KATERYNA LAIDLER
https://orcid.org/0000-0002-1455-9089
Uniwersytet Marii Curie-Skłodowskiej w Lublinie

THE INTERACTION OF ORTHOGRAPHY, PERCEPTION, AND PHONOLOGY IN THE ADAPTATION OF E /ɜ:/ IN LOANWORDS INTO RUSSIAN

In the process of loanword nativization, foreign sounds are inevitably altered so as to comply with the phonological principles of the borrowing language. There is, however, an ongoing debate as to whether such modifications are attributable to the phonological similarity between the source and the target segments, their acoustic closeness, orthographic conventions of the languages involved or an impact of additional extralinguistic factors. The issue seems particularly relevant in the case of those sounds whose adaptation to the target language involves several changes. The present paper deals with the issue of the so-called British English long schwa adaptation in loanwords from English into Russian. E /ɜ:/ nativization poses an interesting research problem due to its lacking a single phonologically or phonetically closest equivalent in Russian. Thus, considerable variability can be observed in how it is adapted. The present paper aims to examine the major mechanisms and patterns of E /ɜ:/ nativization in Russian loanwords and shed some light on the interplay of phonology, acoustic similarity, and orthography. Towards this goal, the major adaptation scenarios of 200 established loanwords containing E /ɜ:/ have been compared to the results of an online experiment in which 41 native speakers of Russian with no. command of English listened to a list of English words containing the sound in question in different segmental contexts and were asked to transcribe them using Cyrillic characters. The analysis demonstrates that while established loanwords are often influenced by orthography, spelling-based adaptations are inevitably reinforced by phonology and in some cases acoustic similarity. Moreover, a number of such adaptations is marginal if they are not supported by either phonology or phonetics, and the most common substitutes show an interplay of all three factors. Hence, our findings shed some light onto the nature of /ɜ:/ nativization in the Russian language as well as add to the debate of the loanword adaptation phenomena in general.
Keywords: loanword adaptation, phonology, phonetics, acoustics, orthography, Russian, English

1. INTRODUCTION

The issue of loanword adaptation has triggered much interest and controversy among linguists in the last three decades. Hundreds of papers have been devoted to it, improving greatly our insight into the nature of this process, and also facilitating a better understanding of

the inner workings of native grammars. Such conspicuous interest in this subject has brought about a number of new approaches proposed by linguists in their attempts to account for an array of phonetic and phonological modifications that inevitably take place when a word travels from one language to another. Nonetheless, there are still many questions, particularly concerning the role of individual factors contributing to the final phonetic shape of the borrowed words in a recipient language. Three such determinants have been the focus of adaptation research, namely perception, phonology, and orthography, with each of them claimed to play a major role in the nativization process, according to different frameworks. This paper is meant a contribution to this debate. On the basis of an in-depth inquiry into the adaptation of E /ɜː/ in loanwords in Russian we, intend to demonstrate that all three factors interact significantly in this process and do not exclude, but rather complement each other. To our knowledge, this is the first analysis of this problem offered in scientific literature.

A substantial body of loan adaptation studies has been devoted to those pairs of languages which are characterized by markedly different phonological systems since they are likely to exhibit drastic modifications when confronted with foreign segments and structures, e.g. English and Cantonese,[1] French, and Fula,[2] English, and Japanese,[3] English and Korean,[4] English and Mandarin,[5] etc. However, the analyses of anglicisms in phonologically less distant languages, such as English and Russian, frequently demonstrate fascinating patterns that contribute to our understanding of the processes involved in the nativization of borrowings.

In this paper, the impact of perception, phonology, and orthography on the adaptation of English /ɜː/ in loanwords into Russian is

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[1] M. Yip, *Cantonese Loanword Phonology and Optimality Theory*, "Journal of East Asian Linguistics" 1993, p. 261–291.

[2] C. Paradis, D. LaCharité, *Preservation and Minimality in Loanword Adaptation*, "Journal of Linguistics" 1997, no. 33, p. 379–430.

[3] J. Itô, A. Mester, *The Phonological Lexicon*, in: T. Natsuko (ed.), *The Handbook of Phonological Theory*, Blackwell, Oxford 1999, p. 62–100.

[4] Y. Kang, *Perceptual Similarity in Loanword Adaptation: English Postvocalic Word-Final Stops in Korean*, "Phonology" 2003, no. 20, p. 219–273.

[5] Y. H. Lin, *Loanword Adaptation and Phonological Theory*, in: Y. Xiao (ed), *Proceedings of the 21st North American Conference on Chinese Linguistics (NACCL–21),* Bryant University, Smithfield, Rhode Island 2009, p. 1–12.

examined. The so-called long schwa has been selected for this study for a number of reasons. First, it is among the vowels missing from the Russian phonemic inventory.[6] Hence, in the course of nativization, adaptors are bound to replace it[7] with the best substitute among those available to them within their native system. Secondly, the adaptation of this vowel presents a rather complex case of an interplay of several interconnected factors making it particularly interesting from a theoretical perspective.

In what follows, we are going to provide a comprehensive description of the major nativization scenarios of English /ɜ:/ in anglicisms in Russian. This is achieved through a detailed analysis of the established loanwords included in the *Dictionary of Anglicisms of the Russian Language*[8] compiled by Anatolij Dyakov,[9] which is the most up-to-date dictionary of this kind and with the most recent borrowings alongside the older ones. Furthermore, the dictionary data are juxtaposed with those obtained in the online adaptation experiment carried out by the author, which allows us to examine the role of perception[10] in this process and its impact on the adaptation of anglicisms.

The paper is structured as follows. In Section 2 the major approaches to the process of loanword adaptation are briefly presented, after which Section 3 identifies the nativization patterns of E /ɜ:/ in established anglicisms. These scenarios are analyzed with regard to the impact of orthography (Section 4), perception, where the data concerning online adaptation experiments are presented and discussed (Section 5) as well as phonology (Section 6). Finally, a conclusion is drawn in Section 7.

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[6] The discussion of the differences between the sound systems of Russian and English is beyond the scope of this paper especially seeing that in what follows the adaptation of only one sound will be dealt with. For a more detailed comparison of the phonemic inventories as well as phonological processes operating in the two languages see K. Laidler, *From Jazz and Rap to Dzhaz and Rep. Phonological Adaptation of English Loanwords in Russian,* PeterLang, Berlin 2022.

[7] A different option is to incorporate the vowel into the Russian segment inventory. This, however, does not happen.

[8] The abbreviation DARL will be used from this point onwards.

[9] А. Дьяков, *Словарь англицизмов русского языка*, Флинта, Москва 2020.

[10] In this paper, the term 'perception' refers to the stage in loanword adaption which precedes production and at which the mapping of L2 forms onto L1 forms is determined by the perceptual approximation of the foreign input to the speaker's native L1 categories.

