REVIEWS

PHONOLOGY AND RESONANTS

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In his recent monograph* (Fonologia angielskich i polskich rezonantów —
henceforth FAPR) Biedrzycki gives an extensive treatment, couched in terms
of orthodox autonomous phonemic theory, of Polish and English resonants
followed by a contrastive sketch of the isolated entities. In addition to a list
of abbreviations (where MIT is taken to be the Michigan (sic!) Institute of
Technology), a list of phonetic symbols, a preface and a bibliography, FAPR
contains an introduction presenting the theoretical and factual animals that
are at the centre of interest in the next three chapters. Chap. 2 presents an
interpretation of Polish resonants concentrating mainly on triphthongs,
diphthongs (both oral and nasal), the vowels [i] and [i̯], nasal consonants and
marginally, as largely unproblematic, the liquids [l] and [r]. Chap. 3 proceeds
in a similar manner in its treatment of English resonants, diphthongs and tri-
phthongs again bearing the main thrust of the argument and the remaining
resonants being viewed as relatively uncontroversial although special atten-
tion is paid to syllabic consonants. The analytic material in these two chapters
is taken from what B calls the cultural Polish of Warsaw (and what, in order
to avoid B's somewhat parochial attitude, I shall be referring to as Contem-
porary Standard Polish, CSP) in Chap. 2 and RP in Chap. 3. It must be stated
immediately, however, that the data B draws on for his interpretation goes
far beyond what one normally finds in textbooks of phonetics; apart from the

careful, perhaps somewhat studied forms to which is usually given most if not all the attention of traditional textbooks, B exploits the results of his own observations of various styles and, in particular, tempos of speech. This considerably broadens his range of material, particularly in the case of Polish, apart from being one of the still rare attempts made so far to incorporate allegro forms into linguistic analysis; however, neither Harris's (1969) study of Spanish phonology which partly addresses this issue nor Dressler's (1975) nor Rubach's work, to mention just a few, are discussed anywhere by B; Rubach is afforded three items in B's bibliography, one of which is antedated by ten years, another is the very pertinent monograph (Rubach 1977a) although no attention is paid to this anywhere in the body of the book. The recognition of different styles and tempos of speech leads B to the postulation of three phonemic system scalled minimal, practical and expanded (although the specific relations obtaining between these are nowhere made fully explicit). The minimal system for CSP that B arrives at consists of six vowel phonemes /i, i, u, ɛ, ɔ, a/ and eight remaining resonants /m, n, ɲ, ŋ, r, l, j, w/ thus eliminating nasal vowels (or diphthongs) and palatalised labial consonants (both resonants and non-resonants). The English system consists of nine vowel phonemes /i, e, ɛ, a, ɑ, ɒ, o, u, ə/ although B discusses the possibility of reducing it further to just six phonemes (p. 112—117) and eight remaining resonants /m, n, ŋ, l, ɹ, w, j, h/; diphthongs, triphthongs and long vowels are eliminated in favour of clusters of vowels plus glides or vowel geminates. These findings are summarised and juxtaposed in Chap. 4 which is followed by a final chapter of concluding remarks containing some discussion of what B sees as theoretical issues and areas for future research as well as noting possible practical applications of the observations and conclusions presented in the preceding chapters.

FAPR as a whole gives the impression of being a ghost from a bygone age; the main idea is to get at the phonemes and reduce their number. Consequently the minimal pair test is put to its full use and B stresses that even a single pair in the language suffices to establish a phonemic distinction: "we shall consider as legitimate each phoneme, no matter what its functional load may be, even if we were to find it in one word only" (będziemy uważali za pełnoprawny każdy fonem bez względu na jego obciążenie funkcjonalne, nawet gdyby dał się obserwować w jednym tylko wyrazie; p. 126). The corollaries of this position are predictable: phonology is viewed as completely separated from the rest of the language, the once-a-phoneme-always-a-phoneme principle is endorsed (p. 26), overlapping is excluded (at least "in principle" p. 26, whatever that might mean), reducing the number of phonemes on the other hand becomes the major theoretical driving force (nasal nuclei are not independent phonemes in CSP since that would increase the number of vowel

phonemes by twelve, p. 53; [i] and [ɨ] are better seen as individual phonemes since that allows B to eliminate five deadly foes in the shape of palatalised labials, p. 58; "the most telling proof supporting the correctness and advantageousness of this treatment (i.e. complex vocalic nuclei in English being sequences — clusters — of independent phonemes, E. G.) is the economy of the description as specifically reflected in the decreased number of phonemes" (Najdobitniejszym dowodem słuszności i korzystności takiego ujęcia jest ekonomiczność opisu szczególnie wyrażająca się w zmniejszonej liczbie fonemów. p. 98—99)) with pattern congruity thrown in for good measure etc. The analysis lives up to its theoretical expectations — we are presented with a separate phonemic system for allegro forms which includes /æ/, /o/, /ə/ on the basis of such minimal pairs as (p. 74):[1]

mia(ł)eś 'you, masc. had' — *zmią(ł)eś* 'you, masc. folded' — *mia(ł)aś* 'you, fem. had', phonemically /mjææ̃ø/ ≠ /mjɛɛø/ ≠ /mjaaø/; *czu(ł)o* 'one felt' — *czo(ł)o* fforehead', phonemically /tšoo/ ≠ /tšɔɔ/; *za czo(ł)em* 'past the forehead' — *zaczą(ł)em* 'I began', phonemically /zatšɔəm/ ≠ /zatšɛɛm/.

Likewise the existence of word final voiceless vowels, which are further restricted to the position after a voiceless consonant at the end of a falling intonation contour, coupled with the observation that such vowels may be deleted altogether leads B to postulate distinctive stress in such pairs as *młodzież* 'youth' — *młodzieży* 'gen. sg.', phonemically /'mwɔdʑɛš/ ≠ /mwɔ'dʑɛš(š)/. B does not appear to see that setting up an ever increasing number of phonemes for rapid speech is in itself an exercise in futility; what needs to be done, if allegro forms are to be studied in an intelligent and significant fashion, is to uncover the regular principles which link the studied and the rapid forms (such as that attempted by Rubach). B occasionally slips into this mode of reasoning when he says that /ə/ and /æ/ replace the phoneme groups /ɔwɛ/ and /awɛ/ as in *zacząłem* 'I began', *zapomniałem* 'I forgot' (p. 70 and also p. 66). However, instead of pursuing these lines B reverts to his theoretical mode and continues to set up not only new phonemes but also new types of phonemes — we have here flaunted proudly over the pages of FAPR not only phonemes from the minimal list but also stylistic, redundant, potential, facultative, additional and even pop-phonemes (this last is B's own concoction referring to what native speakers regard as distinctive — although they are usually wrong unless their judgements happen to be in agreement with the results of phonemic analysis, as is the case of the vowel plus glide

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[1] In our examples phonetic transcription is provided only where necessary. On the whole we follow B's system of transcribing, both phonetically and phonemically, although palatalised velars are marked /k', g'/ for simplicity.

interpretation of English diphthongs and triphthongs, p. 99²). I have no intention here of offering any apology for or justification of native speakers' reactions; it is a fact, however, that somebody who pronounces for example *chrzestny* 'baptismal' as [xšɛsnni] or [xšɛsni] knows that he may also pronounce it [xšɛstni] without deleting the /t/ just as he knows that he may not pronounce *milosny* 'love, adj.' [mʼiwɔsni] as* [mʼiwɔstni]. Orthography, which is frequently blamed by B for all sorts of nonphonemic reactions on the part of native speakers, is irrelevant here — speakers know which forms are related and make use of this knowledge. It is presumably the same knowledge which gives rise to B's suggestion that the voiceless nasal consonants of *następny* 'next' [nastɛmm̥ni], *wykrętny* 'quibbling' [vikrɛnn̥ni] and *uklęknij* 'kneel down, imp.' [uklɛŋŋ̥ij] should be assigned to the phonemes /p, t, k/ (p. 82, ftn. 107); were he to observe his no overlapping principle, he might as well group them with voiced nasals and assign them to nasal phonemes, as he does elsewhere.

