3 Past participles in Czech: a morphophonological puzzle

Markéta Ziková

3.1 Introduction

The chapter investigates past participles in Czech. Specifically, I focus on the variation of the shape of the past participle morpheme in the colloquial variety of Czech[1] . The variation poses a morphophonological puzzle: it involves apocope of the past participle suffix *-l*, which is however not a regular phonological process in Czech.

Let me start with past participle forms common to both Standard Czech and Colloquial Czech, shown in (1). The table lists participles of four verbs which represent four different conjugation classes with four distinct stem-building suffixes (themes). The four themes are *-i*, *-e*, *-a*, and *-ova*.

(1) Past participle paradigms

	i-class	*e*-class	*a*-class	*ova*-class
	STEM-PRT-AGR	STEM-PRT-AGR	STEM-PRT-AGR	STEM-PRT-AGR
MASC.SG	pros-i-l-Ø	lež-e-l-Ø	děl-a-l-Ø	kup-ova-l-Ø
FEM.SG	pros-i-l-a	lež-e-l-a	děl-a-l-a	kup-ova-l-a
NEU.SG	pros-i-l-o	lež-e-l-0	děl-a-l-o	kup-ova-l-o
MASC.PL	pros-i-l-y	lež-e-l-y	děl-a-l-y	kup-ova-l-y
FEM.PL	pros-i-l-y	lež-e-l-y	děl-a-l-y	kup-ova-l-y
NEU.PL	pros-i-l-a	lež-e-l-a	děl-a-l-a	kup-ova-l-a
GLOSS	'please'	'lie'	'make'	'buy'

Each of the past participle forms consists of three morphological ingredients: a verbal stem, a past participle morpheme and an agreement marker which spells out gender and number features of the subject in a sentence. Formal realization of the past participle and subject agreement morphemes is independent of the conjugation class: there is a single past participle suffix *-l* and

[1]More precisely, the variation occurs predominantly in the colloquial variety spoken in the western part of the Czech language territory (Cvrček 2010: p. 241, Štícha 2013: p. 459).

a single set of agreement markers for all four classes in (1). The agreement set comprises three phonologically distinct vocalic suffixes. The suffix *-o* appears only once in the paradigm: it is a portmanteau of neuter and singular. Suffixes *-a* and *-y*, on the other hand, are ambiguous. The high-vowel suffix is a plural agreement marker which is ambiguous between two genders, i.e., masculine and feminine.[2] The suffix *-a* is ambiguous with respect to both gender and number features as well: it spells out either feminine singular or neuter plural. In addition, a portmanteau of masculine and singular lacks any overt marking, a fact traditionally interpreted as a zero ending (marked as *-Ø* in the table).

The generalization over the four paradigms is in (2). There is a past participle suffix *-l* which is preceded by a stem (made up from a root and a theme) and followed by an agreement suffix, spelled out by a vowel or a zero (depending on the ϕ-features).

(2) STEM PRT AGR
root-{*i/e/a/ova*} -l -V/Ø

Stems of past participles can also be morphologically simplex, as shown in (3). In this pattern, the past participle suffix *-l* is linearly preceded by a root, not by a theme.

(3) STEM PRT AGR
root -l -V/-Ø

While the complex-stem pattern in (2) is common to both Standard and Colloquial Czech, the simplex-stem pattern in (3) shows phonologically conditioned variation. If a stem has a vowel-final root, like 'wash' in (4), then it always follows the pattern in (3), in other words, the past participle suffix *-l* is distributed across all paradigm cells.

[2]The masculine plural marker has an orthographic variant *-i* which appears with animate subjects; cf. (i) vs. (ii):

(i) Stroje$_{MASC.PL}$ stál-y v koutě místnosti.
'Machines stood in the corner of the room.'

(ii) Lidé$_{ANIM.MASC.PL}$ stál-i v koutě místnosti.
'People stood in the corner of the room.'

Since there is no phonological difference in these variants, e.g., *stál-y* and *stál-i* are both pronounced as [staːli], I leave this orthographic contrast aside.

(4) Past participle paradigm of 'wash' (Standard and Colloquial Czech)

	STEM-PRT-AGR			
MASC.SG	my-l-Ø			
FEM.SG	my-l-a			
NEU.SG	my-l-o	STEM	-PRT	-AGR
MASC.PL	my-l-y	rootV	-l	-V/-Ø
FEM.PL	my-l-y			
NEU.PL	my-l-a/y[3]			

The suffix *-l* is also concatenated to roots that end in a consonant, as *nes* 'carry' in (5). However, for these verbs, there is a difference between Standard Czech and Colloquial Czech: in the Colloquial Czech, the *-l* in the masculine singular form is missing. Since also the masculine singular agreement is not overtly marked, what we see in the shaded cell in (5) is a bare root, i.e., *nes* (still meaning 'he carried').

