

BINARITY IN A TERNARY LANGUAGE - ESTONIAN QUANTITY RECONSIDERED

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Abstract: In 1938 Paul Ariste presented at the 3rd International Congress of Phonetic Sciences a paper which challenged the binarity principle. Estonian was claimed to have ternary quantitative oppositions in both vowels and consonants. This interpretation had been rooted since the Estonian phonetics by Mihkel Weske (1879). F.J. Wiedemann in his grammar of Estonian (1875) interpreted the prosodic oppositions in Estonian as depending on syllable type: the short syllables have but one pronunciation, and the long stressed syllables have two opposed pronunciations. His binary interpretation was rediscovered in 1960ies (V. Tauli, R. T. Harms, and several Estonian linguists).

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1. WHY IS ESTONIAN CLAIMED TO BE PHONOLOGICALLY TERNARY?

The ternary length oppositions in Estonian are common knowledge (or belief) among Finno-Ugrian linguists. This belief is based upon indisputable ternary phonetic oppositions of the so-called "simple sounds":

*koli - kooli - `kooli = [koli] - [kõli] - [kôli] (FU transcription)
[koli] - [ko:li] - [ko::li] (IPA transcription)
'trash' - 'school', Genitive - 'school', Illative*

*koli - kolli - `kolli = [koli] - [kolli] - [kol:li]
'trash' - 'ogre', Genitive - 'ogre', Partitive*

These quantity distinctions are called the first, second, and third (or short, long, and overlong) degrees of length (Q1, Q2, Q3). Let us not ask at this stage whether they are segmental or syllabic oppositions.

Any Estonian phonology has to interpret quantity distinctions in different syllables, not only in the quoted types of syllables:

I	II	III	or	I	II	III
* <i>koli</i>	- <i>kooli</i>	- `kooli		* <i>ko-li</i>	- <i>koo-li</i>	- `koo-li (I, II, III)
	<i>koera</i>	- `koera			<i>koe-ra</i>	- `koe-ra
* <i>koli</i>	- <i>kolli</i>	- `kolli		* <i>ko-li</i>	- <i>kol-li</i>	- `kol-li (I, II, III)
	<i>kolme</i>	- `kolme			<i>kol-me</i>	- `kol-me
	<i>konksu</i>	- `konksu			<i>konk-su</i>	- `konk-su
	<i>paista</i>	- `paista			<i>pais-ta</i>	- `pais-ta

The traditional Estonian phonetics needs a distinction between “simple” and “complex” sounds in order to cope with structural parallels of long vowels and diphthongs, on the one hand, and of geminated consonants and consonant clusters, on the other hand. Diphthongs and consonant clusters are interpreted as “complex sounds”:

<i>[koli]</i>	-	<i>[ko:li]</i>	-	<i>[ko::li]</i>	(I, II, III)
		<i>[koera]</i>	-	<i>[koe:ra]</i>	(II, III) ‘dog’, Gen. and Part.
<i>[koli]</i>	-	<i>[kolli]</i>	-	<i>[kol:li]</i>	(I, II, III)
		<i>[kolme]</i>	-	<i>[kol:me]</i>	(II, III) ‘three’, Gen. and Part.

The interpretation of this parallelism in Estonian textbooks and traditional analysis follows the argument that while “simple sounds” have three distinctive degrees of length in Estonian, “complex sounds” have two - only the second and the third (or long and overlong) degrees. The question about the phonological status of these “complex sounds” (i.e. diphthongs and consonant clusters) has often received the answer that in Estonian both diphthongs and consonant clusters (each complete with its distinctive quantity degree), are phonemes (that is, the “complex phonemes” consist of other phonemes). In most cases the phonological status of “complex sounds” is not analyzed at all.

The traditional analysis has its origins in the Estonian phonetics by Mihkel Veske in 1879 and this analysis has been adopted during following generations of grammarians as the most indisputable feature of Estonian.

