

THE PLACE OF PHONOLOGY IN THE DESCRIPTION OF LANGUAGE

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Abstract: The author focuses his attention upon some problems which have dominated generative discussions on Polish phonology in recent years, in particular some vowel alternations, palatalizations of consonants, the opposition of voiced vs. voiceless consonants. Many irregularities can be observed in such processes, depending on the origin of respective sounds. To account for such facts in synchronic terms recourse is usually had in generative phonology to underlying elements which never surface in Polish, e.g., the tense and the lax *e* or an underlying mid back unrounded vowel. Such solutions account for morphophonological rather than purely phonological facts. In the author's opinion, morphophonology should be separated from phonology.

Keywords: phonology, morphophonology, vowel alternations, consonant alternations, palatalizations, irregularities, neutralization, variation.

1. INTRODUCTORY REMARKS

In recent years we have been witnessing a rapid development of phonological theory accompanied by its enormous diversification. In addition to some varieties of traditional structural phonology and the classical generative approach of Noam Chomsky and Morris Halle (1968), numerous novel generative models have been offered. Each of them abounds in new theoretical constructs, concepts and terms.

A question arises as to whether the proliferation of phonological approaches always reflects a real enlargement of linguistic knowledge or is, sometimes, nothing more than a growth in terminology and a sterile manipulation of theoretical constructs. Far from intending to deny

considerable progress in phonological research made in the framework of the generative approach (see, e.g., Gussmann 1992, Rubach 1992, Szpyra 1995 for its brief review with respect to some recent proposals concerning Polish and English phonology), I would like to discuss some weak points which, in my opinion, can be noticed in work by generative phonologists.

They seem to result from two tendencies which are characteristic of most work carried out in this framework: attempting to describe phonic¹ phenomena in purely phonological terms, i.e., in abstraction from other language levels, and concentrating on aspects of the theory itself rather than language facts. Incidentally, the former feature is in conflict with what the generative phonologists claim, namely, that they reject the principle of structural linguistics forbidding the mixing of levels in language description.

In this paper I focus my attention upon some of the vocalic and consonantal alternations of Polish and the ways generative phonologists have tried to account for them.

2. THE VOWEL-ZERO ALTERNATION

Polish abounds in both vocalic and consonantal alternations. From among vocalic variances in Polish as well as in other Slavonic languages the vowel-zero alternation has attracted the most attention of generative phonologists. The alternation can be illustrated by such forms as:

(1)	Nom. Sing. <i>sen</i> <i>sweter</i>	Gen. Sing. <i>snu</i> <i>swetra</i>	gloss dream sweater
(2)	Gen. Plur. <i>matek</i> <i>plócien</i>	Nom. Sing. <i>matka</i> <i>plótno</i>	gloss mother linen
(3)	Perfective Inf. <i>odebrać</i> <i>odegrać</i>	Imperfective Inf. <i>odbierać</i> <i>odgrywać</i>	gloss to take back to play
(4a)	Preposition with -e <i>we wsi</i> <i>ze skrzynki</i>		gloss in the village from a crate
(4b)	Preposition without -e <i>w domu</i> <i>w złocie</i> <i>z głową</i> <i>z domu</i>		gloss at home in gold intelligently from home

¹ I use the neutral term 'phonic' to abstract from the differentiation between phonology and phonetics.

Apart from the above mentioned variance the vowel *e* in Polish can alternate with *o* and *a*, and, on the other hand, both front and back vowels may follow hard and palatal consonants, cf. *nieść* 'to carry' - *niosę* 'I carry', *siedzieć* 'to sit' - *siedział* 'he sat, he was sitting', *ciało* (Nom. Sing.) 'body' - *w ciele* (Loc. Sing.) 'in the body', *kotem* (Instr. Sing.) 'with a cat', *o kocie* (Loc. Sing.) 'about a cat'.

Most of sound alternations in Slavonic have been comprehensively described from the diachronic point of view. It is much more difficult to give an account of them in synchronic terms due to various irregularities they exhibit.

Various alternations of the vowel *e* in Polish depend on the source it evolved from. In forms in which the vowel originates from Common Slavonic *e* or *ē*, it alternates with *o* or with *a* and follows soft consonants. In forms in which it alternates with zero it developed from one of the so-called yers.

