

THE UNNATURAL PHONOLOGY OF ICELANDIC AND POLISH VELAR PALATALISATIONS

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INTRODUCTORY

The existence of very similar or even identical rules in the phonology of diverse languages is well-known. This fact lies behind the concept of phonological naturalness which is a theoretical attempt to connect the non-accidental nature of the occurrence of similar phenomena to their phonetic character. Viewed in this way naturalness has had a respectable tradition in modern phonology, starting with Baudouin de Courtenay and Kruszewski and ending possibly with the Stampe-Dressler-Wurzel idea of natural processes. Few people have explicitly rejected any reference to naturalness, Hjelmslev being probably the most celebrated example. However, affirming the phonetically non-arbitrary nature of phonological phenomena is a far cry from claiming that phonology must be reducible to phonetically statable rules, which is precisely the position adopted by some of the recent neo-naturalists (e.g.: Hooper 1976, Wurzel 1981¹). As is well-known, the standard generative tradition of the SPE type, while recognising the concept of rule naturalness, expressly refuses to restrict phonological phenomena to such processes only. Since Dressler (1977) and Wurzel (1981) explicitly reject the view that morphology constitutes an independent component of grammar, the question arises as to whether the whole issue is not a terminological quibble where phonetically

¹ Wurzel (1981: 414) discussing the rise of rule morphonologisation claims that it happens at "the point from which a PR [phonological rule — E. G.] the application of which has so far been exclusively conditioned by phonetic factors (a context determinable in purely phonetic terms), no longer functions exclusively on the basis of phonetic conditions, i.e. where its naturalness gets limited."

statable rules are termed "phonological", whereas those involving other (additional) elements are named "morphonological" or the like. A more general and probably more significant question is whether such a dichotomy of rules can be maintained in the first place.

This paper is meant as a contribution to the ongoing controversy of naturalness in phonology. We will review in some detail the process of velar palatalisation — roughly $k \rightarrow k'$ before a front vowel or glide — in a Germanic language (Icelandic) and a Slavic language (Polish) paying particular attention to cases which violate the phonetically general character of the rule. An attempt will be made to show that the phonological regularity is, to a certain extent, phonetically unnatural and that this fact is in itself neither particularly surprising nor, indeed, very significant. In the course of the discussion we will argue that reducing phonology to phonetic specifiability is both unjustified and undesirable. The issue then is not whether we can describe linguistic regularities by dividing them, say, into phonological and morphonological — clearly, formulating specific criteria and applying them consistently will always produce some sort of description — but rather whether the phonetic rationalisation involved in a division of this sort is tenable. This paper will attempt to show why the narrowly conceived view of naturalness is misguided and misguided — in this sense, then, the paper has an avowedly reactionary aim.

VELAR PALATALISATION IN MODERN ICELANDIC

The Icelandic palatal plosives $[k', g']$ alternating with the non-palatalised velars $[k, g]$ constitute a well-known phenomenon which has appeared in several studies, some of them dealing with it exclusively (Haugen 1958/1972, Orešnik 1977, Árnason 1978, Wurzel 1980, 1981, Anderson 1981). They have all tried to establish the extent to which the appearance of the palatal consonants is predictable, i.e. can be stated by rule. We will now review the basic facts again.

Palatal plosives appear before front non-rounded vowels

$[i, I, e]$ spelt $\langle i, í, y, ý, e \rangle^*$, e.g.:

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|-----|-------------------------|--------------------------|
| (1) | $[k, g]$ | $[k', g']$ |
| a. | bók 'a book' | bókin 'the book' |
| b. | leika 'to play' | leikinn 'id. past part.' |
| c. | kú 'cow, dat. acc. sg.' | kýr 'nom. sg.' |
| d. | koma 'to come' | [ég] kem 'I come' |

* Phonetic transcription is indicated only where necessary or where ambiguities might arise. Details irrelevant to the discussion are omitted.

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|----|-------------------|--------------------------|
| e. | borg 'town' | borgin 'the town' |
| f. | bjarga 'to save' | borginn 'id. past part.' |
| g. | björg 'help, n.' | bjargir 'id. gen. pl.' |
| h. | [ég] gaf 'I gave' | gefa 'to give' |

Velars are unaffected before the front rounded vowels $[Y, ö]$ spelt $\langle u, ö \rangle$ e.g.: bók — bækur 'nom. acc. pl.', gata 'street' — götur 'nom. acc. pl.' or before back vowels, e.g.: kalla 'call', kura 'doze', kona 'woman', garður 'court', gúmi 'elastic', gola 'brecze' (but see the discussion following the examples in (8) below). The noun köttur 'cat', kattar 'gen. sg.', kettir 'nom. pl.' illustrates the situation where one and the same morpheme appears with a velar before a front rounded and a back vowel and with a palatal before a front non-rounded vowel.

Likewise the front diphthong $[ei]$ $\langle ei, ey \rangle$ but not the front rounded $[öy]$ $\langle au \rangle$ or the back diphthongs $[au]$ $\langle á, a \rangle$, $[ou]$ $\langle ó, o \rangle$ behave in the same way, e.g.:

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|--------|---------------------|---------------------------|
| (2) a. | ganga [gaunga] 'go' | [ég] geng [g'eing] 'I go' |
| b. | kaupa 'to buy' | [ég] keypti 'I bought' |
| c. | [ég] gó 'I barked' | geyja 'to bark' |

A similar situation obtains when no alternations are involved, i.e. before front non-rounded vowels and diphthongs velars are palatalised while before front rounded vowels and diphthongs as well as before back vowels and diphthongs they remain non-palatalised, e.g.:

