Documenting a language with phonemic and phonetic variation: the case of Enets

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This paper describes phonemic and phonetic variation attested in Enets, a highly endangered Uralic language of Northern Siberia. This variation is worth describing for three reasons. First of all, it is a part of documenting phonology of this disappearing language. Second, it is extremely frequent and widespread, including most words of the lexicon, but at the same time it does not visibly correlate with any social parameters, so this is one more case study in the vein of the sociolinguistic agenda set by Dorian (2001; 2010). Third, the Enets variation presents a challenge for consistent transcription, let alone an orthography design. These three reasons structure the paper: after an introductory section on the Enets community, languages used in the community in past and present, methodology of this study, and phonological profile of Enets, I proceed to a phonological description of the variation (§2), to sociolinguistic details of this variation (§3), and finally to issues of representation of the Enets data in a vain search for a perfect orthography for the language (§4).

Crucially, the last reason was the driving force for this research in the first place, as "[c]reating a phonemic orthography implies at least a basic phonological analysis preceding its design" (Jany 2010:234) and "faulty phonological analyses give rise to faulty orthographies" (Rehg 2004:506). Being neither a phonetician, nor a phonologist, I had initially aimed only for a basic description of sound patterns for the sake of an orthography; however, it quickly became evident that the puzzle of variation in Enets was not to be taken lightly, and more specific research was conducted. However, despite all the work done, I still see the results rather as a grounding for a consistent transcription/orthography than as a full phonological description. For the latter, Enets is still awaiting a talented phonologist, while our documentation project aimed hard to preserve exemplars of Enets sounds for this purpose (see Khanina 2017 for details).

1. Introduction[1]

1.1 General information on the language Enets is a Northern Samoyedic, Uralic language spoken on the Taimyr Peninsula, in the north of central Siberia. Enets has two dialects: Forest Enets (FE) and Tundra Enets (TE). In the last 30 years, there have been no regular connections between the two Enets speech communities; today, FE and TE speakers do not know each other and hardly consider speakers of the other

dialect as belonging to the same ethnic group. However, linguistically the dialects are quite close and mutually comprehensible.[2] Both dialects are strongly endangered: from ca. 300 of the ethnic Enets, the number of confident native speakers for each Enets dialect is around 12, and all Enets speakers are over 60 years old. Another couple of dozens of individuals of Enets origin can understand the language and produce simple sentences, but they do not usually try to use Enets. Today the language is not used on an everyday basis by anyone, though rare occasional conversations still occur. FE speakers live mainly in the village of Potapovo and in the local town Dudinka, and make up a kind of a community, although the community does not use their language any more. TE speakers live in the village of Vorontsovo, in the Tukhard tundra, less so in other villages along the Yenisey river north of Dudinka, and until recently in the villages of Ust-Avam and Volochanka. TE speakers do not constitute a community today: even the three remaining TE speakers in Vorontsovo do not see themselves as a group, and this is the biggest number of TE speakers in any given location. The economic situation of most Enets speakers is harsh, their living conditions are deplorable, and today they have numerous pressing concerns other than to take care of their disappearing language.

1.2 Contact languages for Enets The Enets have traditionally been surrounded by other ethnic groups: the Nganasans, the Tundra and Forest Nenets (all Nothern Samoyedic), the Selkups (Southern Samoyedic), the Evenkis (Tungusic), and the Kets (Yeniseian). In the last century, contacts with the Nganasans, the Tundra Nenets, the Evenkis and the Dolgans (Turkic), and the Russians were particularly prominent. The Enets have always been a multilingual group: by the start of the massive language shift to Russian in the 1950s, the most common two other languages of the Enets were Nganasan and Tundra Nenets (see Khanina & Meyerhoff 2018 for more details on Enets multilingualism). All our consultants spoke no Russian before the age of seven, when their schooling started: they all were sent to Russian-medium boarding schools where the use of native languages was forbidden. None of our consultants chose to speak Enets to his/her children, so they actively used the language only before their parents died in the 1990s. At the same time, by the beginning of the 1980s, most domestic reindeer of the area died, and in the beginning of the 1990s, the collapse of the Soviet Union meant the end of the state support to the remaining collective reindeer farms; so most of the Enets stopped practicing traditional activities connected to reindeer. Thus, in the 1990s, Enets basically stopped being used in the home and in the sphere of traditional reindeer herding, and there were no other domains left for the language.

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[2]The author had the privilege to be accompanied in 2010 by a Forest Enets speaker, Zoja Nikolaevna Bolina, in a fieldtrip to a Tundra Enets location: there the mutual comprehensibility of the two modern dialects was confirmed. However, it turned out to be impossible to accurately transcribe and translate a text in one Enets dialect with a speaker of the other dialect.

1.3 Data and analysis The research reported in this paper is based mainly on data collected during a documentation project on Enets in 2008–2011[3] and in fieldtrips to FE in 2015–2016. The data consists of elicited wordlists and a collection of annotated modern and legacy texts (ca. 25 hrs for FE, ca. 7 hrs for TE); all data is archived in ELAR.[4]

In 2008, an initial wordlist was collected by Andrey Shluinsky and myself, which consisted of ca. 260 words and was recorded for 14 FE speakers and 3 TE speakers, and then fully transcribed for 5 FE speakers and for all the 3 TE speakers. The transcriptions were then analyzed by the two of us, partly with the help of the Praat software, in order to figure out a phoneme inventory of the language. In 2015–2016, an extended dictionary wordlist for ca. 1000 lexemes was collected by Andrey Shluinsky and Maria Ovsjannikova from 4 FE speakers (not all words were collected from all speakers), and by now I have transcribed about a quarter of the data.[5] Most of the analyzed phonetic data made its way into a sound dictionary of Enets; see Khanina (2017) for more details.[6] The analysis of this second wordlist contributed to refining the phonological analysis made during the documentation project. Furthermore, phonemic transcription for some words was adjusted after the text collection was transcribed and glossed.

Elicitation of the wordlists followed the same procedure: a Russian translation of the target word was presented to an Enets speaker, then the speaker pronounced the Enets equivalent, and a linguist asked them to repeat it several times in isolation. If the speaker could not remember the Enets equivalent or produced a different Enets equivalent that was the one the linguist intended, then the linguist suggested the target Enets equivalent and asked if this word actually existed in Enets. If the speaker could not recognize the word, the linguist did not insist, and they switched to the next word. During the collection of the first wordlist of 260 words, Enets words were recorded in isolation and in a carrier phrase 'I say <target word>': since Enets is a SOV language, the target word usually was placed after the personal pronoun and before the verb for 'say'. During the collection of the second wordlist of 1,000 words, Enets words were recorded in isolation and in example sentences, usually suggested by speakers themselves. From 4 to 10 word forms were also recorded for declinable words (some possessive and number forms for nouns, some person-number and TAM forms for verbs).

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[3]"Documentation of Enets: Digitization and analysis of legacy field materials and fieldwork with last speakers" based at the Max Planck Institute for Evolutionary Anthropology in Leipzig (Germany) and supported by the Hans Rausing Endangered Languages Project, SOAS, University of London (UK). The documentation project was realized jointly by Andrey Shluinsky and myself, and much phonetic analysis was also done jointly: many decisions reported in this paper were born after endless discussions between us, and a previous version of this paper was actually co-authored by the two of us. Recently, however, I became more interested in the issues of variation than my co-author, and the view of variation presented in this paper belongs to me only; needless to say, I am thankful to Andrey for all the effort he put into the phonetic foundation of this paper, though all mistakes remain my own.

[4]https://elar.soas.ac.uk/Collection/MPI950079

[5]This was done with financial support from Russian Science Foundation, grant 15-18-00044.

[6]The dictionary can be accessed at http://lingvodoc.ispras.ru/.

1.4 Summary of Enets phonology   Tables 1–2 show the phoneme inventory of Enets with main allophones.

Enets also has double, or long, vowels: they are written here as double vowels, as there is some evidence that they are more adequately analyzed as two separate phonological objects rather than as a single one.

Table 1. Enets vowels: the /ɛ/ phoneme is found only in FE; otherwise, the two dialects have identical sets of vowel phonemes and their allophones

	Front		**Central**	**Back**
Close	i [i, ɨ]			u [u]
Close-mid	e [e, ɛ, i, ɨ, ə]			o [o, u, ɔ, ə]
Mid-open		ɛ [ɛ, æ, a]		ɔ [ɔ]
Open			a [a]	

(1)

      FE,   TE /dʲee/ 'tent cover'
      FE /koo/,   TE /kuu/ 'ear'
      FE /agaan/,   TE /agaane/ 'heavily, loudly' (F /aga-an/, T /aga-ane/ 'big-PROL.SG')

As is typical for Uralic languages, the first syllable is often more prominent in Enets than other syllables: all three stress-related parameters (length, intensity, and pitch) can contribute to prominence. The second syllable can also be prominent; further syllables are rarely prominent, though there are some exceptions connected to some affixes that tend to be prominent. In addition, it is not uncommon for some of the stress-related parameters to mark out the first syllable and for the others to mark out the second syllable. At the same time, different pronunciations of the same words may be characterized by a change in length, intensity, or pitch for the first or the second syllable. In short, the situation with Enets stress is very messy and a proper study of stress in Enets is yet to be undertaken. For the moment, it is only clear that there is no easily identifiable fixed stress in Enets, and that the first syllable is more prominent than other syllables more often than not. In target words within a carrier phrase there are usually fewer prosodic distinctions between the first and the second syllables than in isolated pronunciations: length is the most frequent parameter to differentiate the two syllables in a carrier phrase.

