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Absolute phonological ungrammaticality in Croatian

0 Introduction

It is not an easy task to define absolute *phonological* ungrammaticality, or ungrammaticality in general. It is even more difficult to supply a plausible definition of the term 'absolute'. Intuitively, it seems that ungrammaticality means the lack of representation of any kind: syntactic, semantic, phonological, etc. The reason for the absence of a string of representation of any kind could be approached from two perspectives. The absence could be relative in character, which means that the lack of a string can be explained on the basis of some interacting constraint. There is the well known case of syntactic homonymy: the surface string *the chase of the ship* can be given two respective interpretations based on the underlying structure of the sentence; more importantly, on the origin of the imbedded structure ($[$*the ship*$]_{\text{NP}}$) in either subject or object position): (i) *someone has chased a ship* and (ii) *it was the ship which did the chase.* There are no constraints of any kind that could prevent one is assuming that both underlying representations are correct, i.e., the surface phonological form of the otherwise *un*ambiguous underlying syntactic structure is ambiguous. In contrast to this, *the irrigation of the river* is phonologically (and syntactically) unambiguous: the semantic component of the grammar precludes the insertion of $[$*the river*$]_{\text{NP}}$ into subject position of the underlying structure. The surface form, accordingly, can only mean: *someone did the irrigation of the river* with $[$*the river*$]_{\text{NP}}$ positioned in object position. However, whether semantics can have access to the syntactic component is still a hotly debated issue. Chomsky (1965), for example, argues for the independence of the syntactic component of all the other modules: it is a matter for pragmatics to decide whether there are rivers which do the irrigation (for) themselves. Even if one disregards the theoretical issues behind the solution, this kind of ungrammaticality can be termed RELATIVE. In other words, there is a solution behind this 'anomaly': the semantic component can be viewed as a higher ranking constraint which filters out ungrammatical structures. As opposed to this, ABSOLUTE means that no explanation can be given for the absence of a given string, i.e., this ungrammaticality is absolute in the sense that it cannot be explained on the basis of any constraint whatsoever. Absolute phonological ungrammaticality then, at this stage, means that the absence of a phonological string is not reducible to the interaction of either some phonological constraints and the 'underlying' form of the string or to some intermodular relations.

The article is structured in the following way: in **1** the notion of absolute phonological ungrammaticality (APU) is defined, in **2** Dynamic APU is shown, in **3** it will be shown in what way APU can be remedied and in **4** the Croatian case will be exemplified in detail.

1 Absolute phonological ungrammaticality (APU): kinds and examples

According to Törkenczy (2001a,b), APU is a gap, the lack of a string of segments that is systematically missing as an expression/representation for *phonologically* statable reasons; in other words, a given string is illicit with respect to a phonological constraint. Kager's (1999) interpretation is given in (1): there is input to the phonological component but there is *no* output.

(1) INPUT → PHONOLOGY → OUTPUT = ∅

There are two kinds of APU: STATIC and DYNAMIC. Static APU means that there exists no input representation that the phonology maps onto a specific output representation (i.e., there does not exist a possible output representation to *any* input). Typical examples include *static phonotactic* constraints: in English, for example, the second member of a branching onset has to be a sonorant continuant if the first consonant happens to be an obstruent other than the coronal fricative s; also operative in (modern) English is the constraint that uː cannot follow a postconsonantal glide w. The historical cluster simplification of *two* (Old English *twā*) and *who* (*hwā*), for example, shows this: twaː > twɔː> twuː > tuː (cf. Old English *wā* 'woe' in which the there is no simplification).[1] This constraint does not apply to any other back vowel or to uː preceded by a single w or a w preceded by s (cf. *quorum* kwɔːrəm, *quo* kwəʊ *quarry* 'kwɒri, *woo* wuː, *swoon* swuːn, *swoop* swuːp, etc.). Other constraints operative in other languages can also be mentioned: in Korean there are no wu/wo and ji/je clusters; similarly, in Croatian ji clusters are systematically absent (at least, in lexical, i.e., non-function, words). Some of these restrictions can be explicated on the basis of OCP effects (cf. McCarthy 1988).

The other, theoretically more compelling, case of APU is termed DYNAMIC. This instance of APU can be formulated in the following way: a specific input representation is not mapped onto any output representation (i.e., there is no output to the input; Törkenczy 2002 and references therein). This means that a morphological operation (affixation, reduplication, stress shift, truncation, etc.) is blocked if it should produce a string which is in violation of a phonological constraint. There is no phonological repair: the string that ought to be produced by the application of a regular phonological operation is non-existent. As a consequence of this, defective paradigms arise which, however, may be remedied in a number of ways, or,

[1] English is less systematic on this issue than the picture above suggests: cf. *swoon* vs. *sword*. The reason for this is at least twofold: (i) this constraint may only have been operative in a given period of this language and does not affect words that have entered the language at a later stage (this "relativity" of diachronic rules has a time honoured status in diachronic linguistics) or to (non-low) back vowels that have come into existence subsequent to the operation of this rule (cf. *sword* sɔːd vs. *sward* swɔːd 'upper layer of earth'; recast in (more) modern terminology: some words are in a counter-feeding order with respect to the rule above due to the two factors mentioned above) and (ii) modern English is heterogeneous in that it inherits forms from various historic Old English dialects (Old English *swāpan* should have given modern English *swope* rather than *swoop* (cf. *woe*)). For a similar loss of w before u see Old Norse, for example: Common Germanic **wulfaz* > Old Norse *ulfr* (cf. English *wolf*) vs. **swerðam* > *sverð* (no loss since the vowel is front; for the opposite situation see English *sword* < Old English *swurd*/*sword*).

alternatively, may be left unrepaired: in the latter case, there are real GAPS in the paradigms which are not filled by alternative forms of some origin; in the former, however, the gap is filled by a form produced by the application of an alternative/recessive phonological rule or by a form coming from another paradigm. Dynamic APU is apparent in those cases in which the target of a given phonological operation consists of strings identical (or nearly identical) in segmental make-up but whose behaviour differs with respect to this phonological operation: the majority of the designated strings undergoes a regular phonological process but the very same process is blocked in a sub class of these strings for no apparent reason. Nevertheless, it may still be possible to subject this sub class of offending strings to a phonological regularity. This morpho-phonological process, however, may be less productive synchronically and confined to a class of morphologically marked strings but may still be activated in those cases in which the more productive process fails to apply (for some phonologically statable reason). In other words, the more productive process is complemented by a less productive one in those cases in which the resulting string would be ungrammatical vis-à-vis this more productive process[2] (this will be shown to be the Croatian case).

