Syncretism in Optimality Theory
Underspecification vs. Leading Forms

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(1) Determiner inflection in German

dies 'this'	MASC.SG	NEUTER.SG	FEMININE.SG	PLURAL
NOMINATIVE	er	es	e	e
ACCUSATIVE	en	es	e	e
DATIVE	em	em	er	en
GENITIVE	es	es	er	er

(2) Subset Principle
A vocabulary item V is inserted into a functional morpheme M iff (i) and (ii) hold:
(i) The morpho-syntactic features of V are a subset of the morpho-syntactic features of M.
(ii) V is the most specific vocabulary item that satisfies (i).

(3) Specificity of vocabulary items
A vocabulary item V_i is more specific than a vocabulary item V_j iff there is a class of features $\mathbb{F}$ such that (i) and (ii) hold.
(i) V_i bears more features belonging to $\mathbb{F}$ than V_j does.
(ii) There is no higher-ranked class of features $\mathbb{F}'$ such that V_i and V_j have a different number of features in $\mathbb{F}'$.

(4) Feature Decomposition (Bierwisch (1967), Wiese (1999)):

a. Case

NOM:	[–obl,–gov]
ACC:	[–obl,+gov]
DAT:	[+obl,+gov]
GEN:	[+obl,–gov]

b. Gender/Number

MASC:	[+masc,–fem]
FEM:	[–masc,+fem]
NEUT:	[+masc,+fem]
PL:	[–masc,–fem]

(5)

a.	[+masc,+obl,+gov] ↔ /m/[1]	(dat.masc.sg./neut.sg.)
b.	[+masc,+obl] ↔ /s/[2]	(gen.masc.sg./neut.sg.)
c.	[+masc,+fem] ↔ /s/[3]	(nom./acc.neut.sg.)
d.	[+masc,+gov] ↔ /n/[4]	(acc.masc.sg.)
e.	[+masc] ↔ /r/[5]	(nom.masc.sg.)
f.	[+obl,+fem] ↔ /r/[6]	(dat./gen.fem.sg.)
g.	[+obl,+gov] ↔ /n/[7]	(dat.pl.)
h.	[+obl] ↔ /r/[8]	(gen.pl.)
i.	[ ] ↔ /e/[9]	(nom./acc.fem.sg./pl.)

(6) [+masc] > [+obl] > [+fem] > [+gov].

(7) Competition of exponents

dies	MASC.SG	NEUT.SG	FEM.SG	PL.
NOM	$\underline{r}^5$, e^9	$\underline{s}^3$, r^5, e^9	$\underline{e}^9$	$\underline{e}^9$
ACC	$\underline{n}^4$, r^5, e^9	$\underline{s}^3$, n^4, r^5, e^9	$\underline{e}^9$	$\underline{e}^9$
DAT	$\underline{m}^1$, s^2, n^4, r^5, n^7, r^8, e^9	$\underline{m}^1$, s^2, s^3, n^4, r^5, r^6, n^7, r^8, e^9	$\underline{r}^6$, n^7, r^8, e^9	$\underline{n}^7$, r^8, e^9
GEN	$\underline{s}^2$, r^5, r^8, e^9	$\underline{s}^2$, s^3, r^5, r^6, r^8, e^9	$\underline{r}^6$, r^8, e^9	$\underline{r}^8$, e^9

Syncretism in Optimality Theory

1. Optimal Paradigms:
   McCarthy (2005)
2. Radically a-morphematic approaches:
   Müller (2002, 2007b), Carstairs-McCarthy (2007)
3. Rules of referral:
   Xu (2007)
4. Underspecification:
   Grimshaw (2001), Wunderlich (2001, 2004), Trommer (2001, 2003, 2006), Ortmann (2002), and Don & Blom (2006)

Basic Assumption

Claim (Itô et al. (1995), Artstein (1998), Bakovic (2003), Smolensky (2006)): Underspecification – and especially underspecification of inputs – is a dubious concept from an optimality-theoretic point of view; it is a tool that arguably belongs in a different model of grammar.

Towards a New Approach

Basic assumptions:

1. There is no underspecification of exponents.
2. Paradigms are epiphenomena (Bobaljik (2007)).
3. Not all members of a paradigm (exponents) are present in the input; only leadings forms are (see Wurzel (1984), Albright (2008) on somewhat related concepts).
4. A mismatch of paradigm cells and leadings forms gives rise to syncretism: Initial gaps are filled by using "wrong", i.e., unfaithful exponents (Weisser (2007)).
5. Mismatches between the exponent's specification and the target specification are minimized; this is not accomplished by a single Minimality condition (cf. the Nearest Neighbour Principle in Weisser (2007, 26), or the Minimality principle in Lahne (2007, 11)), but by a set of ranked faithfulness constraints for the features involved (as in Grimshaw (2001), Trommer (2001, 2006), Wunderlich (2004)).
6. Feature decomposition yielding natural classes is needed exactly as before.

