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A unified model of Proper Government¹

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Abstract

This article aims at unifying the various devices handling vowel-zero alternations in Government Phonology. Two sets of data are analysed: French schwa-zero and Czech [ɛ]-zero alternations. It is shown that both function identically with respect to the number of consonants that surround the alternation site. The standard analysis requires four different theoretical devices in order to account for those alternations, that is Proper Government, Constituent Government, Interconstituent Government and Government-Licensing. Crucial to the standard analysis is the observation that governing domains intervening between the governor and the governee block Proper Government. I introduce an alternative account of Proper Government the main feature of which is a strict CVCV syllable structure exclusively allowing for a consecution of non-branching Onsets and non-branching Nuclei. The CVCV-analysis offers the following advantages: first, it provides a straightforward explanation for the blocking effects of intervening CCs. Second, the devices needed to account for the alternations boil down to one, that is Proper Government. In a second step, Czech [r]-[ř] alternations are discussed. I argue that what is typically assumed to be a branching Onset must be viewed as a consecution of two Onsets separated by an empty Nucleus. It follows that the model of Proper Government that capitalises on the blocking effect of governing domains such as branching Onsets is not available for Czech. Hence, if Proper Government is to be viewed as a device of UG, as is suggested by its cross-linguistic stability, there must be a unique version of Proper Government for all languages.

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1. Introduction

Government theory aims at accounting for syntagmatic relations holding within phonological representations. Government Phonology's device *Proper Government* was introduced in order to account for vowel-zero alternations (Kaye, Lowenstamm and Vergnaud 1987). Under the government-approach, a vowel is not realized when its hosting Nucleus is the target of Proper Government.

Moreover, it seems to be a stable crosslinguistic phenomenon that vowel-zero alternations are inhibited in the environment of [CC]-clusters. Typically, the properly governable vowel [e] in (1) alternates with zero in a (1a)-environment, whereas no alternation occurs in (1b) configurations.

- (1) a. CeC
 b. CCeC
 CeCC

Specific assumptions and proposals regarding constituent structure in blocking (1b)-environments are made in Kaye, Lowenstamm and Vergnaud (1987) and Charette (1990).

In this paper, I will propose an alternative analysis of the Government/ Licensing-relations that hold between vowels and consonant clusters blocking Proper Government.

This alternative account relies on a version of syllable structure allowing only for a strict alternation of non-branching Onsets and non-branching Nuclei: the CVCV-model (cf. Lowenstamm 1996).² I shall argue that Proper Government in a CVCV-frame offers explanatory advantages while at the same time unifying the theoretical devices needed for vowel-zero alternations.

The model of Proper Government I will defend unifies four devices: Proper Government, Interconstituent Government, Constituent Government and Government Licensing, that control intersegmental relations in the Kaye, Lowenstamm and Vergnaud (1987) and Charette (1990)-account. In the perspective I adopt, Proper Government alone accounts for the intersegmental phenomena discussed. Moreover, directionality of Government may be unified (right-to-left).

In a second step, I will generalize the CVCV-analysis deductively. Czech [r]-[ř] alternations suggest that there are no branching Onsets in this language. Showing the identical behaviour of both French and Czech Proper Government,

2. Other work within this frame: e.g. Lowenstamm (1988); Guerssel and Lowenstamm (1994); Bendjaballah (1995); Creissels (1989); Bonvino (1995); Ségéral (1995); Hérault (1989); Nikiema (1989); Ségéral and Scheer (1994); Larsen (1994, 1995); Heo (1994).

and assuming Proper Government to be a device of Universal Grammar, I will be led to extend the Czech analysis to French.

I start by presenting the current model of Government (Section 2) and Charette's (1990) analysis of French schwa within this model (Section 3). I will then introduce the alternative way of running Proper Government within a CVCV-frame (Section 4). Section 5 discusses the Czech alternation [r] - [ř], suggesting the absence of branching Onsets in this language. In a further step, I shall present Czech vowel-zero alternations (Section 6). Section 7 evaluates the consequences of the absence of branching Onsets for Czech Proper Government. Finally in Section 8, I will discuss the implications of viewing Proper Government as a device of Universal Grammar.

2. Government in current Government Phonology

Internuclear relations responsible for vowel-zero alternations in Government Phonology are handled by a device called Proper Government. (2) provides a definition of Proper Government as currently understood.³

(2) Proper Government

- a. Proper Government is a form of internuclear government from right to left where no governing domain intervenes between the governor and the governee.
- b. Proper Government cannot enter a governing domain (thus long vowels are no possible targets of Proper Government)
- c. Proper Government applies to empty Nuclei. When empty Nuclei are properly governed, they remain inaudible. If they escape Proper Government, they are subject to a language-specific epenthesis.
- d. A properly governed position cannot govern any other position.

Consider the following data from French where zero alternates with schwa in free variation:

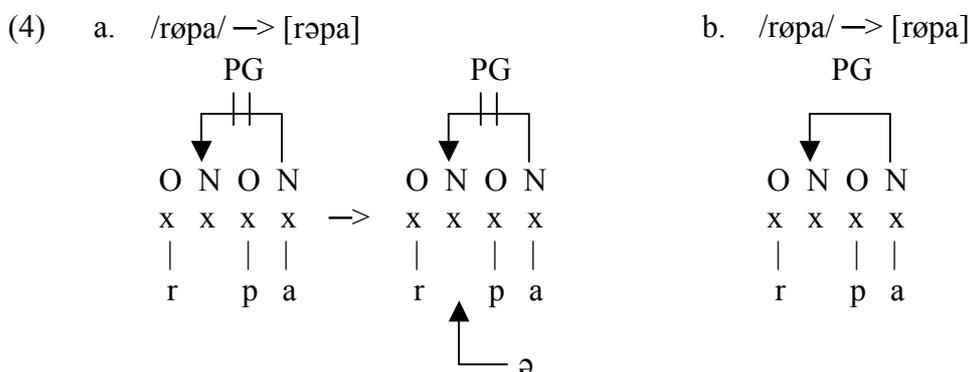
(3) Forms of the same word in free variation⁴

rəpa	røpa	<i>repas</i>	"meal"
səmen	sømen	<i>semaine</i>	"week"
vənir	vønir	<i>venir</i>	"come"

3. For a survey of the status of Proper Government, see, e.g., Kaye, Lowenstamm and Vergnaud (1987); Kaye (1990a).

4. The distribution of alternating French schwa is more puzzling than the data below might suggest. For fuller discussion cf. Encrevé (1988), Dell (1973) and references therein.

