

THE JOHN PAUL II CATHOLIC UNIVERSITY OF LUBLIN
FACULTY OF HUMANITIES
INSTITUTE OF ENGLISH STUDIES

SOUND STRUCTURE AND SENSE

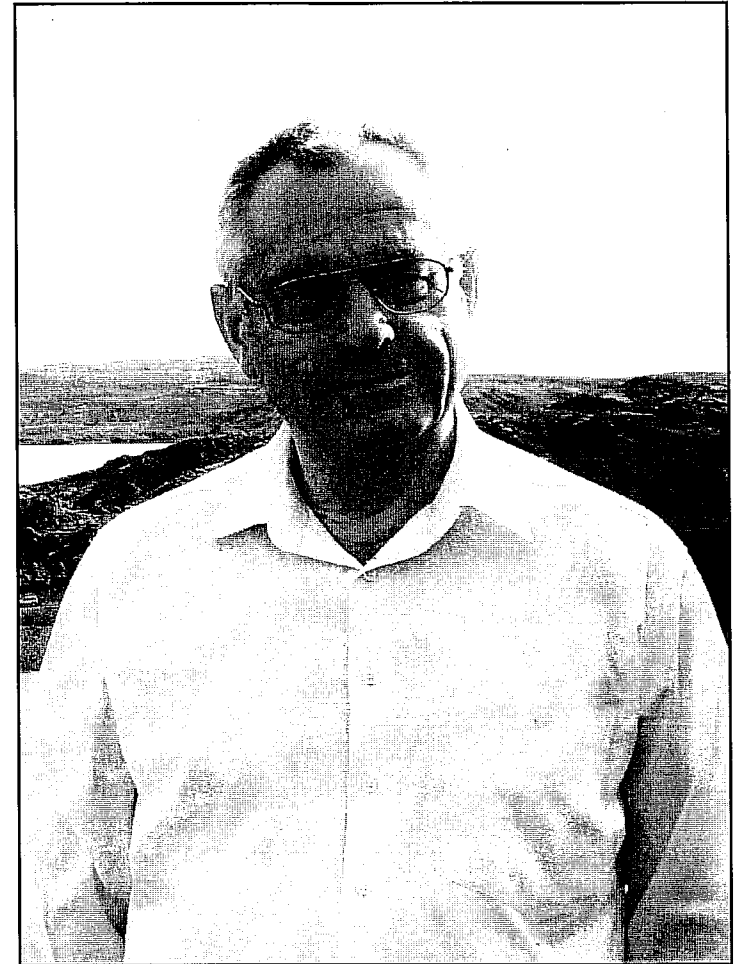


STUDIES IN MEMORY
OF EDMUND GUSSMANN

EDITED BY
EUGENIUSZ CYRAN, HENRYK KARDELA, BOGDAN SZYMANEK



WYDAWNICTWO KUL
LUBLIN 2012



EDMUND GUSSMANN
1945 - 2010

Reviews

- 1970 M. I. Steblin-Kamenskij: *Očerki po diaxroničeskoj fonologii skandinavskix jazыkov*. *Kwartalnik Neofilologiczny* 17: 102–104.
- 1973 R. W. Langacker: *Language and its Structure*. *Kwartalnik Neofilologiczny* 20: 224–227.
- 1975 R. W. Langacker: *Fundamentals of Linguistic Analysis*. *Biuletyn Fonograficzny* 16: 109–111.
- 1981 D. A. Dinnsen: *Current Approaches to Phonological Theory*. *Journal of Linguistics* 17: 371–374.
- 1982 K. Árnason: *Quantity in Historical Phonology: Icelandic and Related Cases*. *Íslenskt mál og almenn málfraedi* 4: 303–316.
- 1982 M. Aronoff, and M.-L. Kean: *Juncture*. *Studia Anglica Posnaniensia* 15: 172–177.
- 1983 S. Ohlander: *Phonology, Meaning, Morphology. On the Role of Semantic and Morphological Criteria in Phonological Analysis*. *Papers and Studies in Contrastive Linguistics* 16: 121–125.
- 1984 B. Kress: *Isländische Grammatik*. *Kwartalnik Neofilologiczny* 31: 384–366.
- 1984 A. Bammesberger: *A Handbook of Modern Irish*. *Kwartalnik Neofilologiczny* 31: 386–368.
- 1985 J. Rubach: *Cyclic and Lexical Phonology. The Structure of Polish*. *Linguistics* 23: 609–623.
- 1986 S. L. Strauss: *Lexicalist Phonology of English and German*. *Studia Anglica Posnaniensia* 18: 241–245.
- 1988 K. P. Mohanan: *The Theory of Lexical Phonology*. *Journal of Linguistics*: 232–239.
- 1994 Ch. Y. Bethin: *Polish Syllables. The Role of Prosody in Phonology and Morphology*. *Journal of Slavic Linguistics* 2 (1): 178–182.
- 1995 M. Ball with J. Fife: *The Celtic Languages*. *Lingua* 97: 284–286.
- 1997 F. van Coetsem: *The Vocalism of the Germanic Parent Language*. *Lingua* 102: 66–69.
- 1998 P. Schrijver: *Studies in British Celtic Historical Phonology*. *Lingua* 105: 247.
- 1999 T. Gamkrelidze, and V. Ivanov: *Indo-European and the Indo-Europeans*. *Lingua*: 157–160.
- 1999 P. Smith: *Oidhreacht Oirghiall*. *Zeitschrift für celtische Philologie* 51: 301–302.
- 2004 P. Stevens (ed.): *Nýtt skáldatal. Dictionary of Literary Biography vol. 293. Icelandic Writers. Tímarit Máls og Menningar* 65: 86–89.
- 2006 S. Karlsson: *The Icelandic Language*. *Folia Scandinavica Posnaniensia* 9: 319–322.

Contents

Prefacev

Publications of Edmund Gussmann vii

1. A question of timing: raising of /a/ to /o/ in Russian Vologda dialects1
CHRISTINA Y. BETHIN

2. Resonance primes say ‘NO’ to cross-vocalic harmony.....15
ANNA BLOCH-ROZMEJ

3. The category of nominal number in English and the inflection–
derivation distinction29
MARIA BLOCH-TROJNAR

4. Copy deletion in Polish predicate clefting55
ANNA BONDARUK

5. On the expansion of Polish resultative adjectives terminating in *-niety*71
BOŻENA CETNAROWSKA

6. The language of ‘madness’: a conceptual metaphor approach107
ANNA CHAREZIŃSKA

7. Asking for more – an attempt at understanding Old English
ditransitive complementation patterns135
MAGDALENA CHARZYŃSKA-WÓJCIK

8. Cracow sandhi voicing is neither phonological nor phonetic.
It is both phonological and phonetic153
EUGENIUSZ CYRAN

9. Word-final devoiced consonants in Turkish: H as a boundary marker185
ANN DENWOOD

10. Modern Natural Phonology and phonetics199
KATARZYNA DZIUBALSKA-KOŁACZYK

11. Phrasal fore-stress in English211
HEINZ J. GIEGERICH

12. Are nonce words really deviant, context-dependent, and unlexicalizable?223
WOJCIECH GUZ

13. No compensatory lengthening in Old English after loss of /x/ in /lx, rx/ clusters	239
DANIEL HUBER	
14. An RcvP analysis of vowel harmony in Yoruba	263
HARRY VAN DER HULST	
15. Strictly conservative vs. moderately revolutionary: a typology of Q-Celtic and P-Celtic stop mutations	289
KRZYSZTOF JASKUŁA	
16. Non-concatenative morphological formations: a Cognitive Grammar analysis of blends and acronyms	303
HENRYK KARDELA	
17. Canadian Raising, eh?	321
JONATHAN KAYE	
18. On the representation of tone in Element Theory	353
NANCY C. KULA	
19. Feminine and gender, or why the 'Feminine' profile of French nouns has nothing to do with gender	371
JEAN LOWENSTAMM	
20. Experience behind language: panchronic motivation behind Polish names of the months	407
PRZEMYSŁAW ŁOZOWSKI	
21. High applicatives in Polish	421
ANNA MALICKA-KLEPARSKA	
22. How prosody controls the directionality of voicing assimilation	447
KUNIYA NASUKAWA	
23. Evidence-based phonology – the elimination of ghosts, ghost explanations, and ghost science	465
STEFAN PLOCH	
24. Dark secrets of Hungarian vowel harmony	491
PÉTER REBRUS, PÉTER SZIGETVÁRI, AND MIKLÓS TÖRKENCZY	

25. An analysis of the left-edge effects in Hungarian and its theoretical implications for other languages	509
NANCY A. RITTER	
26. On the onset of psych eventualities	533
BOŻENA ROZWADOWSKA	
27. Polish prefixes	555
JERZY RUBACH	
28. English nasal sounds revisited	575
PIOTR RUSZKIEWICZ	
29. Variation in the lexicon: yer-based and epenthetic vowel-zero alternations in Polish	631
TOBIAS SCHEER	
30. The fate of vowel clusters in Hungarian	673
PÉTER SIPTÁR	
31. Degrees of emptiness: from semantics to phonology	695
PIOTR STALMASZCZYK AND TOMASZ CISZEWSKI	
32. Morphological types vs. word-formation: any correlations?	711
PAVOL ŠTEKAUER	
33. Phonology, morphonology and spirantization in Polish	729
JOLANTA SZPYRA-KOZŁOWSKA	
34. Sequences of three plosives in Polish (notes on a footnote)	751
BOGDAN SZYMANEK	
35. On the feature valuation/interpretability biconditional in Minimalist Theory. The case of (un)interpretable gender	761
EWA WILLIM	
36. The mechanism of i-umlaut	807
JERZY WÓJCIK	
Subject index	825
Language index	833
Contributors	837

Variation is in the lexicon: yer-based and epenthetic vowel-zero alternations in Polish

Tobias Scheer

1. Introduction: Edmund Gussmann's way uphill

Since his first contribution on the international generative stage in 1980, Edmund Gussmann went down a long a winding road or rather, a track which at last forced him to trace through unexplored fields. Engaging at first on the generative mainstream road at times when the star of SPE was already falling, i.e., just before Lexical Phonology and autosegmental representations turned the field upside down, he turned off into the Government Phonology track in the early 90s, a move that was sealed by Gussmann and Kaye (1993).

But after some time Edmund Gussmann also felt uncomfortable on this byway of the generative road, and started to explore his own ways into hills and mountains that were surrounding the GP-track. The guiding light was twofold: on the one hand, the attraction of a neighbouring valley where structuralist locals once granted the right to morphemes to have multiple copies, but whose access was closed in the 60s; on the other hand, the quest for a wild fruit that could offer an alternative to chunk-based phonology, which Edmund Gussmann believes is actually junk-based.

Gussmann's (2007) book on Polish is, if not the endpoint, at least a milestone in the personal evolution of the author, which spans a remarkably large array on the theoretical chessboard. The directions that Edmund Gussmann has taken over the years leave the footsteps of a free mind whose only guide is the promise of insight: whether this leads to large illuminated roads seamed with cheering audience or to lonesome and onerous mountain paths plays no role.

This is what I wrote in a review of Gussmann's 2007 book on Polish (Scheer 2010). The author commented on the draft in early 2009, but I am not sure he saw the published version before he passed away in September 2010.

The pages below illustrate the project of the late Gussmann to shrink phonological computation, i.e., to outsource most of the labour that it once did in the times of SPE to various other components of the grammar: the phonology → phonetics mapping, the lexicon and allomorphy (i.e., the neighbouring structuralist valley). This is done regarding a particularly prominent and important phenomenon of Polish (and Slavic) phonology: vowel-zero alternations. Gussmann (2007) has taken the step to consider that they are the result of

allomorphic, rather than of phonological computation. He thereby parts company with virtually all generative accounts of Polish or Slavic vowel-zero alternations, and places himself in the tradition of one of the structuralist strands.

It is argued below that as right as I believe Gussmann was in many of his outsourcing ventures, he was wrong in the specific case of vowel-zero alternations. I argue that three ingredients are needed in order to set up a purely phonological analysis: 1) the generalization of Bethin's (1992) epenthesis-based analysis from loanwords to the native vocabulary of Polish, 2) its restriction to a certain class of lexical items that are identified by their phonological patterning and 3) the marking of lexical contrasts ('I alternate' vs. 'I do not alternate') in the phonological representation itself (presence vs. absence of a floating piece of melody) coupled with an invariable computation, rather than by diacritic features that trigger variable computation (this word-final consonant is associated to the phonological word, while that word-final consonant needs to be integrated into syllable structure).

The result is an analysis couched in CVCV (a development of Government Phonology) whose basic insight follows Worth (1968), an article that is concerned with the Russian cousin of the Polish pattern to be studied. And which is written in a structuralist environment.

