MATI HINT (Tallinn)

THE SEMI-VOWELS [j] AND [w] IN THE PHONOLOGICAL AND MORPHOPHONOLOGICAL SYSTEMS OF ESTONIAN. I

The semi-vowels [j] and [w] in the phonological system of Estonian

1.0. From the viewpoint of autonomous taxonomic phonology very different opinions have been expressed concerning the status of the Estonian semi-vowels [j] and [w] and their relations to /i/ and /u/ as well as /v/.[1] However, in accordance with the spirit of taxonomical descriptive linguistics, the morphological and morphophonological consequences of different phonological solutions have not been hitherto seriously considered. The author of the present article is of the opinion that the different phonological transcription methods may be of interest since they show how it is possible to treat, in an abstract manner, a part or a subsystem of the phonological system of a language, in a number of varying ways. And yet, in the description of a language as a whole, and in the description of the sound pattern of a language, only those transcriptions and concepts are of relevance which may be associated with a reasonable and systematic morphological description that has not been distorted by phonological conceptions and transcriptions. After all the speaker of a language interprets the possibilities of a phonological system and its analysis according to their actual usage in grammar. Therefore, when proposing phonological solutions, one must not neglect the morphological system. An entirely autonomous phonology which ignores the actual usage of the phonetic system of a language in grammar may misrepresent that system, altogether. Below, an attempt has been made to treat the principal phonological problems connected with the Estonian semi-vowels (on the level of transcription) and discuss some phonological concepts which are based on the viewpoint of autonomous phonology. Thereafter, some morphophonological consequences of phonological solutions are dealt with.

In the following phonological formulae the word-initial sequences are marked with ┼, word-final sequences with ╫, and word-medial ones with two hyphens. Non-occurring sequences are marked with an asterisk.

1.1. T.-R. Viitso has proposed the possibility of treating [j] as a positionally defined allophone of /i/.[2] I. Lehiste, too, has repeatedly omitted /j/ from the list of Estonian phonemes.[3]

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[1] A systematized summary of the different standpoints has been presented by V. Hallap, cf. V. H a l l a p, Poleemilist, julget, kapitaalset, sekka ka vähem meeldivat. —. KK 1965, pp. 54—56.

[2] T.-R. V i i t s o, Teese ja antiteese. — ESA IX 1963, pp. 8 ff.

[3] I. L e h i s t e, Segmental and Syllabic Quantity in Estonian. — American Studies in Uralic Linguistics (= Indiana University Publications. Uralic and Altaic Series, Vol, 1), Bloomington 1960, pp. 24, 26; I. L e h i s t e, A Poem in *Halbdeutsch*. — Word, Vol, 21, 1965 1, pp. 62, 64; I. L e h i s t e, Consonant Quantity and Phonological Units in Estonian (= Indiana University Publications. Uralic and Altaic Series, Vol. 65), Bloomington, The Hague 1966, p. 1; cf. V. H a l l a p, Otstarbekohasuse printsiip fonoloogias. — KK 1962, p. 738.

The contrast of the word-initial diphthong /+*i*V/ to the initial CV-sequence /+*j*V-/ is, in fact, sufficient proof of the phonological nature of /*j*/ from the standpoint of autonomous phonology. The diphthongs /+*i*V/ occur in dialectal words, genuine place-names as well as in foreign loan-words of the literary language: compare, e. g., [*iusse*] 'hair, pl.' in the Tartu dialect, [*ià*] 'good' in the Central-Estonian dialect, or the place-name [*iùгemägi*] [4] from Rõngu, or the word *ioniseerima*, with its deriva-tives in the literary language as contrasting to the initial /+*ju*-/ and /+*ja*-/ and /+*jo*-/ sequences. The word-initial weakly stressed /*i*/ preced-ing a stressed vowel in the word *ioon* = [*i,ô·n*] is not pronounced, in correct usage, as [*j*]; neither does a similar /*i*/ in the word *hiaatus* turn into a [*j*] in the usage of those who omit the initial /*h*/. Moreover, one must not ignore the abundant occurrence of /-*i*V-/-diphthongs in word-initial stressed syllables (both in dialects and in Literary Estonian); their rare occurrence in an absolute initial position may be considered (with some reservations) occasional.

Thus, it must be considered as reasonable to recognize both /*i*/ and /*j*/ as autonomous phonemes in Standard Estonian, though their distribution is to a great extent complementary: /*j*/ does not occur before consonants (alternatively, it is possible to adopt a definition that /*i*/ does not occur as the second component of a diphthong or a sequence of vowels, e. g. /ˈsein/ or /ˈsejn/ 'wall').

There are considerable restrictions in respect to possible combinations with /*i*/ and /*j*/. The sequences */+*ji*-/, */+*jii*-/ and */+ˈ*jii*-/ do not occur initially in stressed syllables (the pronunciation of [*j*] in the recent cultural loanword *jiidiš* 'Yiddish' is questionable, but that word may re-main an exception [5]). The sequences /*ij*V/ of the first quantity degree are impossible. Sequences */+C*j*-/ do not occur in word-initial position (except in foreign proper names). [*j*] does not occur in a word-final posi-tion in phonetic transcription, and in phonological transcription a final /*j*/ would be superfluous as well. However, a conception that denies the existence of /*i*/ as the second component of a diphthong or vowel sequence would demand the recognition of a final /*j*/: /ˈlaj/ or /ˈlajj/ 'broad' and /ˈpajnama/ or /ˈpajjnama/ 'haunt' (compare below 1.5; the mark ˈ before a syllable denotes the third quantity degree).

