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Understanding Factors Behind Two Patterns of English /æ/ Adaptation in Russian

1. Introduction

The phenomenon of loanword adaptation has sparked much interest in phonological studies within the last thirty years. The emergence of new models and the access to an ever-growing number of loanword corpora have allowed researchers a better insight into the mechanisms that govern the process of phonological nativisation of borrowings. The most meticulous attention in subject literature is, however, devoted to those language pairs whose sound inventories as well as phonotactic principles governing them differ dramatically, e.g. French and Fula (Paradis & LaCharité, 1997), English and Japanese (Itô & Mester, 1999), English and Cantonese (Yip, 1993), English and Korean (Kang, 2003). This is not surprising, seeing that the comparison of such strikingly contrasting systems often allows insightful observations to be made and clear patterns to be extracted from the data. On the other hand, not many in-depth analyses are offered where two languages show less marked

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distinctions, such as for example English and Polish (Molęda, 2011; Radomski, 2019; Szpyra-Kozłowska, 2016a; Szpyra-Kozłowska & Radomski, 2016), English and Czech (Molęda, 2011) or English and Russian (Laidler, 2019, 2021), which abound in irregularities and rarely make it possible to draw theoretically interesting conclusions. Thus, research focuses on distinct and unambiguous nativisation scenarios, whereas cases that depart from them are deemed random and are therefore largely ignored. This oversight might also stem from a limited corpus of loanword data available to a linguist, which seriously hinders their attempt at data classification and quantification and results in failure to accurately establish and explain the often puzzling patterns of loanword nativisation.

On the theoretical side, one of the most controversial questions with regard to loanword adaptation is whether it takes place in perception or production. In the case of the former, the input to the adaptation is an acoustic signal produced by L2 speakers which is mapped by the listeners to their native L1 categories (Peperkamp, 2005; Peperkamp & Dupoux, 2003; Vendelin & Peperkamp, 2006). Any modifications introduced by the adaptors are phonetic in nature since they are determined by the perceptual biases of the listeners' L1 phonetic system. An alternative view claims the existence of a universal set of phonological rules which facilitate the processing of foreign sounds and subsequently help speakers to map them onto their native L1 representations in compliance with the rules of their L1 phonology (Itô & Mester, 1999; Jacobs & Gussenhoven, 2000; Paradis & LaCharité, 1997; Steriade, 2008). According to this approach, the perception of non-native structures is faithful and modifications introduced in the process of loanword adaptation are phonologically minimal repairs.

This paper undertakes an analysis of adaptation of a group of English loanwords in Russian. It deals with selected descriptive and theoretical aspects involved in the nativisation of the English ash vowel in Russian anglicisms, substituted in the target language by either /a/ or /ɛ/. The article demonstrates that both vowels appear with equal frequency in loanwords, which at first glance might point towards the random nature of E /æ/ adaptation, whereas a closer look reveals a number of interconnected extralinguistic as well as language-internal factors at work. We aim to identify these determinants and provide an adequate account of them. To this end, the article focuses on the impact of dialectal input in the process of adaptation as well as the role of the temporal factor, i.e. the time period in which a loan entered Russian (Section 3.2). We also examine the segmental context in which the vowel in question appears

(Section 3.3) and the lexical sets where it is found (Section 3.4). In order to address the issue of the role of perception and phonology in ash adaptation, in Section 4 we provide empirical evidence obtained in an experiment on online adaptation of 30 words containing ash by 80 native speakers of Russian.

To our knowledge, this is the first such detailed investigation of ash adaptation in Russian based on clear methodology and an extensive corpus of data. It owes much to Szpyra-Kozłowska's (2016b, 2016c) papers on extralinguistic and intralinguistic factors involved in loanword nativisation, and Szpyra-Kozłowska and Radomski's (2016) analysis of E /æ/ adaptation in Polish borrowings.

2. Adaptation of E /æ/ in established borrowings into Russian – basic facts

The front mid-low English /æ/ is one of the vowels absent from the Russian phonemic inventory and is therefore invariably substituted in loanwords. Considering that the English /æ/ is orthographically always <a>, one of the few graphemes that overlap with the Cyrillic notation, one can argue for a strong motivation to simply transliterate[1] the letter <a> in such borrowings and subsequently assign it the phonemic status of Russian /a/. However, the data demonstrates that the English ash is substituted with either the front open /a/ or the mid half-open /ɛ/ with almost equal frequency. An examination of 327 loanwords containing ash in the original form – taken from the *Slovar' anglitsizmov russkogo iazyka* [Dictionary of Anglicisms of the Russian Language, hereafter DARL], compiled by D′iakov (2021) – shows that in 56% of the cases it is realised as R /a/, and in 44% as R /ɛ/. Some representative examples of the two adaptation scenarios are provided in (1a) and (1b):[2]

(1a) E *jazz* → R *dzhaz* [dʐas]
E *trap* → R *trap* [trap]

(1b) E *rap* → R *rėp* [rɛp]
E *bad* → R *bėd* [bɛt]

[1] Transliteration is based on a graphic principle, where English graphemes are substituted by the closest Cyrillic characters (grapheme-to-grapheme adaptation). In transcription, phonemes of the source language are substituted with their closest equivalents in the recipient language (phoneme-to-phoneme adaptation).

[2] All Russian words in this article are transliterated according to the Library of Congress system (ALA-LC).

