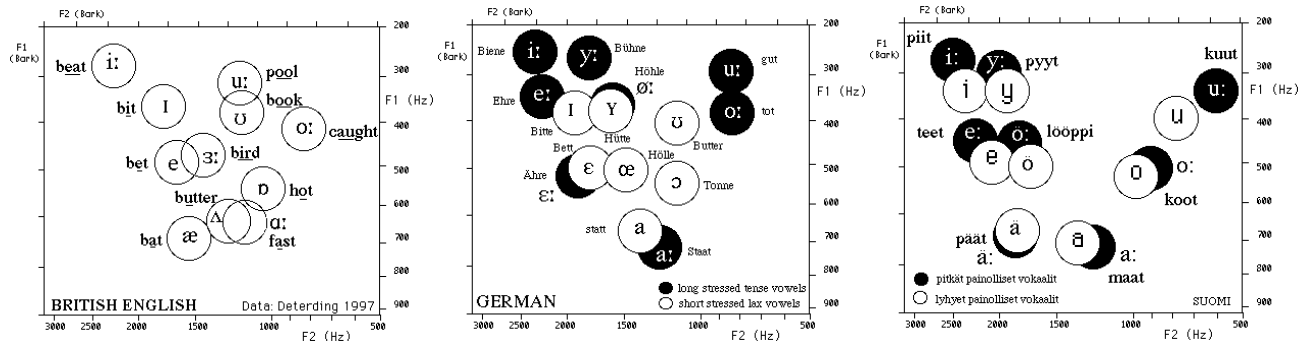


Seeking articulatory principles of chain shifting

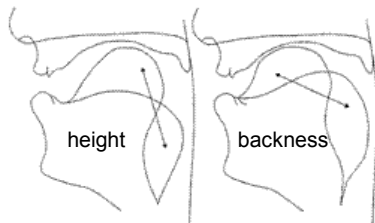
E-Ching Ng · e-ching.ng@yale.edu · Phonetics lab · 24 April 2012

- (1) Labov's principles of chain shifting (Labov 1994: 116, 176)
 - I. In chain shifts, long/tense vowels rise — *no exceptions*
 - II. In chain shifts, short/lax vowels fall — *exceptions*
 - III. In chain shifts, back vowels move to the front — *few exceptions*
- (2) Generalizations
 - a. Height: Long/tense vowels tend to rise, short/lax vowels tend to fall
 - b. Fronting: All vowels tend to become more fronted
- (3) Acoustics: Long/tense vowels and low F1 (cf. high vowels)
 - a. Low F1 is the primary acoustic correlate of [+ATR] vowels (Niger-Congo: Starwalt 2008)
 - b. Southern British English (Deterding 1997) c. German (Iivonen 1987) d. Finnish (Wiik 1965)



e. German unstressed Vs: tense higher than lax, but more peripheral in terms of frontness (Jessen 1993)

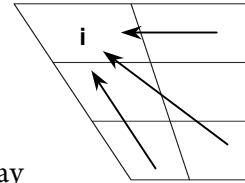
- (4) Articulatory bias: ATR and conservation of volume → Height



Maybe advancing the tongue root tends to raise the tongue blade (cf. Ladefoged 2005: 128 fig. 12.7)

- (5) Articulatory bias: Vowel length and time to achieve constriction → Height
 - a. Long vowels have a longer time to achieve constriction → Long vowels rise
 - b. Short vowels have a shorter time to achieve constriction → Short vowels fall
 - c. But short vowels also have a shorter time for the lips and jaw to open → Exceptions to (b)
- (6) Coarticulatory bias: Coarticulation with /i/ → Raising, fronting
 - a. /i/ is the vowel most resistant to coarticulation (Italian: Farnetani *et al.* 1985; Catalan, Spanish: Recasens 1987; Turkish: Beddor & Yavuz 1995; Japanese: Kondo & Arai 1998; Spanish, English: Bradlow 2002: 251-2; Shona, English: Beddor *et al.* 2002; Thai: Mok 2011)
 - b. “Presumably ... the high-front gesture for /i/ places severe constraints on tongue dorsum variability” (Bradlow 2002: 251-2)

- c. If /i/ tends not to coarticulate with other vowels,
but other vowels coarticulate normally with /i/,
all vowels may tend to become more similar to /i/.
- d. Raising and fronting of other vowels → Chain shift pushing /i/ out of the way



(7) Summary

- I. In chain shifts, long/tense vowels rise — *Articulatory and coarticulatory biases (4, 5a, 6)*
- II. In chain shifts, short/lax vowels fall — *Articulatory bias (5b) with exceptions (5c)*
- III. In chain shifts, back vowels move to the front — *Coarticulatory bias (6), exceptions unexplained*

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