

# Syllable length in Latvian and Lithuanian: searching for the criteria

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Although the traditional account of syllable length in the Baltic languages confines itself to its connection with syllable tones, other phenomena are also found to be length sensitive. In Lithuanian, syllable length can influence the position of primary stress, while in Latvian it is one of the factors in secondary stress assignment. Several cases of vowel and consonant lengthening, shortening, and deletion can be explained on the assumption that these processes serve the purpose of fitting into a particular unit of quantity. In some instances, the traditional view of the composition of long syllables may need to be revised.

**Keywords:** syllable weight, weight-sensitive phenomena, compensatory lengthening, hypercharacterized syllables, consonant gemination

1. Normally, one would not expect a large section on syllable length in any text concerning the phonology of the Baltic languages. It is recognized only with respect to syllable tones (also called syllable accents or syllable intonations) in order to define the domain of the opposition between acute and circumflex tones in Lithuanian (Fig. 1a) and level, falling, and broken tones in Latvian (Fig. 1b), which happens to be a syllable with a long vowel, diphthong or a combination of a short vowel plus sonorant (so-called diphthongal sequences) (cf. Girdenis 2003, 274, Pakerys 1995, 282, Laua 1997, 100, Muižniece 2002, 22).

It would probably not seem necessary to have a distinct notion for this kind of syllables if they were limited to long vowels and diphthongs, which can easily be imagined as individual sounds belonging to approximately the same class, at least for the purpose of tone assignment (though it might be a better solution to distinguish between two types of syllables even in this case). Yet the compound nature of diphthongal sequences is too obvious to be dismissed without positing

Fig. 1

a. Lithuanian					
acute		circumflex			
<i>kóšė</i>	‘filter’ (PRT.3)	<i>kōšė</i>	‘porridge’		
<i>áukštas</i>	‘high’	<i>aūkštas</i>	‘storey’		
<i>káltas</i>	‘chisel’	<i>kaĩltas</i>	‘guilty’		

  

b. Latvian					
level		falling		broken	
<i>mĩt</i>	‘change’ (INF)	<i>mìt</i>	‘exist’ (PRS.3)	<i>mît</i>	‘tread’ (INF)
<i>aũksts</i>	‘cold’			<i>aûksts</i>	‘high’
		<i>ràuks</i>	‘pucker’ (FUT.3)	<i>raûks</i>	‘yeast’
<i>vaĩks</i>	‘tether’			<i>vaĩks</i>	‘humid’
<i>kuĩs</i>	‘thresh’ (FUT.3)	<i>kùs</i>	‘threshing floor’		

a unit that enables us to treat them on a level with diphthongs and long monophthongs, such a unit being the long syllable (cf. also Girdenis 2003, 269–271). It seems to be of paramount importance in accounting for the seemingly minor but actually crucial difference between diphthongal sequences and other combinations of a short vowel and a consonant, as shown in Fig. 2<sup>1</sup>. For syllable tones, an obstruent occurring after a short vowel has no bearing on syllable structure and it could as well be absent from it, as syllables of this kind would have no distinctive tone in either case and are therefore called short.

In many other languages, a number of divergent phenomena are sensitive to syllable length (quantity)<sup>2</sup>, including stress assignment,

<sup>1</sup> Aleksas Girdenis, in his book on Lithuanian phonology, fails to mention the distinction between long and short syllables in the chapters relating to syllable structure, even though he does mention the different roles of sonorants and obstruents after a short vowel, making a reference to the section on syllable tones (Girdenis 2003, 123).

<sup>2</sup> In order to differentiate between phoneme and syllable length, the latter is frequently called ‘syllable weight’, the adjectives used to denote the type of a syllable being ‘light’ and ‘heavy’ (Fox 2000, 22, 53). In this paper, the traditional ambiguous designation is retained for most cases as it is quite popular in Balto-Slavic accentology.

Fig. 2

a. Lithuanian				b. Latvian			
long		short		long		short	
VR		v(c)		VR		v(c)	
<i>riñtas</i>	'serious'	<i>ristas</i>	'trotter' (ADJ)	<i>riñda</i>	'row, line'	<i>lazda</i>	'hazel'
<i>tiltas</i>	'bridge'	<i>piktas</i>	'evil'	<i>ķilñda</i>	'quarrel'	<i>ligzda</i>	'nest'
		<i>kitas</i>	'other'			<i>gada</i>	'year' (GEN.SG)

verse metrics, minimal word requirement, and some diachronic and synchronic processes that readjust vowels and consonants to a certain type of syllable structure, among them compensatory lengthening, shortening of closed syllables, and lengthening of stressed syllables (Kenstowicz 1994, 291–298; Gordon 2006, 1–2<sup>3</sup>). Syllable length can also be relevant to tone, but the situation is not always similar to that of the Baltic languages in that there are languages where long and short syllables can both receive tones, although of a different kind (Fox 2000, 54; Gordon 2006, 29–30). The types of syllables that count as long or short in other languages often differ from those we deal with in Latvian and Lithuanian as any consonant following a short vowel may contribute to syllable length, whether it is a sonorant or an obstruent<sup>4</sup> (Fig. 3a); on the other hand, some languages treat only syllables with long vowels as long, whereas all syllables with short vowels are considered short even if they are closed by a sonorant (Fig. 3b) (Ewen & van der Hulst 2001, 132–133; Gordon 2006: 4).

The purpose of this paper is to apply some of the well-known criteria of syllable length to Latvian and Lithuanian and to complement the traditional description of long syllables in the Baltic languages with facts that so far have not been mentioned in this connection.

<sup>3</sup> The literature on syllable quantity is vast, and the range of authors cited here does not really reflect the diversity of existing opinion.

<sup>4</sup> Gordon (2006, 32) claims that in many languages that have tonal distinctions on long syllables, only sonorants are likely to contribute to syllable length.

Fig. 3

a. Latin				b. Selkup <sup>5</sup>			
long		short		long		short	
$\bar{v}$ , VC		v		$\bar{v}$		v(c)	
<i>a'mīcus</i>	'friend'	<i>'dōmīnus</i>	'lord'	<i>kɨ'pɔɔ</i>	'tiny'	<i>'amirna</i>	'eats'
<i>car'pentum</i>	'carriage'			<i>qu'mooqɪ</i>	'two human beings'	<i>'uucikkak</i>	'I am working'
<i>ma'gister</i>	'master'						

2. The most frequently reported quantity-sensitive phenomenon is stress. In the Latin examples in Fig. 3a, the stress falls on the penult if it is long or on the antepenult if the penult is short. Even though details vary to a great extent from one language to another, the principle stands that, under the appropriate circumstances, long syllables are capable of bearing stress, while short syllables are not (Ewen & van der Hulst 2001, 223). This basic rule is not completely alien to the Baltic languages, where a few instances can be found in both Latvian and Lithuanian, especially in dialects, where the place of primary or secondary stress is motivated by syllable length.

In Latvian (Fig. 4), final syllables receive secondary stress only if they are long. The same constraint exists in Estonian<sup>6</sup> and in the North Žemaitian dialect of Lithuanian.

In other Lithuanian dialects, there is a special type of stress retraction<sup>7</sup> from a short ending onto a long penult (Fig. 5). This particular type of retraction does not affect words with a short penult. But Lithuanian accentuation is generally determined by the properties of morphemes, so that the rule that places the stress on a long penult actually depends

<sup>5</sup> The examples from Selkup are taken from Ewen & van der Hulst (2001, 133). Stress falls on the rightmost long syllable or on the initial syllable if there is no long syllable.

