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Gussmann + Kaye: 93

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Hat Kaye nicht mal gesagt, Pol. sei ein I
des N. O und N gekickt wird? Wenn yes
weil N kein rind, was brauche denn pol
Wochen?
Aber wenn der Nimmer? Pol wird hat das
and pol. Noun. Laffinal, was will?

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Polish Notes from a Dubrovnik Café¹
I. The Yers

Edmund Gussmann
Jonathan Kaye

0. Introduction

In this article we shall investigate the phenomenon of Polish *yers* or "fleeting vowels". This phenomenon has occupied the attention of a number of phonologists working in a variety of theoretical frameworks for a good number of years. A *yer* is the name given to a vowel involved in vowel - zero alternations. As we shall see yers are by no means limited to cases of such alternations. Typical examples involving yers are given in (1) below.²

- | | | | | | |
|--------|-------------|--------------|----|--------------|----------------|
| (1) a. | pies 'dog' | psa gen. sg. | b. | bies 'devil' | biesa gen. sg. |
| | sen 'dream' | snu gen. sg. | | sień 'porch' | sieni gen. sg. |

In (1a) we see forms displaying vowel - zero alternations. In (1b) the stem vowel is stable and does not alternate. Accordingly the stems of (1a) contain a yer, while those of (1b) do not. Their lexical representations are given in (2) below where \odot represents a yer.

- | | | | | | |
|--------|--------------|-------------|----|------|------|
| (2) a. | pi \odot s | s \odot n | b. | bies | sień |
|--------|--------------|-------------|----|------|------|

The fleeting vowel in (2a) is a yer. The non-alternating vowels in (2b) are assumed to be lexical e's. What these forms show us is that not all superficial e's are manifestations of yers. The problem of yer analysis is to indicate the conditions under which the yer is phonetically manifest and when it is silent. Secondly, over the years there has been much debate as to whether the yer phenomenon is a manifestation of epenthesis or deletion. The forms in (3) provide minimal contrasts between apparent clusters separated by a yer and true clusters with no intervening yer. These data indicate that there is no viable epenthesis account of the yer phenomenon.



(3)	/tr/	plaster	plastra	'plaster'	siostra	sióstr	'sister'
	/dr/	wiader	wiadro	'pail'	kadru	kadr	'frame'
	/pr/	koper	kopru	'dill'	Cypru	Cypr	'Cyprus'
	/br/	żeber	żebra	'rib'	dobro	dóbr	'good'
	/kr/	iskier	iskra	'sparkle'	masakra	masakr	'massacre'
	/kl/	pukiel	pukla	'lock'	cyklu	cykl	'cycle'
	/sł/	poseł	pośła	'MP'	pomyślu	pomyśl	'idea'
	/śń/	mięsień	mięśnia	'muscle'	baśni	baśń	'fable'
	/źń/	więzień	więźnia	'prisoner'	przyjaźni	przyjaźń	'friendship'
	/mn/	trumien	trumna	'coffin'	hymnu	hymn	'hymn'
	/rn/	dureń	durnia	'fool'	ciernia	cierń	'thorn'

It can be seen that a fleeting vowel appears between the final two consonants in the forms on the left while the same two consonants remain unseparated in the forms on the right. Thus *plaster* can be analyzed as *plast^ər* while *sióstr* is analyzed as *sióstr*. If a putative epenthesis operation inserted an *e* in the final *tr* cluster in *plaster* we would expect the same outcome with the form *sióstr*. This would yield the incorrect **sióster*.

In recent years, most analyses of yers have used a syncope process to derive the types of forms we have seen above. In the following section we will turn to two syncope treatments of yers.

1. Previous Treatments of Yers

Within the generative framework Laskowski 1975 and Gussmann, 1978, 1980 represent the first analyses of yers. More recent work includes Rubach, 1984, Spencer, 1985, Bethin 1992 and Szyra 1992. The first three analyses are couched in a linear framework, while Spencer, Bethin and Szyra offer non-linear accounts of this phenomenon. Rubach's account is quite similar to that of Gussmann, 1978, 1980. The main difference is that Rubach uses the framework of Lexical Phonology to express the limits and scope of application of his various rules. The rules themselves follow closely those first proposed by Gussmann. Let us begin our discussion with Rubach's account before proceeding on to Spencer's.

Rubach represents yers as lax high vowels. They come in two varieties: a high front lax vowel which causes palatalisation and a high back lax vowel which does not. Yer behaviour is described by two rules: **lower** which lowers both yers to *e* and **Yer Deletion**, which deletes all non-lowered yers. Rubach's formulation is given in (4) below.

- (4)
- Lower (cyclic)
[+syll, +high, -tense] ---> [-high] / ____ C₀ [+syll, +high, -tense]
 - Yer Deletion (postcyclic)
[+syll, +high, -tense] ---> ∅

Rubach's yers which are lax high vowels are lowered to *e* before other lax high vowels, in other words before another yer. Those yers that have failed to undergo lowering are subsequently deleted by **Yer Deletion**. The way that lowering is to be applied means that given a string of yers, all but the final one will be lowered. The

*interesowne... w... ob
to nie lich... nie...*

final yer will then be deleted. The following derivations illustrate the application of these rules:

- (5)
- | | | | |
|--------------|--|--------------------------------|--------------------|
| | | pi ^ə s ^ə | pi ^ə sa |
| lower | | pies ^ə | n/a |
| yer deletion | | pies | psa |

Rubach provides examples of multiple yer sequences in which all but the final one are lowered³.

- (6)
- | | | | |
|--------------|--|--|---------------------------|
| | | pi ^ə s ^ə cz ^ə ek ^ə | 'dog (double diminutive)' |
| lower | | pieseczek ^ə | |
| yer deletion | | pieseczek | |

As was indicated above, all but the last yer are lowered. Note that the rules must apply in the order given. If this were not the case all yers would be deleted before some got a chance to lower. Thus lowering bleeds the yer deletion rule. Furthermore, Rubach wishes lowering to apply only to non-derived forms and must characterise the lower rule as a cyclic rule. Rubach stipulates that the yer deletion rule is postcyclic.

From a morphological point of view, Rubach must stipulate that the nominative singular and genitive plural of some noun declension are (usually) a yer. This is a contingent fact. One could imagine that Polish behaved differently. The nominative singular of 'dog' could have been simply pi^əs in which case his rules would derive **ps*. There would be no following yer to lower the first yer and it would then be subject to yer deletion. We now turn to Spencer's account of the yer phenomenon.

Spencer considers that yers are simply empty nuclei, a finding with which we are in complete agreement. In his account yers are simply represented as a "v" slot with no associated segmental material. Like Rubach, he offers two rules which follow:

- (7) E-association rule (cyclic)
- | | | |
|---|-----|---|
| V | --- | V |
| | | |
| | e | |
- Extrametricality:
Mark the last yer as V. Extrametrical V's do not undergo (7)
- *

Applying Spencer's analysis to the forms of (5) yields the following derivations.

(8)		p	V	s	V		p	V	s	a
Extrametricality		p	V	s	V		p	V	s	a
					*				*	
E-association		p	V	s	V		p	V	s	a
			e		*			*		

The rule ordering may not be crucial in Spencer's analysis. Conceivably one could allow the E-association rule to apply even to extrametrical V's. The extrametricality would then insure that they are not interpreted. Spencer does not opt for this strategy and stipulates that extrametrical V's do not undergo E-association. It is therefore their lack of segmental content rather than their extrametricality which results in their inaudibility. Under this account extrametricality must be marked before E-association applies. The multiple yer sequences are accounted for as below.

(9)		pVsVczVkV							
Extrametricality		p	V	s	V	cz	V	k	V
									*
E-association		p	V	s	V	cz	V	k	V
			e		e		e		*

As in Rubach's account, the key notion is that all but the last of a sequence of yers is realised as e. Like Rubach, Spencer must stipulate that the nominative singular and the genitive plural must end with a yer. In addition, the E-association rule must be a cyclic one in his account.

2. A Government Account of Yers

Vowel zero alternations have received considerable attention in Government Phonology.⁴ These alternations are treated as manifestations of the phonological *empty category principle* (ECP). The formalism is given below.

(10) The Phonological ECP: A p-licensed (empty) category receives no phonetic interpretation.

- P-licensing:
1. Domain-final (empty) categories are p-licensed.
 2. Properly governed (empty) nuclei are p-licensed.
 3. Magic licensing: s+C sequences p-license a preceding empty nucleus.

Proper government:
 α properly governs β if

1. α and β are adjacent on the relevant projection,
2. α is not itself licensed, and
3. No governing domain separates α from β .

(11) Polish Parameter Settings

License final empty nuclei	ON
Magic Licensing	ON
Unlicensed empty nucleus realised as	e

← Parameter?
 (Note!)
 (Note!)

The phonological ECP states that a p-licensed empty nucleus receives no phonetic interpretation, i.e. is inaudible. There are three ways that an empty nucleus can be p-licensed: (1) it occurs in domain-final position in those languages that p-license all domain-final empty nuclei, e.g. English *pækθ* where the domain-final empty nucleus following the *k* is p-licensed hence inaudible; (2) it is properly governed, or (3) it is followed by a s+C sequence.⁵ Proper government is the primary agent of the vowel-zero alternations that constitute the Polish yer phenomenon. To illustrate how this works, we apply (7) to the Polish data considered to this point.

(12) a.	O	N ₂	O	N ₁	b.	O	N ₂	O	N ₁
	x	x	x	x		x	x	x	x
	p		s			p		s	a

In (12a) we see the nominative singular of the word 'dog'. Note the final empty nucleus. No stipulation need be made here as to its presence. It is required given the principle of *Coda Licensing* (Kaye 1990). (12b) shows the genitive singular form containing the suffix *-a*. The phonological strings are scanned from right to left. This is typical for proper government. In (12a) the empty nucleus N₁ is licensed by virtue of its domain-final position. N₂ is not domain-final and so cannot be p-licensed in the same way as N₁. It cannot be licensed by proper government either because clause 2 of the definition of proper government in (10) requires that the proper governor must not itself be licensed. N₁, the potential proper governor of N₂ is already licensed, as we have seen. It follows that N₂ cannot be properly governed. The only other possibility is magic licensing. This requires that N₂ be followed by an s+C sequence, which is not the case for the form in question. Therefore N₂ is not p-licensed and must receive phonetic interpretation as per the ECP. Given the Polish parameter setting, the unlicensed empty nucleus is realised as e.

Consider now (12b). The genitive singular suffix is a full nucleus, viz. *-a*. As such it does not fall under the ECP. We still have the stem-internal empty nucleus N₂ to deal with. In fact it can be properly governed by N₁. N₁ is not itself licensed. It is adjacent to N₂ on the nuclear projection and no governing domain intervenes between N₁ and N₂. All the conditions for proper government are satisfied and so N₁ 0000e p-licensed via proper government, hence inaudible.

Up to this point no mention of cyclic or postcyclic applications of phonological events need be stipulated. P-licensing is required for all phonological strings and is a necessary part of the interpretation of empty nuclei. Specifically all well formed phonological strings must satisfy the *Licensing Principle* given in (13) below.

(13) **The Licensing Principle**

Every position of a phonological domain must be licensed except one. This is the head of the domain.