2. MAJOR APPROACHES TO LOANWORD ADAPTATION

Before we proceed to the discussion of the major adaptation facts of E /ɜː/ in Russian, a brief introduction to the role of perception, phonology, and orthography in the process of loanword nativization is in order. The nature of loanword adaptation has been the subject of a long-lasting debate with the major question being whether it takes place in perception or production, giving rise to the two major competing approaches, i.e. nativization-through-production and nativization-through-perception.

The first of them, as advocated by Carole Paradis and Dariene LaCharité,[11] Junko Itô and Armin Mester,[12] Donca Steriade,[13] advances the claim about the existence of a universal set of phonological rules that aid speakers' foreign sounds processing and their subsequent matching onto the native representations which conform with the adaptors L1 phonology. Furthermore, Carole Paradis[14] emphasizes the role of bilingual speakers in loanword nativization who, according to the scholar, are able to correctly identify the phonemes from the donor language input and find the closest phonological match in the target language at the same time preserving as much of the phonetic information as possible. However, some scholars maintain that the input to loan adaptation does not depend on how proficient the adapters are in L2 (such evidence is provided, among others, by Haike Jacobs and Carlos Gussenhoven).[15] According to scholars, the perception of non-native structures is faithful and the input to loan adaptation is constructed through assigning phonological representations to foreign elements. Hence, under this view, modifications introduced in the process of loanword adaptation are phonologically minimal repairs. This also means that the key importance is

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[11] C. Paradis, D. LaCharité, *Preservation and Minimality…*, p. 379–430.

[12] J. Itô, A. Mester, *The Phonological Lexicon…*, p. 62–100.

[13] D. Steriade, *The Phonology of Perceptibility Effects: the P-Map and its Consequences for Constraint Organisation*, in: Hanson, Kristin; Inkelas, Sharon (eds), *The Nature of the Word: Studies in Honor of Paul Kiparsky*, MIT Press, Cambridge CA 2001/2008, p. 151–180.

[14] C. Paradis, *The Inedequacy of Faithfulness and Filters in Loanword Adaptation*, in: J. Durand, B. Laks (eds), *Current Trends in Phonology: Models and Methods*, University of Salford Publications, Salford 1996, p. 509–534.

[15] H. Jacobs, C. Gussenhoven, *Loan Phonology: Perception, Salience, the Lexicon and OT*, in: J. Dekkers, F. v. d. Leeuw, J. v. d. Weijer (eds), *Optimality Theory. Phonology, Syntax and Acquisition*, Oxford University Press, Oxford 2000, p. 193–210.

attached to contrastive features of L2 phonemes whereas allophonic variation is irrelevant and should not have any impact on the output of the nativization process in the target language.

A substantial body of loan adaptation studies demonstrates that modifications introduced by the borrowers are indeed a reflection of their L1 phonologies. For example, complex onsets in French loanwords in Fula[16] similar to complex onsets and codas in English loanwords in Marshallese[17] are repaired so as to avoid such ill-formed structures in L1. The adaptation of individual segments is also subject to the influences of phonology as in the case of English loanwords in Korean[18] in which English voiceless plosives are invariably adapted as aspirated plosives in Korean irrespective of their realization in source items.[19]

The advocates of an alternative view, however, assign no. role to production grammar claiming that repairs take place as early as at the stage of perception (Sharon Peperkamp and Emmanuel Dupoux,[20] Peperkamp,[21] Inga Vendelin and Peperkamp).[22] According to Peperkamp and Dupoux,[23] the mapping of L2 onto L1 forms is determined by the perceptual approximation of the foreign input to the listener's native L1 categories. The reliability of L2 perception is therefore influenced by the perceptual biases of the L1 phonological system making any modifications phonetic in nature. Such an explanation of the adaptation process implies that borrowers are non-native speakers of L2 whose perception of foreign sound signals is unreliable and often faulty. Some scholars (e.g. Paul Boersma;[24] Boersma and Silke Ha-

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[16] C. Paradis, D. LaCharité, *Preservation and Minimality…*, p. 379–430.

[17] R. Brasington, *Cost and Benefit in Loanword Adaptation*, "Working Papers in Linguistics" 1997, no. 3, p. 1–19.

[18] M. Oh, *English Stop Adaptations as Output-to-Output Correspondence*, "Onin Kenkyuu" 2004, no. 7, p. 165–172.

[19] For more examples of phonological adaptations see Kang (2011).

[20] S. Peperkamp, E. Dupoux, *Reinterpreting Loanword Adaptations: The Role of Perception*, in: M. Solé, D. Recasens, J. Romero, *Proceedings of the 15th International Congress of Phonetic Sciences*, Casual Productions, Barcelona 2003, p. 367–370.

[21] S. Peperkamp, *A Psycholinguistic Theory of Loanword Adaptations*, "30th Annual Meeting of the Berkley Linguistic Society" 2005, p. 341–352.

[22] I. Vendelin, S. Peperkamp, *The Influenceof Orthography on Loanword Adaptations*, "Lingua" 2006, no. 116, p. 996–1007.

[23] S. Peperkamp, E. Dupoux, *Reinterpreting Loanword Adaptations…*, p. 367–370.

[24] P. Boersma, *Functional Phonology: Formalizing the Interactions between Articulatory and Perceptual Drives*, Holland Academic Graphics, The Hague 1998.

mann)[25] maintain that perception is largely dependent on the native output constraints in that they determine whether the perception of foreign forms will be faithful or not. Overall, this approach makes a strong prediction as to the correlation between perception and the loan adaptation process and the concept of phonetic input is central to the phonetic approximation view.

Examples of adaptations based on phonetic rather than phonological input are found in Thai[26] where English voiceless stops are adapted with aspiration words initially but with no. aspiration when preceded by /s/, which is a clear reflection of the allophonic realization of these sounds in English. Furthermore, Peprkamp and Dupoux[27] demonstrate how the adapters' inability to distinguish between certain non-native contrasts is mirrored in loanword adaptation. For example, Japanese listeners experience difficulty perceiving CC and CVC contrasts.[28] Korean adapters have major problems distinguishing between /r/ and /l/[29] whereas French speakers struggle to discriminate stress contrasts.[30] All this research demonstrates that perceptual assimilation can operate not only on the level of segments but also suprasegments as well as phonotactic structures.

While both stances offer valuable insights into the nature of the adaptation process, they fail to acknowledge the influence of external factors,[31] such as orthography, on the phonetic/phonological shape of loanwords. Thus, for a long time, its role has been ignored or at best given only marginal attention in the debate about the nature of the input into the adaptation process. For example, Paradis and LaCha-

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[25] P. Boersma, S. Hamann, *Loanword Adapation as First-Language Phonological Perception*, in: A. Calabrese, W.L.Wetzels (eds), *Loan Phonology*, John Benjamins, Amsterdam, Philadelphia 2009, p. 11–58.