<sup>6</sup> On similarities between secondary stress assignment in the Baltic languages and Estonian cf. Daugaviete (2008). An analysis of several accounts of secondary stress in Latvian is given in Daugaviete (2005).

<sup>7</sup> 'Intensyvesnysis kirčio atitraukimas', i. e. 'more intensive stress retraction'.

Fig. 4

	short		long	
Latvian	<i>'dāvana</i>	'gift'	<i>'dāva,nā</i>	'gift' (LOC.SG)
Estonian	<i>'osava</i>	'skilful' (GEN.SG)	<i>'osa,vat</i>	'skilful' (PAR.SG)
Žemaitian	<i>'dūobeļa</i>	'clover' (GEN.SG)	<i>'dūobe,lōu</i>	'clover' (DAT.SG)

on a morphological factor: a short final syllable does not lose the stress if it does not correspond to an ending (Zinkevičius 1966, 38).

Fig. 5

long penult		short penult	
<i>žmo-nà &gt; žmó-na<sup>8</sup></i>	'wife'	<i>rasà</i>	'dew'
<i>vaikùs &gt; vaĩkus</i>	'children' (ACC.PL )		
<i>kalbà &gt; kal̃ba</i>	'speech, language'		

One can find a few other cases in Standard Lithuanian where a long syllable takes precedence in receiving stress within a well-defined morphological class (Fig. 6) (Stundžia 1995, 151). In Fig. 6, adverbs derived from adjectives of the *-us*-paradigm (*pigùs* 'cheap', *tingùs* 'lazy'), are stressed on the root syllable if it is long. Adverbs derived from adjectives of the *-as*-paradigm (*gėras* 'good', *dōras* 'righteous') always have stress on the suffix. All this suggests that, in Baltic, stress assignment rules can serve, at least to a certain extent, as another criterion of syllable length, in addition to quantity-sensitive tone.

<sup>8</sup> In accordance with Lithuanian transcription, vowel length is represented by a raised dot.

Fig. 6

adjective class	adverb formative	long root		short root	
-us	-iai	<i>tingùs</i>	<i>tīngiai</i>	<i>pigùs</i>	<i>pigiaĩ</i>
-as	-ai	<i>dōras</i>	<i>doraĩ</i>	<i>gēras</i> <sup>9</sup>	<i>geraĩ</i>

One of the stress retraction types in Lithuanian dialects actually implies an alternative classification of long vs. short syllables as it is identified by stress moving onto a penult with a long vowel or with the diphthongs *uo*, *ie*<sup>10</sup> (Zinkevičius 1966, 36, 46–47). In forms with other diphthongs and diphthongal sequences of short vowel plus sonorant in the penult, the position of stress remains the same as in forms with a short vowel (Fig. 7). This type of retraction is striking because it treats *uo*, *ie* on a par with long monophthongs, which confirms their monophonemic interpretation (cf. Girdenis 2003, 102–103), but it also places diphthongs and diphthongal sequences in one class with short vowels, which means that their second component does not contribute to syllable length any more than an obstruent following a short vowel in words like *miškùs*.

Fig. 7

$\bar{v}$ , ie, uo		v(C OR R <sup>11</sup> )	
<i>žmo-nà</i> > <i>žmó-na</i>	‘wife’	<i>vaikùs</i>	‘children’ (ACC.PL)
<i>juokùs</i> > <i>juókus</i>	‘joke’ (ACC.PL)	<i>kalbà</i>	‘speech; language’
		<i>rasà</i>	‘dew’
		<i>miškùs</i>	‘forest’ (ACC.PL)

3. Another quantity-sensitive phenomena that is often cited for the sake of illustration is compensatory lengthening, that is, lengthening

<sup>9</sup> Historically a short vowel, lengthened under stress.

<sup>10</sup> ‘Silpnasis kirčio atitraukimas’, ‘weak stress retraction’.

<sup>11</sup> Here R stands for the second element of either a diphthong or a diphthongal sequence.

of a vowel with the purpose of preserving the length of a syllable after the following consonant is lost<sup>12</sup>. A well-known example in the Baltic languages is the deletion of nasal sonorants with subsequent lengthening of preceding vowels<sup>13</sup> (Fig. 8a). At the first stage, reflected by the earliest Lithuanian grammars, it resulted in a long nasalized vowel which eventually gave way to a long denasalized vowel of a different quality (especially in Lithuanian dialects) (Zinkevičius 1980, 68–72; 1966, 75–84). In Lithuanian, diphthongal sequences are kept intact before plosives (Fig. 8b).

Fig. 8

(a)	East Baltic	Lithuanian	Latvian	
	* <i>an</i>	žā̃ši	zūosi	‘goose’ (Acc.SG)
	* <i>en</i>	kē̃sti	cīest	‘suffer’
	* <i>un</i>	sū̃sti	sūtīt	‘send’
	* <i>in</i>	lī̃sti	līst	‘crawl’

  

(b)	East Baltic	Lithuanian	Latvian	
	* <i>an</i>	lāngas	luōgs	‘window’
	* <i>en</i>	penki <sup>14</sup>	piēci	‘five’
	* <i>un</i>	juñta	jūt	‘feels’
	* <i>in</i>	tiñklas	tīkls	‘web’

Both the initial diphthongal sequence consisting of short vowel plus nasal sonorant and the resulting long vowel form long syllables; it is noticeable that words retain their corresponding tones, although the

<sup>12</sup> The term ‘compensatory lengthening’ is also used in accounts of other phenomena; it may denote the lengthening of a syllable nucleus before a syllable which is subject to either apocope or syncope, in order to preserve the duration of the whole word, for example, *daba* ‘nature’ > *dāb*, *galda* ‘table’ (gen. sg.) > *gal:d* in the Tamian dialect of Latvian (Rudzīte 1964, 157–158). See also Fig. 21.

<sup>13</sup> The East Baltic case of compensatory lengthening is viewed in a larger typological perspective in Kavitskaya (2002, 61, 155).

<sup>14</sup> *peñketas* ‘five’ (noun).

segmental material is changed. In many phonological theories their equivalence is interpreted with the aid of units of quantity called morae: a short syllable corresponds to a single mora while long syllables are associated with two morae. In this way, compensatory lengthening is seen as preservation of a prosodic position (mora) after the deletion of a nasal sonorant; when the position becomes vacant, it is reassigned to the preceding vowel (Kenstowicz 1994, 293–295; Ewen & van der Hulst 2001, 150–153).

Only segments contributing to syllable length can be considered moraic. As the possible types of long syllables vary from one language to another, the types of moraic segments are also language-specific (Ewen & van der Hulst 2001, 151; van der Hulst 1999, 12–13). In Lithuanian and Latvian, only sonorants can be associated with morae whereas in Latin (Fig. 3a) any consonant closing a syllable with a short vowel is assigned a mora. In languages like Selkup (Fig. 3b), syllable-closing consonants are, on the contrary, never moraic.