B characterises his approach as 'dynamic and integrated' (p. 15) although there is little in the text to support this ambitious claim. In fact some of his examples and interpretations are a shining proof of just the reverse. Discussing his facultative phonemes B observes (p. 156) that the word *jest* 'is' can appear in several shapes:

(1)   jest trochę 'there is a little'   [jɛs trɔxɛ]
        jest dobrze 'it is well'   [jɛz dɔbže]
        jest ciemno 'it is dark'   [jɛɕ tɕɛmnɔ]
        jest zimno 'it is cold'   [jɛʑ ʑimnɔ]

side by side with the careful form [jɛst]. It is obvious that what happens here is the deletion of the final plosive followed by assimilation of the spirant /s/

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* B attempts to make the native speakers' reactions more objective by pointing out that words such as *yacht* when recorded and played backward are perceived as *toy*. The results of such experiments while intriguing can hardly be taken as definitive. In a situation where listeners are forced to make a choice (and in such experiments this is precisely what happens), phonetic similarity will clearly play a major role. One can be sure that if the words were placed in well-selected contexts, the results might be significantly different. A test sentence taken from Zagórska-Brooks' (1968) experiments *Na wojnie zginą dzielnie* (They will die bravely in war) is invariably perceived by Poles as *Na wojnie zginął dzielnie* (He died bravely in the war) and this is undoubtedly due more to the semantics of the sentence as a whole than to anything else. This goes to show again that speech perception is determined by set and not just by the physical properties of the speech signal only. B's reliance on such experiments is also variable or, in fact, selective. Thus he notes (p. 87) that the word *law* when played backward is perceived as *hall* although he emphatically rejects (p. 93) the traditional structural recognition of the phoneme /h/ as part of the phonemic representation of some long vowels.

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to the first obstruent of the next word in voice and palatal quality. All B's 'dynamic' model succeeds in saying is that [s, z, ɕ, ʑ] do not belong to one phoneme and the word has several phonemic shapes. This is perfectly consistent but totally damaging to the theory since exactly the same thing would be said if the forms were not as above but instead as in (2):

(2)   *[jɛʑ trɔxɛ]
        *[jɛs dɔbže]
        *[jɛz tɕɛmnɔ]
        *[jɛɕ ʑimnɔ]

i.e. with arbitrary criss-crossing of voicing and palatalisation, a situation which cannot and does not happen in Polish. This example itself suffices to show that the phoneme is not just a complication of the description (and this appears to be B's somewhat peculiar understanding of the reasons for the rejection of the phoneme by generative phonology, p. 25 ftn. 27) but rather it makes impossible the statement of generalisations as patent and transparent as the voicing and palatalisation assimilations above on the one hand and on the other it makes predictions which are false and which are not borne out by facts (if the phoneme is a distinctive and independent element, then the crazy assimilations in (2) should be as normal and frequent as the actually attested ones). A similar example involving Polish nasal consonants was given in Gussmann (1974); see also Anderson (1974: 34—39).

B's approach is further marred by his conception of the goals of phonological analysis and of contrastive studies. Although he has reservations as to the correctness of Pike's position "phonemics — a technique for reducing language to writing" (p. 96), B's express purpose is the utilisation of the description for teaching English pronunciation to Polish students and, conversely, teaching Polish pronunciation to English students. The tasks that he sets contrastive phonetics include the phonetic and phonological description of the individual languages carried out in comparable terms, the juxtaposition of phonemic and allophonic systems, the establishment of appropriate transcriptions and the working out of instruction procedures and tricks to be used in teaching (p. 31—32). Clearly these are legitimate goals for applied contrastive phonology, whereas contrastive linguistics as a branch of linguistic studies, however, is considerably broader and more ambitious in its aims; it would be out of place here to repeat arguments generally available (Fisiak 1973 which appears in B's bibliography; cf. also Fisiak 1975, 1976, Eliasson 1974, 1976 of which B seems to be ignorant). If FAPR were explicitly concerned with the methodology of teaching pronunciation, it would have to be evaluated along completely different lines; B himself, however, sees his analysis as the first step towards providing a pedagogical grammar, but

is here concerned with the phonological systems of the two languages as such. It should be noted, however, that some of his phonological solutions appear to be tainted by contrastive purposes, e.g. he is "tempted" to introduce the potential phoneme /o/ into the Polish inventory because of its comparability with English (p. 70), the plausibility of the biphonemic interpretation of the English falling diphthongs is enhanced by its utility in the teaching of English pronunciation (p. 99),[3] the elimination of vocalic length in English is also commended as it facilitates a comparison with Polish (p. 107) etc. I would take it as axiomatic that a descriptive analysis of the phonology of a language should be made in language independent terms. Whatever may be made of contrastive analysis, we are not going to make it more significant or meaningful by allowing considerations of purpose to enter into the analysis itself.

B's practical suggestions do not go very far and can be summarised in one sentence: the student should be made aware of the vast phonetic repertoire at his disposal, including sounds from other dialects that he may hear as well as his own substandard and allegro forms which often coincide with the foreign sounds that he finds so difficult to master. This is all very nice and true but I doubt whether it will help the student a lot since it is a well-known fact, recognised by B, that speakers without special training find it extremely difficult or downright impossible to pronounce in isolation some of the sounds which they may be using in everyday speech. Thus in view of the scarcity of practical directions the reader of FAPR is left with the analysis itself. As can be gathered from the above presentation I find FAPR a disappointing and thoroughly misguided book. Had B applied his talent as a highly skilled phonetician to, say, a presentation of allegro speech phenomena without getting involved in dubious theorising, he would have served the linguistic community better. Likewise had he, as a teacher of English pronunciation, presented some of his experience in the form of prac-

tical suggestions for the teaching of English phonetics to Polish students, then the results might have been evaluated on their own merits. As it is FAPR is partly a collection of data easily available elsewhere and partly a hotch-potch of suggestions and intriguing observations cast in an outdated framework. As a dissertation it might have been accepted at a conservative university some ten years ago but its publication in the late 70's is a mistake.