Historically, Slavonic is known to have had a pair of high reduced (or lax) vowels, a front (or soft) one and a back (or hard) one. They have been labelled yers and are usually represented *ь* (the front or soft yer) and *ъ* (the back or hard yer).

At some point after their coming into being, the reduced vowels developed two allophonic variants known as strong and weak yers. A yer is said to be weak or in weak position if it is the final vowel in a word or is followed in the next syllable by another vowel including a strong yer. On the other hand, a yer is strong or in strong position if it is in a syllable followed by a weak yer or is the only vowel in a word. The weak yers will be given in parentheses.

Examples:

(5a) weak yers: (ь), (ъ)	strong yers: ь, ъ
reconstructed forms	gloss
(5b) * <i>sbm</i> (ь) (Nom. Sing.)	dream
* <i>s</i> (ь) <i>na</i> (Gen. Sing.)	dream (Gen. Sing.)
* <i>pbs</i> (ь) (Nom. Sing.)	dog
* <i>p</i> (ь) <i>sa</i> (Gen. Sing.)	dog (Gen. Sing.)
* <i>š</i> (ь) <i>vbc</i> (ь) (Nom. Sing.)	shoemaker
* <i>šb</i> v(ь) <i>ca</i> (Gen. Sing.)	shoemaker (Gen. Sing.).

The division into strong and weak yers is related to their different developments. Weak yers were dropped, i.e., disappeared whereas strong yers vocalized, i.e., developed into various vowels depending on the language. In Polish both the front and the back yer vocalized into *e*, cf. the Polish reflexes of the above forms:

Polish forms	gloss
(6) <i>sen</i>	sleep
<i>smu</i> , Old Polish <i>sna</i>	sleep (Gen. Sing.)
<i>pies</i>	dog
<i>psa</i> (Gen. Sing.)	dog (Gen. Sing.)
<i>szewc</i> , Old Polish <i>szwiec</i>	shoemaker.

3. CONSONANT PALATALIZATIONS

The development of yers is closely related to consonant alternations because the front yer palatalized the preceding consonant whereas the back yer did not affect its nonpalatal (hard) character, cf.:

Polish forms		gloss
(7) <i>ćma</i> (Nom. Sing.)	<i>ciem</i> (Gen. Plur.)	moth
Old Polish <i>sna</i> (Gen. Sing.)	<i>sen</i> (Nom. Sing.)	sleep, dream
from:		
<i>*t̥ma</i>	<i>*t̥m̥</i>	
<i>*s̥n̥</i>	<i>*s̥n̥a</i>	

Originally, palatalized consonants occurred only when followed by a front vowel. This was connected with the Common Slavonic tendency known as synharmonism. The tendency consisted in bringing into harmony the consonant and the following vowel in any given syllable whereby a front vowel palatalized a preceding consonant and a palatal consonant changed the following back vowels to their front counterparts, that is, the high back vowels (i.e., the short *u* and the long *u*) changed to the high front ones (i.e., the short *i* and the long *i*), the low back vowel *o* to the low front one *e*.

Slavonic was affected by several successive processes of palatalizations. The oldest one comprised consonantal clusters with *j* as second component, e.g., *tj*, *dj*, *gj*, *chj*, *nj* etc. changed into *ć*, *dź*, *č*, *dž*, *š*, *ň* etc.:

(8a) primitive form	resulted form	gloss
<i>*světja</i>	<i>*sveća</i>	candle, light
<i>*medja</i>	<i>*medža</i>	balk
<i>*storgja</i>	<i>*stordža</i>	guard
<i>*vonja</i>	<i>*voňa</i>	smell
<i>*suchja</i>	<i>*suša</i>	drought
(8b) <i>*peket̥</i>	<i>*pečet̥</i>	he bakes
<i>*moget̥</i>	<i>*možet̥</i>	he can
<i>*duche</i>	<i>*duše</i> (Voc. Sing.)	spirit.

Simultaneously with or soon after this change the velars (*k*, *g*, *ch*) palatalized into *č*, *dž*, *š* before all front vowels, e.g., **peket̥*, **moget̥*, **duche* yielded **pečet̥*, **možet̥*, **duše*. This change is known as the so-called first palatalization of velars.

