VARIATION AND ARGUMENTATION IN PHONOLOGY

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One of the unsolved puzzles connected with phonological representations (and, inferentially, also with rules) is the extent to which the feature composition of segments, their number and order, may diverge from the corresponding phonetic representations. This is, of course, the well-known abstractness controversy initiated in 1968 by Paul Kiparsky, where the views expressed vacillate between radically concrete and radically abstract (for surveys of opinions, see Kiparsky 1971; Kiparsky 1973; Vago 1973; Jensen 1974; Crothers 1973; Fischer-Jørgensen 1975a). The anti-abstract positions usually hold that representations involving, say, the context-free merger of some underlying contrasts are irrecoverable and difficult to learn, hence they should be ruled out completely or given a prohibitive cost. The anti-abstract analyses, on the other hand, have claimed, often only implicitly, that abstract analyses are necessary if generalisations behind language facts are not to be left unexpressed. We observe, however, that the controversy involves a somewhat overemphasised polarisation of positions, i. e. each analysis is classified as either abstract or concrete while what is obviously at stake is no so much a binary division but rather a gradual hierarchy with each analysis involving a certain degree of abstractness (or concreteness). Furthermore, the term 'abstractness' is ambiguous (for a survey of meanings, see Jensen 1974) and there are cases which must be termed abstract although they would be unquestionably accepted by (almost) everyone.

An assumption which has met with a well-nigh universal rejection is contained in the statement "ideal speaker-hearer in a homogenous speech community". The failings of this assumption are generally known and need not be repeated here — in fact they gave rise to a new trend in liguistic analysis. The native speaker's linguistic competence is now viewed as being more comprehensive than before, accomodating not only his own dialect but also the exist-

ing variation, becoming thus polylectal (Bailey 1973). Much phonological study of linguistic variation has been concerned with low-level phonetic data although, of course, variation may and probably does involve deeper rules as well. In the present paper, without adopting the variationist position, I would like to suggest that if we take seriously the case for a more realistic competence and hence for a more realistic model of the process of language acquisition,[1] we are brought to the conclusion that the existence of variation actually supports non-concrete phonology. In other words, if in establishing representations and rules we take into account not only structural or language-internal evidence but also data from observed variation, the resulting grammar must be broader than when dealing with the idealised situation. Below we present a number of problematic cases in Polish and English phonology juxtaposing structural and variational evidence.

The first case we shall consider are the Polish laterals. Phonetically there is one basic lateral [l] whose variants depending on the phonetic context will be disregarded here. It alternates in a number of cases with the bilabial semivowel [w] which suggests that the two sounds are related in a systematic way. Indeed, a slightly closer scrutiny reveals that [l] behaves phonologically as a palatal equivalent of [w].

First observe restrictions on the combinations of the two sounds with the most strongly palatalising element in Polish, i.e. the front vowel [i] — whereas [li] is a perfectly well-formed sequence, attested in numerous words both native and foreign e.g.:

[1] Various arguments from language acquisition have at times been adduced although their significance is far from obvious. The concept of learning difficulty has become one of the most frequently brandished catch-words which are intended to reveal what the adult knows that is difficult for the child. Although certain things are probably more difficult to learn than others, it is pointless and misleading to establish the difficulties a priori. One might just as well argue that the Slavic perfective-imperfective verbal distinction is difficult to learn; or the distinction between alveolar and dental [n] because very few people (trained phoneticians including) can hear it in isolation. In other words, what *is* difficult for the linguist does not necessarily have to be difficult for the child.

Another thing connected with a more realistic picture of language acquisition is the time-span involved. Arguments of the type 'vowel shift cannot be a rule of English grammar because it is based on morphemes acquired later in life' assume that the process of the acquisition of phonology is completed at some early point. Again nothing much supports such a hypothesis. In fact, it appears that even spelling may affect phonology; as Bailey (1973: 28) puts it "that literacy greatly affects competence and one's underlying representations can hardly be doubted, despite all the insistence by modern linguists on the spoken form of language. And despite exceptions (which one may or may not able to account for) [ŋ] seems to be more frequent for underlying /n/ before orthographic 'k' and 'g' than before 'c' or 'q' (as in *Bancroft*, *Hancock*, and *banquet* contrast *Bankok* and *Bengali*)".

lipa 'lime', *elizja* 'elision', *stolica* 'capital', *byli* 'they (masc.) were', the sequence *[wi] is totally impossible. The phonetically non-palatalising [i] vowel, on the other hand, can follow [w] but cannot follow [l] e.g.:

lysy 'bald', *upływ* 'elapse', *były* 'they (fem.) were'.

We thus observe the following distributional situation:

li	* lɨ	[li]	*[lɨ]
*wi	wɨ	*[wi]	[wɨ]

These facts suggest that phonologically we have one consonant which, under the influence of the front high vowel is palatalised while remaining unaffected in non-palatalising environments. The distributional facts are further confirmed by a considerable amount of morphological alternations. These involve both flectional and derivational contexts (as the letters *'l'* and *'ł'* always stand for a dental lateral and a bilabial semivowel respectively, we use conventional spelling rather than phonetic transcriptions in our examples below); [l] appears in

a) dat. and loc. sg. if the ending is *-e*, e.g.:
   skała 'rock' — *skale*
   koło 'wheel' — *kole*
   tył 'back' — *tyle*
   nabiał 'dairy' — *nabiale*
b) nom. pl. masc. pers. (nouns and adjectives), e.g.:
   aniol 'angel' — *anieli*
   diabel 'devil' — *diabli*
   cały 'whole' — *cali*
   mały 'small' — *mali*
   umarły 'deceased' — *umarli*
c) derived imperfectives, e.g.:
   siła 'strength' — *wysilać* 'exert'
   uchwała 'resolution' — *uchwalać* 'pass a resolution'
   strzał 'shot' — *strzelać* 'shoot'
   wesoły 'merry' — *rozweselać* 'make merry'
   szkoła 'school' — *wyszkalać* 'educate'
   mydło 'soap' — *zamydlać* 'id. vb.'
d) various derivational suffixes which sometimes do and very often do not preserve a palatalising vowel phonetically, e.g.:
   -eć *mały* 'small' — *maleć* 'decrease'
   szał 'range' — *szaleć* 'rave'
   dorosły 'adult' — *dorośleć* 'mature, vb.'
   podły 'wicked' — *podleć* 'become wicked'
   -ić *szkło* 'glass' — *szklić* 'put glass in'
   mgła 'fog' — *zamglić się* 'become foggy'
   chwała 'glory' — *chwalić* 'praise'
   -i *pszczoła* 'bee' — *pszczeli* 'id. adj.'