2. The Polish plot, and how it was analysed

Polish features two competing patterns of root-final cluster vocalization in gen.pl.: monomorphemic -CC# may (*wiadr-o* / *wiader* 'pail, nom.sg., gen.pl.') or may not vocalize (*cyfr-a* / *cyfr* 'number, nom.sg., gen.pl.'). However, (monomorphemic) clusters always vocalize in presence of a C-initial (or yer-initial) suffix, even those that do not in gen.pl.: *wiader-k-o* 'id., dim.', *cyfer-k-a* 'id., dim.'. The pattern is also lexically variable: some roots have both vocalized and non-vocalized forms in free variation (*wydr-a* / *wydr* / *wyder* 'otter, nom.sg., gen.pl.'). Finally, there is cross-speaker variation as well: some speakers may accept a vocalized or unvocalized version of a root in gen.pl., while others may not (e.g., *kurw-a* / *kurew* / ?*kurw* 'whore, nom.sg., gen.pl.').

Section 4 shows that the pattern cannot be analysed with the regular instrument that is put to use for (Slavic) vowel-zero alternations, i.e., lexically present vowels that are made inaudible by phonological computation (the yers). Most of the literature does not talk about the pattern at all: this is the case for instance of two of the three books that have founded the generative analysis of Polish, Gussmann (1980) and Rubach (1984). By contrast, the third book in this category, Laskowski (1975: 29ff.), offers a very careful survey of the very intricate

empirical situation and provides rich material (see also Bajerowa 1953). Laskowski (1975) is couched in linear SPE, and he considers all vowel-zero alternations the result of epenthesis (rather than of deletion, see Section 4.1 below). His conclusion is that all kinds of lexical items need to be diacritically marked as an exception to all kinds of rules.¹ Szpyra (1995: 97) reaches the same obvious conclusion, but formulates the need for lexical marking in theory-neutral terms:

the logical conclusion is that the presence versus absence of yers is largely unpredictable and must therefore be marked in the lexical representation of the relevant items.

As was mentioned, Gussmann (2007) proposes a completely different interpretation of the pattern: giving up on its phonological character altogether, he argues that the relevant vowel-zero alternations are instances of allomorphy, i.e., managed outside of the phonology (Section 5.1). Cyran's (2005) analysis of the (non-)vocalization of word-final clusters, although not explicitly (because forms with C/yer-final suffixes are not considered), also results in an allomorphic solution (Section 5.2).

Finally, Bethin (1992: 146ff.) argues for a scenario whereby vowel-zero alternations are based on regular yers, except in loanwords where they are of epenthetic origin. It is argued below that this approach is on the right track, but needs to be refined: there is no difference between loanwords and native vocabulary (extension of the scope of Bethin's epenthetic analysis), and all vowel-zero alternations in loans do not originate in epenthesis (restriction of the scope of Bethin's epenthetic analysis). Also, the difference between *cyfr-a* / *cyfr* and *wiadr-o* / *wiader* is certainly unpredictable and hence encoded in the lexical recording of each item – but not by way of Laskowski's lexical diacritics, which are also used by Bethin (whose solution is discussed in greater detail in Section 6.1 and 6.2). Instead of placing diacritics into phonological representations that alter the course of the phonological computation, I argue that the lexical opposition is achieved by contrasting properties of the (autosegmental) representation itself. That is, there are three (and only three) distinct structures: 1) stable vowels (i.e., which do not alternate), 2) alternating vowels that appear in clusters in gen.pl. (*wiadr-o* / *wiader*) and 3) alternating vowels that do not appear in clusters in gen.pl., but surface before C/yer-initial suffixes (*cyfr-a* / *cyfr* / *cyfer-k-a*). In the analysis below, this triple lexical contrast is expressed in the vocabulary of strict CV phonology (Lowenstamm 1996; Scheer 2004; Cyran 2010).

¹ The exception feature that Laskowski (1975: 25ff.) uses is '[α RMF i]' where 'RMF' means 'morphological rule' and i is a variable that refers to the number of the rule.

The three variations mentioned (within gen.pl., cross-roots and cross-speaker) are then a consequence of alternative or hesitating lexicalization of the three lexical representations. As Bethin's, this solution is thus purely phonological and instantiates a currently developed idea in minimalist syntax: variation reduces to variation in the lexicon (the so-called Chomsky-Borer Conjecture: Biberauer 2008; Baker 2008; Roberts and Holmberg 2010).

The gist of the analysis is that an important piece of the standard Slavic yer-based account of vowel-zero alternations needs to be abandoned: it is not true that all vowels which alternate with zero are underlyingly yers – Bethin (1992: 153) says that '[v]owel-zero alternations in Polish are not attributable to a unique underlying representation'. Some are yers (in my analysis, but not in Bethin's, those that vocalize in gen.pl.: *wiadr-o* / *wiader*), while others are not (those that do not vocalize: *cyfr-a* / *cyfr*). The latter are epenthetic vowels, i.e., lexically absent and inserted in order to repair an ill-formed structure (three consonants in a row in surface description, two empty nuclei in a row in the analysis below).²

In a first step, only monomorphemic clusters are examined (as in *wiadr-o*, *cyfr-a*). The behaviour of heteromorphemic clusters, i.e., where the first consonant belongs to the root and the second to a suffix (e.g., *służ-b-a* / *służb* / *służ-eb-n-y* 'service, nom.sg., gen.pl., adj. '), is studied in a second step (Section 8).

3. To vocalize or not to vocalize...

3.1. Pattern A and B (in monomorphemic clusters)

Table (1) below illustrates a set of alternations that I will call pattern A where (monomorphemic) root-final CCs do not vocalize in gen.pl., but where a vowel does break up the cluster in presence of a C/yer-initial suffix. The leftmost column shows that there is no evidence to the end that the sonority slope of the cluster plays a role: TR, RT and RR clusters may follow the pattern at hand (T is shorthand for obstruents, R for sonorants). Also, (more or less recent) loanwords and native vocabulary are both represented and do not show any different behaviour.

The table contains a number of items (in italics) where the cluster does not vocalize before C/yer-initial suffixes. Section 2.3 below collects and discusses words of this type. Finally, items in brackets identify words that natives will probably never had heard or used, and whose status is thus ad-hoc.

² The present chapter is a development of a section in Scheer (2010), where the analysis was first introduced. A shorter version of the present article appears as Scheer (forth b).

(1) **pattern A: -CC# does not vocalize in gen.pl.**
 ==> but vocalizes before C/yer-initial suffixes

	CC-V#	CC#	CeC-C	gloss	
	nom.sg.	gen.pl.	C/yer-initial suffix		
TR#	Tr	cyfr-a	cyfr	cyfer-k-a	number
		zebr-a	zebr	zeber-k-a	zebra
		tundr-a	tundr	tunder-k-a	tundra
		bistr-o	bistr	(bister-k-o)	bistro
		Tatr-y	Tatr	tater-nik	toponym
		algebra	algebr		algebra
		siostr-a	sióstr		sister
		sutr-a	sutr	(suter-k-a)	Hindu aphorism
		Piotr-a	Piotr	<i>Piotr-k-a (!)</i>	first name
		ikr-a	ikr	(ikier-k-a)	fish eggs
		podagr-a	podagr	(podagier-k-a)	gout
	Tn	blizn-a	blizn	(blizen-k-a) (<i>blizn-k-a (!)</i>)	scar
		tętn-o	tętn	tęten-k-o	pulse
		piętn-o	piętn	pięten-k-o	stamp
	Tm	wydm-a	wydm	wydem-k-a	dune
		taśm-a	taśm	tasiem-k-a	ribbon, tape
		jarzm-o	jarzm	jarzem-k-o	yoke
		piżm-o	piżm	piżem-k-o	musk
		pism-o	pism	pisem-k-o	document
				pisem-n-y	
		drachm-a	drachm	drachem-k-a	drachma
	Tv	pletw-a	pletw	pletew-k-a	fin (fish)
		warstw-a	warstw	warstew-k-a	layer
		sakw-a	sakw	sakiew-k-a	pannier
		żuchw-a	żuchw	żuchew-k-a	lower jaw bone
RT#	rT	farb-a	farb	<i>farb-k-a (!)</i>	paint
		kart-a	kart	<i>kart-k-a (!)</i>	card
		musztard-a	musztard	<i>musztard-k-a (!)</i>	mustard
	rv	larw-a	larw	<i>larw-k-a (!)</i>	grub
		barw-a	barw	<i>barw-n-y (!)</i>	colour
		ścierw-o	ścierw	<i>ścierw-nik (!)</i>	corpse
		bulw-a	bulw	<i>bulw-k-a (!)</i>	root tuber
		salw-a	salw	<i>salw-k-a (!)</i>	saivo
		morw-a	morw	morew-k-a <i>morw-k-a (!)</i>	mulberry

IT	walk-a	walk	walecz-n-y	war
	palt-o	palt	palet-k-o	coat
	małp-a	małp	<i>małp-k-a (!)</i>	monkey
	olch-a	olch		alder
	Kielc-e	Kielc	Kielec-k-i	toponym
NT	słońc-e	słońc	słonecz-n-y	sun
			słonecz-k-o	
	czeremch-a	czeremch	(czeremesz-k-a)	bird cherry
	legend-a	legend	<i>legend-k-a (!)</i>	legend
	rumb-a	rumb	<i>rumb-k-a (!)</i>	rumba
TT#	cht płacht-a	płacht	płachet-k-a	sheet
	szlacht-a	szlacht	szlachet-n-y	nobility
			szlachet-k-a (arch.)	
sT#	sp wysp-a	wysp	wysep-k-a	island
RR#	rm form-a	form	forem-n-y	form
			forem-k-a	
	firm-a	firm	firem-k-a	firm
	m urn-a	urn	uren-k-a	urn
	tawern-a	tawern	taweren-k-a	tavern
			<i>tawern-k-a (!)</i>	
	lm palm-a	palm	palem-k-a	palm

I call pattern B the set of alternations where (monomorphemic) root-final CCs vocalize in gen.pl. (as well as in presence of a C/yer-initial suffix). Illustration is provided under (2) below.³

(2) **pattern B: CC# vocalize in gen.pl.**
and also before C/yer-initial suffixes

	CØC-V	CeC#	CeC-C	gloss
	nom.sg.	gen.pl.	C/yer-initial suffix	
TR#	Tr żebr-o	żeber	żeber-k-o	rib
	srebr-o	sreber	sreber-k-o	silver
			<i>srebr-n-y (!)</i>	
	piętr-o	pięter	pięter-k-o	floor
	futr-o	futer	futer-k-o	fur
	lustr-o	luster	luster-k-o	mirror

³ All Polish data in this article have been controlled and enriched by Gienek Cyran, to whom I am indebted.

	jądr-o	jąder	jąder-k-o	nucleus
			<i>jądr-n-y (!)</i>	
	wiadr-o	wiader	wiader-k-o	pail
	iskr-a	iskier	iskier-k-a	sparkle
	chuchr-o	chucher	chucher-k-o	weakling
TI	ciepł-o	ciepeł	ciepeł-k-o	warmth
			<i>ciepl-n-y (!)</i>	
	szabla	szabel	szabel-k-a	sword
	krzesł-o	krzesel	krzesel-k-o	chair
	kukł-a	kukieł	kukieł-k-a	puppet
	jagł-a	jagieł	(jagieł-k-i)	millet
	igł-a	igieł	igieł-k-a	needle
	cegl-a	cegieł	cegieł-k-a	brick
Tn	krosn-o	krosien	krosien-k-o	loom
	wiosn-a	wiosen	wiosen-k-a	spring
	okn-o	okien	okien-k-o	window
	sukn-ia	sukien	sukien-k-a	dress
	sukn-o	sukien	(sukien-k-o)	cloth
	bagn-o	bagien	bagien-k-o	mud
Tv	małtw-a	małew	(małew-k-a)	cuttlefish
	płatw-a	platew	(platew-k-a)	roof
RR#	durni-a	dureń		fool
	perł-a	perel	perel-k-a	perl

While the list of pattern B items under (2) aims at exhaustivity (e.g., Laskowski 1975: 29ff.; Bethin 1992: 146ff.; Cyran 2003: 176ff., 188, 2005; Gussmann 2007: 230ff.), pattern A items under (1) are but a (representative) selection of what can be found in the Polish lexicon. Numerically, then, non-vocalization in gen.pl. (pattern A) appears to be more common than vocalization (pattern B).

Finally, table (2) shows that unlike for pattern A the sonority slope of the cluster is a relevant conditioning factor for pattern B: if any type of cluster can be of the non-vocalizing type (pattern A), RT clusters appear to be unable to vocalize (pattern B). The same may be stated the other way round: only TR clusters seem to be able to vocalize in gen.pl. This generalization was made by Bethin (1992: 149) for loanwords: 'if the vowel does appear, it is more likely to appear within final sequences of rising sonority. Sequences which form optimal syllable codas of falling sonority (i.e., word-final RT and RR clusters in her examples) [...] generally do not acquire the alternation'. Cyran (2003: 176ff., 2010: 160ff.) makes the same observation.

In terms of the analysis to be developed below, this means that the distribution of alternating vowels in root-final clusters is not entirely arbitrary,

i.e., lexical: only the rising sonority slope TR (and maybe RR: table (2) mentions two cases) allows for the acquisition of a yer. Whether a TR cluster acquires / possesses a yer, though, is entirely arbitrary (i.e., lexical). The question regarding the sonority-based condition is not further pursued below. Cyran (2005) – also Cyran (2003: 176ff., 2010: 160ff. – offers an analysis in terms of his CSL (Complexity Scales and Licensing) model: (word-final) TRs are more difficult to license (by the final empty nucleus) than word-final RTs (this is also what the above quote from Bethin implies). Therefore ‘easy’ word-final clusters, i.e., RTs, are safe, while breakdown, i.e., vocalization, is lurking for more fragile TRs.

