

Marginal consonants in the Permic dialects

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ABSTRACT

This study aims to revise and argue for the phonemic status of borrowed phonemes /f/, /x/, and /ts/ in the Permic languages based on dialectal data collected since the mid-20th century. Additionally, a few more marginal consonants are observed. Although earlier scholars did not consider these phonemes to be part of the phonological inventory of Udmurt and the two Komi languages, certain dialects and the standard languages do have a growing number of loanwords from Russian containing the phonemes in question. To some extent, these phonemes also take part in phonological changes when it comes to adapting Russian loanwords.

KEYWORDS

loan phonology, phoneme adaptation, consonants, Dialectology, Permic languages

1. INTRODUCTION¹

This paper aims to focus on phonemes in the Permic dialects that have received less focus in previous studies in a comprehensive way. The phonemes in question could be either loan phonemes (or xenophones), such as /f/, /x/, and /ts/ (and their close variants), as well as

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palatalised labials /vʲ/, /pʲ/, /mʲ/, and the palatalised trill /rʲ/ found in many Permic dialects, or the internally developed /kʷ/ found only in Udmurt. Could these marginal phonemes be given full phonemic status despite their origin and scarcity? How do these phonemes play a role when it comes to lexical borrowings? By compiling data and linguistic descriptions from other authors, this study attempts to synthesise earlier works from a fresh viewpoint. In many cases, the phonemic status of the phonemes in question cannot be decided, but the author of this article would like to provide a broader picture based on the available data.

The marginality of these phonemes could be debated. The conventional definition may be that a phoneme appears to be rarely found in the given language, occurring only in a few instances (in certain set of words), either by borrowing, or occurring as an internal development of the language. The boundary between a marginal xenophone and a fully established phoneme here would be seen when 1) the earlier attested trends of sound substitutions do not happen anymore, i.e. the new phoneme has contrast (often with minimal pairs), 2) the given phoneme can occur in positions without restrictions, 3) the phoneme appears to be present in numerous lexemes (cf. Hall 2013; Martin et al. 2022).

Furthermore, a phoneme is marginalised, i.e. it has been dismissed for some reason by linguists when describing the phoneme system (or inventory) of the given language. The dismissal can be seen in earlier works in the 20th century even until nowadays for /f/, /x/, and /ts/ (see Lytkin 1955b, 14; Rédei 1978, 45; Csúcs 1990, 23; Klumpp 2022, 477),² while more recently Kuznetsov mentions their presence and Komi speakers' ability to pronounce these phonemes due to Russian influence (Kuznetsov 2022, 489–490). Edygarova (2022, 509), and Blokland (2023, 618–619) also give a brief statement on the phonemes in question being loans (mainly) from Russian for Udmurt and Komi respectively. Apart from loanwords, also found in sound-symbolic words according to Bartens (2000, 33).³ More recently, Sažina (2025, 703, 707–708) also observed the borrowing of /f/, /ts/, /x/, and /rʲ/ phonemes via Russian loanwords in the Nerdva dialect of Permyak. A marginalised phoneme could fit the description of both definitions above: a xenophone present only in loanwords, or a certain phoneme that is not ubiquitous but visible only locally, in one specific dialect (or subdialect), but somewhat given less attention even in descriptive works. This fact is quite understandable as most of these works have a strong historical linguistic focus; thus, the foreignness of these phonemes must be highlighted.

In this study, the issue is brought up by reflecting on earlier descriptions (mentioned above) in Permistics through lexical-phonological examples to provide an overview on marginal phonemes of the Permic dialects. Linguistic data is based on earlier collected materials and monographies by dialectologists, primarily focusing on the 20th century, and partially on the beginning of the 21st century. Many of the dialects have varying data available – some older,

²Lytkin (1955a) does not mention any of these phonemes in his 1955 work, but abruptly includes them in 1955b, 14. Rédei gives *c* /ts/, *f* /f/, and *χ* /x/ in brackets, and notes that these sounds should not be considered phonemes in Komi. Csúcs omits *c*, *f*, and *χ* from his charts also claiming these sounds to have unclear status, certainly not equal compared to other phonemes included in the charts. Klumpp does not mention them either in his phonological overview.

³The sounds marked with IPA symbols *f*, *h*, and *ts* are included in brackets in the otherwise erroneous IPA chart by Suihkonen (2023, 578–579); no further explanation is given regarding their status in the phoneme inventory.

some more recent.⁴ Many dialects, however, may have vanished ever since – without field surveys, these statements are merely theoretical.

2. PERMIC DIALECTS AND THE LANGUAGE STANDARDS

In the three Permic languages, 33 different dialects can be taken into consideration. Udmurt roughly has three main dialectal groups with 13 dialects in total, Komi-Permyak has 8 dialects in three main dialectal groups, and Komi-Zyrian has about 11 dialects grouped also in three, while the status of Komi-Yazva is debated (cf. Csúcs 1990, 13–19; Nasibullin 2000, 73; Kel'makov 2003, 99–135; Karpova 2016, 16–40; Tepljašina 1970, 5–58; Lytkin 1955a, 7–10; Lytkin 1962, 27–34; Vászolyi 1964, 17–21, 23–25; Rédei 1978, 37–38; Popova & Sažina 2014, 8; Batalova 1975, 210–235; Ponomareva 2016, 29–32; Arxangelskij 2021, 17–18; Klumpp 2022, 472–473; etc.; see more at Antal M, 2025, 21–63 as a synthesis of contesting categorisations). Some of the former sources also explain how the phonology of standard languages is based partially on the dominant dialect or the dialect around the capital city of the respective language area. Standard Udmurt (which mixes elements from both northern and southern dialectal features), with regard to its phoneme system, is closest to the dialect spoken around Izhevsk. Komi has two language standards: Zyrian is highly equivalent to the Syktyvkar dialect, while literary Permyak supposedly emerged from southern dialects, chiefly from the Kudymkar-Inva dialect, although some features not familiar in the dialectal region (such as the *l* ~ *ν* alternation) were introduced in order to maintain a closer relationship to standard Zyrian. (For the consonant inventory of the three standard languages and the very distinct Yazva dialect of Komi, see the tables in Appendices).

Comparing differences in their phonologies based on the literature and collected data of Permistics from the 20th and 21st centuries, it can be concluded that many of these dialects share a high number of features, while some have a set of very unique features that clearly set them apart from the rest of the dialects when it comes to their phoneme systems. (Just to mention a few, three examples of these strikingly divergent dialects are Krasnoufimsk Udmurt, Komi-Yazva, and Kanin Zyrian).