sokół 'falcon' — *sokoli* 'id. adj.'
orzeł 'eagle' — *orli* 'id. adj.'
osioł 'donkey' — *ośli* 'id. adj.'
-ik *arsenał* 'arsenal' — *arsenalik* 'id. dimin.'
stół 'table' — *stolik* 'id. dimin.'
kryształ 'cut glass' — *kryształik* 'id. dimin.'
igła 'needle' — *iglica* 'spire'
-ski *sowizdrzał* 'scamp' — *sowizdrzalski* 'roguish'
generał 'general' — *generalski* 'id. adj.'
kardynał 'cardinal' — *kardynalski* 'id. adj.'
trybunał 'tribunal' — *trybunalski* 'id. adj.'
-stwo *poseł* 'envoy' — *poselstwo* 'legation'
gaduła 'chatterbox' — *gadulstwo* 'talkativeness'
diabeł 'devil' — *diabelstwo* 'devilishness'
apostoł 'apostle' — *apostolstwo* 'apostolate'
-ny *skała* 'rock' — *skalny* 'rocky'
upał 'heat' — *upalny* 'sweltering'
oryginał 'original' — *oryginalny* 'id. adj.'
mgła 'fog' — *mgielny* 'foggy'
-nik *cło* 'duty' — *celnik* 'customs official'
siła 'strength' — *silnik* 'engine'
zioło 'herb' — *zielnik* 'herbarium'
kwartał 'quarter' — *kwartalnik* 'quarterly; n.
-ec *mały* 'small' — *malec* 'small boy'
widły 'garden fork' — *widelec* 'fork'
wał 'ridge' — *walec* 'roller'
zuchwały 'impudent' — *zuchwalec* 'sauce box'

All other consonants when appearing in the above illustrated contexts also undergo palatalisation processes although their outputs tend to differ due to the existence of several rules for palatalisation in Polish (details Gussmann (1973); Laskowski (1975)). In the case of the lateral, the output of all palatalisations is neutralised[2] to [l]. We must now find the phonological element underlying the alternations. It is, quite simply, the non-palatal equivalent of [l], i.e. /l/. This /l/ undergoes palatalisation if followed by a front vowel phonologically and in all other cases it is changed into a bilabial semivowel. This articulatorily somewhat unusual change appears justifiable on acoustic grounds (Ohala 1974:256 ff).

The interesting point about it is that we are positing a segment phonologically which never appears phonetically. This is not a case of absolute neutralisation though, as no opposition is suspended. What actually does happen here is that the segment undergoes a drastic modification in its feature composition although all systematic relations prior to the modification are also observed after it (i.e., the formal structure is maintained although its content has changed). In other words, after the application of the rules of palatalisation, all non-palatalised laterals undergo a context-free change into a bilabial semivowel. In effect this is an automatic, non-neutralising process (Kiparsky 1973: 67 ff) not very much different in kind from, say, those cases in numerous dialects of English where the lateral is velarised in every context. Surely no one would wish to claim that velarisation must be included in phonological representations; rather the lateral is clear /l/ which never, in fact, appears phonetically, being modified in every context by some detail rule(s). The Polish case differs from this example only in that it involves more features. Thus we have a case well supported both by language internal evicence and by general phonetic considerations of a phonological segment which differs considerably from its phonetic reflex and which, as such, never emerges on the surface. There is no doubt, however, that this abstract segment is necessary, all manners of concrete phonology notwithstanding. To deny this is to claim that speakers of Polish treat the alternations in I and in II in different ways.

[2] Neutralisation of the results of different palatalisations is also true about the remaining sonorants and labials.

I

1. *szkoła* 'school' — *szkole* 'id. dat. sg.'
2. *mały* 'small' — *mali* 'id. pl. masc. pers.'
3. *siła* 'strength' — *wysilać* 'exert'
4. *szał* 'rage' — *szaleć* 'rave'
5. *piekło* 'hell' — *pieklić* 'raise hell'
6. *sokół* 'falcon' — *sokoli* 'id. adj.'
7. *stół* 'table' — *stolik* 'id. dimin.'
8. *orzeł* 'eagle' — *orli* 'id. adj.'
9. *sowizdrzał* 'scamp' — *sowizdrzalski* 'id. adj.'
10. *poseł* 'envoy' — *poselski* 'id. adj.'
11. *upał* 'heat' — *upalny* 'id. adj.'

II

1. *wata* 'cotton-wool' — *wacie* 'id. dat. sg.'
2. *wielki* 'great' — *wielcy* 'id. nom. pl. masc. pers.
3. *swoboda* 'liberty' — *oswobadzać* 'set free'
4. *krzyk* 'scream' — *krzyczeć* 'id. vb.'
5. *kosa* 'scythe' — *kosić* 'mow'
6. *żaba* 'frog' — *żabi* 'id. adj.'

7. *wóz* 'cart' — *wozik* 'id. dimin.'
8. *wdowa* 'widow' — *wdowi* 'id. adj.'
9. *pan* 'sir' — *pański* 'id. adj.'
10. *gospodarz* 'landlord' — *gospodarski* 'id. adj.'
11. *cmentarz* 'cemetery' — *cmentarny* 'id. adj.'

Needless to say, there is not a shadow of evidence that different processes underlie the various classes of data and, unless we are interested in separating them we must postulate underyling /ł/.

