Syllabic consonants in Strict CV

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Contents

1 Introduction

Syllabic consonants have received little attention in contemporary phonological literature. Yet, as these sounds share phonological characteristics with both consonants and vowels, work on syllabic consonants sheds new light on theoretical issues like locality and the interpretation of multiple skeleton-to-melody association, as well as empirical questions such as consonant cluster phonotactics, stress assignment and length alternations.

This thesis discusses the phonological behaviour and representation of syllabic consonants in the framework of **Strict CV Phonology** (Lowenstamm 1996a,b, 1999; Scheer 1997, 1999, forth.; Dienes and Szigetvári 1999; Szigetvári 1999), a recent development of **Government Phonology** (GP, Kaye et al. 1990; Harris 1994; Harris and Lindsey 1995), based on data from Western Slavic (Czech, Slovak and Polish) and West Germanic (German and English).

The thesis is structured as follows. In section 2, I informally present the basic phonological characteristics of syllabic consonants and show that they pattern with vowels is some respects and with non-syllabic consonants in other respects. In section 3, I introduce the relevant properties of Government Phonology and Strict CV Phonology, with special emphasis on the framework of Scheer (1997, forth.) and Dienes and Szigetvári (1999); Szigetvári (1999). In section 4, I show that syllabic consonants are best represented by their melody linked to a vocalic and a consonantal skeletal slot at the same time, and that, *contra* Szigetvári (1999), Rowicka (1999) and Scheer (forth.), this property is unique to syllabic consonants. Reviewing a number of phenomena

including phonotactic restrictions on consonant clusters, the minimal word constraint, vowel-zero alternations and devoicing facts, I argue that syllabic consonants are linked to a consonantal and a *following* vocalic slot, in section 5. Finally, in section 6, I examine the relation of syllabic consonants and phonological length, and offer a revised formulation of interpreting melody-to-skeleton association. *Contra* Toft (2001, forth.), I argue that syllabic consonants are not phonologically long. I also propose a representation for long syllabic consonants that is consistent with the fact that they pattern with *long* vowels in some respects but with *short* non-syllabic consonants in other respects. I summarise in section 7.

2 General properties of syllabic consonants

Examples of words containing syllabic consonants are shown in (1).

(1) *Examples of syllabic consonants*

English	*button*	[bʌtn̩]	
	double	[dʌbl̩]	
German	*haben*	[haːbm̩]	'to have'
	Segel	[zeːgl̩]	'sail'
Slovak	*krk*	[kr̩k]	'neck'
	vŕba	[vr̩ːba]	'willow'
	stĺp	[stl̩ːp]	'pole'
Croatian	*rz*	[r̩s]	'honour'
	rvat	[r̩vat]	'argue'

Syllabic consonants can preliminarily be defined as segments that share phonological properties with vowels as well as with non-syllabic consonants. Let us look at some examples of this behaviour.

Syllabic consonants and vowels often show identical behaviour, to the exclusion of non-syllabic consonants. Consider the following data from Slovak, illustrating the ability of syllabic consonants to bear stress.

(2) *Syllabic vs. non-syllabic consonants – stress*

a.	*krmiť*	/kr̩mic/	'feed'
	krv	/kr̩f/	'blood'
b.	*krava*	/krava/	'cow'
	brat	/brat/	'brother'

Slovak has word-inital stress. All words in (2) contain exactly one vowel and one liquid, but their stress pattern is different. In the words in (2a), liquids are stressed – and syllabic, while in (2b), liquids cannot receive stress due to their non-syllabic status.

Another illustration of the parallel behaviour of vowels and syllabic consonants comes from examining possible words in a language: vowels and syllabic consonants can be heads of prosodic words, non-syllabic consonants cannot.

(3) *Possible words in Slovak and Polish*

Slovak		Polish		gloss
vlk	/vl̩k/	*wilk*	/vilk/	'wolf'
krv	/kr̩f/	*krew*	/kref/	'blood'
krst	/kr̩st/	*chrzest*	/xʃest/	'baptism'
dlh	/dl̩h/	*dług*	/dluk/	'debt'

The data in (3) are cognates from Slovak and Polish. While Slovak allows words without vowels provided that they contain a syllabic consonant; such words are ill-formed in Polish, as this language does not have syllabic consonants.

Syllabic consonants also have properties in common with non-syllabic consonants: they are subject to phonotactic restrictions on consonant clusters. Examining the distribution of [l̩] and [n̩] in Southern British English (SBE), we find that [l̩] is free to occur in any context except after TR clusters, while [n̩] can only appear after singleton coronal consonants.

(4) *Syllabic n̩ and l̩ in SBE* (partly from Toft 2001)

can be syllabic	can't be syllabic	context
bottle *button*		$VC_{[cor]}\_$
tackle	*bacon*	$VC_{[vel]}\_$
people	*deepen*	$VC_{[lab]}\_$
bundle	*Kenton*	$VRT\_$
	petrol *patron*	$VTR\_$

Thus, we can define syllabic consonants as segments that can behave as a natural class together with vowels to the exclusion of non-syllabic consonants, and *vice versa*.

3 The framework

In this section, I outline the main characteristics of the theory of representation I adopt in this thesis: Strict CV Phonology, a recent offspring of Government Phonology. Only those properties of the theories that have immediate relevance to the representation of syllabic consonants are given here, the reader is referred to the works cited in this section for the complete explication.

Government Phonology (GP, Kaye et al. 1990; Kaye 1990, 1995; Harris 1994; Harris and Lindsey 1995) is a representation-based theory, advocating close structural parallelism between syntax and phonology, and making use of devices such as government, licensing and the Empty Category Principle.[1] GP is a strongly representational theory, attempting to account for phonological phenomena by referring to universal properties of syllable structure and melodic expressions, with only a small number of parameters to deal with variation.

As for melody, GP uses abstract, unary autosegmental primes called **elements**. The same set of elements is used for consonants and vowels, their interpretation depends on what type of skeletal slot they are dominated by (see Harris 1994 and Harris and Lindsey 1995 for a detailed introduction to Element Theory). This means that the traditional terms 'vowel' and 'consonant' can only be interpreted on the skeleton. Thus, a given skeletal slot containing the same set of melodic expressions is a 'consonant' if it is dominated by an Onset (5b), and a vowel if it is dominated by a Nucleus (5a).

[1] Since these are defined differently in Standard GP and Strict CV, only the Strict CV formulations are given. The reader is referred to the works cited in this paragraph for details.

(5) *The same elements are used to represent 'vowels' and 'consonants'*

a. [i] b. [j]

Syllable structure in GP is highly constrained: constituents are maximally binary, and the existence of the coda and even the syllable as separate constituents is called into question (Kaye 1990; Kaye et al. 1990). In turn, empty skeletal positions are allowed to remain unpronounced under certain conditions (the Empty Category Principle, ECP). Apart from constituency, lateral relations (government and licensing) have an important explanatory role in GP. Unfortunately, it is often the case that the same information is encoded both by constituency and by government/licensing, leading to the unnecessary duplicating of theoretical tools.

Strict CV Phonology (CVP, also known as CVCV) (Lowenstamm 1996a,b, 1999; Scheer 1997, 1998, 1999; Ségéral and Scheer 1999; Dienes and Szigetvári 1999; Szigetvári 1999) is a radical version of Government Phonology, dispensing with syllable structure altogether, and putting the explanatory burden on lateral relations. The proponents of Strict CV claim that the skeleton is made up of strictly alternating C and V slots. Both types of slots are allowed to remain without phonetic interpretation, but while consonantal positions are free to remain silent if unfilled, empty vocalic positions have

to meet certain conditions to be unpronounced (more on this below).

In CVP, phonological phenomena are accounted for by referring to lateral relations between skeletal slots. There are two types of relations holding between skeletal points: government and licensing. Both are asymmetric, local and unidirectional: they apply to the closest available slot from the lateral actor and their direction is always from right to left. While licensing is a 'good' force, enhancing the original properties of the target, government destroys them.[2]

Two specific frameworks are relevant for the discussion of syllabic consonants in this thesis: Tobias Scheer's version of Strict CV (Scheer 1997, forth.), and Péter Dienes and Péter Szigetvári's VC Phonology (VCP, Dienes and Szigetvári 1999; Szigetvári 1999). The two frameworks are reviewed below.