Proper Government handles the vowel-zero alternation in (3) as follows:



Proper Government is optional in French. In the standard analysis, empty Nuclei escaping Proper Government such as in (4a) are filled with the language-specific default-vowel, schwa in French: [rəpa].

Given (2a), the question arises as to what counts as a "governing domain". Current Government Phonology (e.g. Kaye, Lowenstamm and Vergnaud 1987, Kaye 1990a) assumes the two following kinds of possible governing domains:

- (5) a. Constituent Government
b. Interconstituent Government

Moreover, Kaye, Lowenstamm and Vergnaud (1987) claim that

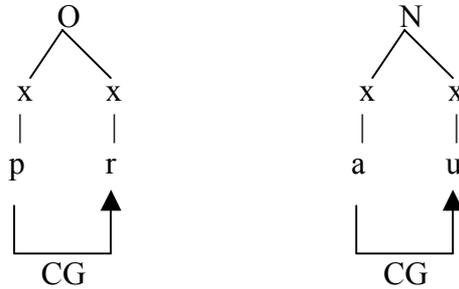
- (6) All syllabic constituents are maximally binary

and confer a theoretical status to the following constituents only:

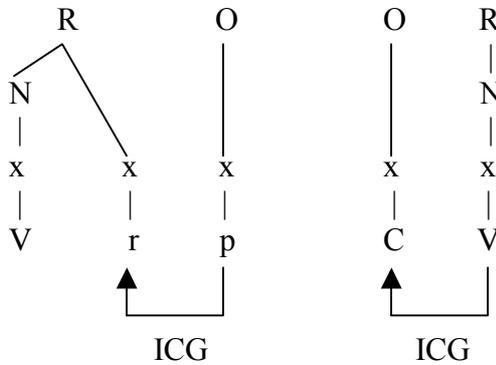
- (7) a. 1. Onset
2. Nucleus
3. Rhyme
are constituents.
b. Coda
is no constituent.

The characteristics of both kinds of government mentioned in (5) are as follows.

- (8) a. Constituent Government holds between the two skeletal slots of the same constituent. It goes from left to right.



- b. Interconstituent Government holds between skeletal slots pertaining to adjacent constituents. It goes from right to left.



Thus, the following universal constraints on government obtain:

- (9) a. strict locality
 only adjacent positions can constitute a Constituent Government-/
 Interconstituent Government-domain;
 b. strict directionality
 Constituent Government goes always from left to right, Interconstituent
 Government goes always from right to left.

In the next section, we shall see how this model deals with contexts that do not allow Proper Government to apply in French.

3. Charette's analysis of French schwa

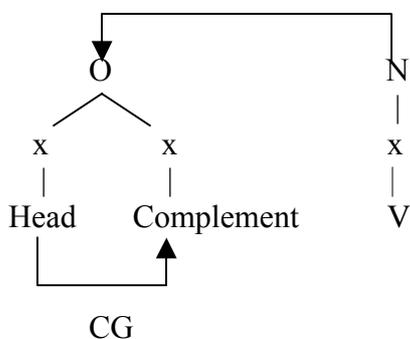
Within the framework just outlined, Charette's (1990) purpose is to account for French schwa- \emptyset alternations which are optional only if no [CC]-cluster precedes or follows the schwa. Indeed, at least for a subgroup of speakers, schwa is

always realized if a [CC]-cluster is present in its neighbourhood.⁵ The three relevant types of sequences are illustrated in (10):

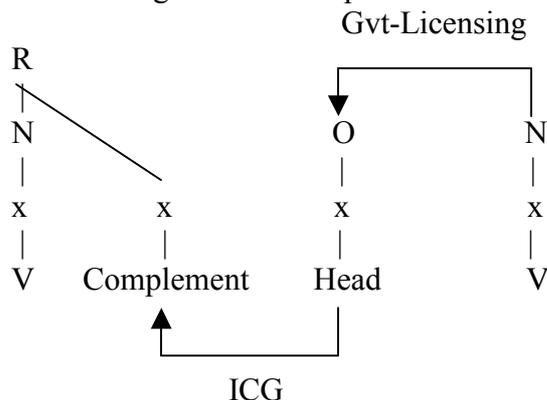
- (10) a. [CəCV] [CøCV] [rəpa,rəpa] "meal"
 b. [CəCCV] *[CøCCV] [səkre,*səkre] "secret"
 c. [CCəCV] *[CCøCV] [krəve,*krəve] "die"

In order to account for these data, Charette relies on the definition of Proper Government given in (2), coupled with a principle she calls *Government-Licensing*:

- (11) Government-Licensing (Charette 1990:242)
 a. A Constituent Government holds within a branching Onset. Its first member is its head. This head must be government-licensed by a following Nucleus in order to be able to govern the branching Onset's complement:



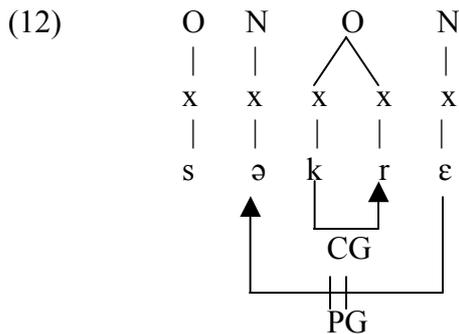
- b. An Interconstituent Government holds between a postnuclear rhymal complement and a following Onset. The head of such an Interconstituent Government is the Onset. This head must be government-licensed in order to be able to govern its complement:



5. Obviously, the facts are richer than suggested by the sample in (10). For fuller discussion see, e.g., Encrevé (1988), Dell (1973).

In (10a)-cases, i.e. [CəCV]-strings, Proper Government can freely apply, no government domain intervening between governor and governee.

In (10b)-strings [CəCCV], the two consecutive consonants between governor and governee constitute a governing domain in the account of Section 2, i.e., either a Constituent Government or an Interconstituent Government.⁶ The intervening metrical configuration, i.e., a branching Onset or a Postnuclear Rhymal Complement - Onset cluster blocks Proper Government: Proper Government cannot apply over governing domains, cf. (2a).



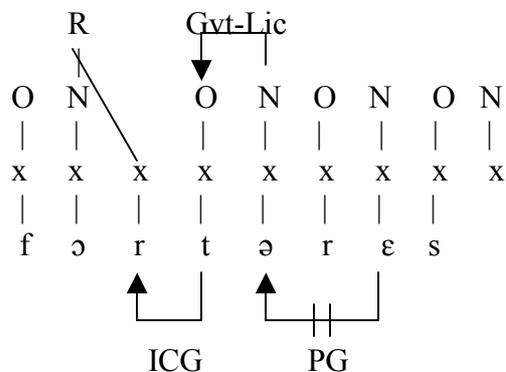
Thus, the ungrammaticality of forms without schwa in the (10b)-cases is correctly predicted.