The alternative way of formalizing the difference between Selkup and Latin is to say that in Selkup only the segments in the nucleus can contribute to syllable length (nucleus-weight languages), whereas in Latin it is the rhyme as a whole that produces a long syllable (rhyme-weight languages). In both cases either the nucleus or the rhyme should be branching, that is, consist of at least two segments, long vowels being analyzed as combinations of two sounds of the same quality. The difference between Baltic and other languages can be expressed, in this theory, by attributing the sonorant consonant in Baltic to the nucleus (Ewen & van der Hulst 2001, 133–134, 145–146). For Baltic, the terms ‘moraic’ and ‘nuclear’ so far can be held synonymous (see also van der Hulst 1999, 13).

This approach also happens to be in surprising accordance with Anna Ābele’s views on the nature of the second components of both diphthongs and diphthongal sequences in Latvian, which she described as syllabic, that is, able to form a syllable nucleus together with the preceding short vowel (Ābele 1921; Abele 1924, 20–21). On the other hand, Ābele would have interpreted as nuclear any moraic segment following a short vowel as she did not view the level of sonority as a prerequisite for being in the syllable nucleus (Abele 1924, 22–25).

4. The process opposed to compensatory lengthening is shortening of vowels in closed syllables in languages where rhyme consonants



contribute to syllable length. As either a long vowel or a rhyme consonant is a sufficient condition for length, syllables that have both are labelled as ‘hypercharacterized’. In the history of many languages, they are reduced to simple long syllables by shortening of the vowel (Fox 2000, 53, 68–69) (Fig. 9).

Fig. 9

Old English	Middle English
<i>wīsdōm</i>	<i>wisdome</i> /wisdom/
<i>kēpte</i>	<i>kepte</i> /kɛptə/

In other languages, long vowels are shortened only before sonorants; such was the effect of Osthoff’s law, which operated in some branches of Indo-European, including Baltic, where it yielded alternations as in Fig. 10 (Collinge 1985, 127; Kenstowicz 1972, 30–31).

Fig. 10

Lithuanian			
<i>kár̃ti</i>	‘hang’	<i>kór̃e</i>	‘hung; hanged’
<i>gér̃ti</i>	‘drink’	<i>gér̃e</i>	‘drank’
<i>pìl̃ti</i>	‘pour’	<i>pýl̃e</i>	‘poured’
<i>pùl̃ti</i>	‘fall; attack’	<i>púol̃e</i>	‘fell; attacked’

Long vowels before newly developed tautosyllabic sonorants and *ĩ*, *ũ* (from *j*, *v*) were once more shortened in some dialects of Latvian and Lithuanian (Fig. 11) (Rudzīte 1964: 248–250; Zinkevičius 1966: 71–72), although this had no impact on the standard languages<sup>15</sup>.

<sup>15</sup> Gordon’s analysis of Lithuanian with regard to Osthoff’s law as a synchronic rule in Lithuanian (Gordon 2006, 234–238, 360, 296) seems inadequate. First, Gordon dismisses counterexamples like *sūr̃ti* ‘grow salty’ — *sūro* ‘grew salty’, *šōnkaulis* ‘rib’ (< *šonas* ‘side’, *káulas* ‘bone’) as exceptions, although verbs and nominal compounds of these types are more productive in Lithuanian than the type *pìl̃ti* — *pýl̃e*. Secondly, he disregards the difference in pronunciation of diphthongs and diphthongal sequences under acute and

Fig. 11

a. Latvian dialects		b. Lithuanian dialects (West Aukštaitian)	
<i>arā̃is</i> > <i>aràis</i>	‘ploughman’	<i>šakojè</i> > <i>šakōj</i> > <i>šakòi</i>	‘branch’ (LOC.SG)
<i>viēns</i> > <i>veñs</i>	‘one’	<i>šakóms</i> > <i>šakòm̃s</i>	‘branch’ (DAT.PL)
<i>dễls</i> > <i>dē̃ls</i>	‘son’	<i>raudónmolis</i> > <i>raudònmolis</i>	‘red clay’

Sonorants following long vowels are not moraic; even though potentially they are able to add to syllable length, they do not perform their role in a context where the two morae associated with a long syllable are already assigned to a preceding long vowel. It is an important point that hypercharacterized syllables never become trimoraic and, despite their traditional designation as ‘overlong’, never constitute a separate class on a par with those of short and long syllables (see Fox 2000, 53, 82). The same, of course, is valid for any type of coda consonants following long vowels in rhyme-weight languages. With reference to nucleus-weight languages like Latvian and Lithuanian, the additional observation can be made that only sonorants occupying the position after a short vowel belong to the nucleus, since sonorants following a long vowel, a diphthong or a diphthongal sequences (Fig. 12) do not contribute to the realization of tones, and *i*, *u* are clearly nonsyllabic, that is *i̇*, *u̇* (Pakerys 1995, 175; Girdenis 2003, 100; Laua 1997, 82).

However, they still have the potential ability to function as factors contributing to both syllable length and tone, and as such to compete

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circumflex tones, all examples used in his experiment being acute (*báltas* ‘white’, *márgas* ‘speckled’). Furthermore, his instances of supposedly neutral pronunciation in unstressed position (*bandà* ‘herd’, *galvà* ‘head’, *žarnà* ‘intestine’) actually turn out to be a very specific case of the so-called ‘two-peaked’ stress (‘diviviršūnis kirtis’), characterized by the lengthening of preaccented long syllables (Girdenis 1978). Interestingly enough, Gordon interprets the lengthening of the first components of acute diphthongal sequences as an argument in favour of Osthoff’s law in its synchronic interpretation rather than against it, as he observes that stressed vowels before sonorants are shorter in comparison with short vowels before obstruents. Unfortunately, Gordon’s observations, based on data from one single informant, are not suggestive of an insight that could be generalized to Lithuanian as a whole.

Fig. 12

Standard Latvian		Standard Lithuanian	
<i>arāis</i>	‘ploughman’	<i>šakojē ~ šakōī</i>	‘branch’ (LOC.SG)
<i>tēis</i>	‘father’	<i>sudiēu</i>	‘adieu’
<i>dēls</i>	‘son’	<i>šakóms</i>	‘branch’ (DAT.PL)
<i>viēns</i>	‘one’	<i>diēndaržis</i>	‘paddock’
<i>kaīls</i>	‘naked’	<i>raudónmolis</i>	‘red clay’
<i>ļāins</i>	‘evil’	<i>laīmžirgis</i>	‘dragonfly’
<i>kaīns</i>	‘hill; mountain’	<i>pīrmtakas</i>	‘forerunner’

with the preceding long vowel for the second mora or, to put it in other terms, for the position in the syllable nucleus. “Closed syllable shortening can be understood as a coda consonant crowding out a vowel from the second mora in order to escape stray erasure” (Kenstowicz 1994, 297). After the long vowel is shortened, the second mora is vacated and can be filled with the sonorant or *i*, *u* which thus becomes the second component of a new diphthong or diphthongal sequence. Logically, the shortening of the long vowel is only one of the possible outcomes of this competition. The alternative is deletion of the sonorant or *i*, *u*, which is also found in dialects of Latvian and Lithuanian (Rudzīte 1993, 341–349; Zinkevičius 1966, 182–186). It takes place not only after long vowels but after diphthongs and diphthongal sequences as well (Fig. 13). The dropping of a coda consonant after a long vowel is referred to as ‘stray erasure’ by Kenstowicz, but one has to keep in mind that, unlike closed syllable shortening, this term refers to the deletion of a segment that fails to match any kind of restriction on syllable structure, not necessarily those related to syllable length (see Kenstowicz 1994, 285–289).