The alternative interpretation was proposed by Ferdinand Johann Wiedemann in his grammar of Estonian in 1875. Wiedemann interpreted the quantity distinctions of Estonian as prosodic (light and heavy stress), not as segmental phenomena, and he succeeded to do it in a binary way. This analysis has been disregarded till 1960-1970-ies, and even after grammars by Robert T. Harms (1962) and Valter Tauli (1972 and 1973) the ternary tradition among Estonian linguists has been prevailing. In 1990-ies the majority of new grammars and textbooks, anyway, turn more and more towards interpretation of Estonian quantity proceeding from binarity and syllabic (not segmental) quantity.

2. WHY HAS THE TRADITIONAL ANALYSIS OF ESTONIAN FAILED?

Traditionally Estonian is claimed to be a quantitative language with at least one prosodic or suprasegmental phoneme - stress, which functions as a reliable boundary signal.

In analyzing, e.g., *[kála]* 'fish', the short stressed vowel *[á]* in the first syllable and the unstressed vowel *[a]* in the second syllable are not interpreted as two different vowels, but stress is extracted from the stressed vowel as a separate suprasegmental (prosodic) phoneme.

In traditional analysis, no such operation is undertaken in the case of distinctive length (quantity) degrees: length degrees are not considered to be prosodic components of sounds (as in the case of stress); instead, they are analyzed as inherent distinctive features of segmental phonemes, e.g. /o/, /o:/, and /o::/ (/o/, /õ/, /õ/ in FU transcription). Instead of describing Estonian as having 9 vowels and two additional suprasegmental phonemes of /length/ and /overlength/, Estonian has been described as having nine vowels in three different length degrees, and in the case of consonants the method has been the same (despite problems connected with the long and overlong "simple" consonants at the syllable boundary, where these "simple" consonant phonemes are manifested as phonetic geminates).

If length distinctions were analyzed in the same way as stress, extracting contrasting quantity degrees as suprasegmental phonemes, the result would be two additional suprasegmental phonemes. However, the problem of distinctive length of "complex sounds" (as in *[koera]* - *[koe:ra]*, *[kolme]* - *[kol:me]*) would still remain unsolved. On the segmental level it is possible to explain the phonological ternary oppositions of the so-called "simple sounds", but not the phonology of "complex sounds".

3. IS ESTONIAN QUANTITY SEGMENTAL OR PROSODIC?

A solution to the Estonian quantity problem lies in abandoning the analyses on the level of segments and adopting the viewpoint which proceeds from the syllable.

In this case we classify Estonian syllables according to their segmental phonetic length: 1) open short syllables (having a single short vowel in the position of syllable nucleus), 2) open or closed long syllables (the former with a long vowel or a diphthong as the syllable nucleus, the latter having a geminated consonant or a consonant cluster on the boundary of the first and the second syllables), and 3) overlong syllables (with the same segmental composition as long syllables):

short	long	overlong
<i>[ko-li]</i>	- <i>[ko:-li]</i>	- <i>[ko::-li]</i>
	<i>[koe-ra]</i>	- <i>[koe:-ra]</i>
<i>[kol-i]</i>	- <i>[kol-li]</i>	- <i>[kol:-li]</i>
	<i>[kol-me]</i>	- <i>[kol:-me]</i>

In a syllabic analysis it is evident that the oppositions *[koli]* - *[ko:li]* or *[koli]* - *[kollli]* are incidental. There is as much reason to contrast *[koli]* with *[koera]* or *[kolme]* as to contrast

[koli] - *[ko:li]* or *[koli]* - *[koll]*. As the majority of long syllables are constructed using diphthongs as syllable nuclei and/or consonant clusters on the boundary of the first (stressed) and the second (unstressed) syllable, there is enough reason to state that diphthongs and clusters are the most common characteristics of long syllables, and syllables with long vowels and geminated consonants represent but a minor subset of long syllables.