1.5 Summary of Russian phonology   As Foulkes (2006:635) notes, "Research on the phonology of bilinguals, however, shows that the grammatical systems of languages may interact and influence a person's speech production and perception (see, e.g., Flege 1995; Flege et al. 2003)." As the Enets are currently undergoing a language shift to Russian, and Russian is the dominant language for all Enets speakers, a short note on Russian phonology is given here (see, e.g., Hamilton 1980 for more details).

Table 2. Enets consonants: the [dʒ] and [tʃ] allophones of the /dʲ/ phoneme, the [s] allophone of the /z/ phoneme, and the [x] allophone of the /k/ phoneme are found only in FE; otherwise, the two dialects have identical sets of consonantal phonemes and their allophones

	Bilabial	Dental / Alveolar	Palatalized coronals	Palatal	Velar	Glottal
Plosive	b [b, bʲ, p] p [p, pʲ]	d [d, t] t [t]	dʲ [dʲ, ɟ, dʒ, tʲ, tʃ] tʃ [tʃ, tʲ]		k [k, kʲ, x] g [g, gʲ, k]	[ʔ, ∅, ɣ̞]
Nasal	m [m, mʲ]	n [n]	nʲ [nʲ]		ŋ [ŋ, ŋʲ]	
Trill		r [r, rʲ]				
Fricative		z [ð, ðʲ, z, zʲ, s] s [s, sʲ, θ, θʲ]	ʃ [ʃ, β, ç]		x [x, xʲ]	
Approximant			ɥ [ɥ]	j [j]		
Lateral approximant		l [l]				

Table 3. Russian vowels with stressed allophones

	Front	Central	Back
Close	i [i, ɨ]		u [u]
Mid	e [e, ɛ]		o [ɔ]
Open		a [a]	

Table 4. Russian consonants

	Bilabial	Dental / Alveolar	Palatal	Velar
Plosive	b [b, p]	d [d, t]		k [k]
	bʲ [bʲ, pʲ]	dʲ [dʲ, tʲ]		kʲ [kʲ]
	p [p]	t [t]		g [g, k]
	pʲ [pʲ]	tʲ [tʲ]		gʲ [gʲ, kʲ]
Nasal	m [m]	n [n]		
	mʲ [mʲ]	nʲ [nʲ]		
Trill		r [r, rʲ]		
Fricative	v [v]	z [z, s]	ʒ [ʒ, ʃ]	x [x, xʲ]
	vʲ [vʲ]	zʲ [zʲ, sʲ]	ʃ [ʃ]	
	f [f]	s [s]	ʝ [ʝ]	
	fʲ [fʲ]	sʲ [sʲ]		
Affricate		ts [ts]		
Approximant			j [j]	
Lateral approximant		l [l]		
		lʲ [lʲ]		

As can be seen from comparison between Tables 1–2 and Tables 3–4, the phoneme inventories of Enets and Russian are quite similar, which facilitates Russian influence on Enets phonetics. Russian vowels are subject to considerable reduction in non-stressed syllables, with /a/ and /o/ merging into /ə/ in this context, and /e/ and /i/ merging into /ɪ/, and this feature of Russian phonology is particularly relevant for Enets. In the conclusion to §2 (2.4), I will formulate a hypothesis that some variation in Enets could have been influenced by this Russian pattern.

2. Phonological details of the variation Examples of Enets sound variation to be analyzed in this paper are divided into three types depending on the phonetic analysis of the variation and its relationship to the lexicon. First, §2.1 is devoted to phonemic variation of vowels /e/ ~ /i/, /ɔ/ ~ /u/, and /ɔ/ ~ /a/: this variation affects only certain Enets words and is a type of variability that belongs to the lexicon. Second, §2.2 describes allophony observed in non-first syllables for vowel phonemes /e/, on the one hand, and /ɔ/, on the other hand: it results in partial neutralization of /e/ and /i/, or /ɔ/ and /u/, respectively. This case is different from the first one in that the variability here belongs to phonetics, though affecting only a part of the lexicon. Finally, §2.3 presents data for word-final vowel omission, belonging to the phonetic domain only.

2.1 Phonemic variation of /e/ ~ /i/, /ɔ/ ~ /u/, and /ɔ/ ~ /a/   Phonemic variation of /e/ ~ /i/ and /ɔ/ ~ /u/ is relevant for the first syllable only (for non-first syllables, see §2.2), while variation of /ɔ/ ~ /a/ has been attested both in the first and the second syllables.

2.1.1 /e/ ~ /i/ variation in first syllable   In Enets, /e/ and /i/ contrast as phonemes in the first syllable, cf. minimal pairs in (2).

(2)

> FE /ʃeze/ 'shoulder blade' vs.   /ʃize/ 'two'
> FE /beʔ/ 'watch (the reindeer)! (/be-ʔ/ watch-IMP.2SG.S)' vs.   /biʔ/ 'water'
> FE /ɟʲeri/ 'day' vs.   /ɟʲiri/ 'moon, month'
> TE /ese/ 'father' vs.   /ise/ 'grandfather'
> TE /pe/ 'wood' vs.   /pi/ 'night'
> TE /seʔ/ 'face' vs. /siʔ/ 'salt'

However, there are few words in both Enets dialects with /e/ ~ /i/ variation in the first syllable, when the use of either front phoneme is possible; see (3). /e/-pronunciations of these words are substantially more frequent.

(3)

> FE /seŋiŋa/ ~ /siŋiŋa/ [seŋiŋa], [sɨŋiŋa]⁷ '(s)he looks (look.3SG.S)'
> FE /lʲeblʲiku/ ~   /lʲiblʲiku/ [lʲeblʲiku], [lʲiblʲiku] 'butterfly'
> FE /selʲeʔejgu/ ~ /silʲeʔejgu/ [selʲeʔejgu], [sɨlʲeʔejgu] 'white'
> FE /tetʃi/ ~   /titʃi/ [tetʃi], [tɨtʃi] 'it is cold' (be_cold.3SG.S)
> FE /neʃ/ ~ /niʃ/ [neʃ], [nɨʃ] 'to stand (/ne-ʃ/ ~ /ni-ʃ/ stand-CVB)'
> FE /nexuʔ/ ~   /nixuʔ/ [nexu(ʔ)], [nɨxu(ʔ)] 'three'
> TE /nexuʔ/ ~ /nixuʔ/ [nexu(ʔ)], [nɨxu(ʔ)] 'three'
> TE /nene/ ~   /nine/ [nene], [nɨne], [nen], [nɨn] 'with'⁸
> TE /edo/ ~   /ido/ [edo], [ido] 'horn'⁹
> TE /eɔʔ/ ~   /iɔʔ/ [eɔʔ], [iɔʔ] 'here (dir)'
> TE /tea/ ~ /tia/ [tea], [tɨa] 'reindeer'

All cases of the /e/ ~ /i/ phonemic variation attested so far are listed in (3). Most of these words are frequent in Enets speech: otherwise the variation would not be possible to notice for a linguist, as the /e/ pronunciations are much more frequent, as has already been mentioned. However, it also contains some words which are not so frequent (FE /lʲeblʲiku/ ~ lʲiblʲiku/ 'butterfly', FE /selʲeʔejgu/ ~ /silʲeʔejgu/ 'white'), but were included into a phonetic wordlist, so were recorded from several speakers

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⁷Both [i] and [ɨ] realizations are typical for /i/, and their choice is connected to the quality of the preceding consonant: after palatalized allophones or phonemes, [i] and never [ɨ] is used; after non-palatalized allophones, both [i] and [ɨ] are possible.
⁸For word-final vowel omission, see §2.3.
⁹One of the sound examples is for /edoza/ ~ /idoza/ 'his horn' [edoza].

in numerous pronunciations, making the non-standard pronunciation easier to spot. Most of the variants with [e] for words in (3) are not only more frequent in modern Enets, they are also more conservative, if compared against data in Castrén (1854; 1855), the first available descriptions for the both dialects of Enets. Some words in (3), though, historically had /i/ and not /e/, e.g., /se‍lʲeʔejgu/ ~ /si‍lʲeʔejgu/ 'white' from /siʔ/ 'salt', or /tia/ 'reindeer' (Helimski, ms). It entails that synchronically, this is a case of phonemic variation with words having gone by different paths to produce the present pattern: some represent an intermediate stage of the sound change /e/ > /i/, and the others are included by analogy to the former.

