

24.914

Regular sound change vs.
lexical diffusion

Reading


- Labov (1963), The social motivation of a sound change.
Word 19, 273–309.


Regular sound change as change in grammar

- /ou/-fronting: $ou > əu$ except before /t/
 - E.g. Philadelphia English
- Before the change: [ou] in all contexts, no [əu]
 - no contrast, only one sound appears
- After the change: [ou] before [t], [əu] elsewhere
 - no contrast, allophonic variation
- Schematic constraints:
 - Context-free markedness: *əu, *ou
 - Context-sensitive markedness: *əut
 - Faithfulness: IDENT(back)

Grammar at time 1


- [ou] in all contexts, no [əu]
 - no contrast, only one sound appears
- no* nou *hole* houʔ
- *əu >> IDENT(back), *ou, *əuʔ


	/nou/	*əu	IDENT(back)	*ou	*əuʔ
a.	 nou			*	
b.	nəu	*!	*		

	/nəu/	*əu	IDENT(back)	*ou	*əuʔ
a.	 nou		*	*	
b.	nəu	*!			

Grammar at time 1

- [ou] in all contexts, no [əʊ]
 - no contrast, only one sound appears
- no* nou *hole* houʔ
- *əʊ >> IDENT(back), *ou, *əʊʔ

	/houʔ/	*əʊ	IDENT(back)	*ou	*əʊʔ
a.	 houʔ			*	
b.	həʊʔ	*!	*		*

	/həʊʔ/	*əʊ	IDENT(back)	*ou	*əʊʔ
a.	 houʔ		*	*	
b.	həʊʔ	*!			*

Grammar at time 2

- [ou] before [t], [əʊ] elsewhere
 - no contrast, allophonic variation

no nəʊ *hole* houʔ

- *əʊʔ >> *ou >> IDENT(back), *əʊ

	/nou/	*əʊʔ	*ou	IDENT(back)	*əʊ
a.	nou		*!		
b.	 nəʊ			*	*

	/nəʊ/	*əʊʔ	*ou	IDENT(back)	*əʊ
a.	nou		*!	*	
b.	 nəʊ				*


Grammar at time 2

- [ou] before [t], [əʊ] elsewhere
 - no contrast, allophonic variation

no nəʊ *hole* houʔ

- *əʊʔ >> *ou >> IDENT(back), *əʊ

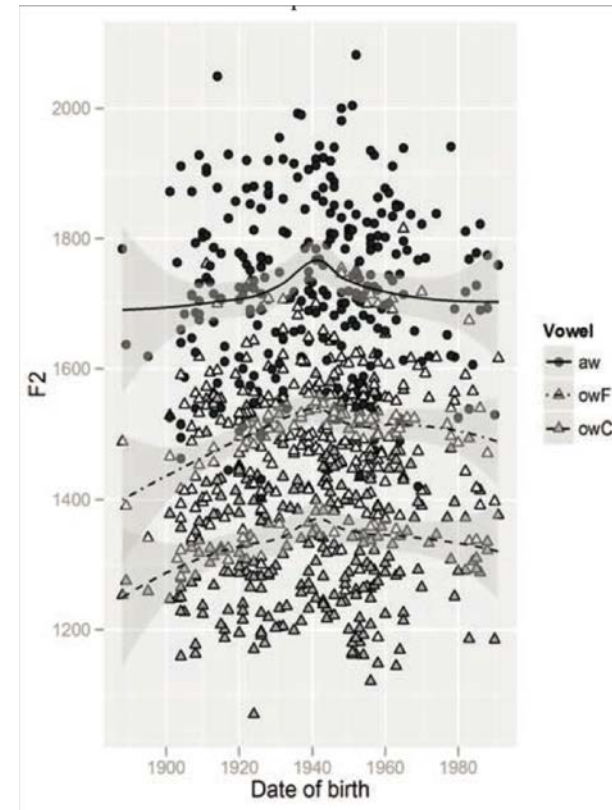
	/houʔ/	*əʊʔ	*ou	IDENT(back)	*əʊ
a.	 houʔ		*		
b.	həʊʔ	*!		*	*

	/houʔ/	*əʊʔ	*ou	IDENT(back)	*əʊ
a.	 houʔ		*	*	
b.	həʊʔ	*!			*

Grammar change

- *əʊt >> *əʊ >> IDENT(back), *ou >
- *əʊt >> *ou >> IDENT(back), *əʊ
- Difference in constraint ranking implies all words change pronunciation.
- Presumably there are intermediate steps
 - gradual fronting of the nucleus of /ou/
- A change in grammar is more than a change in the pronunciation of words – it is a change in restrictions on well-formed words.
 - e.g. imposed on new words
- Why does the constraint ranking change?