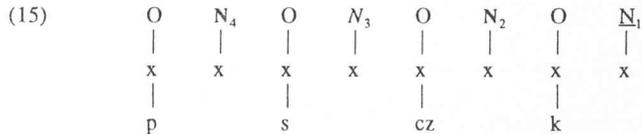
under?
P-licensing is one way of satisfying (13). As we shall see, phonological domains can be nested but (13) must be satisfied before passing from an internal domain to an external one.

Note also that no stipulation need be made about the yer status of suffixes with no phonological content such as the nominative singular and genitive plural of some noun declensions. Preceding yers must be realised in these contexts since there is no available proper governor to p-license them. That the nominative singular form of 'dog' is *pies* and not **ps* is not an accidental property of the lexical representation of the nominative singular in Polish. Rather it follows from the universal definition of proper government in (12).

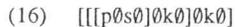
Let us now turn to the derivation of multiple yer sequences as in the double diminutive form of 'dog'. We begin by assuming no morphological structure visible to the phonology.



We apply the same licensing procedure used in the previous derivations and we arrive at the situation in (15) below. An emboldened nucleus, **N** is unlicensed; an underlined nucleus, N is p-licensed by virtue of its domain-final position; an italicised nucleus, *N* is p-licensed by proper government with the proper governor being the nucleus to its right.



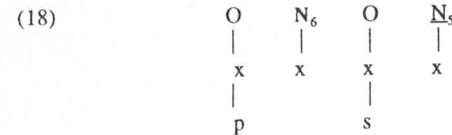
This should produce a form that sounds like *piesczek*. In fact, the correct form is *pieseczek*, with the emboldened vowel constituting the difference between the predicted and the actual form. In (15) we have assumed no internal structure for this double diminutive form. Given its morphological structure it might be more reasonable to assign it a structure as in (16) below.



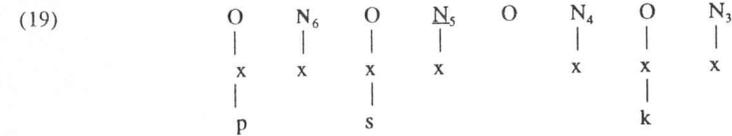
The form of the diminutive suffix is -θkθ. It does not occur in the internal domain of the stem but rather in its external domain as (16) indicates. We see that *pieseczek* has three domains: pθsθ, pθsθθkθ and pθsθθkθθkθ. We will present this derivation in some detail.



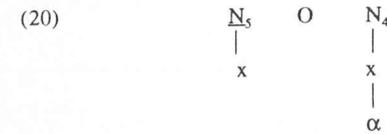
We begin with the internal domain shown in (18) below.⁶



We follow the notational conventions used in (15) above. **N₅** is domain-final, hence p-licensed. **N₆** is unlicensed. The Licensing Principle is satisfied. We could stop things here and interpret this structure. It would come out as *pes* (in fact *pies*, if we included the palatalisation story). Let us continue and incorporate the first external domain.



Note that the domain-final licensed empty nucleus is now immediately followed by an empty onset and then by a following nucleus. The structure in question is shown below.



The configuration in (20) shows an empty nucleus followed by an empty onset followed by a nucleus that may be filled or empty (in (19) it happens to be empty). In all known cases involving this configuration the leading nucleus-onset pair is removed from the representation.⁷ Let us refer to this process as *reduction*. We assume that it is a part of UG and not a peculiarity of Polish. We can formulate it as follows:⁸

(21) **Reduction**

An empty nucleus followed by a pointless onset are removed from any phonological representation in which they occur.

Applying (21) to (19) gives us the structure in (22).

Reduktion einer pointless Nucleus!

(22)	O	N ₆	O	N ₄	O	N ₃
	x	x	x	x	x	x
	p		s		k	

Let us consider the empty nuclei in (22). N₃ is domain-final, hence licensed. N₄, the suffix-initial nucleus of the diminutive is not domain-final nor is it properly governed. The potential proper governor, N₃, is already licensed. Therefore, N₄ is not p-licensed and will be realised as e. Consider now N₆. This nucleus was unlicensed in the previous domain. At that time the following nucleus was domain-final (cf. (18)) and so not a potential proper governor. At this stage N₆ is followed by N₄ which is a potential proper governor. Is N₆ then p-licensed at this point? The answer is no. There are, in fact, two possible reasons why N₆ is not p-licensed.

We could make the following claim:

(23) P-licensing obeys the *Strict Cyclicity Constraint* (SCC).

Applying (23) to the structure (22) gives us the result that N₆ is not subject to p-licensing by N₄ because N₆ was unlicensed in its internal domain.

Another explanation is available for the failure of N₆ to be licensed by N₄. Unlike languages such as Arabic (Kaye, 1986/87) or European Portuguese (Cavaco, 1993), Polish "spells out" unlicensed empty nuclei as e. This is to say that they acquire segmental content in the course of the derivation.⁹ If no additional segmental material were added, unlicensed empty nuclei would sound like [i]. This is the case in some languages, as stated above. In others, like Polish, extra elements are added in such circumstances. Assuming that no domain in Polish may contain an unlicensed empty nucleus without segmental content, this means that the internal domain of our form emerges as in (24) below.

(24)	O	N ₆	O	N ₅
	x	x	x	x
	p	I°	s	
		A+		

As seen in (24) above, N₆ is not empty, hence not subject to the ECP. This becomes apparent when we look at the first external domain in the light of this analysis.

(25)	O	N ₆	O	N ₄	O	N ₃
	x	x	x	x	x	x
	p	I°	s		k	
		A+				

*also in
Targu
(Cherch 90/202
want do/202
with this
odo?*

Whether N₆ can be p-licensed is no longer an issue. It is simply not empty.

Languages like Arabic and European Portuguese which do not add segmental material to unlicensed empty nuclei should provide the deciding cases. If their unlicensed empty nuclei respect the SCC then the first story is true. If not, then the second story is correct. Whether one or both of these scenarios is correct, let us continue with the derivation of this form. We come to the final domain shown below.

(26)	O	N ₆	O	N ₄	O	N ₃	O	N ₂	ON ₁
	x	x	x	x	x	x		x	xx
	p	I°	s	I°	k				k
		A+		A+					

As before, **Reduction** (21) applies to this representation removing the empty nucleus N₃ and the following empty onset.

(27)	O	N ₆	O	N ₄	O	N ₂	O	N ₁
	x	x	x	x	x	x	x	x
	p	I°	s	I°	k		k	
		A+		A+				

N₆ and N₄ have come through earlier domains without being licensed. This state of affairs remains for the reasons discussed above. The domain-final nucleus, N₁ is licensed and cannot serve as a proper governor for N₂. Accordingly, N₂ is unlicensed and receives the same segmental material as in the earlier cases of unlicensed empty nuclei.

(28)	O	N ₆	O	N ₄	O	N ₂	O	N ₁
	x	x	x	x	x	x	x	x
	p	I°	s	I°	k	I°	k	
		A+		A+		A+		

This gives us the final interpretation of the empty nuclei in the double diminutive form. We required no additional stipulations in so far as Polish is concerned. The failure of unlicensed nuclei to become licensed in external domains, whether this be because licensing is sensitive to the SCC or because the nuclei are no longer empty when passed to the external domains, is a general phenomenon of phonological derivations and not a specific fact about Polish.

3. Is level ordering necessary?

We have seen in section 2 that the derivation of Polish phonological forms does not require rules, rule ordering or other associated apparatus. The only aspect of morphology which is visible to the phonology is the presence of internal domains. This is a property of what has been called *analytic morphology*.¹⁰ As far as the phonological processes themselves are concerned, they apply whenever their conditions are met.¹¹

On the other hand, Rubach's account depends crucially on distinguishing cyclic from post-cyclic rules. It will be useful to look at the arguments for this more complex interface between the phonology and the morphology. We begin with Rubach's account of the form *państwo* 'state (dim.)'. Rubach, 1984:189 assumes an underlying form $pa\check{n}st\textcircled{w}ko$.¹² He brackets the form as follows:

(29) $[[[pa\check{n}]st\textcircled{w}]k]o$

We pick up the derivation in the second cycle.

(30) $pa\check{n}st\textcircled{w}$

The issue now is whether Rubach's Lower rule will apply to (30). Recall that Lower will convert a yer to e when followed by another yer. In the second cycle the yer following *ń* is itself followed by another yer, viz. that following *st*. But if the first yer were to lower, 0000000 it would escape the effects of *Yer Deletion* applying at the postcyclic stage. The form would surface as **państewko* and not the correct *państwo*. To avoid this consequence, Rubach must prevent Lower from applying to (30). He appeals to what he calls the *Strict Cyclicity Principle*. Since Lexical Phonology's use of this notion differs sharply from its original formulation and intent, it is worth examining this concept in some detail.

3.1 Strict Cyclicity

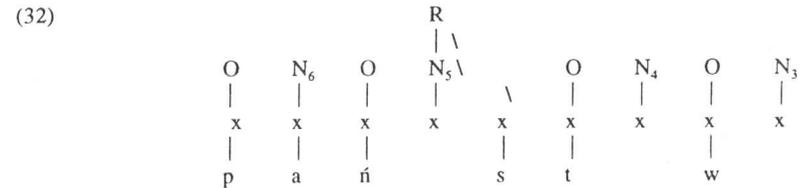
As originally formulated (Chomsky, 1973 for syntax; Kean, 1974 for phonology), strict cyclicity involved a check on backtracking within a derivation. No changes could be effected within a previous cycle that did not involve crucial reference to material contained within the current cycle. Rubach's use of strict cyclicity is rather different. Following Mascaró, 1976 and Halle, 1979 he assumes that "...the Strict Cyclicity Principle prevents cyclic rules from applying in the domain of one cycle solely" (Rubach, 1984:12). The original Chomsky-Kean formulation implies no such restriction. The revised version of the Strict Cyclicity Principle is crucial for Rubach's analysis. Using the original version of the SCP to $pa\check{n}st\textcircled{w}$ would not prevent Rubach's Lower from applying. All the relevant information needed by the rule, to wit, the occurrence of successive yers, is found within a single cycle. Lower could apply with no SCP violation. This, of course, yields an incorrect result as we have seen above. Accordingly, Rubach utilises the revised version which excludes application of a cyclic rule applying entirely within a single cycle. His conclusion is based on his formulation of the Lower rule. If this rule is incorrect, and we shall show that it is, then his claim that "...the behaviour of //istv// is an interesting piece of evidence for selecting the correct version of the Strict Cyclicity principle" (Rubach, 1984:189)¹³ evaporates.

3.2 The państwo derivation

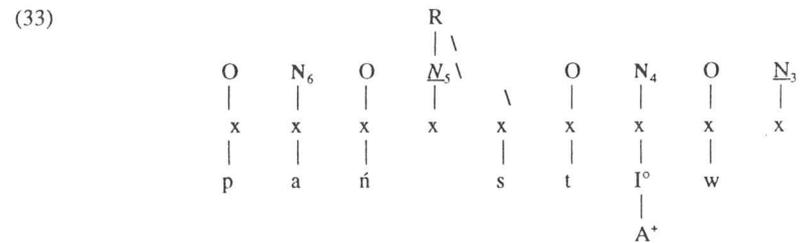
Let us assume the minimal bracketing dictated by the observed facts of Polish. The form *państwo* is a diminutive and we have noted above that the regular diminutive forms an external domain when appended to a stem. This gives us the bracketing shown in (31) below.