(8) Determiner inflection in German

dies 'this'	MASC.SG	NEUTER.SG	FEMININE.SG	PLURAL
NOMINATIVE	r	s	e	e
ACCUSATIVE	n	s	e	e
DATIVE	m	m	r	n
GENITIVE	s	s	r	r

(9) Nine leading forms:

$/r/_1 \leftrightarrow$ [+masc,–fem,–gov,–obl]
$/n/_2 \leftrightarrow$ [+masc,–fem,+gov,–obl]
$/m/_3 \leftrightarrow$ [+masc,–fem,+gov,+obl]
$/s/_4 \leftrightarrow$ [+masc,–fem,–gov,+obl]
$/s/_5 \leftrightarrow$ [+masc,+fem,+gov,–obl]
$/e/_6 \leftrightarrow$ [–masc,+fem,–gov,–obl]
$/n/_7 \leftrightarrow$ [–masc,–fem,+gov,+obl]
$/r/_8 \leftrightarrow$ [–masc,+fem,–gov,+obl]
$/r/_9 \leftrightarrow$ [–masc,–fem,–gov,+obl]

(10) MATCH:
The morpho-syntactic features of stem and exponent are identical in the output.

(11) Faithfulness constraints for features on exponents

a. IDENTMASC:
[±masc] of the input must not be changed in the output on an exponent.

b. IDENTOBL:
[±obl] of the input must not be changed in the output on an exponent.

c. IDENTFEM:
[±fem] of the input must not be changed in the output on an exponent.

d. IDENTGOV:
[±gov] of the input must not be changed in the output on an exponent.

(12) Ranking:
IDENTMASC ≫ IDENTOBL ≫ IDENTFEM ≫ IDENTGOV

(13) Incomplete paradigm with leading forms only

dies ‘this’	MASC.SG	NEUTER.SG	FEMININE.SG	PLURAL
[–gov,–obl]	/r/$_1$		/e/$_6$	
[+gov,–obl]	/n/$_2$	/s/$_5$		
[+gov,+obl]	/m/$_3$			/n/$_7$
[–gov,+obl]	/s/$_4$		/r/$_8$	/r/$_9$

Tableau T_1: Nom.Neut.Sg. contexts

Input: dies ↔ [+masc,+fem,–gov,–obl], EXP	MATCH	IDENT MASC	IDENT OBL	IDENT FEM	IDENT GOV
O_1: dies-r_1 ↔ [+masc,–fem,–gov,–obl]				*!	
O_2: dies-n_2 ↔ [+masc,–fem,+gov,–obl]				*!	*
O_3: dies-m_3 ↔ [+masc,–fem,+gov,+obl]			*!	*	*
O_4: dies-s_4 ↔ [+masc,–fem,–gov,+obl]			*!	*	
☞ O_5: dies-s_5 ↔ [+masc,+fem,+gov,–obl]					*
O_6: dies-e_6 ↔ [–masc,+fem,–gov,–obl]		*!			
O_7: dies-n_7 ↔ [–masc,–fem,+gov,+obl]		*!	*	*	*
O_8: dies-r_8 ↔ [–masc,+fem,–gov,+obl]		*!	*		
O_9: dies-r_9 ↔ [–masc,–fem,–gov,+obl]		*!	*	*	
O_{10}: dies-r_1 ↔ [+masc,–fem,–gov,–obl]	*!				

Note: EXP is an abstract case exponent that stands for the set of possible (fully specified) exponents of the inventory (see RED in McCarthy & Prince (1994)).

Tableau T_2: Acc.Pl. contexts

Input: dies ↔ [–masc,–fem,+gov,–obl], Exp	Match	Ident Masc	Ident Obl	Ident Fem	Ident Gov
O_1: dies-r_1 ↔ [+masc,–fem,–gov,–obl]		*!			*
O_2: dies-n_2 ↔ [+masc,–fem,+gov,–obl]		*!			
O_3: dies-m_3 ↔ [+masc,–fem,+gov,+obl]		*!	*		
O_4: dies-s_4 ↔ [+masc,–fem,–gov,+obl]		*!	*		*
O_5: dies-s_5 ↔ [+masc,+fem,+gov,–obl]		*!		*	
☞ O_6: dies-e_6 ↔ [–masc,+fem,–gov,–obl]				*	*
O_7: dies-n_7 ↔ [–masc,–fem,+gov,+obl]			*!		
O_8: dies-r_8 ↔ [–masc,+fem,–gov,+obl]			*!	*	*
O_9: dies-r_9 ↔ [–masc,–fem,–gov,+obl]			*!		*
O_{10}: dies-r_1 ↔ [+masc,–fem,–gov,+obl]	*!				

