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ABOUT THE PHONETIC PECULIARITIES OF SHORT VOWELS IN THE VÕRU DIALECT

The study of the short vowels and vowel harmony in the Võru dialect was carried out in 1997 and in spring 1998 and it forms a part of the linguistic project "The phonetic, phonological and morphological analysis of vowels in the Võru dialect" (Grant No. 3027 of the Estonian Science Foundation, Project Manager Karl Pajusalu) and "The analysis of the South Estonian vowel system" (ESF Grant No. 3262). As the Võru dialect is rather interesting from the phonetic point of view, then a number of linguists, e.g. Tiit-Rein Viitso (1978), Kalevi Wiik (1988), Toomas Help (1991), Karl Pajusalu (1996) and others have discussed some specific problems of the Võru vowel system or provided an overview of vowel harmony in the South Estonian dialects. However, so far no thorough experimental analysis has been carried out. The aim of the present linguistic project is to bridge this gap.

The Võru dialect area, which belongs to the South Estonian dialect group, reveals a number of linguistic features that can be found only in some other Finno-Ugric languages or which are missing elsewhere. One such phenomenon is velar harmony in the Võru and Tartu dialects. Its origin has not been fully explained so far (e.g. absence of velar harmony in Mulgi). Another important feature is the presence of two illabial mid or high phonemes with a different quality in the vowel system of Võru (or even three or four if the variants are included).

According to the generally accepted view ϵ came into being as a result of the regressive assimilation of e in such words that had a back vowel in the second syllable (e.g. **velka* > *velka* 'debt') (Itkonen 1945; Viitso 1978; Wiik 1988). On the other hand, it is not exactly known what is there in common, as far as the qualitative features are concerned, between the ϵ sound in the South Estonian first syllable and the North Estonian ϵ (i.e. \tilde{o} in Standard Estonian), which have been traditionally regarded as the same. The results of this study indicate that there is a remarkable difference in quality.

After the vowel ϵ came into being in the first syllable (or concurrently), the following important sound change occurred in some Finnic dialects — instead of e its back variant ϵ often came to be used in non-initial syllables if preceded by a back vowel (e.g. *olen* > *ol ϵ n* 'I am') (Wiik 1986 : 51). The harmony of ϵ is problematic in several respects. It is noteworthy already because here one has to do with velar harmony (Wiik 1988 : 21; Lauerma 1993 : 9). The phonetic character of ϵ that is involved in the harmony alternation calls for further clarification as well. Proceeding from the hypothesis that the South Estonian ϵ is historically the retracted variant of e and that this harmony relationship can be reduced to the alternation of the vowel e and its retracted variant

depending on the frontness or backness of the vowel in the first syllable, then we should speak of the harmony of back *e* rather than the harmony of *ɛ* or *ɶ*.

Another interesting phenomenon in Võru and Setu (also in Votic and Vepsian) (Viitso 1981 : 95, 120; 1990 : 163) is the high *i̯* or the so-called Russian central vowel *õ* (and its back variant *ï̯*) (about the origin of *i̯* see Wiik 1988 : 167; 1986 : 51). The position of *i̯* in the phonetic space clearly indicates that the identification with *ɛ* (or *i*) is not a fruitful idea. In the case of *i̯*, too, one has to do with an independent phoneme.

Below I will provide a description of the short monophthongs in the Vastseliina subdialect of the Võru dialect that was obtained by formant analysis. I am going to concentrate on the quality of *ɛ* and *i̯* in the first syllable and *ɶ* in non-initial syllables.

Speech data and their analysis

The study is based on the sound recording of Vastseliina that was made by E. Org and K. Pajusalu as a free conversation in the Sute Village of Vastseliina in 1991. The recording was made in field conditions with the tape recorder "Maranz". The informant is an long-time villager of Sute, a male who was born in 1924. His speech is fluent but at times hurried. I selected such words for analysis that were pronounced quite clearly and comprehensibly. At the same time I took into account that some reduction of vowels in non-initial syllables and in some phonetic environments is a natural phenomenon.

All the measurements were carried out by the speech analyzer CSL 4300. The speech segments were fed into the computer from the tape at a frequency range of 10 kHz. When making the spectrograms I used a broadband filter with a bandwidth of 146 Hz. In addition, the method of linear prediction was used (I added the data to the spectrogram from the menu LPC formant history). The precondition for making the spectrogram was that when measuring the formant frequencies only the stable section of the vowel spectrum would be used. For each vowel I measured the first four formants in accordance with the quality studies of Standard Estonian (Eek, Meister 1994; Liiv, Rimmel 1970).