(5) Past participle paradigm of 'carry'

Standard Czech		Colloquial Czech	
	STEM-PRT-AGR		STEM-PRT-AGR
MASC.SG	nes-l-Ø	MASC.SG	nes-Ø-Ø
FEM.SG	nes-l-a	FEM.SG	nes-l-a
NEU.SG	nes-l-o	NEU.SG	nes-l-o
MASC.PL	nes-l-y	MASC.PL	nes-l-y
FEM.PL	nes-l-y	FEM.PL	nes-l-y
NEU.PL	nes-l-a	NEU.PL	nes-l-y

In sum, the past participle morpheme alternates between the *l* and zero in Colloquial Czech. The alternation occurs in the well-defined phonological context depicted in (6): the suffix consonant does not surface post-consonantally and word-finally.

(6) a. PAST.PRT ⇒ Ø/ *C_#* b. PAST.PRT ⇒ *-l* / elsewhere

Given the phonological distribution, it is plausible to assume that the suffix variation arises from the phonological computation based on the apocope rule in (7).

(7) *l*-apocope
l → Ø/ *C_#*

[3]In Colloquial Czech, the gender contrast is neutralized in plural, so there is only a single plural marker *-y* for all three genders.

In the next section, I argue that the apocope is due to repair the phonotactically marked consonant cluster.

3.2 The past participle suffix apocope and markedness of final consonant clusters

Based on a comprehensive comparative survey, Greenberg (1978) postulates the following generalization concerning phonotactics of word-final consonant clusters.

(8) Generalization on final clusters (Greenberg 1978: p. 258, generalization 18)[4]
In final systems, the existence of at least one sequence containing an obstruent immediately followed by a liquid implies the presence of at least one sequence containing a liquid followed by an obstruent.

Expressed in term of markedness, the generalization in (8) says that liquid-obstruent clusters are marked word-finally: marked obstruent-liquid clusters imply unmarked liquid-obstruent reversals, but not *vice versa*.

The markedness of final obstruent-liquid clusters is associated with their rising sonority profile. The sonority profile of consonant clusters is defined using the sonority hierarchy Parker (2011). The hierarchy in (9) identifies five classes of segments: obstruents (T) – the least sonorous segments – sit the lowest in the hierarchy, vowels (V) – the most sonorous segments – sit the highest. In between these two endpoints, there are three subclasses of sonorant consonants: glides are the most sonorous, followed by liquids (L) and nasals respectively. With respect to this hierarchy, obstruent-liquid (TL) and liquid-obstruent (LT) clusters have reverse sonority profiles: the sonority raises in TL but decreases in LT (counted from the left to right).

(9) Sonority hierarchy (Parker 2011: p. 1162)

high				*sonority*				*low*
vowels	»	glides	»	liquids	»	nasals	»	obstruents
V	»	G	»	L	»	N	»	T

The cross-linguistic observation that the rising sonority TL are marked word-finally is traditionally explained in terms of the Sonority Sequencing Principle, abbreviated as SSP (Selkirk 1982, Blevins 1995, Zec 1995). According to the SSP, word-final clusters are syllable codas in which the sonority falls from the nuclear vowel. The principle therefore predicts that final consonant

[4]In the original text, 'stops' are used instead of 'obstruents,' but stops are a subset of obstruents. It is clear from the context that the generalization really concerns clusters with obstruents.

singletons can be of any quality, while the final clusters have restricted phonotactics. In particular, words ending in VT#, VL#, and VLT# are all well-formed, as opposed to words ending in VTL# which are ill-formed (according to the SSP).

The table in (10) confirms that both obstruent singletons and liquid singletons occur word-finally in Czech: when the obstruent infinitive suffix *-t* and the liquid past participle suffix *-l* are concatenated to a vowel-final stem, they both surface unaltered. The left-most column of the table shows word-final falling sonority clusters. (The LT# do not involve the infinitive suffix because there are no liquid-final stems which the *-t* would attach to.)