Furthermore, there are several doublets, i.e. loanwords realised with both /ɛ/ and /a/, for example:[3]

(2) E *cash* → R *kash* [kaʂ] / *kėsh* [kɛʂ]
E *crack* → R *krak* [krak] / *krėk* [krɛk]

The facts presented above suggest that the choice of the Russian substitutes /a/ and /ɛ/ of English ash is completely random and unpredictable. This superficial conclusion is going to be challenged in the subsequent sections.

3. Factors behind ash-adaptation in established loans

This section examines a possible impact of the source accent and the temporal factor, i.e. the period when a loanword entered Russian, on the choice of the adaptation variant. It also examines the role of the segmental context in which ash occurs and the lexical set a loan belongs to.

3.1. The impact of the temporal factor and source accent

One of the factors that can potentially influence the shape of loanwords is the source accent from which a given item is loaned. Russian speakers have mainly been exposed to two varieties of English: British and American. While earlier economic and cultural ties between Russia and Great Britain promoted the importance of the former as the major donor of English loanwords, the worldwide expansion of American culture has increased the popularity of the latter.

It should also be noted that there is a considerable degree of dialectal variation in the pronunciation of E /æ/ in both varieties of English which can be viewed as potential sources of English loanwords in Russian. Cruttenden (2014, p. 84) observes that at the end of the twentieth century [æ] has undergone changes in British English; a lower and more back ash is nowadays a typical pronunciation of the vowel in question for the majority of General British[4] speakers, whereas the retention of higher [æ] is a marker of Received Pronun-

[3] Occasionally, both Russian vowels can occur within the same word even when there is the same segment in the original, e.g. E *cashback* → R *kashbėk* [kɐʐˈbɛk].

[4] Cruttenden (2014) uses this term instead of RP (Received Pronunciation).

ciation. On the other hand, according to Davenport and Hannahs (2005, p. 45), in General American it is placed midway between cardinals 3 and 4, and is thus closer to the Russian /ɛ/.

Should British English be a predominant source of anglicisms in Russian, it is reasonable to expect a certain variation in the adaptation of E /æ/ depending on the time period in which specific loanwords were borrowed, with the prevalence of /ɛ/ in earlier and /a/ in more recent borrowings. This is what Szpyra-Kozłowska and Radomski (2016) observe in their analysis of E /æ/ nativisation in Polish loans, i.e. its substitution predominantly with P /ɛ/ in older anglicisms and with P /a/ in newer ones (e.g. *dżez* vs *rap*). While a more accurate conclusion would require a more in-depth investigation, the absence of uniformity in the ash nativisation in Russian with regard to time period is rather clear since there are numerous examples of both older (3a) and newer (3b) loans[5] adapted by means of either R /ɛ/ or /a/:

(3a)	**E /æ/ → R /a/:**	**E /æ/ → R /ɛ/:**
	E *tank* → R *tank* [tank]	E *black* → R *blėk* [blɛk]
	E *cab* → R *kab* [kap]	E *jam* → R *dzhem* [dʐɛm]
(3b)	**E /æ/ → R /a/:**	**E /æ/ → R /ɛ/**:
	E *cash* → R *kash* [kaʂ]	E *rap* → R *rėp* [rɛp]
	E *tablet* → R *tablet* [ˈtablʲiˑt]	E *i-pad* → R *aĭ-pėd* [ɐjˈpɛt]

What is puzzling, however, is a striking difference revealed when the data presented in this paper is compared to the analysis of ash-adaptation carried out by Holden (1980). In Holden's study (which examines 102 Russian loans with ash in the English original) the ratio of R /a/ to R /ɛ/ substitutions in the anglicisms is 2:1, whereas the examination of the borrowings included in DARL shows that the number of loans adapted by means of R /ɛ/ has increased substantially in the space of the last forty years, changing this proportion to roughly 1:1. One possible explanation is that over the years American English has assumed

[5] It should be pointed out that the terms "older and newer loans" are imprecise, which is inevitable as the exact time when borrowing took place is impossible to establish. For this reason, the assignment of the examples below to one of these categories depends on the meaning of words: they are divided into those which denote the phenomena that were known in Russian culture in the first half of the twentieth century or earlier and those which refer to more recent concepts such as information technologies.

more importance as the source of Russian anglicisms, which should result in more loans being adapted as /ɛ/, that is, closer to American pronunciation.

This assumption can be verified through the analysis of those items whose pronunciation differs in the two varieties of English. A number of words that have [æ] in General American are pronounced with [ɑ:] in General British. In (4) we demonstrate how such words are adapted in Russian:

(4) BE [hɑ:f] / AE [hæf] → *R khalf* [xalf]
BE [ɑ:sk] / AE [æsk] → R *ask* [ask]

23 items such as those presented in (4) are found in DARL, of which only one is adapted with the Russian /ɛ/ alongside /a/:

(5) *dance*: BE [dɑ:ns] / AE [dæns] → R *dans* [dans] / *dèns* [dɛns]

A systematic adaptation of loans such as those given in (4) by means of R /a/ can suggest that they were borrowed from British English.

Alternatively, this type of adaptation can be attributed to the transliteration of E <a> as R <a>, which would lead to the nativisation of the target vowel as R /a/. While orthography should be given due consideration in the analysis of loanwords, numerous examples presented in this article demonstrate that in the adaptation of E /æ/ the original spelling is disregarded in roughly half of the examined loans and R /ɛ/ is used instead, suggesting that spelling does not always play a decisive role. Therefore, it is unlikely that anglicisms similar to those presented in (4) are strictly spelling-based, which means that they must be some sort of phonemic rendition and as such are likely based on the British English pronunciation of these words.

