Sketches of the phonetic systems of Iranian languages

(*Очерки по фонетике иранских языков*)

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(includes only sections on Shughni vowel system and Shughni-Rushani consonants)

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Shughni-Rushani Group

The Shughni-Rushani group of languages is a well-known linguistic unit and consists of the following varieties: Shughni, Rushani, Khufi, Bartangi, Roshorvi, and Sarikoli.

The latter variety (Sarikoli) is not spoken in the territory of the Soviet Union (the Sarikoli people live in the Xinjiang Province of China), and the Sarikoli language is this not treated in these sketches. The Shughni people, Rushani people (and the Khufi people, connected to them by language), the Bartangi people, and the Roshorvi people, totaling between 25 and 30 thousand people, comprise the majority of non-Tajik population in the Gorno-Badakhshan Autonomous Oblast of the Tajik SSR. Of these people, more than half are Shughni, which are spread across two administrative regions, while Rushani (with the Khufi), and the Bartangi (with the Roshorvi) are in a single district. The proximity between these language varieties is such that mutual intelligibility can be achieved relatively easily. In this sense their language could be called a single language. However, there is no common name which unites the Shughni, Rushani, Khufi, Bartangi, and Roshorvi people; moreover, a general language devised on the basis of these languages, and of which they would be dialects, also does not exist. All languages are equal with respect to their rights, and only the Shughni stand out because of their large population and their economic significance.

However, there is no appreciable orientation toward the speech of the Shughni people, as the unification of all Pamir nations through their unification with Tajiks.

These separate linguistic varieties will be called dialects for the ease of presentation, but with the caveat that they are independent and they are not subordinate to some common language.

Previous research has generally given more attention to the Shughni dialect, as it is the most widely spoken and the most accessible, and as a result this dialect has been the most studied. The phonemic structure of Shughni was established quite accurately by I.I. Zarubin, and thus the goal of this research is simply a more detailed characterization of Shughni phonemes.[1] For the remaining languages the vowel system has remained not totally clear or completely unknown (Khufi dialect) and needed to be established.[2] This was the primary task of this research. With respect to the Rushani and Bartangi consonant system, there was a need to clarify the role and characteristics of the palatalization of the occlusives *k* and *g*. In addition, in the consonant systems of all dialects, it was important to define the phonetic nature of the velars *x̌* and *y̌*, which are found in almost all Pamir languages and are acoustically not the same as Russian velar fricatives, but having a certain ш- or ж-like sound.

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[1] Explained in the Shughni language course given by I.I. Zarubin at Leningrad State University during 1937-1938, the phonological treatment of Shughni is also reflected in his transcriptions (see the following Shughni text: *Two Yazghulami Texts,* Bulletin of the School of Oriental Studies, vol. VIII, London 1936).

[2] On this topic, see the following recent work: I.I. Zarubin. 1937. *Bartangskie i rushanksie teksty i slovar'*. Moscow-Leningrad. p. 4-5.

The main collection of material took place in Stalinabad (Dushanbe) in 1948 and 1949, where the phonetics of three dialects was studied: Shughni, Rushani, and Bartangi. Informants were students, usually in the first course, who had just arrived from the field. There were many Shughni and Rushani speakers among the students, and thus it was always possible to carry out the necessary parts of the study. For all dialects informants were chosen who spoke the main dialect (not transitional, not mixed). For Shughni, informants were from Khorog and were close to that village; for Rushani, informants were from the main large population centers, Derzut and Barushan; for Bartangi, informants were from the village of Ravmid (in the lower reaches of the Bartang). In 1951 at the time of a research trip to Khorog for studying the Shughni-Rushani group, phonetic materials on Bartangi were verified and expanded with data from the villages of Siponj and Basid (in the middle of the Bartang valley). These data also represent the main Bartangi dialect. In addition, materials were collected on the Khufi dialect. Informants in the city of Khorog were students in secondary school and in the older classes of middle school.

In order to examine the length of vowels in Shughni and Rushani, recordings were made on a kymograph.

The letters Sh., Ru., Kh, Br used in the examples represent the Shughni, Rushani, Khufi, and Bartangi dialects, respectively.

Vowel systems

The opposition of long and short vowels is a common feature in the vowel systems of all Shughni-Rushani languages. However, despite having this common feature, the vowel systems of individual dialects also differ in significant ways. In the entire group, four different vowel systems are identified: Shughni, Rushani, Khufi, and Bartangi. The Roshorvi system is identical to Bartangi, and the vowel system of the Bajuwi subdialect of Shughni is identical to that of Shughni.

Shughni Vowels

Phonemic structure and characteristics

The Shughni vowel system contains 10 phonemes, seven of which are long vowels: *ī*, *ē,* ɛ̄, *ā, ō,* *ů*, *ū*) and three short vowels: *a, i, u*. The short vowels *i* and *u* have a wide range of quality with respect to their realization and contrast with all long vowels of their row. The Shughni vowel system is schematized below:

Долгие гласные

Long vowels are are characterized by stability with respect to quality and tenseness. They are pronounced with relatively little airiness, which, with the tenseness of the speech organs, causes purity or the noiselessness of their sounds. For this reason, acoustically their sounds can be defined as (full-voice?). Being long and full of sound, they do not change much in quality and do not often undergo the influence from their various phonetic positions, even in fast speech. In full speech, one generally very rarely notices any nuances in their pronunciation or variants.

Quantitatively, long vowels are more variable and have quite a wide range. The position which is most conducive to their shortening is in closed syllables. However, even the shortest variants of long vowels normally do not fall below 140-160ms, and such a length is enough to preserve their quality. In clear pronunciation, all long vowels in all phonetic positions clearly stretch on – around 280-300ms. A more detailed characterization of the quantity of vowels (both long and short) is given in a special section.

Each long vowel individually can be described from a qualitative point of view in the following way.

/ī/

This phoneme is always very narrow; it is a high, back, unrounded monophthong. Examples: *čīd* “house”; *qatīr* “together”; *sīg* “bull calf”; *yīw* “one”. It doesn’t expand at all noticeable and doesn’t get pushed back even when next to uvulars: *xīr* “sun”; *qīn* “difficult”; *tārīx* “history”. Further examples on the use of *ī*: *pīndz* “five”; *asīd* “this year”; *žīz* “firewood”; *kīl* “head”; *tīr* “top”; *žīr* “stone”; *rizīn* “daughter”; *x̌abīdz* “twig”; *wīz* “weight; load”; *pīc* “face”; *firīpt* “reached; arrived”; *xīrt* “he/she eats”; *nīst* “he/she sits”; *vīrt* “he/she brings”; *naxtīzd* “he she leaves”; *qīwd* “he she calls”; *wižīvd* “he/she returned”. In borrowed words: *qarīb* “near”; *daqīqā* “minute”; *mualīm* “teacher”; *talīm* “education; training”; *kīnō* “movie”; *qrīm* “Crimea”; *pedučlīš* “pedagogical school”.

The phoneme /ī/ is almost never found word-finally. It is noted only in one borrowing from Tajiki: *sī* “thirty”. A long /ī/ in word-final position always becomes a short front vowel: *ti* < *tīr* “top”; *-andi* < *-andīr* – locative postposition, *qati* < *qatīr* “together; with”; *-di* <*-*dīr* – comparative suffix (*katadi* “older”). In borrowed words, a final stressed /i/ or an etymologically

long /ī/ becomes a short vowel in Shughni: *qōzi* “judge”; *tifli* “childhood”; *tangi* “narrowness; tightness; *badi* “evil, badness”; *zōrgi* “entreaty; prayer”; *awqō’wori* “subsistence”. If a long /ī/ is found in such words, then this only tells us that the person has learnt the Tajik pronunciation.

/ē/

This phoneme has an especially narrow pronunciation: its range in height fluctuates between the fourth and fifth grades – i.e. up to the so-called open *i*. In the common, spoken style of speech the narrow /i/ pronunciation is common *mēθ* “day”; *yēw* “wish”; *rēd* “he stayed”; *xēz* – directional postposition (*tar tama-xēz* “to you”). The vowel /ē/ becomes particularly narrow in positions in which it is preceding a nasal consonant, where in the normal speech style the raised variant is found tōjdēn (phonologically *tōydēn*) “they left”; *garðēnt* “it turned”; *virōdarēn* (phonologcally *virōdarēn*) “brothers”; *šagīn* “bull calves”. For this reason, to the Russian ear without proper training, the Shughni /ē/ can be confused for the phoneme /ī/. When pronounced clearly, /ē/ is more open and fluctuates in height with (another variant of /ē/).