Vowels in the first syllable

The vowel system of Võru includes a vowel that is missing in Standard Estonian — it is the so-called Russian *õ* (*ɶ*), marked as *i̯*, which is higher than the illabial central vowel *ɛ* in Estonian. Thus the vowel system of Vastseliina includes ten vowels in the first syllable:

high	<i>i</i>	<i>i̯</i>	<i>ü</i>	<i>u</i>
mid	<i>e</i>	<i>õ</i>	<i>ɛ</i>	<i>o</i>
low		<i>ä</i>	<i>a</i>	

Such a scheme is highly generalized. The objective positions of the vowels in the formant space (see Diagram 1) show that actually the vowels cannot be classified that easily.

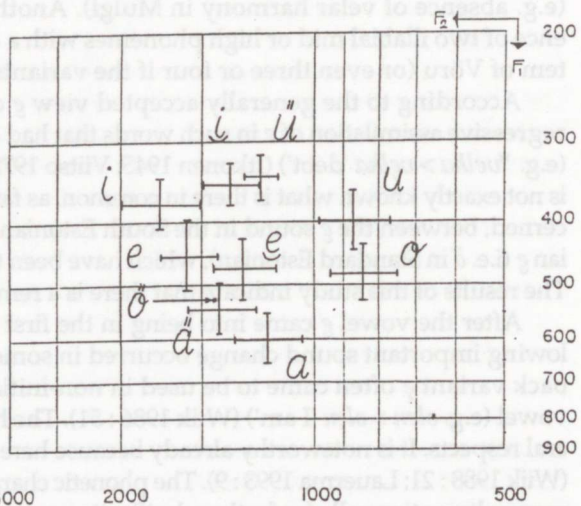


Diagram 1. Location of short monophthongs of the first syllable of Vastseliina in the formant space.

For each phoneme in the first syllable at least 14 words were measured, with the exception of *ö* that could be measured only once.

Table 1

Mean formant values for vowels in the first syllable in Vastseliina together with standard deviations (in Hz)

	F1	SD	F2	SD	F3	SD	F4	SD
<i>a</i>	593,7	55,7	1181,5	137,5	2495,2	213,3	3434,0	215,8
<i>e</i>	455,2	48,6	1589,8	138,2	2370,4	224,1	3355,5	267,8
<i>i</i>	371,0	28,0	1761,7	214,9	2318,6	258,7	3227,9	323,2
<i>o</i>	478,9	42,2	833,3	93,5	2142,9	266,2	3211,5	346,2
<i>u</i>	401,3	40,2	882,1	109,1	1876,1	228,6	2776,9	232,2
<i>ɛ</i>	459,2	60,8	1303,9	154,6	2178,6	240,2	3357,4	280,0
<i>ɨ</i>	346,7	23,1	1358,1	132,8	2100,2	83,1	2843,7	169,5
<i>ä</i>	538,1	44,8	1385,3	163,9	2299,4	184,4	3244,8	281,1
<i>ö</i>	535	–	1434	–	2471	–	3543	–
<i>ü</i>	345,0	28,8	1229,3	65,9	1901,0	140,8	2712,1	120,1

As to their formant values the labial back vowels *u* and *o* are much closer than the corresponding vowels in Standard Estonian (cf. also Pajusalu 1996 : 72). The formant value of the third labial vowel *ü* is higher than *i*, *ɨ* and *u* and is positioned on the F2 scale in the middle between *i* and *u*, being more back than the other front vowels (*i*, *ɨ*, *e*, *ä*). On the basis of vowel relations it could be regarded as a central vowel. Presumably the shift of *ü* toward the center is conditioned by the position of the other high vowel *ɨ* in the phonetic space.

The two most problematic sounds of Võru are the vowels *ɛ* and *ɨ*. In earlier studies the corresponding vowel in Standard Estonian has been classified in different ways (see Viitso 1981 : 91, 95; 1990 : 163; Eek, Meister 1994 : 549). The formant value of the dialectal *ɛ* that corresponds to *ɛ* in the standard language is more front than that of *ü*, which has traditionally been considered a front vowel. As to its height it is located more or less on the same level as *e* and *o*. Thus, in the case of *e* there has been no phonetic raising (at least in the case of this particular informant) and *ɛ* belongs to mid vowels.

ɨ is similarly to *i* a front vowel, but as far as the formant values are concerned, it is *ü* that is the closest sound to *ɨ*. The closeness of the above vowels in the formant space could explain why *ü* is more retracted than the traditional front vowels *i*, *e*, and *ä*.