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|-----|---------------------|---------------------|
| (3) | $[k']$ | $[k]$ |
| a. | ekki 'not' | a. kunna 'be able' |
| b. | kyrr 'quiet' | b. köllum 'we call' |
| c. | kerling 'old woman' | c. kaun 'sore, n.' |
| d. | keyra 'to drive' | d. kátur 'merry' |
| e. | kíf 'struggle' | e. kókó 'cocoa' |
| | $[g']$ | $[g]$ |
| a. | gifta 'to marry' | a. gull 'gold, n.' |
| b. | gýgur 'witch' | b. gösla 'to toil' |
| c. | gegn 'against' | c. gaukur 'cuckoo' |
| d. | geyma 'to hide' | d. gáski 'joy' |
| e. | gígja 'fiddle' | e. góður 'good' |

A special comment is required with reference to the diphthong $[ai]$ $\langle æ \rangle$ since velars preceding it are normally palatalised both in alternating (4 a—f) and in non-alternating (4 g) forms, e.g.:

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|--------|-------------------|-----------------------|
| (4) a. | [ég] kom 'I came' | [ég] kæmi 'id. subj.' |
| b. | kala 'to freeze' | kæla 'to cool' |

j. mús 'mouse'	mýs 'nom.acc.pl.'
k. kú 'cow, dat.acc.sg.'	kýr 'nom.acc.pl.'
l. sandur 'sand'	sendinn 'sandy'
m. val 'choice'	velja 'choose'

Against this background we find the changes of [au] <á> and [ou] <ó> into [ai] <æ>, e.g.:

(7) a. hár 'high'	hærri 'higher'
b. stór 'large'	stærri 'larger'
c. dómur 'judgement'	dæma 'to judge'
d. ráða 'advise'	/hann/ ræður 'he advises'
e. róa 'row'	[hann] rær 'he rows'
f. [ég] þáði 'I accepted'	[ég] þæði 'id.subj.'
g. [ég] sótti 'I sought'	[ég] sækti 'id.subj.'
h. [ég] átti 'I had'	[ég] ætti 'id.subj.'

No matter how we finally decide to formulate the rule — possibly just as a minor rule — fronting of the vocalic nucleus must be part of it. Viewed within the working of Icelandic phonology and morphology then, the diphthong [ai] must be regarded at some stage in the derivation as front. This constitutes evidence showing that [ai] belongs together with other front non-rounded vowels and as such can condition the palatalisation process. The change of /k/ to [k'] is just as mechanical in *koma* — *kem* — *kæmi* as in *bók* — *bókin*.

We will now consider cases which obscure the neat pattern presented above and which make the palatalisation rule opaque, i.e. cases where velars remain non-palatalised before front vowels and conversely, cases where velars are palatalised although the context of the rule is contradicted on the surface.

Non-palatalised velars before front vowels are very rare and include relatively recent borrowings such as *keis* 'case', *ókei* 'O.K.' (with final stress), *fróken* 'miss', *geim* 'game', *gæi* 'guy'. Other marginal forms include the acronyms *KEA*, some pet names *Gæi* (or *Gaji*) from *Gardar* and the isolated shortened form of the affectionate term of address *gey* from *grey* 'poor thing'.

These facts, while interesting in themselves, do not affect the status of the palatalisation rule in Icelandic — borrowings typically display properties which defy the native phonology (note the final stress in *ókei* where Icelandic has regular initial stress); similarly, part of the novelty of affectionate or expressive forms is their phonetic unusualness. Clearly such sporadic cases can in no way determine the pattern of the language — quite conversely, they exploit the pattern to stress the non-ordinary status of the words.⁷

⁷ For the sake of completeness we should also record Orešnik's observation (1977: 138–139) that words taking the derivative suffix *-elsi* side by side with regular palatalised velars admit occasionally of non-palatalised ones, e.g.: *bakkelsi* 'pastry', *fangelsi*

Apart from such marginal cases which might be called extra- or sub-phonological there is one instance which requires special attention. There is a class of nominalised present participles in *-andi*, e.g.: *senda* 'send' — *sendandi* 'sender', *velja* 'choose' — *veljandi* 'voter' whose nom. and acc. plural is *-endur*, gen. pl. *-enda*, dat. pl. *-endum*. Icelandic phoneticians [Guðfinnsson 1946: 41, Böðvarsson 1962: 975] are adamant in claiming that this plural ending does not palatalise stem final velars so that *leikendur* 'player, pl.' and *huggendur* 'comforter, pl.' (from *leika* 'play', *hugga* 'comfort') have invariably non-palatalised velar plosives.⁸ In terms of our analysis the *-end-* affix must be prevented from palatalising the preceding velar. This might be done in various ways but the most pedestrian approach, and the least abstract one at the same time, will place a condition on the palatalising rule to the effect that the front vowel appearing in the structural description must not belong to this suffix.

The other aspect of the opacity mentioned above concerns the appearance of palatalised velars in contexts other than before front vowels. In the examples below the letter <j> is merely orthographic, while phonetically there are palatals before the vowels.

- (8) *kjallari* 'cellar', *kjósa* 'choose', *kjöt* 'meat', *kjarkur* 'vigour', *kjáni* 'simpleton', *sækja* 'seek', *rækja* 'shrimp', *gjörn* 'willing', *gjald* 'payment', *gjósa* 'erupt', *gjóta* 'lane', *leggja* 'lay', *beggja* 'both, gen.'

In a number of cases we have alternations of palatalised and velar plosives. Sometimes the palatalised velar occurs before a front vowel.

- (9) a. *skjöldur* 'shield' — *skjaldar* 'gen.sg.' — *skildir* 'nom.pl.'
- b. *sækja* 'seek' — *sókn* 'act of seeking'
- c. *veikja* 'weaken' — *veikur* 'weak'
- d. *skjóta* 'shoot' — *skýt* 'I shoot' — *skaut* 'I shot'
- e. *gjörn* 'willing' — *girnast* 'want, desire' — *girnd* 'id.n.'

