

XIII. LINGUISTICS*

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A. RULE EXCEPTION FEATURES VERSUS [\pm FOREIGN]; EVIDENCE FROM SPANISH

Kiparsky¹ raises the issue of whether diacritic features like [\pm Foreign] or rule features like [\pm Rule X] are the appropriate formal device for restricting certain phonological rules to apply only to certain sets of words. The choice is no "mere matter of arbitrary notational convenience," since the two devices make empirically distinguishable claims about the nature of natural languages. Features like [\pm Foreign] are a natural device for capturing the fact that words "tend to fall into classes exhibiting similar behavior." However, such regularities can also be mirrored with rule features supplemented by a set of redundancy statements of the form [α Rule X] \rightarrow [α Rule Y]. This alternative predicts that languages will exhibit, typically, a hierarchy of exceptionality, "with exceptions to one rule always being exceptions to another rule, but not vice versa." Thus Kiparsky concludes that "to the extent that there are loan words of varying degrees of assimilation in languages, rather than just one or two homogeneous classes of loan words, rule features receive empirical confirmation as the appropriate notational device."

Unlike other matters treated in Kiparsky's very thoughtful paper, the arguments regarding features like [\pm Foreign] versus [\pm Rule X] features are not backed up by discussion of any specific linguistic data. Nor is the question raised as to whether there are linguistic facts that can be stated simply and naturally by features like [\pm Foreign] but which in principle cannot be handled, without ad hoc notational tricks, by [\pm Rule X]

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features. It is easy to imagine several types of cases of this sort. We shall consider only one type here, of which a reasonably clear example from Spanish will be given directly below. Consider a rule of the form

1. $A \rightarrow B/X \text{ ______ } Y$

whose applicability is determined not by some diacritic feature of the segment A, to which the rule applies, but rather by that of X or Y (or conceivably both), in the environment (and perhaps not even adjacent to A). If A is not in the same formative as X or Y, then A need not have the same diacritic specification as X or Y. Clearly, in this situation the desired results cannot in general be achieved by marking the formative that contains A with the feature [\pm Rule 1], as Kiparsky's proposal requires. On the other hand, this situation poses no problem for the [\pm Foreign] alternative.

Before turning to the Spanish example, let us make a few summary comments about features like [\pm Foreign] in "generative" studies of Spanish synchronic phonology. Both Foley² and Harris³ propose a binary partitioning of the lexicon of Spanish into "vulgar" and "erudite" classes of formatives. These two proposals differ in many details, but both have the property that in addition to the set of rules which all forms are subject to, "vulgar" forms are subject to a special subset of rules which "erudite" forms do not undergo. The result is that, in general, the phonetic representations of "erudite" forms are relatively close to underlying representations, while those of the "vulgar" subset may differ more radically. It is perhaps significant that this area of agreement can be detected in two studies which otherwise disagree considerably, even about what constitutes a bona fide linguistic datum.

One does not know with what degree of seriousness, or of diffidence Foley's proposals concerning "vulgar" and "erudite" forms and rules were set forth. Harris's proposals, however, were made with full awareness that they amounted to a first approximation, which covered much but not all of the relevant data. There are, in fact, forms that are neither completely "vulgar" nor completely "erudite," that is, forms undergoing some but not all of the set of additional "vulgar" rules. "Semivulgar" forms have recently begun to receive more attention.⁴ Consideration of the entire lexicon – rather than a selection of typical "vulgar" and "erudite" forms – reveals a range of data that can be handled quite neatly with [\pm Rule X] features and redundancy statements, both of which have mildly interesting formal properties.

It is not my purpose here, however, to report these results, but rather to present an example from Spanish which suggests that Kiparsky's proposal to replace features like [\pm Foreign] with [\pm Rule X] features is inadequate, in spite of its initial attractiveness, and in spite of the striking empirical support provided by "semivulgar" forms in Spanish.

The essential facts are the following.⁵ The inflectional suffix for third person

plural preterit of second and third conjugation verbs is usually -ieron, but -eron shows up in certain cases:

2. unieron, "they united" versus bruñeron, "they burnished"
pulieron, "they polished" versus bulleron, "they seethed"
cru[x]ieron, "they creaked" versus condu[x]eron, "they conducted"
eli[x]ieron, "they elected" versus di[x]eron, "they said"

What do the forms with -eron rather than -ieron have in common? The phonetic forms provide no immediate answer, but a generalization becomes apparent when we look at earlier stages of derivation. There is fairly good reason to believe that the stems of the last two examples go through a stage condu[š]- and di[š]-; and there is entirely compelling motivation, completely independent of the forms given above, for a rather late rule with the following effect:

3. $\check{s} \rightarrow x$

Thus at some stage of derivation all stems with the ending -eron rather than -ieron end in a palatal consonant. Let us say then that the i of the inflectional ending -ieron is deleted after stems ending in a palatal, by the following rule:

4. $\begin{bmatrix} -\text{cons} \\ +\text{high} \\ -\text{back} \end{bmatrix} \rightarrow \emptyset / \begin{bmatrix} +\text{cons} \\ +\text{high} \\ -\text{back} \end{bmatrix}$ _____

Rule 4 is ordered before rule 3, as in the following partial derivations:

5. bruñieron dišieron
 \emptyset \emptyset (4)
 x (3)
bruñeron dixeron

But what of cru[x]ieron and eli[x]ieron? The [x] of eli[x]ieron, and of many similar verbs, must go through the stage š.⁶ Why then does rule 4 not apply in such forms, giving *eli[x]ieron, etc., just as it applies in the case of (dišieron → dišeron →) di[x]ieron and (condušieron → condušeron →) condu[x]ieron?

No answer to this question has ever been suggested – and indeed it is not easy even to imagine one – which does not involve simply categorizing words, somehow, as to whether or not they undergo rule 4.⁷ But now notice that rule 4 is exactly of the form of rule 1: the segment to which rule 4 applies, namely the i of the inflectional suffix -ieron, is not part of the verb stem. Yet it is the verb stem that must be categorized lexically as being subject to rule 4 or not. The affix cannot be categorized as both

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undergoing and not undergoing the same rule. Briefly, we have precisely the situation described above for which [\pm Rule X] features are inadequate.⁸

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References

1. P. Kiparsky, "How abstract is phonology," p. 13b (unpublished).
2. J. A. Foley, "Spanish Morphology," Ph. D. Thesis, Massachusetts Institute of Technology, 1965 (unpublished).
3. J. W. Harris, "Spanish Phonology," Ph. D. Thesis, Massachusetts Institute of Technology, 1967 (to be published by The M.I.T. Press, Cambridge, Mass.).
4. J. W. Harris, Lectures in Course 23.74, M. I. T., Spring Term 1968-1969.
5. Details are restricted to a bare minimum, almost to the point of misrepresentation. Full treatment of many of these matters can be found in J. W. Harris, "Spanish Phonology," *op. cit.*
6. The stem final consonant of eli[x]ieron can be shown to be systematic phonemic /g/, which is converted to [x] in several steps. The first of these is "velar softening," which is similar in English and Spanish. In Spanish, the first step is $\underline{k} \rightarrow \underline{t}^S$ and $\underline{g} \rightarrow \underline{j}$; \underline{t}^S then becomes [θ] in Castilian and [s] in other dialects; \underline{j} becomes [x] in the following steps, for each of which there is ample independent justification: $\underline{j} \rightarrow \underline{\check{z}} \rightarrow \underline{\check{s}} \rightarrow \underline{x}$. The first step of "velar softening" is a very early rule, and the step $\underline{\check{s}} \rightarrow \underline{x}$ is rather late. Thus stem final systematic phonemic /g/ of eli[x]ieron is represented as one palatal obstruent or another (\underline{j} , $\underline{\check{z}}$, $\underline{\check{s}}$) throughout almost the entire sequence of rules; in particular, at every point at which rule 4 might be ordered.
7. I see no reason why this categorization cannot be in terms of "vulgar" and "erudite," although it is irrelevant for the present argument that the distinction be this particular one.
8. The force of this example depends crucially, of course, on the fact that inflectional and derivational affixes need not have the same categorization with respect to the applicability of some (set of) rule(s) as the stem to which these affixes are attached. But this fact does not seem to me to be open to question, at least for Spanish. In particular, Spanish inflectional suffixes behave like "vulgar" formatives, regardless of whether they are attached to "vulgar" or "erudite" stems.

B. ON FINNISH VOWEL HARMONY

The problem of vowel and consonant harmony has been of significant interest to generative phonologists. Kiparsky has recently reviewed the literature on the subject in a very important unpublished paper.¹ In this paper Kiparsky critically discusses the various root-marking solutions that have been proposed for Finnish vowel harmony, detailing a new solution of his own. This report is intended to point out some difficulties with Kiparsky's analysis, in particular with his decision to employ variable vowel archiphonemes in the endings. I shall argue that an optimal solution of the Finnish harmony problem excludes archiphonemes not only from roots but also from endings.

Examples will be cited which seem to indicate that the vowel harmony rule of Finnish should operate on fully specified "non-abstract" matrices.

Finnish has eight vowels: a front harmonic set /ä/ /ö/ /ü/ [the last written as "y" in the standard orthography], a back harmonic set /a/ /o/ /u/, and two neutral vowels /i/ /e/. In native Finnish words the harmonic vowels are selected exclusively from either the front set or the back set. Foreign borrowings may mix vowels within the root, as in olympialaiset, "Olympic games," and afääri, "business." The vowels of the inflection harmonize with the last non-neutral vowel of the root (cf. Kiparsky²).