[26] M. Kenstowicz, A. Suchato, *Issues in Loanword Adaptation: A Case Study from Thai*, "Lingua" 2006, no. 116, p. 921–949.

[27] S. Peperkamp, E. Dupoux, *Reinterpreting Loanword Adaptations...*, p. 367–370.

[28] E. Dupoux, K. Kazohiko, Y. Hirose, C. Pallier, J. Mehler, *Epenthetic Vowels in Japanese: A Perceptual Illusion?*, "Journal of Experimental Psychology: Human Perception and Performance" 1999, no. 25, p. 1568–1578.

[29] J. C. L. Ingram, P. See-Gyoon, *Language, Context, and Speaker effects in the Identification and Discrimination of English /r/ and /l/ by Japanese and Korean Listeners*, "Journal of the Acoustical Society of America" 1998, no. 103, p. 1161–1174.

[30] E. Dupoux, K. Kazohiko, Y. Hirose, C. Pallier, J. Mehler, *Epenthetic Vowels in Japanese...*, p. 1568–1578.

[31] Some other external factors often discussed in literature include the level of bilingualism in the community, the channel of borrowing (i.e. spoken vs written), source accent and the period of time when the lexical item was borrowed.

rité[32] in their account of French loanwords in Fula conclude that the role of orthography is rather weak with only about 4.6% of adaptations in their corpus of 545 words attributable to the influence of this factor.

The impact of the written input in the process of nativization, however, cannot be denied, for example, in those English words whose silent letters are realized phonetically in their adapted counterparts, as is the case with English <d>, <w>, <k> and <l> in the examples from Polish and Russian below.

(1)   E sandwich [ˈsænwɪtʃ]   →   PL sandwicz [ˈsandvʲits�피]
           E wrap [ræp]   →   PL wrap [vrap]
           E know [nəʊ]   →   R knokatʹ [ˈknokɐtʲ]
           E walkover [ˈwɔːkəʊvə]   →   R valkover [vɛlˈkovʲir]

Even though it might be difficult to draw a clear line between phonological and orthographic adaptations since both can often yield similar results, the role of the latter is slowly being re-evaluated and acknowledged by scholars. For example, Jacek Molęda[33] and Jolanta Szpyra-Kozłowska[34] emphasize the role of visual input in loan adaptation, particularly in the case of those societies which demonstrate a rather low degree of bilingualism.

In an attempt at a formal account of spelling-based adaptations, Lionel Mathieu[35] applies the mechanisms of Optimality Theory[36] to the analyses of orthographic modifications in loanwords found in Romanian and Japanese demonstrating how written representations, as well as grapheme-to-phoneme correspondences established by the borrowing language with regard to the donor one, can contaminate phonological representation of the borrowed items. Another formal

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[32] C. Paradis, D. LaCharité, *Preservation and Minimality…*, p. 379–430.

[33] J. Molęda, *A Comparative Study of Phonological Adaptations of Anglicisms in Czech and in Polish since the 1990s*, Wydawnictwo PWSZ w Raciborzu, Racibórz 2011.

[34] J. Szpyra-Kozłowska, *Perception? Orthography? Phonology? Conflicting Forces Behind the Adaptation of English /ɪ/ in Loanwords into Polish*, "Poznań Studies in Contemporary Linguistics" 2016, no. 52 (1), p. 119–147.

[35] L. Mathieu, *Orthographic Traces in Romanian and Japanese Loanwords: Enriching Phonological Representations*, "Journal of Language Contact" 2012, p. 144–181

[36] J.J. McCarthy, A. Prince, *Faithfulness and Reduplicative Identity*, "University of Massachusetts Occasional Papers" 1995, no. 18, p. 249–384; A. Prince, P. Smolensky, *Optimality Theory: Constraint Interaction in Generative Grammar*, Boulder, Rutgers University, University of Colorado 1993/2004.

OT account of the interaction between orthography and perception is provided by Hamann and Ilaria Colombo[37] in their analysis of English intervocalic consonants borrowed into Italian as either singletons or geminates. Both accounts formalize the process of adaptation in the scenario of the adaptors' simultaneous exposure to the written and auditory input by showing how orthography and perception can interact at the same level of representation. Alternatively, Daland et al.[38] based on an extensive body of evidence on the adaptation of English vowels in Korean put forward a hypothesis according to which orthography plays a greater role in the adaptation of unstressed vowels whereas in the case of stressed syllables it is their perception that the listeners primarily rely on. Hence, in recent studies, the importance of orthography in the process of loanword adaptation is slowly recognized and successful attempts to incorporate it into formal analyses are undertaken.

To sum up this section, there is overwhelming empirical evidence to suggest that loanword adaptation can rely on both phonological and phonetic details of the source as well as the target language. Furthermore, the orthographic representation of a source item can contribute to its interpretation by the borrowers. Hence the process of adaptation should not be boiled down to an exclusive influence of either of these factors but rather the ways in which they interact should be uncovered to present a more accurate picture of the nativization process.

3. ADAPTATION OF E /ɜ:/ IN ESTABLISHED BORROWINGS INTO RUSSIAN

English /ɜ:/ is one of the vowel phonemes absent from the Russian inventory. In order to determine the major adaptation patterns of this vowel, we have examined 203 loanwords taken from *DARL* and enriched the list with 35 proper names, which allowed us to establish the following adaptation rates:

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[37] S. Hamann, I.E. Colombo, *A Formal Account of the Interaction of Orthography and Perception. English Intervocalic Consonants Borrowed into Italian*, "Nat Lang Linguist Theory" 2017, no. 35, p. 683–714.

[38] R. Daland, M. Oh, S. Kim, *When in Doubt, Read the Instructions: Orthographic Effects in Loanword Adaptation*, "Lingua" 2015, no. 159, p. 70–92.

(2) E /ɜ:/   → R /ɛ/39 = 61.5%   E /ɜ:/   → R /i/ = 9%
     E /ɜ:/   → R /o/ = 15%   E /ɜ:/   → R /a/ = 2.5%
     E /ɜ:/   → R /u/ = 12%

It has to be kept in mind that each of the phonemes presented in (2) can have two realizations in Russian, with their slightly fronted allophones occurring after palatalized consonants in CV sequences. These allophones, however, have different graphic representations according to the Russian orthographic rules, i.e.