Labov et al
2013



/ou/-fronting

- *əʊɫ >> *əʊ >> IDENT(back), *oʊ >
- *əʊɫ >> *oʊ >> IDENT(back), *əʊ

What are these constraints really?

- *əʊ – involves movement within the vowel – more effort?
 - fronting/unrounding /oʊ/ may make it more confusable with front vowels and [aʊ] (in Philadelphia: [ɛo])
- *oʊ – fronting/unrounding /oʊ/ makes it more distinct from other back vowels [u, ɔ] (the latter is raised in Philadelphia)
- *əʊɫ - Coda /l/ is strongly velarized in most US accents, so this is probably a constraint against a rapid transition from [-back] to [+back].

Lexical diffusion

- What is the nature of word-by-word changes?
 - What changes in grammar?

Properties of lexical diffusion

- It is apparently phonetically conditioned
 - E.g. TRAP-tensing in Philadelphia is extended to /æ/ before nasal+V in some words (*planet, manage* etc)
- But according to Labov it involves substitution of one pre-existing phoneme for another in the underlying representations of individual words.
 - Why might these substitutions be phonetically conditioned?

Properties of lexical diffusion

- It has been hypothesized that lexically diffused sound changes apply to more frequent words first (e.g. Phillips 2006).
- Possible mechanism – exemplar-based model (Pierrehumbert 2001):
 - Phonetically-conditioned sound changes happen due to biases that apply in speech production (e.g. effort reduction).
 - These production effects have a chance to apply each time a word is used
 - And affect only the representation of that word (exemplars)
 - So more frequently-used words change faster.

Assignment: Investigating Lexical Diffusion

- Goal: understand the mechanisms by which individual words change their pronunciation.
- Try to identify cases of lexical diffusion or word-specific sound changes.
- If you find one, try to identify the factors that affect which words undergo the change (first).
 - Phonetic factors?
 - Word frequency?
- Does the change plausibly involve substitution of one existing phoneme for another (as hypothesized by Labov)?
 - I.e. does the change involve two sounds that were plausibly contrastive before the change?
 - As in [meəd] vs. [p^hæd] in Philadelphia.

Identifying possible cases of lexical diffusion: Irregular correspondences

- Wells' system of standard lexical sets depends on the regularity of sound change.
- But Wells' system contains two lexical sets that are designed to capture irregular correspondences between vowels in different accents: BATH and CLOTH
- No dialect has distinct phonemes in TRAP, BATH and PALM, but they differ in whether BATH groups with TRAP or PALM.
 - US English: BATH has the same vowel as TRAP
 - tɹæp bæθ vs. pɑ(l)m, fɑðə
 - Southern British English: BATH has the same vowel as PALM
 - tɹæp vs. bɑθ pɑ(l)m, fɑðə
- It does not appear to be predictable whether US /æ/ corresponds to S.Br.Eng /æ/ or /ɑ/

The TRAP-BATH split

- Historically, many words in both classes derive from the short low vowel /a/ of Middle English,
- In Southern England, /a/ lengthened in some contexts, eventually developing into back /ɑ:/ in some Southern accents, including RP (Wells 1982)
 - Always before coda /ɹ/ (later lost)
cart [k^hɑ:t] *bar* [bɑ:]
 - Sometimes before coda fricatives /f, θ, s/
half [hɑ:f] *path* [p^hɑ:θ] *pass* [p^hɑ:s]
 - /ɑ:/ also developed from M.Eng /au/ (> /ɔ/) before /ns, ntʃ, nt, nd/
dance [dɑ:ns] *branch* [brɑ:ntʃ] *grant* [grɑ:nt]