So far, Charette's Government-Licensing principle (11) plays no role in schwa-zero alternations: in (10a), there are no governing domains with non-nuclear heads to be government-licensed. In (10b)-strings [CəCCV], the potential governor government-licenses the non-nuclear head of the preceding consonant cluster [CC], although Government-Licensing in this particular case has no incidence on the elision of schwa.

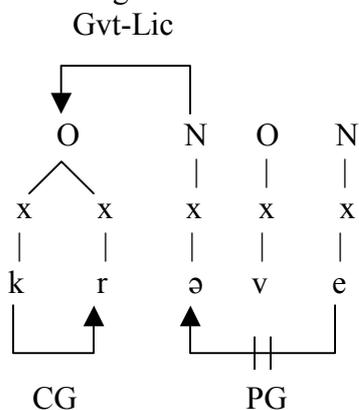
By contrast in (10c)-cases [CCəCV] where the omission of schwa also yields ungrammatical results, the governing domain [CC] preceding the potentially properly governable schwa in [CCəCV] needs to be government-licensed. The only possible licenser in sight is the properly governable schwa.

6. Depending on the consonant's Charm- and Complexity values, cf. Kaye, Lowenstamm and Vergnaud (1987); Harris (1990).

(13) a. Preceding Interconstituent Government



b. Preceding Constituent Government



In this situation, Charette (1990:244ss) claims that two principles enter into conflict:

- (14) a. Nothing hinders the schwa from being properly governed by the following vowel.
- b. The [CC] cluster preceding schwa needs to be government-licensed. The only possible government-licenser is this schwa. But schwa, by virtue of the definition of Proper Government (2d), can government-license only if it is not properly governed itself.

According to Charette, this conflict can be decided in favour of either competitor: Proper Government on the one hand and the [CC] cluster seeking Government-licensing on the other. (15) shows the two possible results:

- (15) a. Proper Government applies to schwa. Schwa disappears and, therefore, cannot government-license the preceding [CC]-cluster. Failing to be government-licensed, the non-nuclear head of the [CC] cluster cannot govern its consonantal complement and disappears.

- b. The language favours retention of the [CC]-cluster. The head of the cluster must thus be government-licensed by the only possible candidate, the following schwa. That is, Proper Government must spare this schwa. Schwa cannot disappear.

In Charette's account, the choice between (15a) and (15b) is parameter-driven, French opting for (15b). She presents evidence from another language, Tangale,⁷ where option (15a) is said to be applicable.⁸

Option (15b) being the choice of French, schwa in (10c) strings [CCəCV] cannot disappear. The ungrammaticality of its omission is thus correctly predicted.

4. A CVCV-account in which Proper Government alone runs all alternations

In the model presented above, four different theoretical devices are needed in order to run the alternations, that is Proper Government, Constituent Government, Interconstituent Government and Government Licensing. The central claim I shall put forth below is that Proper Government alone can drive vowel-zero alternations and thereby unify the configurations "blocking" Proper Government if a strict CVCV syllable-structure allowing only for a consecution of non-branching Onsets and non-branching Nuclei is assumed (Lowenstamm 1996).

Let us consider the behaviour of the three relevant configurations [CəCV], [CəCCV] and [CCəCV] in a CVCV-frame. First, [CəCV] *rəpas/ rɔpas* is overtly CVCV. Its syllabic representation in a CVCV frame is not any different from the one shown in (4). I shall therefore not consider it any further.

Second, (16) gives the CVCV-representation of a string involving a surface [CC] cluster after the schwa ([CC]s with falling sonority do not occur in this position in French):

(16)	O	N	O	N _⊙	O	N
	s	ə	k		r	ɛ

Recall that omitting schwa in such a word yields an ungrammatical result. Assuming CVCV, an empty Nucleus stands right in the middle of the surface-[CC] cluster. The schwa cannot undergo Proper Government in this situation because the empty Nucleus N_⊙ stands closer to the only available proper governor [ɛ] and thus constitutes a better target. [ɛ] accomplishing the task of maintaining N_⊙ silent, schwa simply is out of reach.

7. See Kidida (1985) and Nikiema (1989) for discussion of Tangale.

8. This situation could be expressed by means of constraint ranking.

Under the same approach, Kaye's (1990a) Coda-Licensing principle can also be dispensed with: as there are no Rhymes in such a framework, word-final consonants automatically reside in Onsets that are followed by an empty Nucleus.

Below, I sum up the advantages of the CVCV-account:

- (19) a. The CVCV-account unifies government: while the grammar, in the standard model, recognizes Constituent Government, Interconstituent Government, Government-Licensing and Proper Government, Proper Government is the only form of interpositional relation needed to drive vowel-zero alternations under the above provisions.
- b. It rationalizes the operation of Proper Government: Proper Government does not sometimes apply (French *røpas*) while being blocked in cases of intervening consonant-clusters (French *secret*): it *always* applies.
- c. It simplifies constituent structure and shifts the burden of accounting for blocking effects of "branching" constituents onto government theory itself.⁹
- d. It replaces an *observation* ("intervening governing domains block Proper Government") by an *explanation* ("Proper Government cannot apply to the properly governable vowel because the empty Nucleus situated between the governor and this possible target requires Proper Government").

Up to this point, I have introduced an alternative account to the standard way of viewing vowel-zero alternations within Government Phonology.

In the remaining sections, I wish to go one step further and try to *derive* the CVCV-version of Proper Government from more general principles, instead of merely assuming it. Czech [r]-[ř] alternations will be the factual basis of my argumentation.

5. [r] and [ř] in Czech

In this section, I consider the alternation of two segments represented in Czech spelling conventions as <r> and <ř>. While <r> corresponds to the ordinary Liquid [r], IPA does not provide a symbol for <ř>. As I will show below, <ř> has a

9. Recall that accounting for phonological phenomena by government relations rather than by contrasts in constituent structure is a genuine aim of Government Phonology's research-program (e.g., Kaye, Lowenstamm and Vergnaud 1987: 193-194).

voiced and a voiceless version. As its voice value is crucial to my analysis, I shall refer to the voiced version of <ř> with the symbol [ʀ], whereas [ř̥] stands for the voiceless <ř>. The spelling symbol [ř] will appear when referring undistinctly to the voiced and the voiceless allophone.