(10) (C)C# in Czech

VT#				VL#			VLT#			
/miː-t/	=	[miːt]	'wash'	/mi-l/	=	[mil]	/pult/	=	[pult]	'counter'
/pada-t/	=	[padat]	'fall'	/pada-l/	=	[padal]	/kalk/	=	[kalk]	'calque'
/leʒe-t/	=	[leʒet]	'lie'	/leʒe-l/	=	[leʒel]	/skalp/	=	[skalp]	'scalp'

By contrast, the rising sonority clusters in (11) are simplified via apocope: the liquid suffix *-l* does not surface when attached to an obstruent-final stem.

(11) TL# → T#

/plet-l/	→	[plet]	'knit'
/pek-l/	→	[pek]	'bake'
/kop-l/	→	[kop]	'kick'

In sum, from the cross-linguistic perspective, the apocope of the past participle suffix can be interpreted as a repair process: the suffix *-l* is deleted to avoid the ill-formed rising sonority cluster. In what follows, I argue that the apocope is a specific process triggered on the morpheme boundary; the default repair of TL# is via liquid syllabification.

3.3 Repairing marked consonant clusters: apocope vs syllabification

Let me start this section by repeating the contrast between Colloquial and Standard Czech: the *l*-apocope is triggered in the colloquial variety, but not in the standard variety, as demonstrated in (12) and (13).

(12) Colloquial: *l*-apocope

/plet-l/	→	[plet]	‘knit’
/pek-l/	→	[pek]	‘bake’
/kop-l/	→	[kop]	‘kick’

(13) Standard: no apocope

/plet-l/	=	[pletl]	‘knit’
/pek-l/	=	[pekl]	‘bake’
/kop-l/	=	[kopl]	‘kick’

Prima facie, the contrast between the varieties depends on parameter setting. The parameter on marked final clusters is set positively in the standard variety, but negatively in the colloquial variety. As a consequence, TL# are modified in the phonological module of Colloquial Czech.

In fact, also the superficial TL# seen in Standard Czech are manipulated by phonology. The phonological manipulation affects prosodic rather than segmental structure. Specifically, TL# are syllabified as consonant-vowel sequences, i.e., they involve syllabic liquids. The past participles in (13) therefore share a single bisyllabic pattern in which the first open syllable is headed by a vowel and the second one by the liquid */l/*, i.e., [ple.tl̩], [pe.kl̩], [ko.pl̩]. In this respect, the marked TL# differ from the unmarked LT# which do not have syllabic consonants at all. The contrast between syllabic TL# and non-syllabic LT# is illustrated in (14) and (15): the words on the left are bisyllabic, the words on the right are monosyllabic. (Note that syllabic and non-syllabic liquids do not differ in any significant phonetic way: the liquid */l/* has the same acoustic and articulatory properties both in TL# and LT#, see Hůrková & Hlaváč 1981).

(14) TL#: L-syllabification

/pletl/	→	[ple.tl̩]	‘knit’
/pekl/	→	[pe.kl̩]	‘bake’
/kopl/	→	[ko.pl̩]	‘kick’

(15) LT#: no phonological manipulation

/pult/	=	[pult]	‘counter’
/kalk/	=	[kalk]	‘calque
/skalp/	=	[skalp]	‘scalp’

Following Scheer (2009) and Scheer & Ziková (2017), I assume that the liquid syllabification is also a sort of repair. Under this assumption, the parameter on marked final clusters is set negatively in Colloquial and Standard Czech alike. The difference is that these clusters are repaired via either apocope (in the colloquial variety) or liquid syllabification (in the standard variety).

But the picture is a bit more complicated, since the colloquial variety uses both of the repair strategies, i.e., *l*-apocope and *l*-syllabification as well. This is illustrated in (16) and (17). Here I compare four participles with four non-participle forms which never lose their final *l*’s (not even in very informal speech). In other words, even those speakers of Czech who use truncated past participles like [nes] ‘he carried’ never use hypothetical truncated forms like *[mis] ‘mind.’ Instead, non participle TL# are always syllabified, as demonstrated in (17).

(16) *l*-apocope: past participle

/nesl/	→	[nes]	'he carried'
/pekl/	→	[pek]	'he baked'
/hra:bl/	→	[hra:p]	'he raked'
/t͡souvl/	→	[t͡souf]	'he backed off'

(17) no apocope: elsewhere

/misl/	→	*[mis]	'mind, Nsg'
/dekl/	→	*[dek]	'lid, Nsg'
/no:bl/	→	*[no:p]	'posh'
/ʃoufl/	→	*[ʃouf]	'nauseated'

The examples above are chosen to illustrate that the behavior of TL# in Colloquial Czech is independent of the phonotactics: phonotactically identical clusters, i.e., */sl/, /kl/, /bl/, /vl/,* undergo both types of repairs. The distribution of the repair processes obviously depends on the morphological structure: the *l*-syllabification is an across-the-board process which is blocked on the morpheme boundary. This proposal is developed further in Section 3.5. The next Section 3.4 introduces main ingredients of the Strict CV model (Scheer 2004, Cyran 2010) in which reverse clusters LT and TL involve different structural relations.