3.1 Scheerian CV

In Scheer's framework, like in 'traditional' CV Phonology, the skeleton is made up of CV units; it always starts with a C and ends with a V position. Empty vocalic positions are allowed to remain unpronounced if they meet one of the following conditions:

- they are governed by another V position (Proper Government)
- they are domain-final (parametrically)
- they are sandwiched between two consonantal positions forming a domain of Infrasegmental Government (IG, typically obstruent+sonorant clusters). An IG

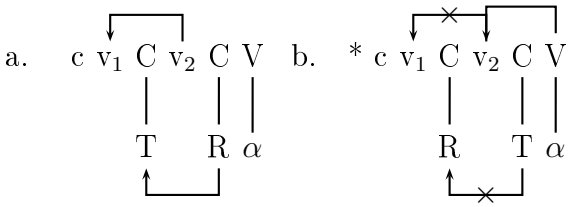
[2]The first principled distinction between government and licensing has been made by Ségéral and Scheer (1999) and it was further developed by Dienes and Szigetvári (1999) and Szigetvári (1999).

relation must be licensed by the V position following the governing C position.

That a V position is not pronounced does not necessarily mean that it cannot be a lateral actor. Only properly governed empty Vs are deprived of their ability to license and govern, the other two types of unpronounced empty nuclei are free to do so. Thus, there are three types of nuclei in this framework: those that are pronounced and can be lateral actors (filled V positions), those that are not pronounced but can be lateral actors (final Vs and Vs in an IG domain) and those that are unpronounced and unable to license and govern (governed Vs). Pronounced Vs never lack the ability to license and govern.

Scheer adopts the idea of Lowenstamm (1996b, 1999) that the left edge of words is marked by an empty CV unit (this was signalled by '#' in earlier work). One of the consequences of this is that it excludes RT clusters (R=any sonorant, T=any obstruent) from word-initial position, as shown below.[3]

(6) *No initial RT clusters*



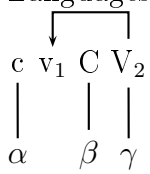
As we see in (6a), every unpronounced empty vocalic position is taken care of: the one between T and R is enclosed in an IG domain and v_1 is properly governed by v_2. In

[3]The following graphical conventions are used in this thesis: government is represented by a solid arrow, licensing by a dashed arrow, pronounced skeletal positions by capital letters, and unpronounced positions by lowercase letters.

(6b), on the other hand, R and T cannot contract an IG relation, and, although v_2 is properly governed and can thus remain silent, there is nothing to silence v_1, which makes the structure ill-formed.

Contra Lowenstamm (1996b, 1999), Scheer claims that the initial empty CV is not present in all languages. In some languages, he claims, the left edge of the word is not visible to phonology, the initial empty CV is missing. This allows for any two consonants to occur word-initially in these languages:

(7) *Languages with no restrictions on initial clusters*



In the above configuration, there is only one empty V to be taken care of, and this can be done by Proper Government by the first live vowel, thus the quality of the two consonants in question is irrelevant. According to Scheer, languages such as English do have an initial empty CV, thus they only allow for the TR-type clusters initially. These are called #TR languages. Conversely, all Western Slavic languages are assumed to lack the empty CV, because they allow non-TR clusters word initially.[4]

3.2 VC Phonology

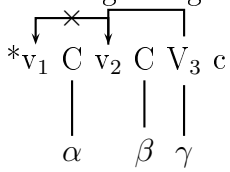
As its name suggests, VC Phonology claims that the skeleton is made up of VC, not CV units; it always starts with a V and ends in a C. From this it follows that there need to be only two ways of silencing empty Vs: either by Proper Government or by

[4]See Blaho (2001) of argument supporting the existence of an initial empty CV in Slovak.

enclosing them in C-to-C governing domains ('buried' V slots), which correspond to sonorant+obstruent clusters in VCP. Only pronounced V slots can be lateral actors in this framework.

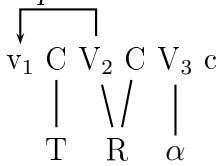
The left edge of the word poses problems for VCP:

(8) *The beginning of the word in VCP*



As we can see in (8) above, the mechanisms presented so far exclude any word-inital clusters, as there is nothing to properly govern the initial empty V. Thus some additional device has to be introduced in order to represent initial consonant clusters. Szigetvári proposes that the second members of onset clusters (oc2 consonants) be represented as in (9) below.

(9) *Bipositional sonorants in VCP*



In (9) above, V_2 has melodic material attached to it, thus, it is not empty, hence not subject to the ECP. This means that it does not need to be governed, and therefore it can govern v_1. This way, the only empty V position is taken care of, and the structure is grammatical.

Szigetvári notes that this representation has already been proposed for syllabic conso-

nants, but concludes that as syllabic consonants and oc2 consonants never occur in the same environment, they may be represented alike.

Having presented the relevant theoretical assumptions, I now turn to the representation of syllabic consonants.

4 Syllabic consonants are uniquely defined on the skeleton

In the light of the data presented in section 2, this section presents the basic arguments for representing syllabic consonants as linked to a vocalic and a consonantal skeletal slot at the same time. This representation correctly predicts that syllabic consonants pattern with vowels in some respects and with non-syllabic consonants in other respects. I also show that this representation is unique to the class of syllabic consonants. *Contra* Szigetvári (1999), I claim that syllabic consonants and (non-syllabic) oc2 consonants must have different phonological representations. Finally, I argue that, *contra* Rowicka (1999) and Scheer (forth.), the representation of 'trapped' consonants does not include a vocalic slot.

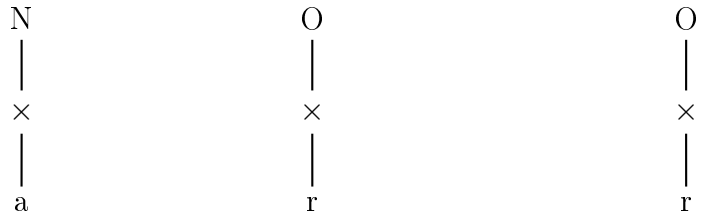
4.1 Syllabic consonants

In a standard Feature Geometry framework (e.g. Clements 1991; Clements and Hume 1995), where vowels and consonants can be distinguished solely on the basis of their featural makeup, the most straightforward way of representing syllabic consonants is by a consonantal feature tree linked to a vocalic (nuclear) slot.[5]

[5]IPA symbols in representations are used only as a shorthand for feature/element trees throughout this thesis.

(10) *Representing syllabic consonants in Feature Geometry*

a. *vowel* b. *consonant* c. *syllabic consonant*



However, as we saw in section 3, this option is not available in Government Phonology, since the information 'consonant' and 'vowel' is only encoded on the skeleton in this framework. Thus, the fact that syllabic consonants are different from vowels and non-syllabic consonants must also be encoded on the skeleton. It has therefore been proposed (Rennison 1993; Harris 1994; Scheer 2001, forth.; Toft 2001; Blaho 2001; Afuta 2002) that syllabic consonants are represented with their melody linked to a vocalic and a consonantal slot at the same time.

(11) *Syllabic consonants are linked to a V and a C slot*

This representation correctly reflects the properties of syllabic consonants: it enables the theorist to formulate generalisations valid for vowels and syllabic consonants to the exclusion of non-syllabic consonants by referring to V slots, and to refer to non-syllabic and syllabic consonants as a natural class by referring to C slots.

4.2 Oc2 consonants

As mentioned in section 3 above, (Szigetvári 1999:119ff) proposes the same representation for the second memeber of word-initial onset clusters and syllabic consonants. In doing so, he offers a solution to how word-initial onset clusters are represented in VCP.

Naturally, positing the same representation for the two types of consonants predicts that the they behave the same way, but this prediction fails to be borne out by the data. First, as Szigetvári himself points out (1999, footnote 116 on p.118), in a given language, syllabic consonants cannot always appear as second members of onset clusters and vice versa. This is the case in Czech and Slovak, where only liquids can be syllabic but nasals can appear in onset clusters as well. Conversely, in English, all sonorants can be syllabic but nasals are excluded from onset clusters. As this discrepancy could somehow be derived from the environment in which sonorants appear (note that syllabic and non-syllabic sonorants are in complementary distribution), this argument in itself does not suffice for rejecting Szigetvári's claim.