1.2. The relation between /*u*/ and /*v*/ is to a certain extent similar to that between /*i*/ and /*j*/: [*v*] occurs as the first component of a consonant sequence but in late cultural loans (*paavst* 'pope') and recent derivatives (*tugevdama* 'strengthen', *teravnema* 'grow sharper'), and in the latter owing to the possibility of the occurrence of [*v*] in a word-final position (contrary to [*j*]). Further, [*v*] may happen to stand before a consonant in inflectional forms of a word, due to the dropping out of a vowel (*haavli* 'of a pellet', *väävli* 'of sulphur', *kühvli* 'of a shovel', *vürhvli* 'of a die'). But [*v*] = /*v*/ does not occur in Literary Estonian syllable- or word-finally after short nuclei of the first (main-stressed) syllable, except in cases of [*v̇v*] geminates (*kivvi*, *tüvve*) and in exceptional words, such as *plevna* (from *Plevna*). In dialects other pronunciation models may occur, e. g. [*kruū*] 'screw' in South Estonia or [*e̯ū*] 'court-yard' in Kodavere.

In respect to the relation between /*i*/ and /*j*/, it was of importance to point out the absence of the sequences /*ij*V/ of the first quantity degree in case

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[4] M. H i n t, Murrakute foneetiliste ja fonoloogiliste süsteemide kirjeldamisest. — ESA 11 1965, pp. 142 ff. A. Raun has stated that *iu* does not occur in initial position in genuine words, cf. A. R a u n, A. S a a r e s t e, Introduction to Estonian Linguistics. — Ural-Altaische Bibliothek. Fortsetzung der Ungarischen Bibliothek XII, Wiesbaden 1965, p. 16.

[5] Cf. T.-R. V i i t s o. Teese ja antiteese, p. 8, footnote 6.

of a stressed /i/; there is no analogical parallel in the relationship between /u/ and /v/: the sequences /uvV/ of the first quantity degree are rather usual (*huvi* 'interest', *tuvi* 'dove', *suve* 'of the summer', etc.). There are no initial sequences /+ji-/ whatever, whereas, on the contrary, the initial sequences beginning with /+vu-/ are quite common. It is, however, of importance to mention that those sequences occur in descriptive words, only (*vulisema* 'to gurgle', *vulin* 'gurgle', *vurisema* 'to whirr', *vurin* 'whirr', *vudinal* 'in a scurry', and others) or in words bearing a descriptive character, as well (*vutt* 'quail', *vurr* 'humming-top'). But it is obvious that those words must be considered as absolutely ordinary lexemes conforming to all norms. By treating descriptive words in isolation from the rest of the vocabulary, or by exaggerating their descriptiveness one might arrive at too subjective conclusions.

Diphthongs /+uV-/ in a word-initial position are very common, particularly *ui*-diphthongs: *uinuma* 'fall asleep', *uimane* 'stupefied', *uisutama* 'to skate', in dialects [uвà] : [uà] 'bean, Nom. and Gen. Sg.', etc.

If initial */+jii-/ and */+`jii-/ sequences are practically non-existent, then the same restriction of occurrence may also be found in the relation of /v/ and /u/: an initial /+vuu-/ occurs only in the words *vuuk* 'joint' and *vuukima* 'to join', which have been adopted into Standard Estonian from the argot of master-builders (Germ. *die Fuge*). This, of course, does not alter the fact that the initial /+vuu-/ sequence is met with in a widely-used word-stem and that its pronunciation contrasts with the pronunciation of an initial /+uu-/. If, however, the stem *vuuk* is to be considered an exception like the word *jiidiš* then this would mean that there is an essential gap in the distribution of /v/ and /u/, which is equal to the absence of the initial /+jii-/ sequence. In both cases, that gap has been filled by the recent loans *jiidiš* and *vuuk*. (The dialectal pronunciation *huuvitav* = [hūvittav] 'interesting' is an obvious secondary development, in Standard Estonian and in most dialects the word is pronounced with a short [u].)

The final /v/ = [ʋ] is rather usual, but generally it does not occur in the environment /Vu—/, except in the case of some foreign words, foreign place-names (*eksuuv* 'exuviae', *Vesuuv* 'Vesuvius') and some erroneously stipulated standard forms (*muuv* 'lowing [cow]', *näuv* 'mewing').

Sequences /+Cv-/ occur word-initially only in a few foreign words (*kvarts* 'quartz', *tvist* 'twist', *šveitslane* 'Swiss' and others); the pronunciation of these sequences, however, does not cause difficulties.

Both /u/ and /v/ are undoubtedly autonomous phonemes.

1.3. Before tackling the problems connected with [w], let us summarize some interesting parallels in the distribution of /j/ and /i/ on the one hand, and /v/ and /u/, on the other. The sequences marked with an asterisk do not occur in the first (stressed) syllables:

(1)   */-jC-/,   cf.   */-vC#/;
        */+jii-/,   cf.   */+vuu-/;
        */+Cj-/,   cf.   */+Cv-/.

It might be possible to overlook the fact that combinations /-vC-/, /+Cv-/, /+jii-/ and /+vuu-/ are represented by single words: if exceptions are admissible in descriptions of languages, these gaps might be regarded as valid.