'prison', *reykelsi* 'incense'. While this fluctuation does occur, it is hardly significant. Orešnik, reporting on earlier findings, states: "Of the 6,520 children that Björn Guðfinnsson has investigated in this respect, 133 or 2.04% always used the velar consonant in the words in *-elsi*, and another 123 or 1.89% sometimes used the velar consonant and sometimes the palatal one", i.e. over 96% of the informants invariably had the palatalised consonant in accordance with the predominant pattern. Since children were asked to read lists of words, one might speculate here to what extent the spelling influenced their performance.

⁸ Kress (1981: 81) transcribes *leikendur* with a palatal, which is definitively an error. A similar transcription in his earlier work was emphatically rejected by Guðfinnsson (1946: 41): "Þetta hefur auðvitað ekki við nein rök að styðjast. Í þessum orðum eru alltaf uppgómmælt lokhljóð (There is of course absolutely no support for this. In these words there are always non-palatalised plosives).

- f. gjöf 'gift' — gefa 'give' — gaf 'gave'
 g. lengja 'lengthen' — langur 'long'
 h. gjalda 'pay' — geld 'I pay' — gjöldum 'we pay' — galt 'I paid'

Although we will argue that the traditional spelling provides a phonological solution, it is important to note that the arguments are phonological rather than orthographic and concern basically the distribution of the palatal glide in Icelandic. If we were to regard the palatalised velars as single consonants phonologically, there would be a singular gap in the possibilities of combining consonants with /j/ in Icelandic. As noted by Haugen (1958/1972: 361) /k, g/ would be "the only prenuclear consonants which would be missing in the list of *j*-clusters". Thus we find *bjarga* 'save', *djúp* 'depth', *fjatta* 'be occupied with', *ljóð* 'poem', *mjúkur* 'soft', *njóta* 'enjoy', *pjanka* 'luggage', *rjóma* 'cream', *sjó* 'sea', *tjörn* 'lake', *þjóð* 'nation' where the initial consonant is followed by [j] phonetically while /k, g/ would have to be barred from this position.

An important consequence of such distributional facts can be noted when *-j-* acts as a verbalising suffix, e.g.:

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|-----------------------------|------------------|
| (10) a. tamur 'accustomed' | temja 'to tame' |
| b. vani 'custom' | venja 'accustom' |
| c. glaður 'glad' | gleðja 'gladden' |
| d. val 'choice' | velja 'choose' |
| e. spurn[ing] 'question' | spyrja 'ask' |
| f. krafu 'demand, n.' | krefja 'id. vb.' |
| g. lap 'lap, n.' | lepja 'id. vb.' |
| h. flutning 'transport, n.' | flytja 'carry' |

Verbs derived from bases ending in velars display a change of velars to palatalised plosives (11 a—h) or the palatal spirant (11 i—j).

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|--------------------------|--------------------|
| (11) a. veikur 'weak' | veikja 'weaken' |
| b. vakur 'wakeful' | vekja 'awaken' |
| c. reykur 'smoke, n.' | reykja 'id. vb.' |
| d. sókn 'act of seeking' | sækja 'seek' |
| e. langur 'long' | lengja 'lengthen' |
| f. sorg 'sorrow' | syrja 'mourn' |
| g. hanga 'hang' | hengja 'hang up' |
| h. hringur 'circle' | hringja 'encircle' |
| i. plógur 'plough, n.' | plægja 'id. vb.' |
| j. þógn 'silence' | þegja 'be silent' |

* Other strong verbs involving similar patterns are listed in Orešnik (1977: 140).

Here a monosegmental interpretation of [k', g'] would claim that verbs are derived by means of the phonetically present *-j-* suffix (with root umlaut where applicable) in the case of bases ending in any consonant except /k, g/; with these consonants the same morphological process is effected by replacing them with their palatalised equivalents. What we are dealing with here is not just a missing generalisation but very clearly a false analysis.

The above argument refers basically to the phonological consequences of derivational morphology. A similar case within inflectional morphology has been made by Wurzel (1980: 387—388) who notes that the vocalism of certain classes of strong verbs includes the phonetic [j] after non-velars contrasted with the absence of the glide after palatalised velars. Consider the pattern of Class 2 strong verbs where in (12 a—c) a non-velar is followed by [j] whereas in (12 d—e) a palatalised velar is not.

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| (12) a. bjóða — býð — bauðum — buðum — boðinn 'offer' |
| b. brjóta — brýt — braut — brutum — brtinn 'break' |
| c. njóta — nýt — naut — nutum — notinn 'enjoy' |
| d. gjóta — gýt — gaut — gutum — gotinn 'dart' |
| e. kjósa — kys — kaus — kusum — kosinn 'choose' |

Similarly some Class 3 strong verbs:

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| (13) a. bjarga — berg — barg — burgum — borginn 'save' |
| b. skjálfa — skelf — skalf — skulfum — skolfinn 'shiver' |
| c. gjalla — gell — gall — gullum — gollinn 'resound' |

Class 1 of weak verbs has the verbalising *-j-* suffix which appears phonetically after non-velars, e.g.: *telja* 'count', *berja* 'strike', *styðja* 'support', *spyrja* 'ask' while velars are palatalised without the phonetic glide, e.g.: *þekja* 'thatch', *vekja* 'awaken' (the voiced velar is additionally geminated, e.g.: *leggja* 'lay', *hyggja* 'think').

We have then a set of diverse facts referring to sound distribution and to the working of phonological rules in derivational and inflectional morphology which can all be given an account consonant with the rest of the language if we assume that the glide [j] appears phonologically, evinces palatalisation and is subsequently deleted.¹⁰ We are thus led to the conclusion that the phonology of Modern Icelandic contains a rule of velar palatalisation¹¹

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|---|
| (14) $\begin{bmatrix} +\text{obstr} \\ -\text{anter} \\ -\text{coron} \end{bmatrix} \rightarrow [-\text{back}] / \begin{bmatrix} -\text{conson} \\ -\text{back} \\ -\text{round} \end{bmatrix}$ |
|---|

¹⁰ Other inflectional irregularities can be handled in a similar way, see Wurzel (1980: 387—388).