3.4 Strict CV: licensing and government

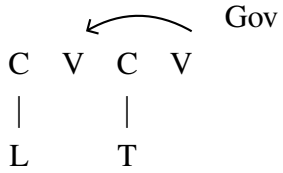
In Strict CV, prosodic level consists of linearly ordered CV units (Scheer 2004, Cyran 2010). Word final consonant clusters therefore look as in (18): there is a prosodic string CVCV in which C(onsonantal)-slots have link to a melodic level, but V(ocalic)-slots are empty.

(18) CC# = CVCV

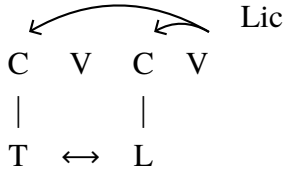
The contrast between marked rising sonority clusters and unmarked clusters in which the sonority falls is expressed in terms of lateral relations holding between the prosodic units. The idea is that the marked TL# involve the stronger relation than the unmarked LT#, as indicated by the bi-directional arrow in (20).

Furthermore, both types of clusters set a relationship with the following V-slot. In (19), the relationship involves government: the post-LT V-slot governs the empty V-slot enclosed in the cluster, as indicated by a leftward arrow. On the other hand, the empty V-slot inside the rising sonority cluster is protected from government because the C-slots are tight-knit. Instead, the TL domain as whole is licensed by the V-slot to its right, as expressed by a branching arrow in (20).

(19) LT#



(20) TL#



The structures above depict word-final clusters in which the governor or licensor is an empty V-slot. Cross-linguistically, however, consonant clusters would rather combine – typically – with vowels than occur word-finally. This means that full V-slots are much more common sources of government and licensing than the empty V-slots.

To capture the distribution of consonant clusters across languages, Cyran (2010; 2011) postulates implicational relations between the full and empty V-slots. The idea is that the positive parameter setting on the empty V-slot implies the positive setting on the full V-slot, but not vice versa. The implementation of Cyran's proposal is depicted in (21).

(21) Parameters on V-slots

	empty V	full V	
governor	✓	✓	LT# / LTV
	×	✓	*LT# / LTV

	empty V	full V	
licensor	✓	✓	TL# / TLV
	×	✓	*TL# / TLV

The left part of the table shows the setting of the government parameter which derives exactly two types of languages concerning LT clusters: (i) languages that display LT both word-finally and pre-vocalically, (ii) languages in which distribution of LT is restricted to the pre-vocalic position. The two-way typology arises from the parameter setting on the empty V-slot: it is a governor in the type (i), but not in the type (ii). The similar situation is seen in the right part of the table (21) but with the licensing parameter. The empty V-slot is either a licensor or not – and this also corresponds to two types of languages: those that have TL both word-finally and pre-vocalically and those that have pre-vocalic TL only.

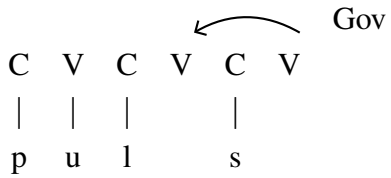
Turning back to the Greenberg's generalization on final clusters in (8), it also identifies two language types: (i) languages that have both TL# and LT#, (ii) languages that only have LT#. To express this generalization in the Strict CV model, I postulate an implication between the two lateral relations when the licensing implies the government. According to this implication, the empty V-slot is either both licensor and governor (in the languages of the type (i)), or it is only a governor, as in the type (ii). It is worth noting that the idea that relations within prosodic

structure are dependent on each other has already been put forward in Scheer & Ziková (2010). In the next section, I use the model to explain the Czech data.

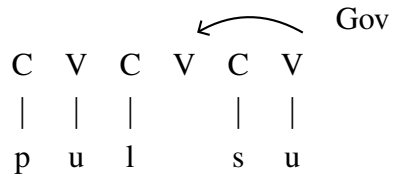
3.5 Syllabic liquids as licensors of consonant domains

In Czech, LT clusters appear both pre-vocalically and word-finally. For example, the cluster of the root */puls/* 'pulse' surfaces in a zero-marked nominative singular form [puls] and in a vowel-marked genitive singular [pulsu] as well; compare (22) and (23). This suggests that the government parameter shown in (21) is set positively for final empty V-slots: empty V-slots can govern LT clusters in Czech and it then implies that full V-slots can do the same job.