3.2. Roots with free variation (and other types of variation)

A number of roots (with monomorphemic clusters) have both vocalized and unvocalized forms in free variation in gen.pl., as shown under (3) below (e.g., Laskowski 1975: 40; Bethin 1992: 125; Gussmann 2007: 230; Cyran 2005, 2010: 170f.).

(3) roots with free variation in gen.pl.

but vocalization is the only option with C/yer-initial suffixes

		CøC-V nom.sg.	CC# / CeC# gen.pl.	CeC-C C/yer-initial suffix	gloss
TR#	Tr	wydr-a	wydr / wyder	wyder-k-a	otter
		biodr-o	bioder / biódr	bioder-k-o	hip
	Tv	brzytw-a	brzytw / brzytew	brzytew-k-a	razor
		pochw-a	pochew / pochw	pochew-k-a	vagina/sheath
		poszw-a	poszew / poszw	poszew-k-a	duvet cover
		bitw-a	bitw / bitew	bitew-n-y	battle
		kotw-a	kotew / kotw		anchor
		tratw-a	tratew / tratw	tratew-k-a	raft
		listw-a	listew / listw	listew-k-a	lath
	Tm	pasm-o	pasm / pasem	pasem-k-o	wisp
		karczm-a	karczem / karczm	karczem-n-y	inn
		ciżm-y	ciżm / ciżem	ciżem-k-a	shoes (arch.)
RT#	IT	kalk-a	kalk / kalek	kalecz-k-a	carbon paper
	rT	kurw-a	kurew / kurw	kurew-k-a	whore
		torb-a	toreb / torb	toreb-k-a	bag
RR#	rn	sarn-a	sarn / saren	saren-k-a	roe deer
		żarn-a	żarn / żaren	żaren-k-a	quern
		ziarn-o	ziarn / ziaren	ziaren-k-o	grain
				ziarn-k-o (!)	

mn	gumn-o	gumien / gumn	gumien-k-o	barnyard
wn	grzywn-a	grzywien / grzywn	grzywien-k-a	fine
ln	weln-a	welen / wehn	(welen-k-a)	wool

The trend to only allow for vocalized forms in TR clusters is also visible here, but less so than with non-variable vocalization. And as before, vocalization before C/yer-initial suffixes is systematic, i.e., the only option.

Diachronically, Polish is visibly following a movement from a stage where no clusters were vocalized at all in gen.pl. to a situation where more and more roots implement vocalized forms. One indicator is the numerical situation (non-vocalization is the standard, only a limited number of roots is able to vocalize), another is the fact that for many roots the vocalized variant is substandard and stigmatized. This may be seen when looking at the recommendation of normative dictionaries like Szober's (1969, 'dictionary of correct Polish'), who warns for instance against gen.pl. *cyfer* (nom.sg. *cyfr-a*). Finally, the interpretation of the sonority restrictions on vocalization that was mentioned in the previous Section also supports this diachronic scenario: vocalization exists in gen.pl. because 'difficult' clusters, i.e., word-final TRs, break down successively along a lexical diffusion perspective (while 'easy' clusters are safe).

Vocalized forms are also substandard and/or dialectal in nom.sg./acc.sg., which is the other zero case marker in Polish (apart from gen.pl.). For example, *wiatr*, *Piotr*, *metr*, *filtr* 'wind, Peter, meter, filter' are commonly encountered as *wiater*, *Pioter*, *meter*, *filter*, and this identifies uneducated speakers, or speakers of non-standard varieties. It is true, however, that the movement can also go in the other direction: vocalized *sweter* 'jumper, nom.sg.' is standard, but unvocalized *swetr* is commonly heard.

In sum, the core of words has predictable (non-)vocalization and does not show any variation: roots belong either to pattern A or B. A fair amount of words, though, show variation, either free or socially relevant, and the exact set of words that belong to the three categories (A, B or variable) is a matter of inter-speaker variation.

3.3. Cases of non-vocalization before C/yer-initial suffixes

Tables (4) and (6) below show cases of non-vocalization of (monomorphemic) root-final CCs before C/yer-initial suffixes (see Laskowski 1975: 39 and Bethin 1992: 148). Their number is relatively small, but they need to be accounted for. This section proposes a *pretheoretical* analysis, arguing that these items are lexicalized, that is stored independently from the root (there is no derivational activity between the root and the items in question). This perspective is

formalized in Section 7 below once the global analysis of the gen.pl. pattern is available.

Table (4) provides those items whose nom.sg. ends in -CC-V, i.e., the category of words that is considered above: only this paradigm has a zero marker in gen.pl.

(4) **CC# that do not vocalize before a C/yer-initial suffix
nom.sg. -CC-V**

	nom.sg.	gen.pl.	C/yer-initial suffix	gloss	
A	tr	Piotr-a	Piotr	Piotr-k-a	first name
	rb	farb-a	farb	farb-k-a	paint
	rt	kart-a	kart	kart-k-a	card
	rd	musztard-a	musztard	musztard-k-a	mustard
	rw	larw-a	larw	larw-k-a	grub
		barw-a	barw	barw-n-y	colour
		ścierw-o	ścierw	ścierw-nik	corpse
	lw	bulw-a	bulw	bulw-k-a	root tuber
		salw-a	salw	salw-k-a	salvo
	rn	tawern-a	tawern	taweren-k-a	tavern
				tawern-k-a (!)	
	nd	legend-a	legend	legend-k-a	legend
	mb	rumb-a	rumb	rumb-k-a	rumba
B	TR	srebr-o	sreber	srebr-n-y	silver
				but: sreber-k-o	
			ciepl-o	ciepeł	ciepl-n-y
			białoskrzydł-n-y	white-winged	
	jądr-o	jąder	jądr-n-y	core	

It may be seen that both patterns A and B deliver -CC-C-V forms, i.e., where the root-final cluster does not break up even before a C/yer-initial suffix (and the sonority restrictions that were mentioned are visible here as well: TR occurs only with pattern B items). It also appears that the same root may derive vocalizing as well as non-vocalizing items: *srebr-n-y* vs. *sreber-k-o* (the same goes for *wietrz-n-y* vs. *wiater-ek* from table 6). Hence whatever the lexical properties of the root, the vocalization before C/yer-initial suffixes does not depend on them. Rather, we are facing lexical idiosyncrasy of the derived words: either they are independent lexical recordings (and hence there is no synchronic derivation based on the root), or there are two separate roots (root allomorphy), one deriving vocalized, the other unvocalized items.

We will see in Section 7 that unvocalized -CC-C-V items are the result of root-allomorphy, rather than of distinct lexical recordings of whole words. There

is a lexical item *srebr₁-* that derives *srebr-o*, *sreber* and *sreber-k-o*, and there is another lexical item *srebr₂-* that is used in *srebr-n-y*. *Srebr₁-* and *srebr₂-* are lexically distinct, and the difference lies in the relationship between the b and the r: while the two consonants form a branching onset in *srebr₂-* and therefore make the r trapped upon the concatenation of -n-y, they are separated by a floating piece of meody (i.e., a yer) in *srebr₁-*.

Note that the cluster -brn- of *srebr-n-y*, or CRC clusters more generally speaking, are well-formed and perfectly unspectacular in Polish: sonorants that occur between consonants (or in #RC and CR# position) are called trapped (as opposed to syllabic, see Scheer 2008, 2009). Examples are *trwać* 'to last', *brzmieć* 'to sound', *klnę* 'I curse', *plwocina* 'sputum', *krnąbrny* 'unruly', *brnąć* 'to wade' etc.

In any event, *srebr-n-y* is *not* synchronically derived from *srebr-o*. Of course it was derived from *srebr-o* at some point in the history of Polish, i.e., when the adjective *srebr-n-y* was first created – but the output of this primitive derivation was then stored in the lexicon and from that point in time on, derivationally speaking, had got nothing to do with the root *srebr-o* anymore.

Another interesting fact about unvocalized items before C/yer-initial suffixes is that the kind of variation described in the previous section is absent. For instance, *srebr-n-y* is the only possibility for this item: nobody says or can say **sreber-n-y*. I could not come by any item parallel to the *wydr-a / wydr/wyder* pattern, i.e., where a -CC-C-V form would show free (or inter-speaker) variation with a -CeC-C-V form. For any given root-suffix combination, either one or the other are found – never both. This effect is predicted by the lexicalization-based analysis: a lexical item (such as *srebr-n-*) that is unsubjected to derivational activity cannot vary – except in case there were two distinct 'primitive' derivations, which have produced two different lexical entries.⁴

For the sake of completeness, table (6) below gathers those items with unvocalized root-final -CCs before C/yer-initial suffixes whose nom.sg. is distinct from -CC-V: 1) -CC# (*wiatr / wietrz-n-y*), 2) -CC-ek# (*Piotr / Piotr-ek*), 3) -CC-C-V# (*jabł-k-o*). Before considering these data, note that nom.sg. -CC#

⁴ The absence of variation concerns only -CCs that 1) are monomorphemic and 2) based on a vowel-final nom.sg. -CC-V. I know of one item with free variation in a heteromorphemic cluster: *myd-el-niczka / myd-l-niczka* 'soap dish' (from *myd-l-o* 'soap', data from Laskowski 1975: 39). Heteromorphemic clusters are discussed in Section 8 below. There is also one item I am aware of where a nom.sg. form in -CC#, *pieśń* 'song', derives forms with free variation before a C/yer-initial cluster: *piosn-k-a / piosen-k-a* 'id., dim.'. The root-final cluster is most probably monomorphemic synchronically speaking, although it has a heteromorphemic origin (compare CS *pēti > Cz pět 'to sing').

clusters most often vocalize in presence of *-ek* (whose vowel is a yer), at least in native vocabulary. This is shown under (5).

(5) **nom.sg. -CC# → nom.sg. -CeC-ek**

nom.sg.	gen.pl.	C/yer-initial suffix	gloss
wiatr		wiater-ek	wind
bóbr		bober-ek	beaver
filtr		filter-ek	filter
trefl		trefel-ek	club

(6) **CC# that do not vocalize before a C/yer-initial suffix
nom.sg. -CC# or -CC-eC# or -CC-C-V**

nom.sg.	gen.pl.	C/yer-initial suffix	gloss
a. no specificity			
wiatr		wietrz-n-y but: wiater-ek	wind
pieśń		piosn-k-a piosen-k-a	song
–		Jędr-ek	first name
Piotr		Piotr-ek	first name
alarm		alarm-ek ⁵	alarm
uniform		uniform-ek	uniform
film		film-ek	film
park		parcz-ek	park
b. s+C clusters			
myśl	–	myśl-nik	thought
c. derived from adjectives			
mędr-ek		mędr-k-a mędr-szy	know-it-all wiser (compar.)
podl-ec		podl-c-a	rascal
d. isolated words			
	jabl-ek	jabl-k-o	apple
	bedł-ek	bedł-k-a Siedl-ce nabiodr-ek	agaric (mushroom) city in Mazowia cuisse
Sewr		sewr-ski	city in France

⁵ *Alarm-ek*, *uniform-ek* and *film-ek* are quoted by Bethin (1992: 148), but the native that I have consulted has a strong preference for forms in *-ik*: *alarm-ik*, *uniform-ik* and *film-ik*.

The categorization under (6) follows Laskowski (1975: 39), who tries to identify specific patterns that lead to non-vocalization before C/yer-initial suffixes. For instance, he singles out s+C as a vocalization inhibitor, and this may sound plausible given the standard suspicion that s+C are solidary and some kind of contour segment (affricate) (e.g., Selkirk 1982: 346ff.; Carr 1993: 212). This generalization, however, does not fare well since we have already come across the pattern A item *wysp-a / wysp / wysep-k-a*. Finally, whether deadjectival derivation has any bearing on vocalization remains to be seen: Laskowski provides only two items.

All in all, what table (6) shows is again lexical idiosyncrasy: which words do not vocalize before a C/yer-initial suffix cannot be predicted from any of their properties.

4. The regular yer-analysis fails: the difference between A- and B-roots must be lexical

4.1. Insertion disqualified in the standard analysis

Pattern B is regular in the realm of Slavic vowel-zero alternations: vowels that alternate with zero are underlying yers, which vocalize in presence of a following yer, and otherwise remain mute: *wiadro* is /wiadEro/, and the yer E appears on the surface in gen.pl. /wiadEr-O/ → *wiader* (gen.pl. is a yer itself) as well as before a yer-initial suffix /wiadEr-Ek-o/ → *wiader-k-o*.

This analysis of Slavic vowel-zero alternations is the insight encoded in the Lower rule that was introduced by Lightner (1965) and adapted to various linear and autosegmental frameworks in the following decades (Gussmann 1980; Rubach 1984, 1986; Gussmann and Kaye 1993; Scheer 2005, see the overviews in Cyran 2005 and Scheer 2011). For the time being it does not matter which implementation of Lower is used: the only thing that matters is that *all* versions share the basic assumption according to which vowels that alternate with zero are underlying yers.