The existence of variation supports this analysis still further, for the velarised lateral actually appears phonetically in some speakers of the older generation, dialectally and also in certain styles of speech (e.g. stage language, where until recently the velarised [ł] was the recommended variant). The correspondence between this [ł] and the general Polish [w] is straightforward: every [w] derived from /ł/[3] corresponds to [ł] in the group of speakers who use it phonetically. This [ł] then is clearly a vanishing sound in the sense that fewer and fewer speakers use it in normal speech, it is furthermore clearly marked either geographically or by generation and, in fact, for the majority of speakers this is a foreign sound — when learning Russian for example they usually replace the Russian [ł] with the Polish [w].[4]

So far we have been concerned with a fairly clear situation -- it was clear in the sense that evidence for the abstract analysis was overwhelming and secondly because the segment postulated, although not occurring phonetically, was not used as a means of preserving an underlying contrast with no surface realisation. But the analysis covered almost exclusively situations arising at morpheme boundaries, i.e. the processes applied to derived forms (Kiparsky 1973:60 ff). Once we move inside the morpheme, we have to make several decisions, none of which is as nicely support as the case above. The following phonetic combinations require description and comment:

[3] We make the reservation "derived from /ł/" in order to exclude the [w] which appears in certain foreign words, e.g.: *auto* 'car', *sauna* 'sauna', *Europa* 'Europe' etc.

[4] The existence of a situation where a foreign sound similar (or identical) in feature composition to an underlying native segment is nonetheless replaced by a native sound differing from it considerably far from refuting the reality of the underlying segments and representations merely shows the *ex definitione* obvious fact that phonological elements can NOT be equated with phonetic ones. The point would not be even worth mentioning had it not been for the fact that several people have criticised phonological representations as being too abstract on the grounds that e.g. speakers of English cannot pronounce [y] or [œ] etc. This sort of criticism is completely irrelevant and it misses the whole point about phonological representations of any kind. Speakers of a language generally find it difficult to pronounce any sound combinations which diverge from surface phonotactic constraints. Thus speakers of English cannot pronounce the velar nasal initially or the clear [l] in isolation but very little, if any thing, follows from this.

[la, lo, lu], i.e. cases where the palatal lateral is followed by a non-palatal vowel and

[we], i.e. the case where the non-palatal lateral (i.e. bilabial semivowel) is followed by a front (palatal) vowel. (We have already provided an explanation for the palatal nature of the consonant when preceding a front vowel.)

The presence of [we] sequences really amounts to saying that the rule of palatalisation is not globally transparent, which in itself is nothing unusual. The major source of opacity is the fact that the surface vowel [e] can be either palatalising or non-palatalising, which means in phonological terms that the non-palatalising [e] is, in fact, not /e/ at the stage in the derivation where the palatalisation rule applies.[5] One such case is the [e] of the instr. sg. ending *-em*, as against the dat. sg. ending *-e*:

dół 'pit' — *dołem* — *dole*
koło 'wheel' — *kołem* — *kole*
kawał 'prank' — *kawałem* — *kawale*
dziąsło 'gum' — *dziąsłem* — *dziąśle*

The same is true about all other consonants in Polish:

kot 'cat' — *kotem* — *kocie*
ląd 'land' — *lądem* — *lądzię*
biuro 'office' — *biurem* — *biurze*
mięso 'meat' — *mięsem* — *mięsie*

The non-palatalising [e] has been intepreted as originating from an underlying /ŏ/ (Gussmann 1973) and as inserted by epenthesis (Laskowski 1975:81).

Another such case is the diminutive suffix *-ek-* which has been interpreted as deriving from underlying /ŏk/ (Gussmann 1973) and from /y̆k/ (Laskowski 1975:69), e.g.:

dół 'pit' — *dołek*
koło 'wheel' — *kółko*
kawał 'prank; large piece of' — *kawałek* 'bit'
dziąsło 'gum' — *dziąsełek* 'id. dimin. gen. pl.'

The same is true about the adjectival endings *-ego*, *-emu*, etc.:

biały 'white' — *białego*, *białemu*, *białej*, but: *biali*
cały 'whole' — *całego*, *całemu*, *całej*, but: *cali*

and compare also other consonants in the same grammatical positions:

dobry 'good' — *dobrego*, *dobremu*, *dobrej*, but: *dobrzy*
zielony 'green' — *zielonego*, *zielonemu*, *zielonej*, but: *zieleni*
bosy 'bare-footed' — *bosego*, *bosemu*, *bosej*, but: *bosi*

These Laskowski (1975: 96) interprets, correctly in my opinion, by positing phonological representations for the endings which do not begin with a front vo-

[5] Cp. a similar discussion of the palatalising and non-palatalising *e*'s in Czech. Anderson and Browne (1973).

wel and then a truncation rule which, roughly speaking, simplifies */oje/* to [e]. Further support for the truncation rule can be found in the pronouns which exhibit both a full and a reduced form:

mój 'my' — *mojego/mego, mojemu/memu, mojej/mej* 'gen. sg. masc., dat. sg. masc., dat. sg. fem'.

twój 'your' — *twojego/twego, twojemu/twemu, twojej/twej* 'gen. sg. masc., dat. sg. masc., dat. sg. fem.'

Several more examples where the front vowel [e] follows [w] phonetically can be described by means of equally uncontroversial rules but we shall disregard those further cases here.

All these pieces of evidence indicate that when the lateral is followed by a front vowel phonologically it surfaces as a palatal consonant phonetically and, furthermore, that surface sequences are due to the operation of independently needed rules. There is, of course, nothing unusual about [w] being followed by a back vowel and I know of no instance where such a back vowel could be derived from an underlying front one.

The situation emerging thus far is fairly clear: whenever the segment /l/ is followed phonologically by a front vowel it undergoes palatalisation and in all other cases the lateral is turned into a semivowel. In several contexts the palatalisation rule is made opaque by later processes which produce the front vowel [e] after the semivowel. What is more difficult to interpret is the presence of palatal [l] before back vowels in words like:[6]

ludzie 'people', *los* 'fate', *lala* 'doll'.[7]

As these words do not exhibit any alternations involving either the non-palatal semivowel or at least a front vowel, one might be brought to the conclusion that /l/ must be recognised as an underlying segment and consequently the non-alternating morphemes entered lexically with it. This would naturally mean that a phonological contrast between velarised and non-velarised laterals has to be introduced into Polish phonology. This is a simple (not to say simplistic) solution which does away not only with the difficulties at hand but also with a number of interesting issues involved in our case. For one thing

[6] I take it that in cases where underlying /l/ is directly recoverable (Gussmann 1976) from sequences of [l] plus a front vowel, it does not require special justification.