4. WHAT IS THE TRUTH ABOUT ESTONIAN PROSODY?

In this analysis short syllables (quantity 1) are not an issue of the Estonian quantity problem. The segmental opposition *short-long* is but an incidental manifestation of the more essential opposition of short and long syllables. The only real domain of quantity oppositions are long stressed syllables, and in these the opposition of the so-called quantity 2 and quantity 3 is syllabic, not segmental. There are three different ways of constructing long syllables: 1) open syllables with long vowels or diphthongs as the syllable nuclei (*[ko:li]*, *[koera]*); 2) closed syllables with short nuclei (*[koll]*, *[kolme]*, *[kortsu]*); 3) closed syllables with long nuclei (*[paista]*, *[ri:sta]*).

The technology of forming different syllables in Estonian is not one of adding “simple” or “complex” sounds in their three different quantities, but of forming phonotactically acceptable short (CV-) or long (CVV-, CVC-, CVCC-, CVVC-) syllables and of pronouncing the long ones (if stressed) in two different ways. The following charts represent some fragments in the phonotactics of long syllables.

Long syllable nuclei

ii - iu - - -
 ei **ee** eu eo ea -
 ui - **uu** - - -
 oi oe ou **oo** oa -
 ai ae au ao **aa** -
 äi äe äu äo - **ää** etc

Consonant clusters at syllable boundary

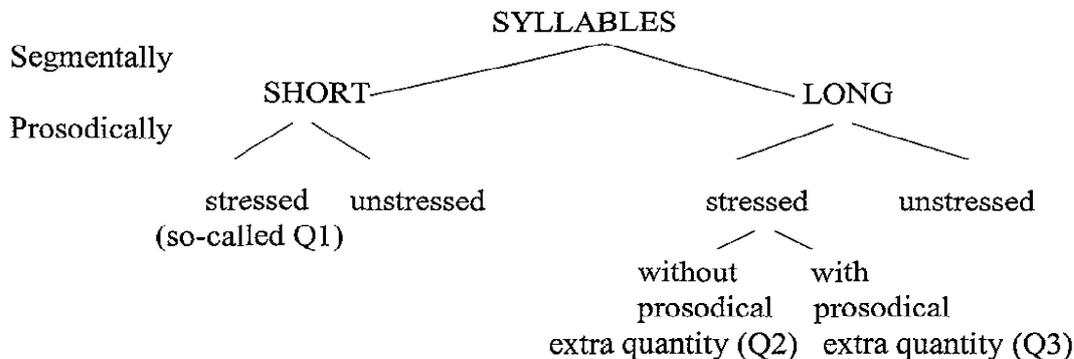
mm - - - (ms)
 - **nn** - - -
 rm rn **rr** rl rs
 lm - - **ll** ls
 sm sn - (sl) **ss** etc

In these charts it is more plausible to interpret the “simple” long vowels and consonants as double occurrences of short phonemes, i.e. as special cases of diphthongs and consonant clusters, not as long phonemes.

There are as many different types of syllables in the overlong quantity (Q3) as there are syllable types in the long quantity (Q2). Short syllables do not participate directly in Estonian quantity oppositions, although they may be claimed to participate in chains of phonetic length oppositions.

<u>Segmental explanation (orthography)</u>			<u>Syllabic explanation (phonemization)</u>		
VQ1	VQ2	VQ3	Short	Long	Overlong
CQ1 11 <i>ude</i>	21 <i>uude</i>	31 <i>uude</i>	/u-te/	/uu-te/ /koe-ra/	/ ^h uu-te/ / ^h koe-ra/
CQ2 12 <i>ute</i>	22 <i>uute</i>		/ut-te/ /kol-me/	/uut-te/ /pais-ta/	
CQ3 13 <i>utte</i>		33 <i>uute</i>	/ ^h ut-te/ / ^h kol-me/		/ ^h uut-te/ / ^h pais-ta/

The binary scheme of Estonian quantity is as follows (Hint 1997):



The opposition of short and long syllables is not regarded as prosodical, it is defined by the segmental composition of syllables.

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