In other words, the standard analysis is based on deletion, rather than on insertion. The two perspectives were debated at length in the literature: are alternating vowels underlyingly absent and inserted, or present and deleted? Insertion-based analyses have been proposed by, among others, Laskowski (1975), Czaykowska-Higgins (1988) and Piotrowski (1992). They are convincingly refuted by Gussmann (1980: 26ff.), Rubach (1984: 28ff., 1993: 134ff.) and Szpyra (1992: 280ff., 1995: 94ff.).

Among the arguments in favour of deletion, the following are decisive. In languages such as Russian where more than one vowel alternates with zero, it cannot be predicted which vowel will appear in which morpheme. That is, the

presence of an alternating *e* in *d'én' / dn'-á* 'day, nom.sg., gen.sg.', against alternating *o* in *són / sn-á* 'dream, nom.sg., gen.sg.', is a lexical property of the root. An insertion-based analysis would not know which vowel to epenthesize into which root.⁶ The second reason is that there is no context for insertion. The motor for insertion is held to be the avoidance of heavy clusters (or unsyllabifiable / extrasyllabic consonants): the gen.pl. of Russian *lásk-a* 'weasel, nom.sg.' and *bobr-á* 'beaver fur, nom.sg.' is *lások* and *bob'ór*, respectively; in the insertion-based perspective, gen.pl. forms undergo epenthesis in order to avoid final *-sk#* and *-br#* clusters. This cannot be the reason, though, since Russian happily tolerates these clusters in *lásk-a / lások* 'caress, nom.sg., gen.pl.' and *bobr-á / bóbr* 'beaver, gen.sg., nom.sg.'. The same situation is found in other Slavic languages. Cyran (2005) makes the argument based on Polish data: compare *swetr-a / sweter* 'jumper, gen.sg., nom.sg.', *lalk-a / lalek* 'doll, nom.sg., gen.pl.', *durni-a / dureń* 'fool, gen.sg., nom.sg.' (where clusters vocalize) with *wiatr-u / wiatr* 'wind, gen.sg., nom.sg.', *walk-a / walek* 'fight, nom.sg., gen.pl.', *cierni-a / cierní* 'thorn, gen.sg., nom.sg.' (where the same clusters do not vocalize).

4.2. Pattern A misbehaves: Lower predicts that it cannot exist

While pattern B is a regular instantiation of Lower, pattern A cannot be analysed with the standard tool. As was mentioned, a critical ingredient of the theory is that *all* vowels that alternate with zero are underlying yers. Since there is a vowel-zero alternation *cyfr-a / cyfer-k-a* 'number, nom.sg., dim.', there must be a yer separating the two root-final consonants: the root identifies as /cyfEr/. We also know that the gen.pl. is a yer, since it provokes the vocalization of the preceding yer in pattern B: *wiadro /wiadEr-o/ – wiader /wiadEr-O/*. Since the inflection marker is of course the same in both patterns, we are expecting a vocalized yer in gen.pl. /cyfEr-O/ – but alas the gen.pl. is unvocalized: *cyfr*.

In short, the standard theory predicts that pattern A cannot exist: once we are sure that the root has a yer, this yer must surface before the gen.pl.-yer. A logical way out of this dilemma would be to assume an allomorphy for gen.pl.: the case marker would be a yer when attached to B-roots, but literally nothing when combining with A-roots. Hence gen.pl. /cyfEr_A-ø/ surfaces as *cyfr* following the regular application of Lower because the trigger for vocalization is absent. On the other hand, the suffixal yer in /wiadEr_B-O/ produces the regular vocalization of the root yer since this time the gen.pl. marker is a yer.

⁶ It is also not the case that the quality of the alternating vowel may be predicted from the palatal vs. non-palatal character of the preceding consonant. In *bobr-á / bob'ór* 'beaver fur, nom.sg., gen.pl.' for example, an *o*, not an *e*, appears after a palatalized labial. This issue is further discussed in Scheer (forth a), also in the light of *e-o* alternations.

This solution based on gen.pl.-allomorphy is outlandish and can be safely disregarded. It supposes roots that select a particular affix, which means that the head is selected by its complement. Allomorphy, however, works the other way round: heads (affixes) select complements (roots), if anything.

4.3. The difference between A- and B-roots must be lexical

It thus needs to be understood what the difference is between A- and B-roots. Obviously, this difference is *lexical*: membership in either class is arbitrary (with the reserve discussed regarding the sonority slope of the root-final cluster), there are doublets, and there is substantial dialectal, register-related and inter-speaker variation. The distinction thus bears all signs of variable lexical representations.

The puzzle, then, is to identify the lexical property that opposes vocalizing and non-vocalizing roots in a system where the gen.pl. marker is invariable. We know that there is no solution in the frame of the standard Lower-based analysis, but of course the basic insight of Lower cannot be called into question given the massive amount of evidence that it is able to account for. What we need, then, is a scenario where the computation is uniform (Lower) for both A- and B-roots, but based on distinct lexical representations. This is an invitation to reconsider the Slavic mantra according to which *all* alternating vowels are underlying yers.

5. Root allomorphy for A-roots

5.1. Gussmann (2007): Standard GP

Instead of trying to isolate the lexical specificity of A-roots, the gen.pl. puzzle may also be taken to be the witness of irregularity, which leaves no hope for a management under the roof of the Lower rule. The alternative, then, is root allomorphy. This is the option favoured by Gussmann (2007), whose general project is to reduce computational activity to a strict minimum: the labour is outsourced to morphology and an increased number of lexical recordings (allomorphy) on the one hand, and to the phonology-phonetics mapping on the other (see Scheer 2010). In this context, the situation in the gen.pl. leads Gussmann to doubt that vowel-zero alternations are managed by phonology at all, despite their regularity elsewhere (in Polish and Slavic).

Gussmann (2007: 230) hints at a non-phonological reason for the failure of A-roots to vocalize in word-final position: "when the nouns become the input to further derivations, the floating vowel normally appears in them". In other

words, gen.pl. *cyfr* remains unvocalized because it is underived, while *cyfer-k-a* is vocalized because the root was subject to derivational activity.

Gussmann (2007: 233) concludes that there are two distinct lexical recordings for every A-root: one where the root-final cluster is separated by a nucleus (which contains a floating piece of melody), and one where the root-final cluster is a branching onset. This is shown under (7) below.

(7) **root allomorphy: a non-phonological solution**

a. allomorph 1: yer present

O	N	O	N	O	N
c	y	f	e	r	

b. allomorph 2: yer absent

O	N	O	N
		^	
c	y	f	r

Gussmann's analysis is couched in (Standard) Government Phonology where word-final consonants are onsets of an empty nucleus (Kaye 1990). He also adopts Scheer's (2004: §76, 2005) representation of yers as floating pieces of melody: stable vowels are lexically associated as under (8) (*bies* / *bies-a* 'devil, nom.sg., gen.sg. '), while alternating vowels (yers) are lexically floating pieces of melody as under (8) (*pies* / *ps-a* 'dog, nom.sg., gen.sg. ').

(8) **stable vs. alternating vowels**

a. lexically associated vowel: stable

O	N	O	N
b ^j	e	s	

b. floating piece of melody:
alternating vowel (yer)

O	N	O	N
p ^j	e	s	

On this analysis, the association of floating pieces of melody (yers) to their syllabic constituent, i.e., their pronunciation, depends on the status of the following nucleus. In case this nucleus is filled (i.e., associated to some melody), it can govern its lefthand neighbour (as under (9)); if on the other hand the following nucleus is unpronounced itself (either because it is empty as under (9) or because it is itself governed as under (9)), it cannot dispense government. Government thus acts as an association-inhibitor: floating pieces of melody associate iff their nucleus is ungoverned. Association is blocked in case it is governed.

(9) **government-based Lower**

a. *wiadr-o*: yer governed

Gvt					
┌───────────┐					
│ │					
└───────────┘					
O	N	O	N	O	N
w ^j	a	d	e	r	o

b. gen.pl. *wiader*: yer ungoverned

Gvt					
┌───────────┐					
│ /					
└───────────┘					
O	N	O	N	O	N
			↑		
w ^j	a	d	e	r	

c. *wiader-k-o*, yer-initial suffix: yer ungoverned

Gvt						Gvt	
┌───────────┐						┌───────────┐	
│ /						│ /	
└───────────┘						└───────────┘	
O	N	O	N	O	N	O	N
			↑				
w ^j	a	d	e	r	e	k	o

The fact that Lower describes a lateral relation between two nuclei ON₁ON₂ whereby the status of N₂ (presence/absence of a yer) determines the vocalization of N₁ is obvious (this is explained at greater length in Scheer 2005, 2011 and Scheer and Ziková 2010). The analysis in Government Phonology merely gives a name to this lateral relation: government.

In this environment, Gussmann's allomorphy-based analysis works like this: underived forms of A-roots select for the allomorph (7) where the root-final cluster is a branching onset. Therefore, in gen.pl. the root does not contain any yer that could surface, and the result is /cyfr-O/ → *cyfr*. In derived forms on the other hand, the allomorph (7) is selected, and yer-initial suffixes trigger regular yer-vocalization along the lines of (9).

The variation that is related to the vocalization of root-final clusters, then, is the result of distinct lexical representations: doublets (such as *wydra* / *wydr/wyder* 'otter, nom.sg., gen.pl.') are due to the competition of two independent lexical representations, one along the lines of A-roots with the allomorphy described, the other along B-roots where no allomorphy occurs and the only lexical form is the one under (7), i.e., the one that bears a yer.

5.2. Cyran (2005): CVCV, and only epenthesis

Let us now consider Cyran's (2005) analysis, which goes down the same road as Gussmann's, albeit not explicitly since forms with C/yer-final suffixes are not examined. Unlike Gussmann, Cyran evolves in CVCV (Lowenstamm 1996;

Scheer 2004; Cyran 2010) where no branching constituents are left. His model allows for lateral relations among adjacent consonants in both directions. Following the classical take of Standard GP, he holds that in a cluster it is always the obstruent that dominates the sonorant. Hence TR clusters contract a progressive relationship T→R, while RT (and RR, TT) identify as R←T. The empty nucleus enclosed in such a domain is circumscribed and may remain empty without being governed. That is, $T\emptyset_1R\emptyset_2\#$ and $R\emptyset_1T\emptyset_2\#$ are well-formed (in Polish where final empty nuclei can license both RT and TR clusters) despite the presence of two empty nuclei in a row because \emptyset_1 is taken care of by the consonantal domain (while \emptyset_2 is licensed by virtue of being domain-final).

Cyran (2005) only considers the (non-)vocalization of word-final CC# clusters, i.e. before the two zero case markers nom.sg. (acc.sg.) and gen.pl. He is not concerned with the situation of the same clusters in presence of C/yer-initial suffixes. On the basis of this empirical situation, he argues for a purely epenthetic analysis of vowel-zero alternations: all alternating vowels that appear in word-final clusters in Polish are epenthetic. Their insertion repairs an ill-formed structure that accommodates two empty nuclei in a row: the leftmost receives a vowel (note that in his system final empty nuclei are unable to govern). This is shown under (10) below.

(10) vowel-zero alternations according to Cyran (2005)

- a. pattern B: CC# broken up b. pattern A: stable CC#

lexically marked as unlockable

O	N ₁	O	N ₂	O	N ₃	O	N ₁	O	N ₂	O	N ₃
sw	e	t	r	r	r	l	i	t	→	r	r
d	u	r	ń	ń	ń	d	a	r	←	ń	ń

result: *sweter* 'jumper, nom.sg.', result: *litr* 'litre, nom.sg.',
dureń 'fool, nom.sg.' *darń* 'sod, nom.sg.'

The reason why epenthesis occurs under (10), but not under (10), is the lexical marking of N₂ under (10) as 'unlockable'. Interconsonantal relations are contracted whenever they can; their presence under (10) is thus the regular case. As was mentioned, their existence makes the structure well-formed since they 'lock' one of the two empty nuclei in a row. The presence of an alternating vowel under (10) shows that in these roots there is no consonantal domain. Since the difference between *sweter* and *litr* is an idiosyncratic property of each root,

it must be marked in the lexicon. Something thus prevents the consonants under (10) to establish a domain, and Cyran holds N₂ responsible: this nucleus is lexically marked as unlockable. Therefore there are two phonologically active empty nuclei in a row under (10), and the leftmost is subject to epenthesis (the rightmost is licensed because it is domain-final). In sum, then, items with unlockable N₂'s belong to pattern B, while roots with regular N₂'s instantiate pattern A.

Like in Gussmann and Kaye (1993), one of the two obstacles for epenthetic analyses that was mentioned in Section 4.1 is overcome, but the other is not addressed. The context for insertion, which is not predictable from the surface, is lexically specified, here in terms of unlockable empty nuclei. That the analysis is not exportable to (Slavic) languages where more than one vowel alternates (like Russian) is not discussed.

Now recall that forms with C/yer-initial suffixes are not in the empirical scope of Cyran (2005). What would be their analysis in terms of his apparatus? The solution is necessarily based on some kind of allomorphy: the regular pattern B under (10) where N₂ vocalizes before C/yer-initial suffixes (*wiadr-o* / *wiader* / *wiader-k-o*) is without problems (like for the regular yer-based analysis), but pattern A cannot be derived by purely phonological means. In order to avoid vocalization in gen.pl. *cyfr*, there must be a consonantal domain as under (10), which however will prevent vocalization in **cyfr-k-a*. Like in Gussmann's analysis, A-items with C/yer-initial suffixes must thus be derived from a lexical form with an unlockable N₂ as under (10) (*cyfer-k-a*), while gen.pl. necessarily instantiates a form with a locked N₂ as under (10).