[7] At the expense of being accused of beating a dead horse we might mention that taxonomic minimal pairs do not constitute a counterargument to this claim. For one thing, most of the so-called minimal pairs not only involve a phonetic contrast but also a grammatical one; if such pairs are to reflect those sound distinctions which must be observed if confusions are to be avoided, then the most typical examples prove nothing for pairs such as *lub* 'or' — *lup* 'booty', *stal* 'steel' — *stał* 'he stood', etc. are unlikely to ever appear in the same position in the utterance. I can think of only two genuine pairs not involving grammatical contrasts: *laska* 'stick' — *łaska* 'mercy' and *szal* 'scarf' — *szał* 'rage'. However, one cannot sensibly restructure the whole system of the language on the basis of two examples. We take up this point below.

the underlying distribution of the two laterals would be highly skewed with /l/ appearing only before some back vowels and /ł/ everywhere. Secondly and much more importantly, the factual basis for such a phonological split, on closer inspection, turns out to be flimsy at best because it is made up largely of words are synchronically foreign:

labirynt 'labyrinth', *lakier* 'varnish', *laser* 'laser', *lafirynda* 'slut', *lawa* 'lava', *lament* 'lament', n.';

lokal 'place', *lokomocja* 'locomotion', *loteria* 'lottery', *lont* 'blasting fuse', *lotos* 'lotus';

lupa 'hand-glass', *lumpować się* 'revel', *luksus* 'luxury', *lutnia* 'lute', *luz* 'looseness', etc.

Here the [l] would have to be recognised as an underlying segment but as the existence of stratified lexicons with phonological and other peculiarities is hardly surprising, we can disregard such words here completely. Once foreign morphemes are eliminated as potential counterexamples, we are left with a handful of words of which some (A) exhibit a front-back vocalic alternation thus pointing to an underlying non-palatal consonant while others (B) indeed show no modifications in shape whatever.

A

lać 'pour; spank', *lanie* 'spanking' — *leje* 'vb. 3 sg.'
las 'wood' — *lesie* 'id. loc. sg.' — *leśny* 'id. adj.'
lato 'summer' — *lecie* 'id. loc. sg.' — *letni* 'id. adj.'
latać 'fly' — *lecieć* 'id. perf.'
lot 'flight' — *leci* 'he flies'
łąg 'hatching' — *lęgu* 'id. gen. sg.'
ogląd 'inspection' — *oględny* 'careful'

B

larwa 'maggot', *ląd* 'land', *lód* 'ice', *lubić* 'like', *lub* 'or', *luty* 'February', *laska* 'stick', *lustro* 'mirror', *los* 'fate',[8] *lala* 'doll', *lulać* 'lull'.[9]

I take it that the presence of a vocalic alternation (as in A) justifies positing an underlying non-palatal lateral in spite of the absence of any direct consonantal alternations. The vocalic shift is governed, putting it vaguely and inadequately, by the principle that vowels become back before a non-palatal consonant, hence *las* as against *lesie* etc.[10] Observe that the same rule might be made res-

[8] There is no reason to treat the last two items as synchronically foreign in spite of their diachronic foreignness.

[9] The words *lala* 'doll' and *lulać* 'lull' are peculiar in that they appear to be (quasi) onomatopeic.

[10] The rule needs to be fully analysed as the account given in Laskowski (1975) is not very satisfactory.

ponsible for the absence of phonetic alternations in words like *laska* 'stick', *larwa* 'maggot' for here the requirement of the rule would be met in every case, i.e. the consonant following the root vowel is never palatalised. Thus the rule of vowel shift cannot apply in *lesie* because of the palatal [ś] but it can apply to *lasce* /l̄esk+/[11] because the immediately following /s/ is not palatal (cp. also *larwa — larwie* with non-palatal [r] as against *miara — mierze* 'measurement', *wiara — wierze* 'faith', where the underlying /r/ is palatalised and ultimately changed into a spirant). Thus the absence of alternations is here accidental and in fact completely predictable from the segmental composition of morphemes. We can thus remove these words as counterexamples to deriving all phonetic *l*'s from the underlying /ł/. What we are left with are basically *-łu-* sequences and possibly a couple of exceptions. We have nothing to say about the latter while the former, apart from the fact that these are precious few of them, could be handled in several ways, either in agreement with Lightner's (1972:57) suggestion for Russian, by postulating the underlying /eu/ diphthong which causes palatalisation and subsequently is monophthongised or, less abstractly, by postulating an underlying /łj/ with the glide again removed after it has caused palatalisation of the lateral.[12] But, as the word handle implies, there is no particularly strong motivation for any of these solutions and hence postulating an underlying /ł/ is also possible; it is possible but far from overwhelming as it covers four or five morphemes in all. It would appear that a concrete analysis could be slightly strengthened by considerations of words mentioned in ftn. 7 above, i.e. contrasts such as *stał* 'he stood' — *stal* 'steel'. On closer scrutiny, however, the initial appeal vanishes into thin air. Pairs such as

łup 'booty' — *lub* 'or'
dał 'he gave' — *dal* 'distance'
szał 'rage' — *szal* 'scarf'
pudeł 'box, gen. pl.' — *pudel* 'poodle'
wał 'ridge' — *wal* 'strike, imperative sg.'

are, of course, non-repetitions and must be distinct phonologically. It does not follow, however, that phonological distinctness must be identified with the nature of phonetic contrast. In fact, there is ample evidence that this is not the case and that phonetic contrast [w — ł] derives from the underlying contrast between the velarised lateral and the velarised lateral followed by a palatal semivowel, i.e. /ł—łj/.

[11] The tense /e/ refers to the /e/ vowel which alternates with /a/; details see Laskowski (1975 : 73 ff).