Some time later new front vowels (long *e* and long *i*) came into being as a result of the monophthongization of the diphthongs (*ai*, *oi*). This process caused the so-called second palatalization of velars but its result was different from that of the first palatalization: it gave palatalized *c*, *dz* and *ś* or *š* depending on the dialects, e.g.:

(9) primitive form	resulted form	gloss
<i>*rěkě</i> (Dat. Sing.)	<i>*rěcé</i>	river
<i>*nogě</i> (Dat. Sing.)	<i>*nodzě</i>	leg

**muchě* (Dat. Sing.) **mušě* or **muśě* fly.

I will pass over the details of the third palatalization of velars whose result was similar to that of the second palatalization.

Examples of the change of back vowels into front ones after soft consonants:

- (10) **krajь* changed into **krajь* 'land, country'
**koňь* changed into **koňь* 'horse'
**jogo* changed into **jego* 'his'.

Such changes gave rise to phonetically motivated alternations:

- (11) **peklь* 'he baked' vs. **pečetь* 'he bakes'
**moglь* 'he could' vs. **možetь* 'he can'
**togo* 'that, this' (Gen. Sing.) vs. **jego* 'his'
**bogь* 'gods' (Instr. Plur.) vs. *koňi* 'horses' (Instr. Plur.).

At the turn of the late Common Slavonic and Polish period, called Proto-Polish, two crucial phonemic changes took place: the dispalatalization of primitive *ě*, *e* into *a*, *o* and the loss of weak yers. They were followed by various analogical levellings and resulted in radical transformation of the alternational system in Modern Polish. Most alternations lost their phonologically conditioned character and became morphologically motivated.

Morphological motivation entails phonological irregularity. That is why a synchronic phonological description of sound alternations is not an easy task. To account for the vowel-zero alternation in synchronic terms recourse is usually had either to a rule of epenthesis or to positing some underlying phonological vocalic elements which functionally correspond to yers.

Both interpretations have been proposed by generative phonologists but it is the latter assumption that has prevailed (cf. Rubach 1992: 112-121, Szpyra 1995: 94-101). These underlying elements have been dubbed yers and claimed to have occurred in two allophonic variants as tense and lax. Similar accounts, following Lightner (1965), are offered for other Slavonic languages.

Various arguments have been adduced against the vowel epenthesis hypothesis (Rubach 1992: 113-116, Szpyra 1995: 94-101). The most important is the fact that the mobile *e* may or may not occur in identical phonic environments, cf.

- | | |
|--------------------------------|-----------------------------|
| (12a) alternating <i>e</i> | |
| <i>ocet</i> 'vinegar' | <i>octu</i> (Gen. Sing.) |
| <i>dzień</i> 'day' | <i>dnia</i> (Gen. sing.) |
| <i>oset</i> 'thistle' | <i>ostu</i> (Gen. Sing.) |
| <i>kuter</i> 'cutter' | <i>kutra</i> (Gen. Sing.) |
| (12b) non-alternating <i>e</i> | |
| <i>facet</i> 'fellow' | <i>faceta</i> (Gen. Sing.) |
| <i>cień</i> 'shadow' | <i>cienia</i> (Gen. Sing.) |
| <i>skuter</i> 'scooter' | <i>skutera</i> (Gen. Sing.) |

(12c) no vowel before the final consonant

odrost 'regrowth'

jesiotr 'sturgeon'

wiatr 'wind'

odrostu (Gen. Sing.)

jesiotra (Gen. Sing.)

wiatru (Gen. Sing.).

From such evidence a conclusion has been drawn that yers are present in the underlying structure of Polish. But the weak point of the yer hypothesis is the lack of high lax vowels in the inventory of phonemes in Polish. That is why the explanation along these lines has been modified by making recourse to such notions as extrasyllabic consonants and syllabification. They are part of the tiers approach to phonology (cf. Rubach 1992, Szpyra 1995).

In my opinion all the three accounts can be reduced to one another. They refer to the problem of phonological representation rather than to functioning of the phonological system and say nothing about the latter. Meanwhile what is interesting about the behaviour of the mobile *e* in Modern Polish is the fact that there can be only one such element in a word and this element occurs in its final morpheme.

