

Class Features as Probes

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GGG Köln, May 31, 2003

1. Introduction

Question:

What is the status of class features in languages with fusional noun inflection (Russian, Greek, German)?

Claims:

(i) Class features are present in morphology:

They are needed to predict the choice of inflection marker for a given stem in morphology (gender, phonological, semantic features of the stem do not suffice).

(ii) Class features are binary (e.g., $[\pm\alpha]$, $[\pm\beta]$), not privative (e.g., I, II):

They combine to yield the standard inflection classes (by underspecification, natural classes of inflection classes can be formed that permit a systematic account of syncretism across inflection classes).

(iii) Class features are uninterpretable in syntax:

They do not project, and syntactic operations do not refer to them.

(iv) Class features are absent in syntax:

Their presence in syntax would violate the Legibility Condition.

(v) Class features act as probes on noun stems that trigger a morphological Agree operation with an inflection marker that acts as a goal before syntax is reached (in the same way that, e.g., LF-uninterpretable ϕ -features on T trigger movement in syntax before LF is reached).

(vi) A pre-syntactic approach to class-driven inflectional morphology respects both the Legibility Condition and the Inclusiveness Condition; inner- or post-syntactic approaches violate at least one of these conditions.

2. Class Features in Morphology

Observation:

The noun inflection systems of Russian, Greek, and German exhibit massive syncretism (i.e., identity of two forms with a different morpho-syntactic function), both within an inflection class (*inner-paradigmatic syncretism*), and across inflection classes (*trans-paradigmatic syncretism*).

Paradigms:

Paradigms are epiphenomena; they do not exist as genuine entities that, e.g., constraints may refer to (see Harley and Noyer (1999), Bobaljik (2002), among many others).

(1) *Syncretism Ubiquity Hypothesis:*

Assume that identity of form implies identity of function unless there is evidence to the contrary.

(Null hypothesis for child and linguist.)

Assumption:

There is less evidence against systematic syncretism than is sometimes made out (Carstairs (1987), Zwicky (1991), Williams (1994)). However, we will not try to derive syncretism across numbers.

Caveat:

Throughout, we focus on the core systems of noun inflection in Russian, Greek, and German. We disregard minor inflection classes, minor cases, stem alternations, stress patterns, lexical idiosyncrasies, etc. These issues are ultimately important in comprehensive morphological accounts; but they arguably do not significantly contribute to the issue of class features.

2.1. Noun Inflection in Russian

References:

Jakobson (1962a), Jakobson (1962b), Neidle (1988), Corbett and Fraser (1993), Fraser and Corbett (1994), Halle (1994), Franks (1995), Stump (2001).

2.1.1. Data

T_1 : *Inflection class I, Sg.: masc*

	<i>zavod_m</i> ('factory')	<i>student_m</i> ('student')	<i>tovarišč_m</i> ('comrade')
nom	∅	∅	∅
acc	∅	a	a
dat	u	u	u
gen	a	a	a
inst	om	om	em
loc	e	e	e

T_2 : *Inflection class II, Sg.: fem, masc*

	<i>komnat_f</i> ('room')	<i>učitel'nic_f</i> ('fem. teacher')	<i>nedel'_f</i> ('week')	<i>muščin_m</i> ('man')
nom	a	a	ja	a
acc	u	u	ju	u
dat	e	e	e	e
gen	y	y	i	y
inst	oj(u)	ej(u)	ej(u)	oj(u)
loc	e	e	e	e

T_3 : Inflection class III, Sg.: fem

	<i>tetrad'</i> _f ('notebook')	<i>myš'</i> _f ('mouse')	<i>doč'</i> _f ('daughter')
nom	∅	∅	∅
acc	∅	∅	∅
dat	i	i	(er)i
gen	i	i	(er)i
inst	ju	ju	(er')ju
loc	i	i	(er)i

T_4 : Inflection class IV, Sg.: neut

	<i>mest</i> _n ('place')	<i>jablok</i> _n ('apple')	<i>syščestv</i> _n ('being')
nom	o	o	o
acc	o	o	o
dat	u	u	u
gen	a	a	a
inst	om	om	em
loc	e	e	e

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 II or III).

(ii) Phonological features on the stem do not suffice to predict inflection class (e.g., $N_{[fem]}$ ending in a soft ([-back]) consonant can be II or III); and there are no theme vowels signalling class membership, despite claims to the contrary (Wurzel (1984), Corbett and Fraser (1993) vs. Wunderlich (1996), Wunderlich (2002)).

(iii) Semantic features on the stem do not suffice to predict inflection class (e.g., $N_{[anim]}$ can be IV).

Conclusion:

Class features are needed.

2.1.2. Analysis

T_5 : Syncretism within and across inflection classes in Russian

	I _m	II _{f,m}	III _f	IV _n
nom	∅	a	∅	o
acc	∅/a	u	∅	o
dat	u	e	i	u
gen	a	i	i	a
inst	om	oj	ju	om
loc	e	e	i	e

Note:

Inner-paradigmatic syncretism can be accounted for by decomposing privative case feat-

ues into more primitive, binary case features that are cross-classified (yielding natural classes of cases). These primitive features are semantics-based in Jakobson (1962a), Jakobson (1962b), Neidle (1988), Franks (1995)), and syntax-based in Bierwisch (1967), Wiese (1999), Müller (2002); we adopt the latter view.

(2) *Decomposition of cases in Russian*: [\pm subject], [\pm governed], [\pm oblique]

nominative: [+subj, -gov, -obl]
 accusative: [-subj, +gov, -obl]
 dative: [-subj, +gov, +obl]
 genitive: [+subj, +gov, +obl]
 instrumental: [+subj, -gov, +obl]
 locative: [-subj, -gov, +obl]

Claim:

Trans-paradigmatic syncretism can be accounted in the same way by decomposing primitive class features into more primitive, binary class features that are cross-classified (yielding natural classes of inflection classes); see Massuet (1999) (on verbal inflection in Catalan), Müller (2003).

(For natural classes of Russian noun inflection classes without feature decomposition, see McCreight and Chvany (1991), Wiese (2003).)

