The Morphophonemics of Latvian Declension

Morris Halle, *Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA., U.S.A.*

Latvian declension presents an instructive example of the need to assume underlying representations that in some cases are strikingly different from their surface realizations. In Latvian the interaction of rules of elision with a rule of metathesis conspires to render the relationship between surface and underlying representations particularly obscure. Since each of the rules is independently motivated, the discrepancies between surface and underlying representations present no serious problem to the language learner. The facts below are offered as a contribution to the ongoing debate concerning the abstractness of underlying representations.

As shown in Tables (1) and (3), Latvian noun declension distinguishes five cases, two numbers, and two genders.

(1)   Masculine Gender

		(a)		(b)		(c)	
Sg	N	gulb-i-s	'swan'	zǣn- -s	'boy'	tirg-u-s	'market'
	G	-j-a		- -a		-u-s	
	D	-i-m		-a -m		-u-m	
	A	-i		-u		-u	
	L	-ī		-ā		-ū	
Pl	N	gulb-j-i		zæn- -i		tirg- -i	
	G	-j-u		- -u		- -u	
	D	-j-iæm		- -iæm		- -iæm	
	A	-j-us		- -us		- -us	
	L	-j-uəs		- -uəs		- -uəs	

Each form is composed of a stem followed by a thematic vowel to which may be added a case ending. We see this most directly in the forms of the i-stem noun (cf. *gulbis* 'swan'). The thematic vowel /i/ becomes /j/ before case endings beginning with a vowel, and it is lengthened in the loc. sg. The composition of the forms is less obvious in the two other masculine paradigms – where the thematic vowels are /a/ and /u/, respectively – because the thematic vowel is deleted before case endings beginning with a vowel, and,

therefore, does not surface in many instances, e.g., in any of the plural forms.

To account for the facts just noted, we postulate rule (2) which desyllabifies /i/ and deletes all other vowels in prevocalic position.

(2)

$$[\text{+syl}] \rightarrow \left\{ \begin{array}{ccc} [\text{-syl}] & / & \left[\begin{array}{c} +\overline{\text{high}} \\ -\text{back} \end{array} \right] \\ \\ \emptyset & / & [\text{---}] \end{array} \right\} \quad [\text{+syl}]$$

In addition to rule (2) we require a word formation rule that deletes certain theme vowels before the case ending /s/: /a/ in the masc. sg. and /i/ in the fem. sg. (see below, (3)). (We shall not state this rule formally.)

Before accounting for the remaining forms in (1) – i.e., the acc. and loc. singular – we give the feminine paradigms illustrated in (3):

(3)   Feminine Gender

		(a)	(b)	(c)
Sg	N	ziv- -s 'fish'	mās-a 'sister'	zem-e 'earth'
	G	- -s	-a-s	-e-s
	D	-i-j	-a-j	-e-j
	A	-i	-u	-i
	L	-ī	-ā	-ē
Pl	N/A	ziv-i-s	mās-a-s	zem-e-s
	G	-j-u	- -u	-j-u
	D	-ī-m	-ā-m	-ē-m
	L	-ī s	-ā-s	-ē-s

We note at once that just as in the masculine nouns the thematic vowel is long in the loc. sg., and it is long also in the dat. pl. and loc. pl. We capture this fact with a second word formation rule:

(4a) $V \rightarrow [\text{+long}]$ / stem + ——   in $\left\{ \begin{array}{l} \text{loc. sg.} \\ \text{loc. pl. fem.} \\ \text{dat. pl. fem.} \end{array} \right.$

Finally, we observe that in the acc. sg. the thematic vowel is high (and round if back). This fact is captured by a third word formation rule:

(4b) $V \rightarrow \left[\begin{array}{c} +\text{high} \\ \alpha\text{round} \end{array} \right]$ / $\left[\begin{array}{c} —— \\ \alpha\text{back} \end{array} \right]$ in $\left\{ \begin{array}{l} \text{acc. sg. fem} \\ \text{gen. pl.} \end{array} \right\}$

If we assume that the word formation rules precede all other phonological rules, and in particular rule (2), then we can account for the gen. pl. forms of the feminine declension by the simple expedient of letting rule (4b) apply to these forms as well.

As shown in (5a) the declension of indefinite adjectives is identical to that of the -a-stem nouns (cf. (1b) and (3b)).

(5a)		Masculine	Feminine
Sg	N	lab- -s 'good'	lab-a
	G	- -a	-a-s
	D	-a-m	-a-j
	A	-u	-u
	L	-ā	-ā
Pl	N	lab- -i	lab-a-s
	G	- -u	- -u
	D	- -iæm	-ā-m
	A	- -us	-a-s
	L	- -uɔs	-ā-s

The definite forms given in (5b) are considerably more complex.