The TRAP-BATH split

- But there are many exceptions to these generalizations, where /æ/ appears in these environments
 - Sometimes before coda fricatives /f, θ, s/
gaffe [gæf] *hath* [hæθ] *mass* [mæs]
 - before /ns, ntʃ, nt, nd/
romance [ˌɹoʊmæns] *ant* [ænt] *stand* [stænd]
 - in some cases there is variation
plastic [plæstɪk]/[plɑːstɪk]
- Wells: the split ‘represents the ossification of a half-completed sound change, which seems to have come to a stop well before completing its lexical diffusion through the vocabulary which met the structural descriptions of the lengthening rule.’ (p.233)

The TRAP-BATH split

- But to establish that ‘a’-lengthening applied word-by-word we need to check whether:
 - The change is truly irregular.
 - Is there actually some phonetic difference between the words that undergo the change and those that do not?
 - Or some morphological difference? (E.g. [mæθ] not *[meæθ] from [mæθəmətɪks] in Philadelphia)
 - The irregularities are not due to later loanwords
 - I.e. the change was regular but then disrupted by later loanwords.

The LOT-CLOTH split

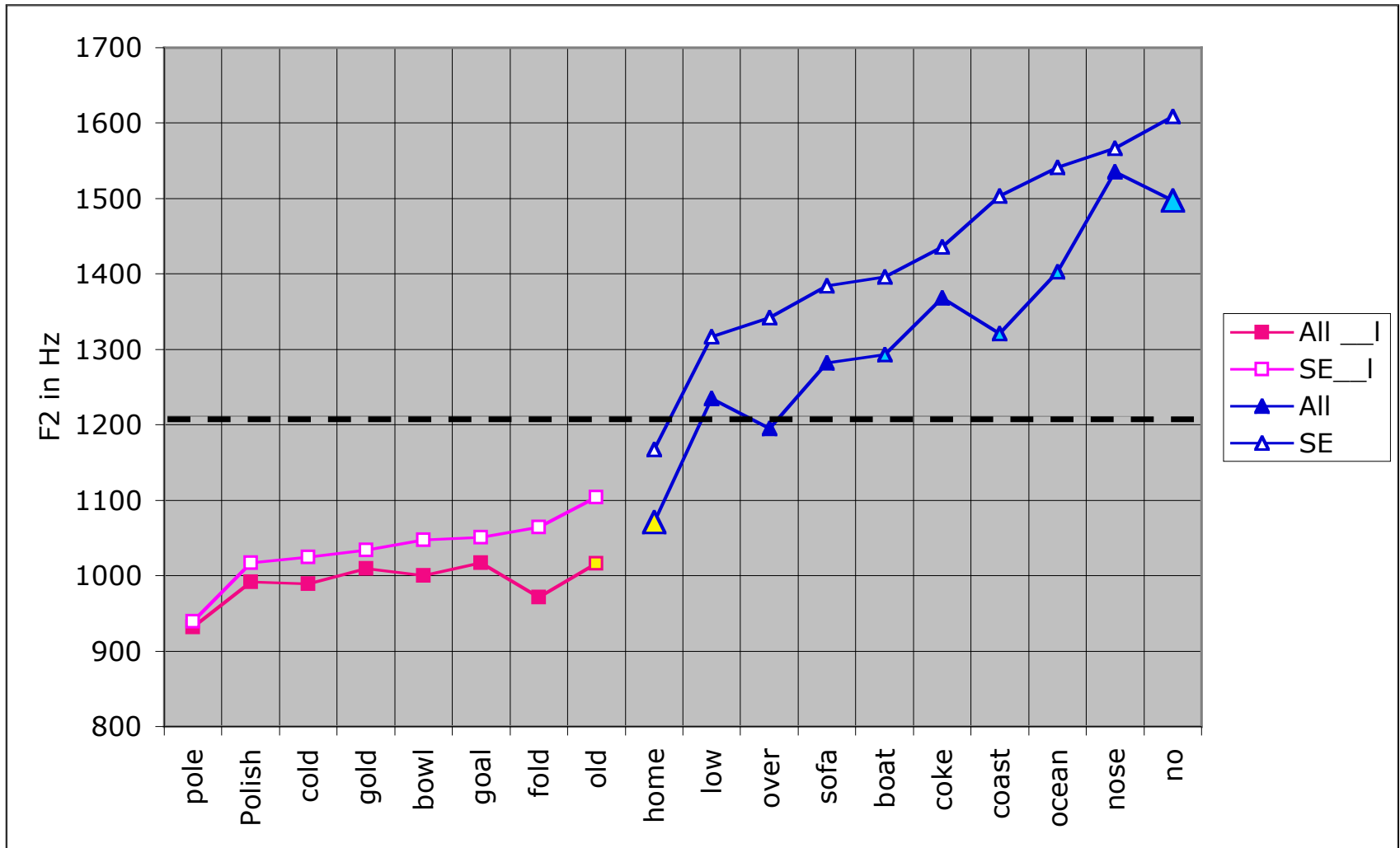
- No dialect has distinct phonemes in THOUGHT, CLOTH and LOT, but they differ in whether CLOTH groups with THOUGHT or LOT.
 - Some US English accents: CLOTH has the same vowel as THOUGHT
 - θɔt klɔθ vs. lat (= pɑm)
 - Current RP: CLOTH has the same vowel as LOT
 - θɔt vs. klɒθ lɒt
- There is some phonological conditioning, but apparently not entirely predictable.
- Other examples: FOOT-STRUT split
 - In Early Modern English, short [ʊ] unrounded to [ʌ] in words like *cut*, but not in words like *put*.
 - Preceding labials tended to block unrounding, but incidence of unrounding is apparently not predictable (e.g. *putt*).