6. A purely phonological solution for the A-B variation

6.1. Bethin's (1992) epenthesis is on the right track, but its scope is both too narrow and too wide

The point made in this chapter is that there is no need to recur to an extra-phonological solution for the Polish pattern A-B variation. A purely phonological management is possible if the invitation that was mentioned at the end of Section 4 is followed: it is not true that all vowels which alternate with zero are underlying yers. Note that this statement is entirely independent of any particular implementation of Lower: it will work with linear as much as with autosegmental systems, and within the latter does not make any selection either. Hence, the analysis below is done in strict CV, but the same point could be made in any other framework that can express a representational difference between the presence and the absence of yers.

Recall that Bethin has already made this point in her 1992 book: “[v]owel-zero alternations in Polish are not attributable to a unique underlying representation”, Bethin 1992: 153). This section takes a closer look at how exactly her dual system works, i.e., which cases of vowel-zero alternations are exactly the result of yer vocalization, and which ones are due to epenthesis. Also, the motivation of epenthesis is examined.

The major line of division that Bethin draws is between native vocabulary and loanwords. She motivates epenthesis on the grounds of vowel-zero alternations in prepositions where Lower plays no role (*w domu* ‘in the house’, *z doktorem* ‘with the doctor’ vs. *we wtorek* ‘on Tuesday’, *ze stołem* ‘with the table’) and then argues that since grammar allows for both yers and epenthesis, there is ambiguity for speakers when they come across a vowel-zero alternation:

[t]his ambiguity is most likely to arise in cases where the evidence for a [-cons] node [her representation of yers] in the conditioning environment is questionable, as for example, might be the case in the inflectional paradigm for the nom sg and gen pl desinences. More information is needed to study how Polish speakers interpret the vowel-zero alternation. (Bethin 1992: 146)

She leaves it at that for alternations that occur in inflectional paradigms, and turns to the study of loanwords. The vowel-zero alternations that are found here, she argues, are the result of epenthesis. While examining the data, though, she notes that native vocabulary and loans behave alike: “[m]any borrowings do not exhibit the vowel-zero alternation at all” (Bethin 1992: 148), and on the same page “[s]ince there are so many native nouns that do not exhibit the alternation as expected, or exhibit it partly [...], the absence of the vowel-zero alternation in borrowed forms is not particularly significant”.

This is certainly true: we have already seen in Section 3.1 that loanwords and native vocabulary are equally represented in pattern A and B, produce items that are subject to gen.pl. variation and derive forms that refuse to vocalize before a C/yer-initial suffix. Hence there is no reason to believe that loans and native items are any different regarding the workings of vowel-zero alternations. Bethin’s distribution of the two managements whereby epenthesis occurs in loans and yers are found elsewhere, then, cannot be correct. If it is true that there is an epenthetic management besides yers, the question thus arises how we know which particular vowel-zero alternation is driven by which mechanism. It is argued below 1) that there is epenthesis, 2) that its motivation is not the one that Bethin uses (rather than being motivated by alternations in prepositions, it is enforced by the configuration created by C/yer-initial suffixes), and that 3) the distribution of the two mechanisms is along the opposition between pattern A (epenthesis) and pattern B (yers).

On this view, the scope of epenthesis in Bethin (1992) is too narrow: not only loans are concerned. But it is also too wide: not all vowel-zero alternations

that occur in loans are the result of epenthesis. Loans such as *perl-a* / *perel* / *perel-k-a* ‘perl, nom.sg., gen.sg., dim.’ also occur in pattern B, which faithfully instantiate regular yer-based alternations.

Another difference between the analysis that is developed below and Bethin’s is the motivation for epenthesis, and this is due to the different perspectives that are induced by different representational environments: while Bethin follows the line of attack of all epenthesis-based analyses whereby a structure needs to be repaired because of a problem encountered with a consonant (which is unsyllabifiable or extrasyllabic), the need for repair in the analysis below comes from the illegal situation of a nucleus (which cannot remain empty in presence of another internal empty nucleus to its right).

As we will see, a side-effect of the nucleus-focussed and hence government-based analysis is the correct prediction of exactly the nucleus that is subject to epenthesis: in $C\emptyset_1C\emptyset_2CV$, V governs \emptyset_2 , but \emptyset_1 remains orphan. It is thus \emptyset_1 , not \emptyset_2 , that is subject to epenthesis: /*cyfɔr-ɔk-a*/ → *cyferka* (not **cyfreka*). Bethin (1992:152) wonders why in the $C_1C_2C_3$ cluster that is in need of repair epenthesis only ever occurs between C_1 and C_2 , rather than between C_2 and C_3 . Her answer is cyclicity: *cyferka* is cyclically derived from [[[*cyfr*]k]a], and epenthesis breaks up *fr* because this is the first cluster that is encountered by the derivation on the innermost cycle. This cannot be the reason, though, since gen.pl. *cyfr* then should also be subject to epenthesis: it is made only of the innermost cycle. The basic equation is precisely that the *same* item, [*cyfr*], behaves differently according to whether it occurs alone (result: *cyfr*) or is followed by a C/yer-initial suffix (result: *cyfer-k-a*). Cyclic derivation is unable to discriminate between the two options because there is no look-ahead: when the innermost cycle of [[[*cyfr*]k]a] is computed, the computation sees nothing else than [*cyfr*] – it does not know that there will be a C/yer-initial suffix on a later cycle.

In sum, I argue that Bethin (1992) was on the right track for the solution of the puzzle by proposing two distinct mechanisms for vowel-zero alternations (yers and epenthesis), but that the scope of both was ill-defined. Also, the shift from a consonant- to a nucleus-focussed view, i.e., to the lateral government-based interpretation of Lower, allows for a better understanding of the precise locus of epenthesis.

6.2. The key to the puzzle: internal vs. final

Before we proceed with the analysis, a pre-theoretical ingredient is missing. Recall from Section 5 that Gussmann ascribes the contrasting behaviour of gen.pl. *cyfr* ‘number’ (no vocalization) and *cyfer-k-a* ‘id., dim.’ (vocalization) to the fact that the latter is derived, while the former is not. This is the non-

phonological way of looking at things. But there is also a phonological way to capture the contrast. Regularity (or uniformity) is encountered when the root-final CC is word-internal: vocalization is regular (pattern A *cyfer-k-a* and pattern B *wiader-k-o* behave alike, except for the lexicalized cases discussed in Sections 3.3 and 7) and unsubjected to variation even for those items that show variation in gen.pl. (*wydra* produces both gen.pl. *wydr* and gen.pl. *wyder*, but only *wider-k-a*). By contrast, irregularity and variation are observed when the cluster is word-final: here vocalization is a matter of lexical marking (gen.pl. *cyfr* vs. gen.pl. *wiader*), and this is also where the locus of variation is found (*wydra* / *wydr*/*wyder*).

Again Bethin (1992) has understood that this is the critical contrast. Regarding *forem-n-y* (*form-a* / *form*), she writes that:

the sonorant is no longer at the end of the word, and a vowel is epenthesised to facilitate syllabification. Although word medial adjunction seems to be characteristic of a few items in Polish such as *piosnka* ‘song’, *srebrny* ‘silver’, *cieplny* ‘thermal’, the usual adjustment of borrowings into Polish phonology seems to call for vowel epenthesis.’ (Bethin 1992: 152)

In Bethin’s analysis, unsyllabifiable root-final consonants such as the *m* in gen.pl. *form* or the *r* in nom.sg. *filtr* are saved by being directly adjoined to a higher prosodic constituent (the phonological word): $[[for]_m]_w$ and $[[filt]_r]_w$ are well-formed since all consonants are integrated into prosodic structure. Lexical marking then discriminates between items that favour this solution (which is the regular way to go) and those where adjunction to the phonological word is blocked: this is the case of nom.sg. *cyngiel* ‘trigger’ (< German *Züngel*), where the word-final consonant remains unsyllabifiable and therefore can only be saved by epenthesis (Bethin 1992: 150, see Cyran 2005 for an overview of this analytic strand).

If it is understood that whether a word is a loan or not plays no role, Bethin’s analysis thus opposes pattern A and pattern B by the idiosyncratic (in)ability of a root to have its last consonant adjoined to the phonological word (pattern A: yes, pattern B: no). Crucially, though, this opposition is only workable word-finally since adjunction to the phonological word is a form of extraprosodicity (Rubach and Booij 1990), and the Peripherality Condition restricts extra-Xity (extrametricality, extrasyllabicity, extraprosodicity) to word edges (e.g., Hayes 1995: 57ff., Clements 1990: 290). This is what Bethin means when she says that adjunction to the phonological word is impossible word-medially. She then runs into ‘a few items’ (*piosnka* etc.) where, in violation of the Peripherality Condition, Rubach and Booij (1990) (also Rubach 1997) argue for an extrasyllabic analysis of the middle consonant of the CRC cluster. Her way out is again to call on the native vs. loan contrast (word-internal adjunction to the phonological word is possible in words belonging to the former, but not in the latter set), but this does

not work: Bethin (1992: 148) herself provides a list of loans that refuse to vocalize before C/yer-initial suffixes (e.g., *barw-a* / *barw* / *barw-n-y* ‘colour, nom.sg., gen.pl., adj.’ (< German *Farbe*)).

I believe that as before, Bethin’s general direction was correct: the contrast between the word-internal and word-final locus is responsible for the distribution of variability (final) and stability (internal). The representational environment in which she evolved, though, did not allow her to bring home this intuition.

In Government Phonology (Standard and strict CV alike), the internal-final contrast translates into the difference between internal and final empty nuclei: the nucleus that decides on the vocalization of the putative yer in the preceding cluster under (9) is word- (or domain-) final, but word- (or domain-) internal under (9). It is well known that the right edge of words allows for more clustering than what can be found word-internally (e.g., Broselow 2003). This and other specific properties of the right edge have been translated into Government Phonology as a difference in the lateral actorship of final empty nuclei (FEN), as opposed to internal empty nuclei. In short, FEN can do more than their internal peers, i.e., they may be able to license and govern where internal empty nuclei are unable to dispense lateral forces (e.g., Charette 1990, 1992; Scheer 2004: §524; Cyran 2010).

6.3. A government-based analysis that predicts the locus of epenthesis

With this in mind we can finally introduce the purely phonological analysis of the A-B variation that the reader is waiting for: the basic insight is the lexical contrast that appears under (11) below.

(11) lexical contrast between A- and B-roots

a. A-root: yer absent

O	N	O	N	O	N
f	o	r	m		

b. B-root: yer present

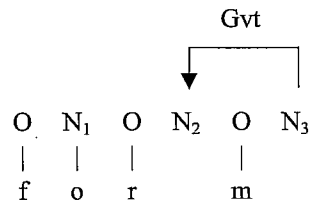
O	N	O	N	O	N
w ^j	a	d	e	r	

The gen.pl. marker is literally nothing (this is the regular analysis in government-based Lower, see Scheer 2005, 2011). Hence in gen.pl. the representations under (11) are interpreted as such. This is shown under (12) below.

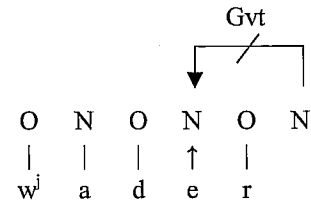
(12) derivation of gen.pl.

a. A-root: *form*

FEN governs empty nucleus

b. B-root: *wiader*

FEN is unable to govern contentful nucleus



FEN are able to govern empty nuclei (as under (12)a), but not nuclei that have a lexical content (i.e., a floating piece of melody, as under (12)).⁷ Therefore the yer of B-roots surfaces: its nucleus is ungoverned ((12)b). Under (12), however, nothing can surface in A-roots since they lack floating pieces of melody (yers). This is also the reason why the FEN is able to govern the preceding nucleus: it is empty.

In nom.sg. forms, the vowel in the final nucleus will always govern the preceding nucleus, irrespectively of whether it is empty or not. The result are non-vocalized forms with both A- and B-roots (*form-a*, *wiadr-o*).

C/yer-initial suffixes identify as under (13) below: they begin with a floating piece of melody (the yer), which after concatenation ends up in the root-final empty nucleus.

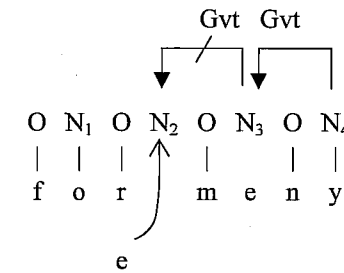
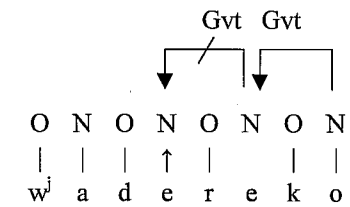
(13) lexical representation of C/yer-initial suffixes

O	N	
e	n	adjectival -n-y
e	k	diminutive -ek, -k-a, -k-o
		etc.

