

# Morphologische Theorien

## X. Synkretismen und Flexionsklassen

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# Trans-Paradigmatic Syncretism

**Trans-paradigmatic syncretism** can be accounted for by decomposing privative class features into more primitive, binary class features that are cross-classified (yielding natural classes of inflection classes). Predecessors of the system in Alexiadou & Müller (2008):

- Halle (1992) on Latvian noun inflection:  $[\pm\text{marginal}]$ ,  $[\pm\text{marked}]$  in addition to the “standard” class features A, B
- Nessel (1994) on Russian noun inflection:  $[\pm\text{nom-end}]$  and  $[\text{a/i-gen-end}]$
- Oltra Massuet (1999) on verbal inflection in Catalan
- Müller (2005) on Icelandic noun inflection
- Trommer (2005) on Amharic verbs.

Alternative approaches to natural classes of noun inflection classes without feature decomposition: McCreight & Chvany (1991), Johnston (1996), Wiese (2003)

# Latvian Noun Inflection: The Paradigm

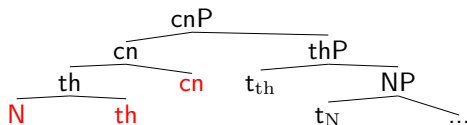
## T<sub>1</sub>: Latvian noun inflection

	IA	IIA	IIIA	IVA	VB	VIB	VIIB	VIIIB
	zīrg 'horse'	gulb 'swan'	akmen 'stone'	tīrg 'market'	ma:s 'sister'	gov 'cow'	dzirn 'handmill'	zem 'earth'
nom	-s	-i-s	-s	-u-s	-a	-s	–	-e
gen	-a	-j-a	-s	-u-s	-a-s	-s	–	-e-s
dat	-a-m	-i-m	-i-m	-u-m	-a-j	-i-j	–	-e-j
inst	-u	-i	-i	-u	-u	-i	–	-i
acc	-u	-i	-i	-u	-u	-i	–	-i
loc	-a:	-i:	-i:	-u:	-a:	-i:	–	-e:
nom	-i	-j-i	-j-i	-i	-a-s	-i-s	-u-s	-e-s
gen	-u	-j-u	-j-u	-u	-u	-j-u	-u	-j-u
dat	-ie-m	-j-ie-m	-j-ie-m	-ie-m	-a:-m	-i:-m	-u:-m	-e:-m
inst	-ie-m	-j-ie-m	-j-ie-m	-ie-m	-a:-m	-i:-m	-u:-m	-e:-m
acc	-u-s	-j-u-s	-j-u-s	-u-s	-a-s	-i-s	-u-s	-e-s
loc	-uo-s	-j-uo-s	-j-uo-s	-uo-s	-a:-s	-i:-s	-u:-s	-e:s

# Structure of Latvian Nouns

Latvian nouns have a functional morpheme for **theme vowels** (th), and a functional morpheme for case/number (cn).

(1) Syntactic structure of the Latvian noun (one possibility):



# Decomposition of Class Features

Choice of the theme vowel depends on an inflection class feature on the noun stem. Class features: [A], [B], [ $\pm$ Marginal], [ $\pm$ Marked].

(2)

class B:	u	i	e	a	
class A:	u	i <sub>b</sub>	i <sub>a</sub>	a	
	+	+	-	-	Marginal
	+	-	+	-	Marked

## Vocabulary Items for th, plus Readjustment Rules

Redundancy rules: [+fem] → class B; [-fem] → class A (with lexical exceptions)

### (3) Vocabulary items (theme vowels; decreasing specificity):

- a. /e/ ↔ {[N], [B], [-marginal, +marked]}
- b. /i/ ↔ {[N], [↯marginal, -↯marked]}
- c. /u/ ↔ {[N], [+marginal]}
- d. /a/ ↔ {[N]}

- The insertion context for /i/ refers to variables over feature values (Halle himself uses a disjunction of two specifications here).
- Two additional sets of readjustment rules are necessary to change the outcome of theme vowel insertion.