5.1. Articulatory description of [ř]

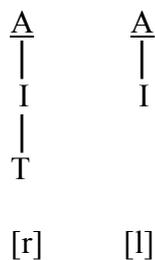
[ř] is a segment showing properties of [r] and the postalveolars [ʃ,ʒ]: on the one hand, the apex is trilling in the alveolar region exactly in the way [r] is produced. On the other hand, the tongue body position is that of the postalveolar fricatives [ʃ,ʒ], i.e., higher than that of [r]. The lips remain unrounded throughout the whole process.¹⁰

5.2. Internal structure of [r] and [ʃ,ʒ]

Before turning to the analysis of [r]-[ř] alternations, I wish to introduce the internal structure of the articulatorily related segments [r,ʃ,ʒ] that I have proposed in previous work (Scheer 1993, 1996).¹¹ The model of consonantal representation I assume is developed in greater detail in Scheer (1996). For the standard system of consonantl representation within Government Phonology, cf. Harris (1990, 1994).

Figure (20) shows the internal structure I assume for [r] and [l] where T denotes the trill of the apex:

(20) internal structure of [r,l]

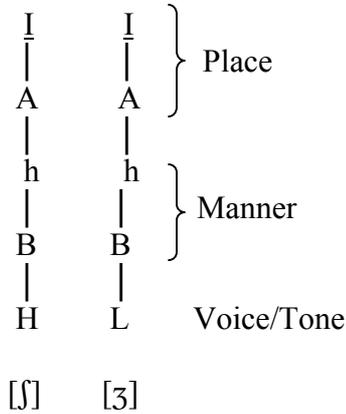


10. For similar articulatory descriptions see, e.g., Mazon (1952:27-28) or Kučera (1961:30-31): "/ř/ is an apical trill with simultaneous raising of the grooved blade of the tongue towards the palate which results in some lamino-palatal friction".

11. The structures given in (20) are arrived at from an analysis of German evidence (Scheer 1993: 100) and an attempt at deriving facts known as the sonority hierarchy (Scheer 1996). Cf. Broadbent (1991), Backley (1993), Harris (1994: 243-244) and Cyran (1997: 180-184) who also argue for A being a characteristic Element of [r]-sounds.

In Scheer (1993: 79-96), based on stem-final alternations of [ts] and [tʃ] in Czech, I proposed the internal structure for [ʃ,ʒ] shown in (21).

(21) internal structure of [ʃ,ʒ]¹²



To sum up, the representational frame I discussed makes the claim that the segmental identity of [r] and the postalveolars [ʃ,ʒ] is the same *with respect to their place of articulation*: all three segments are entirely place-defined by A and I. The only difference comes from the head-operator relation: [r] is A-headed with I as operator, while I is the head and A the operator in [ʃ,ʒ].

5.3. The distribution of [ʀ] and [ř] in Czech

Consider the following distribution of [ʀ,ř].¹³

The examples given in (22) show that the voiceless version of <ř> [ř] occurs after voiceless consonants.

12. **h** is glossed "noise Element" (cf., e.g., Harris 1990, 1994). **B** represents lip rounding (cf. Scheer 1996). **L** and **H** concern the state of the vocal chords: stiff (**H**) or slack (**L**). See Kaye, Lowenstamm and Vergnaud (1987: 216) for further details on **H**, **L**, Scheer (1996) for discussion of general issues related to **B** and **T**.

13. The notations of Czech data in this paper follow Czech spelling conventions. However, I use IPA symbols whenever spelling is misleading. The phonetic values of the spelling symbols appear hereafter: *š,ž,c,č* have their traditional value [ʃ,ʒ,ts,tʃ], an accent (or a little circle on the *u*: *ů*) on a vowel denotes its length, *y* is [i], *ch* is [x], *h* is [ɦ], *ň* stands for the palatal nasal. The symbols *i,í,ě* denote the palatality of the preceding consonant if this consonant is palatalizable. If not, *i,í* are simple [i,ii], and *ě* is articulated [jɛ].

Further abbreviations used are: NOM-Nominative, GEN-Genitive, DAT-Dative, ACC-Accusative, VOC-Vocative, LOC-Locative, INST-Instrumental.

(22)	C _{-voice} + ř	
	potřeba	"need"
	příklad	"example"
	výkřik	"shout"
	chřest	"asparagus"

The words displayed in (23) on the other hand show the voiced [ʁ] after voiced consonants.

(23)	C _{+voice} + ř	
	břech	"coast"
	dřevo	"wood"
	vřeteno	"spindle"
	mříž	"wiring"
	zřídlo	"hot source"
	hřebík	"nail"

The voiced [ʁ] also shows up after vowels.

(24)	V + ř	
	bořekadlo	"proverb"
	zářifka	"bulb"
	talířek	"saucer"
	úředník	"clerk"

[ʁ] finally surfaces word-initially.

(25)	#ř	
	řeřicha	kind of flower
	řeka	"river"
	řetěz	"chain"

It follows from this complementary distribution conditioned by the voice value of the preceding segment that [ʁ] and [ř] are not opposable to one another and thus have the status of allophones of a single phoneme. Note that both voiced and voiceless versions referred to as [ř] are fully opposable to other Czech phonemes.

To which major class of segments should [ř] be assigned? The trill being a typical property of [r], and [r] being the Liquid par excellence (capable of bearing stress and of being "syllabic"),¹⁴ one might think that [ř] is also a

14. Using the word "syllabic" in relation with consonants throughout the whole article represents nothing but a purely informal notation for phenomena commonly known under this label.

Liquid. However, the phonological conditioning of voicing as seen in (22)-(25) suggests that we are dealing with an ordinary Obstruent. Moreover, [ř,ʀ], unlike [r] and just like any Fricative, can never be "syllabic" nor bear stress in Czech.

Czech provides an unfailing test that reveals the phonological status of [ř,ʀ]: final devoicing. Czech devoices domain-finally. As usual in languages with final devoicing, Obstruents only are subject to such restrictions: despite of their voiced articulation, Nasals and Liquids freely occur domain-finally, whereas voiced Stops and Fricatives are never found in this position.