The derivation of forms with C/yer-initial suffixes, then, is as under (14).

⁷ Were FEN able to also govern contentful nuclei, /p^jEsø/ would not surface as *pies*, but as **ps* (Scheer 2004: §541).

(14) derivation of forms with C/yer-initial suffixes

a. A-root: *foremny*b. B-root *wiaderko*

The result is the same on the surface (presence of a vowel) with both A- and B-roots, but the vowel that appears has different origins: it is the regular yer that is lexically present in B-roots, but results from epenthesis in A-roots. In the latter, indeed, the concatenation of the suffix and the application of government produces a configuration that features two unpronounced empty nuclei in a row (N₂ and N₃). Such a structure is ill-formed. N₃ is governed and therefore cannot surface; but being itself unpronounced it cannot govern N₂, which therefore remains orphan. In this situation, the structure is repaired by an epenthesis that fills in the orphan nucleus N₂, i.e., the one that is not governed (N₃ has no demands since it is governed).⁸

Note that N₃, the root-final nucleus, is word-internal under (14), but word-final under (12) when the gen.pl. is derived. It is empty in both cases, and this emptiness makes it unable to govern in internal position: this is why epenthesis is triggered. It is a good governor, though, when occurring in word- (or domain-) final position as under (12): as was mentioned in the previous section, this is how Government Phonology expresses the opposition between the internal and the final locus: FEN 'can do more' than their internal peers.

On this analysis, the variation observed is strictly lexical: doublets are produced when speakers have lexicalized both A- and B-forms for the same root. The evolution being in the sense from A- to B-roots, high style is conservative, and B-forms may be socially stigmatized.

⁸ A ground rule in Government Phonology is indeed that empty nuclei need to be governed: ungoverned empty nuclei make a representation ill-formed. The detail is a little more complicated (and also depends on the brand of GP that one subscribes to), but does not matter here. Relevant literature includes Kaye (1992); Gussmann and Kaye (1993); Cyran (2010: 116ff.) provides a survey.

7. Unvocalized clusters before C/yer-initial suffixes

7.1. What kind of animal are trapped consonants?

Recall from Section 3.3 that the pre-theoretical analysis of those items that do not vocalize before C/yer-initial clusters has concluded at their lexicalization. That is, *srebr-n-y* 'silver, adj.' is not synchronically derived from *srebr-o* 'silver'. Also recall that the cluster -pln-, or CRC more generally speaking, is perfectly well-formed and unspectacular in Polish: *trwać* 'to last', *brzmieć* 'to sound', *klnę* 'I curse', *plwocina* 'sputum' etc.

Sonorants that occur between two other consonants (or between a word edge and another consonant: *rteć* 'quicksilver', *Piotr* 'Peter') are called trapped. While their distribution is identical to syllabic consonants, they have exactly reverse properties: 1) syllabic consonants are counted in verse and by natives, while their trapped cousins are not (Polish *trwać* is a monosyllable, Czech *trvat* 'to last' on the other hand, where the r is syllabic, is a bisyllable); 2) syllabic consonants can bear stress (the r of Czech *trvat* is stressed), while trapped consonants cannot (penultimate stress would fall on the r of Polish *trwać*, were it stressable); also, trapped consonants are invisible for stress assignment (were the r counted in Polish *jesiotr* 'sturgeon', penultimate stress would fall on the o, not on the e); 3) trapped consonants are transparent for voicing: the two Ts in a TRT sequence where R is trapped always agree in voicing (the /v/ of Polish *krw* 'blood, nom.sg.' devoices in *krw-i* [krfi] 'id., gen.sg.'), whereas syllabic consonants are not transparent (Czech /v/ does not devoice in *krv* / *krv-e* 'blood, nom.sg., gen.sg. '); 4) syllabic consonants provoke the non-vocalization of preceding alternation sites (i.e., where a vowel alternates with zero), as opposed to trapped consonants, which produce vocalization.

These diagnostics for the identification of trapped consonants and their opposition to their syllabic cousins have been established in Scheer (2008). Polish has only trapped consonants, whose shorthand description is thus that they are invisible to the vocalic world. Trapped consonants have been analyzed in various ways in the literature. For Polish, the classical analysis is Rubach and Booij's (1990) and Rubach's (1997) that we have already come across in Section 6.2: trapped consonants are unsyllabifiable and therefore extrasyllabic; they are integrated into autosegmental structure by being adjoined directly to the phonological word, i.e., bypassing syllable structure. It was also mentioned that this analysis faces trouble because extrasyllabicity (as much as extrametricality or extraprosodicity) is only encountered at word- (or morpheme-) edges (Peripherality Condition).

In Government Phonology, the analysis of trapped consonants is based on the insight that they are always involved in branching onsets, i.e., in a solidary relationship with the preceding consonant (Charette 1992). In strict CV, this is how

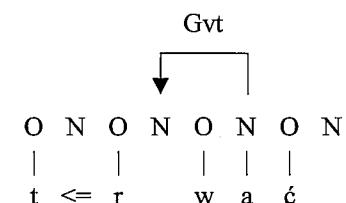
the empty nucleus to their left is circumscribed (Scheer 2009). The systematic opposition with syllabic consonants, then, is due to the non-association of trapped consonants to any nucleus, while the essence of syllabic consonants is to sit in an onset, but to branch on a neighbouring nucleus (whether to the one that precedes or follows is subject to debate, see the summary in Scheer 2008). Hence their participation in the vocalic world.

7.2. A third player: the root-final -CR is a branching onset

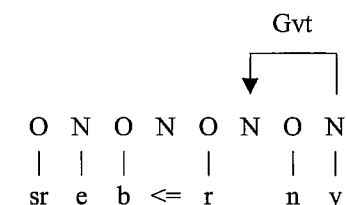
Given these premises, the representation of trapped consonants is as under (15) below, and there is no difference between monomorphemic CRC as in *trwać* and heteromorphemic CR-C as in *srebr-n-y*. Note that the bridge '<=' between the two consonants is the way to express solidarity in strict CV: T<=R is the representation of a branching onset, and the intervening nucleus may remain empty because it is circumscribed by the interconsonantal relationship (Scheer 2004: §14; Brun-Trigaud and Scheer 2010).

(15) representation of trapped consonants

a. monomorphemic CRC



b. heteromorphemic CRC



The lexicalization of clusters that do not vocalize before C/yer-initial suffixes, then, is expressed as by the definition of trapped consonants: they are trapped because they form a branching onset with the preceding consonant *in the lexicon*. That is, the difference between roots that vocalize before C/yer-initial suffixes and those that do not is precisely this: the R of the former entertain a lexicalized relationship with the preceding consonant, while the latter do not. The nucleus to their left in vocalizing roots is empty and hence needs to be taken care of (by way of epenthesis in case the following nucleus is unpronounced), while the nucleus to the left of non-vocalizing items is engaged in a branching onset and hence taken care of.

Table (16) below depicts the three-way opposition between lexical items whose cluster 1) always vocalizes (*wiadr-o* / *wiader* / *wiader-k-o*, i.e., which have a yer), 2) only vocalizes before C/yer-initial suffixes (*cyfra* / *cyfr* / *cyfer-k-a*, free empty nucleus) or 3) never vocalizes (*srebr-n-y*, empty nucleus involved in a branching onset).

(16) root-final CC clusters: three distinct lexical identities

a. yer	b. free empty nucleus	c. empty nucleus involved in a branching onset
O N O N O N	O N O N O N	O N O N O N
w ⁱ a d e r	c y f r	s r e b <=> r

It is important to recall that we are not talking about roots: what is shown under (16) are lexically recorded items, and a given root may be represented in Polish by just one such item (case of *wiadr-*), or by several lexical recordings. All combinations are attested: the root that appears in *srebr-o* 'silver' for example is represented in the synchronic Polish lexicon by a (16) item (that derives *srebr-o* / *sreber* / *sreber-k-o* 'silver, nom.sg., gen.pl., dim.')

and a (16) item (which produces *srebr-n-y* 'id., adj.'). The root of *wiatr* 'wind, nom.sg.' instantiates a (16) (or a (16)c) item in nom.sg. *wiatr*, but appears as a (16) item in *wiater-ek* 'id., dim), and is represented by a (16) item in *wietrz-n-y* 'id., adj.). Finally, the co-existence of (16) / (16) recordings is the source of the variation described in Section 3.2 (*wydr-a* / *wydr* / *wyder* / *wyder-k-a* 'otter, nom.sg., gen.pl., dim.').

In sum, then, what is recorded are different root allomorphs, i.e., excluding suffixes: /wiadEr/, /cyfər/, /sreb<=>r/. Note that this root-allomorphy is quite unlike Gussmann's: it does not account for the same data sets. While Gussmann's allomorphy is about the difference between pattern A and B, this contrast is accounted for by different lexical representations of A- and B-roots and a uniform and purely phonological computation (no allomorphy) in the present analysis. The different types of lexical recordings under (16) only account for two things: (free) variation between pattern A and B (like Gussmann) and the existence of unvocalized clusters before C/yer-initial roots (that Gussmann does not talk about).

7.3. Two challenges and a fourth player

There are two types of challenges for the analysis presented. One is specific to this analysis, the other is general and also concerns all other perspectives on unvocalized clusters before C/yer-initial suffixes. The former concerns the fact that there are a few unvocalized items where the supposedly trapped consonant is not preceded by an obstruent, but by another sonorant. Hence it is not obvious to represent the RR cluster in RRC as a branching onset. Table (6) above mentions three words: *alarm* / *alarm-ek* / *alarm-k-u* 'alarm, nom.sg., dim. nom.sg., dim. gen.sg.', *film* / *film-ek* / *film-k-u* 'film, nom.sg., dim. nom.sg., dim. gen.sg.', *uniform* / *uniform-ek* / *uniform-k-u* 'uniform, nom.sg., dim. nom.sg., dim. gen.sg.'.

All of them are loans – and recall from note 5 that some natives prefer forms in *-ik* (*alarm-ik*, *uniform-ik*, *film-ik*), which means that maybe there is no issue at all.

In case there is, one solution is to have a larger definition of what a possible branching onset is in Polish (or in Slavic more generally speaking): RRs would also qualify. This is argued for by Blaho (2001, 2004), and Ziková (2008) includes even RT and TT clusters. Space restrictions do not allow for going into any greater detail beyond the mention that this perspective faces its own problems (see the discussion in Scheer 2009: 418ff.).

The second challenge, common to all approaches to Polish, is raised by the existence of unvocalized -CC-C clusters before C/yer-initial suffixes whose middle consonant is not a sonorant. Table (4) above lists nine cases: e.g., *kart-a* / *kart* / *kart-k-a* 'card, nom.sg., gen.pl., dim.', *legend-a* / *legend* / *legend-k-a* 'legend, nom.sg., gen.pl., dim.'. All items again are loans, although it is true that one may be tempted to discount the Rw-C cases (like *bulw-a* / *bulw* / *bulw-k-a* 'root tuber, nom.sg., gen.pl., dim.') on the grounds of the fact that [v] (spelt w) is probably an underlying sonorant /w/, rather than an obstruent (Gussmann 1981, 1998; Cyran and Nilsson 1998).

This being the case or not, we are left with *kart-a*, *legend-a* and the like. A possible solution here is to take the behaviour of these words as evidence for counting Polish into the class of languages where coda sonorants can branch on the nucleus to their right. This is shown under (17) below.

(17) coda sonorants can branch in Polish

a. lexical recording	b. non-vocalization before <i>-k-a</i>
	Gvt
	↓
O N ₁ O N ₂ O N ₃	O N ₁ O N ₂ O N ₃ O N
k a r t	k a r t k a

On this count, *kart-k-a* and the like are well-formed because N₂ is not empty: it receives melodic material from the preceding R (while N₃ is governed anyway).⁹

Branching coda sonorants under (17) are thus a fourth option for CC-final items to be recorded in the lexicon: it needs to be added to the three possibilities under (16).

⁹ The fact that homorganic nasal-stop clusters as in *legend-a* and *rumb-a* also produce the effect shown supports the idea that the intervening nucleus is circumscribed, i.e., phonologically inactive: the solidarity of NC clusters is well documented (e.g., Harris 1994: 69, 174ff.; Honeybone 2005: partial geminates).

The reasons for splitting languages into those where sonorants can and those where they cannot branch on following empty nuclei is entirely independent of the Polish facts. On the one hand, there is pervasive parametric variation regarding the strength of the post-sonorant position: consonants after sonorants may either be strong (i.e., go along with the post-obstruent position: in the evolution from Latin to French, the *t* in *porta* > *porte* is guaranteed against lenition as much as the *t* in *rupta* > *route*) or behave as if they were intervocalic (i.e., post-tonic *t*-lenition in various varieties of English: flapping occurs after sonorants as in *quarter*, *winter*, but is impossible after obstruents as in *chapter*, *after*). This is illustrated in greater detail in Ségéral and Scheer (2008a), and the interpretation along the lines of (17) is argued for in Ségéral and Scheer (2008b): if the coda sonorant branches on the following nucleus in languages where post-sonorant consonants are weak, they are literally intervocalic, representationally speaking (i.e., preceded and followed by contentful nuclei).

