

American ~ African Englishes Comparison

Feature	Am Englishes	West African Englishes	East African/Southern African Englishes
Long diphthongs	Long - Mono ([a:] south) - Raising ([əi] north) - Other patterns	Long	?Mono or has a lot (7; Ragutu 1993)
Light diphthongs	Most offgliding, back variable nucleus	Mono	Mono
Tense~Lax/Long~Short	7 long ([o] variable) 4 short ([ʌ] variable)	Mixed absence of distinction High front most stable	Absent
Low back vowel (THOUGHT ~ LOT merger or not)	Merged and nonmerged speakers live adjacent	Some merging of THOUGHT ~ LOT/GOAT/STRUT	Typically: 1 low (LOT), 1 mid-back vowel (BOAT)
Low front vowel	Variable movement: Raising, diphthongal Short backed	[æ] backing, except Gambia rises occasionally; Liberia has [æ]	[æ] > [a]

Focus on contrast by length

TR dominates, need TT

Pronunciation Teaching: Am Engl to African English Speakers

- Viewpoint
 - If localized variant – then follow Oluranti (2025) and Ngefac (2010) and work on comprehensibility and adjust teaching and testing variation
 - Role of **accommodation**
- 1. Build awareness of **tense~lax/long~short** distinction (regardless of BrE ~ AmE target)
- 2. Low Vowel distinctions
 - a) **Front vowel [æ]** very important and complex contexts due to region, but losing word-class internatl distinctions in US
 - b) Backest vowel [ɔ] – people live side-by-side; focus on rounding lips
- 3. Some things you don't need to worry about (Am Engl variation: fine tuning)
 - a) Diphthongization
 - Long diphthongs variation by following consonant (accommodation)
 - Light diphthongs (variation in Upper Midwest US)
 - Adjust lips: smile – front; kiss – back
 - b) Back mid vowel (tense [ɔ] and lax [ʌ])
 - Highly variable by region and lexical item

Pronunciation Payoff

1. More than one way to produce or fine-tune vowels (e.g., /a, ɔ/)
2. In spite of shifts and low back merger, most of the native and nonnative speakers of Am Engl can communicate with each other (relax!—see next point)
3. Contrasts are important but variation within contrasts more about groups
4. Hierarchy (TT > TH) predicts more back to front movement and sliding upwards
5. Changes to contrasts (long-short collapse) is important, but loss of Labial contrast is not (may be used to enhance sounds)

Thank you!

Appreciation to: Joe Salmons, Eric Raimy, Mariam Balogun