### (4) Readjustment rules for theme vowels:

- a. (i) [-cons]-X → [+high]/\_\_cn:[sg.acc]
- (ii) [-cons]-X → X-X/N:[classB]\_\_cn:[pl.loc/dat]
- (iii) [-cons]-X → X-X/\_\_cn:[sg.loc]
- b. (i) ∅ → ie/N:[classA]\_\_cn:[pl.dat]
- (ii) ∅ → u/N:[classA]\_\_cn:[pl.acc]
- (iii) ∅ → (u)o/N:[classA]\_\_cn:[pl.loc]

# Vocabulary Items for cn, plus Readjustment Rules

## (5) Vocabulary items (case/number markers):

- a. /a/ ↔ {[classA],[Sg.Gen]}
- b. /i/ ↔ {[classA],[Pl.Nom]}
- c. /j/ ↔ {[+fem],[Sg.Dat]}
- d. /∅/ ↔ {[classB],[Sg.Nom]}
- e. /∅/ ↔ {[Sg.Acc/Loc]}
- f. /u/ ↔ {[Pl.Gen]}
- g. /m/ ↔ {[Dat]}
- h. /s/ ↔ {-}

Certain instances of case syncretism remain to be derived. Suggestions: further readjustment rules, as in (6). (Note: These readjustment rules are not phonological in nature; rather, they correspond to **rules of referral** or **feature-changing impoverishment**).

## (6) Rules of referral:

- a. (i) Inst → Acc/\_\_\_cn:[Sg]
- (ii) Inst → Dat/\_\_\_cn:[Pl]
- b. (i) Nom → Gen/N:[classB,+marg]\_\_\_cn:[sg]
- (ii) Gen → Nom/N:[classA,+marg]\_\_\_cn:[sg]

## Final Vowel Changes

- (7) Morpho-phonological readjustment rules:
- $[-\text{cons}] \rightarrow \emptyset / \text{N}:[\text{classB}, +\text{marginal}] \_ \text{cn}:[\text{sg.gen}]$
  - $[-\text{cons}] \rightarrow \emptyset / \text{N}:[\text{classA}, -\text{marked}] \_ \text{cn}:[\text{sg.nom}]$
- (8) General phonological rules of Latvian:
- $[-\text{back}, -\text{cons}] \rightarrow /j/ / \_ [-\text{cons}]$
  - $[-\text{cons}] \rightarrow \emptyset / \_ [-\text{cons}]$



# Noun Inflection in Greek

## References:

Mackridge (1985), Babinotis (1986), Ruge (1986), Ralli (1994), Ralli (2002), Alexiadou (2004).

## Assumption (Ralli (1994)):

There are eight inflection classes. (Traditional view: three classes)

# Four Inflection Classes

## T<sub>2</sub>: Inflection classes I–IV

	I: masc <i>kip<sub>m</sub></i> ('garden')	I: fem <i>psif<sub>f</sub></i> ('vote')	II: masc <i>maxit(i)<sub>m</sub></i> ('fighter')	III: fem <i>avl(i)<sub>f</sub></i> ('yard')	IV: fem <i>pol(i)(e)<sub>f</sub></i> ('city')
nom/sg	os	os	s	∅	∅
acc/sg	o(n)	o(n)	∅	∅	∅
gen/sg	u	u	∅	s	s
voc/sg	e	e	∅	∅	∅
nom/pl	i	i	es	es	is
acc/pl	us	us	es	es	is
gen/pl	on	on	on	on	on
voc/pl	i	i	es	es	is

# Four More Inflection Classes

## T<sub>3</sub>: Inflection classes V–VIII

	V: neut	VI: neut	VII: neut	VIII: neut
	<i>vun<sub>n</sub></i> ('mountain')	<i>krat<sub>n</sub></i> ('state')	<i>spiti<sub>n</sub></i> ('house')	<i>soma(t)<sub>n</sub></i> ('body')
nom/sg	o	os	∅	∅
acc/sg	o	os	∅	∅
gen/sg	u	us	u	os
voc/sg	o	os	∅	∅
nom/pl	a	i	a	a
acc/pl	a	i	a	a
gen/pl	on	on	on	on
voc/pl	a	i	a	a

# Independently Motivated Features?

## Observation:

(i) Gender features on the stem do not suffice to predict inflection class ( $N_{[masc]}$  can be I or II;  $N_{[fem]}$  can be I, III, or IV;  $N_{[neut]}$  can be V-VIII).