Two major though tentative conclusions can be drawn from the data discussed so far. First, Russian does not show major differences in E /æ/ nativisation in older and newer loans. Second, British English seems a more likely source of borrowings in Russian, at least as far as the adaptation of lexical items with the vowel in question is concerned.

3.2. The role of segmental context

To investigate the potential influence of the manner and place of articulation of the preceding and following consonants on the outcome of ash-adaptation in anglicisms, a series of chi-square tests was conducted. According to the results, while the manner of articulation has no statistically significant

influence on the choice of the Russian substitute, the place of articulation of both the preceding and following consonants as well as the position of the vowel under investigation in the word contribute to the choice of the phoneme in the adapted loans. In what follows we are going to discuss those contexts which have proved to be statistically significant in the nativisation of E /æ/ as either R /a/ or /ɛ/.

First of all, word-initial /æ/ is mainly adapted as R /a/. In fact, out of the 14 loans with word-initial /æ/ in DARL only two end up as R /ɛ/, while 12 are nativised with /a/, for example:

(6) E *add* → R *ad* [at]
E *angle* → R *angli* [ˈanglʲi]
E *access* → R *akses* [ˈaksiˀs]
E *anchor* → R *ankor* [ˈankər]

An explanation of such a pattern is offered by Holden (1980), who argues that the preference for the initial R /a/ in such loans might be the borrowers' attempt to make them sound less foreign. He goes on to explain that the only etymologically native root beginning with /ɛ/ in Russian is the demonstrative pronominal root *ėt-* ([ɛt]), while in the remaining items word-initial R /ɛ/ is indicative of a borrowing, e.g. *ėllips* [ˈɛlʲips] 'ellipsis', *ėgo* [ˈɛgɐ] 'ego', *ėtika* [ˈɛtʲikə] 'ethic', etc. In such cases we can assume that if R /ɛ/ at the beginning of a word is indeed perceived by the borrowers as a marker of foreignness, the presence of R /a/ in this position might suggest a better integration of a borrowing in the target language.

Another statistically significant pattern found in the analysed data is the adaptation of /æ/ as R /ɛ/ when preceded by a dental consonant (alveolar in the English original),[6] and as R /a/ if the consonant before the vowel is a velar, as shown in (7) and (8) respectively.

(7) dental consonant + /æ/
E *dash* → R *dėsh* [dɛʂ]
E *tag* → R *tėg* [tɛk]

(8) velar consonant + /æ/
E *cab* → R *kab* [kap]
E *gang* → *R gang* [gank]

When the analysed anglicisms are classified according to the place of articulation of the consonants preceding the two adaptation variants of ash in Russian, the results are as follows:

[6] English alveolar /t/, /d/, /s/, /z/, /l/, /n/ are changed to Russian dental /t/, /d/, /s/, /z/, /l/, /n/.

Table 1. Rendition of E /æ/ as R /a/ and /ɛ/ depending on the place of articulation of the preceding consonant in the adapted words

	R /a/	**R /ɛ/**
dental + V	33%	67%
retroflex + V	49%	51%
labial + V	58%	42%
velar + V	62.5%	37.5%

Table 1 demonstrates that the English vowel /æ/ is most frequently adapted as R /ɛ/ when preceded by dentals (67%). The number of such substitutions decreases progressively in the case of the preceding labials (42%) and velars (37.5%), while the difference in the choice of either R /a/ or /ɛ/ after retroflex consonants is negligible (49% and 51% respectively).[7]

Another segmental context that has shown to be significant in the adaptation of ash is the place of articulation of the following consonant. Specifically, E /æ/ is more frequently adapted as R /ɛ/ when followed by palato-alveolars in English, which in Russian are realised as either the palato-alveolar /t͡ɕ/, or the retroflex /ʂ/ and /ʐ/. Some examples illustrating this pattern are given in (9).

(9) E *flash* → R *flësh* [flɛʂ]
E *trash* → R *trësh* [trɛʂ]
E *scratch* → R *skrëch* [skrɛ́t͡ɕ]
E *cash* → R *kësh* [kɛʂ]
E *slash* → *R slësh* [ˈslɛʂ]
E *fashion* → *R fëshn* [fɛʂn]

There is some evidence that the Russian [ʂ, ʐ], which are phonetically hard, are soft at the phonological level and that, historically, they underwent hardening (Padgett & Żygis, 2007). In this case the presence of [ɛ] before soft consonants could be seen as a kind of assimilation in backness with a [-back] vowel being used before a [-back] consonant. Furthermore, E /ʃ, ʒ/ are [-back] and this is how they may be perceived by the adaptors. This, however, is only a tentative explanation which needs further investigation.[8]

[7] This pattern is a reflection of the hierarchy found in native Russian phonology concerning the degree to which the opposition of palatalised against hard consonants is developed (for more detail see Laidler, 2021).

[8] Any further discussion of the issue of palatalisation in loanwords requires more experimental data and its thorough analysis, which is beyond the scope of this article. Hence only

The analysis of the role of segmental context in ash adaptation demonstrates that it is most frequently adapted as R /a/ word-initially and after velar consonants, whereas its change to R /ɛ/ is often observed when it is either preceded by dentals or followed by the palato-alveolar /t͡ɕ/ as well as the retroflex /ʂ/ and /ʐ/.

3.3. Adaptation of ash in different lexical sets

It has been observed (Szpyra-Kozłowska & Radomski, 2016) that there is a tendency to employ one pattern of ash adaptation in some lexical classes of words. Below we examine ash substitution in selected types of proper nouns.