It is necessary to mention that strong components of the linguistic situation of these dialects are language contacts and sociolinguistic features. It is a well-known fact that Russian has been influencing the Permic languages for centuries, but tremendously since the 20th century. The persistent bilingualism and its sociolinguistic factors are well researched (see, for instance, Oszkó & Ponomareva 2017; Salánki & Kondratieva 2018; Sažina & Fedoseeva 2022). Bilingualism also affects native speakers' pronunciation, as it has been shown in Komi by Cypanov, who observes

⁴For the lexical samples from the Permic dialects, the following works were used for the research in the PhD dissertation of the author (see Antal M, 2025 in the References): Tarakanov 1959; Nasibullin 1972, 1977, 1978, 1981, 1982; Kel'makov 1981, 1990, 1998, 2015; Karpova 2016; Lytkin 1961; Batalova 1975, 1990; Vászolyi 1964; Sorvačeva, Saxarova & Guljaev 1966; Žilina & Baraksanov 1971; Žilina 1975, 1985; Saxarova & Sel'kov 1976; Sorvačeva 1977; Saxarova, Sel'kov & Kolegova 1976; Kolegova & Baraksanov 1980; Sorvačeva & Beznosikova 1990; Ljašev 2014; Ponomareva 2016. However this paper only uses examples that are relevant for the given phonological phenomenon.

the substitution of palatal consonants with palatalised counterparts as in Russian, for example (see [Cypanov 2015](#), 34–36).⁵

Apart from Russian, which affects all Permic dialects, Nenets and the Ob-Ugric languages have been in contact with Northern Komi varieties for a long time, while southern Udmurt dialects had longstanding connections with Tatar and Bashkir, just to name the most impactful contact languages of the Permic languages; thus, their possible influences on phonology must also be noted here.

Nevertheless, a clarification has to be made that in this article, the approach to this question is mainly from a phonological point of view, as carrying out experimental phonetic research was not the intention. For the linguistic data, however, phonemic transcription with IPA symbols is chosen to illustrate the nuances and differences that are present in the phoneme inventory of the Permic dialects.⁶ It is deemed necessary as the dialectal transcription used in Permicistics by different scholars represents clearly distinguishable phonemes with varying proximity to each other (not allophones) with the same graphemes (such as the modified Cyrillic *ö* that marks different vowels in different dialects, for more details, see [Antal M, 2025](#), 65, 256, 259, 262). For the lexical data, the comparison of the phonemes and allophones in all Permic dialects had to be made, moreover, a usable IPA chart, containing every element of the phoneme inventory of these dialects, had to be compiled (see [Appendices](#); also based on [Antal M, 2025](#), 71).⁷

3. BORROWED CONSONANTS

According to the traditional phonological concept, the phoneme is an established member of the phoneme inventory of the language, while the allophones occurring in limited circumstances are typically excluded from the phoneme inventory for being non-contrastive (see [Steriade 2007](#), 139; for changes in the theoretical background, see [Siptár 2015a, 2015b](#)). During phonological adaptations (or naturalisation), speakers try to match certain elements of two different phoneme inventories with each other, between which phonemic substitutions may necessarily occur; if these do not occur, the phoneme may also be included in the phoneme inventory of the recipient language ([Thomason 2001](#), 70–73; [Matras 2009](#), 221–230, 166–187; see also [Chang 2008](#), 61–63, 69–71; on the issue of naturalisation, see [Lanstyák 2006](#), 37–52; [Janurik 2007](#), 42–46).

A frequently recurring thesis when describing the Permic languages is that a phone without a contrastive-distinctive role is not phonemic, i.e. it is not part of the phoneme inventory (although an allophone could be contrastive too as it is described in [Steriade 2007](#), 147–151). This statement could not be considered relevant as it is not the contrastive-distinctive aspect that is essential in defining a phoneme (cf. [Siptár 2015a](#), 8–11), but rather that the given phoneme

⁵The different dialectal areas have been impacted by different Russian dialects, such as Northern Russian dialects in the Komi and Northern Udmurt areas alongside Southern Russian dialects in the south of Udmurt areas. However, a number of borrowings could show a mixture of Russian dialects during the adaptation of the vowels, especially in historically less populated regions with a newer Russian population (see more at [Antal M, 2025](#), 72, 184–188). The question of more detailed and distinguished Russian influences is to be further investigated.

⁶For an extended table for the vowels and consonants in Permic languages, see [Antal M \(2025, 67, 71\)](#).

⁷Stress is only marked in the examples when it is clearly indicated in the source material, otherwise, stress marking is omitted to avoid possible mistakes (especially in loanwords with differing stress options for different dialects).

cannot be substituted by another phoneme. For example, in Hungarian we cannot pronounce the words *lándzsa* or *dzsem* otherwise than [la:ndʒɒ] and [dʒɛm], since replacing the affricate /dʒ/ with any other phoneme would make the word unintelligible or confusing: [*la:nʒɒ] ~ [*la:ntʃɒ]; [*jɛm] ~ [*tʃɛm]. There are no such forms as **lángya* ~ **lángcsa*, **gyem* ~ **csem* in (standard) Hungarian, thus the affricate /dʒ/ is considered an established member of the phoneme inventory (cf. the phonemic status of *dzs* /dʒ/ in Siptár 2015c, 49–50, 52).

Taking a look from an areal and contact linguistic point of view, the languages that have been in closer contact with the Permic languages since the 19th century can be grouped into four regarding their phoneme systems:

- i) In Russian, /f/, /x/, and /tʃ/ can be found in native words (see Jones & Ward 1969, 168; Kasatkin 2006, 36–43);
- ii) Tatar and Bashkir have both /f/ and /x/ in their phoneme inventories, however /tʃ/ appears only in loanwords (and in certain dialects in Tatar that have not been in contact with Udmurt; cf. Berta 1998, 283–300);
- iii) In Tundra Nenets /x/ and /tʃ/ occur in native words but /f/ is lacking (see Hajdú 1982, 22–23, 25; Salminen 1997, 37–38);
- iv) Northern Khanty and Northern Mansi only have /x/ in native words, but none of the other two phonemes (see Kálmán 1976, 31; Honti 1984, 26–27; Schmidt 2008, 21–22).

The argument should be made for the fact that in Permic languages, even more phonemes are present than what has been considered part of the phoneme system previously (mainly in the second half of the 20th century, although this opinion seems not to have changed ever since), especially consonants borrowed (primarily) from Russian. These phonemes still remain marginal, but with Russification being more on the rise, the greater is the chance to borrow lexemes containing these marginal phonemes, such as /f/, /x/, /tʃ/.

3.1. Voiceless labiodental fricative /f/

One could call the historical lack of the labiodental fricative /f/ a typical feature of Finno-Permic/Western group of the Uralic languages (i.e. not present in native words and older loans), which has been well-presented in literature for a long time (Csúcs 1990, 23; Rédei 1978, 45; Oszkó 2008, 154). According to the longstanding observation, those Russian loanwords containing the /f/ phoneme have been adapted via substituting *f* /f/ with *p* /p/ in Udmurt (Csúcs 1972, 28–29), as well as Komi-Permyak and Komi-Zyrian, such as Russian *фонарь* /fonarʲ/ → Udmurt *ponar* /ponar/ 'lantern, streetlight',⁸ *фунт* /funt/ → *punt* /punt/ 'pound', *форма* /forma/ → *porma* /porma/ 'form' (Csúcs 1970, 349–351), Komi-Zyrian *плаг* /ptäg/ 'flag', *пунт* /punt/ 'pound', *порма* /pormä/ 'form' (Rédei 1978, 45; cf. Kalima 1911, 21, 106). There are plenty of other instances of this phenomenon (cf. also Nasibullin 1972, 158–161; Nasibullin 1978, 133–137; see Sorvačeva, Saxarova, and Guljaev 1966, 22–23; Saxarova, Sel'kov, and Kolegova 1976, 10; Ljashev 2014, 42; etc.). Csúcs (2002, 461) states that the /f/ phoneme has not been

⁸Regarding the meanings of the lexemes, an English translation was made based on the Russian meaning. Most of the original sources does not provide further explanation on the semantics; if the meaning of the loanword differs from the source word, the differentiated meaning is shown here otherwise. It is also a disclaimer that each time a translation is made, some nuanced details in the semantics could be lost, thus translations must be treated cautiously.

part of the phoneme inventory of Permic languages originally, although borrowing this phoneme has emerged in Udmurt without any substitutions towards the end of the previous century. This recent trend, as far as it can be concluded, has been ubiquitous in the whole Permic linguistic area due to increasing bilingualism since the early 20th century.