In treating the present problem, one should not ignore the fact that there are some more gaps of interest in the distribution of /j/: the sequences /+je-/, /+jee-/ and /+`jee-/ occur in word-initial stressed syllables only in a couple of foreign words or proper names (*jeen* 'yen',

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jeerum 'an interjection derived from a distorted pronunciation of Jesus', *Jeesus* 'Jesus', [*j e n ù*] 'the name of a farm at Rõngu Koruste'); a couple of argot words, too (*jessas* 'Jesus' and *jeeli-jeeli* from Russian *еле-еле* 'hardly'), violate that restriction in the distribution of /j/. Treating those few cases as exceptions, we can obtain a more general rule concerning the restrictions in the distribution of /j/, particularly considering the fact that /j/ does not occur after the short stressed front vowels /i e ä ö ü/ and after /ee/ and /ˈee/, either (an exception is the foreign loan *pejoratiivne* 'peiorative', which often is also pronounced as [*p²ijo-*]). Thus, the most essential restrictions in the distribution of /j/ in word-initial syllables may be summarized as follows:

(2)

$$/j/ \rightarrow \quad \begin{array}{l} +^*- \left\{ \begin{array}{l} i \\ e \end{array} \right\} *- \\ +^*- \left\{ \begin{array}{l} ii \\ \text{`}ii \end{array} \right\} - \\ +^*- \left\{ \begin{array}{l} ee \\ \text{`}ee \end{array} \right\} *- \end{array} \quad \left\{ \begin{array}{l} a \\ u \\ e \\ (o) \end{array} \right\}$$

In the case of /ˈee-/, this rule is broken by but one practically non-occurring derivative — the nomen agentis ending in *-ja* from the intransitive verb *keema* 'to boil' (*keeja*).

Thence it might be concluded that the distributive relations of /e/ and /i/ to /j/ show certain parallels. The more striking is the fact that /j/, which does not occur in the environment /ee—V/ and /ˈee—V/, is automatic in the environment /ii—V/ and /ˈii—V/.

In reality, /j/ is automatic in an even wider environment:

(2a)

$$/j/ \rightarrow \quad \left/ \left\{ \begin{array}{l} (C)(C)Vi \\ \text{`}(C)(C)Vi \end{array} \right\} -V \right/$$

(in words like

laia	= [*laĭja*]	= /laija/	'wide, Gen.',
laia	= [*laĭja*]	= /ˈlaija/	'wide, Part.',
nuia	= [*nuĭja*]	= /nuija/	'cudgel, Gen.',
muie	= [*muĭje*]	= /muije/	'smile',
liia	= [*lĭja*]	= /liija/	'too much, Gen.',
siia	= [*sĭja*]	= /ˈsiija/	'here'; etc.)

The restrictions in the distribution of /j/ are likewise of a wider scope than indicated in the formula (2), and may be summarized in the formula (2b):

(2b)

$$/j/ \rightarrow \quad \begin{array}{l} +^*- \left\{ \begin{array}{l} iV \\ \text{`}iV \end{array} \right\} \\ +^*- \left\{ \begin{array}{l} eV \\ \text{`}eV \end{array} \right\} \end{array}$$

Neither does /j/ occur after a long /uu/ or after a diphthong ending in /u/:

(2c)

$$/j/ \rightarrow \quad \left/ \left\{ \begin{array}{l} Vu \\ \text{`}Vu \end{array} \right\} *- \right/$$

In non-first syllables, those restrictions are valid only in the case of */-ji-/ sequences (which may occur in dialects).

The restrictions in the relations of /v/ = [v] to back vowels are of a lesser scope. The most essential of them, with the aforementioned reservations, may be formulated in respect to stressed vowels as follows:

(3)

$$/v/ \rightarrow \Big/ \begin{array}{c} + {}^*{-} \\ {}^*{-} \end{array} \left\{ \begin{array}{c} `uV \\ `uV \\ Vu \\ Vu \end{array} \right\} {}^*{-} \left\{ \begin{array}{c} V \\ \# \end{array} \right\} \Big/$$

Of course, it must be constantly kept in mind that some single exceptions infringe the indicated restrictions (the recent loan *vuuk* : *vuugi*, the interjection *vuih*).

Actually, the restrictions in the distribution of /v/ are even more extensive: in the environment of /—V*u*/ and /—'V*u*/, as well, /v/ occurs but in the descriptive words *vau* 'peacock (from Germ. *Pfau*)' and *viu* 'buzzard'. Of a more essential significance, however, is the symmetrical restriction of the distribution of /v/:

(3a)

$$/v/ \rightarrow \Big/ \begin{array}{c} + {}^*{-} \end{array} \left\{ \begin{array}{c} `uu \\ `uu \end{array} \right\} {}^*{-} \Big/$$

It is true that for phonological and morphophonological reasons, the [-ŭv-] geminates occurring in South-Estonian dialects might be appropriately phonemicized as /-uv-/ sequences (in words like [laŭD] : [laŭva] 'table', [ûz] : [uŭve] 'new', [kruū] : [kruŭvi] 'screw', etc.[6] In case of that interpretation, an important restriction in the distribution of /v/ and /u/ loses its validity in the phonology of South-Estonian dialects. But here, as well, there is the more plausible alternative of presenting phonemicizations which run parallel to those of Standard Estonian /'laut/ : /lau,a/ or /'laut/ : /lauwa/, etc., where the dialectal phonetic realization would be [-ŭv-] (/,/ is the syllable boundary phoneme). In that case, it would be possible to establish morphophonological rules entirely covering both Standard Estonian and South-Estonian dialects. Thus, the weak-grade Genitive forms would be obtained from strong-grade Partitive forms in the following way (/'lauta/ → /lau,a/):

	Standard Estonian	South-Estonian dialects
At the morphophonological level:		
1. /t/ → ∅ /V—V/	idem
2. /'/ → ∅	idem
3. /,/ → /Vu—a/	idem
At the phonetic level:		
4. /,/ → [w] /Vu—a/	idem
	5. /-uw-/ → [-ŭv-] or
	4. /u,/ → [ŭv] /V—V/

The rules 3—5 might be established as automatic.