His proposal also turns out to be problematic when faced with the data presented in (2) and (3) (repeated below as (12) and (14)). Recall that syllabic and non-syllabic sonorants differ in whether they can be stressed or not. In Slovak, where stress is always initial, if a word begins with a cluster containing a syllabic liquid, the liquid is stressed (12a), but if the liquid is not syllabic, stress falls on the following vowel, as in (12b).

(12) *Syllabic vs. non-syllabic consonants – stress*

a. *krmiť* /kr̩mic/ ‘feed’

krv /kr̩f/ ‘blood’

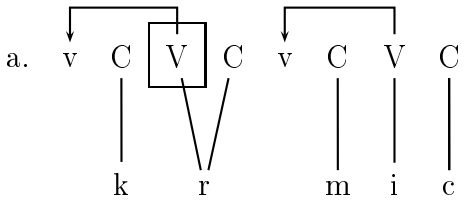
b. *krava* /krava/ ‘cow’

brat /brat/ ‘brother’

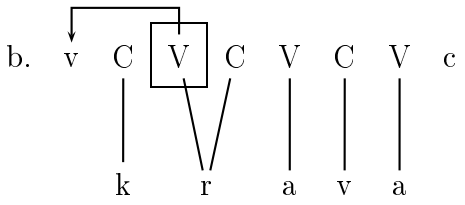
However, if the melody of both syllabic and non-syllabic sonorants is linked to a live vocalic position, it should not be the case that some of these positions are visible to stress while others are not.

(13) *Oc2 consonants are predicted to be visible to stress*

a.



b.



In both (13a) and (13b), the V slot linked to /r/ is the first filled V position in the word, therefore both words are predicted to have main stress on the /r/ – incorrectly.

The data in (14) below relate to the Licensing Principle as reformulated by Polgárdi (1998), the requirement that every phonological domain have a head.[6] It is generally accepted that domains like the phonological word must be headed by a vocalic position. Thus, if the sonorants in word-initial clusters are linked to a V position, words like the Slovak ones in (14), that is, words without 'vowels', should be possible in every language that has initial onset clusters. This is falsified by the Polish data below: there are no 'vowelless' words in this language.

(14) *Possible words in Slovak and Polish*

Slovak		Polish		gloss
vlk	/v̩lk/	*wilk*	/vilk/	'wolf'
krv	/kr̩f/	*krew*	/kref/	'blood'
krst	/kr̩st/	*chrzest*	/xʃest/	'baptism'
dlh	/dl̩h/	*dług*	/dluk/	'debt'

I believe that the arguments above show that the distinction between syllabic and non-syllabic sonorants must be reflected in phonological representation. More precisely, the claim that the melody of non-syllabic liquids is linked to a V position leads to serious problems and should thus be revisited.[7]

[6] Kaye (1990)'s version of the Licensing Principle requires that in a phonological domain, every position be licensed except for the head of that domain, which is licensed from outside. Polgárdi's version is more appropriate for the present discussion since both Scheer and Szigetvári reject the need for every position to be licensed.

[7] It must be noted that Szigetvári (1999) proposes this representation only 'out of necessity', as he is unable to cope with the unpronounced vocalic positions otherwise. He also admits that his solution is not unproblematic but he continues to use it, mainly for want of a better solution – and, admittedly, the present paper does not offer an alternative solution for representing onset clusters in VCP, either.

4.3 'Trapped' consonants

In this subsection, I show that Rowicka (1999)'s and Scheer (forth.)'s representation of Polish 'trapped' consonants faces the same problems as Szigetvári (1999)'s proposal. Examples of 'trapped' consonants are given in (15) below.

(15) *'Trapped' consonants in Polish*

[krt]an 'larynx'

[krf]awić 'bleed'

[trf]tonić 'squander'

Rowicka (1999), who distinguishes phonotactic syllabicity and metrical syllabicity, claims that a consonant does not have to display all characteristics of vowels in order to be syllabic. She argues that Polish 'trapped' consonants like the [r] in *krtan* [krtan] 'larynx' are phonotactically syllabic as they are in an environment where only nuclear elements 'should' occur. However, they do not share other characteristics of vowels, e.g. their ability to bear stress.

Scheer (forth.) acknowledges the difference between syllabic and 'trapped' consonants, and claims that they differ in whether their vocalic slot precedes of follows their consonantal slot.

(16) *Scheer (forth.)'s representation of trapped and syllabic consonants*

a. *syllabic consonants* b. *'trapped' consonants*

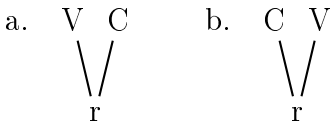
It is evident that, although Rowicka (1999) and Scheer (forth.) use different terminology, their claims share a crucial element: that the representation of 'trapped' consonants in Polish contains a vocalic slot. However, the arguments presented in the previous subsection show that this approach faces serious problems: Polish 'trapped' consonants cannot bear stress and cannot function as heads of phonological words. Moreover, although Scheer (forth.) criticises Rowicka (1999) for failing to distinguish between syllabic and 'trapped' consonants, his representation does nothing to solve the empirical problem: claiming that 'trapped' consonants are represented as in (16b) still predicts that they should pattern with vowels, and fails to explain why they do not.

The predictions of the representation of syllabic consonants argued for in this paper are straightforward: if a segment's representation contains a non-empty vocalic slot, it is expected to display all phonological characteristics of the vowels of a given language. Polish 'trapped' consonants clearly do not meet this criterion, therefore, their representation should not contain a vocalic slot.

5 Syllabic consonants are right-branching

As we saw in section 1, syllabic consonants show both vocalic and consonantal properties. It is therefore appropriate to represent these segments by their melodic material linked to a vocalic and a consonantal skeletal slot at the same time. This section addresses the question whether the vocalic slot should precede or follow the consonantal slot. The first option (17a) is advocated by Harris (1994); Scheer (2001, forth.) and Toft (2001) while the second (17b) is found in Rennison (1993); Blaho (2001) and Afuta (2002).[8]

(17) *Competing representations for syllabic consonants*



In this section, I compare these two representations and argue that (17b) reflects the behaviour of syllabic consonants more appropriately than (17a). I examine a variety of phenomena: the phonotactic restrictions on consonant clusters containing syllabic and non-syllabic sonorants, vowel-zero alternations in prefixes and roots, possible words containing syllabic consonants, and obstruent devoicing.

5.1 Consonant cluster phonotactics

As illustrated in section 1, syllabic consonants differ from vowels in that they are sensitive to their consonantal environment. What has not been pointed out there,

[8] I use Scheer's terms *left-branching* and *right-branching* to mean 'attached to a C and a *preceeding* V slot' and 'attached to a C and a *following* V slot', respectively, without implying that syllabic consonants are a result of the features of a consonant spreading to a neighbouring vocalic slot.

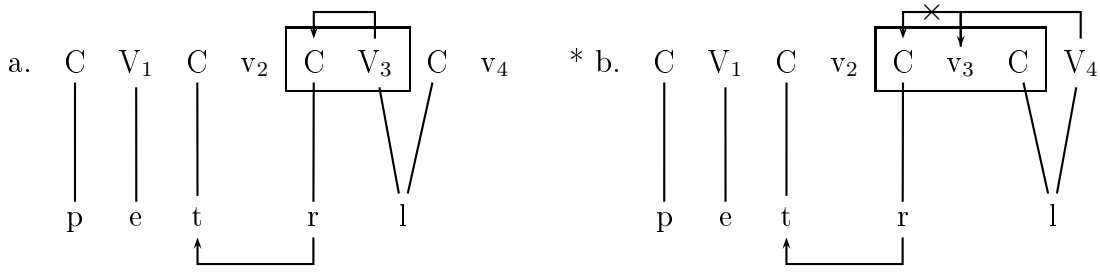
although it is implied by the data in (4) (repeated here as (18)), is that syllabic consonants are sensitive to the type and number of consonants *preceding* them.