It is not entirely clear whether this variation belongs to the lexicon or to the phonetics, i.e., whether this variation is indeed associated with some and not other words; or, alternatively, whether this is a seldom-occurring variation which is in principle possible in any word with /e/ in the first syllable. Analysis of more phonetic data may help to select one of these options. If, with the analysis of more data, the number of /i/ pronunciations of the words in (3) increases, then it is lexical variation. On the contrary, if with the analysis of more data, the number of words with the /e/ ~ /i/ variation increases, then it is phonetic variation. A similar situation in the non-first syllables with /e/ and /i/, that will be discussed below in §2.2, suggests a higher probability of the second scenario; I will return to this point in §2.4.

2.1.2 /ɔ/ ~ /u/ variation in the first syllable /ɔ/ and /u/ contrast as phonemes in the first syllable: even though minimal pairs are very few, they definitely exist and are clearly differentiated by native speakers, cf. (4):

(4)

        FE /tɔ/ 'wing' vs.   /tu/ 'fire'
        FE /pɔ/ 'year' vs.   /pu/ 'stone'
        FE /ɔma/ 'he ate it up' (eat_up.3SG.S) vs.   /uma/ 'mommy' (used as a vocative only)
        TE /kɔɔ/ 'tundra, ridge' vs.   /kuu/ 'ear'

The situation with the two back vowels is heavily complicated by the existence of words where noticeable variation can be heard, cf. (5):

(5)

        FE [koba], [kɔba], [kuba] 'skin, fur'
        TE [koba], [kɔba], [kuba] 'skin, fur'
        [koba-nʲiʔ] 'my skins (skin-PL.1SG)'
        FE, TE [koʔ], [kɔʔ], [kuʔ] 'find'

(FE /moďi nʲeu koʔ/ 'I did not find it (/moďi nʲe-u ko-ʔ/ I NEG-1SG.SOsg find-CONN)',
TE /moďi nʲezʔ koʔ/ 'I did not find (/moďi nʲe-zʔ ko-ʔ/ I NEG-1SG.S find-CONN)')
FE [moga], [mɔga], [muga] 'forest'
TE [moga], [mɔga], [muga] 'tree, forest'
FE [oorʔ], [ɔɔrʔ], [uurʔ] 'eat!' (/uu oor-ʔ/ 'you eat! (eat-IMP.2SG.S)')
FE [kotʃ], [kɔtʃ], [kutʃ] 'to bring here (/ko-tʃ/ bring-CVB)'
TE [poa], [pɔa], [pua] 'year'

Crucially, in cases like (5), the [ɔ], the [u], and the intermediate [o] pronunciations of one and the same word can be produced by one and the same speaker in a row, with just seconds of a pause between them. The speakers are clearly not aware of the variation, and if directly questioned by a linguist about two adjacent pronunciations of one and the same word they have just produced, they either do not understand the question or comment "You can say it either way", or "It does not matter how to say it."

At the same time, available diachronic data on Samoyedic languages, namely Janhunen (1975:171) and Mikola (2004:59–64), suggest that all three phonetic objects – /ɔ/, /u/, and the varying vowel in (5) – developed from three different sources in Proto-Samoyedic and have different cognates in other Samoyedic languages; see Table 5.

Table 5. Enets back vowels with Proto-Samoyedic sources and Northern Samoyedic correspondences

Enets	Proto-Samoeydic	Nenets	Nganasan
/ɔ/	*ɔ̑	/ă/	/ə/
/u/	*u	/u/	/u/
[ɔ], [o], [u]	*o, *ö	/o/	/u/

First, the Enets non-varying 'ɔ'-vowel – as /ɔ/ in (4) – originates from the Proto-Samoyedic *ɔ̑, and has Tundra Nenets cognates with /ă/ and Nganasan cognates with /ə/: cf. Tundra Nenets /xăn/, Nganasan /kəntə/, TE/FE /kɔdo/ 'sledge', or Tundra Nenets /măda-/, Nganasan /mɔtu-/, TE/FE /mɔta-/ 'cut'.[10] Second, the Enets non-varying 'u'-vowel – as /u/ in (4) – originated from the Proto-Samoyedic *u,[11] and has Tundra Nenets and Nganasan cognates with /u/: cf. Tundra Nenets /ŋuda/, Nganasan /ďʲutü/, TE/FE /uza/ 'arm', or Nganasan /turku/, TE /tuďʲiʔɔ/ 'lake'. Finally, the Enets varying 'ɔ ~ o ~ u'-vowel – as the first vowel of the words in (5) – originated from the Proto-Samoyedic *o or *ö, and has Tundra Nenets cognates with /o/ and Nganasan cognates with /u/: cf. Tundra Nenets /xoba/, Nganasan /kuxu/, TE/FE [koba], [kɔba], [kuba]

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[10]The Northern Samoyedic reconstruction has been developed in detail only for the first syllable, so the statements for the vowel correspondence apply for the first syllable only.

[11]For the sake of simplicity, I do not discuss here the Proto-Samoyedic *ü that also resulted in Enets /u/ with optional palatalization of the preceding consonant, but has in some Samoyedic languages vowel reflexes radically different from the reflexes of *u.

'skin, fur', or Tundra Nenets /moŋga/ 'dry lowland', Nganasan /muŋku/ 'tree', TE [moga], [mɔga], [muga] 'tree, forest', FE [moga], [mɔga], [muga] 'forest'.[12]

Summing up, there are three phonetic objects in the domain of the Enets back vowels, each with its own history: 'ɔ'-vowel, 'u'-vowel, and the varying 'ɔ ~ o ~ u'-vowel. Moreover, more than 150 years ago, some of the words with the 'ɔ ~ o ~ u'-vowel were already documented as such by (Castrén 1854; 1855), who inconsistently spelled them sometimes with 'o' and sometimes with 'u'. This is a good argument that the existence of these words is not an artifact of my description or faulty pronunciations by modern speakers, but a persistent fact of the Enets phonology.[13]

However, if approached from purely synchronic terms, is the 'ɔ ~ o ~ u'-vowel a separate phoneme of Enets, or alternatively are there just two back vowel phonemes in Enets, /ɔ/ and /u/, and words where the two can alternate?

Formant measurements and perceptive experiments have been performed for FE in search of an answer.[14] Sadly, none of them has provided conclusive results. On the one hand, formant measurements for FE have suggested that F3 of the vowel in the first syllable of words with /ɔ/ ~ /u/ variation may be lower than F3 of either /ɔ/ or /u/ in the first syllable (the lower F3 is sometimes described as a correlate of less lip rounding, e.g., Ao 1990; Stevens 1998; Mitsuya & Samson 2013). On the other hand, while the minimal pairs for /ɔ/ vs. /u/ in (4) have all been well differentiated by the speakers, adding a word with the 'ɔ ~ o ~ u' variation to the list, e.g., (6), has complicated identification of each of the three words by some speakers in some cases.

(6)

     FE [tɔ], [to], [tu] 'lake'

In addition, three FE speakers have also been presented with words where a back vowel in the first syllable was synthetically replaced with a different back vowel: while the replacement of /ɔ/ with /u/, and the other way round, has made a word unrecognizable (6 words synthesized this way), the replacement of /o/ with either /ɔ/ or /u/ has not done so in most cases (6 words synthesized this way). Some synthesized words of the last type have received comments like "I recognize the word, but I speak differently myself", and some have been accepted as normal words without any comments.

So the synchronic phonetic data at least does not contradict the hypothesis emerging from diachronic evidence that phonetic objects such as the varying /ɔ ~ o ~ u/ vowel in (5) may be a phoneme. Also taking into account the tradition of some Enets studies to treat the /ɔ ~ o ~ u/ vowel as a separate phoneme (see, e.g., Tereschenko

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[12]Tundra Nenets and Nganasan words in this paragraph come from Janhunen (1975:171), Mikola (2004:62), Tereschenko (1965), and Kosterkina et al. (2001).

[13]One caveat has to be stated here: as was the case with /e/ ~ /i/ variation, most of the words with back vowel variation have gone through the aforementioned path, from the Proto-Samoyedic *o or *ö, but there are some words which are not supported by the diachronic data and so their inclusion into the variation may have happened by analogy (e.g., before a front vowel /u/ > /o/).

[14]Both formant measurements and perceptive experiments have been performed and analyzed jointly by the author and Andrey Shluinsky.

1966; Susekov 1977; Helimski, ms.),[15] I have decided to adhere to this descriptive decision and use the symbol /o/ for it. The words of (5)–(6) are rewritten in (7) using this convention.

(7)

    FE, TE /koba/ 'skin, fur'
    TE /koba-nʲiʔ/ 'my skins (skin-PL.1SG)'
    FE, TE /koʔ/ 'find'
    FE /moga/ 'forest'
    TE /moga/ 'tree, forest'
    FE /oorʔ/ 'eat!'
    FE /kotʃ/ 'to bring here'
    TE /poa/ 'year'
    FE /to/ 'lake'

Words with /ɔ/, with /o/, and with /u/ in the first syllable constitute roughly equal parts of the lexicon, in terms of the quantity of words. All three types of words contain highly frequent words along with less frequent words. The variation is not directly connected to a word's frequency, nor was any speaker noticed to produce more words with variation than the others. No connection of the possibility of variation with the quality of the adjacent consonants was detected; besides, words with variation belong to all parts of speech, as illustrated in (7). Such lack of any distribution – statistical, lexical, or social – is expected given the different historic origin of the words with /ɔ/, with /o/, and with /u/: they are reflexes of different Proto-Samoyedic vowels, so no correlation of a vowel with an extralinguistic parameter is indeed expected.