In all fairness it should be added that B is not unaware of the more recent developments in phonological theory but he sticks to the older framework partly because, somewhat irrelevantly, he argues that no other model has produced a complete description of Polish or English phonology and partly because the teaching of English pronunciation is still based on descriptions in terms of phonemes and allophones (p. 15). In a masterly outburst B concludes "Phonemic analyses have always produced those descriptions which are most advantageous, most elegant, simplest, most efficient, most symmetrical, most in accordance with phonetic facts and most closely adhering to the phonetic and phonological systems of languages under discussion" (Dotychczasowe analizy fonemiczne dawały opisy najkorzystniejsze, najzgrabniejsze, najprostsze, najbardziej efektywne, najbardziej symetryczne, zgodne z faktami fonetycznymi i najściślej przylegające do systemów fonetyczno-fonologicznych rozpatrywanych języków. p. 24). Were anybody still left in doubt, B adds the clincher "they (i.e. phonemic analyses — E.G.) have been best suited to the purposes of spelling reform and foreign language teaching, which is a convincing proof of their utility" (Najlepiej też nadawały się do zastosowania w reformach pisowni i w nauczaniu języków obcych, co stanowi przekonywającą próbę ich wartości. p. 24).

I have already expressed displeasure at B's cavalier treatment of previous work and alternative interpretations of specific problems. More must be said about this. Discussing briefly the attitude of generative phonology to the phoneme vis à vis that of structural phonemics B quotes Schane's works calling for the introduction of that entity into generative analysis. B fails to mention, however, that even in the abstract of his paper Schane (1971 : 503) adds: "Synchronically, a phonemic representation is not to be discovered by applying a set of procedures to a phonetic representation, nor does it exist as an autonomous level within generative phonology; rather it is to be characterized as a representation of relevant surface contrasts which is deducible from the function of the rules within generative phonology. Thus the phoneme does in fact have a place in generative phonology without in any way changing the theoretical basis." In other words the phoneme postulated by Schane is a very different sort of entity from that adopted by B and the phonemic tradition. Likewise B quotes Linell's criticism of abstract phonology as not psychologically real (which is surprising coming from B

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[3] Although I have little to say here about the possible practical applications of B', analysis, much of which, referring as it does to low phonetic data is obviously correct, I would like to take strong exception to his recommendation that closing diphthongs should be transcribed with a semivowel as the second element, i.e. /j, w/ since one of the things that Polish students of English must learn to do is n o t to pronounce the full glide finally in such words as *buy, now*. B deplores the fact (p. 97) that no attention has been paid to such suggestions by textbook writers and teachers. Evidently they knew better. I am also curious to know how B's reinterpretation of the traditional aspiration of fortis plosives as the preaspiration of vowels (p. 88) could be used in the classroom. Incidentally, the idea that the aspiration of fortis plosives is better treated as the preaspiration of vowels is not B's but goes back at least to Schatz (1954). Other objections concerning B's interpretation of Polish for the purpose of teaching it to the speakers of German were voiced by Wójtowicz (1976) in her review of Biedrzycki (1972).

who refers to his own methods of analysis as "tricks",[4] p. 113, 127) but seems unaware of the fact that generative phonology is represented by a variety of approaches, some of which are more concrete or phonetically oriented than his own (e.g.; Hooper 1976, Vennemann 1974). Past work on the specific problems that B discusses is mentioned in the body of the book (although Trubetzkoy's (1969 : 168) interpretation of Polish nasal vowels, which I believe is fundamentally correct as far as it goes, is regrettably omitted) but only insofar as they adopt the same framework as B does (hence Gladney 1968, Gussmann 1974, DeArmond 1975, Rubach 1977b offering generative interpretations of Polish nasal vowels or Laskowski's 1975 important monograph are not mentioned even in the bibliography). Lass (1976) is quoted with approval for adopting a vowel cluster interpretation of English diphthongs although a veil of silence is drawn over the fact that Lass's is a generative interpretation and thus incomparable with B's and, more importantly, that Lass extensively criticises as phonetically and phonologically inaccurate the proposal that the second element of the English falling diphthongs is a glide (Lass 1976 : 13—20); this proposal, we might add, lies at the core of B's interpretation of English diphthongs, an interpretation which, is his own words, is "based on close adherence to phonetic facts" (... będziemy opierali nasze interpretacje fonologiczne jak najściślej na faktach fonetycznych, p. 94). Similarly the bibliography contains several surprises — of the Householder — Chomsky&Halle 1965 controversy we find only Householder's first contribution, but then on the other hand we find Anttila's *Introduction to historical and comparative linguistics* and Stanley's volume *Goals of linguistic theory*. One may well wonder what possible relevance Emonds' analysis of extraposition or Kiparsky's arguments against phonological conspiracies can have to anything B is doing. The inclusion of Sansom's *Historical grammar of Japanese* or Thurneysen's *Grammar of Old Irish* would be as appropriate and just about as relevant.

In what follows I would like to discuss a couple of problems in Polish phonology not with a view to offering a different analysis in B's terms (for obvious reasons) or to comparing different solutions (with widely divergent theoretical frameworks this is hardly possible if, indeed, worth while) but rather because the problems seem of significance both for the structure of CSP and for general theoretical purposes. The problems include the distinction between [i—i] and the status of palatalised labials, the distinction between velar and palatalised plosives [k — k'] as well as the question of diphthongs, triphthongs and nasal vowels.

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[4] B makes an obscure remark (p. 25 ftn. 27) affirming his belief in the psychological reality of the (autonomous) phoneme. It is a pity that he has not enlarged on this issue which, as far as I can determine, has nothing to do with his analytic work.

THE DISTINCTION BETWEEN [i—i] AND THE STATUS OF PALATALISED LABIALS

Interpretations of the phonological status of these two vowels have had a long history within structural phonology (summarised by B on pp. 55—58) centring basically on the question of whether the two sounds should be assigned to one or two phonemes.[5] This problem was directly linked with the status of palatalised consonants: the minimal contrast such as [m'i] — [mi] could be interpreted phonologically as that of a palatalised vs a non-palatalised consonant with the vocalic differences being secondary (allophonic, depending on the nature of the preceding consonant) and transcribed phonemically as /m'i/ and /mi/ respectively or, conversely, the contrast could be seen as deriving from the opposition of vowels with the palatal quality of the consonants being allophonic (the appropriate phonemic transcriptions would be /mi/ — /mi/). Part of the tradition has maintained that since the palatalisation contrast is to be observed throughout the consonantal system and in a number of contexts is independent of the following vowel

(3)

ład[ɲ]e 'nicely'	— ład[n]e 'nice, nom. pl.'
ko[tɕ]e 'cat, loc. sg.'	— ko[t]em 'instr. sg.'
mał[p']a 'monkey, adj.'	— mał[p]a 'monkey, n.'

it is the opposition of palatalisation which is distinctive and hence the vowels [i — i] should be regarded as allophones of one phoneme. As noted above B opts for the two vowel phoneme solution for two reasons: it is a well-known fact about certain (predominant, it would seem) varieties of CSP that sequences of a palatalised labial plus vowel (with one reservation which I will outline below) such as [m'a] contain phonetically the palatal glide [j], i.e. they are in fact [m'ja] and can be interpreted phonemically as /mja/; more important however, this solution allows for the elimination of five segments from the phonemic inventory (the net gain is really four since in eliminating five soft labials B introduces /i/ as a separate phoneme). I would like to agree with B in claiming that /i/ and /i/ are independent phonological units although for entirely different reasons.