Examples of the phoneme /ē/: *pēx̌* “ahead”; *wēd* “willow”; *sēr* “full; satisfied”; *ðēw* “demon”; *dēk* “pot; cauldron”; *wēv, dēv, mēv* – plural oblique demonstrative pronouns; *y̌ēw* “wish; desire”; *čēmt* “wish; desire”; *yēt* “open”; *miðēn* “in the middle of”; *avēn* “for the sake of; for”; *x̌ēx̌ā* “glass”; *mēθ* “day”; *rimēd* “he/she orders; commands”; *ðēd* “hits”. In borrowed words: *rēx̌tā* “spilled”; *sē* “three”; *xēl* “kind; sort”; *safēd* “white”; *fērma* “farm”; *sēlsavēt* “village council” *mētr* “meter”. In many cases /ē/ has arisen out of the contraction *ay* > *ē* both in native words, as well as in borrowed words: *mēðů̊n* (Tjk. *maydon*) “(city) square”; *nēzā* (Tjk *nayza*) “spear”; *qēči* (Tjk *qayči*) “scissors”; *wērūn* (Tjk *wayron*) “destroyed; ruined”; *rimēd* (B. *rimayd*) “he/she orders/commands”; *ðēd* (B. *ðayd*) “hits”. The combination *ay* is found very rarely in Shughni; it has been preserved mainly in borrowed words in word-initial position: *ayb* “defect; stain”; *ay čīdōw* “drive; chase”; *Aydār* – proper name. Cases in which *ay* has been preserved in the middle of a word are rare and involve, apparently, words which were borrowed at an earlier date: *sayl* “walk; outing”; *bayt* “poem”.

The phoneme /ē/ also arises from the contraction of some of the most common words: *ðēn* < *ðiyēn* “they hit”. Both of the following forms exist in parallel: *ðēn*//*ðiyēn*; *ðēn*//*ðaðēn*; *ðēt*// *ðāðēt* “give! (pl.)”; *zēt*//*zēzēt* “take! (pl.)”.

The phoneme /ē/ can also be pronounced word-finally, however, but it is almost never found there. Only two cases of word-final /ē/ are attested: *x̌umnē* “tomorrow”; *šambē* “Saturday”.

/ɛ̄/

This is an open, unrounded, front vowel vowel realized on the third level of height. Examples of the phoneme /ɛ̄/: *tɛ̄r* “black”; *mɛ̄st* “moon”; *ðɛ̄r* – present stem of the verb “have”; *pɛ̄yd* – past stem of the verb “to watch; follow”; *čɛ̄d* “knife”; *čɛ̄rtōw* “to plow”; *nɛ̄dz* “nose”; *tɛ̄x̌tōw* “to shave”; *tɛ̄zdōw* “to filter”; *x̌ɛ̄vdōw* “to sleep”; *θɛ̄wdōw* “to burn; ignite”; *nɛ̄ðdōw* “to set (caus of

nistōw)"; *xērtōw* "to keep/feed (cattle)"; *wēð* "canal"; *xēr* "nephew"; *pēð* "snare; trap"; *vērdz* "mare"; *nibēs* "granddaughter"; *ɣēv* "mouth"; *kiǩēps* "magpie".

In borrowed words (from Tajiki), only those instance of *ē* are transferred which are next to uvulars and pharyngeals: *tēɣ* "razor"; *fēl* (Taj *fe'l*) "character"; *bēx* "root". Next to uvulars, *ē* also comes out of the contraction of *ay*: *xēr* (Taj *xayr*) "okay"; *šēx* (Taj *šayx*) "sheikh"; the phoneme /*ē*/ can also arise out of the contraction of *i* + *a*: *miθōgēta* < *miθōgɛi-atā* "once upon a time"; *sārakēθ* < *sārake-aθ* "in the morning".

The phoneme /*ē*/ is never found in word-final position. It may end up there in the abbreviated forms of words; /*ē*/, analogously with /ī/ is contracted to /i/: *zēz* > *zi* "take". On the other hand, there are certain cases in which the phoneme /*ē*/ develops in word-final position from wide variants of the short front vowel. More will be said about these cases in the description of the latter.

All of the long front vowels examined here (ī, ē, ē) in word-initial position always become iotated: *yīw* "one"; *yīdōw* "grind; mill"; *yēd* "bridge"; *yēdand* "there"; *yēnak* "mirror"; *yērů̊n* (//*ayrů̊n*) "surprised"; *yēt* "open"; *yēθ* "nest".

/ā/

This phoneme is a low, unrounded vowel with neutral (mixed) frontness/backness. When pronouncing /a/ the tongue flat on the bottom of the mouth cavity, as in the articulation of the stressed Russian /a/ between hard consonants (in the words: *дам, сад*), with which the Shughni /ā/ is equal in quality. These vowels differ, however, with respect to their length and tenseness. This vowel does not advance forward in any significant way, nor does it change in quality in any significant way.

Examples of /ā/ in use: *māš* "we"; *ðāð* – pres. Stem of the verb "give"; *nān* "mother"; *tāt* "father; *mā* "negation marker on verbs" (*mā lüv* "don't speak"); *bāt* "porridge"; *cān* "gun"; *cāǩ* "bitter (f.)"; *xāɣ̌* "sweet (f.)"; *wāǰ* "duty; debt"; *vāǩ* "rope; line"; *ɣac* "girl"; *čāy* "who"; *yā* "her/that"; *ɣ̌āɣ* "jackdaw (bird)"; *kā* // *kād* "where"; *dām* "back"; *tāptōw* "trample down // knead"; *xār* – pres stem of the verb "eat"; *tāž* – pres stem of the verb "pull"; *θāw* – pres stem of the verb "burn"; *vām* – pres stem of the verb "bring"; *sāw* – pres stem of the verb "go". In borrowed words: *ɣām* "grief"; *kām* "little"; *gāp* "word"; *bās* "that's enough!; enough"; *gārm* "warm"; □*urt* "type"; *qārdz* "debt"; *mārt* "March". The phoneme /ā/ regularly appears in borrowed words as a result of the compensatory lengthening in pharyngeals which are unpronounced in Shughni: *fām* (<*fahm*) "understand; know"; *rabār* (<*rahbar*) "chief; leader"; *māqūl* (<*ma'qul*) "acceptable"; *mākam* (<*mahkam*) "strong"; *mālum* (<*ma'lum*) "clear; well-known"; *āwōl* (<*ahwol*) "state; condition"; *ād* (<*ahd*) "agreement; contract"; *ād* (<□*ur*) "limit; border".

The regular positional expansion of *a* to *ā* is observed (phrase-?)finally. It can be said that any final *a* in nouns is long, both in borrowed words and in native words: *ɣiðā* "boy"; *garðā* "bread"; *murðā* "corpse"; *kōsā* "cup"; *kučā* "street"; □*urta* "dress"; *mālā* "building"; *puǩtā* "mountain slope"; *ɣulā* "big". However, if there is no pause after a word-final *ā*, then it is normally

pronounced as a short vowel: *garða-yum zōx̌t* “I got bread”; *tar wi māla-yi yat* “he went to that building”. In cases like *yi ɣiða yat* “a boy came” – i.e. when a pause after the *a* is possible but not obligatory – the use of *a* or *ā* (*ɣiða* // *ɣiðā*) depends on the clearness of pronunciation. When there is a more clear pause, a long *ā* is generally found – *yi ɣiðā yat*. At the very end of the phrase – i.e. when there is concluding pause – the *ā* in nouns is always long: *čūx̌t-i didi: aram yik-u ɣiðā* “he saw that there was the very same boy”.

However, along with this tendency toward the lengthening of a final *ā*, the general pattern of Shughni long vowels still stands – which was already discussed in the description of *ī* and *ɛ̄* – which says that when a final consonant is dropped, a long vowel which ends up in the final position of the word becomes a short vowel. Thus, for *ā* we get the following: *sa* < *sāw* “go!”; *ða* < *ðāð* “give!”.

In some words, most of which are particles and adverbial words, short *a* in word-final position is preserved and never undergoes contraction: *yiga* “another”; *aga* “if”; *ida* “here; look”; *-ta* – modal enclitic particle.

/ō/

This phoneme is an open rounded back mid vowel [ɔ], close to the Tajik /o/ but differing from it in length. In quality it is very stable and does not noticeable change at all under the influence of various phonetic conditions, even in fast speech.

Examples of /ō/: *virōd* “brother”; *vō* “again”; *tōθč* “bowl”; *ðōrg* “stick”; *pōð* “leg”; *dōd* “father”; *bōb* “grandfather”; *xōx̌* “horn”; *pirō* “before”; *žōw* “cow”; *pōw* – pres stem of the verb “guard; watch”; *zōd* – past stem of the verb “give birth”; *čōr* “man”; *pōθ* “arrow”; *mōy̌dz* “hunger”; *mōθ* “walking stick”; *tōv* “time; instance”; *x̌ōǰ* “fear”; *rōšt* “red (f.)”; *pōc* “turn; shift”; *nōy* “throat”; *zōx̌t* “he took”; *nōw* “nine”; *zōrð* “heart”; *ōt* :visible”. In borrowed words: *čoy* “tea”; *čōrpō* “cattle”; *čōrbōɣ* “garden”; *gōw* “cattle” *dů̊nō* “learned; knowledgeable”; *čōrda* “fourteen”; *mōl* “property; belongings”; *ōzir* “now”; *ōšiq* “person in love”; *pō* “leg”; *qōq* “dry”; *dōskā* “blackboard”; *šōfīr* “chofer; driver”; *kōmsamōl* “(political party)”; *kōmunīst* “communist”.

The phoneme /ō/ is never found before the nasal consonants /n/ or /m/, as it always becomes the phoneme /ů̊/ in this position: *ǰů̊n* < *ǰōn* “soul”; *bů̊n* < *bōn* “beard”; *x̌ů̊m* < *x̌ōm* “evening”; etc. In all other positions, the phoneme /ō/ is found with the same frequency, including word-finally and word-initially.