The point to emphasise here is that the same words can, in different dialects, undergo either shortening of the preceding long vowels or deletion of the following sonorants and *i*, *u* (Fig. 14). To some extent, the choice between these can be influenced by the quality of the nonmoraiic segment: for instance, long vowels never seem to be shortened before *u*. The tone of the syllable should also be taken into

Fig. 13

a. Latvian dialects	
<i>vējs</i> > <i>vēs</i>	‘wind’
<i>pastāṽ</i> > <i>pastā</i>	‘stand (for a time)’ (PRS.3)
<i>liēlc</i> > <i>liēc</i>	‘big’
<i>puīsēns</i> > <i>puīsēs</i>	‘lad’
<i>kumelīnc</i> > <i>kumelīc</i>	‘foal’
b. Lithuanian dialects	
<i>vėjas</i> <sup>16</sup> > <i>vėjs</i> > <i>vies</i>	‘wind’
<i>kraūjas</i> > <i>kraūjis</i> > <i>krāus</i>	‘blood’
<i>tėvas</i> > <i>tėvus</i> > <i>tės</i> <sup>17</sup>	‘father’
<i>artyn</i> > <i>artỹ</i>	‘nearer and nearer’
<i>kraūlīgė</i> > <i>kraūligė</i>	‘blood disease’ ( <i>kraūjas</i> ‘blood’, <i>ligà</i> ‘disease’) Standard Lithuanian <i>kraujāligė</i>
<i>kiřukotis</i> > <i>kiřkotis</i>	‘axe handle’ ( <i>kiřvis</i> ‘axe’, <i>kótas</i> ‘handle’) Standard Lithuanian <i>kirvākotis</i>
<i>kiaūlpienė</i> > <i>kiaūpienė</i>	‘dandelion’ ( <i>kiaūlė</i> ‘pig’, <i>pėnas</i> ‘milk’)

consideration as a possible factor; compare *liēlc* > *liēc*, *puīsēns* > *puīsēs*, *kumelīnc* > *kumelīc* in Fig. 13a and *viēns* > *veñs*, *dēļs* > *dēļs* in Fig. 11a. More specific conclusions could be drawn only from a detailed study of dialectal variation in these processes.

The deletion of *ṽ* after a long vowel in the most common words is reported for the colloquial form of Standard Latvian while in less frequent lexical items *ṽ* is preserved (Fig. 15) (Muižniece 2002, 78).

<sup>16</sup> For the sake of simplicity, the more archaic forms of Standard Lithuanian are given instead of reconstructions.

<sup>17</sup> Zinkevičius (1966, 185) claims the deletion of *v* in *tėvas* > *tės*, *diėvas* > *diės* ‘god’, *gėvas* > *gės* ‘alive’ to be characteristic only of the Lithuanian dialects in Prussia.

Fig. 14

a. Latvian dialects	
<i>arājs</i> > <i>arāis</i> ~ <i>arāš</i>	‘ploughman’
* <i>gaļvāji</i> > <i>gaļvai</i> ~ <i>gaļvā</i>	‘head’ (LOC.SG)
* <i>runāji</i> > <i>runoi</i> ~ <i>runā</i>	‘speak’ (PRS.3)
b. Lithuanian dialects	
<i>šakojė</i> > <i>šakōj</i> > <i>šakði</i> ~ <i>šakō</i>	‘branch’ (LOC.SG)

Fig. 15

a.		b.	
<i>tējs</i> > <i>tēs</i>	‘father’	<i>glējs</i>	‘feeble’
<i>dīejs</i> > <i>dies</i>	‘god’	<i>pājs</i>	‘peacock’
<i>gūojs</i> > <i>gūs</i>	‘cow’	<i>brījs</i>	‘free’

Sonorants occurring after diphthongs and diphthongal sequences can sometimes be eliminated in a more complicated way, as in Fig. 16a, where the intervocalic cluster is simplified by deletion of the next onset consonant and subsequent reassignment of the coda sonorant to the following syllable, or in Fig. 16b, where metathesis is found. (The examples are from Rudzīte 1964, 191; Zinkevičius 1966, 182.)

Fig. 16

a.	Latvian dialectal	<i>sāimniēks</i> > <i>sāimiēks</i>	‘master of the house; owner’
b.	Lithuanian dialectal	<i>pirmà</i> > <i>pīrm</i> > <i>prīm</i>	‘before’

In dialects where hypercharacterized syllables are regularly reduced to simple long syllables, whether by vowel shortening or other processes, it can provide yet another criterion of syllable length (Daugavet 2008). In contexts in which a sonorant or *v*, *j* is added to the syllable as a result of resyllabification, the newly introduced segment

acquires different status depending on the quantity of the preceding vowel. After short vowels, *v*, *j* and sonorants are reinterpreted as the second components of diphthongs and diphthongal sequences, *v*, *j* being replaced with syllabic *u*, *i*, and a new mora, or a new position inside the syllable nucleus, is created (Fig. 17a). After long vowels, diphthongs, and diphthongal sequences the number of possible morae is exhausted, all the positions in the nucleus being already filled, so that the sonorants and *v*, *j* can only be accepted as nonmoraic units residing outside the syllable nucleus; in this position, *v*, *j* can only be replaced with nonsyllabic *j̥*, *ɥ̥* (Fig. 17b).

Fig. 17

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 Latvian dialects
 

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## a. after short vowels

<i>tava</i>	‘your’ (GEN.SG)	<i>tàus</i>	‘your’ (NOM.SG)
<i>klaja</i>	‘open’ (GEN.SG)	<i>klàiš</i>	‘open’ (NOM.SG)
<i>mana</i>	‘my’ (GEN.SG)	<i>màns</i>	‘my’ (NOM.SG)

## b. after long vowels

<i>tēva</i>	‘father’ (GEN.SG)	<i>tē̃us</i> > <i>tēs</i>	‘father’ (NOM.SG)
<i>arāja</i>	‘ploughman’ (GEN.SG)	<i>arā̃is</i> > <i>arais</i> ~ <i>arāš</i>	‘ploughman’ (NOM.SG)
<i>dēla</i>	‘son’ (GEN.SG)	<i>dē̃ls</i> > <i>dēls</i>	‘son’ (NOM.SG)
<i>liēla</i>	‘big’ (GEN.SG)	<i>liē̃lc</i> > <i>liēc</i>	‘big’ (NOM.SG)

Standard Latvian and Lithuanian both lack either vowel shortening in hypercharacterized syllables or the alternative deletion of nonmoraic sonorants and *j̥*, *ɥ̥*. A possible explanation is that the standard languages, together with some dialects, are more interested in maintaining the same phonemic composition of morphemes than in processes optimizing syllable structure.

5. Processes reducing the number of potentially moraic segments may appear to be in conflict with the fact that in Latvian, including most of its dialects, short vowels are actually lengthened before a tautosyllabic *r*, thus producing what seem to be new hypercharacterized syllables. In the western part of the Semigalian dialect (‘zemgaliskās

izloksnes') the sequence of a short vowel plus *r* undergoes a different kind of change as a short vowel is inserted after *r* or *l*, the result being a succession of two short syllables. (The quality and duration of the inserted vowel may vary, even though in Fig. 18b it is transcribed as a reduced *a*.) Both modifications take place regardless of the tone in the western dialects of Latvian, that is, in Curonian ('kursiskās izloksnes') and Semigalian (Fig. 18a, 18b), whereas in the central and eastern dialects as well as in the standard language the lengthening of vowels before *r* is absent from syllables with the broken tone<sup>18</sup> (Fig. 18c, 18d). In addition, in central Latvian, represented by the dialect of Vidzeme and the eastern part of the Semigalian dialect, the lengthening is limited to the open vowels *a*, *e*, *ę* (see Rudzīte 1993, 252–258).

