

CONSONANTS OF THE LITHUANIAN LANGUAGE IN IPA CONTEXT: IDENTIFICATION PROBLEMS

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The report deals with the consonant system of the Lithuanian standard language in the context of IPA. It discusses controversial cases of consonant classification (fricatives /v v^j/ or sonants /v v^j/; consonants /k^j g^j x^j ɣ^j/ – palatal or palatalised and others). Especially great attention is devoted to palatalisation or voicing of consonants – these differential features of the phonemes are analysed on the basis of acoustic phonetics studies.

Key words: *Lithuanian standard language; International Phonetic Alphabet (IPA); transcription; consonantism; palatalisation, voicing.*

The system of consonants of the Lithuanian standard language consists of 45 consonant phonemes [1, p. 39; 15, p. 73; 8, p. 224; 18, p. 10]. The proposed classification of Lithuanian consonant phonemes according to the IPA [11] principles is represented in Table 1.

Table 1

Classification of Lithuanian consonant phonemes (based on IPA)

Manner of articulation	Place of articulation						
	bilabial	labio-dental	dental	alveolar	palatal	palatovelar	velar
plosive	/p/ – /b/ /p ^j / – /b ^j /		/t/ – /d/ /t ^j / – /d ^j /			/k ^j / – /g ^j /	/k/ – /g/
fricative		/f/ – /v/ /f ^j / – /v ^j /	/s/ – /z/ /s ^j / – /z ^j /	/ʃ/ – /ʒ/ /ʃ ^j / – /ʒ ^j /		/x ^j / – /ɣ ^j /	/x/ – /ɣ/
affricate			/tʃ/ – /dʒ/ /tʃ ^j / – /dʒ ^j /	/tʃ/ – /dʒ/ /tʃ ^j / – /dʒ ^j /			
approximant					/j/		
nasal	/m/ /m ^j /		/n/ /n ^j /				
lateral			/l/	/l ^j /			
trill				/r/ /r ^j /			

Both primary (when palatal consonants are generated) and secondary (when palatalised consonants are articulated) **palatalisation** is characteristic of the

Lithuanian language consonants. The only palatal consonant is /j/, it is articulated with the body of the tongue raised against the hard palate, e.g. *jaunas* [ˈjâːunas] 'young', *juokas* [ˈjuõkas] 'laughter'. Articulation of the palatal /j/ is stable, it has no hard equivalent. When articulating palatalised consonants, the rise of the body of the tongue is only an additional feature rather than the main one [17, p. 54].

Each palatalised consonant has its non-palatalised equivalents whose “main articulation is almost the same” [15, p. 76], with the exception of the palatalised velar /gʲ, kʲ, ɣʲ, xʲ/ and the palatalised /lʲ/ (see below). Palatalised and non-palatalised consonants contrast in the position before the back vowel, therefore differently from many modern Indo-European languages, the palatalised and non-palatalised consonants of the Lithuanian language are independent phonemes [8, p. 153], e.g.: *susti* [ˈsʊsʲtʲi] 'to grow scabby': *siusti* [ˈsʲʊsʲtʲi] 'to grow mad', *gabūs* (nom. sg. masc.) [gɑˈbʊs] : *gabūs* (acc. pl. masc.) [gɑˈbʲʊs] 'capable', *trapūs* (nom. sg. masc.) [traˈpʊs] : *trapūs* (acc. pl. masc.) [traˈpʲʊs] 'fragile', *galu* [gɑˈlʊ] 'tip (instr. sg.)': *galiu* [gɑˈlʲʊ] '(I) can'. The palatalised consonants are also used before the front vowels (e.g.: *tylėti* [tʲiːˈlʲeːtʲi] 'to stay silent', *nešėme* [ˈnʲeːʃeːmʲe] '(we) carried', *kietis* [ˈkʲiɛtʲis] 'absinthium') and before other palatalised consonants or the palatal /j/ (e.g.: *balti* [balʲˈtʲi] 'white (nom. pl.)', *balsius* [balʲˈsʲʊs] 'loud (acc. pl.)', *pjauni* [ˈpʲjâːʊnʲi]) '(you) cut'. The opposition of palatalised and non-palatalised consonants is neutralised at the end of a word – only non-palatalised consonants are articulated, e.g.: *eiti* [ˈɛʲtʲi] 'to go' : *eit* [ˈɛʲt] 'to go', *kelsiu* [ˈkʲeːlʲsʲʊ] '(I) will raise': *kels* [ˈkʲeːlʲs] '(he) will raise' [5, p. 48].

In consonant clusters [k g] are not usually palatalised but they do not prevent the consonants that follow them from becoming palatalised [7, p. 411–413; 1, p. 37], e.g.: *žingsnis* [ˈʒʲiŋˈkʲiŋˈnʲis] 'step', *virkdė* [ˈvʲiːrʲiɡʲdʲeː] '(he) made one weep'. The consonants /kʲ gʲ xʲ ɣʲ/ form a separate sub-group of palatalised velar consonants because they are articulated not by additionally raising the body of the tongue against the hard palate but the non-frontal centre of articulation shifts towards the body of the tongue ([1, p. 36]; see the comparison of acoustic features of the velar consonants /k g/ and the palatalised velar consonants /kʲ gʲ/ [10, p. 33–72]). Earlier investigators (e.g. Mikalauskaitė) considered the consonants /kʲ gʲ xʲ/ palatal, and treated the consonants /ɣ/, /ɣʲ/ as pharyngeal sounds [14, p. 47]. This attitude could have been influenced by the periphericity of the sounds, which has almost disappeared today. The consonants /x ɣ/ are proposed to be attributed to the same class of articulation as the consonants /k g/ – to velar consonants, and /kʲ gʲ xʲ ɣʲ/ – to the palatalised velar ones [4, p. 167].

