

CZECH SYLLABIC CONSONANTS REVISITED

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1. Goal

To explain the following three facts about syllabic consonants in Modern Czech:

- (i) root-initial liquids are never syllabic even if they are sandwiched between two consonants
- (ii) the presence of a syllabic liquid in the root always provokes a zero alternant in the prefix
- (iii) syllabic consonants never alternate with V+C sequences

2. Syllabic consonants in Czech

Basic facts

- (i) syllabic consonants form a small subset of the consonantal inventory of Czech – only liquids, i.e. [r], [l], can be syllabic
- (ii) syllabic consonants are never adjacent to vowels

(1)	context	L	non-L	gloss
	C_#	sokl, výmysl, lotr	lept, jilm, vepř	socle, untruth, rouge, etching, elm, pig
	C_C	mřčet, mřtvý, sřkat	přstros, hřmot	to be quiet, dead, to push, ostrich, din

How do we know that liquids are syllabic? Stress and metre tell us:

Behaviour of syllabic consonants

- (i) Czech is a **fixed stress** language → **liquids can be in stressed positions**
- (ii) Czech literary poetry is based on the **syllabo-tonic system** → **liquids can be metric**

Compare two isosyllabic couplets, each made up from octosyllabic verses (from K. J. Erben: *Kytice* (1853), a collection of ballads):

(2)	mlč, synáčku, mlč, mlč, hochu,	a na ten hřmot a na ten hlas
	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
	počkej jenom ještě trochu	mřtvý se zdvihá z prkna zas
	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8

Interim summary

Czech syllabic consonants: a) form a small subset, b) never adjoin vowels, c) can be stressed, d) can be metric

Problem

Non-vowel-adjacent liquids are not automatically syllabic:
root-medial and root-final NVA liquids – always syllabic
root-initial NVA liquids – never syllabic

The fact that root-initial NVA liquids are never syllabic is evidenced by the stress and metre:

In (3), the stress falls always on the first vowel of a given word:

(3)	√LC	gloss
	lbi, lhát, lhostejný, lhůta	skull (GenSg), to lie, indifferent, term
	lkát, lněný, lnout, lpět	to moan, flaxy, to adhere
	lstivý, lvíce, lze, lžíce	tricky, lioness, it is possible to, spoon
	rdesno, rdít, rdousit, rmen	knotweed, to flush, to strangle, camomile
	rmoutit, rtuť, rty, rvát	to grieve, mercury, lip (NomPl), to rip
	rzi, ržát, rži	rust (GenSg), to neigh, rye (GenSg)

In (4), the left-hand couplet illustrates that the word-initial liquid in *lstivý* (tricky) does not contribute to the metre:

(4)	Vari od našeho prahu,	a ticho, pusto v dědině
	123 456 78	1 2 3 4 5 6 7 8
	vari pryč, ty lstivý vrahu	vítr burácel jedině
	1 2 3 4 5 6 7 8	12 34 5 6 7 8

Substantial observation (not mentioned in any Czech grammar)

The merger of a root of the LC type and a consonant-final prefix does not produce the syllabic liquid.

(5)	C[LC	gloss
	z-lhostejnět	become indifferent (inf.)
	z-rdousit	strangle (perf. inf.)
	bez-rtuťový	mercuryless

Two pieces of evidence:

(i) in *zlhostejnět* and *zrdousit*, only the first vowel is stressed

(ii) the following couplet (from Google) demonstrates that the root-initial *r* in *zrdousil* ("he strangled") is not metric

(6)	Vlk si zuby brousil,
	1 2 3 4 5 6
	že by ji hned zrdousil
	1 2 3 4 5 6

Summary

Syllabicity of consonants in Czech is determined by two conditions:

- (i) their quality
- (ii) their phonological and morphological distribution

Question

How are these two conditions related?