5. VOWEL ALTERNATIONS IN DERIVED WORDS

Derived words behave as integral wholes from the point of view of alternations. That is why we have:

(13a) Nom. Sing.	Gen. Plur.	gloss
<i>koło</i>	<i>kół</i>	circle
<i>sioło</i>	<i>siół</i>	village

(13b) base of derivation	derivative	gloss
<i>koło</i>	<i>kółko</i>	little circle.

No phonological rules of the kind Szpyra proposes (Szpyra 1995: 103-105) are needed to account for the lack of the *o-ó* alternations in forms like:

(13c) Nom. Sing.	Gen. Plur.	gloss
<i>kółko</i>	<i>kótek</i>	little circle
<i>półko</i>	<i>pólek</i>	little field
<i>bródka</i>	<i>bródek</i>	little beard.

As far as the opposition between hard and soft consonants is concerned it was, for a long time, linked to that between back and front vowels. Again, various underlying elements have been postulated which never occur on the surface, such as an underlying mid back unrounded vowel in order to 'explain' the lack of palatalization of the consonant before the vowel *e* in forms like *bratem* 'brother' (Instr. Sing.), *darem* 'gift' (Instr. Sing.).

In recent years a tendency can be observed in the generative framework to question the phonetic conditioning of palatalization. Several lines of reasoning are offered.

Spencer (1986) argues that Polish has no phonological palatalization rules at all but a list of allomorphs with palatalized and nonpalatalized consonants is included in the lexicon, and it is a task of morpholexical rules to relate these allomorphs.

Czaykowska-Higgins (1988) disagrees with Spencer's stance and regards palatalization processes as phonological rules but with morphological conditioning, that is, they are triggered not by phonological segments, but by affixes lexically marked as palatalizing.

According to Gussmann (1992), palatalizations are phonological phenomena, which are not, however, conditioned by the frontness of the following segments, but rather by the presence of an autosegmental feature [-back]. The feature is prelinked either to some vowels, which underlyingly are not specified for backness and which phonetically may be front or back, or to the whole affixes, in other words, is lexically assigned to individual segments and morphemes.

I rather agree with Szpyra's opinion (Szpyra 1995: 200-203) that palatalization in some instances is phonetically conditioned, while in others has become morphologized. It is a pity that the author has not presented her view in all details.

As a consequence of phonological changes which took place in Common Slavonic and Old Polish, the alternations of consonants are closely related to the alternations of inflectional endings and derivational suffixes:

(14a) Nom. I Sing.	Loc. Sing.	gloss
<i>kot</i> Masc.	<i>kocie</i>	cat
<i>sława</i> Fem.	<i>sławie</i>	fame
<i>ręka</i> Fem.	<i>ręce</i>	hand
<i>para</i> Fem.	<i>parze</i>	steam
<i>koło</i> Neut.	<i>kole</i>	circle
<i>kraj</i> Masc.	<i>kraju</i>	land, country
<i>kurz</i> Masc.	<i>kurzu</i>	dust
<i>Kozak</i> Masc.	<i>Kozaku</i>	Cossack
<i>skrzynia</i> Fem.	<i>skrzyni</i>	box
(14b) Nom. Sing.	Nom. Plur.	gloss
<i>chłop</i>	<i>chłopi</i>	peasant
<i>aktor</i>	<i>aktorzy</i>	actor
<i>Kozak</i>	<i>Kozacy</i>	Cossack
<i>drań</i>	<i>dranie</i>	rascal
(14c) Adjective	Adverb	gloss
<i>piękny</i>	<i>pięknie</i>	beautiful(ly)
<i>poprzedni</i>	<i>poprzednio</i>	previous(ly)
<i>świeży</i>	<i>świeżo</i>	fresh(ly)
<i>wysoki</i>	<i>wysoko</i>	high, aloft.

The ending of nouns of all three genders in the Loc. Sing. is *-e* if the noun stem ends in a hard consonant with the exception of velars (cf. *koci-e*, *sławi-e*, *kol-e* etc. from *kot*, *sława*, *koło*) but *-u*, *-i* if the noun stem ends in a velar, soft or the so-called functionally soft consonant (cf.