(31) $[[pa\check{n}st\textcircled{w}\emptyset]k\textcircled{o}]$

Starting with the internal domain, viz. $pa\check{n}st\textcircled{w}\emptyset$ the derivation proceeds as below.

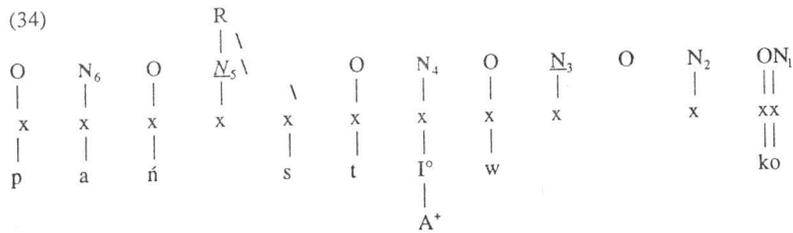


As before the structure is scanned from right to left. N₃ is a domain-final empty nucleus. For that reason it is p-licensed. N₄ is not domain-final and its potential proper governor, N₃ is itself p-licensed and so unable to govern N₄. N₅ is not domain-final but the nucleus to its right, N₄ is a potential proper governor being unlicensed at this point. It cannot properly govern N₅, however, because a governing domain, viz. *st*, intervenes between it and its potential governee. Note that N₅ occurs immediately before an *s+C* sequence. This is the environment for "magic licensing" (cf. the third clause under P-licensing in (10)). Thus, N₅ should be p-licensed, hence inaudible. N₆, being non-empty will not fall under p-licensing. It remains unlicensed. We come to the end of the inner domain with the p-licensing situation as indicated below.¹⁴

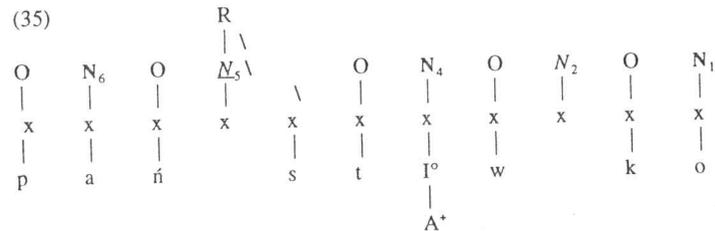


If we now include the external domain of this form, we get (34).

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Reduction, (21), will eliminate N₃ and the following empty nucleus. N₁ is not p-licensed since it is not empty. N₂ can be properly governed by N₁. Thus, we finish with the structure in (35).



We have successfully derived *państwoko* with no additional stipulations. Crucially, nothing in the derivation of this form requires revising the notion of strict cyclicity. We assume, unlike Rubach, that any number of yers can freely occur within a domain. Proper government takes place at any point at which there are consecutive nuclei at the level of nuclear or licensor projection. In other words, it applies whenever it can.¹⁵

There is a further distinction between Rubach's analysis and that presented here. A consequence of magic licensing is that no vowel-zero alternations will be observed before *s+C* sequences in Polish. Since *s+C* is always a p-licensing context, an empty nucleus occurring before this context will always be p-licensed, hence inaudible. Rubach's analysis allows for a potential alternation of the type *napest - napsta*. We predict that such a pattern is impossible. The facts of Polish support our prediction - no vowel-zero alternation is observed before *s+C* sequences.¹⁶

In what follows we shall review systematically the major classes of forms where vowel - zero alternations take place with a view to testing and refining the principles that govern the behaviour of empty nuclei characterised in 2 above. Particular attention will be paid to subregularities and cases that do not conform to the expected or predominant pattern as these will hopefully bring us closer to the understanding of the nature of the phenomena. We will begin by considering the behaviour of empty nuclei in prefixes and prepositions, in the process we will pay attention to certain aspects of the Polish verb structure. This will be followed by a review of the patterns found in various derived categories, i.e. we will investigate the extent to which interaction with morphology affects the phonological regularities. Throughout we will be concerned with the mechanisms of empty nuclei licensing; we will indicate

phonological and morphological environments which depart from what could be expected given standard GP assumptions and results. We start by looking at some prefixes.

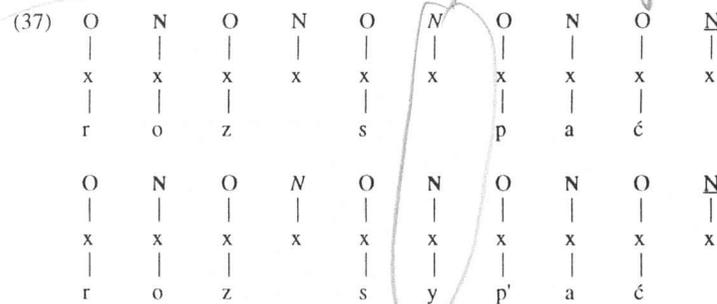
4. Prepositions and Prefixes

Certain prepositions and prefixes systematically appear in two shapes: one with and one without the final vowel. The group includes prepositions which also appear as prefixes: *pod* 'under', *nad* 'above', *w* 'in', *z* 'from', *od* 'from', *przed* 'before' and prefix-only forms: *ob-*, *roz-*. In (36) we consider the prefix *od-* and *roz-*.

(36)

rozstać 'part'	rozespąć 'become sleepy'
rozświetlić 'make famous'	rozśłać 'send off'
odstać 'queue a lot'	odespać 'sleep a lot'
odsłonić 'unveil'	odśłać 'send off'

The prefixes appear as either *roz-*, *od-* or *roze-*, *ode-* before a sequence of two consonants *s+C*. A closer inspection reveals that the *s+C* sequence in the right hand column words is not a genuine cluster but rather the two consonants belong to two distinct onsets with a vowel separating them. This is clearly seen if related forms are considered: *spiać* 'sleep, imperf.', *odsylać* 'send off, imperf.'. No such possibility exists for the left hand column verbs where we will accordingly assume that the *s+C* sequence is genuine, i.e. not separated by a nucleus. There are about thirty verbal roots in Polish containing an empty nucleus in the first syllable (see Szpyra 1989: 214); these combine with prefixes in such a way that when the empty vowel of the root is licensed, the one in the prefix is not, and conversely, with the root vowel realised, the final empty vowel of the prefix is licensed. In other words, if the root vowel is licensed through proper government, the prefixal vowel is not. Consider *rozespać* and its Derived Imperfective form *rozspiać*:



In *rozspiać* the last nucleus is licensed by being domain-final, the empty nucleus in *s0p* is properly governed by the following vowel and the first empty nucleus is not licensed, the resulting form being *rozespać*. In *rozspiać* the root nucleus is [y] for reasons of Derived Imperfective formation and being unlicensed can properly govern the final empty nucleus of the prefix yielding *rozspiać*. Thus far the Polish prefixed verbs conform to the ECP in that empty nuclei receive no phonetic interpretation if

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p-licensed; the specific aspects of p-licensing involved is proper government by a following unlicensed nucleus as well as domain-final licensing.

The important morphological prerequisite for this operation is the existence of a prefix forming a single or non-analytic domain with the following verb. A priori there is no reason why a prefix should be non-analytic - it should be perfectly feasible and, indeed, in the case of fully productive formations totally unremarkable for prefixes to make up analytic domains of their own¹⁷. If this were to happen, one would predict that the final empty nucleus of the prefix should be licensed domain finally, no matter whether the verb begins with a genuine or spurious cluster. Polish fully vindicates this prediction; in fact most prefixes are analytic. In (38) we offer a few examples of verbs containing an empty nucleus (as shown by alternations) and combining with an analytic prefix.

- | | | |
|------|-----------------------------|------------------------|
| (38) | odwszyć 'delouse' | wesz 'louse' |
| | odpchlić 'deflea' | pcheł 'flea, gen. pl.' |
| | rozkrwawić 'cause to bleed' | krew 'blood' |
| | rozłzawić 'cause to cry' | łez 'tear, gen. pl.' |

let N1 etc. etc.
gov. domain

Consider the structure of the last example: rozłzawićθ. Here the prefix constitutes its own morphological domain [rozθ] and consequently its final nucleus is licensed through the domain final licensing parameter. The diagram brings out the structure clearly:

- | | | | | | | | | | | | |
|------|---|---|---|----------|----|----------------|---|----------------|---|----------------|------------------------|
| (39) | O | N | O | <u>N</u> | O | N ₄ | O | N ₃ | O | N ₂ | <u>ON</u> ₁ |
| | | | | | | | | | | | |
| | [| x | x | x | x] | [| x | x | x | x | xx] |
| | | | | | | | | | | | |
| | r | o | z | ł | | z | a | w | i | ć | |

The non-prefixal part of the verb [łzawićθ] offers nothing new as the final empty nucleus N₁ is licensed just as in the prefix, while the first vowel N₄ is properly governed by the following full vowel, hence it receives no phonetic interpretation.

Before leaving prefixal derivatives we would like to record the partly erratic behaviour of the complex prefix wz-, normally characterised as unproductive. In most cases it appears in a single shape (disregarding voice agreement), i.e. [vz], e.g.:

- | | | | |
|------|-------------------|-----------------------|---------------------|
| (40) | wznieść 'errect' | wzmocnić 'strengthen' | wzlecieć 'soar' |
| | wzbronić 'forbid' | wzbogacić 'enrich' | wzgardzić 'despise' |
| | wspomóc 'assist' | wskrzesić 'resurrect' | |

Such forms are handled in the most straightforward fashion by assuming that the complex prefix consists of two analytic domains wθ]zθ], each with a final empty nucleus which is licensed in the ordinary way¹⁸. The situation would be unremarkable were it not for a handful of verbs whose perfective forms appear to display a somewhat different domain structure. In these verbs the prefix emerges as [vez], e.g.:

- | | | |
|------|---------------------|----------------------|
| (41) | wzbierać 'swell up' | wezbrać 'id. perf.' |
| | wzdychać 'sigh' | weschnąć 'id. perf.' |

The left hand column verbs are derived in the manner described above, i.e. on the assumption that each constituent member of the complex prefix forms a domain of its own - thus *wzbierać* is [[wθ][zθ][b'eraćθ]]. The right hand side words call for a different representation, one where the prefix constitutes a single domain of its own [wθzθ] as shown below:

- | | | | | | | | | | | |
|------|---|----------------|---|-----------------------|----|----------------|---|----------------|---|-----------------------|
| (42) | O | N ₅ | O | <u>N</u> ₄ | O | N ₃ | O | N ₂ | O | <u>N</u> ₁ |
| | | | | | | | | | | |
| | [| x | x | x | x] | [| x | x | x | x] |
| | | | | | | | | | | |
| | w | | z | | b | | r | a | ć | |

The final empty nucleus - both N₄ and N₁ - is p-licensed by position while N₃ is licensed through proper government from the full vowel N₂. The first prefixal nucleus N₅ is not licensed and receives an interpretation. We thus ascribe the different phonological effects to differences in the morphological structure, with the general tendency for less structure accompanying more highly lexicalised derivatives.