3. Syllabic consonants in CVCV

CVCV (Lowenstamm 1996, Scheer 2004) is a representation-based autosegmental theory

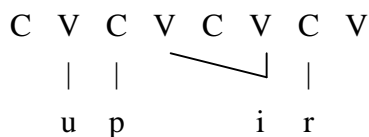
Syllable structure in CVCV:

- (i) is expressed by lateral relations (Government and Licensing)
- (ii) is made up of the CV sequences (C = non-nuclear position, V = nuclear position)
- (iii) is recorded in the lexicon

Consequences

- (i) the syllable structure of each morpheme starts with a C and ends in a V
- (ii) relations between syllabic positions and melody need not be one to one: empty Nuclei, floating melodies, pieces of melody linked to multiple constituents

(7) Lexical representation of the root $\sqrt{\text{UPÍR}}$ "vampire"



Syllabic consonants

– they are on the boundary between consonants and vowels

hence the branching representation:

- (i) syllabic consonants are **double-linked melodies**
- (ii) C position determines their articulation – they are articulated the same way as their non-syllabic pendants
- (iii) V position determines their phonological behaviour – they behave the same way as vowels (e.g. bear stress)

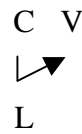
The branching representation is employed e.g. in Szigetvári (1999), Toft (2002), Blaho (2004), Scheer (2004), the latter two analyses are based on the Czech data

Blaho (2004) and Scheer (2004) are in agreement that syllabic consonants:

- (i) are the product of a **repair strategy** – they spread to adjacent Nuclei to save them
- (ii) have the same structure – they spread in **one direction only**

They differ in which Nucleus is the target of spreading:

- (8) a. left-branching structure (Scheer 2004) b. right-branching structure (Blaho 2004)



New analysis based on Czech data

- (i) Czech syllabic liquids branch **in both directions**
- (ii) the direction depends on the position in which they occur:
root-medial liquids are right-branching, root-final liquids are left-branching
- (iii) Czech syllabic liquids cannot be analysed in terms of a repair strategy
- (iv) they branch not in order to save the adjacent Nucleus but because of their internal structure (perhaps)
- (v) liquids **branch lexically**

Arguments:

- (i) prefixal allomorphy: roots with syllabic liquids never take vocalised allomorphs
- (ii) phonotactics of roots with medial syllabic liquids: they can be quadriconsonantal (C₁CC)
- (iii) absence of doublets: root-final syllabic liquids never alternate with a VL cluster

3.1 e ~ ø alternation in prefixes

In Czech, all prefixes ending in a consonant have vocalised allomorphs, i.e. *pod-/pode-*, *roz-/roze-* etc.

Scheer (2004:§28) claims that the vocalisation of these prefixes depends on root structure:

- (9) Distribution of e ~ ø alternants: C_]C

context	ø	e	gloss
C_]V	odø-absolvovat		to complete (perf.)
C_]CV	rozø-ložit		to spread out
C_]TR	rozø-drobit	roze-drat	to fall apart, to scratch up
C_]RT		roze-rvat	to tear up

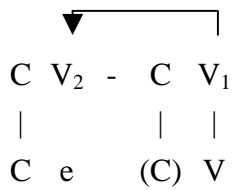
Vowel-zero alternation sites in CVCV

Nuclei with lexically floating segments. They connect if they are not targets of Government, otherwise they remain unconnected, i.e. unheard.

Government & ECP in CVCV

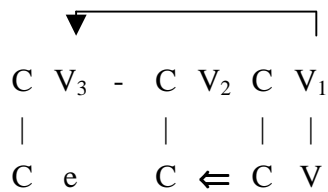
- (i) Government is a lateral regressive relation holding between two syllabic positions
- (ii) Nuclei which are governed do not realize
- (iii) Nuclei with floating segments can be governed only by full Nuclei
(the phonological ECP has been first introduced in Kaye 1990)

(10) Governor and governee are adjacent (as in *odabsolvovat* and *rozložit*)



In (11), the governor and governee are separated by an empty Nucleus (V_2) which is enclosed within a consonantal domain (marked with \Leftarrow):

(11) Governor and governee are not adjacent (as in *rozdrobit*)



Why *rozedrat* and *rozervat* are not derived as in (11)?