It is unclear whether it is justified to transcribe words with variation with a special phoneme; however, any static decision seems inevitably faulty for reflecting a dynamic process. Given that the phonetic study of the back vowel phonemes is far from being completed, I consider the current decision to overdifferentiate rather than to underdifferentiate as responding best to the concerns of language documentation and of facilitation the analysis for future phonologists of Enets.

2.1.3 /ɔ/ ~ /a/ variation in Forest Enets Forest Enets has a group of words showing variation between /a/ and /ɔ/, all of them are listed in (8): the majority of words have the variation in the first syllable, with a few cases in the second syllable, and one case in the fourth syllable. While one third of them have /dʲ/ before the varying vowel, other consonants are definitely possible as well.

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[15]In all these sources, the standard 'o' grapheme is used for /ɔ/, and a grapheme with a superscript 'ȯ' or 'ô' is used for /o/.

(8)

        FE /bɔduj/ ~ /baduj/ [bɔduj], [baduj] 'tundra (adjective)'
        (/bɔduj dʲa/ ~ /baduj dʲa/ 'tundra land')
        FE /bɔtoʔɔ/ ~ /batoʔɔ/ [bɔtoʔɔ], [batoʔɔ] 'tail'
        FE /mɔlʲe/ ~ /malʲe/ [mɔlʲe], [malʲe] 'already'[16]
        FE /dʲɔxɔ/ ~   /dʲɔxa/ [dʲɔxɔ], [dʲɔxa] 'river'
        FE /dʲɔxɔzi/ ~   /dʲɔxazi/ [dʲɔxɔzi], [dʲɔxazi] 'female reindeer'
        FE /ɔbu/ ~   /abu/ [ɔbu], [abu] 'what'
        FE /pɔzurʔ/ ~   /pazurʔ/ [pɔzurʔ] ~ [pazurʔ] 'papers, letters'
        FE /bɔjra-/ ~ /bajra-/ [bɔjra-], [bajra-] 'help cross a river'
        FE /mɔzu-/ ~ /mazu-/ [mɔzu-], [mazu-] 'bark'
        FE /dʲɔza-/ ~ /dʲaza-/ [dʲɔza-], [dʲaza-] 'go'
        FE /dʲɔxara-/ ~ /dʲaxara-/ [dʲɔxara-], [dʲaxara-] 'not know'
        FE /dʲɔbo-/ ~ /dʲabo-/ [dʲɔbo-], [dʲabo-] 'reach someone'
        FE /dʲɔbu/ ~ /dʲabu/ [dʲɔbu], [dʲabu] 'long'
        FE /dʲɔɔ/ ~ /dʲɔa/ [dʲɔɔ], [dʲɔa] 'D'oa (the name of a folktale hero)'
        FE /tɔxɔzʔ/ ~ /tɔxazʔ/ [tɔxɔzʔ], [tɔxazʔ] 'and now'
        FE /xɔnowɛj/ ~ /xanowɛj/ [xɔnowɛj], [xanowɛj] 'hawk' (a Nenets loan)
        FE /kudaxaa/ ~ /kudaxɔɔ/ [kudaxaa], [kudaxɔɔ] 'for a long time'
        FE /lʲizɔgo/ ~ /lʲizago/ [lʲizɔg], [lʲizag] 'sable'
        FE /vɔrŋe/ ~ /varŋe/ [vɔrŋe], [varŋe] 'crow' (a Nenets loan)

Otherwise, there are minimal pairs for /ɔ/ vs. /a/; see (9):

(9)

        FE /dʲɔgo/ 'trap' vs.   /dʲago/ 'there is no (there_is_no.3SG.S)'
        FE /kɔza/ 'nail' vs.   /kaza/ 'granny'
        FE /mɔna/ 'egg' vs. /mana/ 'he said (say.3SG.S)'
        FE /ŋɔ/ 'leg' vs.   /ŋa/ 'sky, weather'

In connection to the back vowel variation, two words in (10) can be mentioned: presumably, they featured the /ɔ/ ~ /a/ variation in the second syllable, but later /ɔ/ changed to /o/, so now we see a case of /o/ ~ /a/ variation.

(10)

        FE /dʲɔgode/ ~ /dʲɔgade/ [dʲɔgode], [dʲɔgude], [dʲɔgade] 'the other'
        FE /dʲadokoon/ ~ /dʲadakoon/ [dʲadokoon], [dʲadukoon], [dʲadakoon] 'carefully'

Unlike the cases discussed in §2.1.1–§2.1.2, the list of words with /a/ ~ /ɔ/ variation did not expand substantially when more phonetic data were analyzed, and so looks rather like a closed set of cases. Currently, it does not seem that one variant of

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[16]This is the only word that shows variation in TE as well: TE /mɔle/ ~ /male/ 'already'.

these words is more frequently used than the other one, though no specific calculations have been performed.

Similar variations, restricted to selected words only, have been attested for some other Forest Enets phonemes as well: e.g., /s/ ~ /z/ variation in /ɔsa/ ~ /ɔza/ 'meat', /sɔse/ ~ /sɔze/ 'belly', /mɔsaʔa/ ~ /mɔzaʔa/ 'work', /mese/ ~ /meze/ 'wind', and some other words, or /ɔ/ ~ /e/ variation in /tɔlʲe/ ~ /telʲe/ 'here it is', /pizɔʔɔ/ ~ /pizeʔɔ/ 'scythe', /pɔd/ ~ /ped/ 'always', etc. However, the number of words involved in these variations is lower than the number of words manifesting the /ɔ/ ~ /a/ variation. Notably, Tundra Enets features less phonemic variation of this type than Forest Enets. It is a matter of further research to find out the reasons for it: specifics of the language decay process with different sociolinguistic settings for the two dialects, different histories of language contact, or an internal logic of the Forest Enets phonological system.

2.2 Allophony of /e/ and /ɔ/   Having presented the situation with /e/ and /ɔ/ phonemes in the first syllable, now I turn to variation connected to these phonemes in the non-first syllables: it is much more common there than in the first syllable.

Indeed, in non-first syllables /e/ can be fully neutralized with /i/ in all phonetic contexts (see §2.2.1), and /ɔ/ can be fully neutralized with /u/ in most phonetic contexts, except for three clear exceptional contexts (see §2.2.2). By full neutralization, I mean the possibility for all words with /e/ to be pronounced with [i] and for all words with /ɔ/ to be pronounced with [u]. However, [e] pronunciations of /e/ and [ɔ] pronunciations of /ɔ/ are also possible, while [e] pronunciations of /i/ and [ɔ] pronunciations of /u/ are impossible, and this is exactly how /e/ vs. /i/ and /ɔ/ vs. /u/ can be differentiated.

2.2.1 Allophony of /e/   Synchronically, in non-first syllables, the phoneme /e/ has allophones [e] and [i]/[ɨ], which are in free distribution; see (11). At the same time, the phoneme /i/ has only allophones [i]/[ɨ]; see (12).

(11)

> FE,   TE /kare/ [karʲi], [karʲe] 'fish'
> FE,   TE /tʃike/ [tʃikʲi], [tʃikʲe] 'this'
> FE,   TE /bine/ [bʲine], [bʲinɨ] 'rope'
> FE /ɛse/ [ɛse], [ɛsɨ] 'father'
> FE /ʃuzebe/ [ʃuzebʲe], [ʃuzebʲi] 'huge'
> TE /ese/ [ese], [esɨ] 'father'
> TE /abure/ [aburʲe], [aburʲi] 'head'

(12)

    FE, TE /ɟitʃi/ [ɟitʃi] (no [ɟitʃe] attested) 'it is acid/bitter (be_acid/bitter.3SG.S)'

    FE, TE /ɔzima/ [ɔzima] (no [ɔzema] attested) 'he appeared (appear.3SG.S)'

    FE /kuzi/ [kuzi] (no [kuze] attested) 'spoon'

    TE /kuuzi/ [kuuzi] (no TE [kuuze] attested) 'spoon'

There are, however, two FE homonymous morphemes, originating in one historic source, for which only [e] and no [i]/[ɨ] variants have been attested. They are regular allomorphs for the cross-reference and the possessive markers for the first person plural, and both of them have the form /-eʔ/:[17] it is widely used and has been never attested as [iʔ]/[ɨʔ], e.g., FE /oom-ubi-eʔ/ [oomubʲieʔ] 'we eat (eat-HAB-1PL.S/SOsg)' or FE /busi-eʔ/ [busieʔ] 'our old man (old_man-NOM.SG.1PL)'.