When comparing the measurement results with those obtained by Pire Teras within the framework of the same project (see Rist 1997), it appeared that the formation of *ɨ* and thus also *ɛ* and *ü* may vary to a considerable degree in various individuals. According to the results by P. Teras *ɛ* is a somewhat more back vowel. It must be conditioned by the articulation place of the other velar vowel *ɨ*, which, according to P. Teras, is lower than *i* and *ü* and is actually a mid vowel. Thus it influences *ɛ* instead of *ü* and has pushed the latter into a more back position. At the same time the measurement results by P. Teras prove that *ü*, which is directly not influenced by the high *ɨ*, is a front vowel as to its formant frequency.

Thus one might conclude that the higher or lower articulation of *ɨ* in various individuals influences the articulation of *ɛ* and *ü* as a more front or back vowel, so that the phonemes will not overlap. One possible explanation for the relatively extensive fluctuation of *ɨ* in the speech of different informants is the late origin of *ɨ*, whereby the phonematic position of *ɨ* is unstable. It proves the hypothesis by K. Wiik (1986 : 51) and T.-R. Viitso (1981 : 112–113) according to which *ɨ* developed into a phoneme during the period when the Finnic linguistic unity was disintegrating, and, accordingly, *ɨ* is still strengthening its phonematic basis.

Vowels in non-initial syllables

Generally speaking, the vowel system of Vastseliina corresponds to the system of vowels in the first syllable. There are some peculiarities, however.

In the second syllable *i* is the equivalent of *ɨ*, but the occurrence of *i* in the second syllable is limited and may not be manifested at all in some individuals as the word can be pronounced with *ɛ*. Usually *i* in the second syllable can occur only in words of the type **sepra* with a schwa vowel, such as *seβɨr* (~ *seβɛr*) 'friend', *peβɨr* (~ *peβɛr*) 'elk', and *adɨr* (~ *adɛr*) 'plough'. As the recorded conversation did not include any words of the type *sõber*, then I was unable to measure *i* in the second syllable. From the second syllable on, *i* does not occur in the Võru dialect.

Also, instead of *ɛ* there is a more back equivalent of *ɛ* in a non-initial syllable. There are no constraints for its occurrence in non-initial syllables, *ɛ* may occur also farther than the second syllable.

Although according to the VMS 1982 and the EMS 1996 there is inconsistent *ö*-harmony in Vastseliina, it is evident that *ö* must have a sporadic character in Vastseliina. As a rule, *ö* can be found only in the first syllable.

The vowels in the second syllable have been measured on an average 23 times (at least 17 times) (see Table 2), with the exception of *ü*, which due to its scarce occurrence in non-initial syllables could be measured only six times.

Table 2

Mean formant values for vowels in the second syllable together with standard deviations (in Hz)

	F1	SD	F2	SD	F3	SD	F4	SD
<i>a</i>	565,5	82,9	1140,0	112,8	2431,6	234,9	3287,9	285,8
<i>e</i>	451,7	46,0	1618,5	126,4	2417,3	183,3	3352,9	250,0
<i>i</i>	371,6	41,3	1731,0	170,3	2369,3	232,2	3202,0	295,1
<i>o</i>	469,2	29,9	1182,8	245,1	2272,5	289,8	3257,2	272,6
<i>u</i>	363,9	33,2	928,2	166,8	1928,4	149,8	2830,4	131,9
<i>ɛ</i>	458,3	40,1	1279,5	126,3	2275,4	258,2	3375,3	326,8
<i>ä</i>	571,9	48,9	1408,2	152,6	2464,8	215,3	3355,6	293,5
<i>ü</i>	339,3	23,2	1252,7	77,9	2001,8	129,8	2621,2	56,2

Vowels in the third syllable were measured on an average 15 times (see Table 3), with the exception of *ü*, which could be measured only three times, and *o*, for which I carried out only one measurement and even then only in a borrowed word that is a compound (*samacorni*). Generally speaking, in the speech of the informant *o* in the third syllable had been replaced by *u*.

Table 3

Mean formant values for vowels in the third syllable together with standard deviations (in Hz)

	F1	SD	F2	SD	F3	SD	F4	SD
<i>a</i>	518,0	63,2	1246,6	200,1	2384,8	317,9	3319,1	244,0
<i>e</i>	456,3	55,7	1627,6	167,3	2449,8	242,2	3418,8	253,4
<i>i</i>	402,1	43,7	1698,4	175,0	2430,6	207,1	3403,6	266,7
<i>o</i>	535	–	967	–	2575	–	3612	–
<i>u</i>	368,1	24,9	1097,2	179,9	2021,8	210,5	3005,6	285,1
<i>ɛ</i>	476,7	34,9	1483,7	107,9	2452,5	228,2	3538,3	195,5
<i>ä</i>	490,1	57,6	1476,8	130,1	2378,2	239,5	3366,2	216,4
<i>ü</i>	328,0	17,0	1220,7	20,2	1998,0	88,4	2696,0	385,2

In the second syllable the back vowels *a* and *o* have shifted toward the center of the formant space; the direction toward frontness is manifested in the case of the

vowel *u* as well (see Diagram 2). Similarly to the Mulgi dialect the formant frequencies for *a* and *ä* in the second syllable are rather close (cf. Pajusalu 1996 : 82). As to its articulation and acoustics φ is very similar to *o* and *e* in the first syllable, but historically it is the retracted equivalent of the front vowel *e*.