(3) R /ɛ/ → R [ɛ] = <è>   R /o/ → R [o] = <o>R /u/   → R [u] = <u>
     → R [e] = <e>   → R [ö] = <ë>   → R [ü] = <ju>

Therefore, if the allophonic variation of Russian vowels is taken into account in the evaluation of the major adaptation patterns, a somewhat different picture emerges:

(4) E /ɜ:/ → R /ɛ/ → R [e] = 59%   E /ɜ:/ → R /u/ → R [u] = 10%
     E /ɜ:/ → R /ɛ/ → R [ɛ] = 2.5%   E /ɜ:/ → R /u/ → R [ü] = 2%
     E /ɜ:/ → R /o/ → R [ö] = 9%   E /ɜ:/ → R /i/ = 9%
     E /ɜ:/ → R /o/ → R [o] = 6%   E /ɜ:/ → R /a/ = 2.5%

Some examples with the most frequent substitute, i.e. Russian /e/ realised as either [e] or [ɛ] are given in (5a) and (5b),

(5a) E alert → R alert [ɐˈlʲert]   E vertex → R verteks [ˈvʲertiˀks]
      E verge → R verdž [vʲert͡ɕ]   E invert → R invert [inˈvʲert]
(5b) E earl → R èrl [ɛrl]   E sir → R sèr [sɛr]

As demonstrated in (2), the second most common adaptation of English /ɜ:/ is through Russian /o/ which can be realised as either Russian [o] or [ö] as is shown in examples in (6a) and (6b),

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[39] The phonological status of /ɛ/ in Russian is marked by controversy. Traditionally, [ɛ] has been treated as an allophone of /e/ (e.g. S. Knyazev, S. Pozharitskaya 2012). The main reason for this, according to Knyazev and Pozharitskaya (2012, p. 229) is the fact that while Russian [ɛ] is pronounced after hard consonants and [e] after soft ones, they are in free variation word-initially with [e] appearing more frequently in this position. There is, however, a serious flaw in such reasoning seeing that word-initial [e] is always pronounced with a glide before it, i.e. as [je], which suggests that the occurrence of [e] is always determined by its adjacency to the preceding [-back] segment. No such restrictions are observed in the case of [ɛ], which leads us to argue that there are more reasons to accept /ɛ/ as a phoneme and [e] as its allophone.

(6a) E lurch → R lorč [lortɕ̂]   E turn → R torn [torn]

(6b) E dirt → R dërt [dʲört]   E research → R resërč [rʲiˑ'sʲörtɕ̂]

Several instances of English /ɜ:/ nativized using the Russian close back vowel and realised as its two allophones, i.e. [u] and [ü], are given in (7a) and (7b) respectively. The adaptation of these items is spelling-based.

(7a) E cursor → R kursor [kur'sor]   E turnip → R turneps [tur'nɛps]
(7b) E blur → R bljur [blʲür]   E lurk → R ljurkatʾ ['lʲürkətʲ]

As can be seen from the examples presented so far, three Russian phonemes most commonly employed in the adaptation of E /ɜ:/, i.e. /ɛ/, /o/ and /u/ in the analysed loanwords are realised phonetically by means of their two allophones whose distribution is dependent on the palatalisation of the preceding consonant.

There are also a few loans in the examined data with English /ɜ:/ nativised as Russian /i/, e.g.:

(8) E girl → R girla [gʲir'la]   E twirl → R tvirl [tvʲirl]
     E dirk → R dirk [dʲirk]   E flirt → R flirt [flʲirt]
     E virtual → R virtual [vʲirtu'al]   E chirp → R čirp [tɕ̂irp]

Finally, the examples with English /ɜ:/ → Russian /a/ substitution are very few and include the following words:

(9) E sternpost → R starnpost ['starnpɐst]   E burster → R barster ['barstiˑr]
     E turkey trot → R tarki-trot ['tarci 'trot]   E hurdle → R xardl [xardl]

It is interesting, however, that all the items in (9) have been borrowed as specialised terms in Russian. Hence, *starnpost* is an archaic nautical term; *barster* is used to describe a cosmic source of powerful bursts of X-rays; *tarki-trot* is the name of an American ballroom dance and *xardl* refers to hurdle horseracing. These words belong to a group of older borrowings and could perhaps be attributed to an incorrect spelling-to-sound overgeneralisation in which English <u> is adapted as Russian /a/.

Among the loans which have been collected, a few doublets are found, i.e. words in which the target segment is adapted in two different ways, one of which is spelling-based e.g.

(10) E burpee → R bërpi [ˈbʲörpʲi] / burpi [ˈburpʲi]
      E purchase → R pečes [ˈpʲet͡ɕəs] / pёčes [ˈpʲöt͡ɕəs]
      E furry → R ferri [ˈfʲerʲi] / furri [ˈfurʲi]
      E burst → R bërst [ˈbʲörst] / burst [ˈburst]

It is unclear how such doublets in (10) arise since those examples differ markedly in how English /ɜː/ is adapted. While some of them seem to be conditioned by the original spelling, e.g. English *burpee* adapted as Russian *burpi*, where English <ur> is transliterated by means of Russian <ur> according to the conventions accepted in this language, other examples, such as the nativisation of English *furry* as Russian *ferri*, clearly have to be some sort of acoustic approximation. It is obvious, though, that the adaptation of English /ɜː/ in Russian is far from being homogeneous and very often even the same items undergo several nativisation scenarios each potentially being attributable to different factors.

In the doublets presented in (11) the target vowel is adapted in the same way and the difference between the two forms lies in the presence or absence of the sound /r/ in the Russian version, e.g.

(11) E birthday → R bezdèj [ˈbʲezdɪ̯əj] / berzdèj [ˈbʲerzdɪ̯əj]
      E workshop → R vokšop [vɐkˈʂop]/ vorkšop [vɐrkˈʂop]
      E sweatshirt → R svetšit [svʲiˈt̚ʂit] / svitširt [svʲiˈt̚ʂirt]

One of the factors that should be taken into account in the analysis of borrowings is the source accent, especially in the case of those segments that show much variability in their realisation across different varieties of English. Szpyra-Kozłowska[40], in a series of articles investigating the factors behind the adaptation patterns observed in Polish anglicisms, argues that the two varieties of English, i.e. Received Pronunciation[41] (RP) and General American (GA) should be considered as the major sources of borrowings in Polish due to the dominance of the former in EFL teaching and a considerable cultural influence of the latter in Poland.[42] This is also true of Russian speaking countries

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[40] J. Szpyra-Kozłowska, *Input to Loanword Adaptation of Anglicisms in Polish*, in: A. Bloch-Rozmej, A. Bondaruk, *Spotlight on Melody and Structure in Syntax and Phonology*, KUL, Lublin 2015, p. 305–329; J. Szpyra-Kozłowska, *Perception? Orthography? Phonology?…*, p. 119–147.

[41] A. Cruttenden, *Gimson's Pronunciation of English (8th edition)*, Routledge, London / New York 2014.

[42] A. Cruttenden explains that this particular variety is also known by other names such as BBC English, General British English, Southern (Standard) British English

where those two accents are influential in the sphere of education and popular culture alike.