3.3.1. Proper nouns

A claim has been advanced that a distinction should be made between the adaptation of proper and common nouns since the former often tend to more accurately reflect their spelling, while the latter – their original pronunciation (Bartmińska & Bartmiński, 1997). The nativisation of ash in proper nouns in Russian constitutes a particularly interesting case since there is a certain difference in how the target sound is adapted depending on the type of proper noun involved. As far as toponyms are concerned, Holden (1980) mentions that they were mechanically transliterated in Soviet cartography and thus E <a> /æ/ became R <a> /a/, which is supported by numerous examples, e.g.[9]

(10) *K**a**nada*, *Ni**a**gara*, *Nebr**a**ska*, *K**a**liforniia*, *S**a**n Frantsisko*, *N**a**shvil'*, etc.

In their study of the factors behind the adaptation of ash in English loanwords into Polish, Szpyra-Kozłowska and Radomski (2016) point out that there is a strong tendency to retain the original spelling of proper nouns, supposedly to preserve a person's or place's identity, which is encoded in their written form. While such an explanation seems plausible in the case of English toponyms that are used in Russian, there is a substantial difference in how the names of both real people and fictional characters are treated. Namely, there are increas-

preliminary explanation of the observed pattern has been offered here.

[9] There is an example of a toponym in DARL that has two possible forms, i.e. one with R /a/ and the other with R /ɛ/: E *Stanford* → R *Stanford* [ˈstanfərt] / *Stènfort* [ˈstɛnfərt]. Otherwise, the substitution of E /æ/ with the R /ɛ/ in geographical names is infrequent.

ingly more instances of nativisation by means of R /ɛ/. The examples in (11) show several names in which E /æ/ is adapted as R /ɛ/, while those in (12) are adapted with R /a/:

(11) ***Ė**niston*, ***Ė**plgeĭt*, *B**ė**nks*, *Br**ė**tt*, *Br**ė**ndon*, *Kh**ė**kmen*, *D**ė**ndridzh*, *R**ė**ndi*, etc.

(12) *Z**a**k*, *P**a**trik*, *Fr**a**nklin*, ***A**tkinson*, *Ch**a**plin*, *G**a**mlet*, *F**a**rell*, *Kh**a**nna*, etc.

The data clearly demonstrate that while R /a/ prevails in borrowed English toponyms, adaptations by means of R /ɛ/ increase considerably when English names of people are loaned. A possible explanation of the differences between the two groups of nouns can stem from the way they enter Russian. Taking into account the fact that words can be borrowed through either speech or writing, /a/-adaptations might suggest a strong impact of orthography, seeing that E <a> overlaps with Russian <a>, whereas R /ɛ/ would appear more often when the phonetic shape of the original word is available to borrowers. An increase in the number of R /ɛ/-adaptations in people's names suggests that the adaptors are more frequently exposed to their phonetic form and thus they rely on how those proper names are pronounced rather than spelled. Such a difference between the nativisation of toponyms and people's names could be explained by a stronger presence of the latter in the media, which could provide borrowers with a greater exposure to their actual pronunciation than in the case of place names.[10]

4. Factors behind ash-adaptation in online loans

As mentioned above, loanwords can enter a language either through speech or writing. When borrowed in their spoken form, their shape is determined by the adaptors' perception and their native phonological system. Basing only on dictionary data it is, however, difficult to establish to what extent the choice of either R /a/ or /ɛ/ is attributable to these factors. Furthermore, if perception plays a significant role in adapting loanwords, the question arises how

[10] Another sub-regularity that can be observed in the adaptation of English ash in Russian loanwords concerns specific lexical items which tend to be pronounced in the same way. One such example is the word *black* adapted as *blėk* [blɛk] in all loanwords and phrases in Russian, including geographical names.

British and American English varieties of ash are perceived by the listeners of the recipient language. These issues are discussed in the following sections, which report on an online experiment on the perception of English words with ash by a group of native speakers of Russian.

4.1. The perception of ash in source accents

To examine whether nativisation of E /æ/ is motivated by Russian listeners' perception and, if so, which variety of English has a major impact on the adaptation of the vowel in question in Russian, an experiment was carried out whose results are discussed below.

The objective of the study was to discover how native speakers of Russian with no command of English perceive and subsequently adapt several English sounds absent from the Russian phonemic inventory. Towards this goal, a list of 115 English words, including 30 with /æ/ in different phonological contexts, was prepared by the author and recorded by a male native speaker of Educated Southern British English. Six of those items were also recorded separately by a female native speaker of Standard American English.[11]

The recordings were presented to the participants of the experiment, one person at a time, through headphones. Each word was repeated twice with a short pause between the consecutive items. The listeners were requested to write down the words they heard using Cyrillic characters, which forced them to employ the written equivalents of the Russian sounds. Since the participants were not asked to pronounce the words, faulty production was not responsible for their versions. Thus, a combination of perception and L1 phonology were at work in their adaptations.

Eighty native Russian speakers of both sexes, aged 35–65 took part in the experiment. All the participants live in the eastern part of Ukraine, where Russian is the first language for the majority of the population. None of them has any command of English. The choice of the participants was dictated by the wish to avoid the influence of the knowledge of English on their perception, and avoid their assumptions as to how the words might be pronounced.

[11] The experimental items were randomly ordered. Care, however, was taken to separate words containing the tested segments.