(3) *Decomposition of inflection classes in Russian*: [$\pm\alpha$], [$\pm\gamma$]

I: [+ α , - γ] *zavod_m* ('factory')
 II: [- α , + γ] *komnat_f* ('room'), *muščin_m* ('man')
 III: [- α , - γ] *tetrad'_f* ('notebook')
 IV: [+ α , + γ] *mest_n* ('place')

(4) *Inflection markers (singular)*:

1. /oj/:	{[+N], [- α , + γ], [+subj, -gov, +obl]}
2. /ju/:	{[+N], [- α , - γ], [+subj, -gov, +obl]}
3. /om/:	{[+N], [<u>+α</u>], [+subj, -gov, +obl]}
4. /e/:	{[+N], [- α , + γ], [-subj, +obl]}
5. /e/:	{[+N], [<u>+α</u>], [-subj, -gov, +obl]}
6. /o/:	{[+N], [<u>+α</u> , + γ], [-obl]}
7. /Ø/:	{[+N], [<u>-γ</u>], [-obl]}
8. /i/:	{[+N], [<u>-α</u>], [+obl]}
9. /u/:	{[+N], [-subj, +gov]}
10. /a/:	{[+N]}

Note:

Inflection markers may bear underspecified case and class features that encode natural classes of cases and inflection classes, respectively. Underspecified class information is underlined in inflection marker specifications.

Assumption:

Noun stems enter morphology with fully specified case, number, gender, and class features. They must combine with an inflection marker. Choice of inflection marker follows the Subset Principle (Kiparsky (1973), Lumsden (1992), Williams (1994), Halle (1997), Noyer (1992), Gunkel (2002), Zifonun (2002)).

(5) *Subset Principle:*

An inflection marker I is merged with a noun stem N iff (i) and (ii) hold:

- (i) The morpho-syntactic features of I are a subset of the morpho-syntactic features of N.
- (ii) I is the most specific marker that satisfies (i).

(6) *Specificity of inflection markers:*

- a. If two inflection markers I_i, I_j differ with respect to the rank of their features, I_i is more specific than I_j if it has a higher-ranked feature.
- b. If two inflection markers I_i, I_j do not differ with respect to the rank of their features, I_i is more specific than I_j if it has more features.

(7) *Hierarchy of features:*

Number \gg Class \gg Case

T_6 : *The interaction of inflection markers in the singular in Russian*

	I: [+ α , - γ]	II: [- α , + γ]	III: [- α , - γ]	IV: [+ α , + γ]
nom: [+subj, -gov, -obl]	/Ø/ ⁷ (/a/ ¹⁰)	/a/ ¹⁰	/Ø/ ⁷ (/a/ ¹⁰)	/o/ ⁶ (/a/ ¹⁰)
acc: [-subj, +gov, -obl]	/Ø/ ⁷ (/u/ ⁹ , /a/ ¹⁰)	/u/ ⁹ (/a/ ¹⁰)	/Ø/ ⁷ (/u/ ⁹ , /a/ ¹⁰)	/o/ ⁶ (/u/ ⁹ , /a/ ¹⁰)
dat: [-subj, +gov, +obl]	/u/ ⁹ (/a/ ¹⁰)	/e/ ⁴ (/i/ ⁸ , /u/ ⁹ , /a/ ¹⁰)	/i/ ⁸ (/u/ ⁹ , /a/ ¹⁰)	/u/ ⁹ (/a/ ¹⁰)
gen: [+subj, +gov, +obl]	/a/ ¹⁰	/i/ ⁸ (/a/ ¹⁰)	/i/ ⁸ (/a/ ¹⁰)	/a/ ¹⁰
inst: [+subj, -gov, +obl]	/om/ ³ (/a/ ¹⁰)	/oj/ ¹ (/i/ ⁸ , /a/ ¹⁰)	/ju/ ² (/i/ ⁸ , /a/ ¹⁰)	/om/ ³ (/a/ ¹⁰)
loc: [-subj, -gov, +obl]	/e/ ⁵ (/a/ ¹⁰)	/e/ ⁴ (/i/ ⁸ , /a/ ¹⁰)	/i/ ⁸ (/a/ ¹⁰)	/e/ ⁵ (/a/ ¹⁰)

(8) *Inflection markers (plural):*

- 1. /ax/: { [+N], [+pl], [-subj, -gov, -+obl] }
- 2. /ami/: { [+N], [+pl], [+subj, -gov, +obl] }
- 3. /am/: { [+N], [+pl], [-subj, +gov, +obl] }
- 4. /ov/: { [+N], [+pl], [- γ], [+subj, +gov, +obl] }
- 5. /Ø/: { [+N], [+pl], [+ γ], [+subj, +gov, +obl] }
- 6. /i/: { [+N], [+pl], [-(+ α , + γ)], [-obl] }
- 7. /a/: { [+N], [+pl], [-obl] }

T₇: The interaction of inflection markers in the plural in Russian

	I: [+α, -γ]	II: [-α, +γ]	III: [-α, -γ]	IV: [+α, +γ]
nom: [+subj, -gov, -obl]	/i/ ⁶ (/a/ ⁷)	/i/ ⁶ (/a/ ⁷)	/i/ ⁶ (/a/ ⁷)	/a/ ⁷
acc: [-subj, +gov, -obl]	/i/ ⁶ (/a/ ⁷)	/i/ ⁶ (/a/ ⁷)	/i/ ⁶ (/a/ ⁷)	/a/ ⁷
dat: [-subj, +gov, +obl]	/am/ ³	/am/ ³	/am/ ³	/am/ ³
gen: [+subj, +gov, +obl]	/ov/ ⁴	/∅/ ⁵	/ov/ ⁴	/∅/ ⁵
inst: [+subj, -gov, +obl]	/ami/ ²	/ami/ ²	/ami/ ²	/ami/ ²
loc: [-subj, -gov, +obl]	/ax/ ¹	/ax/ ¹	/ax/ ¹	/ax/ ¹

Singular vs. plural markers:

Plural markers do not fit into singular contexts, but singular markers compete in plural contexts. However, since singular markers do not have a number feature, they can never become the most specific markers for a given context.

General conclusion:

For each natural class of inflection classes created by class feature decomposition, there is a marker that refers to it.

(9) *Inflection markers that refer to decomposed class features:*

[+α] (I, IV) → /om/ (Sg.), /e/ (Sg.)

[-α] (II, III) → /i/ (Sg.)

[+γ] (II, IV) → /∅/ (Pl.)

[-γ] (I, III) → /∅/ (Sg.), /ov/ (Pl.)

Note:

The system relies on two rules of referral (Zwicky (1985), Corbett and Fraser (1993), Stump (2001)) to account for accusative/genitive syncretism with animates.