Both in Udmurt and Komi dialects, we can find loanwords that have not changed Russian /f/ to *n* /p/ at all, e.g. Tashkichi Udmurt *франсуз* /fransuz/ 'French (adj.)' < *француз* /frantsuz/ (Nasibullin 1981, 180); Kanin Zyrian *фужайка* /fufajka/ 'quilted jacket, fufayka' < *фуфайка* /fufajka/ (Vászolyi 1964, 25). The On Permyak dialect shows both type of adapting processes at the same time: *sarapan* /särapän/ < *сарафан* /sarafan/ 'sarafan', *pevral* /pɛvräl/ < *февраль* /fɛvräl/ 'February', *pikus* /pikus/ < *фикус* /fikus/ 'figus', but also *firma* /firmä/ < *ферма* /fɛrma/ 'farm' (cf. Batalova 1990, 29–30), *famil'lo* /fä'mi:ɫ/ < *фамилия* /fam'iɫ'ija/ 'surname', *funt* /funt/ < *фунт* /funt/ 'pound' (cf. Batalova 1990, 182) etc.

Russian /f/ remains unchanged in the Kobra subdialect of Upper Sysola Zyrian: *фамил'ло* /fämi:ɫ/ < *фамилия* /fam'iɫ'ija/ 'surname', *фэл'шөр* /fɛɫʃɔr/ < *фельдшер* /fɛɫ'ɫʃɛr/ 'medical assistant', *фонар* /fɔnär/ < *фонарь* /fonarʲ/ 'lantern, streetlight' (cf. Žilina 1975, 55). The *φ* [f] → *n* [p] substitution chiefly happens in the Luza-Letka dialect of Zyrian (excluding the Poruba subdialect), although there are exceptional and parallel forms with and without substitution too, for example *фабрика* /fäbrikä/ ~ *набрика* /päbrikä/ < Russian *фабрика* /fabr'ika/ 'factory', *кофэй* /kɔfɛj/ ~ *кофэл'* /kɔfɛɫ/ ~ *копи* /kɔpi/ < Rus. *кофе* /ko'fɛ/ 'coffee' or *шарф* /ʃärf/ ~ *шарп* /ʃärp/ < Rus. *шарф* /ʃarf/ 'scarf' (cf. Žilina 1985, 15–16).

According to Saxarova & Sel'kov (1976, 22–24), the local Northern Russian dialects in contact with the Izhma Komi are described as having /f/, so in Izhma Komi the /f/ appears in large numbers not just word-initially, but word-internally and word-finally through Russian and Nenets loanwords: *туфил* /tuɸil/ 'low shoe (sg.)' < *туфли* /tuɸli/ 'low shoes (pl.)', *картафел'* /kärtäfɛɫ/ < *картофель* /kartɔfɛɫʲ/ 'potato', *фундамент* /fundäment/ < *фундамент* /fundam'ent/ 'foundation', *лафка* /läfkä/ < *лавка* /ɫafka/ 'small shop, stand' etc. In contrast to this, the Izhma adaption of Russian *нефть* /nɛftʲ/ 'crude oil' contains [p] instead of the original [f]: *н'эн* [nɛp] ~ *н'ент* [nɛpt] (see Saxarova & Sel'kov 1976, 22–24).⁹

As a conclusion based on previous works and the given examples, the voiced labiodental fricative /f/ has appeared via loanwords in every Udmurt dialect (except for the Krasnoufimsk dialect), moreover, it can be found in the Kudymkar-Inva and Lower-Inva dialects of Permyak, in Yazva Komi, as well as most of Zyrian dialects (apart from the Middle-Sysola, Upper-Vychegda, Lower-Vychegda and Udora dialects).

3.2. Voiceless velar fricative /x/ and glottal fricative /h/

Following the trends of previous linguistic periods, in many dialects one can also encounter the sound substitution *x* [x] → *κ* [k] (and occasionally *x* [x] → *z* [g]) in Russian loanwords. For the vast majority of cases, sound substitution used to be the determining trend (cf. Csúcs 1972: 27–32; Sorvačeva 1977, 191; Sorvačeva, Saxarova & Guljaev 1966, 23; Saxarova, Sel'kov & Kolegova 1976, 10; also see examples from other dialects in Antal M, 2025, 164–165).

⁹The same result is present in Pechora Zyrian: *н'эн* [nɛp] ~ *н'ент* [nɛpt] < Russian *нефть* [nɛftʲ] (cf. Saxarova, Sel'kov & Kolegova 1976, 10).

Udmurt dialects seem to have substituted [x] with [k] in most of their loanwords by the middle of the 20th century (also see Nasibullin 1999, 14–17). However, as we move towards the north of the Permic linguistic area, words containing the phoneme /x/ are more naturally occurring without sound substitution, thus making the borrowed phoneme more frequent in the dialects as well as in the standard languages:

- ❖ On Permyak *arxirej* /ärxirɛj/ < *архиерей* /arxijerʲej/ 'Orthodox bishop', *xolostej* /xɔɫɔstɔj/ < *холостой* /xɔɫostɔj/ 'unmarried', *ļemex* /ɫɛmɛx/ < *лемех* /lɛmʲɛx/ 'ploughshare' (Batalova 1990, 29);
- ❖ Upper Sysola Zyrian *йухва* /juxvā/ < *уха* /uxa/ 'ukha (fish soup)', *кухта* /kuxtā/ < *кухта* /kuxta/ 'compacted snow on tree branches', *трахмал* /trāxmāl/ < *крахмал* /kɫaxmāl/ 'starch' (Žilina 1975, 55).