(18) *Syllabic n̩ and l̩ in SBE are sensitive to their left-hand environment*

can be syllabic	can't be syllabic	context
bottle *button*		$VC_{[cor]}\_$
tackle	*bacon*	$VC_{[vel]}\_$
people	*deepen*	$VC_{[lab]}\_$
bundle	*Kenton*	VRT_
	petrol *patron*	VTR_

As the data in (18) show, the occurrence of syllabic consonants is restricted by the type and number of consonants preceding them. The left-branching representation of syllabic consonants predicts that this should not be the case. The Principle of Free Occurrence (Kaye 1990) states that there are no restrictions on the medodic content of neighbouring onsets and nuclei – in Strict CV terms, there are no restrictions on the medodic content of neighbouring C and V slots. Thus, if syllabic consonants are left-branching, they should be able to follow any type consonant.

(19) *The left-branching representation makes incorrect predictions in SBE*



As (19a) shows, the left-branching representation of syllabic consonants means that the relationship between a syllabic consonant and a consonant preceding it is the same as the relationship of a consonant and a vowel: they should not be sensitive to each other's melodic content, and IG domains are predicted to occur immediately preceding syllabic consonants. If we represent syllabic consonants as right-branching, on the other hand, syllabic consonants are predicted to occur only in those environments where their non-syllabic counterparts occur. In (19b), the V slot following the TR cluster is governed, consequently, it cannot license an IG relation between the two consonants. As a result of this, v_2 violates the ECP, and the structure is ill-formed. Thus, the left-branching representation correctly predicts that syllabic consonants cannot immediately follow TR clusters.

The following Slovak data also support the generalisation that syllabic consonants are sensitive to consonants preceding them (from Blaho 2001:12). Comparing word-initial clusters containing syllabic liquids with those containing non-syllabic liquids, we find that the distribution of the two types of liquids is the same considering their left-hand environment.

(20) *Slovak syllabic liquids are sensitive to consonants preceding them*

	non-syllabic				syllabic			
a.	*pravý*	[pravi:]	'right'	**rp*	*prst*	[prst]	'finger'	**rp*
	tri	[tri]	'three'	**rt*	*trh*	[trh]	'market'	**rt*
	krava	[krava]	'cow'	**rk*	*krv*	[krv]	'blood'	**rk*
	hra	[hra]	'game'	**rh*	*hrsť*	[hrsc]	'fist'	**rh*
	člen	[t͡ʃlen]	'member'	**lč*	*čln*	[t͡ʃln]	'boat'	**lč*
	tlač	[tlat͡ʃ]	'press'	**lt*	*tlstý*	[tlsti:]	'fat'	**lt*
	plač	[plat͡ʃ]	'cry'	**lp*	*plný*	[plni:]	'full'	**ln*
	kl'úč	[kʎu:t͡ʃ]	'key'	**lk*	*kĺb*	[kl:p]	'joint'	**ĺk*
b.	*mreža*	[mreʒa]	'grate'	**rm*	*mrkva*	[mrkva]	'carrot'	**rm*
	mlieko	[mli͡eko]	'milk'	**lm*	*mlčiť*	[mlt͡ʃic]	'be silent'	**lm*
	vrana	[vrana]	'crow'	**rv*	*vŕba*	[vr:ba]	'willow'	**ŕv*
	vlasy	[vlasi]	'hair'	**lv*	*vlk*	[vlk]	'wolf'	**lv*
	**nr*			**rn*	**nr*			**rn*
	**nl*			**ln*	**nl*			**ln*
	**ňr*			**rň*	**ňr*			**rň*
	**ňl*			**lň*	**ňl*			**lň*

As shown in (20), in Slovak word-initial clusters, both syllabic and non-syllabic liquids can be preceded by any obstruent as well as /m/ and /v/, but not by other sonorants. As shown in (19a), the left-branching representation of syllabic consonants predicts that they can be preceded by any consonant, but this claim is not borne out by the Slovak data, either. Instead, we find that syllabic and non-syllabic liquids can be preceded by the same set of consonants in this language.

If, on the other hand, we examine the right-hand environment of syllabic consonants in Slovak, we find that there are no restrictions on the kind of consonant cluster that can follow them:[9]

(21) *Syllabic consonants are insensitive to consonants following them*

TR	*krčma*	/kr̩tʃma/	'inn'
	kĺznuť	/kl̩ːznuc/	'slip'
RT	*srnka*	/sr̩nka/	'roe'
	tlstý	/tl̩stiː/	'fat'
	prst	/pr̩st/	'finger'
	hrsť	/hr̩sc/	'fist'
TT	*hĺbka*	/hl̩ːbka/	'depth'
	dĺžka	/dl̩ːʒka/	'length'

As the data above show, syllabic consonants in Slovak can be followed by any kind of cluster: RT, TR, TT or sT, which is not true for their non-syllabic counterparts. This suggests that syllabic consonants 'show their vocalic side' to segments on their right – they are right-branching. The left-branching alternative is unable to account for these data (22a), while the right-branching representation predicts that any kind of cluster can occur after syllabic consonants (22b).

[9] As the data in (21) contain monomorphemic forms as well as forms consisting of a root and a synthetic suffix, it is safe to assume that morphological structure is irrelevant from the point of view of this generalisation.

(22) *The left-branching representation makes incorrect predictions in Slovak*

a. * C V_1 C v_2 C v_3 C V_4

s r n k a

b. C v_1 C V_2 C v_3 C V_4

s r n k a

As we can see in (22a), v_2 violates the ECP, since it is not domain-final, nor is it enclosed in a domain of Infrasegmental Government, and it cannot be governed by v_3, since v_3 is itself governed. Thus, v_2 should be pronounced, and words like *srnka* are predicted to be impossible by Scheer's representation of syllabic consonants. If, on the other hand, syllabic consonants are represented as in (22b), both empty V positions in *srnka* are taken care of: v_1 is properly governed by V_2, and v_3 is properly governed by V_4.

Thus, data from consonantal phonotactics favour the right-branching representation of syllabic consonants over the left-branching alternative, since it correctly predicts that syllabic consonants are sensitive to consonants preceding them, but to to consonants following them.[10]

5.2 The minimal word constraint

In this subsection, my aim is to show that the right-branching representation of syllabic consonants is more preferable than the left-branching one by comparing the predictions that follow from both representations about whether θr̩, r̩θ and r̩ are possible lexical

[10]Based on Blaho (2002), Scheer (forth.) acknowledges the fact that syllabic consonants should branch right, and proposes a 'hybrid' solution: syllabic consonants linked to three positions, a consonantal one and *both* vocalic positions immediately adjacent to it. As we will see in section 6, such a representation incorrectly predicts that syllabic consonants pattern with long vowels.

words. In Slovak, syllabic consonants only occur interconsonantally, therefore all of these are impossile. This, however, is not due to the minimal word constraint, since word-initial and word-final syllabic consonants do not occur in longer words, either. Therefore Croatian data will be examined in order to evaluate the predictions following from both representations.[11] Lexical words of the type TR and RT exist in this language (e.g. *tr* 'rub 1ST.SG.AOR.', *rz* 'honour' and *rt* 'cape'[12]) but, to the best of my knowledge, there is no lexical word that consists of a syllabic sonorant only.

In earlier frameworks using syllables, morae and feet, a **minimal word constraint** is formulated: a lexical word minimally consists of a bimoraic foot (see McCarthy and Prince 1996:6-7 and references therein). Szigetvári (1999:99-100) re-formulates this constraint in CV and VC phonology in the following way: in CV, a lexical word consists of at least two CV units; in VCP terms, the skeleton of a major category has to contain a nonperipheral unit (a unit that does not have an empty slot towards the edge of the skeleton).[13]

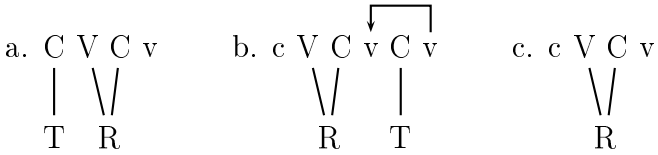
If syllabic consonants are represented as linked to a C and a preceding V slot, CV Phonology predicts that T$\underset{|}{\text{R}}$, $\underset{|}{\text{R}}$T and $\underset{|}{\text{R}}$ are all possible words:

[11] I am indebted to Attila Starčević for his help with Croatian data.