Two minor points to begin with. It is a fact that phonetically in Polish the palatalised labials, or any palatalised consonants for that matter, cannot be followed by [i], i.e. *[m'i] or *[tɕi] are totally impossible; the absence of [i] after palatalised labials finds a natural explanation in B's account since, of course, palatalisation here is determined by the segment which follows.

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[5] The one phoneme interpretation was started by Mroziński as early as 1822. For some evaluation of Mroziński's work in the light of later discussions, see Jakobson(1971).

The systematic impossibility of combining the other palatalised consonants with [i], i.e. *[ɕ, ʑ, tɕ, dʑ, ɲ, l', k', g', x'+i] would have to be regarded as an accidental gap in the distribution. Another question is the status of the glide /j/ after palatalised labials. It should be stressed that within CSP there is no glide when the vowel following the labial is the front high /i/, i.e. we find *miły* 'nice' [m'iwi] and *malpi* 'monkey, adj.' [mawp'i] rather than *[m'jiwi], *[mawp'ji] (the latter forms are substandard and regional). When we look now at the contexts involvig alternations of palatalised and non-palatalised consonants in CSP we observe a striking regularity: wherever a consonant is palatalised by some suffix, the glide /j/ develops if the consonant is labial and followed by a vowel other than /i/. Thus before the /ε/ ending we find

(4)

non-labials:	ro[s]a 'dew'	— ro[ɕ]e dat. sg.'
	wa[z]a 'vase'	— wa[ʑ]e 'dat. sg.'
	la[t]o 'summer'	— le[tɕ]e 'loc. sg.'
	wo[d]a 'water'	— wo[dʑ]e
	smo[w]a 'tar'	— smo[l]e
	ko[r]a 'bark'	— ko[ž]e
	ra[n]a 'wound'	— ra[ɲ]e
	rę[k]a 'hand'	— rę[ts]e
	wa[g]a 'scales'	— wa[dz]e
	ce[x]a 'feature'	— ce[š]e
labials:	zi[m]a 'winter'	— zi[m']je
	ba[b]a 'crone'	— ba[b']je ·
	sza[f]a 'wrdrobe'	— sza[f']je
	ła[p]a 'paw'	— ła[p']je
	kro[v]a 'cow'	— kro[v']je

The same is true about other suffixes, e.g. the adverbial /ε/ suffix or the diminutive /ik/

(5)

non-labials:	dob[r]y 'good'	— dob[ž]e
	ład[ny 'nice'	— ład[ɲ]e
	sta[w]y 'constant'	— sta[l]e
	świę[t]y 'sacred'	— świę[tɕ]e
	praw[d]a 'truth'	— w praw[dʑ]e
labials:	świado[m]y 'conscious'	— świado[m']je
	chci[v]y 'greedy'	— chci[v' j]e

(6)

non-labials:	bere[t] 'beret'	— bere[tɕ]ik
	przykła[d]u 'example, gen. sg.'	— przykła[dʑ]ik
	gło[s] 'voice'	— gło[ɕ]ik
	wo[z]u 'cart, gen. sg.'	— wo [ʑ]ik
	kla[n] 'clan'	— kla[ɲ]ik
	stó[w] 'table'	— sto[l]ik
	łot[r] 'rascal'	— łot[š]yk
	ha[k] 'hook'	— ha[tš]yk
labials:	her[b]u 'coat of arms, gen. sg.'	— her[b']ik
	to[m] 'volume'	— to[m']ik
	paragra[f] 'paragraph'	— paragra[f']ik
	chle[v]u 'pigsty, gen. sg.'	— chle[v']ik
	skle[p] 'shop'	— skle[p']ik

Examples of other suffixes could be multiplied and although details vary with consonant classes (velars and liquids require special treatment) we detect a process of palatalisation here (cf. an identical treatment in Mroziński 1822 : 24). All that needs to be said about the labials is that when palatalised they develop a gide if followed by a vowel with the exception of /i/. We can now wonder what is responsible for palatalisation and since an extensive discussion is precluded here we can only say that on the whole palatalisation is caused by front vowels — in these terms then, /i/ is a nonpalatalising vowel [6]. Whether we are justified in extending the same treatment to morpheme internal position is a somewhat more controversial issue although certain facts clearly indicate that this is, indeed, desirable. Let us just consider here the alternation traditionally referred to as that between the vowel /ε/ and zero. If B's suggestion that palatalised labials are phonologically a sequence of glide plus vowel were to be accepted, we would have to say that there is an alternation between /ε/ and zero if the preceding consonant is non-labial and an alternation between /jε/ and zero if the preceding consonant is a labial, as shown in the following examples:

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[6] The same is true about phonetic *e*'s; phonological tradition as a whole has, curiously enough, overlooked the similarities between the vowels [i—i] on the one hand and the palatalising and non-palatalising *e*' s on the other although the similarities are very striking. Thus we have palatalisation before [i] and some *e*' s, e.g.: *sąsiad — sąsiedzi, sąsiedzie, Francuz — Francuzi — Francuzie* but no palatalisation before [i] and other *e* 's, e.g.: *sąsiady — sąsiadem, Francuzy — Francuzem*. These examples show that the non-palatalising *e*'s are very close phonologically to [i] while the palatalising ones are very close to [i]. This problem is discussed extensively in Gussmann (1978a).

(7)

non-labials:	dzień 'day'	— dnia 'gen. sg.'
	osiem 'eight'	— ośmiu
	panien 'miss, gen. pl.'	— panna
	marzec 'March'	— marca
	kwiecień 'April'	— kwietnia
labials:	wieś 'village'	— wsi
	hufiec 'troop'	— hufca
	stopień 'grade'	— stopnia
	szczerbiec 'kind of sword'	— szczerbca
	Niemiec 'German'	— Niemca

Clearly we have one process here, the deletion of /ɛ/ in certain contexts, and the /j/ after palatalised labials is the result of a late rule; this is further confirmed by the existence of those varieties of CSP which maintain palatalised labials without inserting the glide. Thus when viewed in the broader perspective of the structure of CSP rather than in terms of surface contrasts, palatalised labials followed by the glide /j/ can be regarded as derived from plain labials by general rules. In this interpretation /i/ and /ɨ/ are independent phonological entities, palatalising and nonpalatalising respectively. The relations between these phonological elements and their phonetic realisations are taken up directly below.

THE VELAR AND PALATALISED PLOSIVES [k—k']

Although these plosives are not within the scope of B's direct concern, he includes them in his cumulative list of phonemes in CSP (p. 84); we shall also address ourselves to them since they are connected with the relation of the phonological segments /i, ɨ/ to the phonetic structure and also they have some other interesting implications.

It is easy to see why B would want to regard [k] and [k'] as two independent phonemes — partial minimal pairs such as z [g'ɛn] ty 'bent' — [gɛm]ba 'gob' suffice, according to his principles, to ensure the distinctive status of the segments in question. The story, however, is not that simple once a somewhat less orthodox position is adopted. Let us consider first the contexts where these plosives can occur.