Scheer's answer: because their initial-clusters do not create any domain

In Scheer's model, root-initial consonants create a **domain** iff both conditions are met:

- (i) they are of **rising sonority** (\sqrt{TR}), and
- (ii) they are **followed by a root vowel**

(Consonantal domains are derived from the internal structure of sonorants and obstruents, which is in nature different, and from the *Infrasegmental-Government*: sonorants IG obstruents and to do it they need to be supported by full Nuclei.)

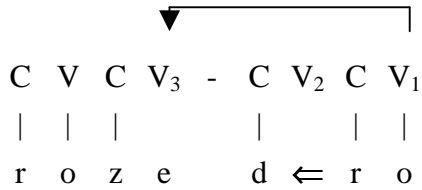
<p>(12) a. \sqrt{RV} (<i>roze-rv-a-t</i>): falling sonority, no vowel → no domain</p> $ \begin{array}{c} C \ V \ C \ V \\ \quad \\ r \quad v \end{array} $	<p>b. \sqrt{DR} (<i>roze-dr-a-t</i>): raising sonority, no vowel → no domain</p> $ \begin{array}{c} C \ V \ C \ V \\ \quad \\ d \quad r \end{array} $	<p>c. \sqrt{DROB} (<i>roz-drob-i-t</i>): raising sonority + vowel → domain</p> $ \begin{array}{c} C \ V \ C \ V \ C \ V \\ \quad \quad \quad \\ d \ \Leftarrow \ r \ o \ b \end{array} $
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What is the function of consonantal domains?

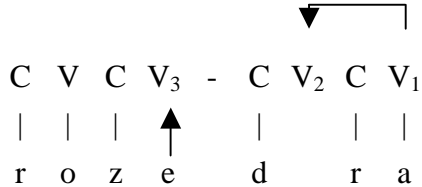
Three categories of Empty Nuclei according to the ECP:

- (i) morpheme-final – their ECP is parametric
(in Czech, they can be empty → consonant-final words; see Kaye 1990)
- (ii) within consonantal domains – their ECP is satisfied by the presence of a domain
- (iii) ECP of all other empty Nuclei can be satisfied only by the Government

(13) Initial domain, hence the prefix-final Nucleus is governed (*roz-drobit*)



(14) No initial-domain, hence the prefix-final Nucleus is not governed (*roze-drat*)



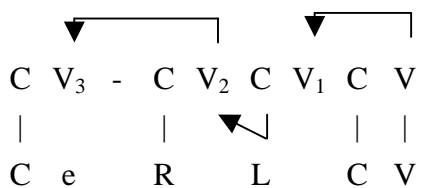
What about roots with syllabic liquids?

In their context, prefix-final Nuclei never emerge, hence they are always governed:

(15)	$\sqrt{\text{TL}_\text{C}}$	$\sqrt{\text{RL}_\text{C}}$	gloss
	zø-hłt-nout	odø-młž-it	to devour, to demist
	rozø-słz-et	zø-młs-aný	start to weep, choosy
	rozø-plk-at	odø-młč-et	start to chatter, to pause
	odø-frč-et	zø-mřz-ačit	to take off, to cripple
	obø-drž-et	rozø-mřh-at	to receive, to squander
	rozø-břn-ět	rozø-mřz-elý	start to prickle, annoyed

Scheer's analysis
 Root-initial domains are restricted to clusters with rising sonority, hence liquids in nasal-initial roots (the second column in (15)) must be left-branching. Only in that case, the prefix-final Nucleus will be governed.