[12] As far as I know, there are no more such words in the language. This is not surprising, however, considering that only /r/ can be syllabic in Croatian, and the fact that the language only permits voiceless obstruents word finally. Thus, since possible combinations are considerably restricted, I believe the small number of such words does not threaten the validity of these data.

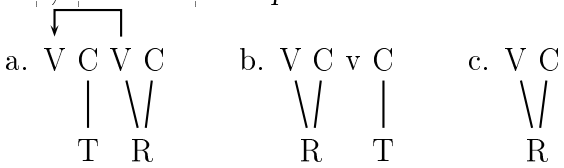
[13] As Tobias Scheer (p. c.) notes, the minimal word constraint cannot be derived from the primitives of CV Phonology.

(23) *TR, RT and R are possible words in CVP*



VC Phonology predicts the same:

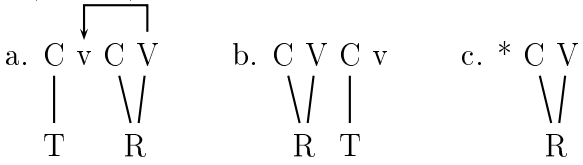
(24) *TR, RT and R are possible words in VCP*



If syllabic consonants are represented as linked to a C and a following V position, the predictions are the following:

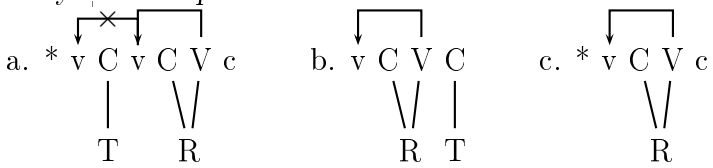
CV Phonology allows TR and RT but not R:

(25) *TR and RT are possible words in CVP*



VC Phonology only allows for RT, excluding TR and R:

(26) *Only RT is a possible word in VCP*



Note, however, that #TR is excluded in VCP even if it is followed by more material within the word (cf. section 4.2), which suggests that it is not the minimal word constraint that is in effect here.

As the right-branching representation of syllabic consonants correctly predicts (in both frameworks) that words consisting solely of a syllabic consonant do not exist, I find this representation more preferable that the left-branching one proposed in earlier work .

5.3 Czech prefixes

Perhaps the most convincing argument Scheer (forth.) brings up to support his claims that syllabic consonants are left-branching is based on vowel-zero alternations in Czech prefixes. He observes that the appearence of the prefix-final vowel depends on the structure of the root. Prefixes end in a consonant if attached to roots beginning with a vowel, a CV sequence or certain TR-initial words. With other roots beginning with TR, however, these prefixes end in a vowel. Scheer points out that TR-initial roots provoking prefix vocalisation show vowel-zero alternation.

(27) *Alternations in Czech prefixes (Scheer's table (3), p.3)*

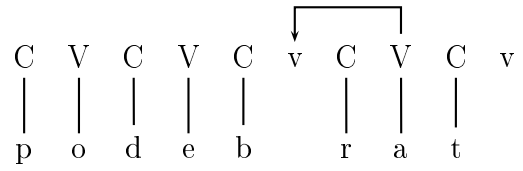
	root provoking vocalised prefixes two occurrences of the same root				root provoking non-vocalised prefixes
√ CC	√CC		√CVC		√ *CVC
√ BR	*ode-brat*	Pf	*odbírat*	Imp	*pod-bradek*
√ DR	*roze-drat*	Inf	*roz-deru*	1.Sg	*roz-drobit*
√ HR	*přrede-hra*	Nom.Sg	*her*	Gen.Pl	*od-hrabat*
√ HN	*ode-hnat*	Pf	*od-hánět*	Imp	*roz-hněvat*
√ PR	*ode-prat*	Pf	*od-peru*	Imp	*vz-pruha*
√ SN	*beze-sný*	Adj	*sen*	Nom.Sg	*pod-sněžík*
√ ŠL	*vze-šlý*	Adj	*šel*	Verb	*roz-šlapat*
√ ZD	*pode-zdít*	Inf	*zeď*	Nom.Sg	*od-zdola*
√ DN	*beze-dný*	Adj	*den*	Nom.Sg	—

According to Scheer, the difference between the two groups of words in (27) is that the two root-initial consonants in the left-hand column do not contract any relationship (otherwise it would be impossible for the cluster to be broken up), while those on the right form a domain of Infrasegmental Government. As a consequence of this, the silent vocalic position between the two consonants needs to be properly governed and is therefore unable to govern in the first case (28a), while it is not subject to proper government and thus able to govern the prefix-final V position in the second case (28b), similarly to a full vowel following a single root-initial consonant (28c).

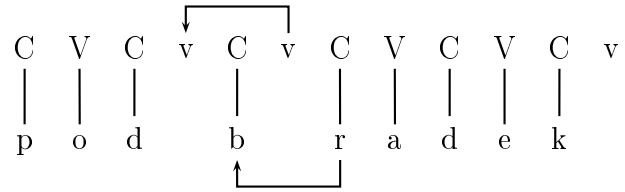
(28) *Vocalisation in Czech prefixes*

vocalised prefixes unvocalised prefixes

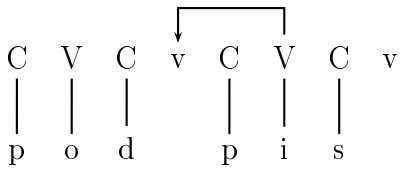
a. CCVC root



b. CCVC root



c. CVC root



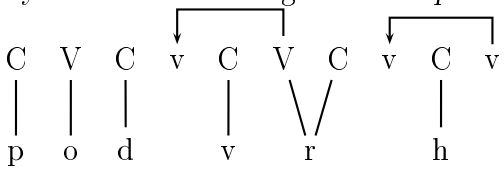
Scheer further observes that roots beginning with a CC̩ cluster take unvocalised prefixes.

(29) *Syllabic consonants do not provoke prefix vocalisation (Scheer's table (5), p.4.)*

roz-drtit	[rozdr̩cit]	'crush'	*od-vlhnout*	[odv̩lhnout]	'remove because of humidity'
roz-drbat	rozdr̩bat	'scratch to pieces'	*od-frknout*	[odfr̩knout]	'snort'
roz-mrhat	[rozmr̩hat]	'waste'	*od-chrchlat*	[otxr̩xlat]	'clear one's throat'
roz-trhat	[rostr̩hat]	'tear up'	*odkrvit*	[otkr̩vit]	'cause hypoxemia'
roz-trpčit	[roztr̩pt͡ʃit]	'embitter'	*od-mrštit*	[odmr̩ʃcit]	'reject'
roz-vrstvit	[rozvr̩stvit]	'pile up'	*od-škrtat*	[otʃkr̩tat]	'cross out'
roz-vrzat	[rozvr̩zat]	'make wobbly'	*pod-hrnout*	[pothr̩nout]	'gather up (dress)'
roz-vrtat	[rozvr̩tat]	'drill to pieces'	*pod-vrh*	[podvr̩h]	'forgery'
roz-vlnit	[rozvl̩nit]	'churn up (sea)'	*před-srseň*	[predprseɲ]	'parapet'
			před-krm	[predkr̩m]	'starter (dish)'

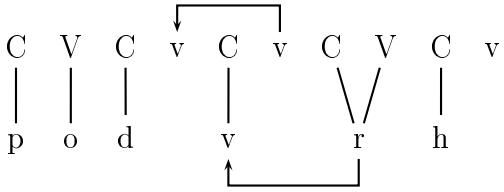
Thus, he concludes, syllabic consonants must be left-branching:

(30) *Syllabic consonants govern the prefix-final V*



Scheer also observes that there is another possible explanation for why syllabic consonants do not provoke prefix vocalisation: that they contract a relation of Infrasegmental Government with the consonant preceding them, and thus pattern with roots starting with singleton consonants:

(31) *Right-branching structure plus Infrasegmental Government (Scheer's table (21), p.16.)*



He argues that this would predict that only obstruents occur before syllabic consonants. However, he says, nasals can also appear in this position, and "it can be reasonably doubted that [mr] and [ml] are well-formed domains of Infrasegmental Government".