The same patterns can be observed in non-verbal derivatives. Let us look at adjectives containing the prefix bezθ- with the general meaning 'without'. In the absolute majority of cases this prefix constitutes a separate domain, which is consistent with its semantically transparent interpretation. For this reason the final nucleus of the prefix is p-licensed whereas the behaviour of the empty nucleus, if any, in the adjectival base follows its own path:

- | | | |
|------|------------------------|----------------------|
| (43) | bezkrwawy 'bloodless' | krew 'blood' |
| | bezdenney 'bottomless' | dno 'bottom' |
| | bezsenney 'sleepless' | snu 'sleep, gen.sg.' |

Against a lengthy list of forms such as these, there is one example where the prefix appears with an unlicensed final vowel, i.e. *bezecny* 'vile'. It is perhaps hardly surprising that the stem of the formation does not exist as an independent word, thus confirming the lexicalised, non-analytic status of its prefix. Given then a single domain, the last empty nucleus of [bezθcθny] is licensed through proper government from the final unlicensed vowel while the first empty nucleus is not licensed and receives phonetic interpretation. The vocalic pattern is fully in accordance with our predictions once appropriate and justifiable morphological structure is assumed. Alternatively, we could simply say that *bezecny* does not contain any prefix at all, hence its stem could be treated as a single morpheme: in any event we are talking about a single morphological domain which is sufficient for the required phonological effects to emerge.

Whether a prefix is non-analytic, i.e. whether it forms a single domain with the verb as in (37) or it is analytic as in (39) is not something which can be generally predicted as it constitutes part of the lexical properties of a given item. As indicated above, one expects in general that non-analytic prefixation will go hand in hand with an item's greater lexical idiosyncrasy, semantic non-compositionality, idiomaticity and the like. This does seem to be the case as we have just seen with the adjective *bezecny*; the same is true by and large about verbal derivatives: *brać* 'take' and the non-analytic *rozebrać* 'undress' are not related in any systematic morphological way.

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On the other hand, the analytic prefix *odθ-* in denominal derivatives frequently has the function corresponding to the English *de-* (*odpluskwić* 'debug', *odszurzyć* 'devermin', *odkurzyć* '(de-)dust' etc.). Similarly, prepositions appearing in certain set expressions tend to form a single domain with a following word, the result being that the preposition is invisible as a separate domain to the phonological licensing principles. This gives rise to set forms such as *we dnie* 'during daytime' which contrast with the syntactic configuration *w dni pochmurne* 'on cloudy days' (cf. *dzień* 'day' from *dōńθ*): in the latter case the preposition forms a separate domain and its final empty nucleus licensed, i.e. [wθ][dōńi]; the former case is a lexical struture [wθdōńe] where the first empty nucleus is not licensed since the following one is properly governed¹⁹.

Prepositions supply an interesting if somewhat isolated case illustrating both morphological possibilities: if followed by a personal pronoun, the preposition combines with it to form a single domain, e.g.: *bez niej* 'without her', *od niej* 'from her', *przed nas* 'in front of us', *pod nią* 'under her' etc. The claim that such structures constitute single domains is based on the fact that it is the preposition which is stressed as it contains the penultimate unlicensed vowel (except, of course, for the prepositions *w* and *z*, whose final empty nucleus is licensed)²⁰. This stands in sharp contrast to regular syntactic combinations like *bez słów* 'without words', *od gór* 'from the mountains', *pod mchem* 'under the moss', *przed snem* 'before sleep' where the preposition is stressless and the following noun receives the main stress. In such syntactic combinations the final empty nucleus of the preposition is licensed as any other domain final empty nucleus, irrespectively of whether a single consonant or a string of consonants follows: *bez nóg* 'without legs', *bez mgły* 'without mist', *bez mgnienia* 'without batting (an eyelid)'; in pronominal collocations (*bez niej*) the final empty nucleus of the preposition [bezθńejθ] is licensed under proper government but in either case it receives no phonetic interpretation in accordance with the ECP. Consider now the oblique form of the first person sg. pronoun, viz. *mnie*: in terms of Government Phonology the combination /mń/ cannot form a true onset and hence the two consonants must belong to separate onsets, i.e. [mθńe]. Alternatively they can form an interconstituent sequence where /m/ is a rhymal complement governed by the /ń/ of the following onset governing it: [θmńe], a structure that would be similar to that found in Greek. If the first representation combined within a single domain with the preposition, e.g. [bezθ] - [bezθmθńe] - the second empty nucleus should be properly governed by the final unlicensed vowel, whereas the first one should receive phonetic interpretation. If the second representation were to be true, then the empty nucleus of [bezθmńe] would remain unlicensed as the final full vowel could not govern it across an interconstituent governing domain. In either case the final vowel of the preposition receives phonetic interpretation: *bez mnie* 'without me', *ode mnie* 'from me', *we mnie* 'within me', *ze mną* 'with me', *przede mną* 'in front of me' etc. This final vowel of the preposition is the penultimate unlicensed vowel of the domain and hence it is, predictably, stressed. Unexpected results of this sort bring striking confirmation for the phonological model adopted in this study.

We cannot leave the area of Polish prefixes and prepositions without considering one more puzzle: whenever *s-/z-* and *w-* appear before a sequence of a like consonant and another consonant, a vowel invariably appears after the consonant of the prefix/preposition. In what follows we will use prepositions to illustrate the regularity. Thus in (44a) the prepositions appear without a vowel either before a single

like consonant or before an unlike sequence of consonants, whereas in (44b) a vowel appears before a sequence starting with a like consonant.

alternatem z/s?

- | | | |
|--------|--|---------------------------------------|
| (44)a. | <i>z sodą</i> 'with soda' | <i>w wodzie</i> 'in the water' |
| | <i>z wodą</i> 'with the water' | <i>w sodzie</i> 'in soda' |
| | <i>z trawą</i> 'with grass' | <i>w trawie</i> 'in the grass' |
| | <i>z rtęcią</i> 'with mercury' | <i>w rtęci</i> 'in mercury' |
| | <i>z krtanią</i> 'with larynx' | <i>w krtani</i> 'in the larynx' |
| | <i>z pstrym</i> 'with a gaudy...' | <i>w pstrym</i> 'in a gaudy...' |
| b. | <i>ze smakiem</i> 'with taste' | (<i>w smaku</i> 'in the taste') |
| | <i>ze strony</i> 'from the direction' | (<i>w stronę</i> 'in the direction') |
| | (<i>z wroną</i> 'with a crow') | <i>we wronie</i> 'in a crow' |
| | (<i>z wzrokiem</i> 'with the eyesight') | <i>we wzroku</i> 'in the eyesight' |

What makes the picture truly puzzling is the behaviour of the preposition *bez*, which as we have seen above, can occasionally appear as *beze*: here, no matter what follows, the final vowel of this preposition is always licensed. Thus, corresponding to the forms of (44a-b) we find: *bez sody* 'without soda', *bez smaku* 'without taste', *bez strony* 'without a page', to say nothing of the unlike sequences: *bez rtęci* 'without mercury', *bez krtani* 'without the larynx', *bez pstryj* 'without a gaudy...', *bez wzroku* 'without eyesight' etc. The examples indicate that the domain-final empty nucleus in the prefixes *zθ*, *wθ* is unlicensed before a like onset - nucleus sequence in the following word, i.e. *zθ*[zθ] and *wθ*[wθ] emerge as *zez* and *wew* (= [vev]). This kind of the OCP effect combines in Polish with the special status of the first syllable, a phenomenon also attested in other languages²¹; the failure to license the domain final empty nucleus is to be found only in the case when the vowel is the first (and only) nucleus within a domain. This explains why there is no similar failure in the case of bi-nuclear prefixes like *bez* from *bezθ*²².

As we have seen the behaviour of the preposition and prefixes is governed by the general principles connected with the ECP, viz. the licensing of empty nuclei domain finally and through proper government with some help from magic licensing. The most important non-phonological contribution comes from morphology whose role, however, is highly restricted: it defines some prefixes/prepositions as constituting analytic domains whereas others are non-analytic and form single domains with the following lexical material.

5. Nominal derivatives

Nouns and adjectives constitute the most spectacular area where the licensing of empty nuclei takes place. It is also here that new problems emerge and call for the elaboration of our licensing principles. We shall first look very briefly at the regular cases, i.e. those which appear to involve just domain-final licensing and licensing through proper government. Then we will consider more instances of magic licensing, the special behaviour of some branching onsets, and the existence of interonset government.

5.1. Selected derivational suffixes

Introducing a government account of yers (2 above) we showed that certain suffixes constitute analytic domains, e.g. the diminutive suffix $\theta k\theta$ was a case in point. Three other significant affixes which appear to display the same properties are the nominalising $-\theta nik\theta$ and $-\theta nica$ as well as the adjective forming suffix θny . Consider some examples; the left hand column supplies derivatives where the empty nucleus preceding the suffix is unlicensed, whereas the right hand one shows an alternant with a licensed nucleus.

(45)	jabłecznik 'apple tart'	jabłko 'apple'
	piekielnik 'hell hound'	piekło 'hell'
	pantofelnik 'slipperwort'	pantofla 'slipper, gen. sg.'
	najemnik 'mercenary'	najmu 'hiring, gen. sg.'
	włókiennik 'textile worker'	włókno 'fibre'
	cukiernik 'confectioner'	cukru 'sugar, gen. sg.'
	setnik 'centurion'	sto 'hundred'
	marchewnik 'carrot leaves'	marchwi 'carrot, gen. sg.'

We will look at the way the empty nuclei are licensed in the word *setnik*, given its representation as $[[s\theta t\theta]\theta\acute{n}ik\theta]$:

(46)	O	N ₅	O	N ₄	O	N ₃	O	N ₂	O	N ₁
	[[x	x	x	x]	x	x	x	x	x	x]
	s		t			ń		i		k

The derivation of this form follows closely the pattern presented in connection with diminutives like *piesek* (24-26): N₄ is p-licensed domain finally while N₅ remains unlicensed and acquires segmental content on the first cycle. On the second cycle Reduction removes N₄ and the following Onset without a skeletal point, N₁ is licensed because of its final position while N₂ properly governs the preceding N₃ thereby licensing it. The resulting form is [setńik].

An observant reader will have noticed that forms like those above can be given an alternative representation without the suffix constituting an analytic domain, i.e. our *setnik* can make up a single domain as $[s\theta t\theta\acute{n}ik\theta]$:

(47)	O	N ₄	O	N ₃	O	N ₂	O	N ₁
	[x	x	x	x	x	x	x	x]
	s		t		ń		i	k

Given this representation N₁ is domain final hence p-licensed, N₂ properly governs N₃ which receives no phonetic interpretation, while N₄ is unlicensed and receives the regular content. In other words, the suffix *-nik* and others like it are ambiguous as far as their morphological status is concerned. At this stage we do not need to make up

our minds as to the two options and since nothing much hinges on it we leave the issue open (but see fn. 22).

The other two suffixes we mentioned above, viz. the feminine nominalising morpheme *-nica* and the adjectival *-ny* offer exactly the same problems both with respect to the licensing of empty nuclei and to domain structure. Since they have nothing new to add to our interpretation, we merely provide examples of each of them, where in (48a) the suffix is *-nica* and in (48b) it is *-ny*. As before the right hand column exemplifies alternants with the nucleus licensed.