The articulation of the non-palatalised /l/ also differs markedly from /l^j/, cf.: *lapo* ['la:po:] 'leaf (gen. sg.)' and *lipo* ['lipo:] '(he) climbed'. The consonant /l/ may be articulated strongly velarised [4, p. 165], in articulating it the tip of the tongue touches the alveolar ridge [14, p. 52], hence, a dental consonant is generated [15, p. 75]. The palatalised /l^j/ is articulated with the tip of the tongue touching the hard palate; hence it is attributed to the alveolar consonants.

Acoustic investigations of secondary palatalisation of Lithuanian consonants showed that the difference between palatalised and non-palatalised consonants is clearly revealed by the values of F2 loci [2, p. 13–18; 4, p. 263]. F2 loci of the palatalised consonants are compactly concentrated in the upper part of the plane of the coordinates, whereas the loci of the non-palatalised consonants are spatially arranged in the lower part. This arrangement is determined by a common additional articulation (the rise of the body of the tongue towards the hard palate) characteristic of the palatalised consonants, whereas the non-palatalised consonants have no common component of articulation that unites them [19]. It has also been noticed that models of the spectrum of the palatalised consonants are noted for more intensive spectral peaks or energy concentration areas.

In the Lithuanian language only the obstruents contrast according to **voicing**: all voiceless fricatives, plosive consonants and affricates have voiced equivalents, i.e. /p/ – /b/, /p^j/ – /b^j/, /t/ – /d/, /t^j/ – /d^j/, /k/ – /g/, /k^j/ – /g^j/, /s/ – /z/, /s^j/ – /z^j/, /ʃ/ – /ʒ/, /ʃ^j/ – /ʒ^j/, /x/ – /ɣ/, /x^j/ – /ɣ^j/, e.g.: *puvo* ['puvo:] '(it) became rotten' : *buvo* ['buvo:] '(he) was', *karas* ['ka:ras] 'war' : *garas* ['ga:ras] 'steam', *šilas* ['ʃilas] 'pinewood' : *žilas* ['ʒilas] 'gray'. The articulation of plosives and voiceless consonants is very similar [15, p. 74]: according to both the place of articulation and the way of articulating them, they are attributed to the same classes. The opposition of these consonants is neutralised before the obstruents and at the end of a word [1, p. 44], e.g. *nešti* ['nɛʃtʲɪ] 'to carry': *nešdamas* ['nɛʒdamas] 'while carrying', *skristi* ['sɫrʲɪsʲtʲɪ] 'to fly': *skrisdamas* ['sɫrʲɪzdamas] 'while flying', *veža* ['vɛ:ʒa] '(he) carries' : *vežti* ['vɛʃtʲɪ] 'to carry', *laužia* ['lâ·ʊʒjɛ] '(he) breaks' : *laužti* ['lâ·ʊʃtʲɪ] 'to break', *daug* ['doṽk] 'much', *lyg* ['lʲ:k] 'as if'. The approximants /j l l^j m m^j n n^j r r^j/ are indifferent to the opposition of voiced – voiceless: they do not make voiceless consonants voiced and always remain voiced themselves.

/v v^j/, which remain voiced are different from the obstruents; they are articulated before the voiceless consonants and do not pass their sonority to other consonants [14, p. 42]. Similarly to the sonant /j/, at the end of a word /v v^j/ lose friction, become even more voiced and turn into the non-syllabic [ɪ, ʊ] forming

diphthongs of secondary origin with the preceding vowels, e.g.: *sudieu* [ˈsɔdʲi̯e̯ʊ] 'farewell', *jūroj* [ˈjũ:roɪ̯] 'sea (loc. sg.)', *kėdėj* [kʲe:ˈdʲẽ̯] 'chair (loc. sg.)'. The approximants /v vʲ/, which undergo complete or partial vocalisation rather than fricative consonants /v vʲ/ were characterised as phonemes in the phonological classification of Lithuanian consonants [8, p. 224], which is based on the functional features of sounds. Though in articulating /v vʲ/ the nature of obstruction is the same as that of other fricative consonants, these consonants, like the consonant /j/, have a large amount of vibrations, have no tone modulation, do not make consonants voiced therefore in earlier grammars [13, p. 70] they were regarded as intermediary between the fricative consonants and approximates. In the current works on phonetics [5, p. 48; 4, p. 167; 16, p. 91] /v vʲ/ are attributed to fricative consonants, which, according to sonority, contrast with the voiceless /f fʲ/ and which can have positional variants – voiced [v vʲ]. The consonants /v vʲ/ of another Baltic language – the Latvian language – are treated in the analogous way [9, p. 338–339]. Voiced fricative consonants tend to turn into approximates in other world languages too [12, p. 122].

Acoustic investigations show that consonant sonority should be evaluated in a complex way: it is testified to by additional voice harmonics of the voiced consonants, partial periodicity of their vibrations, shortness of the voiced consonants, less intensive phases of their noise, as well as the energy ratio between low and high frequencies [15, p. 74; 6, p. 53–105; 3, p. 7–14; 4, p. 170–260].

The system of consonants of the Lithuanian standard language in the context of IPA presented in the report is not final. This issue should be further discussed in the community of phoneticians drawing attention to the problem cases mentioned in the report.

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