¹¹ The rule applies not only to plosives but, as we noted earlier, also to the velar spirant /q/ turning it into [j].

and a rule of *j*-deletion, roughly

$$(15) \quad j \rightarrow \emptyset \quad \left[\begin{array}{l} +\text{obstr} \\ -\text{anter} \\ -\text{coron} \\ -\text{back} \end{array} \right] \text{---}$$

Several non-native words and a few minor forms have to be barred from undergoing the palatalisation rule while the native suffix *-end-* must be prevented from evincing it.¹² This analysis is in no sense particularly abstract, it does not involve anything even vaguely smacking of absolute neutralisation but merely insists on the fact that the phonological pattern may differ in systematic ways from phonetic forms. It is not particularly important to decide here whether non-alternating forms with palatalised velars before non-palatalising vowels be represented as clusters */k, g+j/* or as underlying */k', g'/*, e.g.: *kjöt* 'meat', *gjálp* 'splash'.¹³ No matter which solution we adopt this will not change the status of our rules which for independent reasons have to be part of Icelandic phonology.

It hardly needs to be added that our analysis has been exclusively based on synchronic data, no recourse was made to language history, orthography or the like. The fact that our analysis largely, though not completely¹⁴ coincides with the orthographic version is merely a reflection on the latter and its non-arbitrary or non-accidental nature. Similarly misguided are claims that generative phonology simply "projects the phonological conditions of Old Icelandic in systematic terms into the modern language" (Wurzel 1980: 383). Accusations of this sort could carry force if and only if facts from language history were brought in to justify some allegedly synchronic regularity; this, as we have seen, is simply not the case. All we have done is to reject the assumption that phonology must be reduced to surface phonetic contrasts and affirm the view that it is not isolated from the rest of the grammar.¹⁵ It seems reason-

¹² The *-end-* suffix is particularly interesting since the rule fails to apply before "derived" /c/, as noted by Árnason (1978: 187).

¹³ Haugen, following the structural principles of pattern congruity, interprets all such cases as clusters. Wurzel does likewise but in a much more restricted number of cases (1980: 388): "... since a *j*-elimination rule irrespective of these cases, is necessary anyway to account for the morphological facts mentioned, we assume here (for forms like *steikja* 'roast' — E.G.) as well in parallel to the *vekja* case, a phonological /j/".

¹⁴ Let us record one instance where the two representations do not coincide: Class I weak verbs take *-j-* in for example *telja* and *vekja*. Before endings starting with *-i*, the *j* is dropped in spelling after velars *þið vekid* 'you (pl.) awaken' but not phonologically as other verbs of the same class demonstrate: *þið teljið* 'you (pl.) count'.

¹⁵ This assumption is also endorsed by those who do not necessarily view abstractness as a virtue. Cp. Eliasson's (1982: 193) apt formulation "... we thus accept the prevailing

able to claim that what requires justification and defense is the position attempting to isolate phonological regularities from everything else in the language. Mere observations that some analysis recapitulates history show exactly nothing. Since, by and large, whatever exists in language, be it Germanic aspiration or Slavic terminal obstruent devoicing, must have arisen at some stage or other, partial or even complete identity of historical and synchronic rules is hardly surprising.¹⁶ If we dismiss charges based on unwarranted a priori prejudices (such as, for example, that a synchronic interpretation may not be identical or similar to a diachronic one), we have to consider alternatives which are based on different assumptions and geared to different aims. The Icelandic velar palatalisation is in the lucky position of having such a serious alternative developed by Wurzel (1980, 1981). We will look at this more closely now.

WURZEL'S ANALYSIS

Wurzel has discussed the Icelandic velar palatalisation and related issues in two separate studies of which one (1980) is exclusively devoted to our process in the modern language, whereas the other (1981) uses both a synchronic and diachronic analysis to support his view of morphonological rules. We will consider both accounts.

Wurzel's synchronic analysis consists of three elements: a morpheme structure condition, a rule palatalising velars and a *j*-deletion rule. The last element is the same as our rule (15) and we have no quarrel with it. The other two elements, reproduced below, call for some comment.

(16) (R1) Morpheme structure condition: palatal consonants

$$\left[\begin{array}{l} +\text{consonantal} \\ -\text{anterior} \\ -\text{coronal} \\ -\text{Alt} \end{array} \right] ([+\text{syllabic}]) \left[\begin{array}{l} -\text{consonantal} \\ +\text{front} \\ -\text{round} \end{array} \right]$$

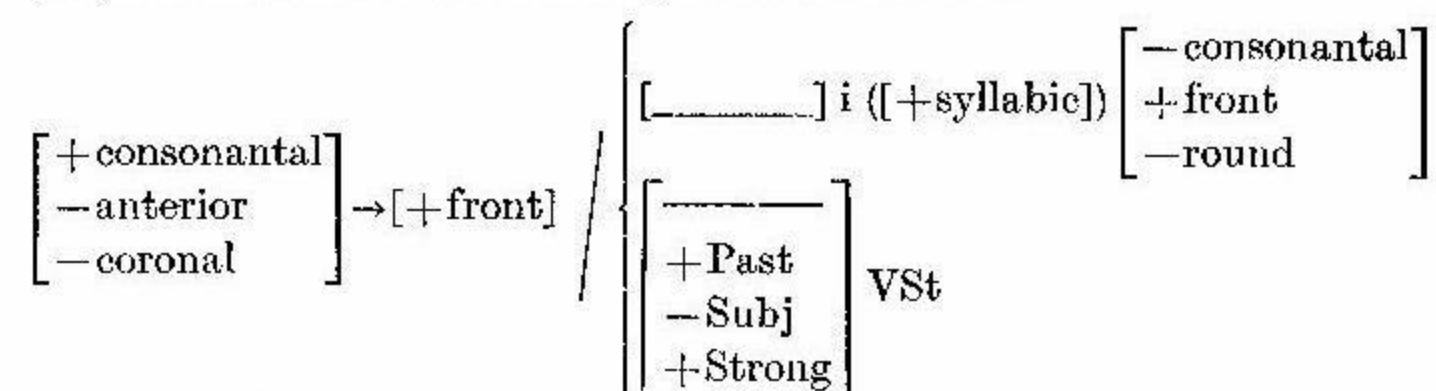
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[+front]