(48) a.	służebnica 'hand maid'	służba 'service'
	okiennica 'window shutter'	okno 'window'
	piekielnica 'hell hound, fem.'	piekło 'hell'
	cukiernica 'sugar bowl'	cukru 'sugar, gen. sg.'
	jajecznica 'scrambled eggs'	jajko 'egg' ²³
b.	senny 'sleepy'	snu 'sleep, gen. sg.'
	piekielny 'hellish'	piekła 'hell, gen. sg.'
	liczebny 'numerous'	liczba 'number'
	haniebny 'infamous'	hańba 'infamy'

5.2 Magic licensing

One of the three factors responsible for p-licensing of empty nuclei is the sequence s+C. This sequence licenses a preceding nucleus (see above and Kaye 1992a) and Polish appears to be making ample use of the possibility. Among the nominal suffixes three are directly relevant here: *-ski*, *-stwo* and *-sko* exemplified by *pański* 'lordly' from *pański*, *państwo* 'state' from *państwo* and *wińsko* 'wine, express.' from *wińsko*. In each case the spirant /s/ forms the rhymal complement which is governed by the obstruent of the following onset. The structure of *pański* is as follows:

(49)	O	R	O	R	O	R
	x	x	x	x	x	x
	p	a	ń	s	k	i

As the sequence s+obstruent forms a governing domain, the following unlicensed vowel cannot properly govern the empty nucleus preceding the sequence (recall that proper government strictly disallows a governing domain to separate the governor from the governee - see (10) above). This is by no means an untypical situation in the environment of s+C and, as extensively argued in Kaye (1992a) it provides an environment for p-licensing. Polish is just one of the languages which license empty nuclei due to the following s+C. As we will see below, this licensing principle does a lot of work in Polish and accounts for some of the otherwise mysterious combinations of consonants.

5.3. Branching onsets and morphological domains in derived forms

We will now look more closely at a number of examples that appear to contradict our licensing principles or that the principles as formulated appear unable to handle. We will see that given minimal assumptions about the morphological structure or minor extensions of our theoretical mechanisms, most of these apparent counterexamples will turn out to be spurious. Some residual forms remain nonetheless, which in itself is not disturbing but since they seem to involve classes of forms, this means that more work will have to be done before a definitive and comprehensive analysis of the Polish yers can be obtained.

Let us compare the following nouns containing the suffix *-ba*, most frequently derived from verbs, with their genitive plural forms and adjectives in *-ny* derived from those nouns:

(50)	verb	<i>-ba</i> noun	<i>-ny</i> adjective
	liczyć 'count'	liczba 'number'	
		liczb 'gen. pl.'	liczebny 'numerous'
	służyć 'serve'	służba 'service'	
		służb 'gen. pl.'	służebny 'ancillary'
	wróżyc 'prophesise'	wróżba 'id. n.'	
		wróżb 'gen. pl.'	wróżebny 'id. adj.'
	chwalić 'praise'	chwalba 'id. n.'	
		chwalb 'gen. pl.'	chwalebny 'glorious'
	strzelać 'shoot'	strzelba 'gun'	
		strzelb 'gen. pl.'	-----
	prosić 'request'	prośba 'id. n.'	
		prośb 'gen. pl.'	-----
	grozić 'threaten'	groźba 'threat'	
		groźb 'gen. pl.'	-----
	-----	hańba 'infamy'	
		hańb 'gen. pl.'	haniebny 'infamous'

As can be seen, the nouns in *-ba* appear to be separated from their derivational verbal bases by an empty nucleus which emerges unlicensed in most adjectival derivatives. Where our derivatives depart from the expected pattern is in their gen. pl. forms as clearly the form *służb* for example, coming from [służbθ] can only license the domain final empty nucleus and the preceding one should acquire phonetic content yielding *[służb]. This does not happen and we have a ready mechanism at our disposal, namely all we need to do is assume that *-ba* is an analytic suffix: in such a case *służba* - *służb* are represented as [[służθ]ba] and [[służθ]bθ] respectively. The domain-final licensing parameter is responsible for the genitive forms. However, in order for the adjectives to fail to license the empty nucleus separating the two consonants one has to assume that *-ba* is no longer an analytic domain suffix, i.e. for *służebny* we need representations like [[służθbθ]θny] or [służθbθny]. On either representation the nucleus of /θb/ must be unlicensed as there is nothing which could properly govern it and it obviously does not occupy the domain final position. By adjusting the morphological structure we manage to derive the desired phonological effects; as things stand this is little more than doctoring a representation and we would

need morphological justification to strengthen our case. Note also that it is not the case that the addition of any suffix automatically brings about a domain adjustment: the diminutive suffix /θkθ/, for example, exerts no such effect hence *strzelba* is diminutivised into *strzelbka* (gen. pl. *strzelbek*) with the nucleus of /θb/ licensed in the same way it is in the non-diminutive base. One can entertain different possibilities such as the elimination of analytic domains with the addition of a non-analytic suffix (which would suggest that *-ny* is non-analytic) but for the present this must be viewed as a tentative possibility only. More work is clearly needed here.

A somewhat more complex and more problematic case of erratic behaviour involves the consonant /v/ in onset structures. This consonant has been argued (Gussmann 1981, 1992b) to be a sonorant phonologically, i.e. it is in fact /w/ and hence can appear as the governed member of branching onsets *twój* 'your', *kwias* 'acid', *chwalić* 'praise' and the like. As everywhere in Polish the fact that a given sequence of consonants is a well-formed onset does not necessarily mean that every such sequence is indeed an onset; in the word *gra* for example, what clearly looks like an unquestionable onset /gr/ is in fact a sequence of two onsets separated by an empty nucleus as shown by the gen. pl. *gier* and the diminutive *gierka*. Consider now *pluskwa* 'bed bug' and its gen. pl. *pluskiew* unambiguously showing that what looks like /kw/ is in fact /kθw/ as against *modlitwa* and its gen. pl. *modlitw* which shows that here /tw/ forms an onset. The inherent ambiguity of such sequences leads to the existence of doublets in certain cases, e.g. *bitwa* 'battle' with its gen. pl. forms *bitw* or *bitew*. In terms of our analysis the fluctuating forms can mean one of two things: either there is an additional licensing mechanism responsible for the licensing of the nucleus in *bitw* or the two forms reflect distinct underlying representations, one with an empty nucleus separating the consonants and one with a branching onset. Since the non-fluctuating forms exist both with an empty nucleus (*pluskwa* - *pluskiew*) and with a branching onset (*modlitwa* - *modlitw*), the conclusion seems to be that the fluctuating forms must be due to distinct underlying representations.

Consider now the behaviour of the branching onset /tw/ of *modlitwa* before certain derivational suffixes, viz. the adjectival *-θny*, the nominalising *-θnikθ* and the diminutive *-θkθ*: *modlitewny* 'prayerful', *modlitewnik* 'prayer book', *modlitewka* 'little prayer'. In every case an unlicensed nucleus separates the two consonants. Since we established that the sequence /tw/ does form a branching onset in this word, the only conclusion which can be drawn is that the underlying representations of the basic noun and the derived forms are different. In other words, the branching onset of the base has been eliminated in derived forms.

This type of double underlying forms appears to be required for branching onsets before the three suffixes illustrated above. The interesting property of this generalisation is that it holds not only in the case of truly branching onsets but also with the fluctuating forms which obligatorily select the variant with the unlicensed nucleus rather than with the branching onset. Thus while *bitew* and *bitw* are equally grammatical gen. pl. forms of *bitwa*, its diminutive and *-ny* adjective can only be *bitewka* and *bitewny* respectively, never **bitwka*, **bitwny*. We might formulate a tentative suggestion to the effect that branching onsets tend to be eliminated in derived forms.

In view of this suggestion we may now return to a problem raised in Section 3 where we discussed the derivation of *państwko* 'state, dim.'. It was shown there that given the representation of (31) [pańθstθwθ]θko] our licensing principles coupled with

[v] - /w/?

bit Cyran
or -bry?

and
ba/b?
Reine
Nepelnic?

the universal mechanism of Reduction derive the required surface form in a straightforward fashion: domain final nucleus and the one preceding s+C are licensed whereas the unlicensed one receives phonetic content with the form emerging as *państwko* (the derivation of its further diminutive *państweczko* or its gen. pl. *państweczek* is likewise unproblematic given the assumption that the diminutive suffix forms an analytic domain). A problem arises when the basic form *państwo* and its gen. pl. *państw* are considered: as can be seen /tw/ forms a branching onset here. Our suggestion then is that the branching onset in derived forms is broken up, which means in effect that we are dealing with partly different underlying representations. As we have seen in the case of the fluctuating forms, such duplex underlying forms have to be recognised in any case.²⁴

It should be added that the two types of forms discussed in this section represent radically different phenomena even if on the surface they appear to manifest the tendency to eliminate certain consonantal sequences. In the case of derivatives like *służba* - *służebny* or *hańba* - *haniębny* we are not talking about distinct underlying representations but merely about the mechanism responsible for the licensing of the nucleus in specific forms (i.e. the gen. pl. *służb*, *hańb*). With branching onsets of the /tw/ type we recognise an alternative underlying representation /tθw/ in specified morphological contexts. Despite certain similarities these are distinct phenomena.

5.4 Consonantal clusters and licensed nuclei. Interonset government.

The fact that Polish abounds in consonantal groups is a generally known if poorly understood phenomenon. In the past scholars typically noted various peculiar combinations of consonants, especially in the context of sonority hierarchy discussions but little if any theoretical use has been made of such observations. The only significant exception to it is Kuryłowicz's 1952 paper with which we find ourselves in fundamental agreement although, obviously, important differences will have to be recognised as well. We shall not go into the details of Kuryłowicz's reasoning apart from noting that his study deserves more attention than it has been afforded (for some discussion of the paper see Gussmann 1991, 1992b).

Starting with bi-consonantal sequences we note that some of them are perfectly well-formed branching onsets which require no discussion or justification, e.g. *bł*, *tr*, *kł*, *gł*, *tw*, *dr* and the like. Others cannot form an onset in Polish or any other language because they violate universal constraints on governing relations (for an extensive discussion see KLV 1990, Charette 1991); thus the existence of the reverse of the above sequences which are all recorded in word initial position in Polish must be explained - they cannot be onsets, e.g. *łby* 'head, nom. pl.', *rtęć* 'mercury', *łkać* 'sob', *łgać* 'lie', *wtóry* 'secondary', *rdest* 'water pepper'. In a number of cases the solution is a simple case of nuclei licensed through proper government as evidenced by direct alternations *łby* - *łeb* 'nom. sg.'. The non-existence of direct alternations for every such form is in itself of little significance; since the offending clusters cannot belong to a single constituent, it is obvious they must either belong to separate onsets or form a rhyme - onset cluster. In either case an additional nucleus must be recognised and a licenser for it must be identified. A great many of such clusters can be readily handled by the following unlicensed vowel: if *rtęć*, *łgać*, *rdest* are represented as *rθtęćθ*, *łθgaćθ* and *rθdestθ*, then the final empty nucleus will be licensed domain-finally, whereas the first one will be properly governed by the following vowel and will likewise be licensed. We see no phonological difference

between the behaviour of the empty nucleus in words like *łθby* and *rθtęćθ* as the same licensing through proper government is at work there.