(10) a. *A rule of referral for accusative/genitive syncretism in the singular:*

$I_{\{[+\alpha, -\gamma], [-\text{subj}, +\text{gov}, -\text{obl}]\}} \rightarrow I_{\{[+\alpha, -\gamma], [+ \text{subj}, +\text{gov}, +\text{obl}]\}} / [+ \text{animate}] _.$

b. *A rule of referral for accusative/genitive syncretism in the plural:*

$I_{\{[+p], [-\text{subj}, +\text{gov}, -\text{obl}]\}} \rightarrow I_{\{[+p], [+ \text{subj}, +\text{gov}, +\text{obl}]\}} / [+ \text{animate}] _.$

2.2. Noun Inflection in Greek

References:

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

2.2.1. Data

Assumption (Ralli (1994)):

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

T_8 : Inflection classes I–IV

	I: masc <i>kip_m</i> ('garden')	I: fem <i>psif_f</i> ('vote')	II: masc <i>maxit(i)_m</i> ('fighter')	III: fem <i>avl(i)_f</i> ('yard')	IV: fem <i>pol(i)(e)_f</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

T_9 : Inflection classes V–VIII

	V: neut <i>vun_n</i> ('mountain')	VI: neut <i>krat_n</i> ('state')	VII: neut <i>spiti_n</i> ('house')	VIII: neut <i>soma(t)_n</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

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).

(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(δ)* ('priest') vs. *papu(δ)* ('grandfather') in class II).

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

2.2.2. Analysis

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

T_{10} : 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

nominative: [-gov,-obl]
 accusative: [+gov,-obl]
 genitive: [+gov,+obl]
 (vocative: [-subj,-gov,-obl])

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

I: $[+\alpha, +\beta, +\gamma]$ *kip_m* ('garden'), *psif_f* ('vote')
 V: $[+\alpha, +\beta, -\gamma]$ *vun_n* ('mountain')
 VII: $[+\alpha, -\beta, +\gamma]$ *spiti_n* ('house')
 VIII: $[+\alpha, -\beta, -\gamma]$ *soma(t)_n* ('body')
 VI: $[-\alpha, +\beta, +\gamma]$ *krat_n* ('state')
 IV: $[-\alpha, -\beta, +\gamma]$ *pol(i)(e)_f* ('city')
 II: $[-\alpha, +\beta, -\gamma]$ *maxit(i)_m* ('fighter')
 III: $[-\alpha, -\beta, -\gamma]$ *avl(i)_f* ('yard')

(13) *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/: $\{[+N], [- \alpha, \aleph \beta], [- \aleph gov, - \aleph obl]\}$
7. /u/: $\{[+N], [+ \alpha], [+gov, +obl]\}$
8. /∅/: $\{[+N]\}$

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: α -notation) is introduced in Chomsky and 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 $\{[+N],[-\alpha,+\beta],[-\text{gov},-\text{obl}]\}$, and one specified as $\{[+N],[-\alpha,-\beta],[+\text{gov},+\text{obl}]\}$. 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.)

T₁₁: 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/ ⁵ (/Ø/ ⁸)	/s/ ⁶ (/Ø/ ⁸)	/Ø/ ⁸	/Ø/ ⁸	/o/ ⁴ (/Ø/ ⁸)	/os/ ⁵ (/s/ ⁶ , /Ø/ ⁸)	/Ø/ ⁸	/Ø/ ⁸
acc/sg: [+gov,-obl], [-pl]	/o(n) ¹ (/os/ ⁵ , /Ø/ ⁸)	/Ø/ ⁸	/Ø/ ⁸	/Ø/ ⁸	/o/ ⁴ (/Ø/ ⁸)	/os/ ⁵ (/Ø/ ⁸)	/Ø/ ⁸	/Ø/ ⁸
gen/sg: [+gov,+obl], [-pl]	/u/ ⁷ (/Ø/ ⁸)	/Ø/ ⁸	/s/ ⁶ (/Ø/ ⁸)	/s/ ⁶ (/Ø/ ⁸)	/u/ ⁷ (/Ø/ ⁸)	/us/ ³ (/Ø/ ⁸)	/u/ ⁷ (/Ø/ ⁸)	/os/ ² (/u/ ⁷ , /Ø/ ⁸)

(14) *Inflection markers (plural):*

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

T₁₂: 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/ ⁵ (/a/ ⁶)	/es/ ⁴ (/a/ ⁶)	/es/ ⁴ (/a/ ⁶)	/is/ ² (/a/ ⁶)	/a/ ⁶	/i/ ⁵ (/a/ ⁶)	/a/ ⁶	/a/ ⁶
acc/pl: [+gov,-obl], [+pl]	/us/ ³ (/i/ ⁵ , /a/ ⁶)	/es/ ⁴ (/a/ ⁶)	/es/ ⁴ (/a/ ⁶)	/is/ ² (/a/ ⁶)	/a/ ⁶	/i/ ⁵ (/a/ ⁶)	/a/ ⁶	/a/ ⁶
gen/pl: [+gov,+obl], [+pl]	/on/ ¹	/on/ ¹	/on/ ¹	/on/ ¹	/on/ ¹	/on/ ¹	/on/ ¹	/on/ ¹

2.3. Noun Inflection in German

References:

Blevins (2000), Eisenberg (2000), Wiese (2000), Wiese (2001), Müller (2002), Sternefeld (2003).

2.3.1. Data

*T*₁₃: Major inflection classes I–IV

	I: masc, neut <i>Hund_m</i> ('dog'), <i>Schaf_n</i> ('sheep')	II: masc <i>Baum_m</i> ('tree')	III: neut, masc <i>Buch_n</i> ('book'), <i>Mann_m</i> ('man')	IV: masc, neut <i>Strahl_m</i> ('ray') <i>Auge_n</i> ('eye')
nom/sg	∅	∅	∅	∅
acc/sg	∅	∅	∅	∅
dat/sg	∅	∅	∅	∅
gen/sg	(e)s	(e)s	(e)s	(e)s
nom/pl	(e)	”(e)	”er	(e)n
acc/pl	(e)	”(e)	”er	(e)n
dat/pl	(e)n	”(e)n	”ern	(e)n
gen/pl	(e)	”(e)	”er	(e)n

*T*₁₄: Major inflection classes V–VIII

	V: masc ('weak') <i>Planet_m</i> ('planet')	VI: fem <i>Ziege_f</i> ('goat')	VII: fem <i>Maus_f</i> ('mouse')	VIII: fem <i>Drangsal_f</i> ('distress')
nom/sg	∅	∅	∅	∅
acc/sg	(e)n	∅	∅	∅
dat/sg	(e)n	∅	∅	∅
gen/sg	(e)n	∅	∅	∅
nom/pl	(e)n	(e)n	”(e)	(e)
acc/pl	(e)n	(e)n	”(e)	(e)
dat/pl	(e)n	(e)n	”(e)n	(e)n
gen/pl	(e)n	(e)n	”(e)	(e)

Note:

- (i) On this view, /s/-plurals do not belong to the core system of German noun inflection.
- (ii) ”x means that x has a floating Umlaut feature.