The non-palatalised plosives [k, g] can occur freely in consonantal clusters within morphemes: initially [skr]obać 'scrape', [vzgl]ąd 'consideration', medially sa[kf]a 'money-bag', na[gw]y 'sudden', and finally pi[sk] 'squeak', ró[sk] 'rod, gen. pl.' (terminal unvoicing prevents, /g/ from surfacing phonetically). Prevocalically the situation is more complex in that the consonants can appear before most vowels, the exceptions being [i] and [ɨ]. Before vowels then

we find the following situation:

(a) neither obstruent can appear before [i].

(b) neither obstruent can appear before [ɨ] although there are exceptions, namely the strongly felt foreign word[7] [ki]nolog 'dog doctor' and a couple of proper names, e.g. [ki]dryński, although the names frequently change the sequences [ki] to [k'i] in unguarded speech.

(c) before vowels other than [i, ɨ] these obstruents occur freely, e.g.: [kɛn]dy 'which way', [gɛm]ba 'gob', [kɔ]ra 'bark', [gɔ]towy 'ready', [ka]ra 'punishment', [ga]rdło 'throat', [ku]ra 'hen', [gu]ra 'mountain' etc.

The palatalised velar plosives [k', g'] present a very different picture since they do not appear in consonantal clusters of any sort or word-finally; prevocalically their occurrence is severely restricted in that

(a) they appear before the front [i] but never before the retracted [ɨ], e.g.: [k'i] pieć 'seethe', [g'i] nąć 'perish'; they can also occur before [ɛ], e.g.: [k'ɛ]dy 'when', bo [g'ɛ]m 'god, instr. sg.'.

(b) no other vowel can normally follow them although there are a few exceptions which are again foreign words, e.g.: [g'a]ur 'giaour', [k'ɔ]sk 'kiosk'.[8] In other words, the palatalised velars can appear only when a front vowel follows; if the front vowel is [i], the palatalised ones appear to the exclusion of the non-palatalised obstruents. Conversely, the palatalised velars can never be followed by the retracted vowel [ɨ].

These severe restrictions suggest that there is a process of velar palatalisation whereby underlying plain velars are softened if followed by a front vowel. This suggestion appears to be contradicted by the fact that no palatalisation takes place before the traditional front nasal vowel, phonetically a sequence of an oral vowel and a nasal consonant homorganic with the following non-continuant obstruent (e.g.: [kɛmp]a 'tuft', [gɛmb]a 'gob', [kɛnd]y 'which way') or by a nasal diphthong if word final or followed by a spirant (e.g.: pie[kɛw̃] 'I bake', mo[gɛw̃] 'I can', [gɛw̃]ś 'goose', [kɛw̃]s 'bite'). Since in a number of words there are alternations of front and back nasal vowels, e.g.: k[ɛn]dy 'which way' — dok[on]d 'where to', g[ɛw̃]ś 'goose' — g[ow̃]ska 'dim.', k[ɛw̃]s 'bite' — k[ow̃]sek 'dim.' we may suggest that phonologically the words have back vowels which in some contexts undergo a shift to front ones. Consequently we may dismiss this set of counterexamples as due to rule ordering, i.e. the rule palatalising velars applies before (counterfeeds) the one

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[7] It is surprising that B, who professes to follow, among others, Pike (p. 24) seems oblivious of the concept of 'coexistent phonemic systems' or, at least, finds no use for it in either Polish or English phonology.

[8] There is also the very interesting verb [g'oɲ]ć 'bend' z[g'ɛn] ty 'bent' which I cannot discuss here (see Gussmann 1978a: 129—130) — let me just note that some forms contain the vowel [i] in the root, e.g. z[g'i] nać 'bend imperfective'.

adjusting the front-back quality of the vowels. In any case, since the absence of palatalisation is here characteristically connected with nasal vowels, one cannot intelligently discuss one thing without taking into account the other; the interpretation we provide for the nasal vowels and their alternations will also account for the superficial non-appearance of palatalised velars before such vowels.

Another group of words where no palatalisation takes place before the phonetically front [ɛ] comprises words of foreign origin, e.g.: [gɛ]*neral* 'general', [gɛ]*neza* 'genesis', [kɛ]*fir* 'kefir', [kɛ]*lner* 'waiter' etc.; these can be marked with a diacritic to exempt them from undergoing the palatalisation rule.

Thus we can see no need to recognise palatalised velars as separate phonological entities. The problem is, however, more complex since as some examples in (4) show the underlying velars can be palatalised in different ways, e.g. rę[k]a 'hand' — rę[ts]e 'nom. pl.' — rą[tš]yna 'express.'. This aspect of Polish involving deep phonological palatalisations is vast and has been extensively studied elsewhere (Steele 1973, Laskowski 1975, Gussmann 1978b); for our immediate purposes we note that if the vowel of the suffix [in—] of *rączyna* is front, as it must be since it palatalises the preceding consonant

(8)

żebra[k] 'beggar'	—	żebra[tši] na 'express.'
no[g]a 'leg'	—	no[ži]na
okru[x] 'crumb'	—	okru[ši]na
kobie[t]a 'woman'	—	kobie[tɕi]na
chło[p] 'peasant'	—	chło[p'i]na
ba[b]a 'crone'	—	ba[b'i]na
pie[s] 'dog'	—	p[ɕi]na
ga[d]a 'reptile, gen. sg.'	—	ga[dʑi]na

then the alternation between [i—ɨ] which we find on the surface must be due to a rule shifting /i/ to /ɨ/ after certain consonants. Thus here the phonetic [i/ɨ] are both realisations of the phonological /i/ and, specifically, the retracted [ɨ] may come from phonological /i/. Another thing that arises from the above reasoning is the fact that the phonetic [i] in e.g. ręk[i] cannot be phonologically /i/ as then we would derive the incorrect *rę[tši]. I suggest that the phonetic [i] after palatalised velar plosives is itself derived from phonological /ɨ/. There is some good evidence to support this position.

One of the suffixes used to form derived imperfectives in Polish appears in two phonetic shapes [iv] and [ɨv] where the former is added to verbal stems ending in a velar plosive[9] and the latter is used elsewhere:

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[9] In the examples and the discussion we have disregarded the velar spirant /x/ which is idiosyncratic in certain ways (see Gussmann 1978: 10 ff).