Only the above solution makes it possible to consider words like *lauda* : *laua* and *nõida* : *nõia* 'witch' as one morphological and morphophonological type in both Standard Estonian and South-Estonian dialects, whereas the phonemicization /lauva/ would separate those types in the South-Estonian dialects.

In Standard Estonian, there is no reason whatever for treating the [v] sound as anything else than a /v/ phoneme. Here, the problem consists in the relation between [v] and [w] at the phonological level (in South-Estonian dialects the sound [w] does not exist).

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[6] Cf. M. H i n t, Murrakute foneetiliste ja fonoloogiliste süsteemide kirjeldamisest, pp. 121, 130, 138.

A comparison of the formulae (2) and (2a) and of (3) and (3a) at once reveals a great difference in the distribution of /j/ and /v/: if /j/ is automatic in the environments /(C)(C)V*i*—V/ and /ʻ(C)(C)V*i*—V/ (where the first V is also /i/), then /v/ cannot occur in the environments /(C)(C)V*u*—V/ and /ʻ(C)(C)V*u*—V/ (where the first V is also /u/), and here the automatic sound is [w]:

(4)
$$[w] \rightarrow / \left\{ \begin{array}{c} \text{(C)(C)V}u \\ \text{ʻ(C)(C)V}u \end{array} \right\} - \left\{ \begin{array}{c} a \\ e \end{array} \right\} /$$

[j] and [w] do not occur in front of /i/, — this is a firm rule of Standard Estonian phonology; the words *mau : maui : ʻmaui* = [*maù*] : [*maŭwi*] : [*maùwi*] 'puffed up' and derivatives *mauine* = [*maŭwine*], *mauikas* = [*maŭwikkaz*] 'puffy' are obvious errors of language standardization.[7]

Formula (4) simultaneously describes the distribution of [w] in conformity with traditional phonetical concepts. The extremely restricted occurrence of [w] raises the problem of its status in the phonological system of the Estonian language.

1.4. Formula (4) gives us grounds for regarding [w] as an allophone of the phoneme /v/. This has also been the view-point of P. Ariste.[8]

Such would be the first basic solution of the problem of the phonological status of [w]. Accordingly, the phonological expression should be as follows:

(5)
[*ūwe*]	= /uuve/	'new, Gen.',
[*kaŭwa*]	= /kauva/	'long time',
[*ęŭwe*]	= /õuve/	'court-yard, Gen.',
[*ęùve*]	= /ʻõuve/	'court-yard, Ill.',
[*saŭwa*]	= /sauva/	'staff, Gen.',
[*saùwa*]	= /ʻsauva/	'staff, Part.'

(putting the mark of overlength in front of the syllable).

T.-R. Viitso considers it possible to treat [w] as an automatic variant of the phoneme /u/, especially if [j] is regarded as an allophone of /i/.[9] Thus, T.-R. Viitso assumes the possibility of a parallel

(6)
[j] → /i/	(in every environment) and
[w] → /u/.	

The above is the second possibility of deciding the phonological status of [w]. The phonological transcription would accordingly appear as follows:

(7)
[*ūwe*]	= /u.uue/,	[*kaŭwa*]	= /ka.uua/,
[*ęŭwe*]	= /õ.uue/,	[*ęùwe*]	= /ʻõ.uue/,
[*saŭwa*]	= /sa.uua/,	[*saùwa*]	= /ʻsa.uua/,

writing here, likewise, the mark of overlength in front of the syllable in phonological transcription (the point marks the stress of the preceding syllable).

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[7] Cf., for example, Eesti õigekeelsus-sõnaraamat II, Tartu 1930; E. M u u k, Väike õigekeelsus-sõnaraamat, Tartu 1933.

[8] P. A r i s t e, Eesti keele foneetika, Tallinn 1953, p. 105. In a new edition of the same (Tartu 1965), however, this view has not been repeated. Cf. also T.-R. Viitso's transcription /tuuvakse/, see T.-R. V i i t s o, Tüvelisest astmevaheldusest (eriti eesti keeles). — ESA VIII 1962, p. 48.

[9] T.-R. V i i t s o, Teese ja antiteese, pp. 8 ff.

An analogical solution in the case of [i] and [j] would yield, e. g., /si.iiale/ = [sìjale] 'whitefish, All.'

Such a transcription stipulates an additional formulation: /i/ and /u/ as nuclei of a syllable are of a vocalic nature, and if they precede a syllable nucleus, they are consonantal.

Independently of the problems of automatic [w] and [j], T.-R. Viitso introduces a syllable-boundary phoneme /,/ which is necessary in such words as /ava,us/ 'opening', /pale,us/ 'ideal', /ʿhõlla,us/ 'yearning', /ʿmuu-se,um/. T.-R. Viitso defines this phoneme at the boundary of any syllable. There does not seem to be any need for such a conception, but this is of no importance in the present case. It is, however, important that the syllable-boundary is of course marked in front of the automatic [w] and [j] too, and that such a transcription immediately yields the third basic possibility of placing [w] and [j] in the phonological system of the Estonian language:

(8) [saůwa] = /sau,a/, [saùwa] = /ʿsau,a/ and
     [laǐja] = /lai,a/, [laǐja] = /ʿlai,a/,

if the mark of overlength is placed in front of the syllable here as well.