The phoneme /ō/ can arise in speech as a result of the contraction of the phonemes /u/ + /a/: *tōθ* // *tu-aθ* “you” (with augmentative particle); *xōθ* // *xu-aθ* “oneself” (with the same augmentative particle); *xōmak* // *xu amak* “his/her uncle”; *mōmak* // *mu amak* “my uncle”; etc.

/ů̈/

This is a close rounded (advanced) back vowel, produced between the fourth and fifth degrees of height. In Russian it is closer to <y> than to <o>. The more open variant – produced a little higher than the fourth-degree /o/) is found in closed syllables when next to uvular consonants and /r/: *ɣů̈ɣ* “ear”; *ků̈r* “blind”. Its usual pronunciation is more narrow (fifth degree or a bit lower). Its degree of advancement toward the front is slight; when next to uvulars it may not be advanced at all.

In the majority of cases the phoneme /ů̈/ is an innovation in the Shughni language: 1) from /ō/ before nasals: *ǰů̈n* “soul”; *dů̈man* “skirt”; *dů̈mōd* “son-in-law, brother-in-law”; *pů̈nd* “road”; *ayrů̈n* “surprised”; *ků̈m* “palate”. These cases are also the main usage of the phoneme /ů̈/. 2) from the diphthongs *āw* and *aw*: *sů̈d* < *sāwd* “goes”; *nů̈d* < *nāwd* “cries”; *wů̈n* < *wawn* “fur; wool”; *nů̈bat* < *nawbat* “turn (in an order)”; etc.; 3) in borrowed words from /u/ together with uvulars and pharyngeals: *mů̈lat* (<*muhlat*) “period (of time)”; *tů̈mat* (<*tuhmat*) “slander; libel”. The phoneme /ů̈/ is also used in interjections and □nomatopoeic words: /ů̈/ as an interrogative-emotional *šů̈g-šů̈g* is a nickname for bull calves; *ů̈šša* is a nickname for cows and bulls; *wů̈r-wů̈r* is a nickname for camels; *xů̈t-xů̈t* is a nickname for donkeys; *fů̈qqast* “”; *bů̈ɣ*: *bů̈ɣd* “to moo”; *wūɣ*: *wů̈ɣd* “to roar”.

Instances of an older usage of the phoneme (from the historical ō < au) are relatively rare. Below are all the remaining attested cases of the usage of /ů̈/: *ků̈r* “blind”; *virů̈* “eyebrow”; *ɣů̈ɣ* “ear”; *rů̈b*: *rů̈vd* – stems of the verb “sweep; shovel”; *rů̈z* “(an opening in the roof)”; *rů̈ps* “fox”; *pů̈stin* “fur”; *bů̈y* “smell”; *ðů̈dz-* – present stem of the verb “to milk”; *ků̈ɣdz* “opening; hole”; *ǰů̈x* “boiling”; *ðů̈v-* – present stem of the verb “gather; pick”; *mů̈rax* “insect”; *pů̈l* “little ball”; *tů̈ɣm* “seed”; *vů̈r* “brown”; *bů̈d* “yarn?”; *čů̈k* “very tall”; *dů̈r* “(basket for grain in a mill)”; *ɣů̈k* “cradle”; *ɣů̈t* “diving?”; *ɣů̈z* “nut?”; *sů̈g* “tale”; *gů̈r* “grave?”; *gů̈y* “ball?”; *Xů̈f* “Xuf (place name)”; *x̌ů̈ǰ* “shelf?”; *marů̈d* “pear?”; *kilů̈l* “lump?”; *kilů̈x̌* “lump?”; *kišků̈l* “wooden bowl?”; *sitů̈r* “cattle?”.

The phoneme /ů̈/ can be used in all phonetic positions, but in word-final position it is found only rarely: *tarů̈* “here”.

/ū/

This phoneme is a very narrow rounded back vowel, formed on the highest grade of height. It is very stable with respect to its quality and doesn’t change appreciably in any position. Examples of /ū/: *sūr* “wedding”; *šūnč* “laughter”; *tūð* “mulberry tree”; *x̌ūdz* “wind”; *xūðm* “sleep”; *x̌ūvd* “milk”; *wūs*“beam? gorge?”; *xūrn* “crow”; *būn* “handful of flour?”; *čūɣ* “varied?, multicolored?”; *vūɣd* “long”; *čūrd* “curved?”; *mūrdzak* “ant”; *kūsā* “beardless”; *dūs* “(a) little”; *vūd* “brought”; *xūd* “ate”; *tūyd* “left (m.)”; *vūst* “tied up; fastened”; *nūst* “sat down (m.)”. In borrowed words: *čūb* “wood”; *čūpů̈n* “shepherd”; *gūx̌wōr* “earrings”; *pūl* “money”; *rū* “face”; *rūz* “day”; *rūyxat* “list”; *sūrat* “portrait; picture”; *sūxta* “burnt”; *tūti* “parrot”; *tūp* “fun”; *xūn* “”; *rūčka* “pen”; *sūd* “pen”.

Word-finally the phoneme /ū/ is found extremely rarely and almost exclusively in borrowed words: *kū* “mountain”; *rū* “face”; *ǰōdū* “magic”; *Baǰū* “Baju (village name)”. In Shughni words which contain a word-final /ū/, it normally becomes a short /u/: *ču* // *čūd* “done”; *xu* // *xūd* “eaten”; *vu* // *vūd* “brought”.

Word-initially /ū/ is not found without a preceding /w/: *wūs* “beam; gorge?”; *wūvd* “seven”.

For the group of long vowels, the following characteristics are outlined:

1) The phonemes /ī/, /ē/, /ā/, /ō/, and /ū/ do not have noticeable variants in quality and have the same realization in all phonetic positions. The phonemes /ē/ and /ů̄/ have variations in openness and can be slightly diphthongized. The phoneme /ů̄/ is different from all other phonemes in its capacity to change on the basis of frontness: it is normally slightly moved forward.

2) The phonemes /ī/, /ē/, /ɛ̄/, /ů̄/, and /ū/ are either never found word-finally (ī, ɛ̄) or are found very rarely, only in a few cases (ē/, /ů̄/, and /ū/). For the phoneme /ō/, the word-final position is normal. The phoneme /ā/ differs from other phonemes in its extremely common presence in word-final position: any short /a/ (in nouns) turns into a long /ā/ in this position.

3) Front vowels /ī/, /ē/, /ɛ̄/ and the back vowel /ū/ are not found word-initially – /ī/ is not found there without a preceding *y*; /ū/ is not found there without a preceding *w*. Before an initial /ā/ one may find an <h> (<hadd> “limit”), but this is not very common for /ā/, which is also found rarely in word-initial position.

4) The phoneme /ů̄/ is different in the comparative narrowness of its usage: it is found mainly before nasals, where it comes from the phoneme /ō/.

Short vowels

All short vowels (a, i, u) are characterized by a more soft sound (when between voiceless sounds and in abbreviation they can become fully devoiced) and by their variability in quality when under the influence of various phonetic conditions, which is particularly common for front and back short vowels. Their range of height is very wide, and their representation by the letters *i* and *u* is merely convention, as they could also be represented by the letters *e* and *o*. The range of short vowels with regard to their length is also very wide, and they can be quite short in unstressed syllables. However, their reduction is not common and is observed only for the phonemes *i* and *u* in the most favorable positions for reduction (for example, before *r*: *v*(*i*)*rōd* “brother”). For /a/, a strong reduction is not observed at all.

The short front vowel *i* varies in height from the close /i/ to the open /ɛ/. Depending on its position in the word, it changes in height in the following way: in open syllables it is more narrow, of an [i] type: *siyō* “black”; *dičōr* “meeting”; in closed syllables it is more open, of an [e] type: *mes* “also”; *ped* “father”; *kexť* “does”. In the absolute final position it is the most open: *sawɛ vō na yadɛ* “you (will) leave and never come back”. In addition to its position in the word, its quality is also affected by surrounding consonants. The most marked widening influence is exerted by the uvulars *x*, *ɣ*, *q*, and also by the consonants *w* and *r*; the most narrowing influence is exerted by the palatal *y* and other consonants with palatal articulation (*š*, *ž*, *č*, *ǰ*): *rezīn* “daughter”; *wend* “his”; *wexen* “blood”; *siyō* “black”; *čisum* “I look”; *viðů̆m* ? “ceiling”. The extreme variants of the phoneme (*i* and *ɛ*) give an especially contrasting impression, being found at the limit of one word or syntagm: *didɛ* - subordinating conjunction (phonologically *didi*); *di dɛ* “hit him!” (phonologically *di di!*).

The following characteristics must be added to the open variant of the phoneme /i/ ([ɛ]), which is found in absolute final position: 1) When a front vowel is in absolute final position and is stressed, it not only becomes widened, but it can also become lengthened and can come close to the length of long vowels; 2) in monosyllabic words, the word-final stressed variant [ɛ] is characterized by a sharp and momentaneous break in its articulation, and since it occurs with a strong open blast of air (short stressed vowels are quite forceful), after a sharply terminated vowel a voiceless noise is common, which sounds like aspiration: *dɛ*^{h} “hit!”; *zɛ*^{h} “take!”. In these cases a significant lengthening of [ɛ] does not occur.