Tableau T_3: Dat.Fem.Sg. contexts

Input: dies ↔ [–masc,+fem,+gov,+obl], Exp	Match	Ident Masc	Ident Obl	Ident Fem	Ident Gov
O_1: dies-r_1 ↔ [+masc,–fem,–gov,–obl]		*!	*	*	*
O_2: dies-n_2 ↔ [+masc,–fem,+gov,–obl]		*!	*	*	
O_3: dies-m_3 ↔ [+masc,–fem,+gov,+obl]		*!		*	
O_4: dies-s_4 ↔ [+masc,–fem,–gov,+obl]		*!		*	*
O_5: dies-s_5 ↔ [+masc,+fem,+gov,–obl]		*!	*		
O_6: dies-e_6 ↔ [–masc,+fem,–gov,–obl]			*!		*
O_7: dies-n_7 ↔ [–masc,–fem,+gov,+obl]				*!	
☞ O_8: dies-r_8 ↔ [–masc,+fem,–gov,+obl]					*
O_9: dies-r_9 ↔ [–masc,–fem,–gov,+obl]				*!	*
O_{10}: dies-r_1 ↔ [+masc,–fem,–gov,+obl]	*!				

(14) Complete paradigm with spreading of leading forms

dies ‘this’	MASC.SG [+masc,–fem]	NEUTER.SG [+masc,+fem]	FEMININE.SG [–masc,+fem]	PLURAL [–masc,–fem]
[–gov,–obl]	/r/$_1$	↑	/e/$_6$	→
[+gov,–obl]	/n/$_2$	/s/$_5$	↓	↘
[+gov,+obl]	/m/$_3$	→	↑	/n/$_7$
[–gov,+obl]	/s/$_4$	→	/r/$_8$	/r/$_9$

Original Underspecification-Based Analysis

(15) Italian Clitics

	1.SG	2.SG	3.SG	1.PL	2.PL	3.PL
ACC	mi	ti	lo/la	ci	vi	li/le
DAT	mi	ti	gli/le	ci	vi	–
ACC-REF	mi	ti	si	ci	vi	si
DAT-REF	mi	ti	si	ci	vi	si

(16) Lexical entries in the Italian clitic lexicon:

fully specified clitics			underspecified clitics		
lo	[–R 3 sg masc acc]	him/it	mi	[$\mathbb{R}$ 1 sg $\mathbb{G}$ $\mathbb{C}$]	(to) me(self)
la	[–R 3 sg fem acc]	her/it	ti	[$\mathbb{R}$ 2 sg $\mathbb{G}$ $\mathbb{C}$]	(to) you(self)
li	[–R 3 pl masc acc]	them (masc)	ci	[$\mathbb{R}$ 1 pl $\mathbb{G}$ $\mathbb{C}$]	(to) us(self)
le_1	[–R 3 pl fem acc]	them (fem)	vi	[$\mathbb{R}$ 2 pl $\mathbb{G}$ $\mathbb{C}$]	(to) you(self)
gli	[–R 3 sg masc dat]	to him/it	si	[+R $\mathbb{P}$ $\mathbb{N}$ $\mathbb{G}$ $\mathbb{C}$]	(to) you(self)
le_2	[–R 3 sg fem dat]	to her/it			

Tableau T_4: 2.Pl.Masc.Acc.Refl contexts

Input: [+R 2 pl masc acc]	Faith Pers	Faith Refl	Faith Num	Faith Gen	Faith Case
O_1: si ↔ [+R ℙ ℕ 𝔾 ℂ]	*!		*	*	*
☞ O_2: vi ↔ [ℝ 2 pl 𝔾 ℂ]		*		*	*
O_3: li ↔ [–R 3 pl masc acc]	*!	*			

Tableau T_5: 3.Pl.Masc.Acc.Refl contexts

Input: [+R 3 pl masc acc]	Fill Refl	Faith Pers	Parse Refl	Faith Num	Faith Gen	Faith Case
☞ O_1: si ↔ [+R ℙ ℕ 𝔾 ℂ]		*		*	*	*
O_2: vi ↔ [ℝ 2 pl 𝔾 ℂ]		*	*!		*	*
O_3: li ↔ [–R 3 pl masc acc]	*!					