If we examine Czech data more closely, we find that only [m] can appear word-initially preceding syllabic consonants. And, although [m]+liquid clusters are not regarded as branching onsets in GP, Czech words beginning with such a cluster behave exactly as other branching onsets do from the point of view of prefix vocalisation: stems triggering

vocalised prefixes show vowel-zero alternations while non-vocalising stems do not.[14]

(32) *[m]+liquid clusters behave like branching onsets*

prefixed form				V-0 in stem
z-mrazit	[zmrazit]	'freeze'	unvocalised prefix	none
roz-mrazit	[rozmrazit]	'defrost'		
s-mrákat	[smraːkat]	'dusk'		
s-mlátit	[smlaːcit]	'beat up'		
roz-mlátit	[rozmlaːcit]	'break to pieces'		
s-mlouva	[smlouva]	'contract'		
roz-mlouvit	[rozmlouvit]	'talk sb. out of sth.'		
s-mlouvit	[smlouvit]	'arrange'		
roze-mlít	[rozemliːt]	'grind to pieces'	vocalised prefix	*mele* [mele] 'grind 3.Sg.'
pode-mlít	[podemliːt]	'undermine'		
se-mlit	[semliːt]	'grind together'		

Thus, Scheer's claim that vowel-zero alternations in Czech prefixes are only analysable assuming the left-branching analysis of syllabic consonants is falsified. Instead, we find that root-initial C+liquid clusters behave exactly like C+Ç clusters: the prefix vocalises if there is a vowel-zero alternation in the first V slot of the root, and does not vocalise if there is no such alternation and the root-initial cluster forms a governing domain. We can therefore conclude that prefix alternations in Czech do not support Scheer's claim.[15]

[14] Cheers to Jonáš Podlipský for these data.

[15] Naturally, analysing [m]+Ç sequences as Infrasegmental Governing domains and assuming that word-initial and word-internal clusters have the same representation (a view that is challenged by

5.4 The evolution of syllabic consonants

Scheer (forth.)'s main motivation for representing syllabic consonants as left-branching is his claim that they always evolved from V+C sequences.

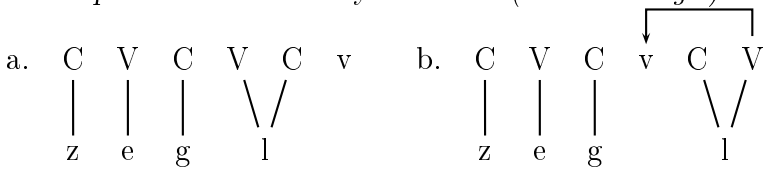
> "Now the hard observational fact is that syllabic consonants are always born through the syncope of a preceding, not of a following vowel. *This is the fundamental argument for representing syllabic consonants as left-branching structures rather than as right-branching items.*" (pp.13-14, emphasis mine)

While I am not competent to challenge Scheer's claim that syllabic consonats always evolve from V+C sequences, I show that, given his own assumptions about possible phonological change, this fact is not a decisive argument concerning the representation of syllabic consonants in synchronic grammar.

Scheer views syllabic consonants as a repair strategy to avoid an ECP violation (recall that the V position of syllabic consonants is not subject to the ECP: it is filled by the melody of the sonorant, thus it is not empty). He notes that both the left-branching and the right-branching alternative produces structures satisfying the ECP (33), but prefers the left branching alternative on the grounds that it is more plausible to assume that a V+C sequence evolves into a left-branching structure, since this leaves governing relations unchanged (Tobias Scheer, p.c.).

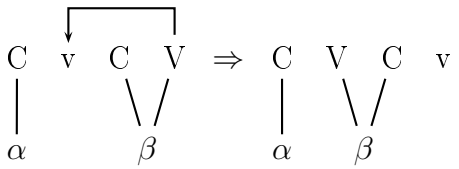
Szigetvári 1999) predicts that [m]+Ç clusters pattern with onset clusters in other contexts as well (thank you to Tobias Scheer (p.c.) for pointing this out).

(33) *Both representations satisfy the ECP (German Segel)*



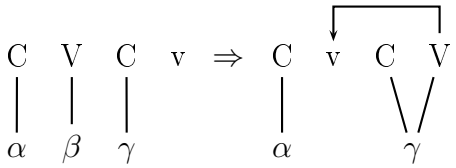
However, this argument is weakened by the internal logic of Scheer (forth.)'s own analysis. Motivating his representation of 'trapped' and syllabic consonants (see 16), he shows that some Czech syllabic consonants evolved from 'trapped' consonants. Thus, a historical process involving a change of governing relations ('metathesis') is a crucial part of his reasoning.

(34) *'Trapped' consonants turned into syllabic consonants*



As (34) shows, the change from 'trapped' to syllabic consonants involves 'metathesis': a vCV sequence becomes a VCv sequence. However, the exact mirror image of this change is involved in a V+C sequence becoming a syllabic consonant.

(35) *V+C sequences becoming syllabic consonants*



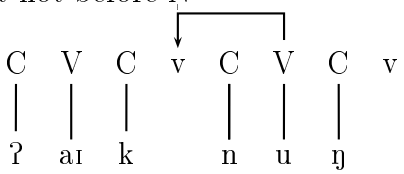
It is far from obvious why a change like in (35) should be deemed impossible if the mirror image of it is allowed within the same framework. Thus, if one allows for a change like the one in (34), the fact that syllabic consonants have developed from V+C sequences can by no means be a decisive argument in favour of a representation that is at odds with synchronic data presented in sections 5.1 and 5.2.

5.5 Obstruent devoicing in German

The final argument addressed in this section is that put forth in Scheer (2003). Examining C+N and C+N̩ clusters in German, Scheer shows that, in certain dialects, obstruents devoice when followed by non-syllabic nasals, but not when followed by syllabic nasals.

(36) *Left-branching: devoicing before N but not before N̩*

a.


b.


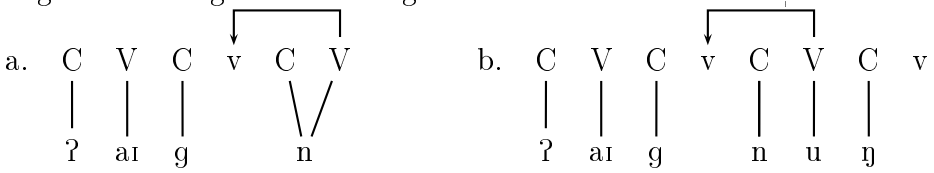
c.


The left-branching representation of syllabic consonants makes the right predictions for this dialect: obstruents in C+N̩ clusters are followed by a filled V slot on the skeleton (36a), therefore they are not subject to devoicing. Obstruents followed by syllabic consonants behave like obstruents followed by vowels (36c): they do not devoice. In C+N clusters, on the other hand, the obstruent is followed by a governed V position, thus, it undergoes devoicing (36b).

The right-branching representation of syllabic consonants is unable to account for the data in (36), since it predicts that obstruents followed by syllabic consonants pattern with obstruents followed by non-syllabic consonants. We do indeed find this pattern in another variety of German: there is no devoicing in either C+N or C+N̩ clusters. The two other logical possibilities (devoicing in both contexts and devoicing before N̩ but not before N) do not seem to occur in German.[16]

[16] Cheers to Klaus Abels and Martin Krämer for their help with the German data.

(37) *Right-branching: no devoicing either before N or before N̩*



It seems to be the case that neither the left-branching nor the right-branching representation of syllabic consonants can account for all the German devoicing facts. The left-branching representation fails to account for the phenomena of the second dialect. As we see in (36), the obstruent in *Eignung* is preceded by a governed V slot, which is the weakest possible V slot in Scheer's framework. Thus, the /g/ in *Eignung* could only escape devoicing if there was no devoicing in the language whatsoever. This is clearly not the case, since both dialects discussed here have word-final devoicing.