In disyllabic words where, as a rule, aspiration does not occur and where the variant [ɛ] can be noticeably lengthened (*sawǰɛ̄* “hip; thigh”), the phonetic preconditions arise for identifying this variant with the long phoneme /ɛ̄/. This identification can also occur in words after which, as a rule in speech, there is a pause and which do not take suffixes or rarely take suffixes – in other words, in words in which the final /i/ is always or almost always found before a pause in speech. The word *didi*, a subordinating conjunction, is such a case. This word always requires a pause after it and never takes any suffixes. In this word we consistently find the open, lengthened, unaspirated variant [ɛ̄]. It is natural for it to be associated with the phoneme /ɛ̄/, and at the present time, at least in the pronunciation of young people, the phonological structure of this word is more readily seen as *didi*, rather than as *didɛ̄*. In different words, when the lack of a pause or a suffixal element changes the sound of the word-final variant (e.g. *sawǰɛ̄* “hip”, but with a suffix *sawǰi-ye*), one cannot tell about whether the short front vowel transitions into another phoneme, as the variant [ɛ] of this word has a consistent phonological connection with the variant [i]. For this reason, in the absolute word-final position in such words as *sawǰɛ̄* (other cases of this type: *qozɛ* “judge”; *badɛ* “evil”; etc.), together with a pure sounding variant [ɛ] with the phoneme /ɛ̄/ the phonetic discrepancy with it can be preserved with a more clear pronunciation. A more forceful pronunciation of the variant [ɛ] accompanied by even light aspiration, or slightly shortened, or with some narrowing, is already enough for differentiating between the two phonemes. But any time that these distinguishing phonetic features disappear, one could say that word-final /i/ and /ɛ̄/ are very similar in sound.

Examples of the phoneme /i/ in use: *sidz* “needle”; *pid* “father”; *zimāð* “land”; *ziv* “tongue/language”; *wixin* “blood”; *virů̆ɣ̆* “eyebrow”; *tirak* “fresh; new”; *virōd* “brother”; *birūǰ* “birchbark?”; *cirōw* “lamp?”; *sipin* “iron?”; *čidīr* “soot”; *tika* “torn”; *yid* “that (medial grade

dem. pronoun)"; *di, wi, mi* – oblique masculine demonstrative pronoun; *dis* "so (так)"; *divi* "door"; *pirō* "before/in front"; *pis* "after; behind"; *zibō* "behind"; *pisēn* "grinding stone"; *piš* "cat"; *pirx̌* "frost?"; *žiniǰ* "snow"; *xisur* "father-in-law"; *xidīr* "elder; senior"; *xist* "wet"; *vidōw* "be"; *sidōw* "to go"; *x̌idōw* "hear"; *nivistōw* "write"; present tense stems: *čis-* "look"; *viri-* "find"; *win-* "see"; *ris-* "stay"; *niθ* "sit"; *ki*(*n*)- "do". In borrowed words: *bisyōr* "very"; *dinyō* "world"; *diraxt* "tree"; *fikr* "thought"; *kirm* "worm"; *kitōb* "book"; *qišlōq* "village"; *rōzi* "content; satisfied; in agreement"; *tilfi* "childhood"; *qīni* "difficulty"; *sinfi* "class (adj.)"; *kilō* "kilogram"; *pōyiz* "train"; *pirogūl* "(unexcused) absence"; *lōčik* "pilot"; *sēntabir* "September"; *instītūt* "institute"; *ōdix* "rest".

The phoneme /i/ regularly arises from long front vowels /ī/, /ē/, /ɛ̄/ in word-final position: *tīr* > *ti* "top"; *andīr* > *andi* "inside"; *zɛ̄z* < *zi* "take". Connected to this is the fact that a common ending for present-tense verbal stems is short /i/: *ribi-* from *ribīdow* ""; *rimi* from *rimēdōw*; *ti* from *tīdōw*; *di* from *ðēdōw*. The same occurs in borrowed words: *šambe* > *šambi* "Saturday"; *tutī* > *tuti* "parrot"; *rozī* > *rozi* "content; in agreement".

The short back vowel /u/ is analogous to the short front vowel and has the same wide range of height: from close [u] to open [ɔ]. The change in height of /u/ depends on the same phonetic conditions as those which operate with respect to the phoneme /i/: the most narrow [u]-like variant [u] is found in open syllables (e.g. *čuyan* "cast iron?; cooking pot?"; *sutum* "I went"). A more open [o]-like variant is found in closed syllables (*sot* "he left"; *poc* "son"). The most open variant is found in absolute final position (e.g. *xɔ* "ate"; *čɔ* "did"). The most widening effect from consonants is shown by the same phonemes: *x*, *q*, *ɣ*, *w*, *r* (e.g. *xu čīd* "(self's) house"; *morx* "chicken"; *borǰ* "corner?; angle?"; *boq* "hill"; *xɔ* "ate"; *xɔ* – coordinating conjunction.

When adjacent to other consonants (in particular fricatives) and in analogous phonetic positions, *u* sounds significantly narrower: *mu čīd* "my house"; *x̌ux̌* "lung?"; *ðust* "hand"; *sust* "weak"; *čux̌* "rooster"; *čo* "did"; *vo* "brought".

The most open, (phrase-)final variant of the phoneme /u/ ([o]/[ɔ]), unlike the final open variant of the phoneme /i/ ([ɛ]) is found relatively rarely, as words which end in *u* are very rare, and especially those which can be in the final position of a syntagm or phrase; i.e. before a pause. These are typically abbreviated forms of verbs (*ču* < *čūd*); i.e. monosyllabic words. In monosyllabic words, as we saw in the description of /i/, a final short vowel is normally characterized by a sharp break in vowel articulation, transitioning into aspiration (*čo*^{h} "did"); i.e. it preserves the phonetic differences with the corresponding long vowel /ō/. As a result, for the phoneme /u/, unlike the phoneme /i/, a significant tendency to transition into the corresponding long vowel in word-final position is not observed. Also significant in this relationship is the fact that the long /ō/ is found often in word-final position, and thus the broadening and lengthening of /u/ could in some cases lead to the mixing of words (*ču* "did" contrasts with *čō* "well (in the ground)"; *vu* "brought" contrasts with *vō* "again"). This obstacle does not exist in distinguishing

final /i/ from the phoneme /ɛ̄/, as the latter is never found in word-final position. The limits of the opening of /u/ in comparison with /u/ is also somewhat narrower: /u/ only attains the (low) height of open [ɔ] in particularly favorable conditions – after uvulars: *xɔ* "ate"; *xɔ* – coordinating conjunction.[3]

Examples of /u/ in use: *buč* "he-goat"; *bun* "floor; bed (bottom of a body of water?)"; *čust* "strong; hard; closed?"; *čuyan* "cast iron?; cooking pot?"; *ðud* "smoke"; *ðum* "tail"; *fuk* "all"; *guǰ* "kid (young goat)"; *dzul* "small"; ""; *puc* "son"; *kud* "dog"; *kuruk* "hen?"; *kut* "short"; *nur* "today"; *surb* "tin?"; *tuǩā* "supplies for the road?"; *tuǩp* "sour?"; *ǩumnē* "tomorrow"; *yuɣ* "yoke"; *žurn* "round"; *wuz* "I"; *tu* "you"; *yu* – 3sg distal dem. pronoun; *xubaθ* "one self"; *xu* "(of) oneself"; *mu* "my"; past tense verb stems: *kuǩt* "slaughter"; *vud* "be"; *ǩud* "hear"; *pud* "rot"; *sut* "go". In borrowed words: *duyum* "second"; *suwwum* "third"; *guftiguy* "conversation"; *duzd* "thief"; *gurg* "wolf"; *ǰumā* "Friday"; *lōzūm* "necessary"; *muallim* "teacher"; *mudir* "chief; leader"; *muyim* "important"; *quwat* "strength"; *surx* "red"; *suwol* "question"; *žurnal* "magazine"; *fakultet* "faculty"; *nuyabr* "November".

The phoneme /u/ regularly arises in word-final position from long /ū/ as a result of the abbreviation of word forms: *xu* < *xūd* "ate"; *vu* < *vūd* "found?"; etc. But such words are relatively rare. The phonemes /ů/ and /ō/ in word-final position do not become /u/: *tarů̄d* > *tarů̄* "here"; *pirōd* > *pirō* "before; in front (of)". Final stressed /u/ in borrowed words also becomes /ū/: *ōrzū* "wish"; *ǰōdū* "magic; witchcraft". Thus, the phoneme /u/ differs from /i/ in that it used much more rarely word-finally.

Both of the short vowels examined so far, both the front and back vowel, while having a very wide range of heights, almost do not change at all with respect to their frontness or backness. Only a light advancement of /i/ forward can be observed when it is next to uvulars (*qišlōq* "village"), but this does not occur in more clear pronunciation. The advancement forward of the phoneme /u/ is also not characteristic.