Other examples

- FOOT-STRUT split
 - In Early Modern English, short [ʊ] unrounded to [ʌ] in words like *cut*, but not in words like *put*.
 - Preceding labials tended to block unrounding, but incidence of unrounding is apparently not predictable (e.g. *putt*).
- (Later) /u:/ shortening
 - After the FOOT-STRUT split, [u:] shortened to [ʊ] in some contexts, as in *good*, *book*, *hook*.
 - The application of shortening appears to be unpredictable and variable, e.g. *room*, *hoof*.
- TRAP-tensing in Mid-Atlantic dialects
 - In Long Island, /æ/ tenses before _stV in some words, but not others
æstəɪnsk *asterisk* meæstə *master*

Other examples

- Irregular blocking of GOAT fronting in *home*?



Finding word frequencies

Lexical Diffusion in OT – indexed constraints

A partial sketch of an analysis of Philadelphia [æ]-tensing

- Tensing before word-final nasals [m, n]: [meæn]
- No tensing before pre-vocalic nasals: [mænədʒ]
- *æN# >> *eæ >> IDENT(low), *æN

	/mæn/	*æN#	*eæ	IDENT(low)	*æN
a.	mæn	*!			*
b.	☞ meæn		*	*	

	/mænədʒ/	*æN#	*eæ	IDENT(low)	*æN
a.	☞ mænədʒ				*
b.	meænədʒ		*!	*	

Lexical Diffusion in OT – indexed constraints

Lexical diffusion:

- No tensing before most pre-vocalic nasals: [mænədʒ]
- Tensing before nasals in a few words, e.g. [pleənət]
- $*\text{æN}_{\text{class1}}, * \text{æN}\# \gg * \text{eæ} \gg \text{IDENT}(\text{low}), * \text{æN}$
 - class1 = {planet, damage,...}


	/mænədʒ/	$*\text{æN}_{\text{cl1}}$	$*\text{æN}\#$	$*\text{eæ}$	IDENT(low)	$*\text{æN}$
a.	☞ mænədʒ					*
b.	meænədʒ			*!	*	

	/plænət/	$*\text{æN}_{\text{cl1}}$	$*\text{æN}\#$	$*\text{eæ}$	IDENT(low)	$*\text{æN}$
a.	plænət	*!				*
b.	☞ pleænət			*	*	

Lexical Diffusion in OT – indexed constraints

Lexical diffusion:

- No tensing before most pre-vocalic nasals: [mænədʒ]
- Tensing before nasals in a few words, e.g. [pleænət]
- $*\text{æN}_{\text{class1}}, * \text{æN}\# \gg * \text{eæ} \gg \text{IDENT}(\text{low}), * \text{æN}$
 - class1 = {planet, damage,...}
- Lexical diffusion could be analyzed as adding words to class1
 - At some point, presumably the general constraint $* \text{æN}$ would be promoted.
 - How would words that do not undergo tensing be analyzed then?

	/plænət/	$* \text{æN}_{\text{cl1}}$	$* \text{æN}\#$	$* \text{eæ}$	IDENT(low)	$* \text{æN}$
a.	plænət	*!				*
b.	 pleænət			*	*	

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