When it comes to the adaptation of the loanwords discussed in this article, the major difference in the pronunciation of the target vowel in RP and GA is the [r]-coloring of /ɜ:/ in the latter. It is unclear whether such a difference can account for the variation in the nativisation of the doublets in (11) but there is a handful of other borrowings in which /r/ is absent in the Russian version, as in the examples in (12). Furthermore, in those words, the original spelling of English /ɜ:/ is disregarded and the adapted variants are some sort of phonetic approximations.

(12) E search → R sёč [sʲötɕ]
      E e-learning → R i-lёning [iˈlʲönʲink]
      E impulse purchase → R impulʹs pečes [ˈimpulʲs ˈpʲetɕiʲs]

It is also worth commenting on how the target vowel is adapted in proper nouns. According to Jerzy Bartmiński and Izabela Bartmińska,[43] proper names have a strong tendency to retain their original spelling which enhances the recognition of such nouns. However, Laidler[44] demonstrates that the adaptation of such nouns in anglicisms in Russian often follows two distinct patterns. The author points out that spelling-based substitutions are common in toponyms whereas the original phonetic forms are more frequently retained in people's names. An explanation could lie in the way the two groups of borrowings enter the language. While place names are frequently borrowed in their written form (e.g. through maps), the latter is more likely to appear in the media these days allowing the borrowers greater exposure to their pronunciation.

If we have a look at some English place names adapted in Russian, it is immediately obvious that in the majority of them the substitution of English /ɜ:/ could have been affected by the original spelling of the word (which is also supported by the presence of /r/ in those toponyms), as the examples in (13a) demonstrate. However, those

and less frequently nowadays as Received Pronunciation (RP).

[43] J. Bartmiński, I. Bartmińska, *Słownik wymowy i odmiany nazwisk obcych*, PPU "Park", Bielsko Biała 1997.

[44] K. Laidler, *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*, Peter Lang, Berlin 2019, p. 63–90; K. Laidler, *From Jazz and Rap...*

toponyms in which the target vowel is not transliterated are considerably less numerous, as shown in (13b).

(13a)
E Perth → R Pert [pʲert]
E Derby → R Derbi [ˈdɛrbʲi]
E Sherwood → R Šervud [ˈʂɛrvut]
E Amherst → R Amxerst [ˈamçiᵊrst]
E Pittsburgh → R Pitsburg [ˈpʲits̪burk]

E Selkirk → R Selkirk [ˈsʲelcirk]
E Alberta → R Alʹberta [ɐlʲˈbʲertə]
E Berkshire → R Berkšir [ˈbʲerkʂir]

(13b)[45]
E Kirkby → R Kerbi [ˈcerbʲi]
E Firth of Forth → R Fert-of-Fort [ˈfʲert əf ˈfort]
E Piccadilly Circus → R Pikkadili-Serkus [pʲikːɐˈdʲilʲi ˈsʲerkus]

A similar picture emerges when a look is taken at some examples of brand names.

(14a)
E Whirlpool → R Uirpul [uˈirlpul]
E Hershey → R Xerŝi [çerʂi]
E McFlurry → R Makfluri [mɐkˈflurʲi]
E Burger King → R Burger King [ˈburgʲiᵊr cink]

E Word → R Word [vort]
E Herbalife → R Gerbalajf [ɟiᵊrbɐˈlajf]
E Virgin → R Virdžin [ˈvirdʐi̞n]

(14b)
E Burberry → R Barberri [ˈbarbʲiᵊrʲi] / Bjurberri [ˈbʲürbʲiᵊrʲi]

Perhaps an explanation similar to the one concerning toponyms can be proposed in the case of the examples in (14a) and (14b). Since the adaptors are likely to come across written forms of brand names regularly, they can be expected to apply transliteration conventions in their attempts to nativise such nouns.

However, an examination of people's names (both real and fictional) has shown a different pattern.

(15a)
E Irving → R Irving [ˈirvʲink]
E Kurt → R Kurt [kurt]
E Sherlock → R Šerlok [ˈʂɛrlək]
E Merlin → R Merlin [ˈmɛrlʲin]

E Kirk → R Kirk [cirk]
E Shirley → R Širli [ˈʂirlʲi]
E Bernard → R Bernard [bʲiᵊrˈnart]
E Albert → R Alʹbert [ˈalʲbʲiᵊrt]

[45] It is interesting to note that even though the adaptation of E /ɜː/ in such toponyms is likely influenced by perception, the presence of the grapheme <g> in nativized variants points towards the influence of orthography.

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(15b)
E Curtis → R Kërtis [ˈcörtʲis]   E Murphy → R Mërfi [ˈmʲörfʲi]
E Burton → R Bërton [ˈbʲörtən]   E Burt → R Bert [bʲert]
E Burnie Burns → R Bërni Berns [ˈbʲörnʲi ˈbʲerns]

It seems that when adapting people's names Russian speakers choose to transliterate English /ɜː/ almost as frequently as they opt for a transcribed variant.[46] While the adaptors might be exposed to the pronunciation of some names in the mass media (especially those of people related to show business, politics, sport etc.), which would reinforce their phonetic adaptation as in the examples in (15b), there might be a strong tendency to simply transliterate others, as in (15a), especially when these are names of writers or fictional characters whose written form might be more familiar to Russian speakers than their actual pronunciation.

4. THE INFLUENCE OF ORTHOGRAPHY

So far, we have observed that in a number of borrowings there is a strong tendency to interpret E /ɜː/ as a combination of English graphemes and simply transliterate them in Russian. Even though English and Russian employ different scripts, i.e. Latin and Cyrillic, the familiarity of the Russian speakers with the former allows them to convert one into the other with relative ease. In order to assess the degree of spelling interference, we should examine the adaptations against the orthographic variants of the source vowel which are sum-marised in Table 1 after Cruttenden.[47]

	E x a m p l e s	T F[48]	L F
< e r >, < e r r >	*her, perfect, referred*	39%	54%
< u r >, < u r r >	*burn, curl, spurred*	24%	24%

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[46] Transliteration is understood as the process of adaptation based on a graphic principle, where English graphemes are substituted by the closest Cyrillic characters. Transcription is the process of graphic adaptation whereby phonemes of the source language are substituted with their closest equivalents in the recipient language.

[47] A. Cruttenden, *Gimson's Pronunciation...*, p. 135.

[48] TF and LF refer to text frequency and lexical frequency respectively.