Kozak-u, kurz-u, kraj-u, pol-u, skrzyn-i, tarcz-y). The suffix deriving adverbs from adjectives is either *-e* or *-u*. The latter occurs with stems ending in a soft or velar consonant.

From the fact that stems which end in the velar consonants sometimes pattern with soft stems (cf. *Kozak-u - kraj-u, wysok-o - poprzedni-o*) a conclusion is drawn that the velars and the palatalized consonants have some phonic features in common (Szpyra 1995: 186). The conclusion does not seem to be justified. Apart from the mutual dependence of grammatical morphemes (endings, suffixes) and consonants in which word stems end, a tendency towards the elimination of alternations plays an important role in morphology. Alternations arise as a result of various phonic processes but are gradually removed from particular areas of morphology, cf.

(15) <i>siostra - siostrze</i>	Old Polish <i>siestrze</i>
<i>żona - żonie</i>	Old Polish <i>żenie</i>
<i>sioło - siole</i>	Old Polish <i>siele</i>
<i>wysoki - wysoko</i>	Old Polish <i>wysoce</i>
<i>mak - w maku</i>	Old Polish <i>w mace</i>
<i>krok - w kroku</i>	Old Polish <i>w kroce</i> .

6. THE PROBLEM OF MORPHOPHONOLOGY

I think my argument shows that alternations cannot be accounted for in purely phonological terms. They belong to morphophonological facts and in structural linguistics were the subject matter of morphophonology. The classical generative phonology completely absorbed morphophonology. Now we can observe attempts to dissociate most alternations from phonology and assign them to other language levels, first of all to the lexicon.

I rather adhere to the traditional view that morphophonology should be separated from phonology. Assigning the tasks of morphophonology to phonology inevitably results in vicious circles, e.g., what makes one posit underlying elements like a tense *e* or a mid back unrounded vowel in Polish is only the unexpected behaviour of the vowel *e* in some environments, but, by this means, no explanation is gained. Alternations have aspects which are related both to phonology and morphology. As we have seen, in the course of the development of Polish some sound processes led to the loss of the automatic character of alternations, which became morphologically motivated and irregular. New facts which result from such changes can hardly be accounted for by means of the manipulation of concepts, e.g., by positing underlying phonemes or features that do not exist in a given language. I am not against diachronic explanations of such facts, but am of the opinion that they should be applied manifestly and not under the cover of pseudo-synchronic solutions.

On the other hand, fully automatic alternations belong to phonology. They are closer to phonetics, too. But they are not numerous in Polish. The alternation of voiced and voiceless obstruents seems to be the only automatic one in Standard Polish. No wonder that this alternation is best realized by Polish native speakers, which is proved by spelling errors made by less educated people:

- (10) *trawka* 'little grass'
 bluska 'blouse'

gus 'bump, tumour'
agrawka 'safety pin'

instead of

(11) *trawka*
bluzka
agrafka
guz.

Description in modern phonology is usually presented in the form of rules. If we expect of phonology to really explain linguistic facts its rules should be placed closer to phonetics.

REFERENCES

- Chomsky, N. and M. Halle (1968). *The Sound Pattern of English*. Harper & Row, New York, Evanston and London.
- Czaykowska-Higgins, E. (1988). *Investigations into Polish Morphology and Phonology*. MIT Ph. D. thesis.
- Fisiak, J. and S. Puppel (Eds.) (1992). *Phonological Investigations*. Benjamins, Amsterdam.
- Gussmann, E. (1992). Back to front: nonlinear palatalization in Polish. In: Fisiak, J. and S. Puppel (Eds.) (1992, pp. 5-66).
- Lightner, Th. M. (1965). *Segmental phonology of Modern Standard Russian*. Doctoral dissertation. MIT, Cambridge, Massachusetts.
- Rubach, J. (1992). Abstract vowels in three dimensional phonology: the yers. In: Fisiak, J. and S. Puppel (Eds.) (1992, pp. 108-151).
- Spencer, A. (1986). A nonlinear analysis of vowel-zero alternations in Polish. *Journal of Linguistics*, 22, pp. 249-280.
- Stieber, Z. (1973). *A Historical Phonology of the Polish Language*. Carl Winter Universitätsverlag, Heidelberg.
- Szpyra, J. (1995). *Three Tiers in Polish and English Phonology*. Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej, Lublin.