opinion that the realm of phonology is not exhausted by a kind of systematic phonetic description ...".

¹⁶ One is reminded in this context of McCawley's (1974/1975: 180) remark in connection with the SPE analysis of Modern English phonology: "... I cannot help being struck by the fact that the closer I examine the SPE analyses, the more reason I find to replace them with alternatives that much more closely parallel the history of the language".

(R2) Alternation of velar and palatal consonants



Condition: If segment_i stands in nominalized Pres. Part. Pl. rule is applied only if it holds also for Sg.

R1, which is restricted to non-alternating native words, claims that before front non-rounded vowels and diphthongs as well as before the diphthong [ai]¹⁷ velars are lexically palatal, e.g.: *kind* 'sheep', *gestur* 'guest', *geit* 'goat', *gæra* 'sheepskin'. In other contexts there may be either velars or palatals, *köttur* 'cat' vs. *kjöt* 'meat'. R2 turns velars into palatals again before front non-rounded nuclei or the diphthong [-u], e.g.: *geta* 'be able', *kefja* 'to dip' subject to the condition that *-end-* does not palatalise, e.g.: *elskender* 'lover, pl.'. Furthermore, palatalisation of velars is also claimed to take place in a morphologically specified environment, viz. in the preterite subjunctive of strong verbs, e.g.: [*við*] *lékjum*, *gengjum* 'we played, went, subj.'.

Although this account appears to provide an adequate record of the situation in the modern language, it is seriously flawed both descriptively and in its underlying assumptions. Leaving aside the theoretical model for the moment let us concentrate on the two rules.

R2 introduces morphological conditioning into the rule by making it apply in the preterite subjunctive of strong verbs. The inclusion of the subjunctive in the palatalisation rule is a red herring; to see this consider the structure of the preterite subjunctive of strong verbs in Modern Icelandic. It is formed by adding appropriate endings to the *i*-umlauted stem¹⁸ of the preterite plural indicative, e.g.: *við kúsum* 'we chose, indic.' — *við kysum* 'id. subj.', *við gáfum* 'we gave' — *við gæfum* 'id. subj.'. Stem final velars are additionally palatalised, e.g. *við tókum* 'we took' — *við tækjum* 'id. subj.', while vowel final stems show the presence of [j] phonetically, e.g. *við sáum* 'we saw' — *við sæjum* 'id. subj.'. — umlaut, velar palatalization and the presence of [j] in some cases belong together and are part of one process of the preterite subjunctive formation. We suggest that it is formed by the addition of the *j*-suffix to the preterite plural indicative; after causing *i*-umlaut /j/ is deleted by a morphologically conditioned rule, roughly after anterior consonants in the subjunctive. Velars undergo regular palatalisation with /j/

subsequently deleted by rule (15), while after vowels the glide emerges phonetically. Once the totality of phenomena connected with the preterite subjunctive formation is taken into account, there is no need to single out the velar palatalisation rule for this purpose.

R2 amounts to a transderivational constraint and is a misleading way of saying that the plural present participle ending *-end-* never causes palatalisation. What Wurzel says in effect is that *elskender* has a non-palatalised velar because of the singular form *elskandi*, while *reykjendur* 'smoker, pl.' has a palatalised velar since it has it already in the singular *reykjandi*. What this interpretation fails to reveal is the fact that present participles are formed by adding the suffix *-andi* etc. to present tense stems — if the present tense stem contains a palatal, then this consonant will surface in all paradigm forms of the participle (*reykjandi*, *reykjanda*, *reykjendur*, *reykjendum*); if the velar is non-palatalised, the *-end-* suffix will not affect it. The only condition that can be imposed on the palatalisation rule is that the palatalisation triggering element must not belong to this suffix. The presence of the palatalised velar in the verbal stem is due to the verbalising suffix /j/, e.g.: *ósk*, 'wish, n.' — *æskja* 'id. vb.', *reykur* 'smoke, n.' — *reykja* 'id. vb.', *mark* 'sign' — *merkja* 'id. vb.', *sókn* 'visit, n.' — *sækja* 'id. vb.', an interpretation that is argued for by Wurzel himself (1980 : 387—388) even for cases where no direct evidence is available, such as *steikja* 'roast' (see fn. 13). We thus conclude that both the special constraint imposed on velars before a palatalisation triggering segment and the morphological conditioning of the rule result from an incomplete analysis of the data. They merely distort the picture of the situation by turning into causes what are merely consequences of other regularities.