In an unstressed open syllable before *r*, if the preceding consonant is not a voiced stop, and after *w*, if the following consonant is a voiced fricative, the phonemes /i/ and /u/ can become reduced and even disappear: *v*(*i*)*rōd* "brother"; *w*(*i*)*zů̄n* "know!"; *k*(*u*)*ruk* "hen?". In clear pronunciation the vowel sound is always restored. Cases of similar reduction are often found for the vowel /i/ (even for it they are rare). For the vowel /u/ they are sporadic. In the position between voiceless sounds in unstressed open syllables in fast speech both vowels can become completely devoiced.

The short low vowel /a/ usually has a neutral (central) frontness, as in the Russian stressed /a/ between hard sounds (*сам*, *дар*). The range in changes of quality are rarely narrow – /a/ can only advance forward slightly under the influence of the articulation of palatal consonants: *nay* "no"; *yak* "one"; *yam* "this"; *yat* "arrived"; the advancement is not obligatory and it does not occur in clear speech. The phoneme /a/ is even more stable with regard to height: it can only

[3] The latter word is an exceptionally favorable case for distinguishing /u/ from /ō/. As an enclitic, the conjunction *xu* does not attract word stress, and thus /u/ here does not have the aspirated variant [ɔʰ]. At the same time, the conjunction *xu* requires a pause after it, which causes /u/ to become the consistent open variant [ɔ]. As a result, in fast speech, the mixing of /u/ with /ō/ is possible (*xu*//*xō*). However, in clear pronunciation /u/ always recovered (i.e. is pronounced?).

narrow a bit through strong abbreviation in fast speech, giving the impression of a short central vowel (*ə*): *iktərwi* “to there”; *kərtuška* “potato”.

Thus, with respect to its fundamental qualitative characteristics – height, frontness, and unroundedness – the phoneme /a/ generally matches its long counterpart /ā/. Additional qualitative characteristics of short vowels – their noisiness in stronger air flows and their characteristic abruptness at the end of their sound – are not obligatory and do not show up in all phonetic positions. As a result, the main distinction between *a* and *ā* is duration.

The opposition in features of duration, about which was already discussed in connection with the phonemes *i* and *u*, is significantly weakened in absolute final position, where short vowels are lengthened and where, because of this, they can match the qualitatively similar long vowel.

For the phoneme /i/ this possibility is only partially realized (*i* > *ɛ̄*); for the phoneme /u/ it is not realized at all. In this along with other inhibiting factors, which were already discussed in the description of these phonemes, the following circumstance also plays a significant role. Final /i/ and /u/ have a wide range of height and can change in openness depending on influence from the preceding consonant, the nature of the following pause, and the style of speech. Thus, in each individual case they can also not match in quality with the corresponding long vowel. So, for *i* even before a final pause, the variant [ɛ] is not obligatory: its narrowing is always possible. Cases of the opening of *u* to [ɔ] (i.e. to the height of the phoneme /ō/) are very few.

For the phoneme /a/ this factor – i.e. the constant possibility of qualitative variation – does not exist, as it is stable in final position and is equal in quality to the vowel /ā/. For this reason, with the lengthening of short /a/ in final position, which is accompanied by the loss of abruptness of its ending, it comes to match the long phoneme /ā/ in sound. This leads to the merger of the phonemes /a/ and /ā/ in final position. Thus, in all nouns which can be in the final position of a syntagm or phrase – i.e. in the vast majority of nouns – we find long /ā/: *darā* “valley”; *čaǎmā* “stream; creek”; *rūyā* “side; direction?”; *garðā* “bread”; *ɣiðā* “boy”; *tuǎā* “supplies for the road”; *bačgalā* “children”; *kattā* “big”; *ōsta-ōstā* “slowly”; *tōqā* “”; *ɣullā* “big”; etc. Long /ā/ is so firmly established in these words that it can be pronounced even in those cases in which the word in question is used in a position where it doesn’t precede a pause: *ɣullā naxčēr* “large mountain goat”; *tōqā-tōqā* “alone”; *ōsta-ōstā* “slowly”; although in these cases it is also possible to find the parallel usage of short /a/: *ɣulla naxčēr*; *tōqa-tōqā*; *ōsta-ōstā*; etc.

In cases where a suffix is added to a word the short /a/ is normally pronounced: *garða-yi zōǎt* “he got bread”; *ɣulladi* “older; bigger”. However, even in these cases, if stressed is preserved on /a/, then it is possible to find long /ā/: *garðā-yi zōǎt* “he got bread”.

Short /a/ is preserved word-finally primarily in those words which cannot end a syntagm or phrase – i.e. those which are not used before a pause: in function words, particles, and adverbs. For instance: *-ta* – a modal-strengthening particle; *ca* – subordinating conjunction; *aga* “if”; *diga* (*//yiga*) “again; another”; *ida* “there (вот)”; etc.

Analogously with other short vowels, /a/ can arise in final position from the shortening of its corresponding long vowel in abbreviated word forms, usually in abbreviated imperative forms of

verbs: *sa* < *sāw* “go!”; *va* < *vār* “bring!”; *ða* < *ðāð* “give!”; *xa* < *xār* “eat!”; *mā na* < *mā nāw* “don’t cry!”.

In cases where short /a/ is preserved word-finally, it clearly opposes long /ā/ and does vary in duration, always being a short vowel, unlike the phonemes /i/ and /u/, for which the tendency is to lengthen in word-final position.

Examples of the phoneme /a/ in use: *vaz* “goat (f.)”; *čaǩ* “chicken (f.)”; *ǩac* “water”; *yax* “sister”; *xaǩ* “stiff; hard; stuck?”; *varθ* “both”; *ðar* “far”; *kaў* “crooked, curved ~ Persian *kazh*”; *kaš* “bitter”; *lavdz* “word”; *cavōr* “cour”; *kaxōy* “woman?”; *lašak* “rye?; grain?”; *kanab* “cannabis?; hemp?”; *waǩt* “eight”; *maðōr* “noon”; *tama* “you (pl.)”; *wam*, *dam*, *mam* – singular oblique feminine dem pronouns; *yad-/yat* “come”; *žaq-/žaqt* “squeeze”; pres. stems: *xay-* “thrash; beat up?”; *ðak-* “lick”. In borrowed words: *barq* “lightning?; electricity?”; *čand* “some”; *dars* “class”; *dast* “hand”; *farq* “difference”; *maalum* “clear; known”; *mualim* “teacher”; *maktab* “school”; *qand* “sugar”; *zabů̄n* “tongue; language”; *yanvar* “January”; *gazēt* “newspaper”; *kalxōs* “(collective farm)”; *kartuškā* “potato”.

For all three short vowels at the beginning of words, the corresponding consonant also often appears: *y* before /i/; *w* before /u/; *h* before *a*: *ʰar* “every”; *ʰalow* “fire?”; *ʰamo* “however; but”; *ʰaram* “(down) there”; *ʰaray* “three”; *wurus* “Russian”; *ʷuzbak*//*uzbak* “Uzbek”; *ʷuǩ*//*uǩ* “consciousness; sense”; *yida*//*ida* “there (вот; вон)”; *yik*/*ik* “augmentative prefix”; *yi*//*i* “one”; *yidōra*//*idōra* “establishment; founding”. However, because the sounds *y* and *w* are phonemes in other cases in Shughni, their presence or absence at the beginning of words is not always without meaning and is starting to become connected with a particular word. Thus, for *i* and *u* there is a group of words in which *y* and *w* normally do not occur. This is primarily in loan words: *ilm* “science”; *išq* “love”; *ijrō* “fulfillment; implementation”; *insōf* “justice; truth?”; *izzat* “respect”; etc. For *u*: *ukumat* “government”; *ukm* “order”; *umr(i)* “life”; *umēd* “hope”.

Vowel duration

Recordings on the kymograph carried out in one sitting on the 20th of September, 1949, with the pronunciation of a student from Stalinabad Pedagogical Institute, Javariev, originally from Porshniv.

The figures denoting the length of vowels is in centiseconds are given in the sequence adopted in “Sketches”: in the first row of the column, the average duration is given; in parentheses is the number of measurements from which the figure of average duration has been taken; in the second row is the range of normal duration; in the third row are the limits attested of duration attested in the recordings.

With regard to influence from consonants there are two basic positions: 1) the position which is favorable for preserving duration; this includes the following combinations of consonantal environments: voiced–voiced sounds or voiced sound–voiceless fricative; 2) positions which shorten the duration of the vowel: voiceless – voiceless; voiceless occlusive – voiced occlusive. Both of these positions are shown with the Arabic numerals in (1) and (2).

In this general division clarifications are given when necessary. Thus, for long vowels the combination of the sonorants *l, m, n* + a voiceless sound (e.g. *mēθ*) gives the first position; for short vowels (e.g. *mis*) it gives the second position, as the sonorants *l, m,* and *n* do not affect long vowels, but shorten short vowels noticeably.