Groups of three consonants frequently involve the prefixes *wθ-* and *zθ-* but these, as we argued above, form analytic domain hence their final nuclei will be licensed. Thus sequences illustrated by *zgromadzić* 'gather' or *wkraść* 'steal into' say nothing apart from the fact that analytic prefixes may be added to words. Similarly groups of four consonants involve prefixes in the overwhelming majority of cases: it is either *wz-* (presumably represented as *wθ|zθ|*) realised as [vz] or [fs] or *zθ-* (realised as [s]); examples are *wzbraniać* [vzbr] 'forbid', *wstrząsnąć* [fstš] 'agitate' (where the [š] is a realisation of a palatalised /r'/), *skrwawić* 'make bloody'. These words are represented as follows: [[[wθ]zθ]brańaćθ], [[[wθ]zθ]tr'ðsnðćθ], [zθ]krθwićθ] and the nuclei are licensed in a straightforward way.

A considerable number of the non-prefix sequences of three or four consonants involves an s-type consonant and is thus likely to be due to magic licensing. The initial sequences of *sprawa* 'matter', *zbrodnia* 'crime', *mścić* 'avenge', *szprot* 'sprat', *łsnąć* 'shine', *wstręt* 'repulsion', *pstry* 'gaudy', *wskrzesić* 'resurrect' all result from magic licensing: the s-type consonant occupies the position of the rhymal complement, its nucleus is empty and it is governed by the following onset head. The sequence s+C licenses the preceding empty nucleus which receives no phonetic interpretation.

Although prefix structure and magic licensing cover the lion's share of the "odd" Polish clusters, we are still left with a sizeable scatter of consonant groups that need to be explained since their members could not conceivably belong to single constituents. In (52) we list several such cases.

(51)	<i>mgła</i> 'mist'	<i>ckliwy</i> 'maudlin'	<i>tkliwy</i> 'tender'	<i>pchła</i> 'flea'
	<i>mdleć</i> 'faint',	<i>łgnąć</i> 'adhere'	<i>mgnienie</i> 'bating (of an eyelid)'	
	<i>tkwić</i> 'stick'	<i>pchnąć</i> 'push'	<i>drgnąć</i> 'shudder'	<i>rznąć</i> 'carve'
	<i>cknąć</i> 'hanker'	<i>wbrow</i> 'despite'	<i>plwać</i> 'spit'	<i>smród</i> 'stend'
	<i>źdźbło</i> 'blade of grass'		<i>wprawa</i> 'experience'	

Forms such as these are important because they put our view of syllable structure to a severe test. Take the form *pchła* as an instance: it might seem that *chl* is a possible branching onset and all we need worry about is how to license the initial empty nucleus. That is to say, one might assume that the representation is [pθchl̩a], but this unfortunately is not the case. As the gen. pl. of the noun - *pcheł* - shows *chl* is not a branching onset but a sequence of onsets, i.e. the representation of the word must be [pθchθl̩a] and our problem is how to get the first nucleus licensed, assuming for the moment that the second is licensed under proper government from the final full vowel. Likewise the word *mgła* - *mgieł* 'gen. pl.' shows the representation to be [mθgθl̩a]. The sequences involving nasals as the final element of necessity must be preceded by an empty nucleus since nasals could not be governees in a branching onset; thus *mgnienie* must be with [mθgθńeńe], *pchnąć* - [pθchθnðćθ], *łgnąć* [łθgθnðćθ], *drgnąć* - [drθgθnðćθ]. Although liquids and the labial glide could form an onset with the preceding obstruent (cf. *ckliwy*, *tkwić*), we shall make the more restrictive claim and say that in every case we have a sequence of a consonant followed by an empty nucleus. What we have to consider are options for licensing the nuclei.

*
10
C
2

Taking the word *mgła* and its gen. pl. *mgieł* as exemplifying the problem, we have to recognise their underlying structures as

(52)	a.									b.								
		O	N ₃	O	N ₂	O	N ₁				O	N ₃	O	N ₂	ON ₁			
		x	x	x	x	x	x				x	x	x	x	xx			
		m		g		ł	a				m		g		ł			

The form in (52b) is uncontroversial as N₁ being domain final is licensed hence it cannot govern N₂ which thus acquires phonetic content and can properly govern N₃. If the same mechanisms were to be applied to (52a), then N₁ licenses N₂ through proper government and N₂ being itself licensed cannot properly govern N₃ which should be interpreted phonetically. This does not happen and the form **megła* never emerges phonetically; we should also add that the noun, when verbalised, can attach the non-analytic prefix *ode-* yielding *odemglic* 'de-mist, devapourise'. What we seem to require is a governor for N₃, both in verbal forms and also for cases where the inflectional ending is an unlicensed nucleus.

Two ways are open to us at this stage. One is to claim that the governor is indeed the unlicensed nucleus N₁ and government applies recursively across a domain. In other words, N₁ properly governs N₂ and then N₃, on the projection where N₁ and N₃ are adjacent. This type of recursive proper government has been suggested by Kaye 1986/87 for Marrakechi Arabic and for Polish by Gussmann 1992c. It would seem to work for Polish in that the heavy consonantal clusters could be derived from simple structures involving well-formed onsets followed by empty nuclei. This hypothesis runs into problems with prefix structures; consider the verb mentioned above - *odemglic*, which is clearly based on the noun *mgła*:

(53)	O	N ₆	O	N ₅	O	N ₄	O	N ₃	O	N ₂	ON ₁
		x	x	x	x	x	x	x	x	x	xx
		o	d		m		g		ł	i	ć

If N₂ is a proper governor for N₃ and N₄, then there is nothing to prevent it from serving the same function with respect to N₅ to derive **odmglic*²⁵. To salvage the recursive application of proper government one would have to separate analytic prefixes in some way so as to keep their behaviour distinct not only from non-analytic prefixes but also from simplex forms. As we prefer to adhere to the more restrictive view of morphology which recognises only analytic and non-analytic domains, we shall not pursue this path and consider an alternative interpretation.

Returning to the representation of *mgła* in (52a) above as mθ₃gθ₂ła we may try to develop a different approach by noting that the final unlicensed nucleus can be the only source of proper government for θ₃; in such a case we need to find the source of licensing for θ₂. A close inspection of the examples in (52) supplies an interesting regularity concerning the onsets flanking θ₂: in almost every case²⁶ the two onsets can

und
an
so
fay
de

Ważnym delem wzięł ONO
111A
mgł
u. gov. utw gov. demowarj

contract an interconstituent governing relation, with government flowing from left to right. Thus in *mgła* /g/ governs /ł/ and similarly in all other cases: g - n, ch - ł, d - l, k - l, n, w, m - r, b - r, etc. Whenever an empty nucleus finds itself flanked by onsets in a potentially governing relation, it can be licensed or not depending on the nature of the following nucleus. If the following nucleus is a full vowel, then it sustains enough licensing power to license its onset to enter into a governing relation with the preceding inset. (On licensing and licensing power, see Brockhaus 1992, Harris 1992). This means that the interonset governing relation can only arise when there is an unlicensed vowel to allow or license this relation; when the vowel following the second onset is an empty nucleus, no interonset government is licensed and consequently the nucleus separating them is not licensed. This is the situation with N₂ and N₁ in (53b); in (53a) the final nucleus is unlicensed and hence the onset preceding N₂ is licensed to govern the onset preceding N₁. Finding itself sandwiched in a governing relation, the empty nucleus N₂ is licensed. N₃ is properly governed by N₁ in (53a) and by the unlicensed N₂ in (53b). If this line of reasoning is correct we need to extend our p-licensing (see (10) above) to include an additional case:

4. Interonset licensing: interonset government p-licenses a nucleus separating the onsets.

The important condition on interonset government itself must be kept in mind, namely it is licensed by a following unlicensed nucleus only. Thus while the segmental content of the onsets remains stable, their governing relation may change depending on what follows.

The interonset interpretation of the licensing of empty nuclei in Polish makes some very strong predictions which can easily be disproved. Note that our analysis allows proper government across an interonset governing relation only. This means that if the interonset relation cannot obtain, proper government cannot license an empty nucleus preceding such an onset sequence. To make it more concrete, in the word *mgła* the final vowel properly governs the first nucleus because of the interonset governing relation; if the word were *młga* from młłga, clearly there would be no interonset relation as /ł/ could not govern /g/, hence the final full vowel would properly govern the preceding one and the first empty nucleus would be unlicensed. The prediction then is that sequences such as **młg* should be impossible in Polish. The prediction is borne out with a vengeance.

For one thing sequences of two obstruents are frequently found in Polish: *dbać* 'care', *kpić* 'sneer', *tkać* 'weave', *ptak* 'bird', *gdy* 'when'. They present no problems since the nucleus separating them is properly governed by the following unlicensed vowel. No interonset relation is possible between obstruents of like charm (and complexity). Sequences of three - or more! - obstruents are totally impossible²⁷. Why should this be the case? Imagine a form which comes from the combination of the beginnings of *kpić* and *ptak*, namely *kptić*: it would have to be represented as kθpθtić. No governing relation is possible between p and t hence the nucleus separating them would have to be licensed due to proper government from the following vowel. This would however bar the vowel from governing the first empty nucleus which, being unlicensed, would acquire phonetic content: *keptić* (or *kepcić*). The form **kptić* - or **kpcić* - can never arise. The same is true about sequences of three sonorants: **lmr* is totally impossible in Polish, and this also applies to various combinations of sonorants and obstruents

gł
gł
any 499
woli aus -
problem
relates more
governer??
with
lobal?

where the two final segments cannot form a governing relation. Examples are very numerous: **mnd*, **dmd*, **kmm*, **tlt*, **ltp*, **unm*. What we can find are cases where the two final consonants form an interonset governing relation, hence the first consonant of the trio can be practically anything as it will be followed by an empty nucleus which is properly governed by the vowel which licenses the interonset government; comparing two non-existent words *mdna* vs *mnda* one concludes that the former is and the latter is not a possible word. This is due to the fact that *d* can govern *n* through interonset government while *n* cannot govern *d*. There are also cases of three consonants, where the first two form a branching onset hence the empty nucleus following it is going to be properly governed by the next full vowel: *krtai* 'larynx' and *grdyka* 'Adam's apple' are *krθtañθ* and *grθdyka*, hence we have a simple case of proper government. A neat illustration of the working of our system is the word *krnqbrny* [krnθbrny] 'unruly' whose representation is supplied below:

(54)

O	N ₄	O	N ₃	O	N ₂	O	N ₁
\				\			
x x	x	x	x	x x	x	x	x
k r	n	θ	b	r	n	y	

Leaving aside problems connected with the interpretation of Polish nasal vowels (N₃), we note that both N₄ and N₂ are properly governed by the following unlicensed vowels. In this particular case no interonset government could be established between *r* and *n* since obviously *r* cannot govern *n*. Hence the surface sequences *km* and *bm* are due to the configuration of a properly governed empty nucleus in the position after a branching onset. On the other hand **rnkqbrny*, **kmqbrny* seem impossible formations and their impossibility follows directly from the impossibility of establishing interonset government between *n-k*, *r-b*, and an interconstituent government between *m* in the rhyme and *r* in the onset. Similarly, side by side with the existing *krtai*, *grdyka* there are the impossible **kntai*, **gmtyka*. Since *kn* and *gm* are impossible onsets, we would have to assume the structures to be *kθntañθ*, *gθmtyka* or *kθnθtañθ*, and *gθmθdyka*. On either interpretation the first empty nucleus would remain unlicensed; with *kθntañθ*, *gθmtyka* proper government could not cross a governing domain, that between a rhymal complement and a following onset. In the second case, with *kθnθtañθ*, *gθmθdyka*, there could be no propagation of proper government from a single governor. As before then, the undesirable sequences have no way of arising.²⁸

So far we have been concerned with sequences of consonants and the interonset relation at the beginning of the word. Since the absolute word initial position is special in other ways, it might be of interest to see that the interonset government is not specifically restricted to that position. Towards that aim we shall consider a productive verbal suffix *-nqć* which frequently contributes to heavy consonantal clusters on the surface (most often, though not always, in word internal position).