(22) LT#: [puls]

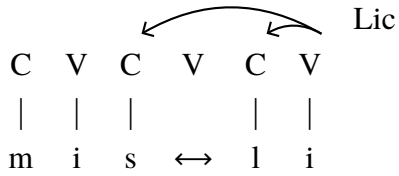


(23) LTV: [pulsu]



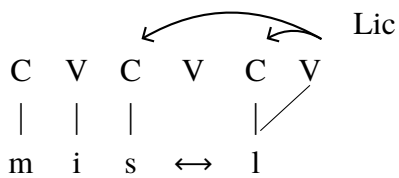
TL clusters are found pre-vocalically, hence full V-slots are consonant domain licensors in Czech. This is depicted in (24): the cluster of the root */misl/* 'mind' is licensed by the genitive-singular vowel in [misli].

(24) TLV: [misli]



The root 'mind' combines with a zero marker in the nominative singular. The cluster */sl/* thus appears word-finally and the liquid becomes syllabic: [mis̩]. Figure (25) shows how the *l*-syllabification is modelled in Strict CV. The process involves branching of the liquid melody from the C-slot to the V-slot (Toft 2002, Rowicka 2003). The branching structure captures the nature of syllabic consonants precisely, as mentioned previously in Section 3.3: they are consonants which display vowel-like behavior.

(25) TL̩#: [mis̩]



The structure in (25) builds on Scheer (2009); he postulates a link between syllabicity and the property of being part of a consonant domain. In particular, Scheer claims that Czech belongs to languages in which only full V-slots are licensors of TL clusters. This is the reason why the liquid branches to its right in (25): the branching creates the proper licensor. The licensed cluster */sl/* is thus regularly spelled out.

The proposal that syllabic liquids are consonant-domain licensors explains their uneven distribution on word margins in Czech: they are present word-finally, but absent word-initially. Logically, #LT clusters could behave the same way as the TL#. To see this logical possibility, consider the diagram in (26). The initial liquid of the past participle [lhal] 'lie' has room to branch: there is the empty V-slot next to the liquid. However, [lhal] has only one syllable, headed by a vowel [a], which indicates that the initial liquid does not branch at all. Scheer's proposal accounts for that: since LT clusters are not consonant domains, their liquids are not syllabic at all.

(26) #LT: [lhal]

C	V	C	V	C	V
|		|	|	|	
l		h	a	l	

To sum up, TL# are consonant domains that are regularly licensed by syllabic liquids in Czech. The exception to this general pattern are heteromorphemic clusters that are always obtained by concatenation of the past participle suffix *-l*. In Standard Czech, the heteromorphemic TL# behave the same way as monomorphemic TL#. The fact that the suffix *-l* is a regular syllabic consonant indicates that consonant domains are independent of the morphological structure in the standard variety. In other words, the rising sonority cluster */sl/* forms a tight-knit domain both within a single morpheme and across the suffix boundary as well. Therefore, the domain is licensed by the syllabic liquid in both the root [misl̩] 'mind' and in the past participle [nes-l̩] 'he carried.'

Adopting this view on syllabic liquids leads us to analyze their absence in colloquial past participle forms as a boundary effect. In Colloquial Czech, consonant domains are established lexically and cannot be created by morpheme concatenation. In other words, the suffix *-l* is not a domain licensor, hence it is not syllabic.

This proposal allows us to capture the difference in behavior of productive and lexicalized past participle forms. The lexicalized forms are propria and display syllabic liquids even in the colloquial variety; for example, surnames like *Mázl* (literally 'he erased') or *Klepl* (literally 'he knocked') are always spelled as [maːzl̩] and [klepl̩]. This is what is predicted by the analysis: the suffix *-l* is lexically stored together with the verbal stem, hence it licenses the domain with the stem-final consonant.

The proposal explains why the past participle suffix *-l* is syllabic in Standard Czech but not in Colloquial Czech. However, what remains to be answered is why is the suffix *-l* dropped in the colloquial variety.