(9)

velar plosives:	ska[k]ać 'jump'	—	podska[k'iv]ać
	mru[g]ać 'wink'	—	odmru[g'iv]ać
non-velars:	ła[m]ać 'break'	—	przeła[miv]ać
	grze[b]ać 'bury'	—	zagrze[biv]ać
	sy[p]ać 'spill'	—	zasy[piv]ać
	sia[d]ać 'sit'	—	przysia[dɨv]ać
	la[t]ać 'fly'	—	odla[tɨv]ać
	praco[v]ać 'work'	—	odpraco[vɨv]ać
	wo[w]ać 'call'	—	nawo[wɨv]ać
	g[r]ać 'play'	—	g[rɨv]ać
	cze[s]ać 'comb'	—	przycze[sɨv]ać
	poka[z]ać 'show'	—	poka[zɨv]ać

Clearly we are dealing with one suffix which appears as [iv] only after velars. The same situation can be found in several other places in Polish grammar. Thus the nom. sg. ending of masc. adjectives is [i] after velar plosives and [ɨ] elsewhere:

(10)

velar plosives:	wro[g'i] 'hostile'	—	wro[g]a 'fem. sg.'
	dzi[k'i] 'savage'	—	dzi[k]a
non-velars:	stro[mɨ] 'steep'		
	goto[vɨ] 'ready'		
	tę[pɨ] 'blunt'		
	gru[bɨ] 'fat'		
	ly[sɨ] 'bald'		
	mło[dɨ] 'young'		
	zło[tɨ] 'golden'		
	pięk[nɨ] 'beautiful'		
	ca[wɨ] 'whole'		
	dob[rɨ] 'good'		

Similarly the nom. pl. of certain nouns takes [i] after velar plosives and [ɨ] elsewhere:

(11)

velar plosives	wal[k]a 'battle'	—	wal[k'i]
	dro[g]a 'way'	—	dro[g'i]
non-velars:	ma[p]a 'map'	—	ma[pɨ]
	ra[f]a 'reef,	—	ra[fɨ]
	do[m] 'house'	—	do[mɨ]

ka[v]a 'coffee'   — ka[vi]
choro[b]a 'illness'   — choro[bi]
pie[s] 'dog'   — p[si]
cha[t]a 'hut'   — cha[ti]
wa[d]a 'fault'   — wa[di]
ska[w]a 'rock'   — ska[wi]
ra[n]a 'wound'   — ra[ni]
ko[r]a 'bark'   — ko[ri]

In the same fashion the gen. sg. of certain nouns takes [i] after velar plosives and [i] elsewhere:

(12)

velar plosives: rę[k]a 'hand'   — rɛ[k'i]
              no[g]a 'leg'   — no[g'i]
non-velars: wo[d]a 'water'   — wo[di]
           cha[t]a 'hut'   — cha[ti]
           ro[s]a 'dew'   — ro[si]
           ko[z]a 'goat'   — ko[zi]
           ko[r]a 'bark'   — ko[ri]
           ra[n]a 'wound'   — ra[ni]
           ska[w]a 'rock'   — ska[wi]
           zi[m]a 'winter'   — zi[mi]
           ła[p]a 'paw'   — ła[pi]
           ra[f]a 'reef'   — ra[fi]
           wdo[v]a 'widow'   — wdo[vi]
           ba[b]a 'crone'   — ba[bi]

In all these examples the same pattern recurs thus supporting the contention that phonological /i/ shifts to /i/ after velar plosives and subsequently causes their (surface) palatalisation. Thus while both /i/ and /i/ have to be recognised as underlying segments, examples such as *rączyna, kobiecina* show that /i/ may be realised as either [i] or [i] phonetically while examples such as *dobry, wielki* show that conversely, /i/ may be realised in the same way:

(13)

/ i /   / i /
i   i
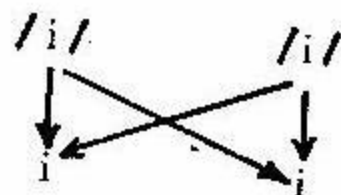
Thus we can see that no adequate assessment of the phonology of a language can be made unless due cognizance is taken of the grammatical facts; analyses based solely on surface phonetic contrasts are bound to produce a totally distorted picture.

TRIPHTHONGS, DIPHTHONGS AND NASAL VOWELS

B appears almost unique among phoneticians and phonologists working on Polish in believing that there are oral diphthongs and triphthongs in the language[10]. His triphthong is a vowel flanked by glides while his diphthong is simply a vowel accompanied by a glide[11]. Since B takes [w] to be a semivowel in spite of the fact that it alternates with [l] (e.g. *t*[w]*o* 'background' — *t*[l]*e* 'loc. sg.'), the number of diphthongs and triphthongs is quite high; they can all, however, be shown to consist of sequences of independent phonemes so there is no need to feel disquieted by their large number.

It is embarrassing to have to dispute this claim since students of elementary phonology classes are surely told that in order to qualify as a diphthong a certain vocalic nucleus must be shown to function as a unit in the phonology of the language. Otherwise we could go on inventing names for sequences of plosive plus vowel, spirant plus nasal, vowel plus velarised consonant and so on ad infinitum. What possible justification could B offer for the [ju] in *jutro* 'tomorrow' being a diphthong in Polish? None as far as I can see; it is simply a sequence of the glide [j] and the vowel [u] just as [fu] in *futro* 'fur coat' is a sequence of the spirant [f] and the vowel [u]. Evidence can and has been given even in B's theoretical framework for the correct identification of diphthongs and

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[10] In fact a curious development of these ideas can be traced. In the short book on Polish pronunciation (Biedrzycki 1972) and in its longer version (Biedrzycki 1974) B speaks of diphthongs only. The book at present under discussion also introduces triphthongs (cf. also Kalisz 1974: 75); it was presumably considerations of syllable structure that prevented him from setting up quadri- and pentaphthongs in e.g. [jajɔ] 'egg' and [wajew] 'I scold' although, on the other hand, B is not worried by the fact that the same glide may traverse syllable boundaries with impunity. Thus in the monosyllabic *jaj* 'egg, gen. pl.' we have a triphthong [jaj] while in the bisyllabic *jajo* 'nom. sg.' we would presumably have a sequence of two diphthongs [ja+jɔ]. The concept of syllabicity is not made precise either; on pp. 80—81 B speaks of some nasals as being "syllabic in the phonetic sense" although the phonetic correlates of syllabicity are anything but obvious. I believe it is more appropriate to speak of the syllable as belonging to the domain of phonology rather than treating it as a phonetic primitive. B's claims (p. 129) that length appears to be a phonetic exponent of syllabicity is irrelevant for no matter how long the spirant of *s-s-s-snake* may be, the word will remain monosyllabic. Likewise it is difficult to see what B means by asserting that the nasals in the Polish *pism, spazm* are syllabic. If he is not saying that *pism* and *spazm* are bisyllabic, as I hope he is not, then what is he saying?

[11] The same is incidentally true about English so that *yet, wet, red, head* (p. 86) all start with rising diphthongs and, I suppose, *yeah, way, ray, hay* would be triphthongs. These are immediately shown to consist of a non-syllabic phoneme /j, w, r, h/ plus a vocalic syllable centre. What was the justification for calling them diphthongs or triphthongs in the first place?

triphthongs (cf. for example Heffner's (1964: 112) demonstration that the [juw] of *cute* should be regarded as a triphthong in English).[12] In view of the fact that there is not a shred of evidence for the existence of oral diphthongs in Polish,[13] B's claim that nasal diphthongs exist parallel to oral ones (p. 42 ff) vanishes into thin air.

B's interpretation of nasal diphthongs (and also triphthongs but we shall forget about these) is definitely his most ingenious contribution. Traditionally only two mid nasal diphthongs [ɛw̃] and [ɔw̃] were objects of interest; B shows that all six of his oral vowels can be followed by a nasal glide, either front or back, hence we have twelve nasal diphthongs paralleling twelve oral diphthongs consisting of a vowel plus a front or back glide. These structural similarities prompt B to look for a biphonemic solution for nasal diphthongs as he did for the oral ones. He treats the diphthongs containing the front nasal glide [j̃], which all appear before a spirant and occasionally in word final position) as consisting of a front vowel plus the palatal nasal /ɲ/ while the symmetry of the emerging system suggests that the back nasal glide [w̃] should be treated as the velar nasal phoneme /ŋ/. Hence *koński* 'of the horse' and *kąski* 'bites' are phonemicised as /kɔɲsk'i/ and /kɔŋsk'i/ respectively, nasal diphthongs are dismissed as potential phonemes and an inventory of four distinctive nasal consonants is established /m, n, ɲ, ŋ/. The velar nasal is further shown to appear, contrary to traditional descriptions, not only before the velars /k, g/ but also elsewhere (p. 74 —76) which leads to the establishment of minimal pairs with /n — ŋ/ giving a final polish to the analysis.