Thus, the automatic [j] and [w] would serve as forms of the realization of the syllable-boundary phoneme /,/. Those realization rules could be presented here in the following manner:

$$(9) \qquad /,/ \rightarrow [w] \Big/ \begin{Bmatrix} Vu \\ ʿVu \end{Bmatrix} - \begin{Bmatrix} a \\ e \end{Bmatrix} \Big/$$

where V is also /u/, and

$$(10) \qquad /,/ \rightarrow [j] \Big/ \begin{Bmatrix} Vi \\ ʿVi \end{Bmatrix} - \begin{Bmatrix} a \\ e \\ u \end{Bmatrix} \Big/$$

where V is also /i/ and in some single cases [j] may also occur in front of /o/ too (neiokene 'young woman, dim.' and in similar words). Since the mark of overlength is written in front of the overlong syllable and not above the concrete phoneme, it may be left out of the specifications of the environment; thus the same rule would be simultaneously valid for the words of the second and third quantity degree:

$$(9a) \qquad /,/ \rightarrow [w] \Big/ Vu - \begin{Bmatrix} a \\ e \end{Bmatrix} \Big/$$

$$(10a) \qquad /,/ \rightarrow [j] \Big/ Vi - \begin{Bmatrix} a \\ e \\ u \end{Bmatrix} \Big/$$

V. Hallap has indicated that in the phonological transcription of such words as ʿlai : laia : ʿlaia and ʿsau : saua : ʿsaua the syllable-boundary mark may even be omitted.[10] In case of such a solution, the non-automatic /j/ cannot be omitted from the list of phonemes (compare the contrasts in the words saja 'a hundred, Gen.' and saia 'white bread, Gen.'). The mark of the syllable-boundary may be left out of the list of phonemes if the list is supplemented by rules of syllable division.

As a fourth possibility, we may consider a phonemicization that is close to the phonetic transcription:

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[10] V. H a l l a p, Poleemilist, julget, kapitaalset, sekka ka vähem meeldivat, p. 55.

(11) $[sau̯wa]$ = /sauwa/, $[saù̯wa]$ = /‘sauwa/,
and, correspondingly,
$[lai̯ja]$ = /laija/, $[laì̯ja]$ = /‘laija/.

1.5. These four basic possibilities of a phonological interpretation of the automatic [w] and [j] may of course be combined and some details may be shifted in the basic schemes. In the article mentioned, V. Hallap has provided some good examples of pertinent possibilities, and he has also referred to the interests of the description of morphology.

Let us now take another look at the differences between the four basic solutions. Under discussion are the segments [w] and [j] following a stressed (word-initial) syllable:

$$(9b) \qquad / \left\{ \begin{matrix} Vu \\ `Vu \end{matrix} \right\} - \left\{ \begin{matrix} a \\ e \end{matrix} \right\} / \quad \text{as an environment for [w] and}$$

$$(10b) \qquad / \left\{ \begin{matrix} Vi \\ `Vi \end{matrix} \right\} - \left\{ \begin{matrix} a \\ e \\ u \end{matrix} \right\} / \quad \text{as an environment for [j].}$$

Table 1 : 1

Segments Phonemes	[w]	[j]
Solution 1	/v/	/j/
Solution 2	/u/	/i/
Solution 3	/‚/	/‚/
Solution 4	/w/	/j/

The first solution (/sauva/, /laija/, /‘sauva/, /‘laija/) has been considered possible by P. Ariste. M. Hint has supported such a solution.[11] The overlapping in the distribution of [v] and [w] in some single cases does not render that solution questionable, in particular because /-Vuv-/ sequences occur at morpheme boundaries in some extremely unshapely derivatives accepted in standardized Estonian, such as /‘näuvat/ = [näu̯vaᴅ] 'they mew', /‘muuvat/ = [mû̯vaᴅ] 'they low', /‘hauvat/ = [hau̯vaᴅ] 'they hatch', and at the boundary of phonological component words of some extremely rare foreign loans (*rauvakk* from Germ. *Rauchwacke*, and perhaps some others). Such cases may be treated by marking the boundary of morphemes, resp. the component words with some kind of juncture, e. g. /‘näu-vat/, /muu-vat/, /rau-‘vakk/, etc., as has already been suggested earlier.[12]The standpoints of the most orthodox form of descriptivism have been shaken in recent years to such an extent that exceptions to phonological rules are no longer considered as methodologically impermissible, even from the viewpoints of descriptivism, and thus the quoted words may be regarded as exceptions to a phonological rule or phonological

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[11] M. H i n t, Fonoloogilistest võõrjoontest normeeritud eesti kirjakeeles. — ESA X 1964, p. 42.
[12] M. H i n t, Fonoloogilised võõrjooned normeeritud eesti kirjakeeles, p. 42. As to the phonological component words in foreign loans of a compound structure, cf. M. H i n t, Ortoeepia normeerimise probleeme. — Keel ja struktuur 2. Tõid strukturaalse ja matemaatilise lingvistika alalt, Tartu 1968, pp. 16—34.

system. In the present case we are obviously dealing with words which are either alien to the system of a language or peripheral from the viewpoint of the system.

The first solution relies on phenomena of a system which point to the complementary character of [w] and [v] and to the parallels between /j/ and /v/ in the phonological system of Standard Estonian. But, as indicated above (1.3), those parallels are far from being complete and so the first solution cannot be considered superior to others even from the purely phonological standpoint.