In Izhma Zyrian, older and more recent Russian loanwords both contain *x* /x/: *хрѣс'ц'анство* /xɾɛs'änstvɔ/ < *крестыанство* /krʲestʲjanstvo/ 'peasantry', *плаха* /pläxä/ < *плаха* /pɫaxa/ 'block of wood', *хлам* /xlām/ < *хлам* /xɫam/ 'trash', *охвота* /ɔxvɔtā/ < *охота* /oxota/ 'hunting', *хөм* /xɔm/ < *хотя и* /xoɫʲa jɪ/ 'although', *жөн'их* /zɔɲix/ < *жених* /zɛnʲik/ 'bridegroom' (Saxarova & Sel'kov 1976, 24–25), while Ob-Ugric loans (both from Khanty and Mansi) in the Siberian subdialect also retain the initial [x] sound: *хар'ио* /xärɪɔ/ 'young willow branches', *холам* /xɔɫām/ 'name of an aquatic plant', or *хорт* /xɔrt/ 'reach (of a river), part of the river from one bend to another, straight flow' (Rédei 1964, 3–4). A set of Tundra Nenets borrowings shows the same strategy in lexemes such as *хадыл'э(й)* /xädiɫɛ(j)/ 'coppice, young forest; dry small firewood' < Nenets *хады-ель* /xadijɛɫʲ/, *ханавэй* /xänävɛj/ ~ *ханэвэй* /xänɛvɛj/ 'hawk' < Nen. *ханавеи* /xanawej/, *хармо* /xärmo/ ~ *харму* /xärmu/ 'bend (sledge runner)' < *харму* /xarmuʃ/, *хасырэй* /xäsirɛj/ 'swampy lake' < Nen. *хасрë* /xasɾʲo/ etc.¹⁰ Vászolyi gives one example of Nenets loan in Kanin Zyrian, namely the word *хора* /xora/ 'male reindeer' (Vászolyi 1964, 27) that can be found in the Izhma dialect as well.

Another phenomenon clearly distinguishes the Izhma Zyrian dialect from its descendant, the Kanin dialect, if we can rely on Erik Vászolyi's fieldwork from 1964. Based on his observations, the glottal voiceless fricative *h* /h/ occurs only in Kanin Zyrian in Russian loanwords (as opposed to the hard *х* /x/ fricative in Nenets loanwords) within the entire Permic dialect area, e.g. *kolhoz* /kolhoz/ < Russian *колхоз* /koɫxoz/ 'kolkhoz, collective farm', *greh* /greh/ < *грех* /grʲɛx/ 'sin', *sahar* /sahar/ < *сахар* /saxar/ 'sugar'; however, it shows some fluctuations as in the case of *viher* /viher/ ~ *viher* /vixer/ < Rus. *вихрь* /vixɾʲj/ 'whirlwind'¹¹ (see Vászolyi 1964, 25–27). This issue remains purely theoretical or unresolved, as no further reports were made on this dialect,¹² and most probably all of its speakers have already passed away.

Thus, the voiceless velar spirant /x/ has been adopted in loanwords throughout all the Udmurt dialects (with Krasnoufimsk Udmurt as an exception), in the Zyuzdino and Kudymkar-Inva dialect of Permyak, in Yazva Komi, and the Upper Sysola, Pechora, Syktyvkar, Vym,

¹⁰Examples taken from the wordlist by Saxarova & Sel'kov (1976, 232). The meanings of the original Nenets lexemes are not clarified in the wordlist.

¹¹Mentioned by Vászolyi without the Russian original form, only with the meaning.

¹²Vászolyi gave descriptions in his article he wrote about his fieldwork with one or two informants. Whether he had recorded any material, and whether these recordings are preserved somewhere is unknown to the author of this article.

Izhma, and Kanin Zyrian dialects. The supposedly existing voiceless glottal fricative /h/ theoretically seems to be present only in the latter dialect of Zyrian.

3.3. Voiceless dentalveolar affricate /t͡s/

In certain Udmurt dialects – including the standard language –, the affricate /t͡s/ can also appear on morpheme boundary due to the merger of [t] and [s], when the final consonant *-m* [t] of the word root meets the verbal derivational suffix *-ck* [sk], such as in the words [diʃet̪ski'ni] 'learn', [todmat̪ski'ni] 'meet, get acquainted', [ʃutet̪ski'ni] 'rest', etc. All in all, this is not an instance of a phoneme, only the allophonic fusion of the plosive and the sibilant. In the Northern Udmurt dialect, however, /t͡s/ phonemically occurs in positions where other dialects have [t͡ɕ] (cf. Alasheeva 1982, 92).

Generally speaking, in those dialects where the affricate /t͡s/ is not present in native words (for instance, in Tashkichi Udmurt, Luza-Letka Zyrian, Vym Zyrian, etc.), the loanwords containing /t͡s/ were adopted via the substitution of this affricate with palatal [t͡ɕ], or less frequently with retroflex [t͡ʂ] (e.g. see Sorvačeva, Saxarova & Guljaev 1966, 22; Kel'makov 2004, 248; Nasibullin 1972, 38; Saxarova, Sel'kov & Kolegova 1976, 10; Ljašev 2014, 42; Vászolyi 1964, 26). Other documented cases exhibit deaffrication, when /t͡s/ is simply substituted with a sibilant, often [s], but to some extent [ɕ], or least commonly [ʂ] (see Antal M, 2025, 158). Although these sound substitution processes are present with inconsistencies, many dialects borrowed Russian *u* /t͡s/ without modification in the borrowed lexemes at the same time, as it is visible in the following set of Russian loanwords:

- ❖ On Permyak *cena* /t͡sənä/ < *цена* /t͡sena/ 'price', *пачан* /pät͡sän/ < *пацан* /pat͡san/ 'lad', *ко́нец* /kɔ̃nɛt͡s/ < *конец* /konɛt͡s/ 'end', but *ми́сѣц* /mʲɛʃɛt͡ɕ/ < *месяц* /mʲesʲjats/ (stand. Rus. [mʲesʲjɪts]) 'month', *ку́знец* /kuz̪nɛt͡ɕ/ < *кузнец* /kuznɛt͡s/ '(black)smith', *цвѣтка* /t͡ɕvɛtkä/ < *цветок* /t͡svʲetok/ 'flower' (Batalova 1990, 29–30);
- ❖ Yazva Komi *цар* /t͡sär/ < *царь* /t͡sarʲ/ 'tsar' (Lytkin 1961, 36);
- ❖ Syktyvkar Zyrian *нобран'эц* /nɔ̃bränɛt͡s/ < *новобранец* /novobranɛt͡s/ 'new recruit', *цыфра* /t͡sɪprä/ < *цифра* /t͡sɪfra/ 'figure, digit' (Žilina & Baraksanov 1971, 29, 55);
- ❖ Izhma Zyrian *вэн'эц* /vɛ̃nɛt͡s/ < *венец* /vʲenɛt͡s/ 'crown, wreath, garland', *бол'н'ица* /bɔ̃lɲɪt͡sä/ < *больница* /bolʲnʲɪtsä/ 'hospital', *цирк* /t͡sirk/ < *цирк* /t͡sirk/ 'circus', *комсомол'ец* /kɔ̃msɔ̃mɔ̃lɛt͡s/ < *комсомолец* /komsomolɛt͡s/ 'Komsomol member' (Saxarova & Sel'kov 1976, 25).

This also means that in many cases, the authors listed the affricate in question as part of the phoneme inventory of the given dialect; however, some marked this phoneme as a loan phoneme, making a clear distinction from the native phonemes. In certain dialects, the number of lexemes in which /t͡s/ occurs is very scarce, partially due to the lack of sufficient data. In Kanin Zyrian, for example, Vászolyi listed only one example: *t͡siganka* /t͡siganka/ < *цыганка* /t͡sɪganka/ 'Romani woman', while in other Russian loanwords, the sound is clearly substituted (cf. Vászolyi 1964, 25–26). Once again, it must be emphasised that the documentation of this possibly already extinct dialect of Komi-Zyrian is very poor. A mixed result of the adaptational process within one word is when the initial /t͡s/ is kept, but the internal /t͡s/ changes to [t͡ɕ]: Komi-Yazva *царуч'а* /t͡särʲit͡ɕä/ ~ *цөрүч'а* /t͡särʲit͡ɕä/ < *царуца* /t͡sarʲina/ 'tsarina' (Lytkin 1961, 36, 192).