Observation:

- (i) Gender features on the stem do not suffice to predict inflection class ($N_{[masc]}$ can be I, II, IV, or V; $N_{[fem]}$ can be VI, VII, or VIII; $N_{[neut]}$ can be I or III).
- (ii) Phonological features on the stem do not suffice to predict inflection class.
- (iii) Semantic features on the stem do not suffice to predict inflection class (e.g., not all members of V (weak masculines) are $N_{[anim]}$, and not all masculine $N_{[anim]}$ stems are in V.)

2.3.2. Analysis

T_{15} : Syncretism within and across inflection classes in German

	I _{m,n}	II _m	III _{n,m}	IV _{m,n}	V _m	VI _f	VII _f	VIII _f
nom/sg	∅	∅	∅	∅	∅	∅	∅	∅
acc/sg	∅	∅	∅	∅	(e)n	∅	∅	∅
dat/sg	∅	∅	∅	∅	(e)n	∅	∅	∅
gen/sg	(e)s	(e)s	(e)s	(e)s	(e)n	∅	∅	∅
nom/pl	(e)	”(e)	”er	(e)n	(e)n	(e)n	”(e)	(e)
acc/pl	(e)	”(e)	”er	(e)n	(e)n	(e)n	”(e)	(e)
dat/pl	(e)n	”(e)n	”ern	(e)n	(e)n	(e)n	”(e)n	(e)n
gen/pl	(e)	”(e)	”er	(e)n	(e)n	(e)n	”(e)	(e)

(15) *Decomposition of cases in German*: [\pm subject], [\pm governed], [\pm oblique]

nominative: [+subj, -gov, -obl]

accusative: [-subj, +gov, -obl]

dative: [-subj, +gov, +obl]

genitive: [+subj, +gov, +obl]

(16) *Decomposition of inflection classes in German*: [$\pm\alpha$], [$\pm\beta$], [$\pm\gamma$]

I: [+ α , - β , + γ]

Hund_m (‘dog’), *Schaf_n* (‘sheep’)

II: [+ α , - β , - γ]

Baum_m (‘tree’), *Nagel_m* (‘nail’)

III: [+ α , + β , + γ]

Buch_n (‘book’), *Kalb_n* (‘calf’), *Mann_m* (‘man’)

IV: [+ α , + β , - γ]

Strahl_m (‘ray’), *Auge_n* (‘eye’)

V: [- α , + β , + γ]

Planet_m (‘planet’), *Bote_m* (‘messenger’)

VI: [- α , + β , - γ]

Ziege_f (‘goat’)

VII: [- α , - β , - γ]

Maus_f (‘mouse’)

VIII: [- α , - β , + γ]

Drangsal_f (‘distress’), *Finsternis_f* (‘darkness’)

(17) *Inflection markers (singular)*:

1. /**(e)n**/:

{[+N], [- α , + β , + γ], [+gov]}

2. /**(e)s**/:

{[+N], [+ α], [+subj, +gov, +obl]}

3. /**∅**/:

{[+N]}

T_{16} : The interaction of inflection markers in the singular in German

	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	/∅/ ³	/∅/ ³	/∅/ ³	/∅/ ³	/∅/ ³	/∅/ ³	/∅/ ³	/∅/ ³
acc/sg	/∅/ ³	/∅/ ³	/∅/ ³	/∅/ ³	/ (e)n / ¹ (/∅/ ³)	/∅/ ³	/∅/ ³	/∅/ ³
dat/sg	/∅/ ³	/∅/ ³	/∅/ ³	/∅/ ³	/ (e)n / ¹ (/∅/ ³)	/∅/ ³	/∅/ ³	/∅/ ³
gen/sg	/ (e)s / ² (/∅/ ³)	/ (e)s / ² (/∅/ ³)	/ (e)s / ² (/∅/ ³)	/ (e)s / ² (/∅/ ³)	/ (e)n / ¹ (/∅/ ³)	/∅/ ³	/∅/ ³	/∅/ ³

(18) *Inflection markers (plural):*

- | | |
|--------------------------|---|
| 1. / ^o ern/: | {[+N],[+pl],[+α,+β,+γ],[−subj,+gov,+obl]} |
| 2. / ^o er/: | {[+N],[+pl],[+α,+β,+γ]} |
| 3. /(e)n/: | {[+N],[+pl],[−β,+γ],[−subj,+gov,+obl]} |
| 4. / ^o (e)n/: | {[+N],[+pl],[−β,−γ],[−subj,+gov,+obl]} |
| 5. /(e)/: | {[+N],[+pl],[−β,+γ]} |
| 6. / ^o (e)/: | {[+N],[+pl],[−β,−γ]} |
| 7. /(e)n/: | {[+N],[+pl],[+β]} |

T₁₇: The interaction of inflection markers in the plural in German

	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	/(e) ⁵	/ ^o (e) ⁶	/ ^o er ² (/(e n) ⁷)	/(e n) ⁷	/(e n) ⁷	/(e n) ⁷	/ ^o (e) ⁶	/(e) ⁵
acc/pl	/(e) ⁵	/ ^o (e) ⁶	/ ^o er ² (/(e n) ⁷)	/(e n) ⁷	/(e n) ⁷	/(e n) ⁷	/ ^o (e) ⁶	/(e) ⁵
dat/pl	/(e n) ³ (/e) ⁵	/ ^o (e n) ⁴ (/ ^o e) ⁶	/ ^o ern ¹ (/ ^o er ² , /(e)n ⁷)	/(e n) ⁷	/(e n) ⁷	/(e n) ⁷	/ ^o (e n) ⁴ (/ ^o e) ⁶	/(e n) ³ (/e) ⁵
gen/pl	/(e) ⁵	/ ^o (e) ⁶	/ ^o er ² (/(e n) ⁷)	/(e n) ⁷	/(e n) ⁷	/(e n) ⁷	/ ^o (e) ⁶	/(e) ⁵

3. Class Features in Syntax

3.1. Class Marker Phrases

Claim in Bernstein (1993):

Class markers have a syntactic reflex (see Haegeman (1998) for a generalisation of this proposal).

