Palatalization in Russian loanword phonology

This paper investigates palatalization of consonants before /e/ in Russian loanwords. I have found that vowel height and the place of articulation of a target consonant (PoA) had significant effects on palatalization.

In Contemporary Standard Russian (CSR), consonants before /e/ are always palatalized (Timberlake 2004). In loanwords, both palatalized (C^j) and non-palatalized consonants (C) occur before /e/: *ˈbetmen* 'Batman'. Previous studies show that in existing loanwords, velars palatalize more often than labials and dentals palatalize the least: *velars > labials > dentals* (Holden 1976, Timberlake 2004). Moreover, consonants of the same PoA may have the C/C^j contrast: *d^{j}elikaˈtes* 'delicatessen' (Holden 1976).

Universally, labials palatalize more often than velars and dentals, and the last two are not in a hierarchical relation with respect to each other: *labials > dentals and/or velars.* Also, universally, palatalization before lower front vowels always co-occurs with palatalization before higher front vowels: i >e >ɛ (Bateman 2007).

The main question of the paper is whether CSR speakers extend the rules of their native phonology to loanwords or whether they follow universal tendencies in loanword adaptation. To address this question, I analyze how CSR speakers produce non-native new inputs with velars and dentals followed by one of the English front vowels: /æ/, /ɛ/, and /eɪ/ in stressed and unstressed positions (*teɪməˈrɛs, miləˈtæs*). Labials were excluded from the current study because cross-linguistically, only dentals and velars (not labials) are not in a hierarchical relation with respect to each other. In real loanwords, velars palatalize more often than dentals. The main concern was to see whether palatalization of velars and dentals relies on universal typology or whether it is driven by the native phonology of CSR. The English front vowels /æ/, /ɛ/, and /eɪ/ were chosen in order to test whether vowel height accounts for the C/C^j variation.

Experiment: Six native speakers of CSR listened to nonce loanwords and produced them in a context sentence (6 participants * 24 target items * 2 morphological categories). F1 and F2 of output vowels show that English input vowels /æ/, /ɛ/, or /eɪ/ map to Russian /e/. In unstressed positions, the output vowels are higher and more back which indicates vowel reduction/centralization.
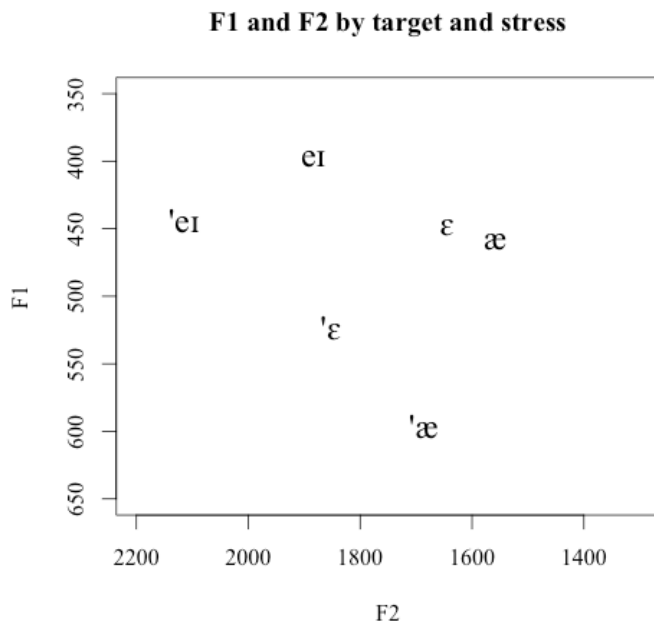
F1 and F2 by target and stress

Fig 1. Average F1/F2 for each output vowel in stressed and unstressed positions

The effects of vowel height and the place of articulation on palatalization were tested in a mixed-effects logistic regression model (R Core Team 2014) and were found to be significant (all *p's* <. 001).

Discussion: The study shows that loanword adaptation relies on both universal typology and on the native phonology: a) dentals show more resistance to palatalization than velars (the native phonology), b) C^j are more likely to occur before higher input vowels than before lower ones (implicational universal).

References:

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