[12] The latter suggestion is not at all far-fetched as it appears supported by the total absence of the phonetic [łj] clusters. The solution we postulate below explains this mysterious gap in distribution as well.

As mentioned above, there are several palatalisations in Polish whose outputs in some cases are neutralised while in others they are kept distinct. One of them is the *j*-palatalisation (Gussmann 1973) which features prominently in several verbal groups where *-j-* appears as part of the thematic suffix. As a diagnostic context we shall consider a class of derived imperfectives based on stems ending in a dental stop which becomes an affricate by the *j*-palatalisation:

swoboda 'liberty' — *oswobadzać* 'set free'
zgoda 'consent' — *zgadzać* 'agree'
zdrada 'betrayal' — *zdradzać* 'betray'
kwiat 'flower' — *ukwiecać* 'adorn with flowers'
kształt 'shape' — *przekształcać* 'transform'
rzut 'thrust' — *rzucać* 'id. vb.'

Stems ending in /ł/ when forming the base of a derived imperfective invariably change the /ł/ into [l]:

cały 'whole' — *ocalać* 'save'
szkoła 'school' — *przeszkalać* 'train'
uchwała 'resolution' — *uchwalać* 'pass a resolution'
nieśmiały 'shy' — *onieśmielać* 'make shy'
ciało 'body' — *wcielać* 'embody'
udział 'share' — *udzielać* 'grant'
wesoły 'merry' — *rozweselać* 'make merry'
skrzydło 'wing' — *uskrzydlać* 'lend wings'
widły 'garden fork' — *rozwidlać* 'fork, vb.'
wystrzał 'shot' — *wystrzelać* 'shoot'

There are several dozen verbs like that all showing that the phonetic [l] can derive from underlying (or intermediate) /łj/. To strengthen the case even further we note that there are a few instances of alternations also involving the word final [l] and [w]:

żal 'sorrow' — *żałować* 'regret'
przyjaciel 'he-friend' — *przyjaciółka* 'she-friend'
kaszel 'cough' — *kasłać* 'id. vb.'
piszczel 'tibia' — *piszczałka* 'fife'
narośl 'excrescence' — *rósł* 'he grew'
myśl 'thought' — *pomysł* 'idea'

What these groups of examples conclusively show is that also word final [l] must be derived from underlying /ł/ plus a palatal glide. Naturally we have not got an alternation in every case but a requirement of this sort is unnecessary as firstly, accidental gaps in the lexicon would be raised to the same status as systematic gaps and secondly, it would deny the existence of language system by restricting regularities to the actually observed facts. Either of these assumptions is damaging and it would turn phonology into a summary of data and phonological representations would, to all intents and purposes,

become indistinct from phonetic representations.[13] Naturally none of the problems discussed above could be handled if similar restrictions were to be imposed. From what we have seen, it is evident that the lateral [l] and the semivowel [w] in native Polish vocabulary, no matter whether they are directly involved in alternations, indirectly involved (i.e. *las — lesie*) or not involved at all, should in all cases be derived from underlying /ł/. The existence of variation strongly supports parts of our argument, i.e. those referring to the feature composition of the underlying element. We must stress, however, that facts of variation do not help one way or the other in solving the remaining problems of abstractness posed by our data as the relevant facts are basically the same in all styles of speech. Hence, in this particular example, the variation data make only a fairly insignificant contribution to the structure of phonological argumentation. As usual in the case of a complex situation, one has to build on a combination of theoretical assumptions of varying degrees of reliability and language-internal or structural arguments; contributions from without tend to be either insignificant or of dubious value.[14]

Our second example is slightly more subtle and less obvious. It concerns the velar spirant(s) in Polish. As is well-known, there is basically[15] only the voiceless velar spirant [x] in the pronounciation of the majority of Poles. However, in a way similar to the mode of existence of the phonetic velarised lateral [ɫ], there is also the voiced velar spirant [ɣ] occurring in the speech of older people, coming mostly from Polish eastern territories, dialectally and in some styles. In the same sense as before then, [ɣ] is a vanishing sound in Polish. We shall first consider those lects where the two velar sounds are kept distinct phonetically and then the case where they merge into the voiceless spirant.

The first thing to be noted about [ɣ] and [x] is that their status within Polish is not equal. For one thing, the voiced spirant is much less frequent in its occurrence and in a number of cases it appears in words which are strongly foreign (including proper names) as in group A below. In group B we present

[13] This is indeed what the self-styled 'natural' generative phonology appears to be heading for. Vennemann (1974 : 346f) proudly announces that his approach does away with nonuniqueness, abstractness, absolute neutralisation, rule order, functional explanations and a couple of other major difficulties of the classical theory. One of the dramatic results of this spectacular simplification of the phonological apparatus is aspiration appearing in Vennemann's underlying representations (e.g. 1974 : 359). Few things could prove better than this how fundamentally misconceived his approach is. Anderson (1975) criticises the bases of Vennemann's conception of phonological structure.

[14] This point can hardly be overemphasised in view of the fact that much of recent work in the sphere of experimental phonology has been remarkably shallow and simplified (see the critical remarks by Kiparsky (1973 : 101 - 2) and Fischer-Jørgensen (1975b)).

[15] With qualifications to follow, ftn. 21.

a list of words where there is no compelling synchronic reason to treat them as foreign[16] although they still contain the voiced velar spirant.