Another possible adaptation occurs only in Izhma Zyrian, where instead of the affricate *ц* [tʃ], a palatalised *ц'* [tʃʲ] is present in older Russian loanwords, primarily when substituting standard Russian *ч* [tʃ]: *ц'эл'ад* /tʃ'ɛl'äd/ < *челядь* /tʃɛl'ädʲ/ 'children', *кирпиц'* /kɪpɪtʃʲ/ < *киприч* /kɪpɪtʃ/ 'brick', *пайц'* /pätʃʲ/ < *печь* /p'etʃ/ 'stove' etc., and this is because that local Russian dialects still possessed the /tʃʲ/ phoneme in their phoneme inventory at the time (Saxarova & Sel'kov 1976, 25–30).

4. MARGINAL /X/ AND /F/ AS ACTIVE PARTICIPANTS IN PHONEMIC CHANGES

The following cases are examples of sound substitutions, where a marginal phoneme appears instead of a mainstream phoneme, namely [x] and [f].

In Izhma Zyrian, a large number of cases occur, in which stem-internal syllable-final plosive /k/ becomes a velar fricative [x]: *захрэм* /zäxrɛm/ < *закром* /zakrom/ 'grain bin', *йахэр* /jäxɛr/ < *якорь* /jakorʲ/ 'anchor' (Saxarova & Sel'kov 1976, 25), *дөхтур* /dɔxtur/ < *доктор* /doktor/ 'doctor'.¹³ Similarly, initial plosive [k] before the vowels [ɔ] and [u], also primarily in words beginning with /k/ + a consonant sometimes changes to the fricative /x/ in Russian loanwords (see Igušev 1973, 12; Saxarova & Sel'kov 1976, 24–25), for example: *хөлдун* /xɔldun/ < *колдун* /koɫdun/ 'sorcerer', *хвас* /xväs/ < *квас* /kvas/ 'kvass', *хварм'эра* /xvärçɛrä/ < *квартира* /kvar-tʲira/ 'flat, apartment', *хрэс* /xrɛs/ < *крест* /krʲest/ 'cross', *хунжа* /xunžä/ < *кумжа* /kumžä/ 'brown trout'. This phenomenon is also present in native words of onomatopoeic origin: *храпкыс'ны* /xräpkiɕni/ vs. Standard Zyrian *крапкысьны* /kräpkiɕni/ 'to crash, to strike', *хорс'итны* /xɔrsʲitni/ vs. Standard Zyrian *корснитны* /kɔrsʲitni/ 'to snort, to snore', *вол'х* /vɔɫx/ vs. Standard Zyrian *вольк* /vɔɫk/ 'slippery' (Saxarova & Sel'kov 1976, 25), *трөбух* /trəbux/ 'fragile'.¹⁴ Supposedly, the spreading of this phoneme in the Izhma dialect could be an influence from Nenets (of which some speakers have switched to Komi earlier);¹⁵ by all means its mere presence shows that the fricative /x/ is indeed part of the Izhma dialect whereas words are not only borrowed with initial /x/, but even in forms that differ from the original Russian sources, and the onomatopoeic words containing the fricative in question should also be highlighted. To some extent, /x/ plays an active role in phoneme substitution when it comes to adapting loanwords.

However, this feature is not unique to Izhma Zyrian. The same happens in some words of the Zyuzdino Permyak dialect, e.g. *л'ехар'* /l'ɛxär/ < *лекарь* /l'ekarʲ/ 'physician', *хрес* /xrɛs/ < *крест* /krʲest/ 'cross', *хр'осна* /xrʲɔsnä/ < *крёстная* /krʲostnaja/ 'godmother' (Sažina 2016, 244). Žilina (1975, 55) gives a few examples from the Upper Sysola Zyrian as well: *дохтар* /dɔxtär/ < *доктор* /doktor/ 'doctor', *насмоха* /näsmɔxä/ < *насморк* /nasmork/ 'rhinorrhea', *харöй* /xärɔj/ < *каруй* /karʲij/ 'hazel (colour)', but she states that this phenomenon can also take place in original (native) Komi words as well.

¹³Example taken from Saxarova & Sel'kov (1976, 149).

¹⁴Example taken from Saxarova & Sel'kov (1976, 223).

¹⁵For the adaptational process of this sound in Nenets loanwords cf. for example Rédei (1962, 91–92).

Not only does /x/ play a role in phonological changes when it comes to adaptation. The Izhma dialect also tends to change the original /p/ to /f/ in Russian loanwords, e.g. *jufka* /jufkă/ < *юбка* /jupka/ 'skirt' (Igušev 1973, 7, 13; Saxarova & Sel'kov 1976, 23). A similar process appears in the On Permyak word *fu-rkñitni* [ˈfurkɲitni] < Rus. *выпорхнуть* /vɨporɣnutʲ/ 'to fly out, to flutter out' (cf. Batalova 1990, 182).

Another dialect, in which unexpected fricativisation occurs, is Luza-Letka Zyrian: *флуз* /flug/ < Russ. *плуз* /pʲluk/ 'cork', *йуфка* /jufkă/ < *юбка* /jupka/ 'skirt'; nevertheless, this sound substitution can be processed in Russian loanwords originally containing *x*, such as *куфн'а* /kufnă/ < *кухня* /kuxnʲa/ 'kitchen', *куфта* /kuftă/ 'compacted snow on tree branches' < *кухтя* /kuxta/ (cf. Žilina 1985, 16).

As these phonemes take part in more phonemic changes, their presence is inevitably growing, resulting in a larger number of cases than in other dialects, where /f/ or /x/ have been substituted previously.

5. OTHER TYPES OF MARGINAL CONSONANTS

A focus should also be brought to a few other consonants, which are either native or borrowed in the Permic languages, but had less attention before due to their marginal status. The labio-velar plosive /kʷ/ is present only in Udmurt as a possible native phoneme, while some other borrowed consonants of palatalised nature cannot be found in a larger area, only regionally.

5.1. A non-borrowed marginal consonant: labiovelar plosive /kʷ/

While previously the Udmurt *кy-* has been analysed either as a *kw* cluster (see below) or the *w* element as an onset of a diphthong by other scholars (most recently Suihkonen 2023, 578), the author of this article suggests that it could be considered a labiovelar plosive /kʷ/, a separate but rather marginal phoneme in Udmurt (cf. the mention of it by Antal M. 2020, 10).