As a good case to start from, consider the defective verbal paradigm of the Hungarian indefinite imperative suffix *-j* (with possible secondary processes such as assimilation). The examples in (2) show that if the stem of a verb ends in single consonant, the imperative formation works exceptionlessly. However, the situation is more complex if the stem ends in two consonants: such consonant clusters are usually bogus in nature, i.e., there is a vocalic slot between the two consonants which is either silenced (hence mute/unpronounced) by proper government coming from the following pronounced vowel or pronounced as a full vowel (modified possibly by vowel harmony). Given that the imperative suffix *-j* consists of a consonant only (cf. Siptár & Törkenczy 2000, for example), the appearance of the vocalic slot is expected (there is no possibility of silencing the vowel as there is no following pronounced vowel), as per Government Phonology; for an extensive discussion of GP issues (e.g., proper government) and references, cf. Szigetvári (1999).[3]

(2) a. csiná**l**+**j** 'do 2p.indef.' → csiná**lj**
köhö**g**+**j** 'cough 2p.indef.' → köhö**gj**
kö**p**+**j** 'spit 2p.indef.' → kö**pj**
e**s**(ik)+**j** 'fall 2p.intr.' → e**ss**

[2] The question of static versus dynamic APU raises some theoretical issues: are "static" restrictions really static, or could they be analysed as dynamic in nature, filtering out ungrammatical structures: this is particularly intriguing in the case of newly borrowed words which violate the phonotactic constraints of a language. Does a word like *gnu* ever enter the English lexicon as gnuː yielding ultimately the surface nuː/gəˈnuː? Whether one is dealing with an active process or not, the surface form of the word has to conform to a language specific template. A similar question arises in the case of monosyllabic borrowings in Hungarian: these words appear to be mapped onto a CVCC template (cf. *blikk*, *sikk*, *tikk*, *sokk*, *blokk, klikk*, *blicc*, etc.). However, theoretically speaking, it is not clear whether this can be viewed as a dynamic process whereby *blik* is "repaired" to *blikk*.

[3] Note that in Hungarian orthography, *s*, *sz* and *cs* have the following IPA values respectively: ʃ, s, and ʧ. The accents over the vowel letters indicate length (thus *ó* is oː, for example).

b. fo**szl**(ik)+**j** 'fray' →*fo**sz**o**lj**/*fo**szlj**
csu**kl**(ik)+**j** 'hiccup' →*csu**k**o**lj**/*csu**klj** (cf. bó**k**o**lj** 'bow' (imp.), csó**k**o**lj** 'kiss' (imp.))
össze**csukl**ik 'collapse' →?csu**k**o**lj**on össze
fe**sl**(ik)+**j** 'come unstitched' →*fe**s**e**lj**/*fe**slj** (cf. fele**s**e**lj** 'talk back' (imp.), bű**z**ö**lj** 'smell' (imp.))
ve**dl**(ik)+**j** 'shed skin' →*ve**d**e**lj**/*ve**dlj** (cf. ve**d**e**lj** 'gulp' (imp.))
bo**ml**(ik)+**j** 'disintegrate' →*bo**m**o**lj**/*bo**mlj** (cf. o**m**o**lj** 'fall in' (imp.))
fe**ksz**(ik)+**j** 'lie down' →*fe**kszj**/*fe**k**e**szj**/*fe**k**e**ssz**
vere**ksz**(ik)+**j** 'fight' →*vere**kszj**/*vere**k**e**szj**/*vere**k**e**ssz**
vona**gl**(ik)+**j** 'writhe' →*vona**g**o**lj**/*vona**glj** (cf. lova**g**o**lj** 'ride' (imp.)), etc.

The examples in (2) need some clarification: theoretically, the nature of the consonants in (2b) mitigates for the recognition of bogus clusters (the consonants in question are not homorganic, the sonority profile is not falling, etc.). The problem, however, is that the enclosed vocalic slot is never pronounced (the bogus cluster is not dynamic, that is): the choice of the suffix prevents the surfacing of the vowel. The verbs in (2b) all belong to the class of *ik*-verbs: i.e., the third person singular *-ik* suffix contains a full vowel which properly governs the enclosed vocalic slot (*bomØlik* > *bomlik*). However, the verb *bűzØlik* > *bűzlik* 'he smells' shows that the bogus cluster can also be dynamic: *bűzölj* 'smell 2p.intr.'. It is tempting to claim that the choice of the suffix depends on whether the bogus cluster is dynamic or not (it should also be noted, however, that the suffix *ik* is not restricted to bogus clusters,[4] cf. (2a); for a fuller explication of these issues see Siptár & Törkenczy 2000). The issue is further complicated by such factors as the surface homophony of lexically full and empty vowels (it is usually assumed that those vocalic slot which are lexically supplied with melodic material do not exemplify vowel–∅ alternation, whereas those which contain no melodic material do show vowel–∅ alternation depending on the availability of proper government; cf. Szigetvári 1999, for example). However, it is possible for a completely empty vocalic slot to be interpreted identically as a slot which possesses no melodic specifications: it is a language specific issue how empty slots are interpreted and in what manner their surface extrapolation may be influenced (e.g., by vowel harmony in Hungarian). If two vowels are phonetically identical, it is their behaviour alone which distinguishes them: cf. *vedelek* (i.e., *ved***E***lek*) ∼ **vedlek* 'I gulp' (melodically specified vowels cannot be properly governed; this is shown by the capital **E**) vs. *vedlek* (i.e., *vedØlek*) ∼ **vedelek* 'I shed skin' (melodically empty vocalic slots can be properly governed). A proper analysis of these issues is largely tangential for the present purposes.

There are other examples of APU (see (3a, b) and (c) below): in Swedish (Iverson 1981), for example, there are gaps in the indefinite singular paradigm of neuter dd final adjectives (the form that could be produced by the application of a regular phonological is missing although no phonotactic restrictions are vi-

[4] This is just one side of the implication, however: while it is true that *-ik* attaches not only to those verbs that end in a bogus cluster (with the possibility of an *un*disclosable empty vowel: cf. *lovagolj* vs. **vonagolj*), every verb that lacks an imperative with *-j* is *necessarily* an *-ik* verb (*bűzlik*, *vonaglik*, *csuklik*).

olated). In Russian (Halle 1973; Hetzron 1975), some second conjugation verbs ending in d, t, s, z have no first person singular non-past forms. In Croatian (Starčević 2001a,b), some nouns ending in non-coronal clusters do not have the regular genitive plural form.

(3) a.

ROOT	NON-NEUTER: ∅	NEUTER: t	
V	sløː	sløːt	'blunt'
Vt	slɛːt	slɛtː	'smooth'
Vd	spɛːd	spɛtː	'tender'
Vtt	rɛːt	rɛtː	'right'
Vdd	rɛːd	*rɛtː	'scared'

b.

	1SG NON-PAST			1SG NON-PAST
'win'	*pobežu	vs.	'give birth'	rožu
'climb'	*lažu			
'talk rudely'	*deržu			
'stir up'	*mucu	vs.	'joke'	šucu

c.