If [ř] is involved in the system of final devoicing, there can be no doubt about its status: it must be an ordinary Obstruent.¹⁵ The words given in (26) demonstrate that indeed [ř] does undergo final devoicing:

(26)	SG=[ř]	PL=[ʀ]	
	/VU#/ undergoing	/Vʀ-V#/ escaping	
	final devoicing	devoicing	
	tchoř	tchoʀi	"skunk"
	trakař	trakaʀe	"wheelbarrow"
	kouř	kouʀe	"smoke"

The results of this section appear under (27):

- (27) a. [ř,ʀ] are Obstruents. Their common underlying identity is /ʀ/. /ʀ/'s voice value is conditioned by the preceding segment: if it is voiceless, /ʀ/ surfaces as [ř]. /ʀ/ undergoes final devoicing just as any other Obstruent, surfacing as [ř] in domain-final contexts.
- b. [ř,ʀ] can never bear stress nor be syllabic.

5.4. Alternations [r] - [ř]

5.4.1. *Distributional restrictions.* [r] in word-final position in the Nominative of masculine nouns alternates with [ř] in Vocative forms of the same words.¹⁶

15. Note that this does not mean that any devoiced Liquid is an Obstruent. The argument holds only for Liquids that participate in devoicing alternations unambiguously restricted to Obstruents.

16. [r]-[ř] alternations are quite common in Czech. They occur elsewhere in the morphology and do not necessarily obey the distribution discussed below. On the other hand, there are configurations where [r]s do not alternate with [ř] although the segmental and syllabic conditions prevailing in the NOM-VOC contrast seem to be met. A full discussion of all these cases would go beyond the scope of this article. The NOM-VOC paradigm for various morphological and contextual reasons stands as a phenomenology of its own.

(28)	NOM	VOC	
	petr	petř-e	"Peter"
	kmotr	kmotř-e	"godfather"
	katr	katř-e	"(iron) bars, prison"
	metr	metř-e	"meter"
	kufř	kufř-e	"suitcase"
	cvikr	cvikř-e	"monocle"
	sachr	sachř-e	"Sacher, kind of cake"
	kopr	kopř-e	"dill"
	svetr	svetř-e	"pullover"
	kapr	kapř-e	"carp"
	mesr	mesř-e	character from Brecht's <i>Beggar's opera</i>

Two conditions must be satisfied in order to trigger the alternation observed in (28):

- (29) conditions on NOM [-r] - VOC [-ř] alternations
- the word must end in a consonant-cluster [-Cr].
 - the suffix under the influence of which [-r] becomes [-ř] must be I-headed.

The table in (30) illustrates (29a). No alternation can ever be observed with words ending in [-Vr].

(30)	Condition 1: -Cr. No alternation with [-Vr]-stems
	NOM VOC *VOC
	doktor doktor-e *doktoř-e "doctor"
	ponor ponor-e *pomoř-e "flotation line"
	mramor mramor-e *mramoř-e "marble"
	boxér boxér-e *boxéř-e "boxer"
	potěr potěr-e *potěř-e "spawn"
	tatár tatár-e *tatář-e "Tatar"

The table in (31) illustrates (29b), showing that non-I headed case-suffixes like *-a, -u, -ovi*, joined to words ending in [-Cr], do not trigger the alternation.¹⁷

17. The I-headed Instrumental suffix [-em] does not trigger the appearance of [-ř]: NOM *petr* but INST *petr-em*, **petř-em*. This fact has an obvious historical reason, for the suffix formerly was *-omь*, (cf., e.g., Slovak where the suffix is still *-om*). On the other hand, it is clear that Czech palatalizations function synchronically. A solution to that problem could be found in a proposal put forth in Scheer (1993: 77-78) concerning a similar diachronic process (the so-called New-High German diphthongization). The diachronic replacement of *o* by *e* implies the replacement of U in the Nucleus' internal structure by I. The U then is not linked to any position anymore and thus inaudible. But it remains present in the lexical recording of the suffix as a floating Element: INST [-em] = /-Uem/. I and U always residing on the same phonological line (cf. Scheer 1996), this U *synchronically* blocks the palatalization because it prevents the *-e*'s I from coming into contact with the stem-final consonant.

(31)

NOM	GEN	*GEN	DAT	*DAT	
petr̄	petra	*petř̄-a	petr̄-ovi	*petř̄-ovi	"Peter"
kmotr̄	kmotra	*kmoř̄-a	kmotr̄-ovi	*kmoř̄-ovi	"godfather"
katr̄	katru	*katř̄-u	katr̄-u	*katř̄-u	"(iron) bars"
metr̄	metru	*metř̄-u	metr̄-u	*metř̄-u	"meter"
kufř̄	kufřu	*kufř̄-u	kufř̄-u	*kufř̄-u	"suitcase"
cvikř̄	cvikřu	*cvikř̄-u	cvikř̄-u	*cvikř̄-u	"monocle"
sachř̄	sachřu	*sachř̄-u	sachř̄-u	*sachř̄-u	"Sacher"
mesř̄	mesřa	*mesř̄-a	mesř̄-ovi	*mesř̄-ovi	character from Brecht's <i>Beggar's opera</i>

5.4.2. *Syllabic analysis.* The representation of the alternating Nominative forms according to the standard framework exposed in Section 2 is shown in (32): the final cluster [-Cr] is a classical instance of a branching Onset where Constituent Government holds between the governor [-C] and its complement [-r].

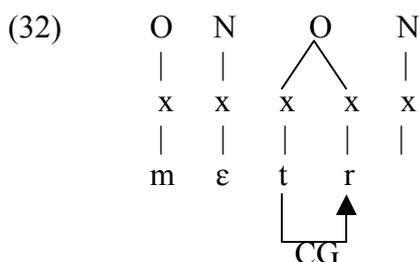
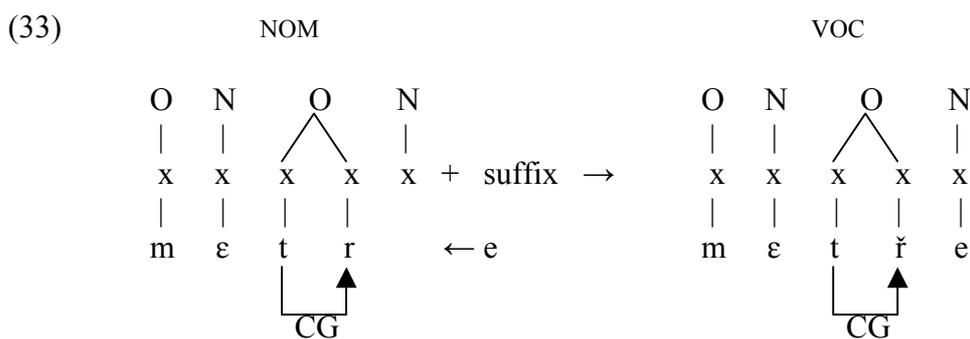