In monosyllabic words

Data: Long vowels before a single consonant

Долгие гласные

1) Тип: *bāad, x̌āb, žɪr, sɪr, sėr, ðēd, sēr, dūs, mūn, bůn, sůd, bō ɣ, ðōd*

ā	ī	ē	ē
23.4 (15)	21.2 (6)	23.4 (8)	23.4 (21)
25—21	24—20	25—22	26—22
28—21	24—18	27—20	27—20

ū	ů	ō
21.0 (26)	22.7 (15)	25.2 (6)
23—19	25—20	28—25
26—18	27—18	28—20

2) Тип: *tāt, pɪc, dēk, ɣůk, pōð*[1]

ā	ī	ē	ū	ō
20.5 (4)	18.0 (13)	18.6 (8)	19.3 (6)	22.3 (10)
—	19—16	20—17	—	24—19
23—19	22—16	21—17	23—16	28—19

Data: Short vowels before a single consonant

Кратκие гласные

1) Тип: *ðar, vad, ziv, sir, vud, x̌ud*

a	i	u
13.3 (8)	13.4 (12)	14.3 (10)
14—12	15—12	15—14
15—12	16—10	17—12

2) Тип: *x̌ac, sat, sit, mis, čit, puc, sut, kut*

a	i	u
10.6 (13)	9.7 (16)	9.6 (11)
12—10	11—9	11—8
12— 9	12—8	11—8

Data: Long vowels before two consonants

1) Тип: *dāx̌t, kānd, tɪɤd, māst, rēðǰ, cůnd, vūst, x̌ūvd, zōx̌t, x̌ōvd*

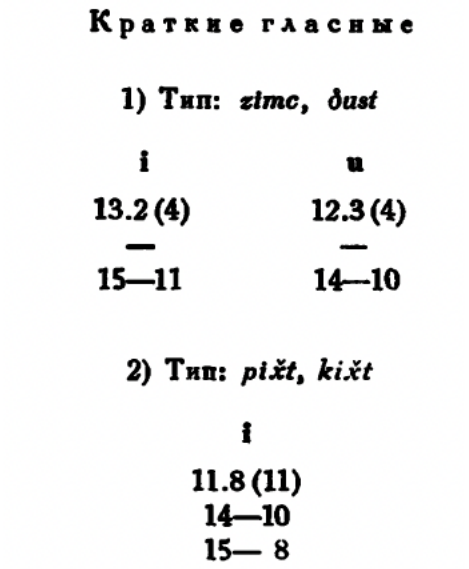
ā	ī	ē	ē
22.6 (13)	20.6 (4)	21.0 (6)	18.8 (5)
25—22	22—20	25—20	20—19
25—19	22—19	25—17	20—17

ū	ů	ō
21.3 (10)	22.5 (5)	20.5 (7)
24—20	24—22	22—20
26—17	26—17	22—17

2) Тип: *pɛ̄xt, pēx̌c, čōst*

ɛ̄	ē	ō
21.4 (4)	17.9 (4)	18.5 (4)
22—19	—	—
22—19	21—16	19—17

Data: Short vowels before two consonants



Краткие гласные

1) Тип: *zimc, ðust*

i	u
13.2 (4)	12.3 (4)
—	—
15—11	14—10

2) Тип: *pi.ǩt, ki.ǩt*

i
11.8 (11)
14—10
15— 8

As seen from the figures above, in monosyllabic words the opposition of long and short vowels is reflected very clearly in all phonetic positions. The total range of duration in closed syllables with one final consonant is 190-250 ms for vowels in the position type 1 and 120-150 ms for short vowels in this position. In second position the range is 160-240 ms for long vowels 80-120 ms for short vowels. This relation (~ratio) between the duration of vowels in both groups is similar in closed syllables with two final consonants. For this type of syllable, the range of duration for long vowels in the position type 1 is 190-250 ms; for short vowels the range is 100-150 ms. In the second position, the range is 170-220 ms for long vowels, and 100-140 ms for short vowels. The duration of long and short vowels never coincides even in the most extreme variations of each.

In the data at hand, no significant difference in the duration of short vowels is observed. Among long vowels, a bigger tendency toward shortening is shown by /ī/ and /ū/, and the biggest tendency toward lengthening is shown by /ē̄/ and /ō̄/ (especially /ō̄/). The bigger propensity for contraction of the phonemes /ī/ and ū/ indicates that they exhibit less of a contrast in duration with their short counterparts /i/ and /u/, in comparison with the phonemes /ē̄/, /ē̄/, and /ů̄/ /ō̄/ show with the same short vowels, respectively. The varying durational relationship between long vowels and their short counterparts finds its explanation in the differing qualities of these vowels. In closed syllables the short vowels /i/ and /u/ draw closer in quality to that of long vowels (i.e. with *ē̄, ɛ̄,* and *ů̄, ō̄*), having an *e*-like and *o*-like sound in that position, respectively. And since the short vowels are more clearly distinguishable in quality from *ū* and *ī* in this position, they can therefore differ less from these two vowels with respect to duration. However, even in the opposition of *i–ī* and *u–ū*, vowel duration is preserved quite clearly: the biggest

convergence is observed for *u*–*ū* in position type 1, where the range of duration for the long vowel is 180-260 ms, and the range for the short vowel is 120-170 ms. In this position, although the duration of the long and short vowels comes close in their most extreme instances (i.e. the longest short vowel, and the shortest long vowel), they are never equal.

In order to provide more clearness in comparing the duration of both groups of vowels, we can ignore the insignificant discrepancies in duration shown, and then a general summary of the data gives us the following picture:

Data (description): In closed syllables with one final consonant, the average length for long vowels is 227 ms in position 1, and 196 in position 2; for short vowels it is 137 in first position and 100 in second position. In closed syllables with two final consonants, the average duration is 213 for long vowels in position 1 and 193 for those in position two; for short vowels the average duration is 127 ms for position 1 and 118 for position 2. The table is given below:

Перед одним согласным

Долгие		Краткие	
1) 22.7 (97)	2) 19.6 (41)	1) 13.7 (30)	2) 10.0 (40)
25—20	23—16	15—12	12—8
28—18	28—16	17—10	12—8

Перед двумя согласными

Долгие		Краткие	
1) 21.3 (50)	2) 19.3 (12)	1) 12.7 (8)	2) 11.8 (11)
25—17	22—17	14—10	14—10
26—17	22—16	15—10	15— 8

In disyllabic words

Data: In closed stressed syllables

In the first syllable:

Первый слог

Долгие	Краткие
1) Тип: *xȃvdām, tĭ́ždām, zṓx̆tām, nȗstām*	
19.9 (16)	—
21—17	—
24—17	—
2) Тип: *pé̋x̆tum, čȃ́x̆tum*	2) Тип: *kl̋x̆tum*
18.4 (3)	10.0 (9)
—	12—8
21—16	14—6

In the second syllable:

Второй слог

Долгие	Краткие
1) Тип: *qatír, cēmén*	1) Тип: *kūddk, x̆itȗr*
19.1 (9)	13.6 (6)
21—19	14—12
21—16	14—12
2) Тип: *pušók, pacén*	2) Тип: *pitĭ́š*
17.2 (5)	10.2 (2)
—	—
18—16	12—9

The data above indicate that the duration of vowels, both in the first and second syllable, is generally the same and does not differ much from their duration in monosyllabic words. For long vowels only a slightly lesser ability to expand, while in short vowels we observe a slightly greater shortening in comparison with monosyllabic words.

Since duration of vowels in the first and second syllables is equal, we can summarize the data of both positions and get the a general picture of vowel duration in the closed stressed syllable in disyllabic words:

Data (description): For long vowels in position 1 the average duration is 196 ms, and in position 2 it is 177 ms; for short vowels in position 1 the average duration is 136 ms, while the average duration for short vowels in position 2 is 100 ms. The table is given below:

Долгие	Краткие
1) 19.6 (25)	1) 13.6 (6)
21—17	14—12
24—16	14—12
2) 17.7 (8)	2) 10.0 (11)
18—16	12—8
21—16	14—6

In closed unstressed syllables:

Since, as with the previous position, the data for first and second syllables is the same, they are summarized in the following manner:

Data (description): The average duration for long vowels in position 1 is 194 ms, and 164 ms in position 2. The average duration for short vowels is 105 ms in position 1 and 92 ms in position 2. The table is given below:

Долгие	Краткие
1) Тип: *sēwjí, xávdām*	1) Тип: *zamčí, ǒustén*
19.4 (10)	10.5 (7)
21—15	13—9
25—15	13—6
2) Тип: *nástām*	2) Тип: *čá.ǩtum, puǩtá, xumné*
16.4 (5)	9.2 (9)
19—15	12—8
19—15	12—6

As can be seen from the numbers, in unstressed syllables long vowels can be shortened a bit more than in stressed syllables. For short vowels the limit of their maximum duration is slighly shorter. As a result, the figure of average duration for both groups of vowels is somewhat lower than for stressed syllables, but in any case the shortening of duration is not significant. The opposition of long and short vowels in duration in this position remains quite clear.