< i r >, < i r r >	*bird, girl, whirred*	18%	11%
< y r >, < y r r >	*myrrh, myrtle*		
< w + o r >	*word, work, worth*	4%	17%
< e a r >	*earl, earth, search*	8%	4%
< o u r >	*journey, courtesy*		

Table 1. Spelling variants of E /ɜ:/[49]

According to the Russian transliterating conventions, the most common spelling variants presented in Table 1 should be interpreted in the following manner:

(16) E <er> → R <er> → R [er]
        E <ur> → R <ur> → R [ur]
        E <ir> → R <ir> → R [ir]

When the data from Table 1 is placed alongside the most frequent adaptation patterns with respect to their spelling in Russian, the following picture emerges:

(17) E <er> = 66%   R <e> [e] = 59%
        E <ur> = 24%   R <u> /u/ = 12%
        E <ir> = 14.5%   R <i> /i/ = 9%

On the one hand, the adaptation of English /ɜ:/ as Russian [e], /u/ and /i/ might indeed be rooted in the original spelling of the target vowel and a similarly decreasing frequency of their occurrence in English and the adapted forms is probably not coincidental. However, in several examined loanwords, the adaptation of the target vowel is a clear phonetic rendition rather than transliteration, as in the examples in (18).

(18) E sternpost → R starnpost [ˈstarnpəst]
        E Starburst → R starbërst [stɐrˈbʲörst]
        E curling → R kèrling [ˈkɜrlʲink]
        E shirting → R šerting [ˈʂɛrtʲink]
        E circuit → R serkit [ˈsʲercit]

[49] A. Cruttenden, *Gimson's Pronunciation...*, p. 135.

To establish the exact number of loans in which the adaptation of English /ɜː/ is likely to be a transliteration of the original variant, we have examined the words within each group of the most common E /ɜː/ spellings, shown in (17), and established how many of them are adapted employing a similar combination of graphemes in Russian as opposed to the number of lexical items in whose nativisation the original orthography of the word was disregarded. The results are presented in Table 2.

E < e r > →	E < u r > →	E < i r > →
R <er> = 98% R <ar> = 1% R <ë> = 1%	R <ur> = 38% R <er> = 26% R <ër> = 19% R <jur> = 7% R <or> = 6% R <ar> = 4%	R <ir> = 45% R <er> = 30% R <ër> = 16% R <or> = 4.5% R <èr> = 4.5%

Table 2. Adaptation rates with regard to most frequent spellings of E /ɜː/

A few observations can be made based on Table 2. First, the most regular adaptation pattern (98%) is observed in the case of English /ɜː/ spelled as the digraph <er> in the original form and realized as Russian [er] (<er>). The other common spellings, i.e. <ur> and <ir>, however, result in more variation with regard to the adapted vowels with only 38% and 45% of such loans respectively rendering a transliterated variant of the target vowel (Russian <ur> and Russian <ir>). Another striking observation is that while the transliterated adaptations do seem to be more frequent than others within each of the three groups in Table 2, English /ɜː/ is very frequently adapted as either Russian <er> ([er]) or <ër> ([ör]), regardless of the original spelling of the target word. These nativization patterns can schematically be represented in the following way:
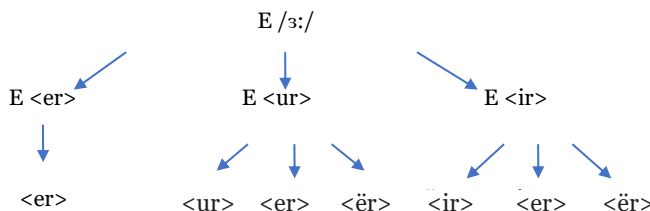
The examination of English loanwords containing /ɜː/ clearly demonstrates that while some of them could indeed be the result of the Russian adaptors' attempt at transliterating the original combination of graphemes, there is a substantial number of borrowings where the spelling of the target vowel is disregarded and a phonetically closest match is selected instead.

5. THE IMPACT OF PERCEPTION

Loanwords do not enter a language through writing only. When borrowed in their spoken form, their shape is often determined by the adaptors' perception. In the previous section, we have observed that English /ɜː/, can be adapted in many ways some of which are indeed attributable to the original spelling of the vowel. In other loans, however, its nativization goes against transliterating conventions that exist in Russian. It is therefore worth examining whether such substitutes are determined by the perception of English /ɜː/ by Russian speakers. Toward this goal, an experiment was carried out whose results are discussed below.

The study was meant 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. The list of 42 English words containing segments absent from Russian, including 10 items with English /ɜː/ in different phonological contexts, was prepared by the experimenter and recorded by a male native speaker of Educated Southern British English. The recording was presented to one person at a time through headphones. Each word was read twice with a short pause between the consecutive items. The listeners had to write down the words they heard using the 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.

The participants were 41 native Russian speakers of both sexes (27 females and 14 males), aged 35-65. The majority of them reported having obtained at least a Bachelor's degree. 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 had any command of English. The choice of the participants was dictated by the wish to avoid

the influence on their perception of the knowledge of English and the listeners' assumptions as to how the words might be pronounced.

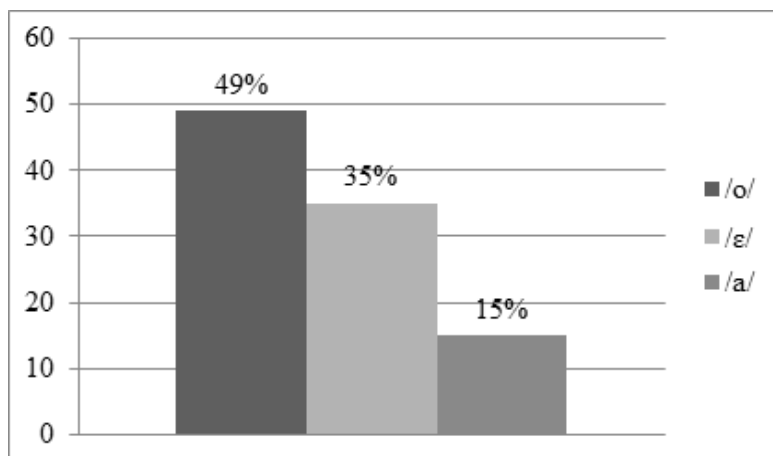The following results concerning words with English /ɜ:/ have been obtained.

Figure 1. Adaptation of /ɜ:/ in online loans

The results of the experiment indicate that in almost half of the cases, the Russian speakers perceive English /ɜ:/ to be similar to Russian /o/ (49%), which in their adaptations is almost equally represented as either Russian <o> - [o] or <ë> - [ö] with the subsequent palatalization of the preceding consonant in the case of the latter. The second most frequent substitute is Russian /ɛ/ (35%), graphically represented by the participants mainly as Russian <e> (i.e. phonetic [e]). Finally, 15% of the listeners have chosen to substitute the target vowel with Russian <a> (phonetic [a]).