Figure (32) also shows that a final empty Nucleus follows the cluster [-Cr].¹⁸ Demonstrably, the VOC suffix [-ε] lexically lacks syllabic structure and will occupy this final empty Nucleus in the VOC form:



18. Cf. Kaye's (1990a) "Coda"-licensing principle.

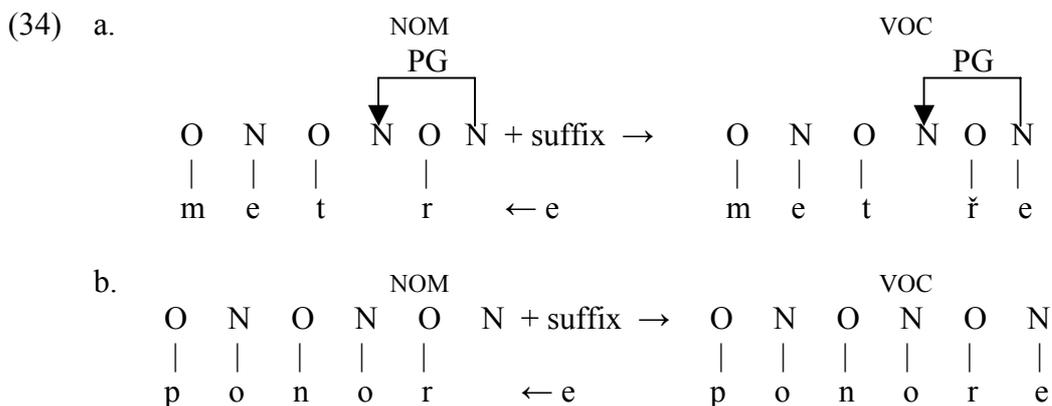
Recall from (29) that only stems with a final [-Cr] cluster are subject to the [r]-[ř] alternation: *Petr* - *Petř-e*, but *doktor* - *doktor-e*.

Classical syllabic representations like those in (33) are unable to account for this contrast: given the contact of the suffixal trigger with the stem-final Onset, why should complex Onsets [-Cr] react, yielding [-Cř-e], whereas simple Onsets [-Vr] remain unaffected [-Vr-e]?

The contact of the palatalising agent with the [-r] is not sufficient for palatalisation to be triggered. The presence of another consonant preceding that [-r] is required. A solution to this problem therefore is to be found in the syllabic structure. As seen above, the traditional model is unable to express the crucial contrast [-Cr] vs. [-r] in syllabic terms (all segments involved belong to the same constituent).

By contrast in a CVCV-frame, a major syllabic difference opposes [-Cr] and [-Vr]: an empty Nucleus separates the surface [-Cr], whereas the [V] and the [r] in [-Vr] are adjacent both on the surface and underlyingly.

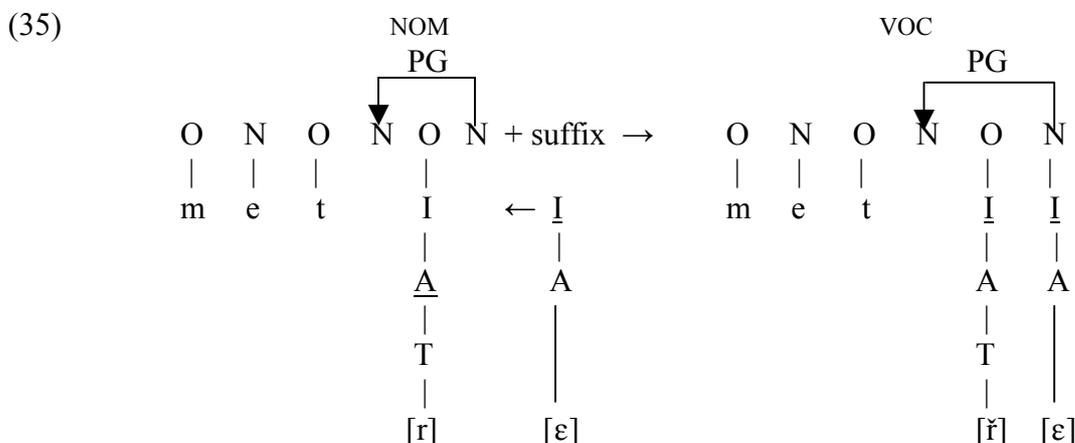
Figure (34) opposes the representations of *metr* - *metře* and *ponor* - *ponore* in a CVCV-frame:



As can be seen, the syllabic contrast "presence vs. absence of an empty Nucleus preceding [-r]" entails a difference in the government-structure of the VOC-forms: the alternating [-r] of *metr* is enclosed within an I-headed governing domain by virtue of the VOC-suffix [-ε], whereas the non-alternating [-r] of *ponor* is not.

I take this difference to be the reason for the alternation: the [-r] of *metr* alternates *because* it is enclosed within an I-headed governing-domain in the VOC-form. The [-r] of *ponor* remains unaltered *because* it is not enclosed within an I-headed governing-domain in the VOC-form.

5.4.3. *Segmental analysis*. Given the consonantal representations introduced above, the infrasegmental processes at work for the alternating [-Cr]-nouns are as follows:¹⁹



These processes are summed up in (36):

- (36) a. The voc establishes an I-headed governing domain where the governor is the final Nucleus and the governee the Nucleus situated between the [r] and the preceding [C].
 b. [r] is enclosed within this domain of I-influence and therefore becomes I-headed, too.

Under the above analysis, we thus face a process where a segment is forced to align its head on the head of a dominating governing-domain. This kind of phonological behaviour is but a case of segmental harmony such as discussed, e.g., in Lowenstamm and Prunet (1987), Charette (1994).

The central point of this section has now been made: in order to explain Czech [r]-[r̥] alternations by means of head-alignment, a CVCV-frame is *required*. In a framework assuming branching Onsets and Charette's Government-Licensing, [ε] would government-license [t] to govern [r]. No direct relation can be stated between [ε] and [r].

Given this situation, the absence of branching Onsets from the Czech syllabic inventory follows.

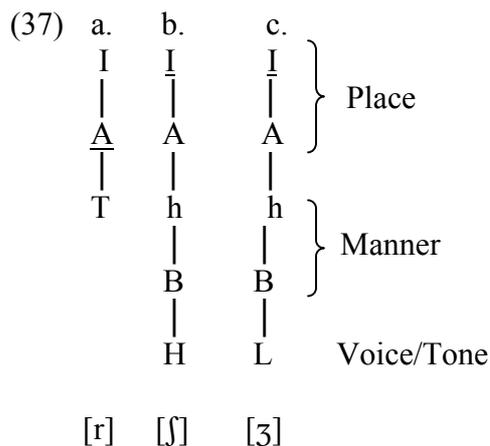
Before considering Czech Proper Government, let us see in the next two sections what implications result from the above analysis for the internal structure of consonants.