Assumption:

Languages that provide the morphological evidence for class markers, e.g., Spanish (Harris (1991)), have a functional projection in the DP, associated with them in addition to DP and NumP, namely CMP.

(19) [DP [NumP [CMP [NP]]]]

Note:

According to Bernstein, these languages

- (a) are characterized by the presence of head movement within the DP and
- (b) exhibit indefinite noun ellipsis.

(20) *Evidence:*

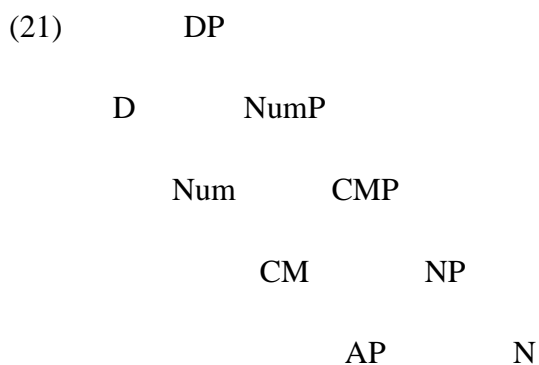
- a. la muchacha americana
the girl american

T₁₈: *Inflection markers in Spanish* (from Aronoff (1994, 67)):

Marker	Class	Gender	Example	Gloss
/o/	I	masc	<i>muchacho</i>	'boy'
/o/	I	fem	<i>mano</i>	'hand'
/a/	II	masc	<i>dia</i>	'day'
/a/	II	fem	<i>muchacha</i>	'girl'
/∅/	III	masc	<i>Cid</i>	'Cid'
/∅/	III	fem	<i>sed</i>	'thirst'
/∅/ (e inserted)	III	masc	<i>padre</i>	'father'
/∅/ (e inserted)	III	fem	<i>madre</i>	'mother'

- b. uno pequeño
 - a small (one)
- c. a red ball/*a ball red
- d. *a small

Assuming that both in English and Spanish adjectives are located in the specifier of NP (Cinque (1993)), in the Spanish example (20-a) the head noun moves from its base position to a higher head in the functional domain, while it remains in its base position in English:



Note:

Bernstein attributes this difference to the presence of class markers in Spanish, as opposed to their absence in English.

3.2. Problems for Bernstein's Correlation

Class features are not syntactically active (Alexiadou et al. (2001)).

First problem:

There are languages that exhibit N-movement and indefinite noun ellipsis in the absence of distinct class markers.

Observation 1:

French is similar to Spanish, although its noun morphology differs from that of Spanish

considerably, i.e., it has no obvious class markers.

(22) *N-movement and N-ellipsis in French:*

Un cube rouge est sur le coin gauche de cette table. Un bleu
a cube red is on the left corner of this table, a blue (one)
est sur le coin droit
is on the right corner

Observation 2:

Italian is similar to Spanish, although it is not immediately transparent whether the language has class markers (see Bernstein (1993)):

(23) *N-movement and N-ellipsis in Italian:*

- a. uno libro grande
a book big
- b. uno grande
a big one

Second problem:

There are languages that lack N-movement in the presence of inflection class distinctions (although they have no system of nominal class markers comparable to that of Spanish).

Observation 1:

Greek has class-driven noun inflection (see previous section). However, no noun movement seems to take place, given that the head noun always follows adjectives. (N-ellipsis is possible.)

(24) *No N-movement in Greek:*

- a. *to spiti meghalo/paljo/oreo
the house big/old/nice
- b. to meghalo/paljo/oreo spiti
- c. i amerikanid-a ginek-a
the_{fem.sg.nom} American_{fem.sg.nom} woman_{fem.sg.nom}

(25) *N-ellipsis in Greek:*

I Maria tha agorasi ena prasino vivlio ki ego ena kokino
Mary_{nom} fut buy-3sg a green book and I a red (one)
'Mary will buy a green book and I a red one'

Observation 2:

Russian permits indefinite N-ellipsis. N-A order is also possible. However, it may not involve head movement but (remnant) NP scrambling. The reason is that N may end up in front of numerals (Franks (1995)), determiners, and even outside the DP.

(26) *N-movement in Russian:*

- a. Éto vopros složnyj
this is question_{nom} complicated_{nom}

- b. My tam žili goda dva
we there lived year_{gen} two
- c. Razgovor étot ja načal naročno
conversation this I began intentionally
- d. Čelovek on neploxo
person he is not bad

(27) *N-ellipsis in Russian:*

U menja bol'saja mašina a u nego malen'kaja
with me big car and with him small (one)

Observation 3:

German has N-ellipsis, but no N-movement.

(28) *No N-movement in German:*

Er hat ein neues Buch/*Buch neues gekauft
he has a new book/ book new bought

(29) *N-ellipsis in German:*

Er hat ein neues gekauft
he has a new bought

Third problem:

There are languages that lack inflection class distinctions but show evidence for head movement, and indefinite noun ellipsis. Hebrew is a case in point (Danon (1996), Ritter (1991)).

(30) *N-movement in Hebrew (Ritter (1991)):*

- a. ha smalot ha yapot
the dresses the nice
- b. beyt ha-'is
house the-man

(31) *Ellipsis in Hebrew:*

rašti slova praxim ?adumim ve ?arba?a sgulim
(I) saw three flowers red and four purple

Table T₁₉ summarizes this distribution.

T₁₉: *Distribution of class features, ellipsis, and NA order:*

<i>Language</i>	<i>Indefinite Ellipsis</i>	<i>NA Order</i>	<i>Inflection Class</i>
Spanish	+	+	+
French	+	+	?
Italian	+	+	?
Greek	+	–	+
Russian	+	?	+
German	+	–	+
Hebrew	+	+	–

3.3. General Considerations

Observation:

Verbs do not impose inflection class restrictions on their arguments.

Note:

There is no verb-subject agreement with respect to inflection class. In fact there is even no noun-adjective agreement with respect to inflection class.