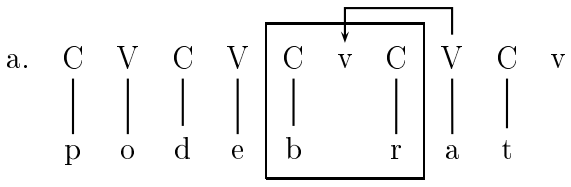
On the other hand, although the right-branching representation of syllabic consonants does predict that the two types of clusters behave in a uniform fashion, it fails to correctly predict what their behaviour is like. In both (37a) and (37b), /g/ is preceded by a governed V slot, thus, accepting Scheer's hierarchy of empty V slots predicts that, in a system with final devoicing, obstruents in both C+N and C+N̩ cluster will also devoice.

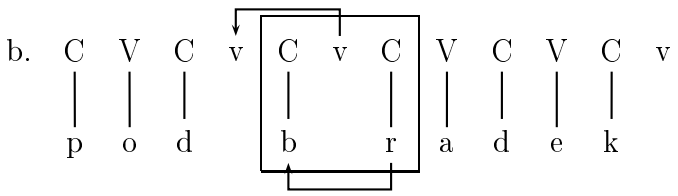
However, the problem is not specific to contexts in the vicinity of syllabic consonants; rather, it derives from Scheer's hierarchy of empty V positions. His hierarchy predicts that final empty V slots always have more licensing power than governed V positions (which can never have any), whereas empirical facts of voicing show that obstruents in pre-sonorant position often behave in a uniform fashion regardless of whether an

Infrasegmental Government relation can be established between the obstruent and the sonorant or not.

The Czech data of section 5.3 illustrate this point convincingly. Recall that Scheer shows that there are two groups of roots with initial obstruent+sonorant clusters: those where the obstruent and the sonorant contract an infrasegmental governing relationship and those where they do not (cf. table (27)). Now, the root-initial obstruents are in different structural positions in these two groups: they are followed by a buried V slot in non-alternating roots (38b) and a governed V slot in alternating roots (38a).

(38) *Two groups of TR-initial roots in Czech*

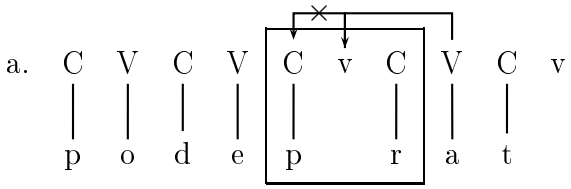


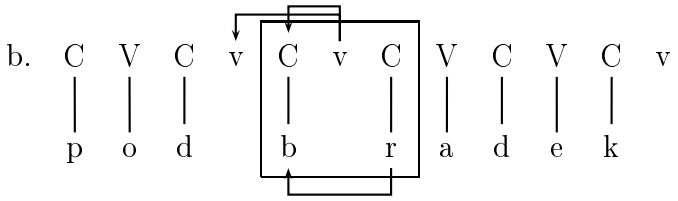


In Czech, only voiceless obstruents can occur in word-final position. In CV terms, final empty V slots do not license voicing on the preceding obstruent. However, according to Scheer, word-final Vslots never have less licensing power than governed V slots (these

are assumed never to have any governing or licensing power at all.) Thus, Scheer's theory falsely predicts that in words like (39a), the root-initial obstruent must devoice.

(39) *Scheer predicts devoicing in alternating roots*





Voicing assimilation seems to be independent of lateral relations on a number of languages (see for instance Petrova et al. 2001 falsifying a number of the assumptions of Lombardi 1999 regarding syllable structure and voicing). Thus, since CV Phonology fails to account for a great deal of empirical data with respect to voicing, it seems necessary to reform the framework and increase its empirical coverage in this area before one can evaluate the arguments involving voicing and syllabic consonants.

6 Syllabic consonants and length

In this section, I discuss the relationship of syllabic consonants and length, as well its implications for interpreting melody-to-skeleton associations. I also examine the length opposition within the group of syllabic consonants in Slovak and propose a representation for long syllabic consonants.

It is generally accepted in autosegmental frameworks that long vowels and long consonants are represented by the same set of melodic expressions linked to two skeletal slots.

(40) *Segments occupying two skeletal positions are long*

a. *long vowel* b. *long consonant* c. *syllabic consonant*

Since the melody of syllabic consonants is also linked to two skeletal positions (to a vocalic and a consonantal one), the question arises whether syllabic consonants should also count as long. In fact, this claim is explicitly present in Toft (2001, forth.).

I argue that this interpretation of length is inadequate for syllabic consonants. I first examine the distinction between short and long syllabic consonants in Slovak and show that assuming that syllabic consonants are longer than non-syllabic ones lacks empirical as well as theoretical support with respect to this language. I then review Toft's (2001) claim that Southern British English /n̩/ and /l̩/ should have different representations

and argue that a more adequate analysis of the data is available.

6.1 Slovak syllabic consonants

Traditionally, three groups of liquids are distinguished in Slovak:

(41) *Distinctions among Slovak syllabic consonants*

non-syllabic			short syllabic			long syllabic		
prah	[prah]	'threshold'	*srna*	[sr̩na]	'roe'	*tŕň*	[tr̩ːŋ]	'thorn'
kráľ	[kraːʎ]	'king'	*prst*	[pr̩st]	'finger'	*kŕč*	[kr̩ːt͡ʃ]	'cramp'
klán	[klaːn]	'clan'	*vlna*	[vl̩na]	'wave'	*kĺznuť*	[kl̩ːznuc]	'slip'
mlieko	[mlieko]	'milk'	*čln*	[tʃl̩n]	'boat'	*kĺb*	[kl̩ːp]	'joint'

That there is a length contrast between short and long syllabic consonants is not straightforward, as there are no minimal pairs differing only in the length of the syllabic consonant in Slovak. Nevertheless, as Rubach (1993:39) notes, the environments in which short and long syllabic consonants occur are unpredictable (42a). Moreover, minimal pairs supporting the existence of a length contrast are absent for certain vowel pairs (42b) but not for others (42c).

(42) *Vowel length contrast in Slovak (partly from Rubach 1993)*

a.	*čln*	[tʃl̩n]	'boat'	— *tĺk*	[tl̩ːk]	'pestle'
	krčma	[kr̩tʃma]	'inn'	— *kŕč*	[kr̩ːt͡ʃ]	'cramp'
b.	*moľ*	[moʎ]	'moth'	— *mólo*	[moːlo]	'pier'
	rad	[rat]	'queue'	— *grád*	[graːt]	'degree'
c.	*krik*	[krik]	'shout'	— *kŕk*	[kriːk]	'bush'
	kura	[kura]	'chicken'	— *kúra*	[kuːra]	'cure'

Thus, if one accepts that length is phonologically relevant for vowels, the lack of minimal pairs is no reason to deny the existence of the contrast in the case of syllabic consonants.

We must admit that the existence of near-minimal pairs is far from being a good phonological argument for the assuming a length contrast in syllabic consonants.[17] However, morphologically conditioned length alternations also support the phonological relevance of length within the class of syllabic consonants, as they pattern with vowels in this respect. One instance of such alternations is the lengthening of the stem nucleus of a class of feminine nouns in the GEN.PL. As the data in (43) illustrate, syllabic consonants (43b) take part in this length alternation just like vowels do (43a).

[17] Thank you to Tobias Scheer for drawing my attention to this point.

(43) *Length alternations in Slovak*

	Nom. Sg.		Gen. Pl.		gloss
a.	*žena*	[ʒena]	*žien*	[ʒi͡en]	'woman'
	chyba	[xiba]	*chýb*	[xiːp]	'mistake'
b.	*srna*	[sr̩na]	*sŕn*	[sr̩ːn]	'roe'
	vlna	[vl̩na]	*vĺn*	[vl̩ːn]	'wave'

An even more convincing argument is provided by the effects of the Rhythmic Law (RL). RL prohibits long nuclei in two consecutive syllables. As an effect of this, underlyingly long suffix vowels shorten after stems with long nuclei. As we can see in (44), short vowels (44a) and short syllabic consonants (44b) do not trigger shortening while long vowels (44c), diphthongs (44d) and long syllabic consonants (44e) do.