Let us start with the minimal pairs. All instances that B quotes involve cases where a velar plosive has been deleted but in every case it may and frequently does appear. Thus pairs such as *pun(k)t* 'point' — *funt* 'pound' phonetically [puŋt] — [funt], are valid only as long as one is prepared to forget

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[12] Compare also his judicious remark "The answers to questions of this kind (i.e. whether some element is or is not a diphthong — E. G.) must be given for each language in which they arise, and not for all languages from any general premise" (Heffner 1964: 112). In other words, there can be nothing like a purely phonetic description since some (at least pre-systemic) phonological analysis of necessity precedes even the process of sound segmentation. The same sentiment was expressed by Trubetzkoy (1969: 37—38): "Only the actual continuous sound flow of the speech event is a positive entity. When we extract individual "speech sounds" from this continuum we do so because the respective section of the sound continuum "corresponds" to a word made up of specific phonemes. The speech sound can only be defined in terms of its relation to the phoneme. But if, in the definition of the phoneme, one proceeds from the speech sound, one is caught in a vicious circle".

[13] This absurdity, that sequences such as [ja], [aw] etc. are oral diphthongs in Polish, has now even appeared in a textbook of Polish pronunciation for speakers of English (Puppel et al 1977).

that the pronunciation [puŋkt] is perfectly regular and generally observed. What such examples really show is that velars may be optionally dropped in some contexts while remaining completely recoverable.

As for the large number of nasal diphthongs I may say that while B's phonetic observations are correct, there was certain wisdom in the traditional accounts, a wisdom which he chooses to disregard, that is while words such as *pensja* salary and *insekt* 'insect' may be pronounced with the back nasal glide [w̃], they may also be pronounced with the nasal consonant [n]. This is not true about the two traditional nasal vowels — *męski* and *kąski* do not admit the possibility in CSP of anything but a diphthongal pronunciation. Distinctions of this sort must be recognised in an adequate grammar and it is simply not good enough to lump together all phonetic facts observed regardless of their status in the structure of the language.

Turning now to the mid nasal vowels let us note that Trubetzkoy (1969:168) interpreted these as individual phonemes in all positions: "... these vowels ("ę", "ą", i.e. ẽ and õ) seem to be independent phonemes in standard Polish (...), where the nasalized vowels occur not only before fricatives but also in final position. Before occlusives the combination of "e, o+indeterminate (homorganic) nasal" may be considered their combinatory variants". Using B's transcription, the prespirantal and word final diphthongs [ɛw̃], [ɔw̃] are grouped together with the sequences [ɛm, ɛŋ, ɔm, ɔn, etc.] into unitary phonemes.[14] B's adoption of the once-a-phoneme-always-a-phoneme principle precludes any such analysis since obviously the sound [m] for example would have to be assigned once to /ẽ/, once to /õ/ and once to /m/.

There are several good reasons why a solution along Trubetzkoy's lines is correct and B's biphonemic interpretation is fundamentally misconceived. The reasons have to do with the idiosyncratic properties of nasal vowels which, phonologically, set them off from oral ones. One such reason has already been discussed: surface velar palatalisation does not apply before nasal vowels. Even if one were to reject the generative interpretation suggested above and based on the interaction of rules, a monophonemic analysis still fares better in stating the generalisation: surface velar palatalisation applies before front oral vowels only (although the forms *giąć, gięty*, cf. ftn. 8, would pose a problem for such an analysis). In B's terms we would require two disjoint and complex environments: the rule applies unless the plosive precedes a nasal diphthong or appears before a mid vowel and a nasal consonant followed by a homorganic non-continuant obstruent; this statement would allow for o[k'ɛ]n 'window,

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[14] Basically the same position is adopted by H. Andersen (1972: 19—21) who also introduces the useful terms 'sequential' and 'segmental' diphthongs; in our instance they would refer to the ways nasal vowel phonemes are realised phonetically.

gen. pl.' where the nasal consonant is not followed by another consonant, for o[k'ɛ]nko 'window, dim.' where the plosive is not homorganic with the nasal and for [g'ɛ]mza 'a kind of mountain goat' where the nasal precedes a non-homorganic spirant. What would remain unaccounted for are still the forms *gięty* and, even worse, *giąć* with surface velar palatalisation applying before a homorganic cluster and a back vowel respectively. This shows then that if surface velar palatalisation is to be described, nasal vowels (in the broad sense of the word) must be phonologically distinct from oral ones.

Another reason has to do with the place of articulation for the nasal consonant between a mid vowel and a noncontinuant obstruent. The examples in (14) show that the nasal is homorganic with the following obstruent:

(14)
bilabial: r[ɔmb]ać 'hew', pos[ɛmp]ny 'sombre'
dental: rz[ɔnt] 'government', kr[ɛnt]y 'crooked'
alveolar: t[ɛn̠tš]a ֊rainbow', p[ɛn̠tš]ek 'bunch'
palatal: pi[ɛɲtɕ] 'five', d[ɔɲtɕ] 'blow'
palato-velar: r[ɛŋk']i 'hand, gen. sg.', dr[ɔɲ'g']i 'pole, nom. pl.'
velar: r[ɛŋk]a 'hand', p[ɔŋk] 'bud'

In B's biphonemic analysis these nasal consonants are identified with those found in other positions and he has no explanation for the impossibility of non-homorganic clusters morpheme internally. In other words the situation in (14) is an accident. Even worse, the alternations of nasal consonants found for example in *ręce — rączka — ręka — ręki* would be viewed as allophonic for the dental and alveolar nasals as well as for the velar and palatalised nasals but (morpho)phonemic for the dental and velar nasals. This type of evidence has been used (Halle 1959, Gussmann 1974) to show that the autonomous phoneme makes it impossible to state simple generalisations (place of articulation assimilation in our case) and as such has no place in linguistic description. In an interpretation that takes nasal vowels as phonologically distinct from oral ones, the nasal assimilation rule can be readily accommodated by saying that the nasal vowel splits into an oral one and a nasal consonant homorganic with the following noncontinuant obstruent or in some other way. Clearly, however, nasal vowels have to be set off from oral ones.

The next case documenting the phonological unity of nasal vowels comes from the existence of alternations between front and back vowels (both oral and nasal). Typical of nasal vowel alternations are the following:

(15)
dąb 'oak tree' — dęby 'nom.pl.'
ząb 'tooth' — zęby

mąż 'husband' — męża 'gen.sg.'
gęś 'goose' — gąska 'dim.'
świąt 'holiday, gen.pl.' — święto 'nom.sg.'