(32) *No inflection class agreement in Spanish.*

- a. la chica inteligente
the girl intelligent
- b. el chico inteligente
the boy intelligent

Conclusion:

Syntax cannot interpret class features. Class features are necessary in morphology but uninterpretable in syntax.

(33) *Legibility Condition* (Chomsky (2000), Chomsky (2001)):

Morpho-syntactic features can be present in some component of grammar only if they are interpretable in this component.

Further conclusion, given the Legibility Condition:

Class features are absent in syntax.

4. Proposal

Note:

Features that are uninterpretable at LF must be deleted in syntax, and they can be deleted by participating in an Agree operation. Agree applies under matching of a probe and a goal if both involve uninterpretable features (and may be accompanied by Merge (movement)).

Proposal:

Class features act as probes in morphology.

Assumption:

- (i) Agree operates in syntax to remove LF-uninterpretable features before LF is reached.
- (ii) Agree operates in morphology to remove syntactically uninterpretable features before syntax is reached.

(34) *Components of Grammar:*

Lexicon → Morphology → Syntax → PF, LF

- a. Lexicon: list of exceptions
- b. Morphology: probe-driven Agree (= fusional inflection), pure (selection-driven)
Merge (perhaps incl. derivational morphology)

- c. Syntax: probe-driven Agree (incl. movement), pure (selection-driven) Merge (perhaps incl. derivational morphology, see below)

(35) *Fusional noun inflection:*

- a. The noun stem is taken from the lexicon with its inherent features (incl. class, gender features).
- b. Non-inherent features (incl. fully specified case and number features) are added in morphology.
- c. A class feature on the noun stem acts as a probe and requires an Agree operation resulting in Merge with an inflection marker (the goal).
- d. All of an inflection marker's features (including – often underspecified – class and Case features) are inherent.
- e. The inflection marker determined by the Subset Principle is selected from the lexicon and merged with the noun stem, resulting in Agree.
- f. The class feature of the noun stem, and all morpho-syntactic features of the inflection marker, are deleted in morphology.
- g. The inflected noun enters syntax, bearing only fully specified and syntactically interpretable morpho-syntactic features.

Note on (35-f):

Underspecified inflection markers give rise to a well-known problem: Syntax needs fully specified Case information, not the underspecified Case information provided by inflection markers. This problem does not arise if the morpho-syntactic features of an inflection marker are automatically deleted by an inflection operation.

(36) *Fusional noun inflection as class-feature-driven Agree:*

- a. /tetrad'/ ('notebook') – /i/
 [+N, –anim, –pl, {–α, –γ}, {–subj, +gov, +obl}] [+N, {–α}, {+obl}]
- b. /komnat/ ('room') – /u/
 [+N, –bel, –pl, {–α, +γ}, {–subj, +gov, –obl}] [+N, {–subj, +gov}]

Side remark:

In the terminology of Stump (2001), the present approach qualifies as “realizational”: despite being a lexical item with morpho-syntactic features, an inflection marker does not actually contribute any morpho-syntactic information to the noun that it combines with.

Observation 1:

By assimilating inflection and syntactic operations, the Subset Principle can in fact be dispensed with in favour of Chomsky's (2001) principle *Maximize Matching Effects* (given that it is sensitive to the hierarchy of features in (7)).

(37) *Specificity as Maximize Matching Effects:*

- a. /tetrad'/ – /i/
 [+N, –bel, –pl, {–α, –γ}, {–subj, +gov, +obl}] [+N, {–α}, {+obl}]
- b. /tetrad'/ – /u/
 [+N, –bel, –pl, {–α, –γ}, {–subj, +gov, +obl}] [+N, {–subj, +gov}]

- c. /tetrad'/ - /a/
 [+N, -bel, -pl, {~~-α~~, ~~-γ~~}, {-subj, +gov, +obl}] [+N]

Observation 2:

The approach also offers a straightforward account of indeclinable noun stems in Greek and Russian for which separate inflection classes have often been stipulated; see, e.g., *reporter_m* ('reporter'), *plaz_f* ('beach') in Greek, *buržua_m* ('bourgeois'), *kofe_m* ('coffee') in Russian. These noun stems simply lack a class feature – hence, a probe that might trigger inflection.

5. Further Issues

5.1. The Timing of Inflection

Note:

Class features are needed in morphology to account for noun inflection markers Russian, Greek, and German. A priori, there are three possibilities concerning the timing of inflection:

- (38) a. Noun inflection applies pre-syntactically.
 b. Noun inflection applies in the syntax.
 c. Noun inflection applies post-syntactically.

Given that there is reason to assume that class features are absent in syntax, we have suggested a pre-syntactic approach to noun inflection where class features are deleted before the noun enters syntax. What about the alternatives?

1. Inner-syntactic approaches:

Class features trigger inflection in the syntax; however, a class feature that shows up in the syntax is incompatible with the Legibility Condition.

2. Post-syntactic approaches (as in Distributed Morphology; see Halle and Marantz (1993), Harley and Noyer (1999)):

There are two possibilities:

- (i) Class features trigger inflection post-syntactically; but they are present in syntax already. Then, the same problem as with 1. arises: At the point where a late insertion approach needs a class feature, the Legibility Condition has long forced its deletion.
 (ii) Class features trigger inflection post-syntactically; they are not present in syntax, but enter the derivation after syntax (Embick (2000)), perhaps by a dissociation operation (Embick (1998)). They might then act as probes in a post-syntactic morphology and undergo deletion before PF is reached. Such an approach may at first sight seem to be able to accommodate the gist of our proposal. However, it invariably violates the Inclusiveness Condition.

Conclusion:

A pre-syntactic approach is compatible with both the Legibility Condition and the Inclusiveness Condition; inner- and post-syntactic approaches are not.