The second solution (/sa.uua/, /la.iia/, /'sa.uua/, /'la.iia/) as presented by T.-R. Viitso cannot be regarded as the best one, either, since it proposes a vocalic-consonantal distribution for /u/ and /i/ that entirely differs from the distribution of other vowels; moreover, that solution ignores the parallels in the restrictions concerning the distribution of /j/ and /v/, omitting /j/ from the list of phonemes, and preserving for phoneme /v/ its range of phonetic occurrence.

As mentioned above (1.1), an elimination of /j/ from the list of phonemes would result in a number of complications of a theoretical and practical character. In Estonian the segments of consonantal function evidently cannot be associated with segments of a vocalic function in a simple and natural manner; any attempts of that kind would involve rather great difficulties.

If this second solution were treated without a consideration of the whole phonological system, it would of course be symmetrical in every respect.

The third solution (/sau,a/, /lai,a/, /'sau,a/, /'lai,a/) generalizes in maximum fashion and in respect to [j] and [w] equally the important fact of the automatic nature of [j] and [w] in the environments discussed. Therefore that solution can be considered superior to the others, both in respect to the entire phonological system and the part of the system concerned with semi-vowels. The problem of [w] arises only in connection with that particular position, and for that reason the localization of the problem is well-grounded. Here one must also point to the phenomenon that automatic [w] and [j] in the environments concerned are, in fact, a linguistic universal, occurring in a great number of languages.[13]

Further there is no reason to fear that the realizations of the syllable-boundary phoneme /,/ by way of [w] and [j] could be mixed up with the realizations of that phoneme as a "pure" division of syllables (without a transitional sound): [w] and [j] occur in a position after a stressed syllable in precisely defined environments (Formulae 9 and 10), whereas the other cases of the syllable-boundary phoneme /,/ are not connected with the stressed syllable or with the conditions indicated by (9) and (10); compare cases like /ava,us/, /pale,us/, /'hõlla,us/, /'muuse,um/, etc. (The question whether a transitional [j] occurs in such words as *raadio* 'radio'

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[13] An automatic [j] differs in many respects from a non-automatic [j] (respectively /j/). /j/ is obtained from /i/ by changing its distinctive feature value [+vocalic] into [−vocalic]; /j/ is both [−vocalic] and [−consonantal] and therefore its pronunciation is difficult for children learning to speak; as a rule, children master last of all those phonemes that are specified as [+vocalic] and [+consonantal] (the liquidae /l r/) as well as [−vocalic] and [−consonantal] (the semi-vowel /j/ and seemingly, in Estonian /v/ as well). On the other hand, the pronunciation of the a u t o m a t i c semi-vowels [j] and [w] is not connected with any difficulties, and children who learn to speak acquire them quite easily, according to the author's own observation. Compare R. J a k o b s o n, Child Language, Aphasia and Phonological Universals. — Janua Linguarum. Series minor No. 72. The Hague—Paris 1968, pp. 14 ff.; R. J a k o b s o n und M. H a l l e, Grundlagen der Sprache. — Schriften zur Phonetik, Sprachwissenschaft und Kommunikationsforschung Nr. 1, Berlin 1960, pp. 38 ff.; T.-R. V i i t s o, Teese ja antiteese, pp. 19 ff.

and *materiaalne* 'material, adj.' or not, does not directly affect the present discussion.)

There is no reason whatever for postulating a syllable-boundary phoneme in places where the syllable begins with a usual non-automatic consonant. This would complicate description of a language beyond expectations: /,/ would receive as many different realizations as there are syllable-initial consonants in a language. A definition of that phoneme by distinctive features would mean wasted labour (by the way, in the article referred to, T.-R. Viitso defines the Estonian phonemes as bundles of distinctive features). The syllable-boundary phoneme /,/ is by no means a usual juncture-phoneme (T.-R. Viitso defines it as a *spiritus lenis* that becomes phonetically assimilated to the preceding consonant). According to T.-R. Viitso, this phoneme occurs at the beginning of every syllable. There are no methodological grounds for endowing it with such a physically vague content, there is no need for /,/ as a syllable juncture phoneme, but for phonemicizing automatic [w] and [j] and in vowel phoneme sequences where syllable boundaries really exist.[14]

The fourth solution (/sauwa/, /laija/, /ˈsauwa/, /ˈlaija/) is as phonetically close as possible. In case this solution is accepted, one could at the phonological level reproach it for not having made use of the whole arsenal of phonological analysis of descriptive linguistics, since the problem does not concern a foreign phoneme, and therefore the segment [w] which is of an extremely limited distribution, should be associated with some other phoneme (as has been done in solutions 1—3), or, on the contrary, an attempt should be made to expand maximally the distribution of the phonologically established /w/, and, as far as possible, to bring its distribution into agreement with the distributions of the other consonants, as is done in the following.

1.6. Formula /,/ → [w] / $\left\{ \begin{matrix} Vu \\ Vu \end{matrix} \right\} - \left\{ \begin{matrix} a \\ e \end{matrix} \right\}$

describes the distribution of [w] according to traditional phonetic principles. In traditional phonetic transcription [w] is not written either at the end of a syllable or a word and the same also applies to [j]: [saù], [laì], etc., and not *[saùw], *[laìj]. And yet, it is possible to adopt a phonological conception and a phonological transcription which put down /w/ and /j/ at word-end, as well:

(12)   /ˈsauw/ : /sauwa/ : /ˈsauwa/ and
         /ˈlaij/ : /laija/ : /ˈlaija/.

At the transition from this transcription to phonetic transcription or to one of the more common phonological transcriptions a simple rewriting rule applies which eliminates final /w/ and /j/:

(13) $/ \begin{matrix} w \\ j \end{matrix} / \to \emptyset / - \# /$

This would be the fifth variant to be considered in respect to the phonological transcription of [w] and [j].