2.2.2 Allophony of /ɔ/ The situation with the back vowels is not as straightforward as with the front vowels. In §2.1.2, the status of the Enets phoneme /o/ was discussed for the first syllable. There, according to the diachronic data and the formant measurements, the words with the [ɔ] ~ [o] ~ [u] variation contain a separate phoneme /o/, which is different both from /ɔ/ and /u/. In other words, while the variation /e/ ~ /i/ does not involve an extra phoneme in Enets, the variation /ɔ/ ~ /u/ involves an additional phoneme /o/: the varying vowel shows formant values uncommon for either /ɔ/ or /u/. What an ear trained in European languages hears as a variation between two Enets phonemes, /ɔ/ and /u/ (with parallels in European languages, Russian foremost since it is the language of the linguists), is actually another phoneme /o/ whose phonetic realization is quite close to the realizations of /ɔ/ and /u/, but different enough from them to be counted as a separate phoneme. At the same time, the perception experiments with minimal pairs are ambiguous regarding the status of /o/ as a separate phoneme. While no easy descriptive answer can be provided for the time being, I opted for the use of the 'o' grapheme in my phonemic transcription in order to overdifferentiate rather than underdifferentiate.

In the non-first syllables, the situation is different by virtue of a much more significant spread of the variation, or the /o/ phoneme in this notation. There are numerous words with /u/ pronounced as [u] – see some examples in (13) – numerous words with the variation [ɔ], [o], or [u] – see some examples in (14) – and very few words with /ɔ/ pronounced as [ɔ] only.

(13)

    FE, TE [mɔtuʔ] (no [mɔtoʔ] or [mɔtɔʔ] attested) 'six'

    FE, TE [kɔru] (no [kɔro] or [kɔrɔ] attested) 'knife'

    FE, TE [nexuʔ] (no [nexoʔ] or [nexɔʔ] attested) 'three'

    FE, TE [tʃuku] (no [tʃuko] or [tʃukɔ] attested) 'all, whole'

    FE, TE [ɟɔtu] (no [ɟɔto] or [ɟɔtɔ] attested) 'goose'

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[17]The allomorphs *-eʔ* are used with i-final stems, the main variant of these affixes being *-aʔ*. TE uses only *-aʔ* for all types of stems.

(14)

FE,   TE [kɔdɔ], [kɔdo], [kɔdu] 'sledge'
(TE [kɔdujˀ], [kɔdɔjˀ] 'my sledge (/kɔdo-jˀ/ sledge-NOM.SG.1SG)')
FE [bʲakɔjˀ], [bʲakujˀ] 'my neck (/bɛko-jˀ/ neck-NOM.SG.1SG)'
FE [pʲexɔn], [pʲexon], [pʲexun] 'outside (/pe-xon/ outer_space-LOC.SG)'
TE [bʲekɔ], [bʲeko], [bʲeku] 'neck'

There are three clear phonetic contexts that may resist the variation: in some words with these contexts only [ɔ] has been attested, cf. (15), while in other words with these contexts the [ɔ] ~ [o] ~ [u] variation has actually been attested, cf. (16). (15a) and (16a) is the context after a vowel, (15b) and (16b) is the context after the glottal stop phoneme, (15c) and (16c) is the context of the Forest Enets variation /ɔ/ ~ /a/; see §2.1.3 above.

(15)   a.

FE,   TE [tɔɔ] (no [tɔu] or [tɔo] attested) 'summer; sleep cover'
TE [irʲiɔ] (no [irʲiu] or [irio] attested) 'moon'
TE [sedeɔ] (no [sedeu] or [sedeo] attested) 'past, former'

b.

FE [sɔʔɔzˀ] (no [sɔʔuzˀ] or [sɔʔozˀ] attested) 'jump up! (/sɔʔɔ-zˀ/ jump_up-IMP.2SG.M)'[18]
TE [menʲeʔɔ] (no [menʲeʔu] or [menʲeʔo] attested) 'old woman, wife'

c.

FE [dʲɔxɔzi], [dʲɔxazi] (no [dʲɔxuzi] or [dʲɔxozi] attested) 'female reindeer'
FE [tɔxɔzˀ], [tɔxazˀ] (no [tɔxuzˀ] or [tɔxozˀ] attested) 'and then'

(16)   a.

FE, TE [ɔɔr-], [oor-], [uur-] 'eat'
   FE [u: ɔɔrˀ], [u: oorˀ], [u: uurˀ]
   'eat! (/uu oor-ˀ/ you eat-IMP.2SG.S)'
   TE [uurˀ], [u:rˀ] 'eat! (/ooro-ˀ/ eat-IMP.2SG.S)'
   TE [ɔ:d] 'eat it! (/oo-do/ eat-IMP.2SG.SOsg)'
FE [kɔ:], [ku:] 'ear'
TE [ŋu:o], [ŋuu:], [ŋu:] 'grass'

_____
[18]Optional, though very frequent, glottalization of the vowel following /ʔ/ is not reflected in these transcriptions for the sake of simplicity.

b.

FE [sæʔo], [sɛʔɔ] 'seven'

FE [ŋaʔɔ], [ŋaʔo], [ŋaʔu] 'duck'

FE [ezeʔoza, ezeʔɔza] 'his runner (of a sledge)
(/ezeʔo-za/ runner-NOM.SG.3SG)'

FE [dʲeʔubʲiraʔ], [dʲeʔobʲiraʔ], [dʲeɔbʲiraʔ] 'you have deprived
(/dʲeʔo-bi-raʔ/ deprive-PRF-2PL.S)'

c.

FE [bɔɔ], [bɔo], [boɔ], [bɔa] 'bad'

As can be seen from (15)–(16), only the first phonetic context, i.e., after a vowel, allows for both clear /ɔ/ realized as [ɔ] only (see (15a)), and for the presence of the variation (see (16a)), in the two Enets dialects. In the second context, i.e., after the glottal stop phoneme, the variation is impossible in Tundra Enets, and in Forest Enets, it is possible only in the four words given in (16b). The third context is present in Forest Enets only, as this variation has not been attested in Tundra Enets, and the variation in this context has so far been attested in three words only, one in (16c) and two in (9).

If the three contexts for Forest Enets and the one context for Tundra Enets did not exist, the back vowel variation in the non-first syllables would be no different from the front vowel variation in the non-first syllables (see §2.2.1): all /ɔ/ would have [ɔ], [o], and [u] allophones, while /u/ would have only [u] allophone. However, the existence of words in (15) and similar to them make the situation with back vowels in the non-first syllables look identical to the situation with back vowels in the first syllable (see §2.1.2): there are words where the back vowel variation is possible (e.g., words in (16)), and there are words where it is impossible (with either /ɔ/ or /u/, e.g., words in (15)). Since the decision to differentiate between the two groups of words was taken for the first syllable (by using for the former words the 'o' grapheme in phonemic transcription), there is no reason not to adhere to it in the non-first syllables either. The words in (13)–(16) are reproduced below in (17)–(20) with phonemic transcriptions. Note, however, that the contexts where variation in the non-first syllables is possible are rare in Enets, so if not for the desire to keep the first and the non-first syllables descriptively parallel, no third back vowel phoneme would be postulated for the sake of the non-first syllables only.[19]

(17)

FE, TE /mɔtuʔ/ 'six'

FE, TE /kɔru/ 'knife'

FE, TE /nexuʔ/ 'three'

FE, TE /tʃuku/ 'all, whole'

FE, TE /dʲɔtu/ 'goose'

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[19]In this case, /ɔ/ in the non-first syllable would be described as always having phonetic realizations [o], [ɔ], and [u], with three exceptional cases where [o] and [u] are impossible.

(18)

        FE, TE /kɔdo/ 'sledge'
        FE /bɛkojʔ/ 'my neck'
        FE /pexon/ 'outside'
        TE /beko/ 'neck'

(19) a.

        FE, TE /tɔɔ/ 'summer; sleep cover'
        TE /iriɔ/ 'moon'
        TE /sedeɔ/ 'past, former'

    b.

        FE /sɔʔɔzʔ/ 'jump up!'
        TE /meneʔɔ/ 'old woman, wife'

    c.

        FE /dʲɔxɔzi/ ~ /dʲɔxazi/ 'female reindeer'
        FE /tɔxɔzʔ/ ~ /tɔxazʔ/ 'and then'

(20) a.

        FE, TE /oor-/ 'eat (ipfv)'
          FE /uu oorʔ/ 'eat!'
          TE /ooroʔ/ 'eat!'
          TE /oodo/ 'eat it!' [20]
        FE /koo/ 'ear'
        TE /ŋuuo/ 'grass'

    b.

        FE /sɛʔo/ 'seven'
        FE /ŋaʔo/ 'duck'
        FE /ezeʔoza/ 'his runner (of a sledge)'
        FE /dʲeʔobiraʔ/ 'you have deprived'

    c.

        FE /boo/ ~ /boa/ 'bad'

Summing up the description of allophony of /e/ and /ɔ/ in the non-first syllables, some frequency remarks have to be added. On the one hand, when used without any affixes, the more close pronunciations of /e/ and /ɔ/, respectively, are more frequent than their more open counterparts: [i] > > [e], [o]/[u] > > [ɔ]. In Forest Enets, close pronunciations are a clear majority of cases, while in Tundra Enets they are more numerous than open pronunciations, though not so dramatically. On the other hand, in affixed forms, vowels of the root have a tendency to be pronounced with more open vowels, which may suggest that the more open pronunciations are more archaic.