The explanation we could offer for this contradiction is that the tautosyllabic *r* became nonmoraic in all or some contexts at the stage immediately preceding the change, and it was its loss of ability to contribute to syllable length that triggered the lengthening of a vowel occurring before it as well as the insertion of a short vowel after it. The lengthening of vowels before *r* is actually to be treated as a kind of compensatory lengthening; even if the segment is not lost, its link with the corresponding mora is suppressed, and the mora is reassigned to the preceding vowel in order to preserve the quantity of the syllable, and possibly also its tone. The short vowel that arises after *r* in Semigalian is also attributed to the mora that is vacated by *r*, except that it constitutes a separate syllable. The idea of a structural equivalence between the long syllable in Fig. 18a and the sequence of two short syllables in Fig. 18b is also in agreement with the traditional views on syllable quantity going back to Latin and Greek (see also Kleiner 2000, 64–65).

Thus, the seemingly hypercharacterized syllables in Fig. 18 turn out to be ordinary long syllables where the tautosyllabic *r* does not have the ability to compete with the preceding long vowel any more than an obstruent would have. Nevertheless, this does not hold true for some Latvian dialects where *r* is deleted after the lengthened vowel (Fig. 19) (Rudzīte 1964, 96).

<sup>18</sup> In the High Latvian Selonian dialect 'sēliskās izloksnes' short vowels are also lengthened under the rising tone, which corresponds to the broken tone of other dialects, although, as one can conclude from the quality of the vowels, it happened later than under the falling tone (see Rudzīte 1964, 289).

Fig. 18

a. Curonian	b. Semigalian	c. Central Latvian	d. High Latvian	
<i>vārna</i>	<i>var<sup>a</sup>na</i>	<i>vārna</i>	<i>vùorna</i>	‘crow’
<i>dârzi</i>	<i>dar<sup>a</sup>zi</i>	<i>dârzi</i>	<i>dùorzi</i>	‘gardens’
<i>dârbi</i>	<i>dar<sup>a</sup>bi</i>	<i>dafbi</i>	<i>dořbi</i>	‘labours’
<i>bērzi</i>	<i>bēr<sup>a</sup>zi</i>	<i>bērzi</i>	<i>bârzi</i>	‘birches’
<i>zêrt</i>	<i>zer<sup>a</sup>t</i>	<i>zêft</i>	<i>zûrt</i>	‘drink’
<i>zîrgi ~ ziêrgi</i>	<i>zir<sup>a</sup>gi</i>	<i>zîrgi</i>	<i>zyřgi</i>	‘horses’
<i>kūrpe ~ kuōrpe</i>	<i>kur<sup>a</sup>pe</i>	<i>kuřpe</i>	<i>kùrpā ~ kùorpā</i>	‘shoe’
	<i>mal<sup>a</sup>ka</i>			‘firewood’
	<i>vil<sup>a</sup>kt</i>			‘pull’

Fig. 19

<i>svârki &gt; svâki</i>	‘skirt; coat’
<i>bêrns &gt; bēns</i>	‘child’
<i>bêrs &gt; bēs</i>	‘birch’
<i>kârkli &gt; kâkli</i>	‘willows’ (NOM.PL)
<i>vêrpt &gt; vêpt</i>	‘spin’

One may suppose that, although initiated in dialects with nonmoraic *r*, the lengthening of preceding vowels spread further to the areas where it was not required by syllable structure. Standard Latvian, for instance, provides us with numerous examples of diphthongal sequences of a short opened vowel plus *r* having the level or the falling tone as in Fig. 20. (The tones are given according to Ceplītis *et al.* 1995.)

The existence of dialects with nonmoraic *r* is confirmed by at least two sources. First, Fricis Adamovičs reported it for the dialect of Dundaga (1923). Though a variety of Curonian, it belongs to one of the two smaller areas in which short closed vowels preceding a tautosyllabic *r* are not lengthened under the broken tone (see Rūķe 1940,



Fig. 20

<i>aŗmija</i>	‘army’
<i>kārte</i>	‘card; map’
<i>hērcōgs</i>	‘duke’

77–79) (Fig. 21). According to Adamovičs (1923, 103), syllables with such *r* after a short vowel have neither of the dialect’s distinctive tones and *r* also lacks the duration associated with other sonorants acting as the second components of diphthongal sequences under level and broken tone.

Fig. 21

<i>kārt</i> > <i>kārt</i>	‘hang’
<i>buŗt</i> > <i>buārt</i>	‘conjure’
<i>biŗt</i> > <i>biārt</i>	‘pour; fall’
<i>aŗt</i> > <i>ārt</i>	‘plough’
<i>uŗbt</i> > <i>urbt</i>	‘bore, drill’
<i>ziŗgs</i> > <i>zirgs</i>	‘horse’

Apart from being a part of Curonian, the dialect of Dundaga is also classified as Tamian as it displays the loss of short vowels in unstressed position, accompanied by lengthening in the nucleus of the preceding syllable. The simplest case is the lengthening of a short vowel in Fig. 22a which receives the so-called rising-falling tone (‘kāpjoši krītošā intonācija’). A lengthened long vowel under the broken tone acquires the so-called broken-falling tone (‘lauzti krītošā intonācija’) and so do long syllables with diphthongs and diphthongal sequences (Fig. 22b). Since the lengthening affects the nucleus as a whole, in the case of diphthongs and diphthongal sequences, it induces a longer duration of the second components. As in the dialect of Dundaga the tautosyllabic *r* is placed outside the syllable nucleus (Fig. 22c), it does not differ from the obstruent in Fig. 22a in that only the preceding vowel is lengthened.

Fig. 22

a.	<i>daba</i> > <i>dāb</i> <i>ligzda</i> > <i>ligzd</i>	‘nature’ ‘nest’
b.	<i>kāda</i> > <i>kā:d</i> <i>jaūna</i> > <i>joū:n</i> <i>gaļda</i> > <i>gaļ:d</i>	‘what, what kind of’ (GEN.SG) ‘new; young’ (GEN.SG) ‘table’ (GEN.SG)
c.	<i>zīrga</i> > <i>zīrg</i>	‘horse’ (GEN.SG)

The second source of supporting evidence for the nonmoraic status of the tautosyllabic *r* is supplied by Juris Plāķis (1924, 161) who claimed that in some varieties of High Latvian diphthongal sequences with liquid sonorants had lost their tones due to insufficient duration of their second components (Fig. 23).