Historically speaking, in the inherited layer of Permic words, in a few instances, a back vowel following the **k* plosive resulted in **kw*, which has developed into a *кв* /kv/ cluster in Zyrian, or the **w* element has been chiefly vocalised into *u*. The case is slightly different for Udmurt, where the *кy-* onset (or *кӱ-* in dialectal transcriptions) is followed by another vowel, for example, standard Udmurt *куиӱ* /kʷiɲ/ ~ Yazva *квим* /kvim/ ~ standard Zyrian *куим* /kujim/ 'three'; Udmurt *куать* /kʷac/ ~ Zyrian *квайт* /kväjt/ 'six'; Udmurt *кyар* /kʷar/ ~ Yazva *куп* /kur/ 'leaf' etc.

Neither Bubrix, nor Csúcs described *kw* as a separate phoneme in Udmurt. Bubrix regards the *w* element as an allophone of *в* /v/ marked with the grapheme *y* /u/ in the standard language (Bubrix 1948, 15–16). Csúcs only sees this /u/ element as an occurrence of /w/ in a tied position, preceded by /k/; likewise, Kel'makov does not categorise it as a unique phoneme (Csúcs 1990, 24; cf. Kel'makov 1998, 83–85; 2003, 13–20).¹⁶ As we look at examples taken from Fu-Lab's online Udmurt dictionary, this supposed phoneme only appears word-initially, mostly before *a* and *u* vowels (with other cases being derivations of certain verbs).

¹⁶In the Northern Udmurt dialect, *кӱ* can be at the same time *кв* too – similarly to Komi (see Maksimov 2018, 198–200).

Word-internally, *-кy-* /k^w/ appears only in compound words (*куатьтонкуинь* /k^wactonk^wiŋ/ 'sixty-three' = *куатьтон* 'sixty' /k^wacton/ + *куинь* /k^wiŋ/ 'three', *инкуазь* /ink^waz/ 'nature; climate, weather' = *ин* /in/ 'sky' + *куазь* /k^waz/ 'weather, climate' etc.), thus the occurrence of /k^w/ is circumstantial indeed. When it comes to loanwords in Udmurt, this /k^w/ phoneme plays a marginal role in *кв* [kv] → *кӱ* [k^w] sound substitution (and merely on a dialectal level). The preconception is that when it comes to Russian *кв* in loanwords, Udmurt would apply the process [kv] → [k^w] to adapt the non-favourable, word-initial consonant cluster. Although this would not be the case for the few loanwords fitting this type, rather they would instantly borrow the initial *кв*- onset: *квадрат* /kvadrat/ 'square', *квалификация* /kvalifikatsija/ 'qualification', *квартал* /kvartal/ 'city block', *квартира* /kvarcira/ 'flat, apartment', *кварц* /kvarts/ 'quartz'¹⁷ etc. By keeping the original orthography, the assumed /k^w/ phoneme does not come into the picture during the adaptation process, despite its obvious possibility in facilitating the pronunciation. However, two examples for this adaptation process can be found in Northern Udmurt: *кӱарм'ура* /k^warcira/ < Russian *квартира* /kvart'ira/ 'flat; apartment', and *кӱашн'а* /k^waʃ'na/ < Russian *квашня* /kvaʃn'a/ 'sauerkraut' (Maksimov 2018, 200). On the contrary, as we have seen, Northern Permyak dialects and Zyrian dialects differ from Udmurt. The word-initial *кв*- /kv/ occurs naturally in very few instances, however the adaptation of Russian loanwords with a similar onset does not mean a problem. Examples are Luza-Letka *кватуишӱӱ* /kvätušəj/ 'grabbing deftly and greedily' < Russian *хватаяущий* /xvatajuʃij/ (cf. Žilina 1985, 164), Upper Sysola *квашн'а* /kväʃnə/ 'dough, kneading' < Rus. *квашня* /kvaʃn'a/ 'sauerkraut' (cf. Žilina 1975, 184), Syktyvkar *квалтар* /kvättär/ < *квартал* /kvartal/ 'district' (cf. Žilina & Barksanov 1971, 52.) etc.¹⁸

The argument must be made that the exiguous presence of word-initial *кв*- [kv] ~ [k^w] in loanwords itself can also add a weak point to the indication of the phonemic status of *кӱ* /k^w/ in at least Northern Udmurt.¹⁹

5.2. Palatalised labials and palatalised trill

Another rare set of xenophones, the palatalised labials *в'* /v^j/, *н'* /p^j/, *м'* /m^j/, and the palatalised trill *р'* /r^j/ are reduced to a smaller territory in the Permic speaking area. For many dialects, above all Udmurt, palatalised consonants in Russian words have been depalatalised until recently (cf. Nasibullin 1999, 14–17).

The *в'* /v^j/ phoneme is present in a small number of loanwords, but can be seen as an allophone of a plain /v/ in all three literary languages. Usually, what would make /v^j/ an allophone is the fact that speakers can drop the palatalised trait; thus, reducing it to the non-palatalised, standard /v/ phoneme, however Northern Udmurt distinctively reduces the use of /v^j/ to certain words. At the same time, non-palatalised pronunciation should not create

¹⁷Fu-Lab: Bol'soj udmurtsko-russkij slovar' [Great Udmurt-Russian Dictionary]. <https://dict.fu-lab.ru/dict?id=129449>.

¹⁸The *кв* [kv] < [n] [p] sound substitution can be found in Udora Zyrian in the case of the word *путанчи́я* /pitontʃijə/ < *квитанция* /kvitantsija/ 'receipt, ticket' (example from Sorvačeva & Beznosikova 1990, 20). Moreover, the *хв* [xv] > *кв* [kv] change does not appear everywhere, e.g. On Permyak *хвастун* /xväs'tun/ < *хвастун* /xvastun/ 'boaster, braggart' (example from Batalova 1990, 183).

¹⁹Furthermore, the prevalence of [k^w] to a reduced number of cases does not prove this phoneme to be an allophone or merely a set of [k] plus [u].

incomprehensibility for speakers, and theoretically speaking, [zver] ~ [zv^ɨer] ~ [zv^ɨer^ɨ] for the word *зверь* /zv^ɨer^ɨ/ 'animal' are all possible outcomes in certain Udmurt dialects.

Two phonemes are only present in the On Permyak dialect: the palatalised voiceless bilabial plosive *n'* [p^ɨ], and the palatalised voiced nasal *m'* [m^ɨ]. These two phonemes are documented just in a few lexemes, making them two of the rarest phonemes in the Permic languages. These lexemes are all borrowings from Russian (see Batalova 1990, 18, 21;²⁰) whereas other dialects would depalatalise Russian *n'* /p^ɨ/ and *m'* /m^ɨ/. Examples for /m^ɨ/ are *ṁa-koṣ* /'m^ɨäkoç/ < Russian *мякоть* /m^ɨakot^ɨ/ 'pulp', *ṁa-ta* /'m^ɨätä/ < Rus. *мята* /m^ɨata/ 'mint' (Batalova 1990, 187).

However, a more frequent member of palatalised consonants among the marginal ones is the palatalised voiced alveolar tremulant *p'* /r^ɨ/, also exclusively documented in loanwords. It is missing from Udmurt dialects, but occurs in most Permyak dialects with the exception of the Lower Inva and Kochovo dialects (see Antal M, 2025, 68). As mentioned before, the Nerdva dialect also has some examples of loanwords from Russian in which /r^ɨ/ is present in the 21st century, but has not been mentioned in earlier works (see Sažina 2025, 703, 707–708; cf. Batalova 1975, 21–24; Batalova 1990, 19–21). In Zyrian, it only appears in the Luza-Letka and Lower Vychegda dialects (Antal M, 2025, 68). It is worth mentioning that even in one respective dialect, the range of these phonemes differs from subdialect to subdialect; moreover, it could have parallel forms within the same village in co-existing varieties of the same word.