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- (ii) Phonological features on the stem do not suffice to predict inflection class (thematic vowels are either part of the ending, in which case they cannot encode inflection class by definition; or they are part of the stem, where they fail to unambiguously encode inflection class; see, e.g., **maxit(i)** ('fighter') vs. **papa( $\delta$ )** ('priest') vs. **papu( $\delta$ )** ('grandfather') in class II).

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- (iii) Semantic features on the stem do not suffice to predict inflection class.

# Analysis

## T<sub>4</sub>: Syncretism within and across inflection classes in Greek

	'2.decl.'	'1.decl.'			'3.decl.'			
	$I_{m,f}$	$II_m$	$III_f$	$IV_f$	$V_n$	$VI_n$	$VII_n$	$VIII_n$
nom/sg	os	s	∅	∅	o	os	∅	∅
acc/sg	o(n)	∅	∅	∅	o	os	∅	∅
gen/sg	u	∅	s	s	u	us	u	os
voc/sg	e	∅	∅	∅	o	os	∅	∅
nom/pl	i	es	es	is	a	i	a	a
acc/pl	us	es	es	is	a	i	a	a
gen/pl	on	on	on	on	on	on	on	on
voc/pl	i	es	es	is	a	i	a	a

# Case Decomposition

(9) **Decomposition of cases in Greek:** [ $\pm$ governed], [ $\pm$ oblique] (,[ $\pm$ subject])

nominative: [-gov,-obl]

accusative: [+gov,-obl]

genitive: [+gov,+obl]

(vocative: [-subj,-gov,-obl])



# Inflection Class Decomposition

(10) Decomposition of inflection classes in Greek:  $[\pm\alpha]$ ,  $[\pm\beta]$ ,  $[\pm\gamma]$

I:	$[+\alpha, +\beta, +\gamma]$	$\text{kip}_m$ ('garden'), $\text{psif}_f$ ('vote')
V:	$[+\alpha, +\beta, -\gamma]$	$\text{vun}_n$ ('mountain')
VII:	$[+\alpha, -\beta, +\gamma]$	$\text{spiti}_n$ ('house')
VIII:	$[+\alpha, -\beta, -\gamma]$	$\text{soma}(t)_n$ ('body')
VI:	$[-\alpha, +\beta, +\gamma]$	$\text{krat}_n$ ('state')
IV:	$[-\alpha, -\beta, +\gamma]$	$\text{pol}(i)(e)_f$ ('city')
II:	$[-\alpha, +\beta, -\gamma]$	$\text{maxit}(i)_m$ ('fighter')
III:	$[-\alpha, -\beta, -\gamma]$	$\text{avl}(i)_f$ ('yard')

# Vocabulary Items (Singular)

## (11) Inflection markers (singular):

- |                     |  |
|---------------------|--|
| 1. /o(n)/:          | { [+N], [+ $\alpha$ , + $\beta$ , + $\gamma$ ], [+gov, -obl] }                                   |
| 2. /os/:            | { [+N], [+ $\alpha$ , - $\beta$ , - $\gamma$ ], [+gov, +obl] }                                   |
| 3. /us/:            | { [+N], [- $\alpha$ , + $\beta$ , + $\gamma$ ], [+gov, +obl] }                                   |
| 4. /o/:             | { [+N], [+ $\alpha$ , + $\beta$ , - $\gamma$ ], [-obl] }   |
| 5. /os/:            | { [+N], [+ $\beta$ , + $\gamma$ ], [-obl] }  |
| 6. /s/:             | { [+N], [- $\alpha$ , $\cancel{\beta}$ ], [- $\cancel{\text{gov}}$ , - $\cancel{\text{obl}}$ ] } |
| 7. /u/:             | { [ <u>+N</u> ], [ <u>+<math>\alpha</math></u> ], [+gov, +obl] }                                 |
| 8. / $\emptyset$ /: | { [+N] }   |

## Variables over Feature Values

### Note on $\aleph$ -notation with /s/:

Assuming that variables ranging over feature values can show up in morpho-syntactic specifications of inflection markers, the two /s/ markers in II and III/IV emerge as one:  $\aleph$  ranges over  $\pm$ . The  $\aleph$ -notation (originally:  $\alpha$ -notation) is introduced in Chomsky (1965), Chomsky & Halle (1968), and has been used in morphology in Noyer (1992) (but see Harley (1994)), Johnston (1996), and Wiese (2003). Without this notion, there would have to be two /s/ markers, one specified as  $\{[+N], [-\alpha, +\beta], [-gov, -obl]\}$ , and one specified as  $\{[+N], [-\alpha, -\beta], [+gov, +obl]\}$ . However, the  $\aleph$ -notion captures the gist of what is traditionally known as the “s-principle” (II uses /s/ where III/IV does not, and vice versa, see Ruge (1986)). (Also note that, other things being equal, markers with variables over features values count as less specific than markers without such variables.)