Fig. 23

<i>dārbs</i> > <i>dārbs</i> <sup>19</sup>	‘labour’	<i>bālts</i> > <i>bālts</i>	‘white’
<i>dzeļrt</i> > <i>dzeļrt</i>	‘drink’	<i>šķeļt</i> > <i>šķeļt</i>	‘cleave’
<i>sīrds</i> > <i>sīrds</i>	‘heart’	<i>sīlts</i> > <i>sīlts</i>	‘warm’
<i>kūrms</i> > <i>kūrms</i>	‘mole’	<i>pūlks</i> > <i>pūlks</i>	‘crowd’

6. Nonmoraic sonorants in Latvian are not, in fact, limited to liquid sonorants. The works of Ābele and Plāķis, together with data from descriptions of Latvian dialects, suggest that not every diphthong or diphthongal sequence forms a long syllable capable of bearing a tone. The second components of diphthongs and diphthongal sequences lacking this property are referred to as nonsyllabic by Ābele, while others (Adamovičs 1923, 103; Liniņš 1928, 56) simply call them short as opposed to the ‘level’ and ‘broken’ second components of diphthongs and diphthongal sequences under the level and broken tones. It should not surprise us that the tone type is here attributed to the second component. Even though the domain of tone distinctions encompasses

<sup>19</sup> Plāķis does not mark the tones but only the duration of the tautosyllabic liquids.

the entire syllable, Ābele (1921, 46) states that the second component plays a crucial part in defining the difference between the distinctive tones in her native Central Latvian dialect of Vidzeme, and this seems to be true of other varieties of Latvian as well.

Ābele also puts emphasis on the fact that the high vowels *u*, *i* as well as nasal and liquid consonants, that is, the segments acting as second components, are less sonorous than mid and low vowels, which usually perform the role of first components, only if each of the sounds is pronounced separately, as a syllable on its own. In a word, syllabification is performed in agreement with language-specific rules that not only determine the number of syllables and the place of syllable boundaries, but also control the composition of syllable nuclei. Languages differ in what sounds, if any, are allowed to share a syllable nucleus with a preceding short vowel. Yet in a language that permits syllable nuclei with a less sonorous segment after the short vowel, the inherently less sonorous second component can become as prominent as the first, since, according to Ābele, characteristics of a segment are regulated by syllable structure and not vice versa (Ābele 1924, 14–19, 21–31).

Thus Ābele claims the second components of Latvian diphthongs and diphthongal sequences to be longer and more intensive in comparison with the first; they are also responsible for the duration of the whole diphthong and diphthongal sequence, respectively (Ābele 1921, 46). She also proposes a test that discriminates between nuclear and nonnuclear segments (or, in her terminology, syllabic and nonsyllabic segments), based on a native speaker's ability to protract a particular segment without destroying the phonetic shape of a word, especially the number of syllables in it. It was through this test that diphthongs with nonmoraic second component were discovered in some varieties of High Latvian in Vidzeme, together with the minimal pairs (Ābele 1933, see also Balode 2000, 28) (Fig. 24).

Fig. 24

Central Latvian	High Latvian			
<i>sàus</i>	<i>sauš</i>	‘my; yours; his etc.’	<i>sàuss</i>	‘dry’
<i>klàiš</i>	<i>klaiš</i>	‘open’	<i>gàišš</i>	‘light, fair’

Plāķis (1924) maintains the idea that diphthongs and diphthongal sequences in Latvian dialects differ with respect to the duration of the second components. Influenced by Antanas Baranauskas' account of East Lithuanian (Baranovskij 1898, 20–25), he represents diphthongs and diphthongal sequences as having three morae, two of which are associated with the second component under the level tone (Fig. 25a) and with the first component under the falling and the broken tone (Fig. 25b).

Fig. 25

a.			b.					
<i>laīks</i>	<i>āī</i>	'time'	<i>slāīks</i> <sup>20</sup>	<i>āī</i>	'slender'	<i>láīpa</i>	<i>āī</i>	'plank'
<i>sveīks</i>	<i>ēī</i>	'healthy'	<i>mēīta</i>	<i>ēī</i>	'daughter'	<i>béīgt</i>	<i>ēī</i>	'finish'
<i>laūks</i>	<i>āū</i>	'field'	<i>rāūgs</i>	<i>āū</i>	'yeast'	<i>plúīnit</i>	<i>ūī</i>	'pull'
<i>puīka</i>	<i>ūī</i>	'boy'						
<i>balīts</i>	<i>āļ</i>	'white'	<i>pāmp̄t</i>	<i>āņ</i>	'swell'	<i>júmts</i>	<i>ūņ</i>	'roof'
<i>kuīpe</i>	<i>ūīr</i>	'shoe'	<i>cīmds</i>	<i>īņ</i>	'glove'	<i>kúngs</i>	<i>ūņ</i>	'lord'
<i>baīnga</i>	<i>āņ</i>	'wave'	<i>gālv̄a</i>	<i>āļ</i>	'head'	<i>ālḡa</i>	<i>āļ</i>	'wages'
<i>laīmp̄a</i>	<i>āņ</i>	'lamp'	<i>zīrgs</i>	<i>īr</i>	'horse'	<i>gúлта</i>	<i>ūļ</i>	'bed'
c.								
<i>(vaī ~) vāī</i>	'or; if'							
<i>māītēī</i>	'mother' (DAT.SG)							
<i>sīlm̄ala</i>	'edge of a forest'							
<i>dāīrbs</i>	'labour'							

Since Plāķis placed words with a lengthened vowel before *r* under the same category as words with the falling and the broken tone, it seems clear that they all have a long vowel in the nucleus instead of a diphthong or a diphthongal sequence. At least one of them, *gālv̄a*, is a well-known example of vowel lengthening from Curonian (cf. Rudzīte 1964, 95); actually, it should be viewed as another case of compensa-

<sup>20</sup> The tones are marked according to Plāķis.

tory lengthening, as the genuine dialectal form stands as *gâla*, where the onset of the following syllable is lost, the vacated position being filled with *l* which, in turn, left an empty position in the nucleus. Lengthening of the first components of diphthongs and diphthongal sequences whose second component is other than *r*, is, indeed, found in some Latvian dialects (cf., for example, Krautmane-Lohmatkina 2002, 18) and may be of the same origin as the lengthening before *r*, though not so widespread. In any event, Fig. 23b has nothing to do with real diphthongs and diphthongal sequences under the broken and the falling tone, which have a longer second component not only in Ābele's native dialect but also in the modern standard language (see Laua 1997, 65).

For our purposes, the most important point is that Plāķis also distinguishes a third group of diphthongs and diphthongal sequences (Fig. 25c) in which each of the components is equated with only one mora (Plāķis 1924, 161; Plāķis 1930, 64–65). We will, however, refer to them further as having only one mora, assigned to the first short vowel, which is the only segment in the nucleus in the relevant instances, whereas the second component is simply nonmoraic. Besides, Plāķis himself states that the first and second component together are equal to a short vowel. The moraic second components of diphthongs and diphthongal sequences will also be treated as associated with only one mora rather than two.

Aside from the case of liquid sonorants, diphthongs and diphthongal sequences with nonmoraic second components tend to be at the edge of a morpheme where they undergo resyllabification before a vowel (Fig. 26c). (In most cases it would be more correct to say that these diphthongs and diphthongal sequences are themselves, in fact, a product of resyllabification before a consonant.) While in Central Latvian in Vidzeme (and in the standard language) they receive the falling tone and are not different from diphthongs and diphthongal sequences in the middle of a morpheme (Fig. 26a), in other dialects they may or may not form a long syllable (Fig. 26b)<sup>21</sup>.

<sup>21</sup> The dialectal examples in Fig. 25b, 26b are taken from Ābele (1935), Liniņš (1928), Liniņš (1923); Plāķis (1930); the transcription of nonmoraic segments is modified according to Ābele (1935, 83).