The morpheme structure condition that Wurzel posits (R1) is flawed as well simply because it is restricted to non-alternating forms, e.g.: *gestur* 'guest' has lexical /g'/ while the phonetically identical sound in *geta* 'be able', has lexical /g/ as it alternates with a non-palatalised velar in, for example, [*ég*] *gat* 'I was able'. Since morpheme structure conditions normally capture redundancies in underlying representations we would expect R1 to hold for all (native) morphemes of Icelandic. In its present formulation R1 merely holds where Wurzel wants it to hold. In other words, whatever R1 may be, it is no morpheme structure condition at all since it is valid for part of the vocabulary only. Restricting R1 to non-alternating forms by means of the diacritic [-Alt] and further admitting lexical /k', g'/ merely disguises the fact that the appearance of palatals and velars is totally unpredictable in this analysis. This is self-defeating since Wurzel's express objective was to capture phonological regularities which, with good reason, he believes the data to display. The arguments why such regularities should be captured by the phonology are very solid (Wurzel 1980 : 384—386) but to achieve this it seems

¹⁷ Recall that Wurzel regards the first element of the diphthong [ai] as [+back].

¹⁸ Where applicable, since root front vowels will, of course, remain unchanged.

necessary to abandon "rules" like R1 and allow the palatalisation process to apply across the board in alternating and non-alternating forms alike.¹⁹

This completes our review of Wurzel's analysis. It has been too detailed perhaps but I believe that unless extreme attention is paid to language specific facts, a flurry of unbridled theorising will do little to enhance our understanding of linguistic organisation. The analysis we have discussed is based on a framework of natural phonology to which we now turn.

The natural framework that Wurzel, Dressler (1977, 1981) and others attempt to develop is based on a separation of phonological rules (PRs) from morphonological rules (MPRs), although it is stressed that the latter do not constitute an independent component of the language. PRs and the phonological component have "the function of adapting the phonetic form of sentences to the conditions of human articulation and perception" (Wurzel 1980: 383–384). PRs must be statable in purely phonetic terms; as soon as this is no longer possible the rule gets 'denaturalised' and becomes an MPR: "The range of morphonology begins where the phonological naturalness of a PR gets restricted in any way" (Wurzel 1981: 414). It is claimed that the decline of rule's phonologicity and the emergence of its morphologicity accompany the shift from a PR to an MPR. This is viewed as the general pattern of the historical development of rules; numerous examples are provided in Wurzel's (1981) paper to support this position. We will be concerned solely with the Icelandic palatalisation and its history.

The division of rules into those that can be stated in phonetic terms and those that need additional information is a taxonomy which despite its fairly ancient tradition is in no way obviously or necessarily true. While it is clear that some rules can be formulated in such ways, it does not follow that the separation of rules is in any way significant. Furthermore, some of the more specific claims are quite disturbing; no matter what is meant by "the conditions of human articulation and perception" it can be hoped that these should not be subject to diachronic change. If, as Wurzel (1980: 390) claims with no supporting evidence, "palatal consonants are easier to pronounce than velars before front vowels" then, taken literally, this should mean that prior to the development of palatalisation as a PR in Icelandic, sequences such as /ke/ were in some sense difficult. Even worse, however, since the palatalisation

¹⁹ We have been very critical of Wurzel's analysis, and there is more criticism to follow, but his is an attempt to interpret within a relatively non-abstract framework a number of phonological facts which he recognises as deserving of a systematic description. It is not difficult to imagine a proponent of the so-called 'natural generative phonology' proudly announcing that /k/ and /k'/ are separate underlying segments and their alternations should simply be listed in the lexicon with each word. In this perspective Wurzel's analysis, with which we disagree in crucial ways, is a serious attempt to handle a sizable body of data within a framework which cannot be dismissed out of hand.

rule very soon acquired some morphologicity, becoming an MPR, it seems that the easier articulation which the PR had introduced was not particularly stable or desirable, as it immediately gave way to a new unnatural state... If PRs indeed ease articulation and/or perception we should expect that once a given stage of adaption has been reached, it should stay put. What actually does happen is that phonetically transparent regularities tend to become obscured (morphonologised in Wurzel's terms or made opaque in Kiparsky's (1973) framework). If it is not the case that language favours the preservation of natural rules as defined above, it is not the case either that rules (should) strive to attain that not particularly desirable state. Natural phonology, as an attempt to reduce the scope of phonological regularities to phonetically conditioned variation or, as Anderson (1981) argues, to reduce the mind to the tongue and the ear, is not a priori compelling or deserving of unqualified attention. Its basic claims must be argued for and the linguistic validity of PR's as distinct from MPR's must be shown. A mere classification of phenomena according to some arbitrary criteria is nothing more than a pronouncement.

An attempt of sorts to justify PRs and MPRs can be found in Wurzel (1981) where the Icelandic palatalisation is regarded as a classic case of rule morphonologisation. It is claimed that in Proto-Norse there was a natural PR which palatalised velar consonants before front vowels and the glide /j/. The subsequent deletion of the glide after palatalised velars as well as later changes in the history of Icelandic (back vowels becoming front rounded ones, the rise of the non-front diphthong [ai]) contributed to the morphonologisation of this initially natural process: "The result of the morphonologization process considered here is an MPR with a phonetically implausible, i.e. unnatural, phonological context" (Wurzel 1981: 428), i.e. rule R2. Before we discuss the actual historical set of events let us note that Wurzel implicitly recognises unity of the process even if he provides no clear reasons for this. It might be claimed for instance that part of this originally natural PR has persisted, while part has been morphonologised. Thus note that in Modern Icelandic as well as throughout its history since the inception of the process, velars are invariably and unexceptionally palatalised before the front high vowels /i, I/. This would clearly qualify as a natural rule in anybody's terms; in fact Orešnik (1977) restricts the rule to such an environment in the modern language while Wurzel lumps it together with the other phenomena which are in various ways constrained, without providing any justification.²⁰

The history of the rule in Icelandic in Wurzel's presentation is quite removed from what actually seems to have happened. For one thing, the front vowel palatalisation is not a Proto-Norse phenomenon as Wurzel asserts but a much later one. Jóhannsson (1924: 6–11) in his detailed documentation of

²⁰ I would guess that Wurzel takes rules to be more important than segments.