A.	B.
handlować 'trade'	*błahy* 'trivial'
mahoń 'mahogany'	*ohyda* 'disgust'
hippika 'horse-riding'	*huk* 'racket'
habanera 'habanera'	*hak* 'peg'
historia 'history'	*hałas* 'noise'
wehikuł 'vehicle'	*hartować* 'temper'
hɯrfa 'harp'	*hojny* 'generous'
maharadża 'maharajah'	*hodować* 'grow'
honor 'honour'	*hulać* 'revel'
habit 'monk's frock'	*hamować* 'brake'
druh 'boy scout'	*wahać się* 'hesitate'
wataha 'band'	*wahadło* 'pendulum'
juhas 'shephard boy'	*haftować* 'embroider'
Sanhedryn	
Sahara	
Alhambra	

The voiceless spirant on the other hand is very general and characteristic of predominantly native words (A), although its occurrence in foreign words is not exceptional (B):

A.	B.
chwila 'moment'	*chronograf* 'chronograph'
chrząszcz 'cockchafter'	*choral* 'chorale'
chwytać 'grasp'	*chlor* 'chlorine'
chytry 'cunning'	*alchemia* 'alchemy'
chrzan 'horse-raddish'	*chemia* 'chemistry'
choć 'although'	*chimera* 'chimera'
chodzić 'go'	*chinina* 'quinine'
chmura 'cloud'	*chaos* 'chaos'
chleb 'bread'	*koncha* 'conch'
zmierzch 'dusk'	*monarcha* 'monarch'
oddychać 'breathe'	*moloch* 'Juggernaut'
orzech 'nut'	
kichać 'sneeze'	
śmiech 'laughter'	
choroba 'illness'	
chłodny 'cool'	
chcieć 'want'	

The most essential difference between the two spirants lies in the fact

[16] Observe that there are very few verbs in these groups.

that while the voiceless one is involved in processes of palatalisations resulting in numerous [x - š] alternations in a great number of contexts, the alternations involving the voiced spirant can be enumerated in full:

druh 'boy scout' — *drużek* 'girl scout, gen pl. — *drużyna* 'team'
Sapieha 'proper name' — *Sapieże* 'id. dat. sg.' — *Sapieżanka* 'id. fem.'
wataha 'Cossack band' — *wataże*[17] 'id. dat. sg.' — *watażek* 'band leader, gen. pl.'

One might entertain the idea that in the lect under discussion [γ] and [x] are realisations of the same underlying segment and that voiced spirant is introduced by a (minor) rule which, in the following discussion will be called the 'voicing rule' for short. Another possibility is, of course, that both voiced and voiceless spirants appear underlyingly. One argument in favour of the rule solution is the extremely limited distribution of the voiced spirant, which stands out in sharp opposition to the voice contrast existing among obstruents in Polish. Observe that there are very few clusters involving the voiced spirants as against the voicless one thus suggesting that the voiced segment is not a freely occurring one. This, of course, puts its phonological independence in doubt. The restricted distribution of the segment would also be responsible for the fact that it does not appear in contexts where the rules of palatalisations apply thus failing to produce more phonetic alternations than those illustrated above. If it does appear in appropriate contexts, the few alternations follow automatically. A disadvantage connected with this solution is that morphemes would have to be marked individually for their applicability to the voicing rule[18] as it could not be restricted to foreign words may have voiceless spirants, nor could it be stated in purely phonological terms.[19] A minor point in favour of the underlying distinction is that the phonological system becomes more regularised as the velar consonants would now involve a full exploitation of the two way distinction into (±continuant) and (±voice). This weak advantage appears clearly outbalanced by the distributional irregularities mentioned above. Thus we conclude that the synchronic evidence appears to favour the voicing rule solution as against one involving underlying distinctions for the speech of those who maintain a voice contrast with velar spirants.

As mentioned above there is no phonetic difference in voice with velar spirants for the majority of Polish speakers today. On the other hand, the

[17] Also *watadze* as if derived from underlying /g/.

[18] The rule would have to apply early in the grammar (perhaps as a readjustment rule) in order to feed velar palatalisations.

[19] Naturally one might resort to diacritic marks, something like /+Slavic/ and/or /+Polish/ but as the assignment of a morpheme to a given category would have to be arbitrary, this sort of solution merely disguises the issue.

alternations mentioned on p. 56 are all preserved everywhere intact. So, in general Polish, we find phonetic alternations [x - š] and [x - ź] corresponding to the alternations [x - š] and [γ - ź] in the lects discussed above.

We must now inquire into the phonological rules and representations for this dialect. On the basis of the available evidence nothing favours a voice contrast underlying the velar spirant. Evidence of three alternating morphemes is as irrelevant to the establishment of an underlying contrast as the evidence of three morphemes can be used to contradict an otherwise well-motivated analysis (cp. the [l — w] pairs discussed above). As a result, we have to treat these three morphemes as irregular and we further suggest that (γ) appears at no stage in deep Polish phonology. This we do with regret because 1) the actual alternations are perfectly regular — within the structure of Polish (γ) should palatalise to [ź] in those cases where e.g. [x] palatalises to [š]; in this way the alternations are regarded as irregular (NOT suppletive) but showing extremely low lexical frequency;[20] 2) the existence of lects with voiced velar spirants must be seen as having no influence on the grammar of general Polish. In other words, we have to assume that speakers of general Polish in some way ignore the voice distinction with velar spirants as they obviously encounter no difficulties in understanding speakers who make this distinction. The difference between the dialects would then be reduced to the presence vs. absence of a rule.[21]

This being the case, the existence of variation has nothing to say about the grammar of speakers who do not make the difference in question. We conclude that if language internal evidence for rules and representations is weak, the presence of variation cannot by itself decisively affect them.

Our final example illustrating some of the possibilities and limitations of the influence of the existing variation on phonological descriptions and general theory concerns the treatment of preconsonantal and word final *r*'s in an r-less dialect of English, such as RP. The problem we want to address ourselves to is again the same as before: what is the structural and variational

[20] We must note, however, that even very low lexical frequency of some phenomenon does not necessarily mean that the process underlying it is a figment of a linguist's imagination. As a case in point, consider the voiced velar spirant [γ] which is a result of low phonetic regressive voice assimilation (Wierzchowska 1971 : 71; Rubach 1974). There appear to be only two words exhibiting this process: *klechda* 'ancient tale' and the synchronically foreign Christian name *Bohdan* (its native equivalent being *Bogdan*). Apart from that, the rule applies across word boundaries and this admits a lot of variation depending upon the tempo of speech and other incidental factors. In spite of the extreme lack of lexical support, the rule is absolutely uncontroversial; its failure to produce more reflexes is simply due to there being no clusters of [x] plus a voiced obstruent.