19. In the representations below, the internal structure is given only for the segments under discussion. Manner Elements do not appear.

5.5. The segmental shift from [r] to [ř]

In this section, I will show that the process of head-alignment I claim to be at work in NOM [r] - voc [ř] alternations, the segments' internal structures presented in section 5.2. and the articulatory description of [r,ř,ʃ,ʒ] corroborate each other.

Recall the internal structures of [r] and the postalveolar fricatives [ʃ,ʒ] repeated below:



We saw in Section 5.2. that the Place of articulation of [r] and [ʃ,ʒ] is defined by the same elements, both contrasting only as to the head-operator relation. In addition, [r] bears the trill-element T that [ʃ,ʒ] lack, and h is absent from [r] but present in the other segments.

If [r] is forced to become I-headed per head-alignment, the following internal structure is predicted to be the phonological identity of the resulting [ř]:



The configuration shown is pronounced [ř]. It is the predicted result of head-aligning (37a), viz. [r]. The resulting structure defines the Place of articulation of

a postalveolar ($\underline{I}-A$) that trills (T) (recall that the postalveolars $[\text{ʃ}, \text{ʒ}]$ are defined as $\underline{I}-A$).²⁰

This is the exact elemental translation of $[\text{ř}]$'s articulatory description given in 5.1: "the apex is trilling in the alveolar region exactly in the way $[\text{r}]$ is produced [...], the tongue body position is that of the postalveolar fricatives $[\text{ʃ}, \text{ʒ}]$, i.e., higher than that of $[\text{r}]$."

Furthermore, the articulatory observation that $[\text{ř}]$ is a "raised" $[\text{r}]$ perfectly fits with the notorious lowering-properties of A and the claim that $[\text{r}]$ is A-headed, whereas I is the head in $[\text{ř}]$ and $[\text{ʃ}, \text{ʒ}]$.

Following this analysis, the shift of $[\text{r}]$ into $[\text{ř}]$ has the characteristics displayed in (39):

- (39) $[\text{r}] \longrightarrow [\text{ř}]$
- a. a shift in the Place of articulation from an alveolar to a postalveolar consonant.
 - b. a shift in major classes from a Liquid to an Obstruent (adjunct of h).
 - c. no supply of Place-Elements takes place within this process. $[\text{r}]$ and $[\text{ř}]$ are isomorphic as to their Place-definition.

If this analysis is adequate, then it constitutes evidence for theories allowing isomorphic transformations of phonological expressions and challenges models that fail to make room for such switches affecting the head-operator relation, i.e., models in which all primitives within a phonological expression are equally weighted.

5.6. *Consequences for the phonological identity of major classes*

In this section, I should like to briefly explore the consequences of the $[\text{r}]-[\text{ř}]$ alternation for the elemental constitution of major classes.

According to the analysis proposed, the Liquid $[\text{r}]$ turns into the Obstruent $[\text{ř}]$ because the head-operator relation between A and I is inverted. The A-headed object $[\text{r}]$ is able to receive stress and to be "syllabic", whereas the I-headed object $[\text{ř}]$ is not.

Under such an analysis, headedness is the crucial property distinguishing $[\text{r}]$ from $[\text{ř}]$. The reason preventing $[\text{ř}]$ from being "syllabic" and a Liquid is the absence of A from its head position. In turn, the property enabling $[\text{r}]$ to be "syllabic" and a Liquid is its A-headedness. Hence, if it is necessary *and* sufficient to eliminate A from the segment's head-position in order to disqualify

20. In addition, as $[\text{ř}]$ is a fricative, h participates in its articulation, whereas it is absent from $[\text{r}]$.

the whole object to act as a Liquid, then the following general condition on Liquids obtains:

(40) Liquids are A-headed

The statement made in (40) gives a segment-inherent *reason* for a part of the *observations* generally referred to as sonority hierarchy: A being the most sonorant Element and given the obvious intimate relationship between sonority and "syllabicity", the prominent role played by A in (40) permits to derive the long observed affinity between Liquids and their ability to be "syllabic" from an inherent property shared by all Liquids.²¹

6. Proper Government in Czech

Having suggested that there are no branching Onsets in Czech, let us see how this language behaves with respect to Proper Government.

Czech has overt case-marking. Consider the behaviour of stem-internal *e* when case-markers are suffixed.²²

(41)	NOM	GEN	DAT	ACC	VOC	LOC	INST	
	pes	pøsa	pøsovi	pøsa	pøse	pøsovi	pøsem	"dog"
	lev	løva	løvovi	løva	løve	løvovi	løvem	"lion"
	otec	otøce	otøci	otøce	otøče	otøci	otøcem	"father"
	šev	šøvu	šøvu	šev	šøve	šøvu	šøvem	"seam"
	peň	pøně	pøni	peň	pøni	pøni	pøní	"trunk"
	konev	konøve	konøvi	konev	konøvi	konøvi	konøví	"watering can"

The observable *e-ø* alternations are typical instances of Proper Government. They parallel French Proper Government of the *røpa/røpa* type (10a): if a proper governor is available to its right, the properly governable vowel ([ϵ] in Czech, [ø] in French) has no phonetic realization. Its absence is obligatory in Czech, while it is optional in French.

In line with known properties of Proper Government (cf. its definition 2b), long vowels never alternate with zero in Czech:

21. Cf. Scheer (1996) for a more detailed discussion of this approach in relation to the sonority hierarchy.

22. "ø" here indicates an empty position, it does not refer to the front rounded vowel [ø].

(42) Proper Government cannot target long vowels

NOM	VOC	*VOC	
šéf	šéfe	*šøfe	"boss"
šev	šøve	*ševe	"seam"

The examples provided in (43) below show cases where properly governable vowels are realized if more than one consonant intervenes between governor and potential governee:

(43)	Stem	without suffix		with a [-V] case-suffix		with a [-CV] adj.-suffix	
	hudeb	hude <u>b</u>	GEN PL	hud <u>ø</u> b-a	NOM SG	hude <u>b</u> -ní	"music"
	kaváren	kavá <u>r</u> en	GEN PL	kavá <u>r</u> en-a	NOM SG	kavá <u>r</u> en-ský	"Café"
	loket	lok <u>e</u> t	NOM SG	lok <u>ø</u> t-u	GEN PL	lok <u>e</u> t-ní	"elbow"
	začátek	začá <u>t</u> ek	NOM SG	začá <u>t</u> ek-u	GEN PL	začá <u>t</u> eč-ní	"beginning"

As can be seen, these instances of Czech Proper Government are the equivalent of the French *secret* - **søcret* cases (10b): two consonants intervening between governor and governee inhibit the internuclear relation (*hudební*, **hudøbní*).