NOM.SING.	GEN.PLUR.	VS.	NOM.SING.	GEN.PLUR.
banka[5] 'bank'	ba**n**a**k**a		šunka 'ham'	*šu**n**a**k**a
ujak 'uncle'	u**j**a**k**a		majka 'mother'	*ma**j**a**k**a
puška 'rifle'	pu**š**a**k**a		njuška 'snout'	*nju**š**a**k**a
tetka 'aunt'	te**t**a**k**a		tvrtka 'company'	*tvr**t**a**k**a

As can be seen from the examples in (3), the resulting surface forms do not seem to violate any language-specific constraint: there are well formed strings of identical (or, at least, nearly identical) segmental structure alongside those which, for no explicable phonological reason whatsoever, are simply missing as licit structures.

2 Types of dynamic APU

Törkenczy (2001a) describes two types of dynamic APU according to the scope of the phonological constraint: ARBITRARY and SYSTEMATIC. The latter (see (4a) below) means that the phonological constraint applies generally to the entire system: in Turkish, this constraint dictates that suffixed forms have to contain at least two syllables (Orgun & Sprouse 1997). In contrast to this, arbitrary APU can be formulated in the following way: a given phonological constraint does not apply to the whole of the system, i.e., there may be morphological/phonological/etc. environments in which its effects are revoked (cf. the local behaviour of the English deadjectival verb forming suffix -*en* and the *absence* of a general constraint banning the occurrence of two sonorant segments in two consecutive onset positions).

[5] In this paper, the traditional set of orthographic conventions is used in citing Croatian data. The following set of lesser-known correspondences should be born in mind: *c* (IPA ʦ), *š* (ʃ), *ž* (ʒ), *č* (ʧ), *dž* (ʤ), *ć* (t͡ɕ), *đ* (d͡ʑ), *lj* (ʎ), *nj* (ɲ). The orthography of the language does not mark long vowels since length is not phonemic in Croatian (as seems to be the usual case in all Slavic languages: cf. Cyran 2003, and Starčević 2002 for the Croatian case). The length of vowels depends on stress, syllable structure, etc. Vocalic length, however, is again largely immaterial for the present purpose and will only be shown if relevant.

(4) a. **Turkish suffixed forms**

ROOT	SUFFIXED FORMS
sol^{y} 'note G'	sol^{y} üm 'my G'
doː 'note C'	*doːm 'my C'

b. **English deadjectival verb forming -en**

ADJ.	VERB		ADJ.	VERB	
bla**ck**	blacken		whi**t**e	whiten	
si**ck**	sicken		dea**f**	deafen	
di**m**	*di**mm**e**n**	vs. wo**m**a**n**	du**ll**	*du**ll**e**n**	vs. su**ll**e**n**

c. **Hungarian 2Sg.indef.pres. -sz ∼ -Vl suffix alternation**

álmo**dsz**/*álmodol 'dream'	té**psz**/*tépel 'tear'
ke**nsz**/*kenel 'smear'	mé**rsz**/*mérel 'measure'
olva**s**o**l**/*olvasosz 'read'	má**sz**o**l**/*má**sz**o**sz** 'climb' vs. **sz**ö**sz** 'fluff'
né**z**e**l**/*né**z**e**sz** 'watch'	vs. **z**ú**z**a 'gizzard'
tanu**lsz**/*tanu**l**o**l** 'study'	vs. da**l**o**l** 'sing', fe**l**e**l** 'answer', ho**n**o**l** 'dwell'

As can be seen in (4b), the English deadjectival suffix *-en* attaches to obstruent final monosyllabic adjectives only. If the input to this morphological operation should end in a sonorant, the process is blocked, i.e., there is no output. In other words, this is a phonologically conditioned morphological operation. It should also be obvious that the ban on two consecutive occurrences of sonorant segments is not systematic, i.e., there are strings which (superficially) violate the constraint (cf. *woman*). In Hungarian (4c), the choice of the suffix (*-Vl* versus *-sz*; V marks a vowel modified by harmony) depends on the nature of the stem final consonant: if it is a fricative, the suffix is *-Vl*, whose vowel is subject to harmonising (*mászol*, *nézel*). In all other cases, it is impossible to have this suffix (**kenel*, **tanulol*, **tépel*). It can be concluded that the unrestricted variant of the above suffix is *-sz*: it occurs after obstruents (minus the fricatives which take the alternative ending *-Vl* and minus the affricates which appear to be rare in this position) and all sonorants. This can be termed a phonologically conditioned non-phonological alternation (cf. Rebrus & Törkenczy 2000): it is phonological since it is sensitive to a well defined phonological class (the fricatives), but it would be difficult, if not impossible, to find a relevant common phonological denominator to the two alternating suffixes (this can be contrasted with the choice of the English plural suffix s, z, ɪz). However, the ban on the co-occurrence of two fricatives (or two sonorants, for that matter) in two consecutive onset positions does not extend to the entire system of the language: *szösz*, *zúza*, *dalol*, etc. are licit strings. This is why the term arbitrary seems to be applicable to this kind of APU.

3 Is APU remedied and how?

In the last few paragraphs we have given examples for different kinds of APU. It is also relevant from a theoretical point of view that APU is usually remedied, i.e., in many cases the gaps left void of grammatical strings are, nevertheless, filled. The gaps are usually filled by alternative forms, by strings created by the application of some alternative suffixes, etc. According to Törkenczy (2001a), APU can either be remedied or left as it is: in the latter case, one is dealing with OVERT APU (i.e., the gaps are visible at the surface: see the Swedish, Russian, Turkish examples), in the former with COVERT APU. Covert APU means that the gaps created by the failure of some rule application are not visible because there has been some repair done. In other words, the gaps are masked by alternative forms.

APU can be remedied in a number of ways. One of the possibilities is by the so-called symbiotic stems (Törkenczy 2001b): symbiotic means that there are two parallel stems in the lexicon and if it should happen that one stem contains gaps at given points in certain paradigms, the other stem fills the empty slots, i.e., APU is remedied/covert. In Hungarian, some verbs have symbiotic stems: in (2b) it has been demonstrated that some verbs lack the imperative form. These gaps are, however, filled by the symbiotic stem: **verekszj*/**verekeszj*/**verekessz* is substituted by *verekedj* 'fight (imp.)', i.e., by a grammatical string. There can be instances of syntactic repair: ungrammatical forms are substituted by periphrastic syntactic constructions, e.g., **csukolj*/**vedelj*/**foszolj*/**feselj* is repaired as *Hagyd abba a csuklást/vedlést/foszlást/feslést* 'stop hiccuping/shedding your skin/fraying'. In English, in contrast to this, the absence of deadjectival *-en* forms can be repaired by zero suffixation/conversion: e.g., *dimm* (adj.) $\nrightarrow$ **dimmen*; → *(to) dim*, etc. In Croatian, there exists an alternative genitive plural suffix which is attached in those cases in which the regular suffix would produce an illicit string: e.g., *majka* 'mother' $\nrightarrow$ **majaka*; → *majki*, etc. (more on this in the next section).