# Competition

## T<sub>5</sub>: The interaction of inflection markers in the singular in Greek

	I: [+α+β+γ]	II: [-α+β-γ]	III: [-α-β-γ]	IV: [-α-β+γ]	V: [+α+β-γ]	VI: [-α+β+γ]	VII: [+α-β+γ]	VIII: [+α-β-γ]
nom/sg: [-gov,-obl], [-pl]	/os/ <sup>5</sup> (/∅/ <sup>8</sup> )	/s/ <sup>6</sup> (/∅/ <sup>8</sup> )	/∅/ <sup>8</sup>	/∅/ <sup>8</sup>	/o/ <sup>4</sup> (/∅/ <sup>8</sup> )	/os/ <sup>5</sup> (/s/ <sup>6</sup> , /∅/ <sup>8</sup> )	/∅/ <sup>8</sup>	/∅/ <sup>8</sup>
acc/sg: [+gov,-obl], [-pl]	/o(n)/ <sup>1</sup> (/os/ <sup>5</sup> , /∅/ <sup>8</sup> )	/∅/ <sup>8</sup>	/∅/ <sup>8</sup>	/∅/ <sup>8</sup>	/o/ <sup>4</sup> (/∅/ <sup>8</sup> )	/os/ <sup>5</sup> (/∅/ <sup>8</sup> )	/∅/ <sup>8</sup>	/∅/ <sup>8</sup>
gen/sg: [+gov,+obl], [-pl]	/u/ <sup>7</sup> (/∅/ <sup>8</sup> )	/∅/ <sup>8</sup>	/s/ <sup>6</sup> (/∅/ <sup>8</sup> )	/s/ <sup>6</sup> (/∅/ <sup>8</sup> )	/u/ <sup>7</sup> (/∅/ <sup>8</sup> )	/us/ <sup>3</sup> (/∅/ <sup>8</sup> )	/u/ <sup>7</sup> (/∅/ <sup>8</sup> )	/os/ <sup>2</sup> (/u/ <sup>7</sup> , /∅/ <sup>8</sup> )

# Vocabulary Items (Plural)

## (12) Inflection markers (plural):

- |    |       |   |
|----|-------|---|
| 1. | /on/: | { [+N], [+pl], [+gov, +obl] }   |
| 2. | /is/: | { [+N], [+pl], [- $\alpha$ , - $\beta$ , + $\gamma$ ], [-obl] }               |
| 3. | /us/: | { [+N], [+pl], [+ $\alpha$ , + $\beta$ , + $\gamma$ ], [+gov, -obl] }         |
| 4. | /es/: | { [+N], [+pl], [- $\alpha$ , - $\gamma$ ], [-obl] }                           |
| 5. | /i/ : | { [+N], [+pl], [ <u>+<math>\beta</math>, +<math>\gamma</math></u> ], [-obl] } |
| 6. | /a/:  | { [+N], [+pl], [-obl] }   |

# Competition

T<sub>6</sub>: The interaction of inflection markers in the plural in Greek

	I: [+α+β+γ]	II: [-α+β-γ]	III: [-α-β-γ]	IV: [-α-β+γ]	V: [+α+β-γ]	VI: [-α+β+γ]	VII: [+α-β+γ]	VIII: [+α-β-γ]
nom/pl: [-gov,-obl], [+pl]	/i/ <sup>5</sup> (/a/ <sup>6</sup> )	/es/ <sup>4</sup> (/a/ <sup>6</sup> )	/es/ <sup>4</sup> (/a/ <sup>6</sup> )	/is/ <sup>2</sup> (/a/ <sup>6</sup> )	/a/ <sup>6</sup>	/i/ <sup>5</sup> (/a/ <sup>6</sup> )	/a/ <sup>6</sup>	/a/ <sup>6</sup>
acc/pl: [+gov,-obl], [+pl]	/us/ <sup>3</sup> (/i/ <sup>5</sup> , /a/ <sup>6</sup> )	/es/ <sup>4</sup> (/a/ <sup>6</sup> )	/es/ <sup>4</sup> (/a/ <sup>6</sup> )	/is/ <sup>2</sup> (/a/ <sup>6</sup> )	/a/ <sup>6</sup>	/i/ <sup>5</sup> (/a/ <sup>6</sup> )	/a/ <sup>6</sup>	/a/ <sup>6</sup>
gen/pl: [+gov,+obl], [+pl]	/on/ <sup>1</sup>	/on/ <sup>1</sup>	/on/ <sup>1</sup>	/on/ <sup>1</sup>	/on/ <sup>1</sup>	/on/ <sup>1</sup>	/on/ <sup>1</sup>	/on/ <sup>1</sup>