the mediaeval Icelandic changes shows that by 1330 this palatalisation was well-established. Not surprisingly, Haugen (1976: 208) discussing the change in Scandinavian dialects dates its beginnings to almost a century earlier: "In all dialects there was a tendency to palatalize velar stops before front vowels, often written as *i* in OIc. and ONw by 1250, Osw and ODa before 1300 (*gæta* > *giæta* watch, *riki* > *riki* kingdom); this change led to coalescence with the older clusters *gi ki* [*gj kj*] and to later affrications". In any case neither the 14th nor the 13th c. is normally regarded as Proto-Nordic ... The sequence of events seems to have included an early palatalisation of velars by the following glide [*j*], deletion of the glide after palatal velars (conversely, a coalescence is also possible, e.g. *kj* → *k'*), palatalisation of velars by front vowels in the 13th c., and further changes opaquating the palatalisation rule. One can, of course, argue that the front vowel palatalisation was an extension (generalisation) of the earlier *j*-palatalisation but the crucial point is that at no stage was there a neat natural PR of the type proposed by Wurzel (1981: 426):

$$(17) \begin{matrix} k \\ g \end{matrix} \rightarrow [+front] / \text{---} \begin{bmatrix} -\text{consonantal} \\ +\text{front} \end{bmatrix}$$

since at the time when [*j*] palatalised, the vowels did not, whereas when the vowels did, [*j*] presumably no longer appeared phonetically after velars. Additionally and more importantly the pl. participle suffix *-end-* never caused palatalisation; this is stressed by Jóhannsson (1924: 8) whose rich manuscript materials show "*gj, kj* í hverri einustu orðmynd á undan hvellu raddhljóði (að frátaldri hluttaksorðaendingunni *-and-*, *-endur*)" (*gj, kj* in every single word before a light vowel (with the exception of the participle ending *-andi*, *-endur*)). This case is important because it is so extreme: note that front vowels palatalise the preceding velars absolutely cross-lexically but fail in the case of just one suffix.²¹ This one suffix in Wurzel's model turns the cross-lexical and otherwise unexceptional generalisation, which is additionally clearly motivated phonetically, into an MPR. In other words, the front vowel palatalisation has never been a phonological rule in the history of Icelandic but a morphological one from the very start (and this despite the claim that MPRs (always?) result from the denaturalising of PRs in some way). We believe that this reduces to absurdity the concept of PRs as statable in purely phonetic terms as well as the delimitation of the fields of phonology and morpho-

²¹ Árnason (1978: 188) offers suggestions which are neither particularly compelling nor even seriously defended: "The exceptionality of the forms *leikendur*, *elskendur*, etc. could perhaps stem from the presence, at the time of the greatest activity of the palatalization, of some kind of boundary between the stem and the suffix. Analogy is also conceivable: the allomorph containing the velar is generalized into the plural".

nology derived from it. This division, once attention is paid to well-known and recorded facts, collapses like a house of cards.

Summing up then, the restrictive concept of phonological processes developed by neo-naturalists complicates the synchronic description of Icelandic palatalisation and is not supported by diachronic evidence. It is reminiscent of the role played by the phoneme and we venture to suggest that it should go the way of the phoneme, too. Rather than being natural, actual phonological processes are in various ways constrained and little point is served in trying to force them into the preconceived strait-jacket of phonetic naturalness. As our discussion of the Icelandic velar palatalisation shows, rules yept natural seem to have precious little to do with the nature of phonological regularities.

THE POLISH AND ICELANDIC VELAR PALATALISATIONS: PARALLELS

We can deal with the Polish situation very briefly here since it has been extensively discussed elsewhere (Gussmann 1980a, b, c). We will be particularly interested in noting similarities between the Polish process and its counterpart in Icelandic.

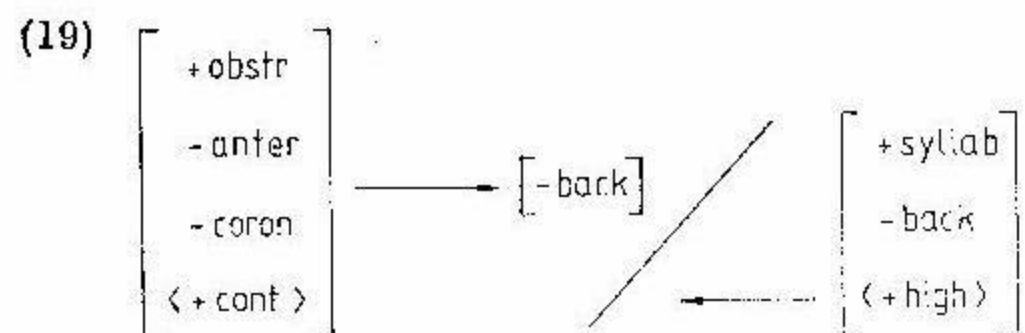
Putting it very generally, Polish velar plosives are palatalised before front vowels. We thus find alternations of the type illustrated in (18).

(18)	[k, g]	[k', g']
a.	kły 'tusk, pl.'	kiel 'id.sg.'
b.	wielka 'great, sg.fem.'	wielki 'id.masc.'
c.	wroga 'hostile, sg.fem.'	wrogi 'id.masc.'
d.	mrugać 'wink'	odmrugiwać 'wink back'

What is specific about the Polish situation is the fact that the palatalisation inducing vowels are phonologically [+back]. To see this take the [*i*] of *wrogi* as an example — here it is the inflectional ending of masculine adjectives in the nom.sg. Other consonants regularly take the vowel [*i*] <*y*> as the inflectional ending, e.g.: *mały* 'small', *dobry* 'good', *łyśy* 'bald', *syty* 'full up', *ładny* 'pretty', *młody* 'young', *słaby* 'weak', *tępy* 'blunt', *chromy* 'lame', *nowy* 'new'. Similarly, the derived imperfective suffix [*iv*] of *odmrugiwać* appears as [*iv*] <*yw*> after non-velars, e.g.: *śpiewać* 'sing' — *wyspiewywać* 'sing away', *skrobać* 'scrape' — *zeskrobywać* 'scrape off', *latać* 'fly' — *oblatywać* 'fly around', *wołać* 'call' — *zwotywać* 'call together' etc. Clearly we need a rule fronting [*i*] to [*i*] after velars²² and this derived vowel evokes palatalisation. The same argument