Recall the idea put forward in Section 3.2: the suffix apocope is a repair strategy for a rising sonority consonant clusters which are marked word-finally. A possible implementation of this idea is depicted in (27). There is an empty V-slot between the suffix liquid */l/* and the stem-final obstruent */s/*: the culprit for the ill-formedness of the structure in (27). This V-slot is neither enclosed in a consonant domain, nor governed by a final empty V-slot. Cutting the last CV unit makes the structure well-formed: the previously problematic piece of the structure becomes a regular final empty V-slot in the left-hand side table in (27).

(27) TL# > T#: /nes-l/ > [nes]

3.6 Summary

This chapter looked at past participle forms in Czech. The goal was to explain the difference in phonological behavior of the participle suffix *-l* in the standard and colloquial varieties of Czech. The difference was explained in terms of licensing consonant domains: these domains have different parameters in each language variety.

From the cross-linguistic perspective, the suffix creates rising sonority clusters – and these are marked word-finally. Therefore, these clusters are manipulated by phonology. In particular, the past participle suffix *-l* either becomes a syllabic consonant or it is apocoped. Building on Scheer (2009), I proposed that the suffix syllabification provides a licensor of the consonant domain in which the liquid suffix is involved. In the colloquial variety, consonant domains cannot be created across the morpheme boundary – and that is why the suffix is not syllabified. Instead, the marked rising sonority cluster is repaired via the suffix deletion.

References

Blevins, Juliette. 1995. The ayllable in phonological theory. In John Goldsmith (ed.), *The handbook of phonological theory*, 206–244. Oxford: Blackwell.

Cvrček Václav, et al. 2010. *Mluvnice současné češtiny, 1: Jak se píše a jak se mluví [Grammar of contemporary Czech: How it is written and how it is spoken]*. Praha: Karolinum.

Cyran, Eugeniusz. 2010. *Complexity scales and licensing in phonology*. Berlin: Mouton De Gruyter.

Cyran, Eugeniusz. 2011. Parameters and scales in syllable markedness: the right edge of the word in Malayalam. In Katarzyna Dziubalska-Kołaczyk (ed.), *Constraints and preferences*, 1–42. Berlin: Mouton de Gruyter.

Greenberg, Joseph Harold. 1978. Some generalizations concerning initial and final consonant clusters. In Joseph Harold Greenberg, Charles Albert Ferguson & Edith A. Moravcsik (eds.), *Universals of human language: phonology*, vol. 2, 243–279. Stanford: Stanford University Press.

Hůrková, Jiřina & Sáva Hlaváč. 1981. K výzkumu českých souhlásek likvidních [Analyzing the Czech liquids]. *Slovo a slovesnost* 42. 269–279.

Parker, Steve. 2011. Sonority. In Marc van Oostendorp (ed.), *The Blackwell companion to phonology. Vol. II: Suprasegmental and prosodic phonology*, 1160–1184. Oxford: Blackwell.

Rowicka, Grażyna. 2003. /r/ syllabicity: Polish versus Bulgarian and Serbo-Croatian. In Stefan Ploch (ed.), *Living on the edge: 28 papers in honour of Jonathan Kaye*, 511–526. Berlin: Mouton de Gruyter.

Scheer, Tobias. 2004. *A lateral theory of phonology. Vol.1: What is CVCV, and why should it be?* Berlin: Mouton de Gruyter.

Scheer, Tobias. 2009. Syllabic and trapped consonants in the light of branching onsets and licensing scales. In Gerhild Zybatow et al. (ed.), *Studies in formal Slavic phonology, morphology, syntax, semantics and information structure. Proceedings of FDSL 7, Leipzig 2007*, 411–426. Frankfurt am Main: Peter Lang.

Scheer, Tobias & Markéta Ziková. 2010. The Coda Mirror v2. *Acta Linguistica Hungarica* 57(4). 411–431.

Scheer, Tobias & Markéta Ziková. 2017. Branching onsets in Old Czech. In Olav Mueller-Reichau & Marcel Guhl (eds.), *Aspects of Slavic linguistics: formal grammar, lexicon and communication*, 285–309. Berlin: Mouton De Gruyter.

Selkirk, Elisabeth. 1982. The syllable. In Harry Van Der Hulst & Norval Smith (eds.), *The structure of phonological representations*, vol. 2, 337–384. Foris Dordrecht.

Štícha, František. 2013. *Akademická gramatika spisovné češtiny [Academic grammar of Literary Czech]*. Praha: Academia.

Toft, Zoë. 2002. The phonetics and phonology of some syllabic consonants in Southern British English. *ZAS Papers in Linguistics* 28. 111–144.

Zec, Draga. 1995. Sonority constraints on syllable structure. *Phonology* 12(1). 85–129.