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[20]In these two TE forms, the phonological transcription also features /o/ before /ʔ/ that was not pronounced in the examples (16a) above: such an omission of a vowel before a word-final glottal stop is typical for TE.

2.3 Word-final vowel omission   Originally Enets did not have any consonant-final words, and this stage of the language history is represented in Castrén (1854; 1855). Since then, word-final affixes have almost completely lost their final vowels in Forest Enets speech; see (21). If not followed by another affix, one can hear a final vowel of these affixes only very rarely, cf. Sorokina (2010), Siegl (2013), *inter alia*, which do not mention this possibility at all. However, (Helimski 2007) reported Forest Enets elders being able to produce "full forms", i.e., with all final vowels of suffixes, among other things, upon a linguist's request in the 1990s. As for modern Tundra Enets speakers, they often omit word-final vowels in affixes, but can use them equally well in natural speech, and consider the forms with final vowels "better" or "more traditional" Enets; see (22):

(21)

> FE /kɔduraʃ/ ~ /kɔduraʃi/ [kɔduraʃ] > > [kɔduraʃi]
> 'to try' (/kɔdura-ʃi/ 'try-CVB')
> FE /dʲeeb/ ~ /dʲeebi/ [dʲeebʲ] > > [dʲeebʲi]
> 'let it ache' (/dʲe-ebi/ 'ache-3SG.S.IMP')

(22)

> TE /niɔ dʲɔzito/ [dʲɔzit], [dʲɔzito]
> 'beat the child!' (/niɔ dʲɔzi-to/ 'child beat-2SG.SOsg.IMP')
> TE /tɔdʲi niɔdo kɔltado/ [niɔdo], [niɔdɔ], [niɔd], [kɔltad], [kɔltadɔ]
> 'you have washed your child' (/tɔdʲi niɔ-do kɔlta-do/ 'you
> child-OBL.SG.2SG wash-2SG.S')

Bare lexemes have been resisting the loss of word-final vowels for longer. Today most of them can be used with their final vowel or without it, and the latter is possible when the word-final vowel is not followed by any other affix. So what has just been said about Tundra Enets affixes ending with a vowel in word-final position is true for lexemes in both dialects of Enets. Words without any affixes can be nouns with nominative case, adjectives, adverbs, numerals, and particles; see (23). Verbs never appear without any morphological markers on them. Most probably, final vowels of bare lexemes are dropped more often in Forest Enets than in Tundra Enets, though the comparison is quite hard to make and is very impressionistic for the time being.

(23)

> FE,   TE /kɔdo/ [kɔdo], [kɔd], [kɔt] 'sledge'
> FE, TE /baru/ [baru], [bar] 'edge'
>> FE /dʲerida baro ɔzima/ [baro] 'the morning came (lit. the edge of the
>> day appeared)' (/dʲeri-da baro ɔzima/ day-OBL.SG.3SG edge
>> appear.3SG.S)
>> TE /dʲedoʃeɔ baro taabizouʔ/ [bar] 'they have reached the bank of
>> Yenisey' (/dʲedoʃeɔ baro taa-bi-zouʔ/ Yenisey edge
>> reach-PRF-3PL.M.EXC)

FE /ɟⁱago/ [ɟⁱagu], [ɟⁱag], [ɟⁱak] 'there_is.3SG.S'
FE /biida uʔ ɟⁱago/ [ɟⁱak], [ɟⁱagu] 'he has no intelligence' (/bii-da uʔ
ɟⁱago/ intelligence-OBL.SG.3SG intelligence there_is_no.3SG.S)
FE /umu/ [umu], [um] 'north'
FE /buju/ [buju], [buj] 'soup'
FE /kamozo/ [kamozo], [kamoz] 'house'
FE /tʃuku/ [tʃuku], [tʃuk] 'all'
TE /nenogo/ [nenogo], [nenog] 'mosquito'
TE /siʔɔro/ [siʔɔro], [siʔɔr] 'tongue'
TE /teto/ [teto], [tetu], [tetɔ], [tet] 'four'
    TE /nexuʔ teto/ [tet] 'three, four'

Most Enets words finish with CV#. If it is /ʔ/V#, the word-final vowel omission does not take place, and the data do not clearly show whether the vowel omission is possible when a word finishes with V₁V₂#, but there are very few words with ʔV# or V₁V₂# at the end.[21] Consonant devoicing is usual when the last vowel is omitted.

In FE, the final vowel omission in words with more than two syllables may co-occur with a different phonetic process: namely, the optional omission of even vowels. See (24):

(24)

    FE /alʲako/ [alʲko], [alʲak] 'urine'
    FE /buniki/ [bunɨk], [bunkʲi] 'dog'
    FE /iblʲɛjugu/ [iblʲɛjug], [iblʲɛjgu], [iblʲejg] 'small'

The vowel reduction is most frequent for words with word-final back vowels, i.e., with /u/ or /o/ at the end,[22] as in (23), but there are also instances of final vowel dropping in words ending with other vowels; see (25):

(25)   TE,   FE /tʃike/ [tʃikʲi], [tʃikʲe], [tʃik] 'this'
        TE /tʃike poa/ [tʃik] 'this year'
    FE /ɛke/ [ɛkʲe], [ɛk], [ɛkʲ] 'this'
        FE /ɛke pazuruz/ [ɛk] 'these letters' (/ɛke pazuru-z/ this
        letter-NOM.PL.2SG)
    FE /buuse/ [buuse], [buusɨ], [buus] 'old man, husband'
        FE /buuse tʃajŋaj/ [buːs], [buːsɨ] 'let the old man drink tea' (/buuse
        tʃajŋa-j/ old_man drink_tea-IMP.3SG.S)
    FE /ɟⁱɔxazi/ [ɟⁱɔxazɨ], [ɟⁱɔxaz] 'female reindeer'
        FE /ɟⁱɔxaziʔ mɔdeezutʃ/ [ɟⁱɔxazɨ], [ɟⁱɔxaz] 'I saw female reindeer (pl)
        (/ɟⁱɔxazi-ʔ mɔdee-zutʃ/ female_reindeer-PL see-1SG.S.PST)'

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[21]Enets V₁V₁ sequences can be realized as [V₁V₁], [V₁ː], or [V₁], independent of their positions in the word.
[22]/ɔ/ can be at the end of words only if preceded by a vowel or a glottal stop (see §2.2.2), and these are contexts where the vowel omission is not to be attested, as just stated.

FE /kaba/ [kaba], [kab], [kap] 'storm, wave'
TE /agapa ďʲaxa/ [agapa ďʲaxa], [agap ďʲaxa] 'the Agapa river'
   TE /agapa ďʲaxado/ [agap] 'till the Agapa river' (/agapa ďʲaxa-do/
   Agapa river-DAT.SG)
TE /ďʲere/ [ďʲere], [ďʲer] 'day'
   TE /ďʲere ďʲaboone/ [ďʲer] 'the whole day' (/ďʲere ďʲabo-one/ day
   length-PROL.SG)
TE /tʃinaďʲi/ [tʃinaďʲi], [tʃinaďʲ] 'now'
TE /pɔlʲe/ [pɔlʲe], [pɔlʲ] 'thick, strong'

However common the final vowel omission of rounded back vowel is, there are some words that have never been attested without the final vowel, though the words themselves are rather frequent; see (26). In the case of non-back final vowels, there are many such words.

(26)

   FE /ɔdo/ [ɔdo], [ɔdu],   TE /ɔdu/ [ɔdu] 'boat' (no [ɔd] or [ɔt] attested)
   FE,   TE /bine/ [bʲine], [binɨ] 'rope' (no [bʲin] attested)
   FE,   TE /aba/ [aba] 'partridge' (no [ab] attested)

The distribution of words among these two groups, those which optionally omit the final vowel and those which never omit it, does not correlate with any semantic, syntactic, or phonological feature. Moreover, when native speakers were asked for their judgments on the acceptability of different pronunciation variants, substantially more words were discovered to allow final vowel omission, while pronunciations without the final back vowel were rejected by the speakers for only a couple of words. On the other hand, some pronunciations without final front or middle vowels that had been attested in natural speech were rejected as impossible during elicitation sessions. This inconsistency suggests that actually any final vowel can be omitted, but presumably the frequencies of the variants with and without the final vowel are different for different words. The backness of the vowel is one of the most evident and significant factors, but this factor is evidently not the only one. Thus I describe the variation "with the final vowel" vs. "without the final vowel" as purely phonetic, i.e., possible in principle for any affixless lexeme.

2.4 Discussion   Most cases of variation discussed in 2.1–2.3 (variation of front vowels in the first syllable, belonging to the lexicon, and in the non-first syllables, belonging chiefly to phonetics, the FE /ɔ/ ~ /a/ variation attested for some words, and finally the almost universal word-final vowel omission) are connected to sound changes taking place right now or recently finished (the latter is the case for the FE /ɔ/ ~ /a/ variation). These sound changes are summarized in (27).[23]

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[23]It has been mentioned before that though most words with variation result from these sound changes, there are also some individual words for which this variation has arisen by analogy.