Kiparsky's objections to the root-marking solutions arise essentially from their treatment of the neutral vowels /i/ and /e/. The analysis proposed by Lightner requires that all underlying vowels be written as archiphonemes: /I/ /E/ /A/ /O/ /U/. The roots are to be specified [+back] or [-back], and harmony in the endings is guaranteed by a morpheme structure constraint in the meta-theory. [Cf. Lightner,³ "We assume as a fact about language that each phonological segment of a word is associated with the abstract markers of the root."]

As Kiparsky has indicated, in Lightner's system pouta, "fine weather," and pöytä, "table," would be represented respectively as /pOUtA/ and /pOUtA/. Kiparsky notes the crucial fact that when a root contains entirely neutral vowels, it always takes [-back] desinences. The partitive of tie "road" is tie+tä; the partitive *tie+ta is impossible.

Kiparsky's emendation is to require that roots be fully specified and then to introduce a rule that will harmonize the archiphonemes of the endings. The rule in question will consider /i/ /e/ /ä/ /ö/ /ü/ as front and /a/ /o/ /u/ in harmonizing the feature [back]: "If all neutral vowels are set up as underlying /i/ and /e/, there are no special distributional restrictions at all on the neutral vowels. They have exactly the distribution of other vowels. And the vowel harmony rule treats them as front vowels simply because they are front vowels." (Cf. Kiparsky⁵.) This explains the impossibility of forms like *tie+ta. Since the vowels /i/ and /e/ are inherently front, the desinence must also be fronted.

Except for a brief footnote, Kiparsky restricts his analysis to the facts of inflectional morphology. There are, however, important examples of derivational morphology that demonstrate the inadequacy of both the Lightner and the Kiparsky solutions. As Kiparsky correctly remarks, the vowel harmony rule appears to treat /i/ and /e/ regularly as [-back] when harmonizing inflectional suffixes, [It seems that the only form which violates this generalization is meri "sea" with partitive mer+ta (cf. Lehtinen⁴).] but for certain derivational suffixes the rule would have to regard the same /i/ and /e/ as [+back]. The following examples of verbs and their nominalizations (drawn largely from Rapola,⁶ Hakulinen,⁷ and Penttilä⁸) should illustrate this point.

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When roots contain non-neutral front vowels, the nominalization suffixes are fronted:

(1)	nähdä	"to see"	näkö	"vision"
	työntää	"to push"	työntö	"push"
	säästää	"to save"	säästö	"savings"
	kylvää	"to sow"	kylvös	"sown field"
	kääntää	"to turn, translate"	käännös	"turn, translation"

When roots contain non-neutral back vowels, the nominalization suffixes are back:

(2)	luulla	"to believe"	luulo	"belief"
	tuntea	"to feel"	tunto	"sensation, feeling"
	jatkaa	"to continue"	jatko	"continuation"
	ostaa	"to buy"	ostos	"purchase"
	paistaa	"to roast, bake"	paistos	"pie"

In cases in which only neutral vowels appear in the root, however, the nominalization suffixes are regularly back, not front:

(3)	kiittää	"to thank"	kiitos	"thanks"
	liittää	"to join"	liitos	"junction, joint"
			liitto	"alliance, union"
	niittää	"to mow"	niitto	"mowing"
	siittää	"to beget"	siitos	"conception"
	pistaa	"to stick, prick"	pisto	"sting"
	kiiltää	"to shine"	kiilto	"luster, gloss"
	pitää	"to keep"	pito	"keeping"
	viiltää	"to slash"	viilto	"slash"
	hiihtää	"to ski"	hiihto	"skiing"
	hiiltää	"to char"	hiilto	"charring, carbonization"
			hiillos	"embers, dying fire"
	piillä	"to hide, conceal"	piilo	"cranny, secret place"
	piirtää	"to draw, sketch"	piirto	"scratch, mark, trace"
			piirros	"drawing, sketch"
	elää	"to live"	elo	"life"
	pettää	"to deceive"	petos	"deceit"
	pelätä	"to fear"	pelko	"fear"
	levätä	"to rest"	lepo	"rest"
	tehdä	"to do"	teko	"deed"
			teos	"work, product"

mennä	"to go"	meno	"going"
lentää	"to fly"	lento	"flight"
tietää	"to know"	tieto	"knowledge"
kieltää	"to forbid"	kielto	"prohibition, refusal"
rientää	"to hasten"	riento	"striving, aspiration"
heittää	"to throw, fling"	heitto	"throwing, casting"
peittää	"to cover"	peitto	"shelter; bedspread"
kiertää	"to turn"	kierros	"turn, round, bout"
		kierto	"circulation"

These examples are an embarrassment to any analysis that employs archiphonemes. Lightner cannot explain why a root should behave as [-back] with an infinitive ending and [+back] with a nominalization suffix. Kiparsky cannot explain why /i/ and /e/ are consistently treated as back when harmonizing the nominalization suffix, although the harmonization of this suffix is clearly the same process as the harmonization of desinences.