4 The Croatian case

4.1 Vowel–zero alternation and the empty vowel

In Croatian, there are cases of vowel–zero alternation (cf. (5) below). The only vowel which alternates with zero is *a* (in the traditional school grammar literature, this a is called *nepostojano a*, i.e., non-stable *a*, cf. Raguž 1997).

			NOM.SING.	GEN.SING.		NOM.SING.	GEN.SING.
(5)	a.	'chum'	mom**a**k	momka	'drake'	pat**a**k	patka
		'pebble'	šljun**a**k	šljunka	'elbow'	lak**a**t	lakta
		'cough'	kaš**a**lj	kašlja	'whisper'	šap**a**t	šapta
		'thumb'	pal**a**c	palca	'rope'	konop**a**c	konopca
		'deficit'	manj**a**k	manjka	'male frog'	žab**a**c	žapca
	b.	'silence'	taj**a**c	tajca			
		'clown'	paj**a**c	*pajca/pajaca			
		'rotten'$_{\text{adj.}}$	kvar**a**n	kvarnog			
		'trout'	šar**a**n	*šarna/šarana			

As can be seen in (5a) and (b), it is predictable which vowel undergoes syncope potentially if followed by a full vowel (it is always a), but it is unpredictable whether syncope really takes place. It is a lexical matter which vowel alternates with zero (cf. a similar case in Hungarian: *seper* 'sweep' ∼ *sepri* 's/he sweeps it' vs.

(*le*)*teper* 'get down' ∼ (*le*)*teperi*/*(*le*)*tepri*; *takony* 'snot' ∼ *taknyos* 'snotty' vs. *Bakony* ∼ *bakonyos*/**baknyos* 'resembling Bakony', *bokor* 'bush' ∼ *bokrot*/**bokorot* 'bush (acc.)' vs. *motor* 'motor cycle' ∼ *motort*/**motrot* 'acc.'). In (10), a formal representation will be attempted.

Vowel∼zero alternation is constrained by strict structural and melodic restrictions. In the so called traditional Government Phonology framework (Kaye et al. 1990), it was assumed that there existed a number of ways of silencing a vowel: (i) by proper government, (ii) by parametric licensing word-finally, and (iii) by on inter-onset governing relationship. Proper government is also restrained: the target of proper government must be followed by a pronounced vowel and cannot be separated from it by a consonantal governing domain (i.e., by a branching onset or a coda onset cluster). It has also been assumed that proper government can only propagate from right to left and is not allowed to cross governing domains. The advent of CV/VC Phonology (Lowenstamm 1996; Dienes & Szigetvári 1999; Szigetvári 1999) has brought about the ultimate demise of consonantal relationships: given the premise that there can be no identical skeletal positions next to each other, branching onsets and coda–onset clusters could no longer host two C positions either. This does not mean the total eradication of inter consonantal relationships, however: coda–onset clusters still exist but are reformulated as CC clusters with an intervening empty vocalic slot, and strict melodic restrictions holding between the two consonantal members. At this stage, it is obvious why proper government is unable to cross a consonantal "domain", i.e., why there is no syncope preceding a branching onset or a coda–onset cluster: proper government always hits the immediately available vocalic slot, and there *is* one between any two consonants (in other words, there are no instances of multiple proper government).

As far as melodic restrictions are concerned, it seems that it is only melodically empty vocalic positions that alternate with zero. The question of empty vocalic positions is not straightforward, but a more in depth analysis will not be attempted (cf. Kaye 1995; Harris & Lindsey 1995; Szigetvári 1999; Scheer 1998a,b among many others). It will, nevertheless, be assumed that an empty V is capable of alternating with zero and if it is not properly governed, its extrapolation will receive language specific manifestations: in English, for example, an empty V is pronounced as either ə or ɪ, in Croatian the empty vowel is pronounced a (the fact that it may be identical to the extrapolation of the melodic element **A** is irrelevant phonologically; it is the behaviour of the two that is crucial). Thus, restrictions on the interpretation of an empty V are twofold: structural and melodic.

The empty vowel, as we have seen, can be syncopated (i.e., properly governed) if it is followed by a pronounced vowel and the two vowels are not separated by more than one consonant (some language specific constraints are disregarded at this point): e.g., *family* 'fæmɪlɪ∼'fæmlɪ. In English (as opposed to Croatian), syncope is optional (apart from cases where it has been lexicalised: cf. *every*, *comfortable*, *vegetable*), but there are cases in which it is impossible: cf. *separate* (adj.) 'sepərət∼'seprət (optional) vs. *separate* (v.) 'sepəreɪt∼*'sepreɪt (impossible). It seems that syncope is impossible if the target is followed by a vowel bearing a certain degree of stress. An explanation for this phenomenon-comes from VC Phonology (Szigetvári 1999): there is a close relationship between a stressed vowel and government. In CV/VC Phonology there are two forces emanating from a vowel (and, under limited conditions, from a consonant): government and licensing. The latter represents a force which supports melodic material, whereas the former destroys it: a vowel which is targeted by government loses its inherent loudness (as per VC Phonology) and becomes mute, i.e., syncopated (a properly governed vowel is *not* pronounced, i.e., it is silent/mute).

According to Szigetvári (1999), a stress domain contains a pronounced VC unit (the vowel need not necessarily be stressed) and any number of VC units extending up to but not containing the next stressed vowel: e.g., [ˈsepərət] is one stress domain but [ˈsepər][eɪt] is two. The Antipenetration Constraint (AP) states that government cannot cross a stress domain (licensing can, however): this explains why syncope is possible in [ˈsepərət], but impossible in [ˈsepər][eɪt]. In the latter case, the government coming from the stressed vowel eɪ cannot cross the domain and (properly) govern the empty vowel ə in the next domain (there are no such restrictions in the former case since there is only one domain). This explains rather naturally the absence of syncope (and also seems to be supported by other phenomena).