5.2. The Status of Derivational Morphology

Ad (34):

Siloni (1997) (see Chomsky (1970), Wasow (1977)):

lexical (pre-syntactic) vs. syntactic nominalization

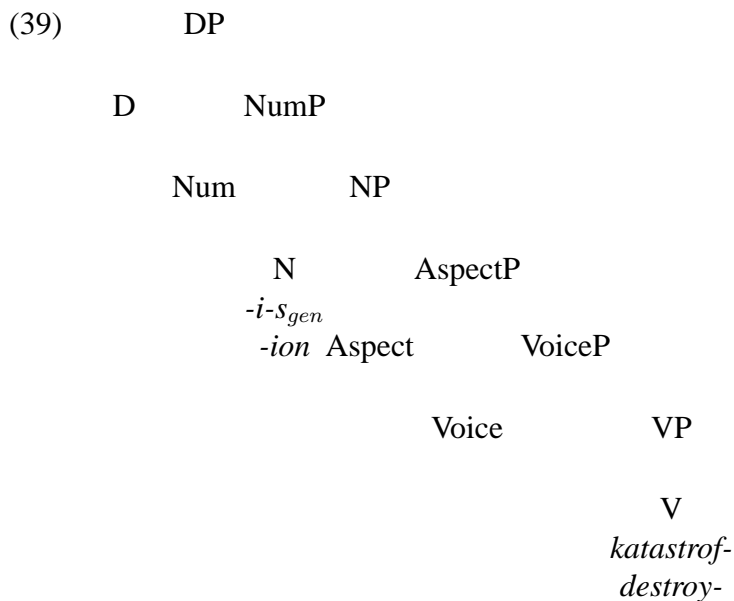
(i) Hebrew event nominalizations → lexical

(ii) Hebrew gerunds → syntactic

On such accounts, correlation of properties is argued to favor nominalization in two different places. But:

Note:

A pre-syntactic approach to noun inflection does not necessarily imply that all nominal derivational morphology also has to apply before syntax; it may also apply in the syntax, via head movement to an inflected head (Borer (2000), Alexiadou (2001)). For instance, nominalization may well involve syntactic head movement of V to N, as in (39); however, N is already inflected.



References

- Alexiadou, Artemis (2001): *Functional Structure in Nominals*. Benjamins, Amsterdam.
- Alexiadou, Artemis (2002): Inflectional Class, Gender, and DP Internal Structure. Ms., Universität Stuttgart. To appear in L. Gunkel, G. Müller and G. Zifonun, eds., *Explorations in Nominal Inflection*. Berlin: Mouton de Gruyter.
- Alexiadou, Artemis, Liliane Haegeman and Melitta Stavrou (2001): On Nominal Functional Projections: Noun Morphology, Movement and Ellipsis. In: *Proceedings of the Annual Conference of the Israel Association for Theoretical Linguistics*. Vol. 16, pp. 1–8.
- Aronoff, Mark (1994): *Morphology by Itself*. MIT Press, Cambridge, Mass.
- Babiniotis, George (1986): *Brief History of the Greek Language*. Athens University Press, Athens.
- Bernstein, Judy (1993): Topics in the Syntax of Nominal Structure across Romance. PhD thesis, CUNY.
- Bierwisch, Manfred (1967): Syntactic Features in Morphology: General Problems of So-Called Pronominal Inflection in German. In: *To Honour Roman Jakobson*. Mouton, The Hague/Paris, pp. 239–270.
- Blevins, James (2000): Markedness and Blocking in German Declensional Paradigms. In: B. Stiebels and D. Wunderlich, eds., *Lexicon in Focus*. Akademie-Verlag, Berlin.
- Bobaljik, Jonathan (2002): Syncretism without Paradigms: Remarks on Williams 1981, 1994. In: G. Booij and J. van Marle, eds., *Yearbook of Morphology 2001*. Kluwer, Dordrecht, pp. 53–85.
- Borer, Hagit (2000): Exo-Skeletal vs. Endo-Skeletal Explanations: Syntactic Projections and the Lexicon. Ms., USC. Presented at the UC San Diego conference Explanation in Linguistics, December 1999.
- Carstairs, Andrew (1987): *Allomorphy in Inflection*. Croom Helm, London.
- Chomsky, Noam (1970): Remarks on Nominalization. In: R. Jacobs and P. Rosenbaum, eds., *Readings in English Transformational Grammar*. Ginn and Company, Waltham, Mass., pp. 184–221.
- Chomsky, Noam (2000): Minimalist Inquiries: The Framework. In: R. Martin, D. Michaels and J. Uriagereka, eds., *Step by Step*. MIT Press, Cambridge, Mass., pp. 89–155.
- Chomsky, Noam (2001): Derivation by Phase. In: M. Kenstowicz, ed., *Ken Hale. A Life in Language*. MIT Press, Cambridge, Mass., pp. 1–52.
- Chomsky, Noam and Morris Halle (1968): *The Sound Pattern of English*. MIT Press, Cambridge, Mass.
- Cinque, Guglielmo (1993): On the Evidence for Partial N-Movement in the Romance DP, *University of Venice Working Papers in Linguistics* 3.2, 21–40.
- Corbett, Greville and Norman Fraser (1993): Network Morphology: A DATR Account of Russian Nominal Inflection, *Journal of Linguistics* 29, 113–142.
- Danon, Gabi (1996): The Syntax of Determiners in Hebrew. Master's thesis, Tel-Aviv University.