On the other hand, an argument in favour of (17) is made in Szigetvári and Scheer (2005: 62ff.) based on parametric variation in stress assignment.

Whether the analysis under (17) is workable for Polish remains to be seen: it should make the prediction (if it is true that not just some, but all coda sonorants branch) that there are no coda phenomena in Polish at all (such as lenition on consonants in coda position). This is not an implausible empirical statement.

8. Heteromorphemic clusters

8.1. Suffixes may or may not have an initial floating yer

Let us finally turn to heteromorphemic clusters, i.e., where the first consonant belongs to the root and the second to a suffix. We will see that work exactly in same way as their monomorphemic peers: their behaviour is lexically conditioned. The only difference is that the presence (pattern B) or absence (pattern A) of the floating piece of melody is a lexical property of the suffix, rather than of the root. This makes sense: we have seen under (13) that suffixes may be yer-initial – logically, then, they may also lack the initial yer.

Table (18) below shows that there are non-vocalizing and vocalizing suffixes. Note that as before vocalization is systematic before C-/yer-initial suffixes in both cases. Also note that the (non-)vocalization of a suffix does not depend on the particular case marker at hand: all surface zeros behave alike. That is, the yer of yer-bearing suffixes, i.e., under (18), appears on the surface in nom.sg. (*pies-ek* / *pies-k-a*) as well as in gen.pl. (*has-ł-o* / *has-eł*).

(18) heteromorphemic clusters

(non-)vocalization in nom.sg. or gen.pl. is an individual property of each suffix

a. non-vocalizing suffixes

(heteromorphemic pattern A)

	C-C# gen.pl.	C-C-V nom.sg.	C-eC-C C/yer-initial suffix	gloss
-b-a	szuż-b	szuż-b-a	szuż-eb-n-y	service
-stw-o	świń-stw	świń-stw-o	świń-stew-k-o	mess
-ń-a	kawiar-ń	kawiarni-a	kawiar-en-k-a	Café
-w-a	lich-w	lich-w-a	lich-ew-k-a	usury

b. vocalizing suffixes

(heteromorphemic pattern B)

	C-eC#	C-C-V	C-eC-yerC	gloss
-ek	pies-ek (nom.sg.)	pies-k-a	pies-ecz-ek	dog
-ec	wzorz-ec (nom.sg.)	wzor-c-a		pattern
-ew	kon-ew (nom.sg.)	kon-w-i	kon-ew-k-a	can
-eł-o	has-eł (gen.pl.)	has-ł-o	has-eł-k-o	password
-en-a/o	pani-en (gen.pl.)	pan-n-a	pani-eń-sk-i	Miss
-en-ia	kuch-en (gen.pl.)	kuchni-a	kuch-en-k-a kuch-en-n-y	kitchen

Suffixes thus identify as either yer-initial or non-yer-initial. This is shown under (19) below.

(19) lexical representation of suffixes

a. yer-initial

O	N
e k	
e c	
e w	
e ł	-o
e n	-a/o
e n	-ia

b. non yer-initial

O	N
b	-a
st e w	-o
ń	-a
w	-a

The A-B variation is thus lexical in all morphemes, roots and suffixes (affixes) alike. The concatenation of the two types of suffixes produces strings that are exactly identical to the A- and B-items that we know already from monomorphemic clusters. This is shown under (20) below.

(20) heteromorphemic and monomorphemic A- and B-items

	a. pattern A				b. pattern B			
	O	N	O	N	O	N	O	N
heteromorphemic	sł	u	ż	b a	h	a	s e	ł o
monomorphemic	c	y	f	r a	w ⁱ	a	d e	r o

Derivations of gen.pl. and C/yer-initial forms then work along the same lines as with monomorphemic clusters.

8.2. Identification and incidence of some individual suffixes

Laskowski (1975: 41ff.) examines various suffixed forms. He tries to identify purely phonological properties that are able to predict (non-)vocalization of heteromorphemic clusters. In his treatment, like almost everywhere else (Cyran 2005 is an exception), heteromorphemic clusters are not any different from monomorphemic items. This puts him on the wrong track on a number of occasions: the only thing that decides on vocalization is the lexical shape of the suffix. One case where he goes off the track is for forms that end in *-nia* in nom.sg.. Illustration is provided under (21) below.

(21) suffixes /-n-ia/ and /-eń-a/, both *-nia* on the surface

a. /-n-ia/

C-C-V nom.sg.	C-eC# gen.pl.	CeC-C C/yer-initial suffix	gloss
kuch-ni-a	kuch-en	kuch-en-k-a kuch-en-n-y	kitchen
wiś-n-ia	wisi-en	wisi-en-k-a	sour cherry
stud-n-ia	studzi-en	studzi-en-ka	well (fountain)
suk-n-ia	suki-en	suki-en-ka	dress

b. /-eń-a/¹⁰

C-C-V nom.sg.	C-C# gen.pl.	C-eC-yerC C/yer-initial suffix	gloss
kawiar-ni-a	kawiar-ń	kawiar-en-k-a	Café
kasar-ni-a	kasar-ń	(kasar-en-k-a)	barracks, watch-tower
cukier-ni-a	cukier-ń	cukier-en-ka	pastry shop
kotel-ni-a	kotel-ń	(kotel-en-k-a)	period of pairing up sheep
kopal-ni-a	kopal-ń	kopal-en-k-a	mine
chłód-ni-a	chłód-ń	chłód-en-k-a	cold room
czereś-ni-a	czereś-ń	czeresi-en-k-a	sweet cherry
grzyb-ni-a	grzyb-ń	grzybi-en-k-a	mycelium (kind of fungus)

Laskowski (1975: 41) tries to tell (21) from (21) on the basis of the root-final consonant: the gen.pl. vocalizes after obstruents in the former, but remains unvocalized after sonorants in the latter case. This is not true: there are non-vocalizing items under (21) whose root-final consonant is an obstruent (and which Laskowski does not mention). That we are facing two distinct suffixes may also be seen when looking at the forms where the suffixal consonant is word-final (i.e., column two):¹¹ vocalizing items under (21) have a plain *n*, while non-vocalizing clusters show a palatal *ń*. Interestingly, this contrast is neutralized before C/yer-initial suffixes, where only plain *n* occurs.

Another interesting case is the surface sequence *-Cw-a*, which Laskowski (1975) does not analyze morphologically either. All instances remain unvocalized in gen.pl. (e.g., *lichw-a* / *lichw* 'usury', *larw-a* / *larw* 'grub'), but vocalization may (*lich-ew-ka*) or may not (*larw-k-a*) occur before C/yer-initial suffixes. Table (22) below shows both paradigms (non-vocalized items have already been discussed in table (1) above).

¹⁰ Some of the words below have competing gen.pl. forms where the case marker is *-i*, rather than zero: nom.sg. *chłód-ni-a*, *czereś-ni-a* and *grzyb-ni-a* also derive gen.pl. *chłód-n-i*, *czereś-n-i* and *grzyb-n-i*.

¹¹ Note that it does not matter whether the suffix is followed by a vowel in nom.sg.: nom.sg. *grzybi-eń* behaves exactly like nom.sg. *chłód-ni-a* etc.

(22) mono- and heteromorphemic -Cw-a

a. monomorphemic -Cw-a

Cw-V nom.sg.	Cw# gen.pl.	Cw-C C/yer-initial suffix	gloss
larw-a	larw	larw-k-a	grub
barw-a	barw	barw-n-y	colour
ścierw-o	ścierw	ścierw-nik	corpse
bulw-a	bulw	bulw-k-a	root tuber
salw-a	salw	salw-k-a	salvo

b. heteromorphemic -C-w-a

C-w-V nom.sg.	C-w# gen.pl.	C-ew-C C/yer-initial suffix	gloss
lich-w-a	lich-w	lich-ew-k-a	usury
past-w-a	past-w	past-ew-n-y	victim
modlit-w-a	modlit-w	modlit-ew-nik	prayer
Lit-w-in	Litw	lit-ew-sk-i	Lithuania
sak-w-a	sak-w	sak-iew-k-a	nosebag
Mosk-w-a	Mosk-w	Mosk-iev-sk-i	Moskow
lin-k-a	lin-ek	lin-ew-k-a	small line

Like before, Laskowski (1975: 42) tries to predict this contrast on the basis of the consonant that precedes the -wa: clusters are vocalized, he holds, after obstruents, while they remain unvocalized after sonorants. This time I could only find one item that shows that vocalization is independent from the nature of the preceding consonant: *lin-ew-k-a* 'small line', where a sonorant precedes the w (whose derivational basis, however, is unclear: there is no nom.sg. **lin-w-a*). But even without that, it is clear from the morphological analysis that the decisive property which allows us to predict (non-)vocalization is the mono- or heteromorphemic character of the Cw-cluster: vocalization is encountered only when the -w- is a suffix.

In terms of the four distinct lexical representations that were discussed in Sections 7.2 and 7.3, the non-vocalizing items under (22) are instances of (17), i.e., however, are regular pattern A cases as under (16) (only coda-consonants that branch on the following nucleus. Words under (22), of the heteromorphemic kind).

A particularly interesting item is *past-w-a* / *past-w* 'victim, nom.sg., gen.pl.'. The associated C/yer-initial form is *past-ew-n-y*, but it means 'relative to pasture'. This meaning is obviously idiosyncratic, and there is no way to have a semantically compositional derivation of 'relative to pasture' on the basis of *past-w-* 'victim' and *-n-* 'adjective'. This illustrates, if there was any more need, that forms with C/yer-initial suffixes may be lexicalized.

8.3. Variation associated to heteromorphemic clusters

The same variation as with monomorphemic clusters is found with their heteromorphemic cousins. For the suffix *-l-o*, Laskowski (1975: 39) mentions *myd-el-nicz-k-a* 'soap dish' and *myd-l-nicz-k-a* 'id.' in free variation, and if *pieś-ń* 'song' is counted as heteromorphemic (see note 4), the same goes for *pios-en-k-a* / *pios-n-k-a* 'song dim.'. On the other hand, *mas-l-o* 'butter' and *piek-l-o* 'hell' derive only *mas-el-nicz-k-a* 'butter dish' and *piek-el-nic-a* 'witch', respectively.

Lexicalized items where a RCC cluster resists vocalization even in presence of a C/yer-initial suffix are also encountered: Laskowski (1975: 43) mentions *strzel-b-a* / *strzel-b* / *strzel-b-ka* 'rifle, nom.sg., gen.pl., dim.' and *proś-b-a* / *proś-b* / *proś-b-k-a* 'demand, nom.sg., gen.pl., dim.'. These are thus the heteromorphemic peers of the type *kart-a* / *kart* / *kart-k-a* that was discussed in Section 7.3 where the coda sonorant (or the s) branches on the following nucleus as under (17).¹² Also, as with monomorphemic clusters, the same root may produce vocalized and unvocalized items before C/yer-initial suffixes: associated to the B item *światł-o* / *światel* 'light, nom.sg., gen.pl.' on finds *światel-k-o* 'id., dim.' and *świetl-n-y* 'id., adj.'.

Finally, an interesting variation that was not discussed thus far is illustrated under (23) below.

(23) C₁-C₂-C₃: vocalization or loss of C₂

C-l-V nom.sg.	C-e# gen.pl.	C-el-C C/yer-initial suff.	C-l-C C/yer-initial suff.	gloss
mas-l-o	mas-eł	mas-el-nic-a	mas-nic-a	butter, nom.sg., gen.pl., butter churn
żdźb-l-o	żdźb-eł	żdźieb-eł-k-o	żdźieb-k-o	blade of grass

Before C/yer-initial suffixes, the two items either vocalize the suffix /-eł/ (the pattern B reaction), or eliminate the middle consonant of the /C₁-eC₂-eC₃/ cluster. The same behaviour is observed for the monomorphemic cluster *-bł* in *jabl-k-o* 'apple, nom.sg.', which may also be pronounced *jap-k-o*.

The management of CCC clusters (i.e., of two empty nuclei in a row), by cluster reduction is also found in other languages. In Czech for example, the gen.sg. of *Kadl-ec* 'last name (Silesia), nom.sg.' is either *Kadl-ec-e* or *Kad-c-e*.

¹² Based on the two examples mentioned, Laskowski (1975: 43) tries to accredit the generalization that the abstract suffix *-b-a* always vocalizes before C/yer-initial suffixes, except before *-k-a*. Fortunately this is not the case: *iz-b-a* / *iz-b* / *izd-eb-k-a* 'room, nom.sg., gen.pl., dim.' (with an additional d-zero alternation).

The suffix *-ec* has an alternating vowel (*blb-ec* / *blb-c-e* 'idiot, nom.sg., gen.sg.'): either it is regularly silenced and the preceding consonant has to go as well, or it remains stable against the rule (Scheer 2004: §127). In French, *autrE-ment* 'otherwise' (where E represents a schwa) may be pronounced *autr[ə]ment* or *aut'ment*. In French, schwa may or may not be pronounced (*la semaine* or *la s'maine* 'the week'), but after TR clusters its absence provokes the elimination of the preceding consonant (Scheer 1999, 2004: §126). In all cases, it is the onset of the vowel that is not realized which is eliminated.