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[14] Cf. T.-R. V i i t s o, Teese ja antiteese, p. 11 and further.

There has even been criticism of usual juncture phonemes, on account of their phonetic undeterminedness, cf., e.g., J. V a c h e k, Some Remarks on "Juncture" in Phonological Analysis. — Proceedings of the Sixth International Congress of Phonetic Sciences. Held at Prague 7—13 September 1967. Prague 1970, pp. 963—965.

[15] The possibility of this transcription has also been indicated by V. Hallap, see V. H a l l a p, Poleemilist, julget, kapitaalset, sekka ka vähem meeldivat, p. 54. Such a description has been practically applied by R. Hammarberg, who interprets diphthongs in the shape of *koj*: and *nõw*: (but long vowels as *kuu:p*, etc.), see R. H a m m a r b e r g, Grade Alternation in Estonian, [Helsinki, preprint] 1968, pp. 24, 54, etc.

There is yet another, a sixth transcription possible, which is even more radical:

(14)   ⸢*saww*/   : /*sawwa*/   : ⸢*sawwa*/   and
          ⸢*lajj*/   : /*lajja*/   : ⸢*lajja*/.

In this variant, /*w*/ and /*j*/ would be written at the end of both syllable and word; the diphthongs ending in /*i*/ and /*u*/ would be thus abolished in phonological transcription.[15] It should also be kept in mind that the transcriptions /*sawwa*/, ⸢*põwwe*/, /*uwwe*/, etc., do not cover the South-Estonian dialectal pronunciation [*savva*], [*pęvve*], [*uvve*], etc., but apply to Standard Estonian [*sauwa*], [*peuwe*], [*uuwe*], etc.

As a result of the liquidation of the diphthongs ending in /*i*/ and /*u*/, such words as *sein* 'wall', *nõid* 'witch', *laud* 'table' and *paun* 'pouch' should be transcribed with the help of /*j*/ and /*w*/, as well. If now /*j*/ and /*w*/ were conceived as consonantal phonemes, then, in words of the third phonological quantity degree, /*jj*/ and /*w*/ may be written in front of another consonant in double form:

(15)   ⸢*sejjn*/, ⸢*pawwn*/, ⸢*nõjjt*/, ⸢*lawwt*/, ⸢*õwwe*/, ⸢*lajja*/, etc.[16]

In words of the second phonological quantity degree, however, the transcription would be

(16)   /*sejna*/, /*pawna*/, /*nõjja*/, /*lawwa*/.

In order to reduce the sixth logically conceivable transcription variant to the traditional phonetic transcription, the following rules (17) should be applied:

(17) a) ⸢*ww*/ → [*ù*]   / ___ { ╪ } ;
          ⸢*jj*/ → [*ì*]   / ___ { C }

      b) /*w*/ → [*u*]   / ___ { $\begin{array}{c} -C \\ -w \\ -j \end{array}$ } { $\begin{array}{c} e \\ a \\ u \end{array}$ } ;
          /*j*/ → [*i*]

      c) ⸢*w*/ → [*ù*]   / ___ { $\begin{array}{c} -w \\ -j \end{array}$ } { $\begin{array}{c} e \\ a \\ u \end{array}$ } ;
          ⸢*j*/ → [*ì*]

          C ≠ /*w j*/.

(It would be simple to present those rules as changes in feature specifications: [—*vocalic*] → [+*vocalic*]. But here we adhere to the conventional transcription although it obviously conceals some essential linguistic generalizations.)

A seventh transcription mode of [*w*] and [*u*] as well as [*j*] and [*i*] is a variant of the above: in words of the third phonological quantity degree, /*w*/ and /*j*/ are not doubled in front of another consonant:

(18)   ⸢*sejn*/, ⸢*pawn*/, ⸢*nõjt*/, ⸢*lawt*/, but ⸢*õwwe*/, ⸢*lajja*/.

In order to reduce that variant to phonetic transcription, the following rules (19) should be applied:

[16] Compare M. H i n t, On the Phonological Transcription of Overlength in Standard Estonian. — СФУ II 1966, pp. 23—35; М. Х и н т, Создание морфофонологической транскрипции для описания морфологии эстонского языка. — СФУ V 1969, pp. 3—16.

(19) a) $\begin{array}{l}/\ulcorner ww/\to[\grave{u}]\\ \ulcorner jj/\to[\grave{\imath}]\end{array}\Big/\,-\#/$;

   b) the same as (17b);

   c) $\begin{array}{l}/\ulcorner w/\to[\grave{u}]\\ \ulcorner j/\to[\grave{\imath}]\end{array}\Big/\begin{array}{l}-C\\ -w\\ -j\end{array}\left\{\begin{array}{l}a\\ e\\ u\end{array}\right\}\Big/$;

        $C\neq/w\ j/.$

If the transcriptions /ˈsaww/ and /ˈsawwa/ are still possible, then /ˈsav/, /ˈsavv/ and particularly /ˈsavva/ are no longer so, since the /ˈvv/ = [ʋ̀ʋ] occurring in Illative forms like *kivvi* 'stone', *savvi* 'clay', *tüvve* 'trunk' would in Standard Estonian clearly contrast with /ˈww/ = [ù̯w] in forms like *saua*. Thus, the transcriptions /ˈsaww/, /ˈsawwa/, /ˈpõwwt/ 'drought', etc., would in fact represent an extreme reasonable possibility of the development of that theme. The fact that the transcriptions /ˈlajj/, /ˈlajja/, /ˈlajjnet/ 'waves' do not arouse similar contrast problems (/jj/ → [ij] and /ˈjj/ → [ì̯j], in any case) proves once more the unparallel nature of /v/ and /j/ in Standard Estonian.