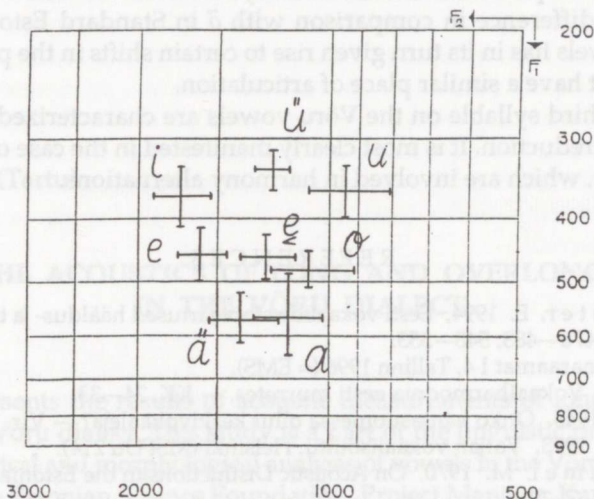


Diagram 2. Position of short monophthongs of the second syllable in the formant space in Vastseliina.

In the third syllable all the vowels have been reduced to a considerable degree (see Diagram 3). The stablest vowel in the speech of this informant seems to be *ü*. As to its formant value φ has shifted toward the front vowels and *ä* has been raised considerably. In the Mulgi dialect the sound change *a, ä > e* is rather widespread in non-initial syllables, from the third syllable on it is even a regular phenomenon (e.g. *juhatteje* 'manager') (Pajusalu 1996 : 79). In the Võru dialect area the change *a, ä > e* has not taken place in non-initial syllables, but *ä* has become reduced to a considerable degree. Reduction can be observed also in the other vowels of the third syllable. It is manifested most of all in the case of φ and *ä* that are subject to vowel harmony.

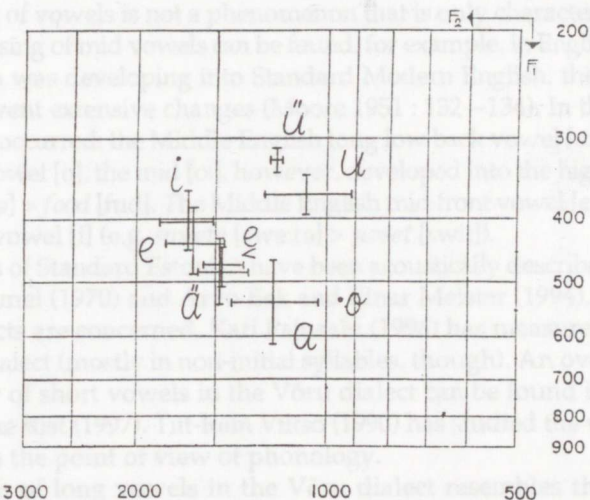


Diagram 3. Position of short monophthongs of the third syllable in the formant space in Vastseliina.

Summary

The vowel system of Võru is in several respects different from that of Standard Estonian. The most important special features include two different illabial central vowels and their equivalents in non-initial syllables. At the same time there exists a noteworthy difference in comparison with *õ* in Standard Estonian. The large number of vowels has in its turn given rise to certain shifts in the pronunciation of the vowels that have a similar place of articulation.

From the third syllable on the Võru vowels are characterized by a relatively high degree of reduction. It is most clearly manifested in the case of the secondary vowels *ä* and *ɛ*, which are involved in harmony alternations.

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Table 3

Vowel	Mean formant values for vowels in the third syllable							
	F1	F2	F3	F4	F5	F6	F7	F8
<i>a</i>	118.0	662.2	266.2	200.1	2482.2	217.9	33.91	344.0
<i>ä</i>	426.3	533.7	1223.6	147.1	2891.0	242.2	34.88	253.4
<i>i</i>	402.1	668.7	1203.4	152.3	2232.2	237.1	33.66	266.7
<i>e</i>	335	667	1207	152	2275	241	36.12	—
<i>ɛ</i>	368.1	667	1207	152	2275	241	36.12	285.1
<i>o</i>	476.7	668.9	1207	152	2275	241	36.12	195.5
<i>õ</i>	490.1	668.6	1207	152	2275	241	36.12	216.4
<i>u</i>	328.0	170	1220.7	202	1996.0	80.4	26.60	368.2