In open unstressed syllables:

In this position, the phoneme *i* stands out with its slightly greater shortening, and therefore the data for its duration are given separately:

Data (description): The average duration of a long vowels in position 1 is 194 ms, and in position 2 the average duration of long vowels is 169 ms. For short vowels, the average duration of /a/ and /u/ in position 1 is 95 ms, and the average duration of /i/ in this position is 77 ms. In position 2 the average duration of /a/ and /u/ is 77 ms and that of /i/ is 50 ms. The table is given below:

Долгие	Краткие	
ī, ō, ů̄, ē, ū	a, u	i
1) Тип: *čīdów, dōnő, bůnén*	1) Тип: *čarő, bucén*	1) Тип: *dišīd*
19.4 (13)	9.5 (6)	7.7 (8)
21—17	10—9	9—7
23—17	12—9	13—5
2) Тип: *pēžín, čūpůn*	2) Тип: *qatí, tužá*	2) Тип: *pītíš, kīnům*
16.9 (11)	7.7 (12)	5.0 (8)
19—14	8—6	6—4
23—14	10—6	8—3

As can be seen from the data given here, the duration of long vowels does not change much in comparison with the preceding phonetic positions. Short vowels, however, are significantly shortened and thus in unstressed open syllables the difference in duration between both groups is the greatest. In the group of short vowels, the phoneme *i* stands out for its extreme shortening. In the shortest of their variants, the phonemes *u* and *i* can become completely devoiced when between two voiceless consonants.

In open stressed syllables:

For this position there are data only for long vowels and only in position 1. The average duration of long vowels in the recordings (the words recorded were *lů̄di* "he said"; *mēθat* "during the day") was 168 ms and the general range of duration was 160-190 ms. These figures, although they are not sufficient, indicate that stress does not have an influence on the duration of long vowels in open syllables: stressed vowels are not longer than unstressed vowels (on the given data, they are even a bit shorter).

In word-final position:

In monosyllabic words we have data only for short *i* and short *u* in the words *zi* "take" and *ču* "did". The duration of *i* here is 123 ms, and the duration of *u* is 138 ms; i.e. their duration here is generally equal to their duration in closed monosyllabic words.

As already discussed in the description of the quality of short vowels, these vowels are characterized by a sharp break in their articulation and by a following aspiration. With regard to their height, the short vowels *i* and *u* have, in absolute final position, the most open variant of their respective phonemes (i.e. [ɛ] and [o], respectively). Additionally, for word-final short vowels, there is a tendency for expansion (lengthening), which is accompanied by the loss of their abruptness and aspiration. This happens usually in disyllabic words, and thanks to this the phonetic preconditions are formed for the fusion of short vowels with their corresponding long vowels. This process of vowel transition was noted for the phoneme *i* (*i* > *ɛ*) in its description.[4] The figures given below show the limits of fluctuation of the phoneme *i* with regard to its duration in final position in disyllabic words and the limits of its potential lengthening.

The duration of *i* in final position is examined in relation to the duration of long vowels, on the one hand, and in relation to the duration of short *a*, on the other, as examples of short *u* in final position.

Data (description): Long vowels: The average duration of *ā* was 179 ms; the average duration of *ē* was 141 ms; the average duration of *ō* was 200 ms. The table is given below:

Долгие

Тип: *taxá, xumné, dōnó*

ā	ē	ō
17.9 (8)	14.1 (4)	20.0 (13)
20—17	—	21—17
20—15	16—12	25—17

The other long vowels are almost never found in final position, and there is no data for them. The given data on the duration of the vowels *ā* and *ō* gives almost the same duration as in other positions in disyllabic words. The phoneme *ē* turns out to be significantly shorter in average duration than the others with 140 ms. Although there are only four measurements for *ē*, the extent of its shortness recorded here can hardly be considered accidental: its range within these four measurements is narrow and covers only 50 ms. The relative shortness of *ē* is fully explicable phonetically. In word-final position *ē* does not have an opposing short vowel which is close to it in quality. The short front vowel in this position has only a more open sound (the variant [ɛ]), and for this reason duration for the phoneme *ē* is not as essential in word-final

[4] For the short vowel *u*, as already discussed, such a transition is not common, as it is rarely found in absolute final position. For *a* the transition (*a* > *ā*) is regular.

position as it is for the phonemes *ā* and *ō*, which are similar or even identical in quality in word-final position with the short vowels *a* and *u*, respectively. Thus, duration for the phoneme *ē* can be considered to constitute the shortest variant for a long vowel in final position.

Short *a*, which has the opposing long vowel *ā*, is always clearly distinguishable from its corresponding long vowel with respect to duration and does not show a tendency toward lengthening. For this reason, the short vowel *a* in final position can serve as a kind of reference for normal duration for short vowels in this position. Its duration observed in the word *aga* is 107 ms with a range of 90-120 ms; i.e. it is by and large equal to the duration of *a* in other positions in disyllabic words.

The phoneme *i* (as the variant [ɛ]) can lengthen considerably in final position as it does not have an opposing long vowel (the phoneme /ɛ̄/ is never found in final position). When lengthened, the abruptness and aspiration which is typical for final short vowels is lost. The data (22 measurements) give both short variants of the sound *i*, as well as instances of lengthening, often in the same words. Basic observed variants are the following:

1. Short variants, usually accompanied by the specific characteristics of short vowels (an abrupt sound and aspiration), are found in the following words: *qati* – postposition indicating the togetherness of an action; *sewǰi* “thigh; hip”; *zamči* “aluminum?”; *pixǒni* “forehead”; *qozi* “judge”. The average duration for the short variant of *i* in these words is 145 ms (on seven measurements), with a typical duration between 140-150 ms and with a range of 130-160 ms. This variant is a typical short vowel, as it is generally accompanied by aspiration and because the normal duration of long vowels (excluding *ē*) has its limit at 170 ms. However, a duration of 140-150 ms is already something which separates *i* from other short vowels. With such a length the abrupt sound of *i* and its aspiration are often weakened and may be absent. Thus, of the seven cases of this variant at hand, in three cases *i* does not have these characteristics. The long vowel *ē* can also be characterized by this same duration of 140-150 ms (i.e. the duration of *ē* in word-final position).

2. The next variant, an intermediate variant with an average duration of 160 ms, is observed in the words *qozi* and *zamči* (four cases). With this duration the characteristic features of short vowels (abruptness and aspiration) are already not observed at all, and this variant is getting close to being similar to long vowels.

3. The third variant is the most common (11 cases) and has an average duration of 195 ms and a typical range of 180-210 ms. This variant is attested in the words *nōri*, *ɣaybi*, *qōzi*, *sēwǰi*, *zamči, pixǒni, qati*.

So it can be seen that, although *i* in word-final position can transition into a long vowel (as the phoneme /ɛ̄/, it can also be shortened and restored as *i*.

Conclusions

The data given above indicate the following:

1. Long vowels do not change much in regard to their phonetic position. They can generally only be shortened to about 170 ms.

2. The range for short vowels is also not very wide. They are shortened drastically only in unstressed open syllables when adjacent to voiceless sounds. As such, *i* is identified as the vowel which has the biggest tendency towards reduction. The normal range of duration for short vowels is between 80-130 ms.

3. The opposition between long vowels and short vowels is preserved very clearly in all phonetic positions with the exception of word-final position.

4. In final position, short vowels are inclined to expand considerably, which can lead to their transition in this position to their corresponding long vowels. This transition is regular for the vowel *a* (short *a* is preserved only in a small number of words in which its shortness has become stable); for the phoneme *i* there is an ongoing process of this transition which is observed, which has not yet led to well-established results; for the phoneme *u* this process is not developing, as *u* is find only very rarely in final position.

Consonants

The structure of the consonant system is the same for all dialects; there are only a few cases of difference in phonetic characteristics of individual phonemes.

The characteristic features of the consonant system of the dialects of the entire group are the following: a) the presence of the slit fricatives *θ* and *ð* (of the English type) as independent phonemes which oppose ? fricatives *s* and *z*; b) the presence of velar fricatives *x̌* and *ɣ̌* as independent phonemes, which oppose the uvulars *x* and *ɣ*; c) the presence of single-focus/homorganic? (whistling?) affricates *c* and *dz* as independent phonemes which oppose the double-focus (hushing) affricates *č* and *ǰ*; d) the presence of bilablial *w* as an independent phoneme which opposes labiodental *v*; e) the presence of the voiceless uvular stop *q* as an independent phoneme; the lack of the lower pharyngeal fricative *h* as an independent phoneme.

In total, the consonant systems of the group of dialects in question contains 29 phonemes and can be appreciated in the following table:

				Губо-губные	Губо-зубные	Передне-язычные	Средне-язычные	Задне-язычные	Увулярные
Шумные	смычные	простые		p b		t d	k g		q
		аффрикаты	однофокусные			c ʒ			
			двухфокусные			č ǰ			
	щелевые	однофокусные	круглощелевые			s z		x̌ ɣ̌	
			плоскощелевые		f v	ϑ ð			x ɣ
		двухфокусные				š ž			
Сонанты				w			y		
	носовые			m		n			
	боковые					l			
	дрожащие					r			

Note: shaded cells indicate that for the given speech organ, the manner of articulation in question is physiologically impossible.

The following consonants need to be addressed further:

The phonemes *k* and *g*. The Shughni phonemes *k* and *g* are velar in all phonetic positions and not have any remarkable variants. In the other dialects the phonemes *k* and *g*, when adjacent to front vowels or when in word-final position when following any vowel, are brought forward significantly up to the point where they have palatal articulation: Rushani *čùǵ* "did"; *tāḱ* "trap?"; *ḱinum* "I do" but *dākum* "I give" (from *dāḱ* "give"); *ikmand* "now"; *kɔ̄r* "work; thing"; Bartangi *čūǵ* "did"; *carańǵ* "how"; *dzuliḱeḱ* "small"; but *ku* "mountain"; *ikday* "this very (e.g. this very thing)"; *sawdɔ̄gar* "merchant".

