

The role of palatals in the fronting of /u/

Our paper addresses the phonetic motivation of the fronting of /u/ in North American English. Prior accounts of this sound change in North America (Labov 2010) and in England (Harrington 2007, 2012) have attributed it to direct or indirect influence of preceding onset consonants. Here, we argue that /u/-fronting is specifically driven by preceding palatals.

We first evaluate Labov's (2010) proposal of a causal link between /u/-fronting and the loss of /j/ after tautosyllabic alveolars (*due, tune*). (Labov speaks of glide deletion after coronals, i.e. including palato-alveolars; however, there is no historical evidence of /j/ having been present in *juice, chew* etc. in North America.) In this scenario, the weakening of /j/ brought about a new phoneme, the diphthong /ɪu/ (Labov's /iw/). Subsequent merger of /ɪu/ with allophones of /u/ in words like *do* and *cartoon* resulted in a new, fronted norm for /u/. Labov's account provides an elegant solution to the actuation problem by connecting the inception of /u/-fronting to an independent, contemporaneous "triggering event". However, its empirical validity is doubtful. If /u/-fronting were indeed contingent on /j/-deletion, dialects which have tended to maintain /j/, such as Southern Anglo English (Phillips 1994), should show the least fronting. Yet, Southern Anglo dialects were the first to innovate /u/-fronting (Bailey 1997) and have historically led the change (Thomas 2001). It is also unclear how this scenario accounts for dialects which have lost /j/ but nevertheless show little or no /u/-fronting, such as Eastern New England (Labov, Ash, and Boberg 2006: 154).

A further weakness of Labov's account is that it ignores the role of preceding palatal glides that did not undergo deletion (*you, music*) and the role of palato-alveolars (*juice, chew*), which were not involved in /j/-deletion. As we argue, it is palatals, not alveolars, that are most likely to have caused /u/-fronting. We present four types of evidence in support of this claim.

1. CROSS-LINGUISTIC PLAUSIBILITY. A crosslinguistic survey of all phonetically-conditioned phonological processes (a total of 804) in 82 languages, selected to be maximally unrelated genealogically (Bybee and Easterday 2012), found in 11 cases of vowel fronting processes conditioned by a preceding consonant, and this consonant in 10 cases had a palatal articulation: it was a palatal glide, palatalized consonant, or a palato-alveolar consonant.

2. TYPE FREQUENCY. As pointed out by Harrington (2007), the distribution of /u/ in the English lexicon is heavily biased toward occurrence in syllables in which /u/ follows onset consonants with a high F2 locus. Of these consonants, /j/ makes up the largest share with over 40%. Even in the North American system, which has no glide after alveolars, /u/ is still more often preceded by /j/ than by any other consonant.

3. DEGREE OF COARTICULATORY FRONTING. The degree of fronting brought about by CV coarticulation is strongest for palatals. Preliminary evidence from naturalistic productions of /u/ in the *Fisher Corpus* (Cieri 2004, 2005) show that preceding palatals and palato-alveolars lead to a significantly higher second formant frequency than preceding alveolars.

4. FINE PHONETIC DETAIL OF THE FRONTED /u/. The fronting of /u/ in most dialects of North America (excepting the Southern pattern; see Koops 2010) results in formant contour shapes that appear to mimic the shape of /u/ following a palatal. For example, in the case of alveolar onsets, the F2 trajectory shows a quick initial rise to a frequency above the alveolar locus, closer to that associated with a palatal onset. At the same time, the F1 trajectory starts out unexpectedly low, and may even show a brief initial drop, indicating raising of the tongue body toward the palate.

References

- Bailey, Guy. 1997. When did Southern American English begin? In: E. Schneider (ed.) *Englishes Around the World 1. Studies in Honour of Manfred Görlach*. John Benjamins, pp. 255–275.
- Bybee, Joan and Shelece Easterday. 2012. The prominence of palatalization. Paper presented at the High Desert Linguistic Society Meeting, November 2012. The University of New Mexico. Albuquerque.
- Cieri, Christopher, David Graff, Owen Kimball, Dave Miller and Kevin Walker. 2004. *Fisher English Training Part 1, Speech*. Linguistic Data Consortium, Philadelphia.
- Cieri, Christopher, David Graff, Owen Kimball, Dave Miller and Kevin Walker. 2005. *Fisher English Training Part 2, Speech*. Linguistic Data Consortium, Philadelphia.
- Harrington, Jonathan. 2007. Evidence for a relationship between synchronic variability and diachronic change in the Queen's annual Christmas broadcasts. In: J. Cole and J. Hualde (eds.) *Laboratory Phonology 9*. Mouton de Gruyter, pp. 125–144.
- Harrington, Jonathan. 2012. The coarticulatory basis of diachronic high back vowel fronting. In: M.-J. Solé & D. Recasens (eds.) *The Initiation of Sound Change. Perception, Production, and Social factors*. John Benjamins, pp. 103–122.
- Koops, Christian. 2010. /u/-fronting is not monolithic: Two types of fronted /u/ in Houston Anglos. *University of Pennsylvania Working Papers in Linguistics* 16.2: 113–122.
- Labov, William. 2010. *Principles of Linguistic Change. Volume 3: Cognitive and Cultural Factors*. Wiley-Blackwell.
- Labov, William, Sharon Ash and Charles Boberg. 2006. *The Atlas of North American English. Phonetics, Phonology and Sound Change*. Mouton de Gruyter.
- Phillips, Betty. 1994. Southern English glide deletion revisited. *American Speech* 69: 115–127.
- Thomas, Erik. 2001. *An Acoustic Analysis of Vowel Variation in New World English*. Duke University Press.