(27)

> FE, TE: /e/ > /i/
> FE: /a/ > /ɔ/
> FE, TE: CV# > C#

Though Enets is a very small, unwritten, and highly endangered language, its scholars are lucky to have Castrén (1854; 1855) as points of reference for the language that used to be spoken 150 years ago. None of the sound changes in (27) had yet started by the time of data collection for these volumes. At the same time, a text collection (Sorokina & Bolina 2005) and a dictionary (Sorokina & Bolina 2009), based on research done in the 1960s–1990s, provide solid evidence for the existence of the variation in the generation of parents of modern speakers as well. This means that these sound changes are in the state of synchronic variation for quite a while already, and given the moribund state of the language are likely to stay as such without reaching their final point.[24]

Additionally, these sound changes are also quite similar in their phonetic details to processes attested in Russian opposition between stressed vs. unstressed vowels. Indeed, the stress in Russian often moves in different forms of a word, and so some phonemes may be stressed in one word form (28) and unstressed in another word form (29).

(28)

> Russian /lʲes/ [lʲes] 'a forest'
> /lʲisi/ ['lʲisɨ] 'foxes'

(29)

> Russian /lʲesa/ [lʲɪ'sa] 'forests'
> /lʲisa/ [lʲɪ'sa] 'a fox'

As a result, vowels of the same morpheme may be pronounced in two different ways: in a stressed way, differentiating between /e/ and /i/, as in (28), or between /a/ and /o/; and in an unstressed way, merging /e/ and /i/, as in (29), or /a/ and /o/. If Enets non-first syllables are taken as a structural parallel to Russian unstressed syllables, it is no surprise that the /e/ ~ /i/ and /ɔ/ ~ /u/ variation is more widespread in the non-first syllables: it is exactly where the otherwise different vowel phonemes merge in Russian. Besides, Russian syllables that go after the stressed one may reduce their vowels almost to zero (unless the vowel is /u/), and this is similar to word-final vowel reduction in Enets (though, controversially, in Enets /u/ is omitted most easily). While I by no means claim that contact with Russian is the only source of the variation in Enets, the parallelism of Russian phonetic features can definitely support the existence of the variation.

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[24]It is not entirely clear whether the /ɔ/ ~ /u/ variation is connected to a sound change /ɔ/ > /u/, to a merger of reflexes of different Proto-Samoyedic vowels, or actually both. Anyway, this variation is much older than all others described in this paper, as it was attested in Castrén (1854; 1855).

As with any sound change in progress, its accurate synchronic description can be a real challenge, and here the goal of phonemic or phonetic transcription may mislead a researcher. Cf. a proposal by Ladd (2014:44) to switch to vowel plots for representing sound systems of the world's languages instead of insisting on the traditional phone-based transcription: "this description [NB: referring to IPA-based transcriptions] misrepresents the quantitative data: the distribution of the vowel in Rosa's appears to occupy a continuous space on the plot, not two separate spaces corresponding to two different transcriptions." Unfortunately, I see here a contradiction between what has to be done, according to the latest research in phonetics, and what can realistically be done within a language documentation project, even a quite extended one. At the same time, I am very much sympathetic to the very idea of the intrinsic imperfectness of any phonetic transcription, and would even suggest that it is the lens of phonetic research tradition that makes the variation in Enets to look so prominent. To give an example: when Enets speakers were asked to correlate the sounds heard in Enets words to one or another Russian sound (and the Enets set of vowel phonemes in IPA terms is very close to the Russian set, as was mentioned in §1.5), they struggled. It shows that the Russian phonemes clearly structure the universal phonetic space in a much more discrete way than the Enets phonemes do.

However, why can phonological systems of some languages be reasonably well represented by IPA transcription, but phonological systems of other languages cannot? The answer may be found in the sociolinguistic part of the picture.

3. Sociolinguistic details The variation presented in §2 is a selection of the most spectacular cases in modern Enets, but there are definitely other types of phonetic/phonemic variation going on. Any linguist working with Enets immediately noticed this peculiarity of the language, and basically no publication on Enets, except for Helimski (ms.) which is not yet in print, attempted to use a unified phonemic orthography (cf. Bolina 2012; 2014; 2015; Labanauskas 1992; 2002; Sorokina 2010; Sorokina & Bolina 2001; 2005; 2009; Siegl 2013). As a result, most words were spelled in numerous ways, and before I had a chance to do extended fieldwork on Enets, I could not believe such richness of variants to be true. However, once in the field, it turned out that this was not the researchers' fault, but a reality of this language, cf. a quotation from Siegl (2013:33): "I have decided against both an abstract phonological transcription and normalization in order to preserve the encountered picture. At present normalization would be counter-productive; idiolectal variation in pronunciation, e.g. realization of glottal stops, alternating vowel length in identical forms, or the impossibility to identify a single underlying form which would be representative of 'Forest Enets', do not justify any abstract normalization from the point of view of language documentation."

My first idea was to find the reason of the variation in the language decay process. As described in §1, Enets is not regularly used any more by anyone, even though there are people living in the same villages, or even in the same households, who share the knowledge of the language and would be able to speak it to each other. So the language is indeed moribund.

However, I was lucky to get access to hours of recordings of the previous generation of Enets speakers, i.e., the late parents of my consultants, and to compare their language to modern Enets. Surprisingly, all variation attested in the language of the last speakers was there in the recordings of their parents. The frequencies of the variants that corresponded to more advanced stages of the sound changes were somewhat lower in their speech, but the phenomena themselves could definitely be observed for that generation as well.[25] Moreover, the /ɔ/ ~ /o/ ~ /u/ variation was documented even by Castrén (1854; 1855), so it can be said to have existed for even longer.

At the same time, the different phonetic and phonemic variants did not show any correlation with any meaningful social parameter: age, gender, or clan. There were no other parameters to choose from, as the modern Forest and Tundra Enets communities had no social stratification beyond these factors. Neither could the use of variants correlate with the level of proficiency in Enets, as all my main consultants were equally fluent; and when recordings of less fluent speakers were studied for comparison, the same degree of variation was observed there.

In search for an explanation of the extremely high degree of variation, I discovered that Dorian (2001; 2010) had proposed that certain social settings favor a rather high degree of variation that is not attested otherwise: socially homogeneous unstratified societies with no written standard for speakers to correlate with showed indeed an extraordinary degree of idiosyncratic linguistic variation. The Forest and Tundra Enets language communities match the definition of socially homogeneous unstratified societies quite well.

While 100 years ago there used to be rich Enets people with reindeer and poor Enets people without them, in the 1930s–1940s the stratification was abolished by the Soviet state that expropriated all the reindeer and made everyone economically equal. Since then, all Enets speakers lived in very similar harsh conditions and practiced the same activities: reindeer herding and fishing for state farms (*kolkhozes*) before the 1990s, and fishing and hunting for their own subsistence after that. In the studied period, from the 1930s to the 1990s, the date when the active language use stopped, Enets has never been a written language, and neither has it ever been used for any purpose outside traditional activities and the family setting. At the same time, the communities' sizes were very small, and all Enets speakers knew each other in the respective Forest and Tundra communities very well, so they had no chance to hear someone speaking Enets whom they did not know personally. "Where small population size, high interaction density, and egalitarian social structure prevail, linguistic accommodation may be minimal or absent," notes Dorian (2010:5), and this seems to be exactly the case of Enets.[26]

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[25]With the hypothesis of Russian contact influence in mind, it has to be noted that the previous generation all spoke Russian regularly by the time of recording, though for most of them, their Enets was more fluent than their Russian. This generation acquired Russian when they were adults, in contrast to the generation of modern speakers who acquired Russian at the schooling age of seven.

[26]Note, however, that I have not yet had a chance to study distribution of frequency of the variants by individual speakers, so at the moment I can only claim that all speakers naturally produce all variants, but I do not yet know whether usage patterns differ on an individual basis.

Phonetically, most Enets phenomena described in this paper are better referred to not as variation, but as more continuity in the articulatory/acoustic space than normal for larger stratified societies. However, together with variation in consonants or morphology not discussed here, they can be classified under variation in the broad sense of this word.

Apart from East Sutherland Gaelic, Dorian (2010) provides examples of other speech communities from all around the world for which abundant socially neutral idiosyncratic variation has been reported in the literature. These are Tolowa (Collins 1998), Gaelic in Leurbost on the Isle of Lewis (Oftedal 1956), Cambap (Connell 2002), Karelian (Sarhimaa 1999), Acadian French in Newfoundland (King 1983), Kven Saami (Lindgren 1999), Inis Mor Irish of Aran islands (Duran 1992), Formazza German (Dal Negro 2004), and African American English of Hyde County in North Carolina (Wolfram & Beckett 2000; Wolfram & Thomas 2002). My suggestion is to add Enets to the list, as it possesses all the features common for these communities:

- geographical isolation and/or enclavement within a larger allophone population;

- minority status for the language in question, with either no relationship or distant relationship to the dominant language of the country or region;

- absence of community-external language norms and exclusion of the minority language from written use among its speakers;

- absence of social stratification related to socioeconomic differentiation;

- absence of social evaluation of variants vis-a-vis one another;

- a homogeneous small-community social structure characterized by dense face-to-face interaction and multiplex social roles;

- absence of linguistic accommodation;

- obsolescence (with declining use as an exacerbating, if not originating, factor).