[21] Let us observe that the change from lects with the voicing rule to general Polish involves a loss of a rule and removal of diacritic features on individual morphemes.

evidence for a particular analysis? Within RP [r] occurs only prevocalically[22] thus exhibiting again an extremely limited distribution and again being suggestive of a phonological patterning differing from the phonetic one.[23] There are some well-known instances of alternations which motivate the monophthongal interpretation of English vocalic nuclei. In the context of [r] we can note the following examples:

rare — rarity
clear — clarity
severe — severity
superior — superiority
sonorous — sonority
bar — barrier
car — carrier
declare — declarative
compare — comparative
prepare — preparative

Although the list could be extended, i.e. the examples presented above are not isolated in the language (Chomsky and Halle 1968; Hoard 1972), the processes deriving complex vocalic nuclei from underlying simple ones characteristically involve grammatical boundaries We know of no morpheme internal alternations, i.e. ones with final segment(s) neutral. In effect, although there are derivations justified on the basis of morphological alternations, we also have hundreds of morphemes which appear in constant shape in the language. Thus side by side with the alternating *car* and *bar* we have non-alternating *card* and *bark* and the question now arises as to how we should represent the second pair of words phonologically. One obvious possibility is to represent the non-alternating forms in their more or less phonetic shape in accordance with several versions of concrete phonology (cp. also Wang 1973:115), i.e. *car* and *bar* would be represented lexically as [kar] and [bar] respectively, while *card* and *bark* would be [kad] and [bak] underlying; the the second solution is to represent the morphemes as [kar], [bar], [kard],

[22] This refers to the so-called linking and intrusive *r*. In agreement with the traditional approach we believe that the linking *r* is simply the non-deleted *r*, while the intrusive one is due to epenthesis working under special phonological and sociolinguistic conditions. See, however, Johansson (1974) where a (particularly weak, in our opinion) case is made for epenthesis in both instances.

[23] In the course of the discussion we have relied several times on distributional arguments which are usually viewed as of sedondary importance. It is perhaps worth noting in this connection that about a century ago, Kruszewski (1881 in 1967 : 29) evidently regarded distributional arguments of equal or greater value than alternation arguments: as a first example of a class of what he regarded as a completely productive and phonetically conditioned process he gave the case of the voicing of the initial and intervocalic /s/ in German, where no morphological alternations are ever involved.

(bark) and apply the same rules to all of them. The former solution would require a complete reshuffle of the underlying system of English vowels which, despite the difficulties it is beset by, appears in parts well motivated (Hoard 1972) or alternatively, were we to uphold the underlying inventory of vocalic segments then hundreds of morphemes would have to be marked as exempt from the operation of the major rules of English non-consonantal phonology (i.e. vowel-shift and the like). Either solution would increase considerably the complexity of the description and as such it is not particularly attractive. Simplicity arguments are no longer terribly attractive either but in this particular case they appear to support (or be supported by) at least two other types of consideration.[24] For one to sever an interpretation of words like *bark* from words like *bar* is, in effect, to deny the relevance of phonetic considerations in phonology which would supposedly have to be based on morphological data alone. We specifically argued against such a simplistic view of the working of phonology in language The obvious phonetic similarity of the two words, with no evidence to the contrary, would suggest that they should be handled in the same way phonologically This line of reasoning is nothing more than another way of saying that individual cases should be thrown into relief against the system of language (cp Fischer-Jørgensen 1975b).

We may appear to be belabouring this case as, in fact, no one, to our knowledge, has suggested that a morpheme like *part* should have a phonological C_1VC_1 structure. This may be partly due to the fact that most work on the phonology of English has been based on American data but we believe that mostly because the adoption of some version of concrete phonology with its apartheid policy segregation alternating and non-alternating morphemes would produce tangibly counterintuitive results. The basis for this feeling is, of course, the existence of numerous dialects of English where preconsonantal *r*'s actually appear phonetically. To all intents and purposes, the *r*-less speakers of English are, mathematically speaking, in the minority. It is probably not too far fetched to say that forms such as (bak) have not appeared in the literature not because of the existence of structural arguments involving — which are not overwhelming in any case — but precisely because speakers of r-less dialects have to accomodate the *r*-full type of pronunciation in their competence. (In this case it is, most often, a fully conscious knowledge). The obvious solution to adopt is to take the facts of variation as reinforcing the structural evidence and consequently posit underlying (r) preconsonantally as well as rules that lengthen the vowels and delete (r) in appropriate contexts. The alternative solution where, apart from the comp-

[24] For a careful evaluation of the concept of simplicity and its possible link with other aspects of phonological structure, see Anderson (1974 : 77ff).

lication of the grammar, the speaker in every instance like *bark* would have to learn two underlying forms, one *r*-less for his own speech and another with *r*, without at the same time capturing the basic and recurrent phonological relatedness between them, becomes ludicrous.

We have considered arguments for phonological abstractness in connection with the existence of speech variation. The assumption underlying speech variation has naturally been that the speaker of one dialect is capable of understanding quite a lot of what he himself never actually produces, be it other dialects, styles and other lects such as, e.g. the strongly marked speech of a foreigner where the difference cover not only details but may involve considerable modifications and/or distortions when compared with his own speech; consequently he must have at his disposal means of achieving this purpose. More abstract underlying representations and a more complex set of phonological rules appear to describe these facts better than a concept of, say some storage procedure as most, if not all, of the observed speech variation (and here the Polish velar spirants constitute an interesting exception) must be derived from the same underlying forms (Similar lines of reasoning have been adopted by Nessley 1973; Hoard and Sloat 1973). The existing variation sometimes enforces considerably abstract forms which, in the examples we have examined, may be interpreted as reinforcing the structural evidence. In this way the existence of linguistic variation strengthens the case for abstract phonology. The aspects of abstractness where we have found support from variation comprise cases a) where the feature composition of an underlying segment is modified beyond articulatory (though perhaps not acoustic) recognition — Polish [ł]; b) where segmental composition of a morpheme differs from its phonetic form in the sense that some phonological segment never emerges phonetically in that morpheme (thus violating both segment paradigm condition and feature paradigm condition discussed by Jensen 1974 and also Kiparsky's strictures) — the RP preconsonantal [r]. The existence of variation may be indicative of other aspects of phonology which cannot be decided on the basis of monolithic evidence — rules and representations in the case of the Polish [γ - x] distinction.