- Eisenberg, Peter (2000): *Grundriß der deutschen Grammatik. Band 1: Das Wort*. Metzler, Stuttgart.
- Embick, David (1998): Voice Systems and the Syntax/Morphology Interface. In: H. Harley, ed., *Papers from the UPenn/MIT Roundtable on Argument Structure and Aspect*. Vol. 32, MITWPL, Cambridge, Mass., pp. 41–72.
- Embick, David (2000): Features, Syntax, and Categories in the Latin Perfect, *Linguistic Inquiry* 31, 185–230.
- Franks, Steven (1995): *Parameters of Slavic Morphosyntax*. Oxford University Press, New York and Oxford.
- Fraser, Norman and Greville Corbett (1994): Gender, Animacy, and Declensional Class Assignment: A Unified Account for Russian. In: G. Booij and J. van Marle, eds., *Yearbook of Morphology 1994*. Kluwer, Dordrecht, pp. 123–150.
- Gunkel, Lutz (2002): Syncretism and Case Underspecification in Polish Noun Paradigms. Ms., IDS Mannheim. To appear in L. Gunkel, G. Müller and G. Zifonun, eds., *Explorations in Nominal Inflection*. Berlin: Mouton de Gruyter.
- Haegeman, Liliane (1998): Gender and Word Markers in West Flemish. Ms., University of Lille.
- Halle, Morris (1994): The Russian Declension: An Illustration of the Theory of Distributed Morphology. In: J. Cole and C. Kisseberth, eds., *Perspectives in Phonology*. CSLI Publications, Stanford, pp. 29–60.
- Halle, Morris (1997): Distributed Morphology: Impoverishment and Fission. In: B. Bruening, Y. Kang and M. McGinnis, eds., *Papers at the Interface*. Vol. 30, MITWPL, pp. 425–449.
- Halle, Morris and Alec Marantz (1993): Distributed Morphology and the Pieces of Inflection. In: K. Hale and S. J. Keyser, eds., *The View from Building 20*. MIT Press, Cambridge, Mass., pp. 111–176.
- Harley, Heidi (1994): Hug a Tree: Deriving the Morphosyntactic Feature Hierarchy. In: A. Carnie and H. Harley, eds., *MITWPL 21: Papers on Phonology and Morphology*. MITWPL, Cambridge, Mass., pp. 275–288.
- Harley, Heidi and Rolf Noyer (1999): Distributed Morphology, *GLOT International* 4/4, 3–9.
- Harris, James (1991): The Exponence of Gender in Spanish, *Linguistic Inquiry* 22, 27–62.
- Jakobson, Roman (1962a): Beitrag zur allgemeinen Kasuslehre. Gesamtbedeutungen der russischen Kasus. In: *Selected Writings*. Vol. 2, Mouton, The Hague and Paris, pp. 23–71.
- Jakobson, Roman (1962b): Morfologičeskije Nabljudenija. In: *Selected Writings*. Vol. 2, Mouton, The Hague and Paris, pp. 154–181.
- Johnston, Jason (1996): Systematic Homonymy and the Structure of Morphological Categories. PhD thesis, University of Sydney.
- Kiparsky, Paul (1973): ‘Elsewhere’ in Phonology. In: S. Anderson and P. Kiparsky, eds., *A Festschrift for Morris Halle*. Academic Press, New York, pp. 93–106.
- Lumsden, John (1992): Underspecification in Grammatical and Natural Gender, *Linguistic Inquiry* 23, 469–486.

- Mackridge, Peter (1985): *Modern Greek*. Clarendon Press, Oxford.
- Massuet, Isabel Oltra (1999): On the Notion of Theme Vowel: A New Approach to Catalan Verbal Morphology. Master of science thesis, MIT, Cambridge, Mass.
- McCreight, Katherine and 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 (2002): Remarks on Nominal Inflection in German. In: I. Kaufmann and B. Stiebels, eds., *More than Words: A Festschrift for Dieter Wunderlich*. Akademie Verlag, Berlin, pp. 113–145.
- Müller, Gereon (2003): On Decomposing Inflection Class Features: Syncretism in Russian Noun Inflection. Ms., IDS Mannheim. To appear in L. Gunkel, G. Müller and G. Zifonun, eds., *Explorations in Nominal Inflection*. Berlin: Mouton de Gruyter.
- Neidle, Carol (1988): *The Role of Case in Russian Syntax*. Kluwer, Dordrecht.
- Noyer, Rolf (1992): Features, Positions, and Affixes in Autonomous Morphological Structure. PhD 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.
- Ritter, Elizabeth (1991): Two Functional Categories in Noun Phrases: Evidence from Modern Hebrew. In: S. Rothstein, ed., *Syntax and Semantics*. Vol. 26, Academic Press, San Diego, pp. 37–62.
- Ruge, Hans (1986): *Grammatik des Neugriechischen*. Romiosini, Köln.
- Siloni, Tal (1997): *Noun Phrases and Nominalizations*. Kluwer, Dordrecht.
- Sternefeld, Wolfgang (2003): Feature Checking and Case Agreement in German DPs. Ms., Universität Tübingen. To appear in L. Gunkel, G. Müller and G. Zifonun, eds., *Explorations in Nominal Inflection*. Berlin: Mouton de Gruyter.
- Stump, Gregory (2001): *Inflectional Morphology*. Cambridge University Press, Cambridge.
- Wasow, Tom (1977): Transformations and the Lexicon. In: P. Culicover, T. Wasow and A. Akmajian, eds., *Formal Syntax*. Academic Press, New York.
- Wiese, Bernd (1999): Unterspezifizierte Paradigmen. Form und Funktion in der pronominalen Deklination, *Linguistik Online* 4.
- Wiese, Bernd (2000): Warum Flexionsklassen? Über die deutsche Substantivdeklination. In: R. Thieroff, M. Tamrat, N. Fuhrhop and O. Teuber, eds., *Deutsche Grammatik in Theorie und Praxis*. Niemeyer, Tübingen, pp. 139–153.
- Wiese, Bernd (2001): Paradigmen aus formbezogener Sicht. Handout, IDS Mannheim.
- Wiese, Bernd (2003): Some Cases of Case Syncretism. Ms., IDS Mannheim. To appear in L. Gunkel, G. Müller and G. Zifonun, eds., *Explorations in Nominal Inflection*. Berlin: Mouton de Gruyter.
- Williams, Edwin (1994): Remarks on Lexical Knowledge, *Lingua* 92, 7–34.

- Wunderlich, Dieter (1996): Minimalist Morphology: The Role of Paradigms. In: G. Booij and J. van Marle, eds., *Yearbook of Morphology 1995*. Kluwer, Dordrecht, pp. 93–114.
- Wunderlich, Dieter (2002): Is There Any Need for the Concept of Directional Syncretism?. Ms., Universität Düsseldorf. To appear in L. Gunkel, G. Müller and G. Zifonun, eds., *Explorations in Nominal Inflection*. Berlin: Mouton de Gruyter.
- Wurzel, Wolfgang Ullrich (1984): *Flexionsmorphologie und Natürlichkeit*. Akademie Verlag, Berlin.
- Zifonun, Gisela (2002): Aspekte deutscher Reflexivkonstruktionen im europäischen Vergleich: Pronominale Paradigmen und NP-interne Reflexiva. Ms., IDS Mannheim. To appear in L. Gunkel, G. Müller and G. Zifonun, eds., *Arbeiten zur Reflexivierung*, Tübingen: Narr.
- Zwicky, Arnold (1985): How to Describe Inflection. In: M. Niepokuj, M. V. Clay, V. Nikiforidou and D. Feder, eds., *Proceedings of the 11th Annual Meeting of the Berkeley Linguistics Society*. BLS, Berkeley, University of California, pp. 372–386.
- Zwicky, Arnold (1991): Systematic versus Accidental Phonological Identity. In: F. Plank, ed., *Paradigms: The Economy of Inflection*. Mouton de Gruyter, pp. 113–132.

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