4.2 The Antipenetration Constraint applied to Croatian

It has been shown in the previous paragraph that the AP has an important effect on the possible target of syncope: if the empty vowel is followed by a stress domain, there is no syncope and accordingly its pronunciation (as a language specific manifestation of the empty vowel) is obligatory; if, on the other hand, there is no interfering new stress domain, the targeted vowel remains silent. According to Kaye (1995), there is a close interface between morphology and phonology: there are various cases of morphological concatenation ([AB], [[A]B] and [[A][B]], i.e., synthetic, analytic suffixation and compounding, respectively) which determine, among a number of issues, whether proper government is available or not: if there are internal domains (i.e., in the cases [[A]B] and [[A][B]]), there is no syncope.[6]

[6] It seems that Szigetvári's (1999) and Kaye's (1995) accounts are identical. However, the similarities are superficial only. Kaye, in accordance with standard GP, assumes that every string ends in a vocalic slot which can be silenced parametrically (i.e., there are languages which allow words to end in a consonant). This silencing of the vowels, however, can only occur if the empty vowel is immediately followed by a domain boundary, i.e., C∅]. The domain silences the vowel but, as a consequence of this, this empty vowel cannot properly govern another vowel (only pronounced vowels, irrespective of whether they contain melodic elements or are empty (but pronounced), are allowed to properly govern). The domains postulated by Kaye are, nevertheless, connected to stress: the existence of a domain is signalled by stress ([[A][B]], for example, contains three stress domains: [A], [B] and [AB]; [[A]B], however, only two: [A] and [AB]). The difference between AP and a morphological domain is exactly in the morphology bit: AP may (but need not necessarily be) connected to morphology: *about* and *separate* (v.) both contain two stress domains ([ə][baʊt] and [ˈsepər][eɪt]) but only the latter can be regarded as morphologically complex. In Kaye's analysis, however, domains are inherently intertwined with morphology (i.e., [*about*] is one, but [*sepa*][*rate*] is two morphological domains). In addition to this, AP has a cross-linguistic relevance which lies outside the scope of the present analysis. Let it serve to the detriment of Kaye's analysis that the supposed non-existence of an [A[B]] domain is related to the interaction between a domain-boundary and the empty nucleus: the empty vowel *cannot* be

AP, when applied to Croatian, yields the following results: syncope is obligatory whenever government is available (cf. (6)).

(6) **The Antipenetration Constraint applied to Croatian**

NOM.SING	mom**ak** (m.) 'chum'	sestra (f.) 'sister'	stablo (n.) 'trunk'
OBLIQUE CASES (SING./PLUR.)	momk**V**	sestr**V**	stabl**V**
GEN.PLUR.	mom**a**ka	sest**a**ra	stab**a**la

As can be seen, in all oblique cases (singular and plural alike) syncope of the empty vowel is obligatory: e.g., *momku* 'dat./loc.sing.', *momcima* 'dat/loc.plur.', *sestro* 'voc.sing.', *sestre* 'nom.plur.' (stress is on the first syllable in all of the words), etc. The only exception to this generalisation is the genitive plural suffix -*a*: there is (obligatorily) no syncope. The following structural representation can be given: [ˈ*momØka*] > *momka* (one stress domain, the empty vowel can be syncopated) vs. [ˈ*momØk*][*a*] > *momaka* (two domains, the genitive plural suffix (as per AP) is unable to govern the empty vowel, which in turn has to be pronounced as the melodically empty vowel of Croatian, i.e., as a). Translated into Kaye (1995), the situation can be depicted as [*momak*][*a*] vs. [*momka*], i.e., in the latter case morphology is *synthetic* (the gen.sing. of *momak* cannot be distinguished from a monomorphemic word like *pismo* 'letter'), in the former it is compounding that is at play: the genitive plural suffix is phonetically long and has secondary stress (as can be independently shown by its ability to initiate a question intonation), which excludes analytic suffixation of the [[A]B] type. So, one can say that the genitive plural suffix is really -*ā*, a domain-forming suffix with (secondary) stress.

What other evidence is there is favour of regarding the suffix -*ā* to be functionally different from the genitive singular suffix -*a*, for example? In the first place, as demonstrated above, the suffix never can never properly govern, i.e., cause syncope (cf. ˈ*smokva* 'fig nom.sing.' vs. ˈ*smokve* 'gen.sing.' vs. ˈ*smokava* 'gen.plur.'). In addition to this, it can change the nature of lexical pitch (a rise is lowered as opposed to a low which remains unchanged): e.g., ˈ*písmo* 'letter'∼ˈ*pìsama*, ˈ*stáblo* 'trunk'∼ˈ*stàbala*, ˈ*góvno* 'excreta'∼ˈ*gòvana* vs. ˈ*svjètlo* 'light'∼ˈ*svjètala* (no change in pitch). The suffix -*ā* also regularly lengthens the preceding vowel (even the syncope-prone vowel gets lengthened): *izru*ˈ*čenja* 'extradition gen.sing.'∼*izru*ˈ*čenja*, ˈ*pisma* 'letter gen.sing.'∼ˈ*pisāma*, ˈ*momka* 'chum gen.sing.'∼ˈ*momāka*, ˈ*rđa* 'rust nom.sing.'∼ˈ*r̄đa* (with a lengthened syllabic *r*), ˈ*crkva* 'church nom.sing.'∼ˈ*crkāva*, etc. None of these systematic changes occur with other inflectional suffixes (especially the genitive singular suffix -*a* in case of masculine and neuter nouns) or in case of compounding.[7]

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silenced in a CØ[environment as per theoretical reasons (as opposed to the CØ] environment referred to above).

[7] Croatian is one of the few pitch accent languages (cf. Cruttenden 1986): this basically means that pitch is given lexically and can be used for contrastive purposes. Traditionally (e.g., Raguž 1997) four different types of pitch are recognised: (i) a LONG FALL (e.g., *mâjka* 'mother', *dân* 'day', *cȓkva* 'church'), (ii) a LONG RISE (e.g., *rúka* 'hand', *túga* 'sorrow', *ráditi* 'to work', etc.), (iii) a SHORT FALL (e.g., *kȕća* 'house', *pȑst* 'finger', *ȍko* 'eye', etc.), and (iv) a SHORT RISE (e.g., *vòda* 'water', *vòditi* 'to lead', etc.). In this short presentation, the

The data amassed above show that the genitive plural suffix is not on a par with other inflectional suffixes and should be regarded as a stress domain which can influence the stem in a number of ways.

4.3 The suffix -ā and consonant clusters

Up to this point the unrestricted variant of the genitive plural suffix has been taken to be represented by the suffix -*ā*. This, however, is not the only suffix which represents the genitive plural: it can also be represented by the suffixes -*u*, -*i* and -*iju*. These suffixes, however, are extremely limited and the number of strings they can attach to is minimal: -*u*, for example, attaches to three nouns only (*ruku* 'hand', *nogu* 'leg' and *slugu* 'servant' alongside the regular *ruka*, *noga*, *sluga*), the number of nouns *iju* attaches to can also be listed exhaustively (*očiju* 'eye', *ušiju* 'ear', *noćiju* 'night', *prsiju* 'breast', *prstiju* 'finger', *gostiju* 'guest', *noktiju* 'nail' and a few others). It is necessary to investigate the distribution of the suffix -*i*. It *regularly* attaches to a marginal class of those feminine nouns that end in a consonant or in o (which historically derives from l, i.e., a consonant): e.g., *čast* 'honour', *vlast* 'government', *kost* 'bone', *riječ* 'word', *kokoš* 'chicken', *kap* 'drop', *krv* 'blood', *noć* 'night' (also *noćiju*), *bol* 'pain', *misao* 'thought', *pogibao* 'dying'; ca. 15 nouns). What is crucial for the present purposes is that this marginal suffix is used to remedy APU in those cases in which the attachment of the regular suffix -*ā* is impossible: e.g., **majaka* is replaced by the grammatical *majki* (note that the suffix -*ā* is regularly attached to nouns of all three genders: e.g., *ujaka* 'uncle (masc.)', *tetaka* 'aunt (fem.)', *pisama* 'letter (neut.)'). The reason for the alternative suffixation lies in the fact that in certain cases it is impossible *not* to properly govern an empty vocalic slot (i.e., there are strings which for no apparent reason seem to contain an empty vocalic slot which has to be governed obligatorily: cf. *pušaka* vs. **njušaka* which is remedied by the alternative suffix, i.e., *njuški*). These show a case of covert APU: gaps are remedied by the alternative suffix.