# Literatur

- Alexiadou, Artemis (2004): Inflectional Class, Gender, and DP Internal Structure. In: G. Müller, L. Gunkel & G. Zifonun, eds., *Explorations in Nominal Inflection*. Mouton de Gruyter, Berlin, pp. 21–49.
- Alexiadou, Artemis & Gereon Müller (2008): Class Features as Probes. In: A. Bachrach & A. Nevins, eds., *Inflectional Identity*. Oxford University Press, Oxford, pp. 101–155.
- Babinotiotis, George (1986): *Brief History of the Greek Language*. Athens University Press, Athens.
- Chomsky, Noam (1965): *Aspects of the Theory of Syntax*. MIT Press, Cambridge, MA.
- Chomsky, Noam & Morris Halle (1968): *The Sound Pattern of English*. MIT Press, Cambridge, Mass.
- Halle, Morris (1992): The Latvian Declension. In: G. Booij & J. van Marle, eds., *Yearbook of Morphology 1991*. Kluwer, Dordrecht, pp. 33–47.
- Harley, Heidi (1994): Hug a Tree: Deriving the Morphosyntactic Feature Hierarchy. In: A. Carnie & H. Harley, eds., *MITWPL 21: Papers on Phonology and Morphology*. MITWPL, Cambridge, Mass., pp. 275–288.
- Johnston, Jason (1996): Systematic Homonymy and the Structure of Morphological Categories. PhD thesis, University of Sydney.
- Mackridge, Peter (1985): *Modern Greek*. Clarendon Press, Oxford.
- McCreight, Katherine & Catherine Chvany (1991): Geometric Representation of Paradigms in a Modular Theory of Grammar. In: F. Plank, ed., *Paradigms*. Mouton de Gruyter, Berlin, pp. 91–111.
- Müller, Gereon (2005): Syncretism and Iconicity in Icelandic Noun Declensions: A Distributed Morphology Approach. In: G. Booij & J. van Marle, eds., *Yearbook of Morphology 2004*. Springer, Dordrecht, pp. 229–271.
- Neset, Tore (1994): A Feature-Based Approach to Russian Noun Inflection, *Journal of Slavic Linguistics* 2, 214–237.
- Noyer, Rolf (1992): Features, Positions, and Affixes in Autonomous Morphological Structure. PhD thesis, MIT, Cambridge, Mass.
- Oltra Massuet, Isabel (1999): On the Notion of Theme Vowel: A New Approach to Catalan Verbal Morphology. Master of science thesis, MIT, Cambridge, Mass.
- Ralli, Angela (1994): Feature Representations and Feature-Passing Operations: The Case of Greek Nominal Inflection. In: *Proceedings of the 8th International Symposium on English & Greek*. University of Thessaloniki: School of English Dept. of Theoretical & Applied Linguistics, pp. 19–46.
- Ralli, Angela (2002): The Role of Morphology in Gender Determination: Evidence from Modern Greek, *Linguistics* 40, 519–551.
- Ruge, Hans (1986): *Grammatik des Neugriechischen*. Romiosini, Köln.
- Trommer, Jochen (2005): A Feature-Geometric Approach to Amharic Verb Classes. Ms., Universität Leipzig.
- Wiese, Bernd (2003): Categories and Paradigms: On Underspecification in Russian Declension. Ms., IDS Mannheim. To appear in L. Gunkel, G. Müller and G. Zifonun, eds., *Explorations in Nominal Inflection*. Berlin: Mouton de Gruyter.