9. Conclusion

Following Bethin (1992), I have argued that Polish gen.pl. alternations compel us to abandon a fundamental ingredient of the regular analysis of Slavic vowel-zero alternations: it is not the case that all alternating vowels are underlying yers. Some are, but others are not, and only analysis will tell who is who. In the Polish case, the critical diagnostic is the behaviour of stem- or root-final clusters in gen.pl.: vowels that appear before C/yer-initial suffixes in pattern A roots are epenthetic (*cyfer-k-a*, cluster unvocalized in gen.pl.: *cyfr-a* / *cyfr*) while they represent vocalized yers in pattern B roots (*wiader-k-o*, cluster vocalized in gen.pl.: *wiadr-o* / *wiader*).

All variation encountered is lexical in nature. On the one hand, A- and B-items contrast by the lexical presence vs. absence of a yer, and roots that have both A- and B-forms in free variation (*wydr-a* / *wydr/wyder*) afford both lexical recordings (with and without the yer). On the other hand, there is variation associated to forms with C/yer-initial suffixes. The following reactions are encountered in order to repair a CCC sequence (i.e., one that contains two empty nuclei in a row):

(24) C₁C₂C₃

	CC-V nom.sg.	C(e)C# gen.pl.	/C(e)C(e)C/ C/yer-initial suff.
a. epenthesis: CeCC	cyfr-a	cyfr	cyfer-k-a
b. yer vocalization: CeCC	srebr-o	sreber	sreber-k-o
c. trapped sonorant	srebr-o	sreber	srebr-n-y
d. branching coda-sonorant	kart-a	kart	kart-k-a
e. C ₂ eliminated	mas-t-o	mas-el	mas-nic-a (mas-el-nic-a)

A pattern where several strategies compete in order to repair an ill-formed structure appears to be predestined for an OT-type analysis in terms of constraint interaction. This is not the case here: I have argued that the contrast between all patterns is only lexical, and that no piece of the variation is produced by computation.

Let us now look at the broader Slavic picture. If Polish has alternating vowels that are the result of epenthesis, other Slavic languages may have epenthetic vowels as well. Czech for instance is not among them: in this language vocalization in gen.pl. is absolutely regular (*form-a* / *forem* / *ne-forem-n-y*) 'form, nom.sg., gen.pl., adj.' and so on). In Polish terms, Czech is a language where all roots are of the B-type, and hence where all vowel-zero alternations represent yer vocalization. Diachronically speaking, then, it may be the case that Polish is on the way to become like Czech (the movement is from A- to B-roots).

Finally, the analysis of Polish makes a prediction regarding Slavic languages where more than one vowel alternates with zero (e.g., of the Eastern family): in case they feature the Polish pattern and thus have epenthetic vowels, there must be a way to predict which vowel (*e* or *o* in Russian for example) will be inserted. Either it is always the same vowel, i.e., *e* or *o*, or the quality of the vowel must be able to be predicted from the consonantal environment. Russian happens to instantiate the Polish pattern (Worth 1968), and the prediction may thus be tested: those alternating vowels which appear in presence of yer-initial suffixes, but not in gen.pl. (e.g., *igr-á* / *igr* / *igór-k-a* 'game, nom.sg., gen.pl., dim.'), must not be able to sustain the lexical contrast between *e* and *o*.

References

Items followed by the mention WEB are available at www.unice.fr/scheer.

- Bajerowa, Irena
1953 Z historii polskich grup spółgłoskowych [From the history of Polish consonantal clusters]. *Biuletyn Polskiego Towarzystwa Językoznawczego* 12: 193–203.
- Baker, Mark C.
2008 The macroparameter in a microparametric world. In *The Limits of Syntactic Variation*, T. Biberauer (ed.), 351–373. Amsterdam: Benjamins.
- Bethin, Christina
1992 *Polish Syllables: the Role of Prosody in Phonology and Morphology*. Columbus OH: Slavica.

- Biberauer, Theresa
2008 Introduction. In *The Limits of Syntactic Variation*, T. Biberauer (ed.), 1–72. Amsterdam: Benjamins.
- Blaho, Sylvia
2001 The representation of Slovak syllabic consonants in strict CV. *The Odd Yearbook* 6: 3–24.
2004 Syllabic consonants in strict CV. MA thesis, Pazmany Peter University. WEB.
- Broselow, Ellen
2003 Marginal phonology: phonotactics at the edge. *The Linguistic Review* 20: 159–193.
- Brun-Trigaud, Guylaine, and Tobias Scheer
2010 Lenition in branching onsets in French and in ALF dialects. In *Development of Language through the Lens of Formal Linguistics*, P. Karlík (ed.), 15–28. Munich: Lincom.
- Carr, Philip
1993 *Phonology*. London: Macmillan. WEB.
- Charette, Monik
1990 Licence to govern. *Phonology* 7: 233–253. WEB.
1992 Mongolian and Polish meet Government Licensing. *SOAS Working Papers in Linguistics and Phonetics* 2: 275–291.
- Clements, George
1990 The role of the sonority cycle in core syllabification. In *Papers in Laboratory Phonology I*, J. Kingston, and M. Beckmann (eds.), 283–333. Cambridge: Cambridge University Press.
- Cyran, Eugeniusz
2003 *Complexity Scales and Licensing Strength in Phonology*. Lublin: Wydawnictwo KUL.
2005 Sound patterns of Polish: phonotactic paradoxes at the right edge of words. *Studies in Polish Linguistics* 2: 61–89.
2010 *Complexity Scales and Licensing in Phonology*. Berlin: Mouton de Gruyter.
- Cyran, Eugeniusz, and Morgan Nilsson
1998 The Slavic [w > v] shift: a case for phonological strength. In *Structure and Interpretation. Studies in Phonology*, E. Cyran (ed.), 89–100. Lublin: Folium. WEB.
- Czaykowska-Higgins, Ewa
1988 *Investigations into Polish Morphology and Phonology*. Cambridge, Mass.: MIT Press.
- Gussmann, Edmund
1980 *Studies in Abstract Phonology*. Cambridge Mass.: MIT Press.
1981 Glide shifts in Polish. In *Phonologica 1980*, W. Dressler, O. Pfeiffer, and J. Rennison (eds.), 169–178. Innsbruck: Universität Innsbruck.
- 1998 Domains, relations, and the English agma. In *Structure and Interpretation. Studies in Phonology*, E. Cyran (ed.), 101–126. Lublin: Folium. WEB.
2007 *The Phonology of Polish*. Oxford: Oxford University Press.
- Gussmann, Edmund, and Jonathan Kaye
1993 Polish notes from a Dubrovnik Café: I. The yers. *SOAS Working Papers in Linguistics and Phonetics* 3: 427–462.
- Harris, John
1994 *English Sound Structure*. Oxford: Blackwell. WEB.
- Hayes, Bruce
1995 *Metrical Stress Theory. Principles and Case Studies*. Chicago and London: University of Chicago Press.
- Honeybone, Patrick
2005 Sharing makes us stronger. In *Headhood, Elements, Specification and Contrastivity: Phonological Papers in Honour of John Anderson*, P. Carr, J. Durand, and C. Ewen (eds.), 167–192. Amsterdam: Benjamins.
- Kaye, Jonathan
1990 ‘Coda’ licensing. *Phonology* 7: 301–330. WEB.
1992 Do you believe in magic? The story of s+C sequences. *SOAS Working Papers in Linguistics and Phonetics* 2: 293–313. Reprinted in *A Festschrift for Edmund Gussmann from His Friends and Colleagues*, H. Kardela, and B. Szymanek (eds.), 155–176. Lublin 1996: Redakcja Wydawnictw KUL. WEB.
- Laskowski, Roman
1975 *Studia nad morfonologią współczesnego języka polskiego* [Studies in the morphophonology of Polish]. Wrocław, Warszawa, Kraków, Gdańsk: Wydawnictwo Polskiej Akademii Nauk.
- Lightner, Theodore
1965 Segmental phonology of contemporary standard Russian. Ph.D. diss., MIT.
- Lowenstamm, Jean
1996 CV as the only syllable type. In *Current Trends in Phonology. Models and Methods*, J. Durand, and B. Laks (eds.), 419–441. Salford, Manchester: ESRI. WEB.
- Piotrowski, Marek
1992 Polish yers in non-linear phonology. In *Phonologica 1988*, W. Dressler, H. Luschützky, O. Pfeiffer, and J. Rennison (eds.), 215–227. Cambridge: Cambridge University Press. WEB.
- Roberts, Ian, and Anders Holmberg
2010 Introduction: parameters in minimalist theory. In *Parametric Variation: Null Subjects in Minimalist Theory*, T. Biberauer, A. Holmberg, I. Roberts, and M. Sheehan (eds.), 1–57. Cambridge: Cambridge University Press.
- Rubach, Jerzy
1984 *Cyclic and Lexical Phonology: The Structure of Polish*. Dordrecht: Foris.
1986 Abstract vowels in three dimensional phonology: the yers. *The Linguistic Review* 5: 247–280. WEB.

- 1993 *The Lexical Phonology of Slovak*. Oxford: Clarendon Press.
- 1997 Extrasyllabic consonants in Polish: Derivational Optimality Theory. In *Derivations and Constraints in Phonology*, I. Roca (ed.), 551–581. Oxford: Clarendon.
- Rubach, Jerzy, and Geert Booij
1990 Edge of constituent effects in Polish. *Natural Language and Linguistic Theory* 8: 427–463.
- Scheer, Tobias
1999 Aspects de l'alternance schwa-zéro à la lumière de 'CVCV'. *Recherches Linguistiques de Vincennes* 28: 87–114. WEB.
- 2004 *A Lateral Theory of Phonology. Vol. 1: What is CVCV, and Why Should It Be?* Berlin: Mouton de Gruyter.
- 2005 Slavic vowel-zero alternations and Government Phonology: two approaches, one solution. In *Formal Approaches to Slavic Linguistics 13: The South Carolina Meeting*, S. Franks, F. Gladney, and M. Tasseva-Kurktchieva (eds.), 300–311. Ann Arbor: Michigan Slavic Publications. WEB.
- 2008 Syllabic and trapped consonants in (Western) Slavic: the same but yet different. In *Formal Description of Slavic Languages: The Fifth Conference, Leipzig 2003*, G. Zybatow, L. Szucsich, U. Junghanns, and R. Meyer (eds.), 149–167. Frankfurt am Main: Lang. WEB.
- 2009 Syllabic and trapped consonants in the light of branching onsets and licensing scales. In *Studies in Formal Slavic Phonology, Morphology, Syntax, Semantics and Information Structure*, G. Zybatow, U. Junghanns, D. Lenertová, and P. Biskup (eds.), 411–426. Frankfurt am Main: Peter Lang. WEB.
- 2010 Review of Gussmann (2007) *The Phonology of Polish*. *Studies in Polish Linguistics* 5: 109–158.
- 2011 Slavic yers. In *The Blackwell Companion to Phonology*, M. van Oostendorp, C. Ewen, E. Hume, and K. Rice (eds.). New York: Wiley-Blackwell.
- forth *a* Why Russian vowel-zero alternations are not different, and why Lower is correct. *Journal of Language and Verbal Behaviour*.
- forth *b* Yers and epenthetic vowels in Polish. In *Slavic Linguistics in Brno*, M. Dočekal, and M. Ziková (eds.). Frankfurt am Main: Peter Lang.
- Scheer, Tobias, and Markéta Ziková
2010 The Havlík pattern and directional Lower. In *Formal Approaches to Slavic Linguistics. The Second Cornell Meeting 2009*, D. Zec, and W. Browne (eds.), 471–486. Ann Arbor: Michigan Slavic Publications.
- Ségéral, Philippe, and Tobias Scheer
2008*a* Positional factors in lenition and fortition. In *Lenition and Fortition*, J. Brandão de Carvalho, T. Scheer, and P. Ségéral (eds.), 131–172. Berlin: Mouton de Gruyter. WEB.
- 2008*b* The Coda Mirror, stress and positional parameters. In *Lenition and Fortition*, J. Brandão de Carvalho, T. Scheer, and P. Ségéral (eds.), 483–518. Berlin: Mouton de Gruyter. WEB.
- Selkirk, Elisabeth
1982 The syllable. In *The Structure of Phonological Representations, Part II*, H. van der Hulst, and N. Smith (eds.), 337–384. Dordrecht: Foris.
- Szigetvári, Péter, and Tobias Scheer
2005 Unified representations for the syllable and stress. *Phonology* 22: 37–75.
- Szober, Stanisław
1969 *Słownik Poprawnej Polszczyzny* [Dictionary of Correct Polish]. 7th edition. Warsaw: Państwowy Instytut Wydawniczy.
- Szpyra, Jolanta
1992 Ghost segments in nonlinear phonology: Polish yers. *Language* 68: 277–312. WEB.
- 1995 *Three Tiers in Polish and English Phonology*. Lublin: Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej.
- Worth, Dean
1968 Vowel-zero alternations in Russian derivation. *International Journal of Slavic Linguistics and Poetics* 11: 110–123.
- Ziková, Markéta
2008 Why are case markers in the Czech nominal declension not cyclic suffixes? In *Studies in Formal Slavic Linguistics*, F. Marušić, and R. Žaucer (eds.), 325–335. Frankfurt am Main: Peter Lang. WEB.