The list of restricted suffixes has been discussed in the previous paragraph. The unrestricted suffix then is -*ā* which freely attaches to stems ending in a single consonant, irrespective of gender (e.g., ˈ*jabuka* 'apple (fem.)', ˈ*samaca* 'batchelor (masc.)', ˈ*ruha* 'cloak (neut.)' etc.). If, however, there is a consonant cluster, the situation is more complex (cf. (7), overleaf).

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traditional pitch symbols are used. This is inadequate for at least two reasons: (i) pitch length coincides with vowel length (i.e., a long vowel can only host either a long rise or a long fall but not a short rise/fall), and (ii) vowel length does not seem to be conceivably phonemic in Croatian. This means that there are two lexical pitches: a RISING and a FALLING one (how vowel length is realised is yet another issue). A rising pitch on a vowel can therefore be symbolised as *á* and a falling one as *à*. The distribution of pitch is strictly regulated in this language: (i) there can be no pitch on final syllables of non-monosyllabic words (yet, there *can* be secondary stress, as in the case of genitive plural -*ā*), (ii) in monosyllabic words only a falling pitch is allowed, (iii) there are *no* long vowels before a pitch (this naturally explains why vowels can retain their length before the genitive plural suffix: it bears secondary stress but no pitch: i.e., (secondary) stress and pitch need not necessarily coincide), (iv) a rising pitch is allowed on any syllable (except the last one) but a falling pitch is only found on initial syllables. There are a number of problems with any one of these remarks, but this would be beyond the present scope.

(7)

					regular suffix	*alternative suffixes*	
				nom.sing.	-$\bar{a}_1$	-$\bar{a}_2$	-*i*
CORONAL			*fric+obst* (st, zd, št, žd, šć, šć)	vrsta 'kind' pošta 'post-office' nužda 'need'	—	vrsta pošta nužda	—
CORONAL			*fric+son*	trešnja 'cherry' basna 'fable'	trešanja basana	—	—
CORONAL			*son+obst*	student 'student' prevarant 'swindler'	studenata prevaranata	—	—
CORONAL			*obst+son*	suradnja 'cooperation' patnja 'suffering'	—	—	suradnji patnji
NON-CORONAL	*homorganic*	*labial*	*son+obst*	lampa 'lamp' bomba 'bomb'	—	—	lampi bombi
NON-CORONAL	*homorganic*	*velar*	*son+obst*	banka 'bank' šunka 'ham'	banaka *šunaka	—	 šunki
NON-CORONAL	*non-homorganic*	l, m, r, z + C		postrojba 'line-up' borba 'fight' tvorba 'making' ćurka 'turkey' gozba 'feast' mazga 'mule'	—	—	postrojbi borbi tvorbi ćurki gozbi mazgi
NON-CORONAL	*non-homorganic*	*other clusters*		puška 'rifle' njuška 'snout' bitka 'fight' tetka 'aunt'	pušaka *njušaka *bitaka tetaka	—	 njuški bitki
NON-CORONAL	*non-homorganic*	*problematic cases (for other reasons)*		bicikl 'bicycle' projekt 'projekt' indeks 'index'	bicikala projekata indekasa	—	—

As can be seen from the chart in (7), there are three alternative suffixes, clear cut and less straightforward cases. The suffixes exemplify different behaviour and there are two different -$\bar{a}$ suffixes (see (8) below).

The behaviour of the suffixes can be seen in (8): the three suffixes influence the stem to different degrees: -$\bar{a}_1$ has been discussed extensively; the important difference between -$\bar{a}_1$ and -$\bar{a}_2$, however, lies in the fact that the latter is attached in those cases when it is illicit to disclose the empty vowel between the consonants.

(8)

	-$\bar{a}_1$ (e.g., *stablo*∼*stabala* 'trunk')	-$\bar{a}_2$ (e.g., *borba*∼*borba* 'fight', also possible: *borbi*)	-*i* (e.g., *lopta*∼*lopti* 'ball')
change in pitch	✓	—	—
lengthening of preceding V	✓	✓	—
unsyncopated empty nucl.	✓	—	—

The most neutral suffix is -*i*: it never causes changes in the stem. What is important, however, is that the two alternative suffixes (i.e., -$\bar{a}_2$ and -*i*) are attached when it is illegal to allow the empty vowel to be pronounced. The choice between the two suffixes is sometimes optional, sometimes only one or the other is allowed (the choice seems to be determined by the nature of the consonants surrounding the empty vowel). Disregarding the shaded areas in (8) the situation is straightforward: it is either grammatical to pronounce the empty vowel (the regular suffix is chosen then) or not (in which case one or both of the alternative suffixes is available).

It is the shaded area which is theoretically baffling: no generalisation can be reached based solely on the nature of the consonants surrounding the empty vowel. Two strings consisting of identical (or nearly identical) melodic material behave differently: the failure to attach the regular suffix -$\bar{a}_1$ does not automatically entail an empty box in the nominal paradigm; APU is remedied by the attachment of the alternative suffix -*i* (see (9), in which the arrow → indicates instances of covert/remedied APU).

There are implicational relationships to be deduced based on (9). According to Wurzel (1984), an implicational relationship means that a given form of a word can be deduced on the basis of another: this relationship makes a paradigm more uniform and enhances learnability. There are well-know examples from German: if the genitive singular ends in -*n*, the nominative plural will necessarily also end in -*n* (e.g., *Willen* 'will', *Bullen* 'bull', *Studenten* 'student', etc.). The relationship is not bi-unique, however: if the nominative plural ends in -*n*, the genitive need not necessarily (e.g., *Namen* 'name'∼*Namens*/**Namen*, *Rosen* 'rose'∼*Rose*/**Rosen*, etc.). If a noun ends in -*er*/-*el* and is feminine, the plural nominative will end in -*n*: *Nadel* 'pin' → *Nadeln* (vs. *Nagel* 'nail (masc.)'∼*Nägel*/**Nageln*, *Sessel* 'reclining chair (masc.)'∼*Sessel*/**Sesseln*, *Bundel* 'bundle (neuter)'∼*Bündel*/**Bundeln*), *Kiefer* 'Scotch fir (fem.)' → *Kiefern* (vs. *Kiefer* 'jaw (masc.)'∼*Kiefer*/**Kiefern*). The relationship, again, is not bi-unique.