The overall results of ash adaptation in all the experimental items are presented in Figure 1.

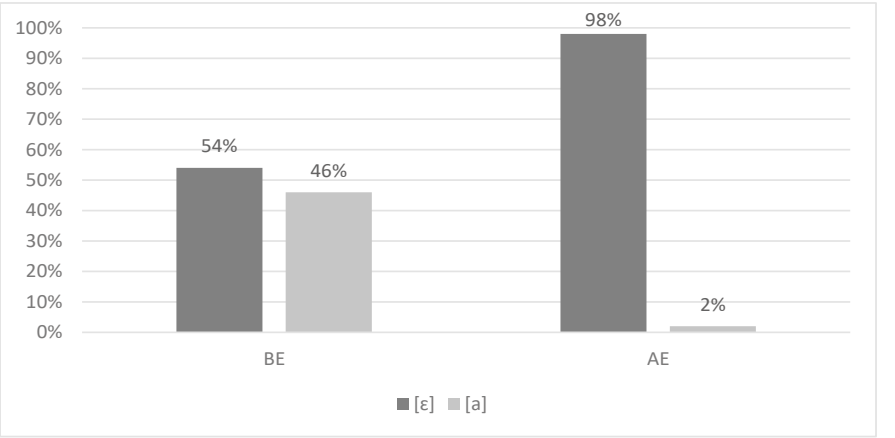

Fig. 1. Adaptation of BE and AE /æ/ – general results

Figure 1 demonstrates that in the sample produced by the British native speaker /æ/ was adapted as R /ɛ/ by 54% of the participants, and as R /a/ by 46%. The results are markedly different for the American English sample, in which ash was substituted by /ɛ/ in 98% of the cases.

The analysis of the experimental items shows that in the BE sample the number of /ɛ/-adaptations increased strikingly where the target vowel was followed by a nasal consonant. This pattern is presented in Table 2.

Table 2. Adaptation of BE /æ/ depending on the manner of articulation of the following consonant

	/a/	**/ɛ/**
/æ/ + obstruent	71%	29%
/æ/ + nasal	7%	93%

The participants displayed a strong tendency to adapt the BE /æ/ as R /ɛ/ in those words where it was followed by a nasal but not an obstruent. Since they had to rely on their perception, a possible difference in the acoustic characteristics of E /æ/ in these two contexts should be taken into account. In English, vowels preceding nasal consonants are nasalised and it has been observed that in a variety of languages, under the influence of nasalisation, high vowels tend

to lower while low vowels tend to rise (Whalen & Beddor, 1989). What is more, in English the degree of nasalisation is much stronger (especially in AE) than in Slavic languages. It is thus reasonable to expect a shift in the perception of /æ/ followed by a nasal towards the Russian /ɛ/ since the distance between the F1 values of E /æ/ and R /ɛ/ will shorten in this context.[12]

Let us now relate the results of the experiment to the adaptation facts of E /æ/ in Russian established anglicisms. We have observed an almost 1:1 ratio between R /a/ and /ɛ/ substitutions in the lexical items in DARL, with only a slightly stronger tendency towards the former. The results of the online experiment show similar proportions in the case of the BE sample but with a minor preference for R /ɛ/. This marginal difference in the two sets of data is not surprising and might be attributed to the potential influence of spelling in established loans, considering that E /æ/ is orthographically always E <a>. On the other hand, when the data on established anglicisms is compared to that of the AE /æ/-adaptations in the experiment, the difference is striking, which might suggest that AE is not the primary source of the anglicisms under discussion in Russian, which supports the conclusion tentatively formulated in Section 3.1.

To accurately evaluate the acoustic distance between the two variants of E /æ/ employed in the experiment and the two substitutes used by the participants, their formants should be compared.[13] The average formant values of [æ] in the experimental recordings are shown in (13a) and (13b).[14]

(13)	a. British speaker:	b. American speaker:
	F1 740	F1 650
	F2 1544	F2 2218

The average values of F1 and F2 of the Russian vowels /ɛ/ and /a/ found in Leonov et al. (2009, p. 878) are given in (14a) and (14b).

(14)	a. R /ɛ/:	b. R /a/:
	F1 450	F1 712
	F2 2025	F2 1300

[12] It should be pointed out, though, that no such pattern was observed in established loans.

[13] Phonetic closeness is often explained in terms of acoustic distance (Kuhl, 2000).

[14] F1 and F2 values of the vowels produced by the speakers in the experimental items fall within the same range given in the relevant literature: F1 732; F2 1527 for a male native speaker of RP (Cruttenden, 2014, p. 104), and F1 669; F2 2349 for a female native speaker of General American (Hillenbrand et al., 1995, p. 3103).

Figure 2 plots the data from (13) and (14).