These examples are not unique. Some others can be briefly indicated:

(4)	itkeä	"to cry"	itku	"cry, crying"
	kipeä	"sick, ill"	kipu	"pain, ache"
	viileä	"cool, fresh"	vilu	"chill"
	[dialect: vileä]			
(5)	evätä	"to refuse"	epuu	"refusal"
	kehrätä	"to spin"	kehruu	"spinning"
	kerjätä	"to beg"	kerjuu	"beggary"
(6)	pieni	"small"	pienuus	"smallness"
	mies	"man"	miehuus	"manhood"
	pitkä	"long"	pituus	"length"

[The forms isä "father", isyys "fatherhood"; selvä "clear" selvyys "clarity" can be explained by positing roots isä-, selvä- and truncating the /ä/ after vowel harmony has applied to isä+uus and selvä+uus.]

(7)	kiertää	"to twist, turn"	kiertue	"tour, troupe"
	lentää	"to fly"	lentue	"air squadron"
	saattaa	"to accompany"	saatue	"escort, convoy"

In all these cases the suffix is fronted if the root contains non-neutral front vowels.

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The obvious solution to the difficulties noted in (1)-(7) is to allow derivational endings that are back in underlying form and to set up inflectional endings that are front. The vowel harmony rule then stipulates that all harmonic vowels to the right of the left-most non-neutral vowel will assimilate the backness of the latter. In mixed roots of foreign origin all but the last non-neutral vowel must be specially excluded, by the feature [+foreign] mentioned in the formulation below. The vowel harmony rule will then be:

$$(8) \quad V \longrightarrow [a \text{ back}] / \# X \begin{bmatrix} V \\ a \text{ back} \\ \beta \text{ round} \\ -\beta \text{ low} \\ -\text{foreign} \end{bmatrix} Y \begin{bmatrix} \text{---} \\ \gamma \text{ round} \\ -\gamma \text{ low} \end{bmatrix}$$

[Restriction: X contains no vowel $\begin{bmatrix} \delta \text{ round} \\ -\delta \text{ low} \\ -\text{foreign} \end{bmatrix}$; X and Y contain no word boundary.]

This rule distinguishes the harmonic vowels, which are $\begin{bmatrix} a \text{ round} \\ -a \text{ low} \end{bmatrix}$, from the neutral vowels, which are $\begin{bmatrix} -\text{round} \\ -\text{low} \end{bmatrix}$ and have no harmonic pairs. It is significant that the rule has a definite left-to-right direction of assimilation. It would be very surprising in a language like Finnish, which makes such exclusive use of postfixes and postpositions, to encounter a regressive assimilation rule.

It would be interesting to know why vowels that are $\begin{bmatrix} a \text{ round} \\ -a \text{ low} \end{bmatrix}$ constitute a natural class in Finnish phonology. Finnish linguists seem to be generally agreed that there is no reason to believe that /i/ and /e/ ever participated in the harmony schema; even in proto-Finnish they had no back correspondents, apparently (cf. Hakulinen⁹ and Rapola¹⁰ for discussion).

This solution to the vowel harmony problem gives "morpheme structure rule" a minimal function in the synchronic phonology of Finnish. The rule does nothing but mark roots [+foreign] and [-foreign]. The rule itself (or at least the vowel harmony part of it) could be viewed as the historical result of applying the vowel harmony rule to Finnish roots for centuries. Over time the native Finnish roots have been largely regularized by the action of the vowel harmony rule (8), although recent borrowings clearly indicate that the total set of "possible" (i. e., pronounceable) morphemes has always included unassimilated forms, too. The formulation adopted here explains why roots may violate harmony but elements to the right of roots may not. It permits the sequence /a/ /ä/ in afääri, "business," but excludes it from, say, *laiva+llä, "on the ship."

If one views the morpheme structure rules as specifying not "possible morpheme in a language" (cf. Stanley¹¹) but rather "native morpheme" or "assimilated morpheme," then

there is no longer any occasion for surprise at the fact that "in many respects [the morpheme structure rules] seem to be exactly like ordinary phonological rules, in form and function." (Cf. Chomsky and Halle.¹²)

I hope that this note has demonstrated that it is illegitimate to use over-all morpheme structure rules and archiphonemes in the solution of the Finnish vowel harmony problem. The optimal solution is a very non-abstract one.

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References

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