(5b)		Masculine	Feminine
Sg	N	lab-aj- -s	lab-ā
	G	-ā	-ās
	D	-aj-a-m	-aj-a-j
	A	-u	-u
	L	-aj-ā	-aj-ā
Pl	n	lab-iæ	lab-ās
	G	-uɔ	-uɔ
	D	-aj-iæm	-aj-ā-m
	A	-uɔs	-as
	L	-aj-uɔs	-aj-ā-s

We observe at once that some forms surface with the suffix *-aj-* whereas others do not have this suffix. The forms with the suffix *-aj-* are otherwise completely straightforward: the rules developed above readily account for all of their peculiarities. We shall assume therefore that all definite forms are generated with the special suffix *-aj-* to which are then added the thematic

vowel /a/ and the regular case endings, all of which are subject to the three rules of word formation and the phonological rule (2) given above.

This will account for the nine forms in (5b) where the suffix *-aj-* appears intact on the surface. In the remaining eleven forms the underlying /j/ of the suffix does not appear on the surface and must be assumed to have been deleted. We note that in these eleven forms (but not in the nine above) the suffix *-aj-* is followed either by a word-final short vowel or by a short vowel plus a word-final obstruent. It is in this environment, then, that a rule of j-deletion (6) is postulated.

(6) $j \rightarrow \emptyset$ / ＿＿＿ V ([-son]) #

We order j-deletion after rule (2) because the /a/ of the definite suffix is not deleted, as shown, e.g., by the fact that in the gen. sg. forms the ending surfaces with a long rather than a short vowel.[1] The effects of (2) and (6) on the underlying representation are shown in (7):

(7)   Masculine   Feminine

Sg	G	lab aj̶-a̶-a		N	lab-aj̶-a
	A	lab-aj̶-u		G	lab-aj̶-a-s
				A	lab-aj̶-u

Pl	N	lab-aj̶-a̶-i			
	G	lab-aj̶-a̶-u		N/A	lab-aj̶-a-s
	A	lab-aj̶-a̶-us		G	lab-aj̶-a̶-u

To obtain the correct output for the rest of the forms in (7) we must add a rule of metathesis (8a) followed by a rule of round/back assimilation (8b).

(8a) $V_1 \, V_2 \rightarrow V_2 \, V_1$ in certain environments

(8b) $V \rightarrow \begin{bmatrix} \alpha\text{back} \\ \alpha\text{round} \end{bmatrix} \Big/ \begin{bmatrix} +\text{high} \\ \alpha\text{back} \\ \alpha\text{round} \end{bmatrix} \underline{\hspace{3cm}}$

As pointed out by Halle and Zeps (1966), rules (8a) and (8b) are independently motivated. They are needed to account for the quite regular alternations between /ej/ and /iae/ in verbs such as /seju/ 'I bind' /siaet/ 'to bind'; or /leju/ 'I pour' /liaet/ 'to pour', as well as for the otherwise quite isolated alternation /dew-u/ 'I gave' /duɔt/ 'to give'. In verbs metathesis occurs before endings beginning with a consonant, whereas in definite adjectives metathesis takes place in word final position.

Finally, if we make the natural assumption that a sequence of identical vowels surfaces as a single long vowel, nothing further needs to be said about the gen. sg. masc. or about the nom. sg., gen. sg. and nom./acc. pl. fem. forms.

To conclude we list below the rules that have been developed in this discussion in the order in which they must be applied:

(9)   Word formation rules

   a)   Raise thematic vowel in acc. sg., etc. (4b)
   b)   Lengthen thematic vowel in loc. sg., etc. (4a)
   c)   Delete thematic vowel $\{{a \atop i}\}$ before /s/, etc.
   d) $i \rightarrow j$ and $V \rightarrow \emptyset$ before V (2)
   e) $j \rightarrow \emptyset$ (6)
   f)   metathesis (8a)
   g)   assimilation (8b)

NOTE

1. It was observed by Zeps (1969) that in the meter of Latvian folk songs it is necessary to distinguish a special class of syllables that may occupy two adjacent positions in the metrical pattern. The case endings before which j-deletion does not take place are among the syllables that may count metrically as equivalent to two syllables.

REFERENCES

Halle, M. and Zeps, V.J. (1966). Survey of Latvian Morphophonemics. *MIT RLE Quarterly Progress Report*, **83**, 105-113.
Zeps, V.J. (1969). The Meter of the Latvian Folk Dactyl. *Celi-Rakstu Krājums* Lund: Ramave.