These phonemes are present in a handful of lexemes; thus, they are very rare not just within the Permic dialectal area, but within the dialects they can be found in. Some of them might be replaceable with a depalatalised version of the given consonant in certain dialects, but despite their scarcity, they could have full phonemic status in others. In order to conclude this issue, more data would be necessary.

6. RE-EVALUATION OF BORROWED PHONEMES

As we could see, earlier descriptions of the Permic languages and their dialects did not fully accept the phonemic status of borrowed phonemes (mainly from the Russian language), especially in the 20th century. Especially during Soviet times, disregarding words and even phonemes that have arrived from the (oppressing) state language can be seen as protection towards the minority language, preserving it from especially Russian influences, and cultivating it in avoidance of russification and language extinction (while Russian lexemes could also be seen, and has been seen as a sign of language development by many others).²¹ What has been recorded as a more original form of the Udmurt or Komi language can be seen as a contrast to the Russian language; thus, Permic phonology and the phonology of Russian are opposed. At the current stage of active and widespread bilingualism, the existence of a speaker in the generations younger than 65 years old, who is not familiar with the phonemes borrowed from Russian would be doubtful.

High presence of the phonemes in lexemes (in this case, chiefly loanwords) should only be seen as a catalyst for reinforcing the phonemic status, not a requirement for phonemic status.

²⁰For any word containing /p^ɨ/, Batalova does not give any instances, only mentions as a mere borrowing in loanwords.

²¹The former attitude is more understandable from a purist approach rooted in minority identification.

Looking at this issue from a statistical point of view, both the language standards and the dialects contain a larger number of lexemes that have these borrowed phonemes in them without any phonological substitution that could have been the contributing factor to their naturalisation. Having digitised the Russian loanwords from Lytkin's detailed 1961 wordlist of the Yazva dialect entirely (more than 1400 lexemes) made it possible to search and count the occurrence of borrowed phonemes easily.²² The phoneme /f/ is present in 19 words (both word-initially and internally). The number of words containing /t͡s/ is just 11, while /x/ appears only in 4 cases (word-internally, but not initially). The total amount of words with the palatalised tremulant /rʲ/ is the highest, counting 37 examples.

For a brief comparison, based on Saxarova & Sel'kov's (1976, 231–234) wordlist, Izhma Zyrian alone has over 80 words beginning with *x*- /x/, about 30 words beginning with *ϕ*- /f/, and 12 beginning with *u*- /t͡s/. Regarding the standard languages, the Great Komi-Russian Dictionary (titled *Bol'soj komi-russkij slovar'* [Great Komi-Russian Dictionary]) on Fu-Lab²³ (based on a dictionary published in 2000) contains 59 words starting with the letter *ϕ*, 26 words with an initial *x*, and 16 words beginning with the letter *u* (out of 32,659 lexemes). On the same website, the Permyak dictionary (titled *Perem komi kyvkud* + [Komi-Permyak Dictionary +], based on a 1985 printed dictionary) does not include any word beginning with *ϕ*, *x*, or *u* (out of 17,935 lexemes). The online Udmurt dictionary of Fu-Lab (titled *Bol'soj udmurtsko-russkij slovar'* [Great Udmurt-Russian Dictionary], based on a dictionary published in 2008), however, enlists 143 words with *ϕ*-, 77 words with *x*-, and 35 words with *u*- (out of 44,637 lexemes). These numbers only give a partial picture and are here merely to demonstrate their proportion in the vocabulary.

Borrowings in the 20th century imply that these new phonemes arrived much quicker and more widespread in the different dialects than expected, although the exact timing is not fully traceable: reliable attestations beginning with the late 1950s and the 1960s (Tarakanov 1959; Lytkin 1961; Vászolyi 1964; Sorvačeva, Saxarova & Guljaev 1966), followed by the 1970s (Igušev 1973; Batalova 1975; Saxarova & Sel'kov 1976; Sorvačeva 1977; etc.) and onward. Csúcs (2002, 456, 461–463) also points out that newer layers of Russian loanwords do not show any phonological changes, as it has been the case for earlier loanwords (as shown in Csúcs 1970, 1972). The contrast could be present between /f/ vs. /p/, /x/ vs. /k/, as it can be the case with /t͡s/ vs. /t͡ʃ/, and even /t͡s/ (affricate) vs. /ts/ (cluster, as it could be seen in Udmurt, see Chapter 3.3).

On a dialectal level, the presence of /f/, /x/, (/h/), /t͡s/ is attested in many Permic dialects. The lack of attestation in the 20th century, however, could be due to lack of information on the given dialect, especially on the dialects of Komi Permyak. Table 1 provides an overview of the occurrence of these phonemes, listed from the southernmost area of the Permic dialects (Udmurt dialects) towards the northernmost areas (Komi dialects):

²²A rare occurrence of the palatalised [mʲ] sound in the Yazva Komi word *u'm'op* [t͡ʃi'm'or] 'hair (a traditional folk medicine technique for treating headaches)' indicates its clearly non-phonemic status. The same could be said about [pʲ] and [vʲ] as they appear only in the word *n'aməŭ* [p'ätəj] 'fifth' and *zəv'ortka* [zə'v'ortkə] 'wrapping (loop for attaching shafts to a sled)'. These words also have another, non-palatalised forms: *nəməŭ* [p'etəj], *zəv'ortka* [zəv'ortkə] underlining the phonological instability of these borrowing for speakers (both phonemically and lexically). Examples are taken from Lytkin's (1961, 84–202) wordlist.

²³<https://dict.fu-lab.ru/>.

Table 1. The occurrence of /f/, /x/, /h/, and /ts/ in the Permic dialects (based on Antal M, 2025, 67–70; 258, 261, 264). Cursive indicates the uncertainty of the phonemic status marked in the dialectal literature

Language	Dialectal group	Dialect	/f/	/x/	(/h/)	/ts/
Udmurt	Southern dialects	Kanly	+	+	–	–
		Buy-Tanyp	+	+	–	–
		Tatyshly	+	+	–	–
		Krasnoufimsk	–	+	–	–
		Tashkichi	+	+	–	–
		Bavly	+	+	–	+
		Shoshma	+	+	–	–
		Kukmor	+	+	–	+
		Core Southern Udmurt	+	+	–	–
	Central dialects	Izhevsk	+	+	–	+
		Central Udmurt	+	+	–	–
	Northern dialects	Beserman	+	+	–	+
		Northern Udmurt	+	+	–	+
Komi-Permyak	Western dialects	Zyuzdino	+	+	–	+
	Southern dialects	Kudimkar-Inva	+	+	–	+
		Lower Inva	–	–	–	–
		On	+	+	–	+
		Nerdva	–	–	–	–
	Northern dialects	Mysy-Lupy	–	–	–	–
		Kosva-Kama	–	–	–	–
		Kochovo	–	–	–	–
	Komi-Yazva		+	+	–	+
Komi-Zyrian	Southern dialects	Middle Sysola	–	–	–	–
		Upper Sysola	+	+	–	–
		Luza-Letka	+	–	–	–
	Transitional dialects	Upper Vychegda	–	–	–	–
		Pechora	+	+	–	+
		Syktvykar	+	+	–	+