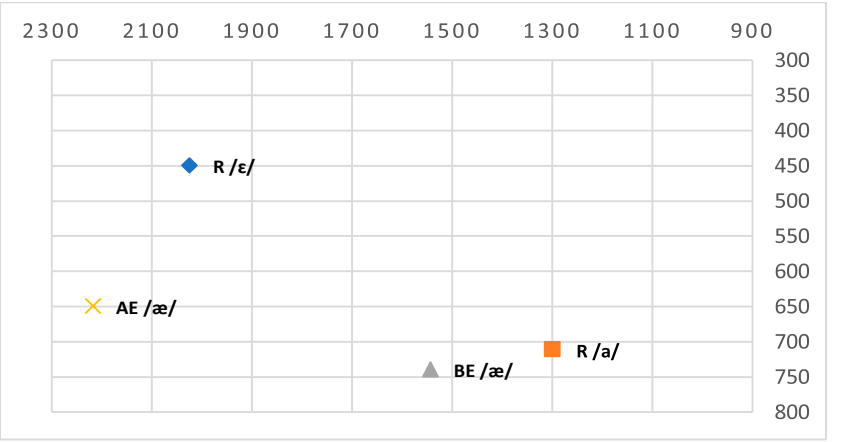

Fig. 2. Average F1 and F2 values of BE & AE /æ/ and Russian /ɛ/ & /a/

Figure 2 demonstrates that while the American speaker's /æ/ is acoustically closer to R /ɛ/, the British speaker's /æ/ is perceptually more similar to R /a/. Had the acoustic distance been the primary factor determining the adaptations used by the participants, we would have observed a substantially higher number of R /a/ substitutions in the case of the British English input. In fact, the results are almost equally distributed between R /a/ and /ɛ/ (46% and 54% respectively). However, if we take a look at the formant values of the BE /æ/ and R /ɛ/, we can see that while the two vowels differ strikingly in backness (F2), the difference between their F1 values, though not as subtle as in the case of BE /æ/ and R /a/, is not considerable either, which could, to some extent, explain why the listeners often identified and adapted it as R /ɛ/. The relative stability of the vowel's F1 value in comparison to its F2, whose value could be significantly impacted by the articulation of adjacent consonants, could explain the listeners' reliance on the vowel height rather than its backness and, as a result, their choice of R /ɛ/.

4.2. The role of phonology

It is important to examine the adaptation data further in order to see whether or not they might be phonologically motivated. One way in which phonology can influence the outcome of the nativisation process is by selecting the variant which departs minimally from the original segment with

regard to its phonological make-up. Moreover, the adaptors' L1 phonology can affect the process of nativisation, forcing them to apply their native phonological rules and phonotactic constraints. It has been established in Section 3.3 that there is some relationship between the phonological context and the choice of the vowel in the anglicisms under investigation. Specifically, we have observed that R /ɛ/ is used more frequently when preceded by dentals in the adapted variant as well as when followed by the palato-alveolar /t͡ɕ/ or the retroflex /ʂ/ and /ʐ/.

To establish which adaptation can be considered to be a phonologically minimal alteration, let us compare the relevant features of the two substitutes used in our data with those of English /æ/.

Table 3. The distinctive feature matrix of E /æ/, R/a/ and R /ɛ/

	E /æ/	**R /a/**	**R /ɛ/**
[**high**]	-	-	-
[**low**]	+	+	-
[**back**]	-	+	-
[**rounded**]	-	-	-

From the feature matrix presented in Table 3, it is clear that the two substitutes of the English ash attested in both established and online loans differ from the target vowel in one feature only. Hence, the potential outputs involve either the delinking of the feature [-back], which renders [-high; +low] segment, i.e. R /a/, or the feature [+low], resulting in [-high; -back] vowel, which corresponds to R /ɛ/. Since both repairs require only one step, they can be considered equally minimal and can be expected to appear with similar frequency in the adaptations. This is precisely what we have observed in established loans and in our online data concerning the BE /æ/, i.e. an almost equal distribution of R /ɛ/ and /a/, with only a marginal increase of the former even though BE /æ/ is acoustically closer to R /a/ than to /ɛ/.

Furthermore, we have investigated whether the contexts discussed in Section 3.3 with regard to established loans could have a similar influence on the online adaptations. While the position of the target vowel in a given item does not have any statistically significant impact on the choice of the substitute, the phonological context seems to play some role in the participants' choice between R /a/ and /ɛ/. Hence the highest number of R /ɛ/ adaptations has been observed in those experimental items where it is either preceded by a dental

consonant (72%) or followed by the Russian retroflex /ʂ/ (81%). On the other hand, neither the presence of the palato-alveolar /t͡ɕ/, nor the retroflex /ʐ/ seem to have any major impact on the choice between either the [+back] or [-back] vowel in the adapted variant. Nonetheless, the fact that the results of the experiment at least partially coincide with the patterns uncovered in the analysis of established loans, provides an important piece of evidence for the impact of target language phonology on the process of loanword adaptation.

With regard to the controversy reported in Section 1 concerning the role of perception and phonology in loan adaptation, in the light of ever-growing body of evidence, many researchers take an intermediate position, according to which both these factors play a part in this process, with perception being strongly affected by the adaptors' L1 phonological system. Perhaps the most frequently cited example is the Japanese speakers' inability to perceive the contrast between the English /l/ and /ɹ/: they map both of them onto a single available liquid consonant in their language, i.e. /ɾ/ (Goto, 1971). Phonologically motivated perception can also be observed on the level of phonotactic structures. For instance, French listeners have been reported to perceive the ill-formed /tl/ onset cluster as /kl/ (Hallé & Best, 2007), while Japanese speakers struggle to differentiate between CC consonant clusters and the same sequences with an epenthetic vowel /u/ (Dupoux et al., 1999). Radomski (2019) reports on the production experiment in which some of the word-initial CC Polish consonant clusters are nativised by internal epenthesis by the majority of the English-speaking participants when they violate either the Sonority Sequencing Principle (SSP) or the Minimal Sonority Distance (MSD). These examples, along with the facts of the English ash adaptation in Russian discussed in this article, provide compelling evidence for the primary role of phonologically-driven perception in the process of loanword adaptation.