(Dorian 2010:286)

Putting the Enets data on variation into a broader sociolinguistic context helped me to stop looking for the rules that would condition the variation in each case discussed in this paper, but to accept the possibility of widespread, unconditioned variation as a natural linguistic phenomenon, not as a failure of my phonetic description.

At the same time, it became clear from the literature review that while language obsolescence cannot be the only factor responsible for the variation, it is hard to separate it from other factors. Indeed, as Dorian (2010:282–285) notes, small, socioeconomically undifferentiated communities speaking an unwritten minority language are by definition threatened in a modern world, so it is impossible to pull apart the two factors: obsolescence and the cultural type of community.

4. Graphic representation matters   This section is devoted to the tension between the phonetic reality and the goal of language documentation oriented towards producing a transcribed collection of texts and a practical orthography. As Bowern (2008: 64) notes, "If you have the same word transcribed in four different ways in a learner's book, it will be very confusing to those trying to learn the language or the writing system." So while the variation can be represented with the help of the '~' sign in phonemic or phonetic transcription, it cannot be transferred as such to a published collection of texts: whether online and oriented towards linguists, or in paper and oriented towards the Enets speech communities.

First, a brief introduction to the history of writing in Enets is useful; see also (Siegl 2013:493–505). Though an alphabet for Enets was officially introduced by Tereschenko (1986), it has never been used by the Enets communities or linguists. The only Enets trained as a linguist, Darja Spiridonovna Bolina, was the first person to write Enets, specifically Forest Enets (cf. Bolina 1995; 2003). From 1996 on, an Enets page in the local newspaper has appeared from time to time (from once in a month in better times, to once in several months), written in different years mainly by Forest Enets writers Darja Spiridonovna Bolina, Zoja Nikolaevna Bolina, Viktor Nikolaevich Pal'chin, and the late Nina Kuprijanovna Borisova. Other Forest Enets speakers occasionally also wrote down stories in their language to be shared with a linguist. Community-oriented publications by linguists have already been mentioned above; see §3. Today, the two individuals regularly writing in Forest Enets are Zoja Nikolaevna Bolina and Viktor Nikolaevich Pal'chin. The former works as a specialist on Enets language and culture in the local House for Folklore[27] (cf. books prepared by her: Bolina 2012; 2014; 2015). Both people transcribed hours of Enets recordings as community collaborators in our documentation project. Viktor Nikolaevich did it with much enthusiasm and in a significant volume, and he continued the activity even when the project was over. When Andrey Shluinsky was in Tajmyr in 2015, he gave him more transcriptions and asked for more recordings to transcribe. The transcription became an inspiring hobby for him, and most probably he is the only person who would ever write Enets for his own pleasure.

The writing systems in all cases just discussed are inconsistent, not only among various authors, but also for a single author. No Tundra Enets has ever tried to write down his or her language. Enets written by the Enets communities' members or for the communities' members has always been Cyrillic-based, as this is the default script for anyone living in the Russian Federation.

As a part of our documentation project, in 2009–2011, Andrey Shluinsky and myself suggested a project of consistent Enets orthography that was mainly a unification of principles already in use in the mentioned cases. None of our consultants was interested in discussing the orthography, so as a result it has not been shaped by the community, but represents an outsiders' linguistic product. Now we are finalizing text collections to be published,[28] and so today our main concern is a spelling

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[27]Tajmyrskij Dom Narodnogo tvorchestva.

[28]The online version of the text collection will feature two scripts, a Latin-based one and a Cyrillic-based one, and the print version will use only a Cyrillic-based script. Both scripts will unambiguously correspond to each other with clear conversion rules.

system that would be used primarily for reading, given that there are now only two individuals who write in Enets, and neither of them is willing to change their current writing practices to any better orthography. In addition, we have to keep in mind that most of the people who would ever read the Enets text collections are at least imperfect speakers of Enets, or do not speak it at all. It is with this setting in mind that I proceed to discussion of the best ways to represent Enets in writing.

There are very few resources on orthography design that give any advice on dealing with variation; the most common assumption seems to be that community members shall choose the variant they like most in the course of orthography workshops. Lack of interest in the orthography design from the Enets communities presumes that this option is missing. The more valuable are resources that provide general guidance, cf. the idea expressed by Friederike Lüpke (2011:332): "While it is commonly assumed that it is better in an orthography to overspecify than to underspecify, UNDERSPECIFICATION (or the conflation of several phonemes into one grapheme) can be a powerful tool for the creation of a PANDIALECTAL orthography in the case of unstandardized and internally diverse speech varieties". Though for Enets the aim is not a pandialectal representation, but a pan-variation one, the issue of underspecification is exactly the relevant one. So the "fullest" variant of a word is chosen for orthography of the text collection, without specifying all variants. However, in most cases all possible variants can actually be deduced from the "fullest" one, and a separate note in the introduction to the text collections explains the procedure.

The principle of the "fullest" variant is easily implemented in the case of word-final vowel loss: all final vowels are kept in writing, as in phonological transcriptions in (22)–(25). The same orthographic decision is described in Guérin (2008:62) for Mavea, where a similar phonetic variation is observed.

When the variation is allophonic, as for /e/ and /ɔ/ in the non-first syllables, the "fullest" variant is the one with [e] or [ɔ], correspondingly. If /e/ or /ɔ/ is written in the non-first syllable, it can be deduced that [i] or [u] pronunciations are also possible here. If /i/ or /u/ variants of words with variation are chosen, the information that some of these words with /i/ or /u/ can be pronounced with [e] or [ɔ] would be lost then. This spelling decision is realized in (11)–(12) for front vowels. However, I decided not to follow the same straightforward path with back vowels in order to keep spelling decisions for back vowel variation the same for the first and the non-first syllables. Since in the first syllable there may be a separate phoneme, /o/, found exclusively in the words with variation, the same grapheme is used in the case of back vowel variation in the non-first syllables.

When the variation is phonemic, either the most conservative or the most frequent variant can be taken for the "fullest" one. In case of /e/ ~ /i/ variation in the first syllables, /e/ is the most conservative and the most frequent variant, so the decision is easily taken. In case of /ɔ/ ~ /a/ variation, /a/ is the most conservative variant, and the frequency of the variants is roughly the same, so /a/ variants of these words are taken for the orthography.

With these spelling conventions taken, the resulting orthography avoids a problem of producing forms that would be unattested in oral Enets (cf. a discussion of possible

orthographic forms unattested orally in Guérin 2008:61), and thus is helpful for semi-speakers or learners of Enets. This category of users has to be always acknowledged with such an endangered language. That is why the proposed orthography prioritizes the needs of semi-speakers or learners and makes reading significantly less challenging than spelling: by adapting the consistency principle, each word is written in one unique way, and this helps readers to retrieve the meaning of words more quickly (cf. Venezky 2004:150).

5. Conclusion   With this paper I have aimed to contribute to a description of the most problematic parts of the Enets phonology. The vowel chaos that confronted all researchers of Enets could be grasped by positing a number of variation patterns, some phonemic and some allophonic, most of them resulting from ongoing sound changes. Driving forces of the unusually high level of variation have also been discussed. The sociolinguistic setting – a small, socially unstratified, homogeneous community with no standard language – was shown to be exactly the one favoring synchronic variation. The existence of a similar variation in Russian, i.e., an opposition between two types of syllables (stressed vs. unstressed in Russian and first vs. non-first in Enets) and merger of some vowels in the weaker type of syllables, could also have contributed to the stability of the observed phonological patterns, given that Russian is the dominant language of all modern Enets speakers. Besides, in eastern varieties of Tundra Nenets, another contact language of Enets in the last hundred years, we also see an incipient word-final sound change /o/ > /u/, attested at least since the end of the 19th century (cf. Lehtisalo 1956), and this is another source of support for freezing the Enets sound changes in a variation stage for several generations of speakers.

Finally, the most adequate way of representing the variation in community materials and the digital corpus was suggested, based on the principle of underspecification generally useful for internally diverse speech varieties. The Enets case thus contributes to the typology of possible sound systems of the worlds' languages and gives an example of its treatment within a documentation and conservation effort.

List of glosses

I	1ST PERSON
2	2ND PERSON
3	3RD PERSON
CONN	CONNEGATIVE
CVB	CONVERB
DAT	DATIVE
DIR	DIRECTIONAL
EXC	EXCLAMATIVE
HAB	HABITUAL
IMP	IMPERATIVE
LOC	LOCATIVE
M	MIDDLE SERIES OF CROSS-REFERENCE MARKING

NEG	NEGATIVE
NOM	NOMINATIVE
OBL	OBLIQUE
PL	PLURAL
PRF	PERFECT
PROL	PROLATIVE
PST	PAST
S	SUBJECTIVE SERIES OF CROSS-REFERENCE MARKING
SG	SINGULAR
SOSG	SUBJECTIVE-OBJECTIVE SERIES OF CROSS-REFERENCE MARKING FOR SINGULAR OBJECT

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