Fig. 26

a.	b.		c.	
<i>sàus</i>	<i>sa<math>\underset{u}</math>s</i>	‘my; yours; his etc.’	<i>sava</i>	‘my; yours; his etc.’ (GEN.SG)
<i>klàiš</i>	<i>klaiš</i>	‘open’	<i>klaja</i>	‘open’ (GEN.SG)
<i>lèi</i>	<i>le<math>\underset{i}</math></i>	‘pour’ (PRS.3)	<i>leju</i>	‘pour’ (PRS.1SG)
<i>šùì</i>	<i>š<math>\underset{u}</math>i</i>	‘sew’ (PRS.3)	<i>šuju</i>	‘sew’ (PRS.1SG)
<i>tèu</i>	<i>te<math>\underset{u}</math></i>	‘you’ (DAT.SG)	<i>tevi</i>	‘you’ (ACC.SG)
<i>viņš</i>	<i>viņš</i>	‘he’	<i>viņi</i>	‘they’
<i>ņēm</i>	<i>jēm</i>	‘take’ (PRS.3)	<i>ņemu, jēmu</i>	‘take’ (PRS.1SG)
<i>silmala</i>	<i>silmala</i>	‘edge of a forest’	<i>sila</i>	‘forest’ (GEN.SG)

A special case is that of diphthongs and diphthongal sequences at the end of a word and in uninflected monosyllables where resyllabification does not really occur (Fig. 27).

Fig. 27

a.	b.	
<i>vài</i>	<i>vai</i>	‘or; if’
<i>mātēi</i>	<i>māte<math>\underset{i}</math></i>	‘mother’ (DAT.SG)
<i>laīpài</i>	<i>laīpai</i>	‘plank’ (DAT.SG)
<i>laīkām</i>	<i>laīkam</i>	‘time’ (DAT.SG)
<i>režàm</i>	<i>režam</i>	‘see’ (PRS.1PL)

Although the official norm of Standard Latvian in this regard is almost identical with the situation in the Central Latvian dialect in Vidzeme, they disagree in what happens to a tautosyllabic *j* after a short *i*, and *v* after *u*, respectively. In the dialect (Fig. 28b), *j*, *v* are replaced with syllabic *i*, *u* which, in combination with the preceding vowels, form long high monophthongs (Endzelins 1951, 25), whereas in Standard Latvian (Fig. 28a) *j*, *v* yield nonsyllabic *ĵ*, *ū*, resulting in

a short syllable. In other dialects, on the contrary, *ī* may be found instead of the long vowel in *šī* ‘this’ (NOM. SG. FEM.) (Liniņš 1928, 44).

Fig. 28

a.	b.	
<i>riīkuris</i>	<i>rikuris</i>	< <i>rīja</i> ‘barn’, <i>kurt</i> ‘make fire’
<i>druņnesis</i>	<i>drūnesis</i>	< <i>druva</i> ‘grainfield’, <i>nest</i> ‘carry’

Plāķis was the first explicitly to suggest that the special status of the second components in Fig. 26b is conditioned by the fact that they alternate with syllable onsets (Plāķis 1930). Since onsets do not contribute to length, it is natural to conclude that they merely retain their characteristics after resyllabification. A more complicating way for the language is to create a new mora as it does in Fig. 26a, Fig. 27a, and Fig. 28b.

It is interesting to note that in the dialects presented in Fig. 26b, there is no difference between tautosyllabic sonorants and *j*, *v* after long and short vowels, as in both cases they are nonmoraic (Fig. 29, see also Fig. 17). To a certain extent, the nonmoraic status of the second component of new diphthongs and diphthongal sequences in Fig. 29a can be seen as a manifestation of the same tendency that eliminates the hypercharacterized syllables in Fig. 29b. Yet, after short vowels, the second components are rarely reported to be deleted.

The conclusion which we are forced to draw is that syllable length in Latvian does not entirely rely on the type of segments constituting a syllable rhyme, because there may be short and long syllables of the same composition (Fig. 24, repeated here as Fig. 30). Even if in the case of diphthongs it can be accounted for very simply by assuming that syllabic *u*, *i* and nonsyllabic *u*, *i* are realizations of different phonemes, /u/, /i/ and /v/, /j/, respectively, this solution can hardly be extended to sonorants.

Fig. 29

a. after short vowels			
<i>tava</i>	‘your’ (GEN.SG)	<i>tàus ~ taus</i>	‘your’ (NOM.SG)
<i>klaja</i>	‘open’ (GEN.SG)	<i>klàiš ~ klaiš</i>	‘open’ (NOM.SG)
<i>mana</i>	‘my’ (GEN.SG)	<i>màns ~ mans</i>	‘my’ (NOM.SG)
b. after long vowels, diphthongs, and diphthongal sequences			
<i>tēva</i>	‘father’ (GEN.SG)	<i>tētūs ~ tēs</i>	‘father’ (NOM.SG)
<i>arāja</i>	‘ploughman’ (GEN.SG)	<i>arāiš ~ arais ~ arāš</i>	‘ploughman’ (NOM.SG)
<i>dēla</i>	‘son’ (GEN.SG)	<i>dētls ~ dēls</i>	‘son’ (NOM.SG)
<i>liēla</i>	‘big’ (GEN.SG)	<i>liēlc ~ liēc</i>	‘big’ (NOM.SG)

Fig. 30

Central Latvian	High Latvian			
<i>sàus</i>	<i>saus</i>	‘my; yours; his etc.’	<i>sàuss</i>	‘dry’
<i>klàiš</i>	<i>klaiš</i>	‘open’	<i>gàišs</i>	‘light, fair’

Our conclusion does not apply to Lithuanian, where the issue of durational differences between the first and the second components of diphthongs and diphthongal sequences is more complicated and should be analyzed separately.

7. It might seem obvious that in a language that distinguishes between short and long syllables, long segments contribute to syllable length, the most conspicuous example being long vowels in the nucleus of long syllables. Nevertheless, in Latvian there are also long consonants, especially in intervocalic position, which are considered as having nothing in common with syllable length. The only exception is the intervocalic long sonorants in Fig. 31, whose first part simultaneously functions as the second component of diphthongal sequences. Such syllables can only have the level tone.



Fig. 31

<i>kaĩna</i>	‘jug’
<i>ķeĩme</i>	‘comb’
<i>kreĩles</i>	‘beads’
<i>ķeĩra</i>	‘wheelbarrow’
<i>vĩllaine</i>	‘woollen shawl’
<i>meĩlene</i>	‘blueberry’

The other class of long consonants includes voiceless obstruents which, unlike sonorants, are always geminated after a stressed short vowel; an opposition of a single and double voiceless obstruent, analogous to the opposition of sonorants in Fig. 32a, is not possible in Latvian.

Fig. 32

a.	<i>nule</i>	‘just now’	<i>nulle</i>	‘zero’
	<i>gali</i>	‘end’ (NOM.PL)	<i>galli</i>	‘Gaul’ (NOM.PL)
b.	—		<i>lappa</i>	‘leaf’
	—		<i>akka</i>	‘water well’
	—		<i>rassa</i>	‘dew’
	—		<i>matti</i>	‘hair’ (NOM.PL)

Single voiceless obstruents are only found after long vowels, diphthongs, and diphthongal sequences where they usually act as onsets of the following syllable. Thus, the first part of geminated voiceless obstruents is, in fact, in complementary distribution with the second component of diphthongal sequences, diphthongs, and long monophthongs (Fig. 33a, 33b). It is worth mentioning that sonorants, too, can be doubled only after short vowels; the most convincing argument is the choice between short and long *o* in borrowings in Fig. 33c (according to Ceplitis *et al.* 1995). As gemination of voiceless obstruents after stressed short vowels is obligatory, we may deduce that its purpose is to supply a rhyme consonant for the stressed syllable and fill the empty second mora, making the syllable long. As a result, almost all

stressed syllables in Latvian become long with the exception of words with an intervocalic voiced consonant after a short vowel, as in *daba* ‘nature’. The reason for this drastic change undoubtedly lies in the influence of the Baltic-Finnic languages, although the process was not straightforward.