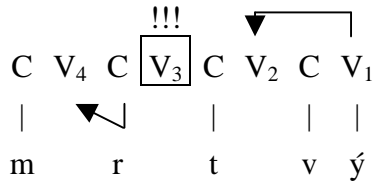
(16) Prefix + $\sqrt{\text{RL}_\text{C}}$



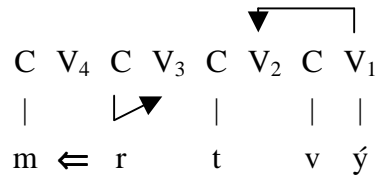
Problem of Scheer's analysis
 its prediction: only $\sqrt{\text{TRV}}$ take unvocalised prefixes
 reality: all $\sqrt{\text{CCV}}$ take unvocalised prefixes (see the first column in (17))
 → his hypothesis that root-initial consonantal domains are restricted to clusters with rising sonority is based on incomplete data

Interim conclusion – consonantal domains
 In Czech, root-initial consonantal domains are blind to sonority. They are created whenever a given cluster is followed by the full Nucleus.

(20) a. *mṛtvý*: [r] branches to its left
 → violation of the ECP



b. *mṛtvý*: [r] branches to its right
 → ECP of all Nuclei is satisfied



What about the sibilant-initial roots?

Data in (21) demonstrate that the presence of a sibilant does not influence the vocalisation of the prefix → initial SC clusters behave as single consonants. In that they are similar to affricates.

(Such a single-consonant-behaviour of initial SC clusters is attested in many Indo-European languages, e.g. English *stole*, *scare*, *strike*, *spring*; see e.g. Bell (1978), Kaye (1992).)

Root-initial SC clusters

They are dominated by one syllable position, hence there is no empty Nucleus to be governed

(21)	$\sqrt{C}CC$	$\sqrt{SC}C$	gloss
	rozø- <i>bṛ</i> nkāt	odø- <i>str</i> kāt	start to pluck, to push away
	odø- <i>dr</i> ncāt	rozø- <i>škr</i> t-at	to bump away, to strike
	zø- <i>mṛ</i> tvěly	odø- <i>špl</i> h-at	bloodless, to climb away

Conclusion

Root-internal syllabic liquids must be right-branching because:

- (i) they are heads of consonantal domains
- (ii) they govern prefix-final Nuclei
- (iii) there are no phonotactic restrictions on their right periphery

There exist two other contexts where liquids are followed by empty Nuclei:

- (i) in root-initial position: $\sqrt{_}C$
- (ii) in root-final position: $\sqrt{\dots}C_$

Let's examine the predictions of the right-branching representation.

3.3. Root-initial liquids

Predictions of the right-branching representation:

- (i) they should be syllabic
- (ii) they should merge only unvocalised prefixes

As shown in (22), neither prediction is borne out → roots beginning with LC clusters behave exactly as roots starting with other clusters

(22)	\sqrt{LCV}	\sqrt{LC}	gloss
	$z\emptyset$ - lh ostejn-ět	roze- lk -at	to become indifferent, start to moan
	$bez\emptyset$ - rtu t'-ový	roze- rd -ít	mercuryless, start to flush
	$z\emptyset$ - rd ous-it		to strangle (perf.)

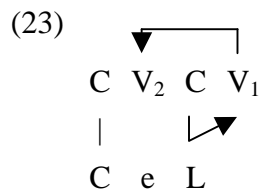
hence:

Root-initial liquids behave as other initial consonants, they never branch.

Problem: this is only description. Fair question: why root-initial liquids are disabled to branch?

3.4. Root-final liquids

Prediction of the right-branching representation:
sites of vowel-zero alternations which precede them should remain silenced



Data in (24) demonstrate that this prediction is wrong → liquid-final roots can display alternating vowels:

(24)	CeL]	CL]V	gloss
	kotel	kotø1-e	boiler, NomSg, GenSg
	chumel	chumø1-u	cluster, NomSg, GenSg
	živel	živø1-u	element, GenPl, GenSg
	pater	patør-a	floor, GenPl, GenSg
	maker	makør-a	macro, GenPl, GenSg

In (25), there are the same root-final clusters but this time with syllabic liquids.

(25)	CL _r]	gloss
	trot̚]	prune, NomSg
	šim̚]	grey horse, NomSg
	póv̚]	scum, NomSg
	lot̚]	rouge, NomSg
	cuk̚]	sugar, NomSg

Scheer's analysis:

Syllabic consonants are the product of a repair strategy.