The same is true for Croatian. If the plural genitive suffix is the regular -$\bar{a}$, the nominative singular[8] will either have an empty vowel which is ungoverned, hence

[8] The nominative singular in the case of masculine nouns is 'unmarked' in the sense that it can end in a consonant. Recast in the present framework unmarkedness means that a potentially empty vowel is not followed by a pronounced vowel which should obligatorily govern it (cf. *novac* 'money nom.sing.' ∼ *novca* 'gen.sing.'). In other words, masculine nouns predominantly end in a consonant. In the case of feminine and neuter nouns the nominative singular ends in -*a* (*ovca* 'sheep') and -*e*/-*o* (*selo* 'village', *pismo* 'letter'),

(9)	zamka ‘trap nom.sing.’∼*zam**a**ka	→ zamki ‘gen.plur.’
	(vs. zam**a**k ‘castle’∼zam**a**ka∼*zamki)	
	patka ‘female duck’∼*pat**a**ka	→ patki
	(vs. pat**a**k ‘drake’∼ pat**a**ka∼ *patki)	
	trunka ‘shred’∼*trun**a**ka	→ trunki
	šunka ‘ham’∼*šun**a**ka	→ šunki
	(vs. banka ‘bank’∼ban**a**ka∼*banki)	
	paljba ‘barrage’∼*palj**a**ba	→ paljbi
	(vs. biljka ‘plant’∼bilj**a**ka∼*biljki)	
	lopta ‘ball’∼*lop**a**ta	→ lopti
	(vs. šap**a**t ‘whisper’∼šapta ‘gen.sing.’∼šap**a**ta)	
	bajka ‘fable’∼*baj**a**ka	→ bajki
	(ujak ‘uncle’∼uj**a**ka∼*ujki)	
	kičma ‘spine’∼*kič**a**ma	→ kičmi
	prizma ‘prism’∼*priz**a**ma	→ prizmi
	(cf. čizma∼čiz**a**ma∼čizmi both exist)	
	kavga ‘row/commotion’∼*kav**a**ga	→ kavgi
	maska ‘mask’∼*mas**a**ka	→ maski
	(vs. guska ‘goose’∼gus**a**ka∼*guski	
	daska ‘plank’∼das**a**ka ∼*daski)	
	bačva ‘barrel’∼*bač**a**va	→ bačvi
	(vs. mačka ‘cat’∼mač**a**ka∼*mački)	
	žurka ‘party’∼*žur**a**ka	→ žurki

pronounced (e.g., *novaca* → *novac* ‘money’) or an empty vowel which is governed and, accordingly, mute (e.g., *ovaca* → *ovca* ‘sheep’). If, however, the genitive plural suffix is *-i*, the nominative will always contain an obligatorily governed empty nucleus (e.g., *lopti* → *lopta/*lopat* ‘ball’, *zamki* → *zamka/*zamak* ‘trap’, *patki* → *patka/*patak* ‘female duck’). As can be seen, in those cases in which the empty vowel has to be governed obligatorily even in the nominative, it is impossible to chose the suffix *-ā* in the genitive plural and thus disclose/pronounce this vowel: the vowel has to remain mute throughout the paradigm and the only place where it could potentially be vocalised (in the genitive plural “box”) is given an alternative suffix, i.e., *-i* which can properly govern this vowel. In conclusion: the suffix *-i*, as a non-stress domain forming one, is always chosen when the vowel has to remain mute. The relationship is again not bi-unique: if the nominative contains a syncopated vowel (*ovca* ‘sheep’, *bačva* ‘barrel’), the choice of the genitive plural suffix can be guessed along the following scale of priority: it is either the general suffix *-ā* (*ovaca*) or, to a lesser and unpredictable extent, the recessive *-i* (*bačvi*) if the regular one fails for phonologically statable reasons (the vowel has to remain

respectively. In other words, this means that the empty vowel can (potentially) only be disclosed by the regular genitive plural suffix, i.e., *ovaca* and *pisama*.

mute). If, however, the genitive plural suffix is -*i*, the vowel can never be vocalised (*bačvi* → *bačva* 'nom.sing.').[9]

4.4 Theoretical issues and solutions

Törkenczy (2001a) terms the de adjectival verb formation process arbitrary because the constraint on the co-occurrence of two sonorants in adjacent onsets does not pertain to the whole system of English (cf. *woman* vs. **dimmen*). However, it is questionable whether this classification is relevant: it is known from Lexicalist Phonology that certain constraints apply to certain strings only at given positions in the derivation. There are operations (morphological, phonological, etc.) which never apply to monomorphemic words but regularly apply to derived strings (cf. STRICT CYCLICITY): e.g., the constraint that the antepenultimate syllable of a string can only contain a lax vowel (a.k.a. Trisyllabic Laxness) is not relevant to monomorphemic words (cf. *nightingale* vs. *sanity*). Viewed from this perspective, the de adjectival verb formation is *not* arbitrary, it is SYSTEMATIC: there are *no* exceptions to this constraint whatsoever (in other words, *woman* and *sullen* are not exceptions to this generalisation: these strings do not even come under the purview of the constraint). As can be seen, arbitrary APU can be recast into systematic APU and this means that a certain phonological regularity can be constrained in its scope of application by its sensitivity to morphological domains, hence monomorphemic [*woman*] vs. (a possible case of) complex *[*dimm*][*en*].

The Croatian case, however, can rightly be termed ARBITRARY because the input to this morphological suffixation rule (the shaded area in (7)) is always what it ought to be, i.e., monomorphemic strings. In other words, the operation should apply indiscriminately to the input strings (there are no strings that could be excluded on some other basis as has been done above in connection with *women* vis-à-vis **dimmen*). However, the suffixation rule attaches both the regular suffix -*ā* and the alternative suffix -*i*, the latter one of which can properly govern the empty nucleus (i.e., the one which does not constitute a stress domain).