Ābele considered a combination of a short vowel and a voiceless obstruent in Latvian to be a diphthong and placed them in one class with traditional diphthongs and diphthongal sequences as having two segments in the nucleus (Ābele 1924, 22–27). The interpretation of syllables containing a short vowel followed by a voiceless obstruent as long contradicts the popular view that long syllables in Baltic must carry one of the distinctive tones. Apart from this, however, there are other criteria supporting our claim. In Fig. 22 (repeated here in a slightly modified way as Fig. 34a–c), the fragment of the syllable that undergoes lengthening after apocope may be identified with the nucleus. As noticed earlier, the tautosyllabic *r* in Fig. 34b, unlike other sonorants, is not treated as part of the nucleus. Ābele (Ābele 1924, 26–27) uses the same phenomenon to argue that voiceless obstruents belong to the nucleus (see Fig. 34d). Although we can point out that obstruents were already long before the apocope and merely retain their initial duration, the truth, however, remains that the preceding vowel is not lengthened either.

Fig. 33

a.	<i>lappa</i>	‘leaf’	<i>lāpa</i>	‘torch’
			<i>laipa</i>	‘plank’
			<i>lampa</i>	‘lamp’
b.	<i>likka</i>	‘put’ (PRT.3)	<i>lika</i>	‘crooked’ (GEN.SG)
			<i>laika</i>	‘time’ (GEN.SG)
			<i>lanka</i>	‘marshy meadow’
c.	<i>donna</i>	‘Italian woman of rank’	<i>krōna</i>	‘crown (coin)’

The picture is somewhat complicated by the fact that voiceless obstruents do not behave differently after the long vowels, diph-

thongs and diphthongal sequences in Fig. 34e, which do not undergo lengthening as distinct from those in Fig. 34c<sup>22</sup>. Furthermore, in some dialects voiceless obstruents are even lengthened in this case (Paula 1927, 41; Krautmane-Lohmatkina 2002, 124–125). In this respect the Tamian dialect of Latvian is similar to Estonian, where tense obstruents contribute to the realization of the so-called third quantity after long vowels, diphthongs, and combinations of a vowel and a sonorant (Lehiste 1997, 31; Hint 1997, 131). This problem, however, is beyond the scope of the present discussion.

Fig. 34

a.	<i>daba</i> > <i>dāb</i>	‘nature’
	<i>ligzda</i> > <i>ligzd</i>	‘nest’
b.	<i>zīrga</i> > <i>zīrg</i>	‘horse’ (GEN.SG)
c.	<i>kāda</i> > <i>kā:d</i>	‘what, what kind of’ (GEN.SG)
	<i>jaūna</i> > <i>joū:n</i>	‘new; young’ (GEN.SG)
	<i>galda</i> > <i>gā:d</i>	‘table’ (GEN.SG)
d.	<i>lappa</i> > <i>lap̄</i>	‘leaf’
	<i>sitta</i> > <i>sīt̄</i>	‘hit’ (PRT.3)
e.	<i>rīti</i> > <i>rīt̄</i> ~ <i>rīt̄</i>	‘morning’ (NOM. pl.)
	<i>aīta</i> > <i>aīt̄</i> ~ <i>aīt̄</i>	‘sheep’
	<i>sīltu</i> > <i>sīlt̄</i> ~ <i>sīlt̄</i>	‘warm’ (ACC.SG)

The other piece of evidence in support of the thesis that syllables with a short vowel and a voiceless obstruent are long in Latvian comes from secondary stress assignment in the dialect of Aizpute (Liniņš 1928). In Fig. 35a–b, secondary stress falls on the ending if the root syllable is short, but the endings are unstressed if the root syllable is long. Unfortunately, there are additional complications in this case. First, syllables with a short vowel and a voiceless obstruent are not treated as long in word-final position. The ending receives stress because it

<sup>22</sup> In other dialects long vowels can be lengthened before voiceless obstruents, too, like *kāta* > *kā:t* ‘handle’ (GEN.SG) (Šmite 1928, 10).

has a long syllable (the examples in Fig. 35c show that no secondary stress is assigned to short endings) yet no secondary stress is found on the endings in Fig. 35d. Secondly, the long endings that carry the secondary stress in Fig. 35a are, in fact, reported to have a nonmoraic second component and carry no tone (Liniņš 1928, 56–57); in other words, they should not be viewed as long syllables either but they, nevertheless, act as such with respect to secondary stress.

The only conclusion that can be drawn from these data is that all three types of syllables are long in a different sense, that is, they are sensitive to different criteria and should be represented in a different way (see Gordon 2006, 5–8). Secondary stress does not require the second component of diphthongs and diphthongal sequences to be in the syllable nucleus but, as the syllable is still considered long, there is no reason not to treat the second component as moraic. Thus, the terms ‘moraic’ and ‘nuclear’ should be given different meanings with respect to Latvian. Voiceless obstruents can, in turn, be associated with the second mora of the stressed syllable under certain conditions only.

Fig. 35

a.	'za <sub>1</sub> ram	‘branch’ (DAT.SG)	c.	'grava	‘ravine’	d.	'ragus	‘sledge’
	'be <sub>1</sub> drei	‘hole’ (DAT.SG)		'sēdli	‘saddle’		'jemat	‘take’ (PRS.2PL)
b.	'nākam	‘come’ (PRS.1PL)						
	'laīpai	‘plank’ (DAT.SG)						
	'kaļpam	‘servant’ (DAT.SG)						
	'akkai	‘water well’ (DAT.SG)						
	'kluccim	‘log’ (DAT.SG)						

8. Apart from tone, length-sensitive phenomena in the Baltic languages also includes primary and secondary stress, compensatory lengthening of vowels before a lost tautosyllabic sonorant or before a sonorant that has become nonmoraic, shortening of long vowels or dropping of sonorants and *j*, *v* in hypercharacterized syllables, lengthening of stressed syllables by gemination of intervocalic consonants,

and, to some extent, lengthening of syllables before a vowel that has been lost to apocope and syncope. Some of these criteria are operative only in one of the two Baltic languages and some are valid only in dialects. At least in two instances, presented in this paper, different criteria yield different results in the same language or dialect, which does not seem unusual from a typological point of view. Some of the criteria also lead to a revision of the traditional view on the composition of long syllables, as they do not count syllables with diphthongs and diphthongal sequences as long or, on the contrary, extend the notion of syllable length to include syllables with a short vowel followed by a voiceless obstruent.

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## ABBREVIATIONS

ACC — accusative, ADJ — adjective, DAT — dative, FUT — future,  
GEN — genitive, INF — infinitive, LOC — locative, NOM — nominative,  
PAR — partitive, PL — plural, PRS — present, PRT — preterite, SG —  
singular

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