We must observe, however, that recourse to speech variation as a means of justifying abstract representations is an extremely dangerous procedure as one may easily misuse it. The case we have considered above seem to us to be fairly uncontroversial but numerous less obvious instances easily come to mind. To mention just one: there are dialects of English where the initial semivowels in *which* and *witch* contrast. Should this fact be regarded as relevant for a grammar of a speaker who makes no such distinction? If not, then how are we to account for this interpretation of the phonetic difference in the speech of others? (cp. also the case of the Polish velar spirants.). We may guess that there exist some restrictions on phenomena which should be

included into phonological competence as its true part while others simply have to be learnt (stored) or learnt to disregard individually. But we have nothing to offer by way of supporting such a hypothesis which must remain a guess. The issue as to what facts must be taken into account while constructing a realistic model of phonological competence comprising also speech variation is in essence not very much different from the question of morpheme relatedness in a monolithic grammar: there is nothing to decide in advance which facts should be taken into account and which ones should be left out. Relying on one's intuition and general concepts as to what is productive will not take us very far as very often scholars will recognise as related those facts which support their major thesis or theory; Derwing's (1973:122 ff) rejection of synchronic relationship between forms such as *reciprocal — reciprocity various — variety* constituents one extreme while Lightner's (1975) conviction as to necessity of relating synchronically such pairs as *dual — two, pregnant — kindergarten* reaches the other end. Facts of speech variation just as much as any other facts must be looked for and sifted with extreme caution; no operational procedure can be given once and for all.

Finally we would like to stress that the frequently voiced call for a more realistic model of language acquisition is, in any case, tantamount to the need for broadening the scope of competence. We have tried to indicate some of the ways where phonological competence appears to be in need of extension.

REFERENCES

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

Anderson, S. R. 1975. "On the interaction of phonological rules of various types". *JL 11/1*. 39 - 62.

Anderson, S. R. and Browne, W. 1973. "On keeping exchange rules in Czech". *Papers in linguistics 4*. 445 - 482.

Bailey, Ch.J. 1973. *Variation and linguistic theory*. Arlington: Center for Applied Linguistics.

Bailey, Ch.J. and Shuy, R. W. (eds). 1973. *New ways of analyzing variation in English*. Washington, D. C.: Georgetown University Press.

Brame, M. K. (ed.). 1972. *Contributions to generative phonology*. Austin: Texas University Press.

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

Crothers, J. 1973. "On the abstractness controversy". Indiana University Linguistic Club.

Chomsky, N. and Halle, M. 1968. *The sound pattern of English*. New York: Harper and Row.

Derwing, B. L. 1973. *Transformational grammar as a theory of language acquisition*. Cambridge: Cambridge University Press.

Dingwall, W. O. (ed.). 1971. *A survey of linguistic science*. Merryland: Linguistic Program.

Fischer-Jørgensen, E. 1975a. *Trends in phonological theory*. Copenhagen: Akademisk Forlag.
Fischer-Jørgensen, E. 1975b. "Perspectives in phonology". Paper read at the 8th Congress of Phonetic Sciences, Leeds.
Fujimura, O. (ed.). 1973. *Three dimensions of linguistic theory*. Tokyo: TEC.
Gussmann, E. 1973. *A phonology of consonantal alternations in Polish and English*. Unpublished PhD dissertation, Maria Curie-Skłodowska University, Lublin.
Gussmann, E. 1976. "Recoverable derivations and phonological change". Mss.
Hoard, J. E. 1972. "Naturalness conditions in phonology with particular reference to English vowels". In Bramc, M. K. (ed.). 1972. 123 - 154.
Hoard, J. E. and Sloat, C. 1973. "Variation in English stress placement". In Bailey, Ch. J. and Shuy, R. W. (eds). 1973. 265 - 275.
Jensen, J. 1974. "How abstract is abstract". *Glossa 8/2*. 247 - 260.
Johansson, S. 1974. "Linking and intrusive /r/ in English". *Studia linguistica 27*. 53 - 68.
Kiparsky, P. 1968. "How abstract is phonology". In Fujimura, O. (ed.) 1973. 3 - 56.
Kiparsky, P. 1971. "Historical linguistics". In Dingwall, W. O. (ed.). 1971. 576 - 649.
Kiparsky, P. 1973. "Phonological representations". Fujimura, O. (ed.). 1973. 1 - 136.
Kruszewski, M. 1881. "O obocznościach dźwiękowych". In Kruszewski, M. 1967. 25 - 46.
Kruszewski, M. 1967. *Wybór pism*. Prefaced by J. Kuryłowicz and R. Jakobson. Wrocław—Warszawa—Kraków: Ossolineum.
Laskowski, R. 1975. *Studia nad morfonologią współczesnego języka polskiego*. Wrocław—Warszawa—Kraków: Ossolineum.
Lightner, Th. 1973. *Problems in the theory of phonology*. Edmonton: Linguistic Research.
Lightner, Th. 1975. "The role of derivational morphology in generative grammar". *Language 51/3*. 617 - 638.
Nessly, L. 1973. "Nativization and variation in English phonology". In Bailey, Ch.J. and Shuy, R. W. (eds). 1973. 253 - 264.
Ohala, J. 1974. "Phonetic explanation in phonology". In Bruck, A. et al. (eds.) 1974. 252 - 274.
Rubach, J. 1974. *Variability of consonants in English and Polish*. Unpublished PhD dissertation, University of Warsaw.
Sebeok, T. (ed.). 1973. *Current trends in linguistics. 10*. The Hague: Mouton.
Vago, R. 1973. "Abstract vowel harmony systems in Uralic and Altaic languages". *Language 49/3*. 579 - 605.
Vennemann, T. 1974. "Words and syllables in natural generative grammar". In Bruck, A. et al. (eds). 1974. 346 - 374.
Wang, W. 1973. "Approaches to phonology". In Sebeok, T. (ed.). 1973. 101 - 121.
Wierzchowska, B. 1971[2]. *Wymowa polska*. Warszawa: PZWS.