Handwritten note: *W. Tobin says in English '03*

Handwritten notes: *abu warum d-u be. d-u Nqć. interonset gov n p and # on n, gov*

5.4.1 The evidence of the *-nqć* suffix

Given what has been said so far about the interonset relation we expect that *-nqć* could appear after any charmed obstruent, which can contract a governing relation with the nasal. The charmed obstruent may itself govern a preceding neutral consonant acting as a rhymal complement. By and large this is exactly what happens as the following groups of examples document:

- (55)
- | | |
|----------------------------|--------------------------------|
| <i>słabnqć</i> 'weaken' | <i>siorbñqć</i> 'slurp' |
| <i>drapñqć</i> 'scratch' | <i>szarpñqć</i> 'jerk' |
| <i>bledñqć</i> 'grow pale' | <i>merdñqć</i> 'wag' |
| <i>zakwitñqć</i> 'blossom' | <i>ochajtñqć</i> 'get married' |
| <i>blakñqć</i> 'fade' | <i>połknqć</i> 'swallow' |
| <i>sięgnqć</i> 'reach' | <i>targñqć</i> 'attack' |
| <i>cofnqć</i> 'retreat' | <i>kojfnqć</i> 'snuff it' |

Handwritten note: *Warum sollte es o-o-gov sein? Pa riled del wty*

The interonset relation is licensed by the following full vowel of the suffix, the result being that the empty nucleus between the obstruent and the nasal is licensed being caught up in this interonset government. The presence of a preceding rhymal complement has no influence on what follows.

Obviously a well-formed interonset structure can be preceded by an onset with an unlicensed nucleus (as in the examples like *słabñqć*, *drapñqć* etc above) or by an onset (branching or not) and an empty nucleus. If the latter situation were to occur, the empty nucleus would be properly governed by the vowel of the suffix, in addition, of course, to that vowel licensing the interonset relation. It is perhaps hardly surprising that this is exactly what we find:

Handwritten note: *abu w?*

- (56) *dźgnqć* 'stab', *dotknqć* 'touch' (cf. *dotykać* 'id. imperf.'), *przyłgnqć* 'adhere' (cf. *przelegać* 'id. imperf.'), *drgnqć* 'vibrate', *ocknqć* 'wake up', *zepchnqć* 'push off' (cf. *psychać* 'id. imperf.'), *zeschnqć* 'dry up' (cf. *sechł* 'he dried up'), *czknqć* 'have hiccups'

Words like these are derived in exactly the same way as the *mgła* type (52a), i.e. the empty nucleus caught up in the interonset relation is licensed whereas the preceding one is properly governed by the unlicensed nucleus of the suffix. This we illustrate by the verbs *dźgnqć* and *drgnqć*:

(57)

O	N ₄	O	N ₃	O	N ₂	O	N ₁
x	x	x	x	x	x	x	x
dź		g		n	ɔ		ć



Handwritten notes: *lup lup pswell xgv go*

Handwritten notes: *Warum aber d-u n_d was für n, was sollte bündel sein? kn' ab Fall von was für bündel sein? Etw: k-ni: vs. hakij- vpl. Annahme 0-0-gov to last part*

O	N ₄	O	N ₃	O	N ₂	O	N ₁
x	x	x	x	x	x	x	x
d	r	g	n	ɸ	ć		

In both forms N₁ is licensed as it is domain-final; N₂ licenses the onset *g* to govern the onset *n* with the result the N₃ is licensed being sandwiched in this governing relation. N₄ is properly governed by N₂ and is thus also licensed.

A much more interesting situation arises when the two consonants in the onsets cannot contract a governing relation; this predictably happens when the left hand onset contains a sonorant or a charmless obstruent (in particular /z, s/). In such a case it is the vowel of the suffix which must license the empty nucleus through proper government. There are several examples where this happens:

(58) *walnąc* 'strike', *palnąc* 'hit', *zagarnąc* 'scoop', *kimnąc* 'have a kip', *zdrzemnąc* 'have a nap', *rymnąc* 'fall flat', *bujnąc* 'swing', *ziewnąc* 'yawn', *kiwnąc* 'nod'

Words like these are not problematic as they simply illustrate the operation of proper government. What is distinctly more significant is the fact that a sequence of sonorant onsets can not be preceded by a rhymal complement. Thus *bmąc* - *brθnącθ* - is perfectly well formed since the initial branching onset is followed by an empty nucleus which is licensed through proper government from the following full vowel. On the other hand **mmąc* is impossible as its empty nuclei could not be licensed: note that while the nucleus between *r* and *n* of *mθrθnącθ* could be properly governed, there is nothing to license the initial one which would have to be realised phonetically yielding *memąc*, which is of course a perfectly well-formed word in Polish. Similarly, while *kiwnąc* is unobjectionable, **kirwnąc* from *kirwθnącθ* is impossible for the same reason: once the governor *a* of the suffix licenses the preceding empty nucleus, it cannot do that again for the first one.

The behaviour of the strident spirants to which we now turn supplies an additional dimension to the picture of the interonset relation, without modifying it in any way.

Certain verbs whose stems end in a spirant attach the *-nąc* suffix without any surface consequences. This is shown in (59):

(59)	<i>zasnąc</i> 'fall asleep'	cf. <i>sen</i> 'sleep, n.'
	<i>rosnąc</i> 'grow'	<i>rosła</i> 'she grew'
	<i>gasnąc</i> 'die out'	(do) <i>gasać</i> 'id. imperf.'
	<i>grzęznąc</i> 'get bogged down'	<i>grzęzła</i> 'she got bogged down'
	<i>liznąc</i> 'lick'	<i>lizać</i> 'id. imperf.'
	<i>maznąc</i> 'smear'	<i>mazać</i> 'id. imperf.'

In these words the nasal of the suffix is preceded by a single spirant; from our point of view this can only mean that the two consonants belong to separate onsets and as such present no problem since the empty nucleus separating them is licensed through proper government from the following vowel. Consider *rosnąc* and *liznąc*

(60)

O	N	O	N	O	N	O	N
x	x	x	x	x	x	x	x
r	o	s	n	ɸ	ć		

O	N	O	N	O	N	O	N
x	x	x	x	x	x	x	x
l	i	z	n	ɸ	ć		

The situation is slightly different in the infrequent cases where the spirant itself is preceded by a sonorant: *marznąc* 'freeze', *rżnąc* 'carve', *pełznąc* 'crawl', *obmierznąc* 'disgust'. Here we have to assume two empty nuclei and the underlying structure of such words can be exemplified by *marznąc* as follows:

(61)

O	N ₅	O	N ₄	O	N ₃	O	N ₂	O	N ₁
x	x	x	x	x	x	x	x	x	x
m	a	r		z		n	ɸ	ć	

Following Kaye (1992a) we shall assume that the strident spirants cannot govern but can themselves be governed by any consonant, including sonorants (cf. English *sw eet*, *slim*, *sneeze* etc). With reference to (61) this means that N₃ cannot be licensed through the interonset relation but rather through proper government from N₂; N₃ on the other hand finds itself trapped in the interonset relation between the governor *r* and the governee *z*, the result being that it is also licensed.

The final group of verbs germane to our discussion enrich the picture somewhat. These *-nąc* verbs are derived from bases ending in s+C sequence, where the C is either a velar or a dental. In certain cases the addition of the suffix produces no visible changes, although forms exist with the plosive deleted as *chrzęsnąc* or *chrzęsnąc* 'grate, crunch' (cf. *chrzęst* 'crunch, n'), *zachłystnąc* or *zachłystnąc* 'choke'. In most cases the non-realisation of the plosive is obligatory:

(62)

<i>klasnąc</i> 'clap'	<i>klaskać</i> 'id. imperf.'
<i>mlasnąc</i> 'click'	<i>mlask</i> 'id. n.'
<i>cisnąc</i> 'hurl'	<i>pocisk</i> 'bullet'
<i>wrzasnąc</i> 'yell'	<i>wrzask</i> 'id. n.'
<i>błysnąc</i> 'flash'	<i>błysk</i> 'id. n.'
<i>bluznąc</i> 'blurt'	<i>bluzgać</i> 'id. imperf.'
<i>bryznąc</i> 'splash'	<i>bryzgać</i> 'id. imperf.'

*also derive
unlike in N3
died ab
Voll wo hat Neben
am 0-0 gar
in Dimension! kann nicht stimmen*

*Warum nicht
R O N O
N | | ?
r z n
w
of
we bring
id. deriv
(63ks)
(wzks)*

brum

In all these forms the spirant occupies the position of a rhyml complement and the plosive governs it from the onset position. Since the onset must also govern the nasal in the following onset it appears that it is not strong enough to do so and for this reason is not itself realised. It is probably not an accident that the plosive which is deleted is a velar, a cold-headed consonantal segment, hence easily susceptible to deletion. The vowel preceding the nasal would presumably be licensed through proper government from the following unlicensed nucleus.

At this stage we should perhaps add a word or two concerning the interaction of the two principles we have been using to account for the licensing of nuclei, viz. proper government and the interonset government. While the latter can only be observed when the two consonants contract a governing relation, the former is obviously more general. In other words, forms such as *palec* 'finger' - *placa* 'gen. sg.', *dureń* 'fool' - *durnie* 'nom. pl.' license the empty nuclei through proper government only, since obviously no interonset government can be established between l and e or r and n respectively. In numerous other forms the two licensing principles might seem to compete, e.g.: *pies* 'dog' - *psa* 'gen. sg.', *ciem* 'moth, gen. pl.' - *ćma, ogień* 'fire' - *ognia* 'gen. sg.' etc. We shall adopt a position that the interonset relation is always active i.e. given its presence, the intervening nucleus is necessarily licensed. Proper government, as the less restricted principle is the elsewhere case, applying to whatever has not been affected by the interonset government licensing.

Another theoretical point which requires at least a brief mention is the application of proper government across an interonset governing relation which we have tacitly assumed above. It will be recalled that part of the definition of proper government is that the governor cannot be separated by a governing domain from a governee. In our examples like *mgła* from *młgła* we postulate proper government from the vowel *a* across the interonset government. It appears that the ban on a governing domain intervening into a proper government relation requires strict skeletal adjacency between members of the governing domain. Interonset government by its very nature refers to the onset projection and hence the two positions are not directly adjacent on the skeletal level. This evidently suffices to allow proper government to take place between non-adjacent nuclei.

5.5 Residual problems.

Our discussion of the mechanisms which license empty nuclei in Polish has revealed that interonset government, proper government, magic licensing and the domain-final parameter will fundamentally account for the vast majority of the data. Apart from the interonset licensing, the other mechanisms have been found by other researchers to act in a variety of different languages, hence they clearly belong to the repertoire of universal grammar. The interonset government is relatively novel, although not without some precedents elsewhere, which makes us confident that its role in Polish is not ad hoc. It seems, in fact, that one of the theoretical contributions of Polish to the interpretation of empty nuclei is precisely the recognition of the function of interonset structures.