Let us now relate the results of the experiment to the adaptation facts of English /ɜ:/ concerning established anglicisms in the Russian language. If such borrowings were primarily perception-based, we would expect to observe a higher number of nativizations employing Russian /o/ followed by a somewhat lower rate of Russian /ɛ/-substitutions and occasional items with Russian /a/. However, in the integrated borrowings that were examined, Russian /ɛ/ (61.5%) is commonplace whereas Russian /o/ (15%) and /a/ (2,5%) are far less frequent. Perception is clearly not the major factor responsible for the adaptation of English /ɜ:/ in established loans.

However, it is interesting to note that the two most frequent substitutes, i.e. Russian /ɛ/ and /o/, are also the vowels that often ap-

pear in those established borrowings where the adaptation of the target phoneme is not the result of transliteration. It is clear why once a look is taken at their F1 and F2 values. The average formant values of [ɜ:] in the recordings used in the experiment are shown in (19).[50]

(19) F1 = 594   F2 = 1381

As to F1 and F2 of the Russian vowels used as the substitutes of E /ɜ:/ by the subjects, the following average values are given by Leonov et al.:[51]

(20) R /o/: F1 = 555; F2 = 1300
      R /a/: F1 = 712; F2 = 1300
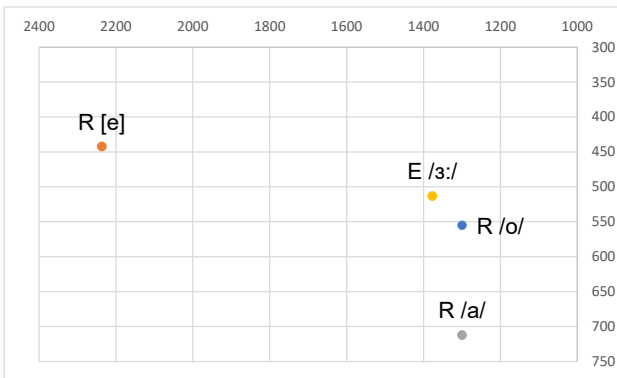   R [e]: F1 = 442; F2 = 2237[52]

Figure 2. Average F1 and F2 values of E /ɜ:/ and R /o/, [e] and /a/

As illustrated in Figure 2, our British speaker's [ɜ:] is acoustically closest to Russian /o/. Thus, Russian listeners can be expected to perceive it more frequently as such, which is confirmed by the results of the online adaptation experiment. The second most common adaptation, i.e. Russian [e], differs from the target vowel substantially with regard to its F2 value. However, the two vowels' F1 frequencies are very close, which could explain why the listeners often identified and

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[50] F1 and F2 values of the vowel produced by the British English speaker in the experimental items fall within the same range given by Cruttenden (2014, p. 104) for a male speaker of Standard British English variety: F1 513; F2 1377.

[51] A. Leonov, I. Makarov, V. Sorokin, *Frequency Modulations in the Speech Signal*, "Acoustical Physics" 2009, no. 55, p. 876–887.

[52] Since F2 values of R [e] and [ɛ] differ slightly, we have included the former since it more accurately corresponds to the vowel used by the participants in the online adaptation experiment.

adapted English /ɜ:/ as Russian [e]. The criteria for such markedness are clear if we take into account the fact that the articulation of consonants might have an impact on the vowel's F2 shape compared to the relative stability of the F1 value. Furthermore, the cross-linguistic primacy of the vowel height (F1) distinction in comparison to front/back (F2), which is found only in more complex systems, serves as an additional argument for the importance of the F1 value in the phonetic analysis of vowels. Hence, from the phonetic point of view, the best substitute for English /ɜ:/ is Russian /o/ whose F1 and F2 values are closest to the target vowel. The second-best choice is Russian [e] by virtue of sharing a rather similar F1 value with E /ɜ:/. Finally, Russian /a/ is a somewhat worse option of the three variants offered by the participants, yet its F1 and F2 are still close enough to those of English /ɜ:/ for the adaptors to identify it as such in 15% of cases. It could, however, be expected since, as pointed out by Cruttenden,[53] one of the characteristic features of CGB[54] is a slightly below mid-open realisation of /ɜ:/ which comes close to the usual pronunciation of GB /ɑ:/.

6. THE INFLUENCE OF PHONOLOGY

We have demonstrated in Section 3 that in established loans, English /ɜ:/ is most commonly replaced with Russian /ɛ/ (61.5%) followed by less numerous Russian /o/ and /u/ substitutions with 15% and 12% respectively. Of these three realizations, only Russian /o/ and /ɛ/ (most frequently pronounced with their allophones [ö] and [e]) was attested in the online experiment as well, which indicates that the choice of Russian /ɛ/ and /o/, at least in some items, in Russian anglicisms can be perceptually motivated.

It is, however, important to examine such adaptations further in order to see whether or not they might be determined by phonology as well. One of the approaches to loanword nativization briefly discussed in Section 2, i.e. the nativization-through-production view,

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[53] A. Cruttenden, *Gimson's Pronunciation...,* p. 136.

[54] CGB or Conspicuous General British, according to Cruttenden (2014, p. 81), "is that type of GB which is commonly considered to be 'posh,' to be associated with upper-class families, with public schools and with professions which have traditionally recruited from such families, e.g. officers in the navy and in some army regiments." Thus, it is synonymous with RP and ESBE (Educated Southern British English).

predicts that a foreign segment will be replaced by the phonologically closest native equivalent. In terms of distinctive feature composition, this means that the best substitute is the one that requires a minimal alteration in its feature specifications. Table 3 shows relevant features of the target vowel as well as those of Russian /o/ and /ɛ/.[55] Russian /u/ is excluded from this analysis since there are strong arguments suggesting that its choice is determined exclusively by orthography.

	E /ɜː/	R /ɛ/	R /o/
[high]	-	-	-
[low]	-	-	-
[back]	+	-	+
[rounded]	-	-	+

Table 3. Feature matrix for E /ɜː/, R /ɛ/ and R /o/

From the feature matrix presented in Table 3, it is clear that both substitutes frequently attested in online adaptations as well as established borrowings share an equal number of distinctive features with English /ɜː/. The substitution of /ɜː/ with Russian /ɛ/ requires a change of [+back] to [-back] whereas the adaptation of the target vowel with Russian /o/ involves the alteration of the feature [rounded]. Since both modifications are equally minimal, their frequent choice in the online experiment is not surprising and a slight shift towards Russian /o/ in the data can be attributed to its F1 and F2 values being closer to English /ɜː/ than in the case of Russian /ɛ/ and English /ɜː/. On the other hand, Russian /ɛ/ in established loans while being both perceptually and phonologically motivated is also reinforced by orthography and hence prevails over other possible substitutes.