Typical of oral vowel alternations are the following:

(16)
zamieść 'sweep' — zamiotę 'I will sweep'
nieść 'carry' — niosę 'I carry'
popiele 'ash, loc.sg.' — popioły 'nom.pl.'
jesień 'autumn' — jesionka 'autumn coat'
gardziel 'throat' — gardziołko 'dim.'

The basic point about the alternations in (15) and (16) is that their contexts are very different and can in no way be reduced to a common denominator; the oral vowels typically require a coronal non-palatalised consonant to follow [ɔ] and a palatalised one to follow [ɛ] while with the nasal vowel alternations both coronality and palatalisation are irrelevant. Possibly B might say that, in addition to other restrictions, what we call nasal vowel alternations are in fact alternations of oral mid vowels if they appear before a nasal glide or a nasal consonant homorganic with the following non-continuant obstruent. This inclusion of the environment of the nasal assimilation rule in a completely independent rule is tantamount to saying that nasal vowels must be phonologically different from oral ones.

The final phenomenon that we shall consider is the well-known fact of nasal vowel fluctuation. There are numerous nouns where the back nasal tends to replace the front one or vice versa, generally leading to a uniformation of paradigms (cf. Westfal 1956). Thus we find

(17)
zaprzęg 'harness' or zaprząg
grzęd 'perch, gen.pl.' or grząd
wylęg 'hatching' or wyląg
wstęg 'rib bon, gen.pl.' or wstąg
żołędź 'acorn' or żołądź

In B's biphonemic terms we could only say that /ɛ/ replaces /ɔ/ or vice versa and what would be completely unaccounted for is the fact that such replacements never take place unless, predictably enough, the vowel is followed by a nasal glide or a nasal consonant homorganic... etc. The conclusion is by now self-evident: no matter how one goes about describing Polish nasal phenomena one cannot put an = mark between oral and nasal vowels phonologically; their phonetic identity is a different story and of no phonological significance.

The discussion of selected problems in Polish phonology above has not been and was not meant to be exhaustive or definitive. Rather we have tried to show how phonology can be discussed once artificial constraints and pseudo-scientific claims have been abandoned.

REFERENCES

Anderson, H. 1972. "Diphthongization". *Language 48.* 11—50.

Anderson, S. R. 1974. *The organization of phonology.* New York: Academic Press.

Anttila, R. 1972. *An introduction to historical and comparative linguistics.* New York: The MacMillan.

Biedrzycki, L. 1972. *Polnische Aussprache.* Warszawa: Wiedza Powszechna.

Biedrzycki, L. 1974. *Abriss der polnischen Aussprache.* Warszawa: Wiedza Powszechna.

Bruck, A., R. A. Fox, M. W. La Galy. (eds). 1974. *Papers from the parasession on natural phonology.* Chicago: Chicago Linguistic Society.

Chomsky, N. and M. Halle. 1975. "Some controversial questions in phonological theory". *JL 1.* 97—138.

DeArmond, R. 1975. "Abstract reinterpretation of nasal segments in Polish". *Phonologica 1972.* 289—299.

Dressler, W. 1975. "Methodisches zu Allegro-Regeln". *Phonologica 1972.* 219—234.

Eliasson, S. 1974. "Contrastive analysis of phonological rules". In *Reports from Uppsala University, Department of Linguistics 3.* 28—34.

Eliasson, S. 1976. "Theoretical problems in Scandinavian contrastive phonology". In *Reports form Uppsala University, Department of Linguistics 5.* 1—46.

Fisiak, J. 1973. "The Polish-English contrastive project" *PSiCL 1.* 7—13.

Fisiak, J. 1975. "The contrastive analysis of phonological systems". *Kwartalnik Neofilologiczny 22.* 341—351.

Fisiak, J. 1976. "Generative phonology and contrastive studies". *The Canadian Journal of Linguistics 21.* 171—179.

Gladney, F. Y. 1968. "Some rules for nasals in Polish". In Gribble, C. (ed.). 1968. 112—120.

Gribble, C. (ed.). 1968. *Studies presented to Professor Roman Jakobson by his students.* Cambridge, Mass.: Slavica Publishers.

Gussmann, E. 1974. "Nasality in Polish and English". *PSiCL 2.* 105—122.

Gussmann, E. 1978a. *Explorations in abstract phonology.* Lublin: UMCS.

Gussmann, E. 1978b. *Contrastive Polish-English consonantal phonology.* Warszawa: PWN.

Halle, M. 1959. *The sound pattern of Russian.* The Hague: Mouton.

Harris, J. 1969. *Spanish phonology.* Cambridge, Mass.: The MIT Press.

Heffner, R—H. S. 1964. *General phonetics.* Madison: The University of Wisconsin Press.

Hooper, J. B. 1976. *Introduction to natural generative phonology.* New York: Academic Press.

Householder, F. W. 1965. "On some recent claims in phonological theory". *JL 1.* 13—34.

Jakobson, R. 1971. "Jazykovjedčeskije boi generala Mrozinskogo". In *Selected Writings II. Word and language.* 375—388. The Hague: Mouton.

Kalisz, R. 1974. "The distributional characteristics of English and Polish diphthongs". *PSiCL 2.* 73—82.

Laskowski, R. 1975. *Studia nad morfonologią współczesnego języka polskiego.* Wrocław: Ossolineum.

Lass, R. 1976. *English phonology and phonological theory.* Cambridge: Cambridge University Press.

Mroziński, J. 1822. *Pierwsze zasady gramatyki języka polskiego.* Warszawa: Glücksberg.

Peters, S. (ed.). 1972. *Goals of linguistic theory.* Englewood Cliffs: Prentice Hall.

Puppel, S., J. Nawrocka-Fisiak, H. Krassowska. 1977. *A handbook of Polish pronunciation.* Warszawa: PWN.

Rubach, J. 1977a. *Changes of consonants in English and Polish. A generative account.* Wrocław: Ossolineum.

Rubach, J. 1977b. "Nasalization in Polish". *Journal of Phonetics. 5.* 17—25.

Sansom, G. 1928. *An historical grammar of Japanese.* Oxford: Clarendon Press.

Schane, S. A. 1971. "The phoneme revisited". *Language 47.* 503—521.

Schatz, C. D. 1954. "The role of context in the perception of stops". *Language 30.* 47—56.

Steele, R. D. 1973. *The segmental phonology of contemporary standard Polish.* Cambridge, Mass.: Harvard University Ph.D. diss.

Thurneysen, R. 1970. *A grammar of Old Irish.* Dublin: The Dublin Institute for Advanced Studies.

Trubetzkoy, N. S. 1969. *Principles of phonology.* Translated by Ch. A. M. Baltaxe. Berkely: University of California Press.

Vennemann, T. 1974. "Words and syllables in natural generative grammar". In Bruck, A., R. A. Fox, M. W. La Galy. (eds). 1974. 346—347.

Westfal, S. 1956. "The ę : ą alternation in modern Polish noun declension". *The Slavonic and East European Journal 86.* 460—486.

Wojtowicz, J. 1976. Review of Biedrzycki (1972). *Język polski 1976.* 298—302.

Zagórska-Brooks, W. 1968. *Nasal vowels in contemporary Polish.* The Hague: Mouton.