Scheer (2004:317): "Syllabic consonants are not produced by nature. They are created when the ECP of a Nucleus is at pains to be satisfied."

Predictions:

$L_r \sim VL$ alternations, because there exist two options how Nuclei with floating vowels before liquids can be saved:

- (i) they can vocalise, or
- (ii) they can receive a liquid melody

Substantial observation (not addressed in Scheer's analysis)

In Czech, there are no $L_r \sim VL$ alternations. Nuclei with floating segments followed by liquids always vocalize when they are not governed.

- (26) 1. Roots in (24) have no doublets: *kotel/*kotl̩*, *chumel/*chuml̩* etc.
 2. Root-initial liquids never branch to ungoverned prefix-final Nuclei to save them. There are no doublets like: *obelhat/*obl̩hat* "to deceive", *rozelkat/*rozl̩kat* "start to moan", *odervat/*odr̩vat* "to rive" etc.

Two possible interpretations:

- (i) external to CVCV: ranking of both strategies: vocalisation >> spreading (reason? Charity begins at home?)
- (ii) CVCV-friendly: lexically floating vowels serve as barriers to the spreading

However, there exist languages with $L_r \sim VL$ alternations, see e.g. doublets of the German infinitive *-en* (data from Scheer (2007)):

(27)	əN	ŋ	gloss
	geb-[əŋ]	geb-[ŋ]	to give
	helf-[əŋ]	helf-[ŋ]	to help
	wett-[əŋ]	wett-[ŋ]	to bet
	sag-[əŋ]	sag-[ŋ]	to say

Difference between Czech (no $\text{C}_r \sim VC$ alternations) and German ($\text{C}_r \sim VC$ alternations) will be parametric:

Floating vowels serve as barriers: YES (Czech) / NO (German)

The repair-strategy-analysis of Czech syllabic liquids faces the fact that words can end in CC clusters:

(28)	CC]	gloss
	fakt	fact, NomSg
	lept	etching, NomSg
	koks	coke, NomSg
	biceps	biceps, NomSg
	šimpanz	chimp, NomSg
	pracant	hard worker, NomSg
	lump	crook, NomSg

From this it follows that:

In Czech, final empty Nuclei can govern other empty Nuclei.

In that case, the reason why postconsonantal final liquids always branch cannot be the ungoverned Nucleus to their left.

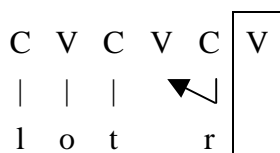
An alternative analysis:

Root-final liquids branch to their left lexically. What decides whether they are syllabic or not is the Nucleus to their right:

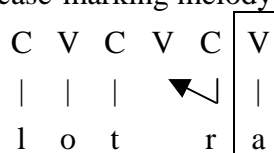
(i) if it is empty, they are syllabic (as in (29)a)

(ii) if it is filled with a vowel of the following morpheme, they are not syllabic (as in (29)b)

(29) a. *lotr*-Ø “rouge, NomSg”
→ the root-final Nucleus is empty



b. *lotr-a* “rouge, GenPl”
→ the root-final Nucleus is filled with the case-marking melody



4. Conclusion

1. Czech syllabic consonants branch to adjacent Nuclei.
2. There exist the systematic difference between root-medial and root-final liquids: the former are right-branching, the latter are left-branching.
3. Syllabic liquids branch lexically.

The proposed model accounts for the phonological behaviour of syllabic consonants in Modern Czech more adequately than the existing analyses.

It explains why:

- (i) roots with syllabic liquids never take vocalised allomorphs of consonant-final prefixes
- (ii) quadriconsonantal roots of the C_LCC type normally exist
- (iii) there are no L_r ~ VL alternations
- (iv) only liquids can be syllabic

Questions to be answered:

- internal structure of liquids
- the representation of “trapped” liquids in Old Czech

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