Despite what must be seen as the striking ability of our model to cope with large portions of complex data, there remain problems that our analysis leaves unaccounted for. There are both individual lexical items and groups of forms which license empty nuclei in ways we do not expect. This may point to the need to further refine our licensing mechanisms or may be a case of lexical idiosyncrasy. In any event

und t?
wielki
wielki
gęsi

Felw?
palca?

|

wicht-
schel

wejn

La wie können phonol. unround.
formen lokal. idiosyncratische sein?

we are dealing with what appears to be numerically insignificant part of the Polish vocabulary. As a case in point consider sequences of a plosive and a nasal which must belong to separate onsets with the empty nucleus licensed through the interonset relation. Against the background of numerous well-behaved forms like

(63)	sierpień 'August'	sierpnia 'gen.'	żaden 'none, masc.'	żadna 'id. fem.'
	studzien 'well, gen. pl.'	studnia	bęben 'drum'	bębna 'gen. sg.'
	włókien 'fibre, gen. pl.'	włókno	ogień 'fire'	ognia 'gen. sg.'
	ciem 'moth, gen. pl.'	ćma	siedem 'seven'	siedmiu 'id. masc. pers.'

we find a handful of words where the nucleus is licensed despite the absence of a following full vowel which could license the interonset government. Here is a practically exhaustive list of these forms:

rpl. alw 955

(64)	kadm 'cadmium'	rytm 'rhythm'	piętn 'brand, gen. pl.'
	tętn 'pulse, gen. pl.'	ścięgń 'sinew, gen. pl.'	astm 'asthma, gen. pl.'
	ciżm (coexisting with ciżem) 'shoe, gen. pl.'	widm 'apparition, gen. pl.'	
	wydm 'dune, gen. pl.'	wiedzńm 'witch, gen. pl.'	zaćm 'cataract, gen. pl.'

Needless to say, the forms in (65) require an explanation which, at the moment we cannot offer. They should, however, be seen in the proper perspective as individual and sometimes quite rare and unusual words whose significance must not be exaggerated.

wejn

6. Conclusion

The single, most striking feature of the government interpretation of the Polish yers is what is not there. In the preceding pages we have offered an account of the well-known facts without using any language specific rules, ordered or not. We have tried to show that the basic pattern of alternations can be derived from universal principles - highly restricted in number - and their parametric instantiations. In this sense Polish is not different from any other language displaying vowel-zero alternations, be it Arabic, Yawelmani or French and does not call for any individual or language specific rules. Where differences across languages can be found with respect to empty nuclei is in their distribution in phonological representations. Polish is quite a rewarding language to study as it freely uses empty nuclei in the structure of its morphemes, which in turns requires a fairly complex interplay of licensing principles.

As we indicated above there are areas where our analysis seems incomplete or possibly misguided. Thus more analytic work needs to be done. Also, as we have indicated in a few places above, some theoretical issues must be refined and tested against new bodies of data, specifically the interplay of the licensing principles we have identified. Let us stress another point however: the coverage of data offered in this study is far richer than in any of its predecessors. To take just one telling example: in the past scholars have concentrated on the so-called yer-phenomena, typified by the *bez - bzy* alternations. Because of the nature of the framework we have been forced to consider data that do not fall into the domain of yer alternations in any obvious way, such as consonantal clusters. To our knowledge, no past account of yers

indicated that there is any connection between them and consonantal groups or that the erratic behaviour of yers before s+C was anything but an accident. These properties not only fall out naturally from the model we develop but in fact are its predictable consequences.

As we have seen, the phenomenon of Polish yers in its entirety can be understood as a manifestation of one of the general properties of grammar, namely licensing. The results of the present study reinforce our belief that progress in phonology is to be found in the exploration of formal linguistic principles and their parametric variation.

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Notes

1. In May 1991 the two authors participated in a "summer school" held in Dubrovnik. It was our custom to meet in a café each morning and discuss issues of phonological theory in general, and its application to Polish phonology in particular. This article emerged as a result

of these discussions. Several weeks later Dubrovnik was shelled. We would like to join our voices in a wish for peace and justice for all the inhabitants of the former Yugoslavia.

2. Throughout this paper Polish examples will be cited in the standard orthography. In general this should cause no problem. However the following correspondences should be noted:

Orthography	IPA
sz	ʃ
cz	tʃ
rz, ź	ʒ
ch	x
ń	ɲ
ć	tɕ
dź	dʑ
ś	ɕ
ż	ʒ
ł	w
w	v
ą	ɔ̃
ę	ɛ̃

i following a consonant serves as a palatalisation marker for that consonant; thus *si* = *ś*, etc. Palatalised velars are transcribed as *k'*, *g'*, *x'* corresponding to the IPA symbols *c*, *ɟ* and *ç* respectively. *y* denotes the front retracted vowel, i.e. [ɨ].

3. Here and below we disregard palatalisation effects.

4. See Charette, 1988, 1991, Harris 1990, Kaye, Lowenstamm and Vergnaud, 1990 and Kaye, 1990.

5. See Kaye, 1992a for a discussion of *Magic Licensing*.

6. The indexing of the empty nuclei in this and the following examples is based on the complete form. They are used so that referencing remains constant. This is done to render the exposition easier to follow.

7. This was first suggested by Vergnaud, 1982 in his analysis of French feminine morphology.

8. Reduction could well be but an instance of a more general principle. Conceivably, it could be derived from the empty syllable constraint or from the OCP. For the time being, we propose it as a separate principle of UG.

9. This is not to say that Polish *e* is "underspecified". Polish contains both empty nuclei and *e*. They have different representations. One is not the unspecified version of the other.

10. See Kaye & Vergnaud, 1990 for discussion of this notion.

11. See Kaye, 1992b.

12. As before, we do not distinguish Rubach's palatalising vs. non-palatalising yers. This has no bearing on the discussion at hand.

13. The symbols *ĩ* and *ř* represent palatalising and non-palatalising yers, respectively.

14. We employ the same conventions as before. An empty nucleus which is p-licensed by magic licensing is both italicised and underlined, *N*.

15. The preceding discussion does not exhaust all the problems associated with the stem *państw-*. We return to the outstanding issues in 5.3.

16. There are two examples which throw additional light on this generalisation, viz. the word *chrzest* [xʂest] 'baptism' - *chrzta* [xʂtu] 'gen. sg.' and the verb *chrzcić* [xʂcić] 'baptise' derived from it and the noun *cześć* [ʂeść] 'honour, respect' - *czci* [ʂci] 'gen. sg.' and the verb *czcić* [ʂcić] 'respect'. These words contain an empty nucleus before the *st* cluster which should be prevented from proper government by the interconstituent governing domain. In actual fact the nucleus is licensed but at the expense of destroying the cluster, i.e. /s/ is deleted. Exactly how the deletion should be described is not relevant here - we note that the generalisation about the absence of an alternation before s+C is maintained, even if its implementation were to involve additional modification of the structure.

17. A case in point illustrating the situation where a prefix forms an analytic domain of its own is the English prefix *un-* of *unkind*, *undecided*. Here considerations of semantic compositionality cohere with phonological properties (e.g. the failure of the nasal to undergo place of articulation assimilation) and set this prefix off from its semantic congener *in-*. The Polish situation is in keeping with what is commonly found elsewhere.

18. The composite nature of the Polish prefix is not an isolated linguistic phenomenon. We can again point to English where the prepositions *into*, *throughout*, *within* must clearly be analysed as consisting of two independent prepositions, respectively: *in+to*, *through+out*, *with+in*.

19. For more examples of this sort see Nykiel-Herbert 1985.

20. Celtic supplies a celebrated case where prepositions combined with personal pronouns, the so-called called inflected prepositions, constitute separate phonological domains (e.g. the Irish preposition *le* makes up a paradigm in the singular *liom* 'with me', *leat* 'with you', *leis* 'with him', *leí* 'with her'); similar cases are found in Romance, Sp. and It. *con*, Il. *col* etc. This simply goes to show that the Polish situation is fairly representative of a much broader type of regularity.

21. Consider in this context French with its failure license the empty nucleus in the first syllable (see Charette 1991) as well as the discussion of the Japanese pitch accent in Yoshida, (in preparation).

22. Note also that there is no general avoidance of the OCP effect across domains: prefixes such as *odθ* and *podθ*, which form analytic domains of their own, do not observe this restriction, e.g. *odtlenić* 'deoxidise', *poddać* 'subjugate'.

23. This particular form seems to support our decision to treat the suffix as analytic. The word *jajko* is itself derived from *jajo* by means of the diminutive suffix $\emptyset k\emptyset$ which, as we have seen, is undeniably analytic. Thus the suffix *-nica* is attached to an analytic form $[[jaj\emptyset]\emptyset k\emptyset]$ - it seems more natural to assume that a domain following an analytic domain is itself analytic, i.e. $[[[jaj\emptyset]\emptyset k\emptyset]\emptyset nica]$; otherwise we would have to assume that the diminutive and the nominalising feminine suffixes constitute a single morpheme. There is no evidence for such a complex suffix functioning independently. This example is not isolated: the suffix *-nik*, discussed above, also attaches to diminutives, e.g. *dzwon* 'bell' - *dzwonek* - 'dim.' *dzwonecznik* 'bell-flower', *dzban* 'jug' - *dzbanek* 'dim.' - *dzbanecznik* 'pitcher plant'.

24. The suggestion that branching onsets tend to be broken in derived forms may be in fact part of a broader generalisation to the effect that true sequences tend to be broken in derived forms. The latter formulation comprises not only branching onsets but also interconstituent consonantal clusters; consider the noun *walka* 'fight', its gen. pl. *walk* which appear to suggest that /lk/ is an interconstituent governing domain with the plosive governing the liquid of the rhymal complement. The $-\emptyset ny$ adjective based on the noun is *waleczny* 'valiant' and shows that the consonantal sequence not involving a branching onset has been broken up. Similarly the loan *forma* 'form' has gen. pl. *form* where the nasal can govern the preceding sonorant /r/. In derived words we find *foremny* 'shapely' and *foremka* 'n. dim.' which again reveal an interconstituent sequence broken up. As in several places before, we have to conclude that the matter merits further study.

25. Note that there is nothing wrong with the phonetic sequence *-dmgʲ-* in Polish: in point of fact this is what emerges when the preposition *od* forms an analytic domain before the noun *mgła*: *od mgły* 'from the mist' and not **ode mgły*. What this shows is that whether an empty nucleus is licensed or not depends upon the phonological consequences of morphological structure rather than on surface phonetic considerations.

26. *rźnąć* 'carve' may be an exception to which we return below - see (61).

27. This is certainly true about the word initial position. Word internally we do find an occasional form like *neptek* 'idiot' - *neptki* 'nom. pl.'. Possibly the p here is a neutral obstruent occupying a rhymal position governed by the negatively charmed t of the onset.

28. We bypass here cases of magic licensing as largely uncontroversial. The archaic *mзда* 'reward' presents no problem as the spirant /z/ can occupy the rhymal complement and together with the following (governing) onset /d/ they license the empty nucleus.