As to the Government-Licensing environment /CCeCV/ where two consonants precede a properly governable vowel, consider the examples hereafter:

(44)	Name of a man	Name of his wife or daughter ²³	
		✓	*
a.	Pát <u>r</u> ek	Pát <u>r</u> eková	*Pát <u>r</u> øková
	Davíd <u>p</u> ek	Davíd <u>p</u> eková	*Davíd <u>p</u> øková
b.	Pát <u>e</u> k	Pát <u>ø</u> ková	*Pát <u>e</u> ková
	Davíd <u>e</u> k	Davíd <u>ø</u> ková	*Davíd <u>e</u> ková

The names in (44a) contrast with the ones appearing in (44b) only by the absence of one of the consonants preceding the potential governee (underscored). This contrast entails the stability of the governee in case of a preceding [CC]-cluster (44a).

These instances of failing Proper Government are parallel to the French *crever* - **crøver* cases (10c).

It appears that, for all intents and purposes, Czech vowel-zero alternations behave like true instances of Proper Government.

In the next section, I will address the syllabic interpretation of Czech Proper Government.

23. The judgements I collected from native speakers are not completely uniform. Especially for the feminine (44a)-cases, all speakers prefer the forms with -e-, but a few do not exclude the ones lacking it.

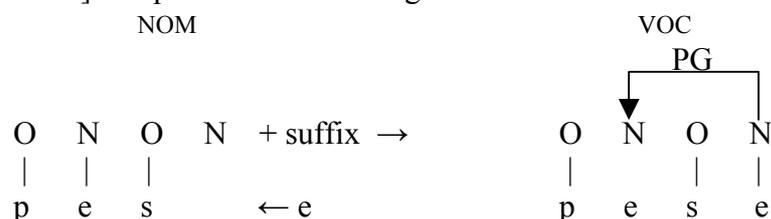
7. Syllabic interpretation of Proper Government in Czech

If there are no branching Onsets in Czech as suggested above, the standard analysis of Proper Government is not available for this language: no intervening or preceding branching Onset can be held responsible for the inhibition of Proper Government.

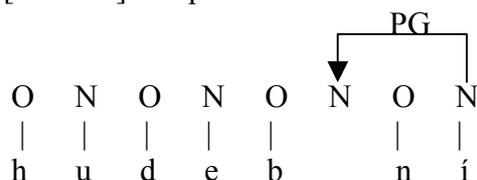
If there should be a theoretical account for Czech vowel-zero alternations, the only alternative based on Phonological Government is the model using a strict CVCV-structure I have introduced above.

I propose the representations in (45)²⁴:

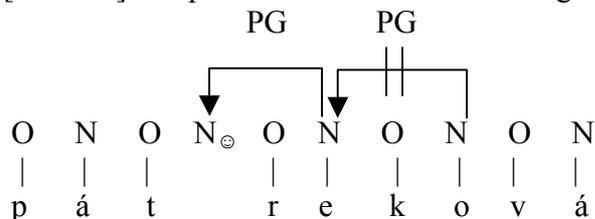
- (45) a. [CeCV]: Proper Government targets *-e-*



- b. [CeCCV]: Proper Government does not target *-e-*



- c. [CCeCV]: Proper Government does not target *-e-*



In the [CeCCV] configuration (45b), the proper governor cannot reach the *-e-* because it governs the empty Nucleus situated within the surface-[CC]. As to the [CCeCV] configuration, the properly governable *-e-* cannot undergo Proper

²⁴ - vowels that are not linked to any constituent are inaudible. Vowel-length is not represented in the following charts.

Government because it has to govern the empty Nucleus hidden within the surface [CC] preceding it.

The next section discusses possible consequences of the preceding proposals for Universal Grammar.

8. Proper Government as a device of Universal Grammar

Vowel-zero alternations can be observed in many genetically unrelated languages. The table below shows some of them.

(46) Language	Vowel that alternates with zero	Alternation	
		Obligatory	Optional
German ²⁵	ə	(x)	x
French	ə		x
Czech	ɛ	x	
Tangale ²⁶	u	x	
Moroccan Arabic ²⁷	i	x	

Their crosslinguistic existence and moreover the remarkable stability of the context controlling the appearance of the vowel suggest a common functioning. Proper Government is an attempt to accommodate the observed generalizations within an existing theoretical frame (see Scheer 1997 for more detailed discussion).

The uniform behaviour of these alternations suggests that the observed effects are a consequence of a unique principle, i.e., Proper Government. Proper Government, then, is to be assigned the status of a device of Universal Grammar. Proper Government fulfills the requirements for such a status since it does not make any reference to language-specific parameters. Under these provisions, the divergences of the particular alternations (optional/ obligatory, different

25. In (standard) German, schwas alternate with zero in free variation very much as in French: a word like *inneres* "interior (neuter)" where both -e-s are schwas may be realized *inneres*, *innøres* or *innerøs*. One schwa at least, however, is obligatory: **innørøs*. If schwa is at a distance of more than one consonant with respect to the next vowel, it is always realized: **innørstes*, **innørlich*.

For some words, only forms without schwa are attested, e.g., *Bummøler* "stroller" is the only possible realization, **Bummeler* being out, while the related verb may or may not exhibit the schwa: *bummeln* "stroll" as well as *bummøln* (the latter with "syllabic" [l]).

26. See Nikiema (1989) for a description.

27. Alternation described, e.g., by Kaye (1990b).

vowels concerned) are due to the language-specific conditions the general principle Proper Government must face when operating in the various languages.

If the UG-hypothesis is correct, Proper Government cannot run in a CVCV-frame in some languages while functioning in a non-CVCV model in some others. If there is only one principle driving the discussed alternations, the blocking effects of adjacent [CC]-clusters must have the same reason in all languages. Either in both French and Czech, Proper Government is blocked by an intervening governing domain, or the governor must govern the empty Nucleus situated within the [CC]-cluster in both languages. The model of Proper Government based on a CVCV-structure is compatible with both Czech and French. By contrast, I have argued that the standard model is only available for French. Hence, the universality of Proper Government provides an argument in favour of its CVCV-version.

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