5. Conclusion

The investigation of E /æ/ adaptation in Russian anglicisms examined in this paper shows the complexity of this process, which involves several determinants and cannot be ascribed to only one of them. In established loans the source accent as well as the segmental context seem to be of particular significance. On the other hand, there is not much difference in how the target vowel is adapted in older loans as opposed to newer ones. Furthermore, there

is a certain consistency with regard to its substitution in various lexical subsets and proper nouns.

The impact of the source accent has also been confirmed in the online experiment in which Russian native speakers clearly perceived the target vowel as R /ɛ/ when presented with the American English sample, but whose adaptations were almost equally divided between R /a/ and /ɛ/ in the case of the British English stimuli. A more careful analysis of the results suggests that while there are phonetic grounds for the observed pattern (the acoustic distance between the vowels expressed in the difference between their F1 and F2 values), some of these adaptations could also be attributed to phonology, i.e. their phonological make-up as well as the influence of the speakers' L1 grammar. What is more, similar segmental contexts have been shown to have an effect on the adaptation of the established loans discussed in Section 3.2. These uncovered patterns clearly demonstrate that speech perception is to a great extent dependent on the phonological properties of the adaptors' L1.

Bibliography

Bartmińska, I., & Bartmiński, J. (1997). *Słownik wymowy i odmiany nazwisk obcych*. "Park".

Cruttenden, A. (2014). *Gimson's Pronunciation of English* (8th ed.). Routledge. https://doi.org/10.4324/9780203784969

Davenport, M., & Hannahs, S. (2005). *Introducing phonetics and phonology* (2nd ed.). Hodder Arnold.

D′iakov, A. I. (2021). *Slovar′ anglitsizmov russkogo iazyka*. Flinta.

Dupoux, E., Kakehi, K., Hirose, Y., Pallier, C., & Mehler, J. (1999). Epenthetic vowels in Japanese: A perceptual illusion? *Journal of Experimental Psychology: Human Perception and Performance*, *25*(6), 1568–1578. https://doi.org/10.1037//0096-1523.25.6.1568

Goto, H. (1971). Auditory perception by normal Japanese adults of the sounds 'L' and 'R'. *Neuropsychologia*, *9*(3), 317–323. https://doi.org/10.1016/0028-3932(71)90027-3

Hallé, P. A., & Best, C. T. (2007). Dental-to-velar perceptual assimilation: A cross-linguistic study of the perception of dental stop+/l/ clusters. *Journal of the Acoustical Society of America*, *121*(5), 2899–2914. https://doi.org/10.1121/1.2534656

Hillenbrand, J., Getty, L. A., Clark, M. J., & Wheeler, K. (1995). Acoustic characteristics of American English vowels. *Journal of the Acoustical Society of America*, *97*(5), 3099–3111. https://doi.org/10.1121/1.411872

Holden, K. T. (1980). Russian borrowing of English [æ]. *The Slavic and East European Journal*, *24*(4), 387–399. https://doi.org/10.2307/306948

Itô, J., & Mester, A. (1999). The phonological lexicon. In N. Tsujimura (Ed.), *The handbook of phonological theory* (pp. 62–100). Blackwell. https://doi.org/10.1002/9781405166225.ch3

Jacobs, H., & Gussenhoven, C. (2000). Loan phonology: Perception, salience, the lexicon and OT. In J. Dekkers, F. van der Leeuw, & J. van de Weijer (Eds.), *Optimality Theory: Phonology, syntax and acquisition* (pp. 193–210). Oxford University Press. https://doi.org/10.1093/oso/9780198238430.003.0006

Kang, Y. (2003). Perceptual similarity in loanword adaptation: English postvocalic word-final stops in Korean. *Phonology*, *20*(2), 219–273. https://doi.org/10.1017/S0952675703004524

Kuhl, P. K. (2000). A new view of language acquisition. *Proceedings of the National Academy of Sciences*, *97*(22), 11850–11857. https://doi.org/10.1073/pnas.97.22.11850

Laidler, K. (2019). Adaptation of interdental fricatives in English loanwords into Russian: Established versus online loans. In J. Szpyra-Kozłowska & M. Radomski (Eds.), *Phonetics and phonology in action* (pp. 63–90). Peter Lang.

Laidler, K. (2021). *Phonological adaptation of English loanwords into Russian: Established versus online loans* [Unpublished doctoral dissertation]. Uniwersytet Marii Curie-Skłodowskiej.

Leonov, A. S., Makarov, I. S., & Sorokin, V. N. (2009). Frequency modulations in the speech signal. *Acoustical Physics*, *55*, 876–887. https://doi.org/10.1134/S1063771009060220

Molęda, J. (2011). *A comparative study of phonological adaptations of anglicisms in Czech and in Polish since the 1990s*. Wydawnictwo Państwowej Wyższej Szkoły Zawodowej w Raciborzu.

Padgett, J., & Żygis, M. (2007). The evolution of sibilants in Polish and Russian. *Journal of Slavic Linguistics*, *15*(2), 291–324.

Paradis, C., & LaCharité, D. (1997). Preservation and minimality in loanword adaptation. *Journal of Linguistics*, *33*(2), 379–430. https://doi.org/10.1017/S0022226797006786

Peperkamp, S. (2005). A psycholinguistic theory of loanword adaptations. In M. Ettlinger, N. Fleisher, & M. Park-Doob (Eds.), *Proceedings of the Thirtieth Annual Meeting of the Berkeley Linguistics Society* (pp. 341–352). Berkeley Linguistics Society.