The phonological motivation behind the choice of the best vowel phoneme in place of English /ɜː/ is clear. There is still, however, the question of the allophonic variation which can be observed in both data sets. As has already been mentioned, most Russian vocalic phonemes have two realizations whose occurrence depends on the palatalization, or lack thereof, of the preceding consonant. Therefore, it is interesting to see how the adaptation of the target vowel is linked to the [back] specification of the preceding consonant. While no clear tendencies have been established in the nativization of E /ɜː/ in

[55] Seeing that tenseness plays no. role in Russian and can be of no. importance to the adaptation process, the feature is excluded from Table 3.

anglicisms, the influence of L1 phonology is evident in online loans. Taking into account that in the adaptations offered by the participants palatalized [-back] consonants are followed by either Russian [e] or [ö] whereas non-palatalized [+back] precede Russian [o], [ɛ] and [a], combining the data concerning the place of articulation of the consonants preceding the nativized variant of English /ɜ:/ shows a clear pattern.

(21)   [-b a c k] c o n s o n a n t
         70.5%   d e n t a l
         62.5%   b i l a b i a l
         23%   v e l a r

The figures in (21) demonstrate that when a consonant is adapted by the listeners with a dental place of articulation, it is also palatalized in 70.5% of cases and English /ɜ:/ is adapted as a fronted allophone of either Russian /ɛ/ or /o/. Bilabial consonants are palatalized and followed by either Russian [e] or [ö] slightly less frequently (62.5%). Finally, the participants have shown a clear preference for non-palatalized velars and the use of either Russian /o/ or /a/ after them. As observed by Alan Timberlake,[56] in Russian, palatalization is inherent to the consonants with velars being more resistant to showing contrast for backness than labials and dentals. The latter, according to the author, exhibits such a contrast most readily.

(22) Susceptibility of consonants to palatalization in Russian:[57]
dentals > labials > velars

The fact that the patterns in (21) and (22) coincide show the interference of the adaptors' L1 phonology on their choice of the optimal nativization of English /ɜ:/. While the decision about the best phoneme to substitute the target vowel with is firmly grounded in the phonological make-up of the available alternatives as well as their acoustic proximity to English /ɜ:/, the phonetic realization of the substitute vowels largely depends on the place of articulation of the preceding consonant. This pattern, however, has only been observed in online loans and not in established ones.

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[56] A. Timberlake, *A Reference Grammar of Russian*, Cambridge University Press, Cambridge 2004.
[57] Ibid.

7. DISCUSSION AND CONCLUSION

The process of loanword adaptation is undoubtedly a complex one and a study of integrated borrowings is a challenging task considering the number of different factors that can affect this process. First of all, determining how a given item entered a language, i.e. through speech or writing, could potentially help to establish the degree of spelling interference in its adaptation. In practice, however, it is not always possible to answer this question with certainty. Moreover, words are adapted in more than one form which could exist side by side. Furthermore, the same adaptation can often be attributed to different factors making it rather difficult to establish with any confidence whether it is orthographically-, phonologically- or perceptually-based. The analysis of English /ɜ:/ adaptation in Russian anglicisms presented here demonstrates the complexity of the process which involves several determinants and cannot be ascribed to only one of them. In other words, we have attempted to demonstrate that many approaches to loanword adaptation are too simplistic in this respect as they do not take into account the whole range of rich and often contradictory nativization facts.

It has been shown that the nativization-through-production stance, briefly discussed in Section 2, predicts the adaptations to minimally depart from the target vowel phonologically. In terms of distinctive features, the two most frequent Russian substitutes employed to adapt English /ɜ:/ in anglicisms, i.e. Russian /ɛ/ and /o/, require minimal modifications of single features – [back] in the case of /ɛ/ and [round] in the case of /o/. Nevertheless, this approach cannot account for English /ɜ:/ → Russian /u/ as well as English /ɜ:/ → Russian /i/ substitutions, which amount to 12% and 9% of all loans. Furthermore, if the phonological make-up of the phonemes was a primary contributing factor in the choice of the best variant, we would expect to see a higher number of Russian /a/ in such borrowings (there are only 2.5% of these items) since it also differs from the target vowel with regard to a single feature.[58]

The nativization-through-perception stance also predicts the occurrence of the two major Russian replacements of English /ɜ:/. The online adaptation data have demonstrated that the listeners frequently perceive English /ɜ:/ as Russian /o/ due to the vowels' F1

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[58] The two vowels differ in their specifications for the feature [low].

and F2 falling within a similar range whereas the choice of Russian /ɛ/ (realized most commonly as [e]) could be determined by a small distance between the two vowels' F1 which might play a greater part in the identification of a vowel due to its relative stability compared to F2. The problem with this approach, however, is that just like the phonological stance it fails to account for English /ɜ:/ → Russian /u/ as well as English /ɜ:/ → Russian /i/ substitutions. Additionally, the results of the perceptual experiment suggest that the listeners are more likely to adapt English /ɜ:/ as Russian /o/ than /ɛ/. The analysis of established loans, however, has shown the exact opposite picture.

Finally, the role of orthography in the adaptation of English /ɜ:/ has to be pointed out. Even though English and Russian employ different scripts, i.e. Latin and Cyrillic, converting one into the other does not pose many difficulty to Russian speakers due to their familiarity with the former. Furthermore, the likelihood of spelling interference increases when the graphemes overlap in the two languages, for example, in the case of <e>. While certainly responsible for some adaptations, e.g. English /ɜ:/ → Russian /u/, English /ɜ:/ → Russian /i/ as well as certain instances of English /ɜ:/ → Russian /ɛ/, orthography alone cannot be viewed as underlying in numerous words where English digraphs <ur> and <ir> are adapted through Russian <er>, <ёr> and <or>.

Regardless of the strong motivation for spelling-based adaptations, there are numerous examples in which it is overridden by perception, phonology or both.

(23)   E /ɜ:/
R /ɛ/ = 61.5%   >>   R /o/ = 15%   >>   R /u/ = 12%; R /i/ = 9%
ORTHOGRAPHY   PERCEPTION   ORTHOGRAPHY
PERCEPTION   PHONOLOGY
PHONOLOGY

The most frequent adaptation variant is therefore motivated by all three forces whereas less common substitutes are backed only by phonology and perception or in the case of the least frequent ones by orthography exclusively. In addition, the influence of spelling, as overwhelming as it may seem at first glance, is in fact rather limited if such forms are not phonologically or perceptually close to the target phoneme.

The analysis carried out in this paper demonstrates that in order to account for English /ɜ:/ adaptation in Russian loanwords, a comprehensive approach should be taken in which all three contributing factors should be given due consideration. Unfortunately, neither phonological nor phonetic stance can single-handedly explain the patterns of nativization that were uncovered. This means that perhaps we should be concerned less with the question of whether the process of adaptation is phonetic or phonological in nature but rather aim to explore how exactly they interact with one another as well as with other grammar-external factors in the process of nativization.

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