(44) *The Rhythmic Law in Slovak*

	Nom. Sg.		Dat. Pl.		gloss
a.	*žena*	[ʒena]	*ženám*	[ʒenaːm]	'woman'
	ulica	[uli͡tsa]	*ulicám*	[uli͡tsaːm]	'street'
b.	*srna*	[sr̩na]	*srnám*	[sr̩naːm]	'roe'
	vlna	[vl̩na]	*vlnám*	[vl̩naːm]	'wave'
c.	*lúka*	[luːka]	*lúkam*	[luːkam]	'grove'
d.	*knieža*	[kɲi͡eʒa]	*kniežam*	[kɲi͡eʒam]	'prince'
e.	*vŕba*	[vr̩ːba]	*vŕbam*	[vr̩ːbam]	'willow'
	hĺbka	[hl̩ːpka]	*hĺbkam*	[hl̩ːpkam]	'depth'

Now, unless the length contrast among syllabic consonants is acknowledged to be phonologically significant in Slovak, the above facts remain without explanation. Therefore, short and long syllabic consonants must be distinguished in Slovak. Accepting that syllabic and non-syllabic consonants also display a length contrast, however, leads to having to distinguish three degrees of consonant length in this language: that of non-syllabic consonants, short syllabic consonants and long syllabic consonants. This is surely to be dispreferred as it results in a rather marked opposition which entirely lacks empirical support. Therefore, I conclude that regarding all syllabic consonants as phonologically longer than non-syllabic ones is inadequate for Slovak. I propose a revised interpretation of melody-to-skeleton association:

(45) *Segmental length*

Segments whose melody is linked to two skeletal positions of the same type (i.e. two consonantal/non-nuclear or two vocalic/nuclear slots) are phonologically long.[18]

Under this approach, the representation of syllabic consonants expresses not length but the fact that they display both vocalic and consonantal properties.

Turning now to the representation of long syllabic consonants, a crucial fact to be

[18] Actually, there is an even simpler way of defining length in strict CV: segments occupying one CV unit are short, while segments occupying two CV units are long. (I am grateful to Péter Szigetvári for pointing this out.) Adopting this approach in Scheer's framework, the fact that (short) syllabic consonants pattern with short vowels follows directly if one assumes that syllabic consonants are right-branching: both syllabic consonants and short vowels occupy one CV unit, while long vowels have two. Similarly, in moraic theory, both syllabic consonants and short vowels are monomoraic (the consonantal slot of the syllabic consonants is in the onset, thus it has no mora), while long vowels are bimoraic. Note that a left-branching representation of syllabic consonants falsely predicts (in both frameworks) that syllabic consonants pattern with long vowels. In VC phonology, on the other hand, VC and not CV units are used, thus, it is the left-branching representation that makes the correct predictions with respect to the length of syllabic consonants.

noted with respect to the Slovak data is that long syllabic consonants pattern with long vowels, but not with long consonants: long non-syllabic consonants can only occur at morpheme boundaries in Slovak, while long syllabic consonants are also found in monomorphemic forms. Accordingly, their representation should allow the theorist to treat long vowels and long syllabic consonants, but not long non-syllabic consonants and long syllabic consonants as a natural class.

(46) *The representation of short and long syllabic consonants*

a. *short syllabic consonant*

b. *long syllabic consonant*

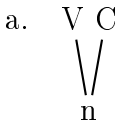
The representation above is consistent with the behaviour of syllabic consonants: it reflects phonotactic constraints on C+Ç: sequences (20) on the one hand, and accounts for the parallel behaviour of long syllabic consonants, long vowels and diphthongs (43, 44) on the other hand.

6.2 Southern British English

In this section, I examine Toft's (2001) analysis of Southern British English (SBE) syllabic /l̩/ and /n̩/, as well as her claim that syllabic consonants are phonologically long, and show that the data do not support her claims; moreover, if taken to its logical conclusion, her analysis also makes a number of undesirable predictions for the SBE data.

Toft, examining syllabic consonants in SBE (cf. (4)), argues that the fact that /l̩/ and /n̩/ do not behave in a uniform fashion follows from the differences in their melodic and skeletal representation. She suggests that /l̩/ be linked to a V slot only, while /n̩/ occupy a vocalic and a successive consonantal position:

(47) *Toft's representation of SBE /l̩/ and /n̩/*

a. 

b. 

Toft's observations regarding the behaviour of syllabic /l̩/ and /n̩/ can be summarised as follows (cf. the data in (4)):

- /l̩/ can be preceded by coronal, labial and velar stops as well as coda-clusters, while /n̩/ only occurs following singleton coronal consonants.
- the phonetic duration of /l̩/ is close to that of onset /l/ (relatively short), whereas /n̩/ patterns with coda /n/ (relatively long).

Her analysis crucially relies on six assumptions (not claiming that these are universally valid):

- there is a a coronal element R.
- this element is a head in /n/ and /t/ but an operator in /l/.
- syllabic consonants are always a result of spreading (i.e. they are not present underlyingly).

- in order to be able to spread, consonants must be licensed by a preceding consonantal position.
- if the consonant that spreads is headed by R, the consonant licensing it must also be headed by R.
- a nucleus that shares its melodic content with a consonantal position cannot government license, while a phonetically realised empty nucleus can.

The first observation, she claims, can be explained by the representation she proposes: if /l̩/ only occupies a nuclear position, it can occur after all kinds of consonants and consonant clusters, in accordance with the Principle of Free Occurrence Kaye (1990). Conversely, the distribution of /n̩/ is restricted by the left-hand context, as it is only licensed to spread by a preceding coronal consonant. As for clusters, she claims that the vocalic position of /n̩/ is unable to government license, while that of /l̩/ can, thus, only the latter but not the former can occur after clusters. She views the duration data as further support for her claim: /l̩/ is linked to one skeletal slot, thus it is shorter, while /n̩/ occupies two positions, therefore it is longer.

I argue that the facts presented by Toft can be given a more adequate interpretation. Her six assumptions, although not lacking motivation entirely, seem to involve a degree of arbitrariness. Moreover, she encodes the difference between /n̩/ and /l̩/ at two points in the grammar: in their melodic makeup and their skeletal representation.

Since /n̩/ and /l̩/ must differ in their melodic makeup, the difference in their behaviour can be derived by referring to melodic makeup only and assuming that the two syllabic consonants look the same on the skeleton, more precisely, they are represented as

linked to an onset and a successive nucleus. The theory is able to express restrictions on C+Ç sequences by using the same mechanism that is used to define restrictions on two neighbouring non-syllabic consonants. The asymmetrical behaviour of SBE /l̩/ and /n̩/ thus reflects the distribution of their non-syllabic counterparts.

Moreover, Toft's account falsely predicts that /l̩/ is entirely insensitive to its consonantal environment. As shown in (4), /l̩/ cannot be preceded by onset clusters. Toft's views concerning the length of syllabic sonorants in SBE also need to be revised. If the fact that /n̩/ is phonetically longer than onset /n/ means that the former is linked to two skeletal positions while the latter to only one, it follows that coda /n/ (and /l/) should also occupy two positions, because they are phonetically longer than their onset counterparts. This would clearly contradict the phonological behaviour of these sounds – the duration of the different realisations of sonorants has no phonological relevance in SBE. Equating phonetic data with phonological behaviour is a crucial shortcoming of Toft's approach. Thus, I believe there is no phonological motivation for Toft's representation of syllabic consonants, nor for her claim that being linked to two skeletal positions necessarily means being phonologically long.

7 Summary

This paper examines a number of phenomena connected to syllabic consonants and their impications for phonological theory. It is argued that, as syllabic Cs pattern with vowels in some respects and with non-syllabic consonants in other respects, they are best represented as linked to a vocalic and a consonantal skeletal position at the same time. *Contra* Scheer (2001, forth.); Szigetvári (1999) and Toft (2001, forth.), (short) syllabic consonants are claimed to be best represented as linked to a consonantal and a following vocalic slot. It is shown that the definition of phonological length must be made more precise, in order to exclude (short) syllabic consonants from the class of phonologically long segments. *Contra* Toft (2001, forth.) it is argued that phonetic duration and phonological length do not always correlate. Long syllabic consonants are shown to pattern with long vowels and diphthongs, but not with long consonants, and a representation reflecting this behaviour is proposed.

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