Peperkamp, S., & Dupoux, E. (2003). Reinterpreting loanword adaptations: The role of perception. In M.-J. Solé, D. Recasens, & J. Romero (Eds.), *Proceedings of the 15th International Congress of Phonetic Sciences* (pp. 367–370). Causal Productions.

Radomski, M. (2019). *Polish consonant clusters in the British mouth: A study in online loanword adaptation*. Peter Lang. https://doi.org/10.3726/b14998

Steriade, D. (2008). The phonology of perceptibility effects: The P-map and its consequences for constraint organization. In K. Hanson & S. Inkelas (Eds.), *The nature of the word: Studies in honor of Paul Kiparsky* (pp. 151–180). MIT Press. https://doi.org/10.7551/mitpress/7894.003.0011

Szpyra-Kozłowska, J. (2016a). Perception? Orthography? Phonology? Conflicting forces behind the adaptation of English /ɪ/ in loanwords into Polish. *Poznań Studies in Contemporary Linguistics*, *52*(1), 119–147. https://doi.org/10.1515/psicl-2016-0001

Szpyra-Kozłowska, J. (2016b). Pozajęzykowe czynniki kształtujące fonetyczną i fonologiczną adaptację anglicyzmów we współczesnej polszczyźnie. *Poradnik Językowy*, *2016*(2), 21–37.

Szpyra-Kozłowska, J. (2016c). Wewnątrzjęzykowe mechanizmy fonologicznej polonizacji zapożyczeń angielskich. *Poradnik Językowy*, *2016*(6), 61–76.

Szpyra-Kozłowska, J., & Radomski, M. (2016). English ash in loanwords into Polish: Factors behind two patterns of adaptation. In J. Szpyra-Kozłowska & E. Cyran (Eds.), *Phonology, its faces and interfaces* (pp. 277–295). Peter Lang.

Vendelin, I., & Peperkamp, S. (2006). The influence of orthography on loanword adaptations. *Lingua*, *116*(7), 996–1007. https://doi.org/10.1016/j.lingua.2005.07.005

Whalen, D. H., & Beddor, P. S. (1989). Connections between nasality and vowel duration and height: Elucidation of the Eastern Algonquian intrusive nasal. *Language*, *65*(3), 457–486. https://doi.org/10.2307/415219

Yip, M. (1993). Cantonese loanword phonology and optimality theory. *Journal of East Asian Linguistics*, *2*, 261–291. https://doi.org/10.1007/BF01739135

Understanding Factors Behind Two Patterns of English /æ/ Adaptation in Russian

Summary

Phonological adaptation of loanwords usually involves the replacement of foreign sounds and phonemes with native ones. Since the front mid-low English vowel /æ/ is absent from the Russian phonetic inventory, in established borrowings from English into Russian it is most frequently nativised as two Russian vowels it resembles most, i.e. /ɛ/ and /a/, as in, for example, *backhand* /bɛkhɛnt/ and *jazz* /dʐas/. However, to the best of our knowledge, so far there has been no attempt to analyse the factors behind this phenomenon. The present paper aims to identify the major mechanisms and patterns of ash-adaptation in Russian and discuss their theoretical implications for the debate concerning the nature of the loanword adaptation process.

The analysis of established loans shows the complexity of the English /æ/ nativisation in Russian. Its outcome depends on a number of factors such as the source accent and the phonological context the target vowel occurs in. Furthermore, the results of the online adaptation experiment we report on, in which native speakers of Russian were asked to transcribe English words using the Cyrillic notation, present a strong argument in favour of phonologically-driven perception.

Zrozumienie czynników stojących za dwoma wzorcami adaptacji angielskiego /æ/ w języku rosyjskim

Streszczenie

Fonologiczna adaptacja zapożyczeń zwykle polega na zastąpieniu obcych fonemów rodzimymi. Ponieważ angielska samogłoska przednia otwarta /æ/ nie występuje w zasobie fonetycznym języka rosyjskiego, w utrwalonych zapożyczeniach z języka angielskiego jest ona najczęściej zastępowana dwiema rosyjskimi samogłoskami, które najbardziej przypomina, tj. /ɛ/ i /a/, jak na przykład w słowach *backhand* /bɛkhɛnt/ i *jazz* /dʐas/. Jednak według naszej wiedzy jak dotąd nie podjęto próby analizy czynników stojących za tym zjawiskiem. Niniejszy artykuł ma na celu zidentyfikowanie głównych mechanizmów i wzorców adaptacji samogłoski /æ/ w języku rosyjskim oraz omówienie ich teoretycznych implikacji dla dyskusji dotyczącej natury procesu adaptacji zapożyczeń.

Analiza utrwalonych zapożyczeń pokazuje złożoność adaptacji angielskiego /æ/ w języku rosyjskim. Jej rezultat zależy od szeregu czynników, takich jak odmiana angielszczyzny, z której pochodzi zapożyczenie, a także kontekst fonologiczny, w którym występuje samogłoska docelowa. Co więcej, omawiane wyniki przeprowadzonego zdalnie eksperymentu, w którym rodzimi użytkownicy języka rosyjskiego zostali poproszeni o zapisanie angielskich słów przy użyciu cyrylicy, stanowią istotny argument za percepcją determinowaną fonologicznie.

Keywords: loanwords; adaptation; anglicisms; Russian language; English language; phonetics; phonology

Słowa kluczowe: zapożyczenia; adaptacja; anglicyzmy; język rosyjski; język angielski; fonetyka; fonologia

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