An even more characteristic "soft" articulation of the phonemes *k* and *g* is for the Khufi dialect and for the Badzhu subdialect of Shughni. Significantly, the Badzhu dialect[5], which matches the Shughni dialect exactly with respect to vowel system, in its treatment of the phonemes *k* and *g* (i.e. in the single feature which distinguishes the dialects in their consonant systems) is adjacent to the Rushani and Bartangi dialects, opposing the Shughni dialect. As such, together with the Khufi dialect, the Badzhu dialect shows an even more clear reflection of the palatalized [ḱ] and [ǵ] in comparison with Rushani and Bartangi [ḱ] and [ǵ]. First of all, in both dialects, the variants of the phonemes *k* and *g* which are advanced in the mouth extend to a greater number of phonetic positions. The variants [ḱ] and [ǵ], in addition to the phonetic positions indicated above, are typical in these dialects when found before the vowels *a* and *ā*, especially when at the beginning of a word, and also before *u*. For instance: Badzhuvi *ǵāx̌t* "he turned around"; *ǵax̌t* "return (n.)"; *ḱā* "that very (f.)"; *ḱam* "this very"; *ḱānd* "half"; *ḱu* "that very (m.)"; Badzhu and Khufi: *kux̌t* "slaughtered"; Khufi *ḱā* "(to) where"; *xišrūǵay* "beauty"; *ḱanidzaḱēn* "housemaid". Sometimes the variants [ḱ] and [ǵ], only with a bit less advancement forward, are found even before the vowels *ō* and *ū* (Examples). Secondly, unlike Rushani and Bartangi *k* and *g*, Khufi and Badzhuvi *x* and *g* are moved further forward, and in faster speech the variants [ḱ] and [ǵ] normally have palatalized articulation. As such, they can become strongly affricated, giving something close to *č* and *ǰ*:[6] Badzhuvi *ǰax̌t* (*gax̌t*) "turned around"; *ćam* "this very"; Khufi: *qustenǰeray* (*qustingiray*) "wrestling; fight?"; *ćæ* (*ki*) "did"; *ćā-t rawōn?* (*kā-t rawōn*) "where are you going?". In more clear speech this affrication is significantly weakened of does not occur at all, and in the most clear style of speech we find clear plosives – or at least the variants [ḱ] and [ǵ] with only slight affrication. The variants of velar plosives which do not move forward at all are primarily found in pre-consonantal positions; e.g. Khufi: *xugǰ* "ate"; *vugǰ* "brought"; *maktab* "school".

The velar fricatives *x̌* and *ɣ̌*, which are the same in all dialects, have some particular features to their articulation. As noted by previous researchers, acoustically the phonemes *x̌* and *ɣ̌* resemble not only *x* and *ɣ* (Russian velar fricatives), but also *š* and *ž*, as they have a certain [š]- or [ž]-like tinge to them. Observations show that the articulation of the phonemes *x̌* and *ɣ̌* is identical with the articulation (of second focus?) of Russian *ш* and *ж*. If the action of the tip of the tongue is taken away in the articulation of Russian *ш* and *ж*, the result is typical Shughni *x̌* and *ɣ̌*. This

[5] The Badzhu village is located at the juncture of the Shughni and Rushani dialects near Khuf.
[6] Note that in Sokolova 1953 these two have accents over them and are thus distinct from *č* and *ǰ*.

articulation differs from Russian velar fricatives with respect to the shape of the slot: Russian *x* and *ɣ* are "slit fricatives", while Shughni *x̌* and *ɣ̌* (and also second-focus Russian *ш* and *ж*) should be defined as (retroflex?), as they give a hissing sound. Examples of the usage of the phonemes *x̌* and *ɣ̌*: *x̌ac* "water"; *x̌āb* "night"; *x̌ōm* (Sh. *x̌ů̄m*) "evening"; *wōx̌* "grass"; *x̌ūdz* "wind"; *dāx̌t* "plain; field"; *ɣ̌īw* (// Sh. *ɣ̌ēw*) "wish; desire"; *ɣ̌in* (Sh. *ɣ̌an*) "woman"; Sh. *ɣů̄ɣ̌* "ear"; Sh. *virů̄ɣ̌* "eyebrow"; *ků̄ɣ̌dz* "hole".

The bilabial approximant *w* can be both кругощелевой and плоскощелевой. As кругощелевой *w* is generally articulated when adjacent to rounded vowels (position 1), while as плоскощелевой it is generally articulated when adjacent to unrounded front vowels (*ī, ē, i*; Sh. *ɛ̄*; Kh. *æ*) and before consonants (position 2): *wōx̌* "grass"; *wurǰ* "wolf"; *žōw* "cow"; *wūvd* "seven"; *cerōw* "lamp?"; *βēð* "canal"; *βīz* "load"; *βēv* "them"; *βi* "him; his"; *βizů̄n* "know!"; etc.[7] Phonetically, both variants are not very different from another, and their differences lie in whether the lips protrude more or less and even here not necessarily: the rounding of the lips in first position can be weakened and, on the other hand, the lip rounding can be seen in second position as well. As such, the variant [β] is usually articulated with some stretching of the lips forward and with quite a wide opening; for this reason it is not similar to the so-called fricative? *b* (weak плоскощелевой bilabial, pronounced without stretching the lips forward.

Before the vowels *a* and *ā* the phoneme *w* is articulated with greater protrusion of the lips than when before front vowels and with a light rounding of the lips. Generally, before *a* and *ā* the variants [w] and [β] are equally likely to be used (*wāð*//*βāð* "they"; *wazīr*//*βazīr* "vizier"; *waxt*//*βax̌t* "eight") with all intermediate levels of weakening or strengthening of lip rounding.

In the majority of cases the phoneme *w* is a relatively strong and energetic consonant which can weaken considerably only in word-final position. Word-initially it can be quite loud and here resembles (to the ear) the velar *ɣ̌* or the uvular *ɣ*.

The rest of the phonemes do not present any remarkable features. The phonemes *θ* and *ð* are плоскощелевой coronals and are acoustically similar to those found in English. The phoneme *n*, as in other Iranian languages, has the velar variant [ŋ] which occurs before velar consonants: Sh. *ca raŋg* "how". In dialects in which final *k* and *g* regularly become palatalized, *n* also becomes palatal before them: *ca raṅġ*. The phonemes *š and ž* and the double-focus? affricates *č* and *ǰ* are articulated with second middle focus?, a bit less advanced in the mouth than the second focus of Tajiki *š* and *ž*; for this reason they are a bit softer to the ear. The phoneme *ž* has a very wide usage in words. The single-focus? affricates *c* and *dz* have quite a strong initial stop, but the phoneme *dz*, as is generally the case with voiced consonants, the stop is a bit weaker, and it can weaken even further in fast speech. As a result, the phoneme *dz* has a tendency toward spirantization, and in certain words a "duplicate/alternative" pronunciation is found between *dz*//*z*: *zaridz*//*dzaridz* "partridge". The phoneme *dz* is generally used more rarely. The uvular consonants *q*, *x*, and *y* are articulatorily and acoustically identical with those of Tajiki. The sonorants *m*, *l*, *y,* and *r* also do not show any noteworthy characteristics.

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[7] There is an example of the phoneme /w/ as used in Rushani *sāβd* "he/she goes", where *β* corresponds to the phoneme /w/. This word in Rushani corresponds to Shughni *süd*.

Regarding the characteristics of individual groups of consonants the following can be said: obstruents? are always vigorous, both voiced and voiceless. Voiced ones are usually многошумный and do not weaken considerably even in word-final position: *wāð* “they”; *rūz* “window in the ceiling”. Only the phoneme *ў* stands out for its greater weakness, and together with a greater sonorantism in word-final position. In connection with this, it is important to note that in Rushani, Khufi, and Bartangi the voiced fricative *ў* is not found in word-final position; in these dialects the phoneme *w* corresponds to Shughni word-final *ў* (and in Bartangi sometimes this phoneme is dropped altogether). This change to *w* evolves precisely out of the weakening and sonorantization of *ў*: Sh. *ɣ̊ū̊ў* // Ru., Kh. *ɣūw* // B. *ɣū* “ear”; Sh. *virū̊ў*, Ru., Kh. *virūw* “eyebrow”; etc.

The labiodental /v/ can be pronounced with very strong energy and sound and thus sometimes resembles *ð*. Devoicing for voiced fricatives in word-final position is not typical, although in the final segment of their sound they can become devoiced.

Stops?. Voiceless stops are always stronger than voiceless stops. They are always vigorous. full stops and are not weakened in any phonetic position. Voiceless stops are generally not aspirated, though aspiration may appear optionally and only weakly. In word-final position voiced stops are devoiced either partially or completely. Being generally somewhat weaker than voiceless stops, in word-final position they weaken even further and are normally implosives in this position, thanks to which they are not confused with their corresponding voiceless stops, which in word-final position remain strong stops. Generally, the identification of voiceless and voiced stops is fully analogous to the identification of the same in Tajiki (but not in the northwestern dialects).

The basic interdialectal alternations of consonants were already pointed out in the mentioned works of I.I. Zarubin, and for this reason they are not addressed here.