With reference to the rules presented above one should note that in rewrite rules which switch the symbols of phonological transcription into phonetic representations the substitutions /ˈw/ → [ù̯] and /w/ → [u], /ˈj/ → [ì̯] and /j/ → [i] apply also after /u/ and /i/ respectively (in words like *tuua* 'bring', *luua* 'broom, Gen.', *siia* 'here', *liia* 'too much, Gen.', etc.). In this case rewritings result in a phonetically long or extra-long vowel:

$$\begin{array}{lll}
/\ulcorner tuwwa/ & \to tu\grave{u}wa & \to [t\hat{u}wa],\\
/luwwa/ & \to luuwa & \to [l\bar{u}wa],\\
/\ulcorner sijja/ & \to si\grave{\imath}ja & \to [s\hat{\imath}ja],\\
/lijja/ & \to liija & \to [l\bar{\imath}ja].
\end{array}$$

In formulae, one ought also to keep in mind that the mark of over-length /ˈ/ may be put either in front of the overlong (in quantity 3) syllable or in front as well as above the concrete overlong phoneme or sequence: /ˈlajja/ = /laˈjja/ = /laˈjja/.

The problems of transcription presented here are equal in both word-end as well in syllable-end positions (in words like [laì̯] and [laì̯ned], [saù̯] and [saù̯na]); neither do the solutions depend directly on the fact whether the transcribed final components of diphthongs [ì̯], and [i] or [ù̯] and [u] (or the long vowels [î], [ī], [û] and [ū]) are situated immediately in front of a syllable boundary or in front of a syllable-final consonant (compare [saù̯] and [saù̯na] and [sauna] and [saù̯n], or [laì̯] and [laì̯ne] and [laine] and [saì̯n]).

The possibilities of the transcription which have been analyzed do not represent an abstract theoretical game. In dealing with morphophonological problems connected with [j] and [w], attention should be drawn to the circumstance that, at the morphophonological level, the phonological structure of words may in some cases be interpreted according to the various transcription modes presented; we would suggest that the pressure of the morphological pattern may be of great importance in choosing between the alternative phonological interpretations.

We shall deal with these problems from the standpoint of morphophonology in the next issue of this journal.

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МАТИ ХИНТ (Таллин)

ПОЛУГЛАСНЫЕ [j] И [w] В ФОНОЛОГИЧЕСКОЙ И МОРФОФОНОЛОГИЧЕСКОЙ СИСТЕМАХ ЭСТОНСКОГО ЯЗЫКА. I

Полугласные [j] и [w] в фонологической системе эстонского языка

1. Согласно теории таксономического фонологического анализа дескриптивной лингвистики эстонские полугласные [j] и [w] можно трактовать по-разному. Автор настоящей статьи придерживается точки зрения, по которой при фонологической трактовке нельзя не принимать во внимание морфофонологическое функционирование звуков и фонем.

1.1. Некоторые авторы (Т.-Р. Вийтсо и И. Лехисте) считают возможным исключить /j/ из списка эстонских фонем, объединив [i] и [j] в одну фонему /i/. С точки зрения таксономической автономной фонологии такой подход не оправдан, так как /i/ и /j/ могут в начале слова контрастировать. Тем не менее в большинстве позиций дистрибуция /i/ и /j/ является дополнительной.

1.2. В какой-то мере взаимоотношения фонем /u/ и /v/ параллельны отношению /i/ и /j/, хотя в сочетаниях /u/ и /v/ ограничений меньше, чем в сочетаниях /i/ и /j/.

1.3. Формулы (1), (2), (2b), (2c), (3), (3a) описывают важнейшие ограничения в дистрибуции /j/ и /v/ и особенно в их сочетаниях с /i/ и /u/ (невозможные последовательности отмечены звездочкой). Некоторые заимствованные слова могут нарушить эти ограничения. Формулы (2a) и (4) описывают позиции, где [j] и [w] автоматичны.

1.4. В этом разделе описываются различные предложения по фонологической трактовке автоматичных полугласных [j] и [w], встречающихся в окружениях (2a) и (4). Транскрипции (5) передают решение П. Аристэ и М. Хинта, транскрипции (7) — концепцию Т.-Р. Вийтсо, формула (8) — концепцию, которую неоднократно выдвигали В. Халлап, Т.-Р. Вийтсо и др. По этой концепции, автоматичные [j] и [w] являются реализациями слогораздела /,/. Формула (11) передает фонологическую концепцию, максимально близкую фонетической транскрипции.

1.5. На табл. 1 : 1 представлены все основные фонологические решения проблемы. В этом разделе анализируются чисто фонологические аргументы, приводимые за и против того или иного решения. Самым удовлетворительным признано решение 3 (фонемизация автоматичных [j] и [w] как реализаций фонемы слогораздела).

1.6. В этом разделе анализируются крайние возможности фонологической трактовки полугласных [j] и [w] как чисто согласных фонем с попыткой расширить их дистрибуцию в фонологической транскрипции так, чтобы она как можно лучше сравнивалась с дистрибуцией остальных согласных фонем. Эти попытки остаются довольно искусственными, но тем не менее такой анализ обнаруживает некоторые сходства и различия в отношениях [i] и [j], с одной стороны, и [u], [w] и [v], с другой.

Морфофонологические проблемы, связанные с данной темой, будут рассмотрены в следующем номере журнала.