One solution to this problem is the introduction of another empty nucleus. There have been various kinds of empty nuclei (cf. Kaye et al. 1990; Charette 1998; Scheer 1996, 1998a, etc.): some nuclei can always remain empty domain-finally (i.e., there exist languages in which words can end in a consonant), some of these nuclei can be direct and indirect government licensors, some empty nuclei can alternate with a pronounced vowel (this is known as vowel–zero alternation in terms of the availability of proper government), there can also be empty nuclei which are couched between consonants and allow proper government to cross them

[9] Based on all this, one could expect theoretically *only* the feminine and neuter nouns to exemplify absolute ungrammaticality vis-à-vis the genitive plural suffix (it is only these two genders that regularly have a governed empty nucleus, even in nominative singular: see previous footnote). Practically, however, it is only the feminine nouns that do this: masculine nouns always have a potentially empty nucleus that can be pronounced (hence they do not require the recessive -*i* suffix to silence the vowel) and neuter nouns are conspicuously missing as possible input to absolute ungrammaticality although they could potentially contain empty vowels in need of obligatory proper government. It is difficult to ascertain the degree to which gender could conceivably play any role in absolute ungrammaticality in Croatian.

(a.k.a. infrasegmental licensing), etc. This kind of empty nuclei could be marked as ones that always need proper government. This leads to a proliferation of empty nuclei. It could alternatively be claimed that there is some consonantal relationship which never allows the empty vowel to be pronounced: this solution could work in some cases (e.g., *bombi*, *lampi* and *šunki* which exemplify homorganic clusters and are thus 'unbreakable') but would not be satisfactory for *banka*∼*banaka* which also contains a homorganic cluster but is, nevertheless, 'breakable'. In addition to this, there are clusters which can never be broken up but the degree of interconsonantal relationships is questionable (i.e., the surfacing of the empty vowel could be expected on theory internal grounds, yet it does not happen): e.g., *slamka* 'straw (for sucking in food)'∼**slamaka*∼*slamki.* It has been suggested by Péter Szigetvári (p.c.) that Croatian could be a language in which the pronunciation of empty nuclei is illicit. These nuclei, thus, always require proper government (cf. the possible representations in (10)).

(10) a. *lopata* 'shovel nom.sing'

$$\begin{array}{cccccc} [\mathrm{C} & \mathrm{V} & \mathrm{C} & \mathrm{V} & \mathrm{C} & \mathrm{V}] \\ | & | & | & | & | & | \\ \mathrm{l} & \mathrm{o} & \mathrm{p} & \mathbf{A} & \mathrm{t} & \mathrm{a} \end{array}$$

Remark: no vowel–zero alternation in any of the forms (*lopate* 'gen.sing.'; *lopata* 'gen.plur.'). *Reason*: the melodic element **A** is inherently connected to the V position that hosts it (syncope is impossible).

b. *šapat* 'whisper nom.sing'

$$\begin{array}{ccccc} [\mathrm{C} & \mathrm{V} & \mathrm{C} & \mathrm{V} & \mathrm{C}] \\ | & | & | & & | \\ \check{\mathrm{s}} & \mathrm{a} & \mathrm{p} & \mathbf{A} & \mathrm{t} \end{array}$$

Remark: vowel–zero alternation possible (*šapta* 'gen.sing.', *šapata* 'gen.plur.'). *Reason*: **A** is a floating melodic element with no inherent affiliation to the V slot and can be governed in the appropriate constellation.

c. *šapata* 'whisper gen.plur.'

$$\begin{array}{cccccc} [\mathrm{C} & \mathrm{V} & \mathrm{C} & \mathrm{V} & \mathrm{C}] & [\mathrm{V}] \\ | & | & | & & | & | \\ \check{\mathrm{s}} & \mathrm{a} & \mathrm{p} & \mathbf{A} & \mathrm{t} & \mathrm{a} \end{array}$$

Remark: the empty vowel is vocalised if it cannot be properly governed: since the genitive plural suffix forms a new stress domain, it cannot properly govern the empty vowel, hence it is pronounced.

d. *lopta* 'ball nom.sing.'

$$\begin{array}{cccccc} [\mathrm{C} & \mathrm{V} & \mathrm{C} & \mathrm{V} & \mathrm{C} & \mathrm{V}] \\ | & | & | & & | & | \\ \mathrm{l} & \mathrm{o} & \mathrm{p} & & \mathrm{t} & \mathrm{a} \end{array}$$

Remark: the empty vowel couched between the two consonants can never be pronounced, i.e., it always requires proper government (as expected, the genitive plural is *lopti*, not *lopata*). *Reason*: there is no melodic material linking to the V slot in (10c). One has to contend with the stipulation that in this language empty vowels cannot be pronounced, i.e., they have to be obligatorily properly governed.

If one accepts the representations above, even this APU is no longer arbitrary: there is a lexical explanation behind the facts: some vowels never alternate with zero (10a), some do so if proper government is available (10b), whereas empty vowels cannot be pronounced, hence proper government is obligatory (10d), i.e., the suffix -*ā* is unavailable. So, being a speaker of this language means a lexical knowledge of the nature of the enclosed vowel between two non-coronal consonants, hence the difference between *banka*∼*banaka* and *šunka*∼**šunaka* (in the latter case the vowel is empty and unpronounceable, in the former there is a floating **A**). The problem with this is that the account is teleological and cannot be accounted for solely on the basis of Government Phonology, for example. It certainly cannot be accounted for on the basis of the Minimalist Hypothesis, i.e., rules apply whenever they can (there will have to be language-specific constraints: e.g., empty vowels must always be silenced).[10] What is needed here is some more flexible interaction between phonology, morphology and the lexicon. How this should be accomplished is beyond the scope of this paper (cf., however, Rebrus & Törkenczy 2000 with an Optimality account on a Hungarian case).

There are also other problematic areas: e.g., *bicikl* 'bicycle' does not disclose the empty vowel word-finally but does so in the genitive plural (*bicikala*). This is spurious since we cannot account for the silence of the vowel in *bicikl* (Croatian has no branching onsets word-finally and this l is not even syllabic). This and a number of other issues also await further research.

5 Conclusion

This paper has attempted to provide an account for a case of absolute phonological ungrammaticality (APU) in Croatian. It has been shown that APU is covert in this language, i.e., locunae are filled by alternative forms. However, the question whether this type of APU is really arbitrary has been revisited in the last section. It has also been pointed out that this phenomenon cannot be satisfactorily addressed in the framework of Government Phonology, for example. The issues await further research.

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[10] This stipulation, however, can be made to fit into the general theory: in classical GP it was assumed that some empty vowels can remain mute (e.g., word-finally if followed by a domain boundary and word-internally if properly governed). It would be theoretically challenging to reverse the situation: instead of silencing empty vowels one could impose a constraint on their interpretation per se: Croatian then would be a language in which empty vowels can never be pronounced (this is supported by this analysis on APU and also by the fact that there are words ending in consonants). What then appears to be a vowel–∅ alternation (*lakat*∼*lakta*) is in fact the interpretation of a floating melody. In English, on the other hand, it would be illicit to pronounce an empty vowel word-finally, but it would be possible to interpret it word-medially (unless properly governed). The pros and cons of this proposal will not be taken up here. On any account, this would run opposite to the general assumption that vocalic slots aim at being pronounced.

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