²² The velar spirant [*x*] requires a morphologically conditioned rule since the fronting occurs only when the vowel appears in the derived imperfective suffix. Thus we have *podstuchać* 'overhear' — *podstuchiwać* 'id. der. imperf.' but *gluchy* 'deaf' rather than **gluchi*.

could be made for the vowel [e] after velar plosives: no matter how the process is described, the [e] of the gen.sg. fem. ending *-ej* in *wielkiej*, *wrogiej* cannot be phonologically front since it does not palatalise other consonants: *małej*, *dobrej*, *łysej*, *sytej*, *ładnej*, *młodej*, *słabej*, *tepej*, *chromej*, *nowej*. Within a phonological model which admits rule interaction, facts like these merely show that some processes applying earlier prepare the ground for the palatalisation rule which itself can be stated in a way similar to the Icelandic process, viz.:



The material in angled brackets refers to the spirant /x/ which is barred from undergoing palatalisation before the vowel [e], e.g. *gluczej*, *gluchemu* etc. In what follows we will disregard the spirant altogether.

In Polish, as in Icelandic, velar plosives never appear phonetically before front high vowels, i.e. [ki] is totally impossible and we only find [k'i] (in Icelandic [k'i] and [k'ɪ]). Before other vowels, the situation is far less transparent since in Polish velars remain non-palatalised before the vowel [e] in the following groups of words:

(20)

- a. in non-native vocabulary, e.g.: *spiker* 'announcer', *kelner* 'waiter', *sugestia* 'suggestion', *geologia* 'geology', *okay* 'O.K.'
- b. in native words where the vowel [e] is part of the nasal nucleus, e.g.: *kęs* 'bite', *kędzierzawy* 'curly', *kędy* 'which way', *gęś* 'goose', *gęsty* 'thick', *gęba* 'mouth, muzzle'; the nasal nucleus may be in free variation with the oral vowel in the inflectional ending *-ę* of the 1st pers.sg. present tense, e.g.: *wlokę* 'I drag', *strzegę* 'I guard' or of the acc.sg. fem., e.g.: *książkę* 'book', *ulgę* 'relief'²³
- c. in forms containing a clitic. Here personal endings of the past tense may be optionally attached to other words in the sentence, subject to certain constraints, e.g.: *jak to zobaczyłem=jakem to zobaczył* 'as I saw it', *rok czekałem=rokem czekał* 'I waited for a year'.

The examples involving non-assimilated borrowings (20a) have their direct counterparts in Icelandic data; the absence of palatalisation before the front nasal vowel (20b) has its correlate in the Icelandic failure of palatalisa-

²³ The phonology of the so-called nasal vowels in Polish is discussed in Gussmann (1980a: Chap. 3).

tion before front rounded vowels. The situation involving clitics in Polish (20c) can be juxtaposed with the Icelandic pl. present participle ending *-end-* where velars systematically withstand palatalisation. In Polish, to a greater extent than in Icelandic, fluctuating forms can be noted in acronyms PGR, RWPGR with [ge] or [g'e] and in foreign words (*inteligentny* 'intelligent', *ewangelia* 'gospel') although the clear tendency is towards the non-palatalised pronunciation.²⁴

The other aspect of rule opacity involving palatalised velars before non-palatalising vowels which, as we noted, is quite extensive in Icelandic and can be handled by postulating /j/ in a number of cases and lexical palatals in others, is less frequent in Polish. It is restricted basically²⁵ to non-native vocabulary, e.g.: *kiosk* 'kiosk', *makiawelizm* 'Machiavellism', *pelagianizm* 'Pelagianism', *legion* 'legion'. It seems most reasonable, as well as least problematic, to enter these words lexically with palatalised velars.

It hardly needs stressing that we are not suggesting any direct relationship between the Icelandic and the Polish situation — we are merely noting striking parallels in the status of a very similar rule in the two languages. The similarity also extends to their non-naturalness, if we take the criteria of naturalness seriously, that is. Note that despite the obvious phonological motivation of the rules, despite the fact that they are practically cross-lexical and amply justified, we are forced to the conclusion that they are unnatural. This conclusion follows not from any facts of the languages but from the a priori adopted criteria of naturalness. As a result we are led to call into question the framework which produces such conclusions.

While phonetic tendencies have to be recognised in language, it seems both futile and ill-advised to restrict the domain of phonological rules to phonetic processes only. It goes without saying that natural tendencies explicable in broad phonetic terms underlie phonological rules; it must be recognized, however, that the rules themselves result from the "harnessing" of these tendencies, i.e. from phonologisations which may take different courses in individual languages. If we do not restrict phonology to mechanical tendencies, then phonology by its very nature has to be unnatural; this view is extensively argued for by Anderson (1981) (who also offers more discussion of the relation between tendencies and rules). As long as the term unnatural does not carry negative overtones, we are ready to regard the velar palatalisations in Icelandic and Polish as unnatural phonological rules. This is merely a different way of saying that the palatalisations are rules of the phonology of the two languages.

²⁴ The change of earlier /j/ to /g'/ and finally to /g/ in foreign words has been illuminatingly discussed by Bajerowa (1982) who claims that spelling was the major factor involved in the process.

²⁵ For an interpretation of one native morpheme belonging here, viz. *giąć* 'bend' see Gussmann (1980a: 107).

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