(continued)

Table 1. Continued

Language	Dialectal group	Dialect	/f/	/x/	(/h/)	/ts/
	Northern dialects	Lower Vychegda	–	–	–	–
		Udora	–	–	–	–
		Vym	+	+	–	+
		Izhma	+	+	–	+
		Kanin	+	+	+	+

7. CONCLUSIONS

The intention here was to assemble and compile the already existing data, to look through the available literature on the phonology of the Permic dialects, and revise the previous descriptions maintained by [Lytkin \(1955a, 1955b, 14\)](#), [Igušev \(1973, 7, 12–13\)](#), [Csúcs \(1972, 28–29; 1990, 23; 2002, 456, 461–463\)](#), [Rédei \(1978, 45\)](#), [Klump \(2022, 477\)](#), and others in their respective works mentioned above. Because most of the Permic dialects have already adopted a significant number of loanwords from Russian (and to some extent in contacting dialects from Nenets and from Ob-Ugric) containing /f/, /x/, and /ts/ without substituting them, as witnessed in earlier borrowings, both the quality and quantity of these adaptations imply the naturalisation of these phonemes. This process also went further in the case of Izhma, Upper Sysola, Luza-Letka Zyrian, and Zyuzdino Permyak, when these recently added phonemes started to take part in phonetic changes in new loanwords (but interestingly, not in native words). Additionally, /x/ is present in the Izhma dialect in onomatopoeic words as mentioned earlier by [Saxarova & Sel'kov \(1976, 25\)](#).

The suggestion would be to include these phonemes in the phoneme inventory of the Permic languages, maintaining the already (and very importantly) highlighted historical lack of /f/, /x/, and /ts/, while footnoting the possible lack of them in some dialects. Ironically, while these marginal phonemes made their way into the Permic languages, peripheral dialects have been fading away, making it even more difficult to monitor current tendencies and any changes in the present. The palatalised labials /v^j/, /p^j/, /m^j/, and the palatalised /r^j/, however, must remain marginal phonemes due to their reduction to a few instances.

There is still a great uncertainty regarding those dialects where attestation is lacking in the 20th century. The pace of the borrowings, however, could be brought up for comparisons made in historical borrowings as examples of *en masse* lexical influx in a language for future studies.

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Appendices

Table 2. Vowels of standard Udmurt with IPA symbols (Antal M, 2025, 29)

	Front Unrounded	Central Unrounded	Back	
			Unr.	Rounded
Close	i u	ɨ ʏ		u y
Close-mid	e ə			o o
Mid		ə ɵ		
Open-mid	(ɛ ɔ)			
Open			ɑ a	

Table 3. Standard Udmurt consonants with IPA symbols and Cyrillic (Antal M, 2025, 30)

	Lab.	Dent.	Alv.	Vel.-alv.	Retrofl.	Pal.	Velar	Lab.-vel.
Nasal	m м	n н				ɲ нь	(ŋ ɳ)	
Plos.	p п	t т				c тб	k к	kʷ кы
	b б	d д				ʃ дб	g г	
Affr.		(ts ʈ)			ʈʂ ʈʂ	ʈʂ ʈʂ		
					ʈʂ ʈʂ	ʈʂ ʈʂ		
Sibil.		s с			ʂ ш	ʂ сб		
		z з			ʂ ʂ	ʂ зб		
Fricat.	(f ɸ)						(x x)	
Trem.			r р	ɭ л				
Later.						ʎ лб		
Appr.	ʋ ɸ					j ʏ		

Table 4. Vowels with IPA symbols in the Kudymkar-Inva and Lower Inva dialects (similar to standard Permyak with the exclusion of /ɜ/) (Antal M, 2025, 56)

	Front Unrounded	Central Unrounded	Back	
			Unr.	Rounded
Close	i	ɨ	ʉ	u
Close-mid		ə		
Mid	ɛ			ɵ
Open-mid		ɜ		
Open		ä		

Table 5. Consonants with IPA symbols & Cyrillic in the Kudymkar-Inva and Lower Inva dialects (Antal M, 2025, 57)

	Lab.	Dental	Alv.	Vel.-alv.	Retrofl.	Pal.	Vel.	Lab.-vel.
Nasal	m м	n н				ɲ нь	(ŋ ɳ)	
Plos.	p п	t т				ɕ ть	k κ	
	b б	d д				ʝ дь	g ɣ	
Affr.		(ʈʂ ʉ)			ʈʂ muu	ʈʂ ʉ		
					ɖʂ dɤx	ɖʂ dɤ		
Sibil.		s c			ʂ ʃ	ʂ cɤ		
		z ʒ			ʐ ʝ	ʐ ʒb		
Fricat.	(β ɸ̞)	f ɸ̞					x x	
		v ɸ̞ (ʋ̞ ɸ̞b)						
Trem.		r p / r̥ p̥						
Later.				ɭ л		ʎ нь		
Appr.						j ü	(ɰ̞ ʏ̞)	

Table 6. The Yazva vowels with IPA symbols (Antal M, 2025, 63)

	Front Unrounded	Central		Back	
		Unrounded	Rounded	Unrounded.	Rounded
Close	i		ɯ		u
Close-mid	e		ɵ		o
Open-mid				ʌ	
Open		ä			

Table 7. Vowels in standard Zyrian and the Syktyvkar dialect with IPA symbols (Antal M, 2025, 44)

	Front Unrounded	Central Unrounded.	Back Rounded
Close	i u	ɨ ʏ	u y
Mid	ɛ ɐ̞	ə ɵ	ɔ o
Open		ä a	

Table 8. Consonants in standard Zyrian and the Syktyvkar dialect with IPA symbols & Cyrillic (Antal M, 2025, 44)

	Labial	Dental	Alveolar	Velar-alveolar	Retroflex	Palatal	Velar
Nasal	m <i>м</i>	n <i>н</i>				ɲ <i>нь</i>	(ŋ <i>н</i>)
Plos.	p <i>п</i>	t <i>т</i>				ɕ <i>ть</i>	k <i>к</i>
	b <i>б</i>	d <i>д</i>				ʃ <i>дь</i>	g <i>г</i>
Affr.		(ts <i>ц</i>)			ʈṣ <i>му</i>	ʈç <i>ч</i>	
					ɖʑṣ <i>дж</i>	ɖʑ <i>дз</i>	
Sibil.		s <i>с</i>			ʂ <i>ш</i>	ç <i>сь</i>	
		z <i>з</i>			ʐ <i>ж</i>	ʑ <i>зь</i>	
Fricat.	(f <i>ф</i>) v <i>в</i> / vʲ <i>вь</i>						(x <i>х</i>)
Trem.			r <i>р</i>				
Later.						ɭ <i>ль</i>	
Appr.				ɭ <i>л</i>		j <i>љ</i>	

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