Revised Analysis without Underspecification

(17) Leading forms in the Italian clitic lexicon, without underspecification:

lo	↔	[–refl,–1,–2,–pl,–fem,+gov,–obl]	him/it
la	↔	[–refl,–1,–2–pl ,+fem,+gov,–obl]	her/it
li	↔	[–refl,–1,–2,+pl,–fem,+gov,–obl]	them (,–,+fem)
le_1	↔	[–refl,–1,–2,+pl,+fem,+gov,–obl]	them (,+fem)
gli	↔	[–refl,–1,–2,–pl,–fem,+gov,+obl]	to him/it
le_2	↔	[–refl,–1,–2,–pl,+fem,+gov,+obl]	to her/it
mi	↔	[–refl,+1,–2,–pl,+fem,+gov,–obl]	(to) me(self)
ti	↔	[–refl,–1,+2,–pl,+fem,+gov,–obl]	(to) you(self)
ci	↔	[–refl,+1,–2,+pl,+fem,+gov,–obl]	(to) us(self)
vi	↔	[–refl,–1,+2,+pl,+fem,+gov,–obl]	(to) you(self)
si	↔	[+refl,–1,–2,–pl,+fem,+gov,–obl]	(to) you(self)

(18) Incomplete paradigm with leading forms only

	1.SG	2.SG	3.SG	1.PL	2.PL	3.PL
ACC	/mi/	/ti/	/lo/,/la/	/ci/	/vi/	/li/,/le/
DAT			/gli/, /le/			
ACC-REF			/si/			
DAT-REF						

Tableau T_6: 2.Pl.Masc.Acc.Refl contexts reconsidered

Input: Pron ↔ [+refl,–1,+2,+pl,–fem,+gov,–obl] Exp	Ident Pers	Ident Refl	Ident Num	Ident Gen	Ident Case
O_1: lo ↔ [–refl,–1,–2,–pl,–fem,+gov,–obl]	*!	*	*		
O_2: la ↔ [–refl,–1,–2,–pl,+fem,+gov,–obl]	*!	*	*	*	
O_3: li ↔ [–refl,–1,–2,+pl,–fem,+gov,–obl]	*!	*			
O_4: le_1 ↔ [–refl,–1,–2,+pl,+fem,+gov,–obl]	*!	*		*	
O_5: gli ↔ [–refl,–1,–2,–pl,–fem,+gov,+obl]	*!	*	*		*
O_6: le_2 ↔ [–refl,–1,–2,–pl,+fem,+gov,+obl]	*!	*	*	*	*
O_7: mi ↔ [–refl,+1,–2,–pl,+fem,+gov,–obl]	*!*	*	*	*	
O_8: ti ↔ [–refl,–1,+2,–pl,+fem,+gov,–obl]		*	*!		*
O_9: ci ↔ [–refl,+1,–2,+pl,+fem,+gov,–obl]	*!*	*		*	
☞ O_{10}: vi ↔ [–refl,–1,+2,+pl,+fem,+gov,–obl]		*		*	
O_{11}: si ↔ [+refl,–1,–2,–pl,+fem,+gov,–obl]	*!		*	*	

Tableau T_7: 3.Pl.Masc.Acc.Refl contexts reconsidered

Input: Pron ↔ [+refl,–1,–2,+pl,–fem,+gov,–obl] Exp	Ident Pers	Ident Refl	Ident Num	Ident Gen	Ident Case
O_1: lo ↔ [–refl,–1,–2,–pl,–fem,+gov,–obl]		*!	*		
O_2: la ↔ [–refl,–1,–2,–pl,+fem,+gov,–obl]		*!	*	*	
O_3: li ↔ [–refl,–1,–2,+pl,–fem,+gov,–obl]		*!			
O_4: le$_1$ ↔ [–refl,–1,–2,+pl,+fem,+gov,–obl]		*!		*	
O_5: gli ↔ [–refl,–1,–2,–pl,–fem,+gov,+obl]		*!	*		*
O_6: le$_2$ ↔ [–refl,–1,–2,–pl,+fem,+gov,+obl]		*!	*	*	*
O_7: mi ↔ [–refl,+1,–2,–pl,+fem,+gov,–obl]	*!	*	*	*	
O_8: ti ↔ [–refl,–1,+2,–pl,+fem,+gov,–obl]	*!	*	*	*	
O_9: ci ↔ [–refl,+1,–2,+pl, +fem,+gov,–obl]	*!	*		*	
O_{10}: vi ↔ [–refl,–1,+2,+pl, +fem,+gov,–obl]	*!	*		*	
☞ O_{11}: si ↔ [+refl,–1,–2,–pl, +fem,+gov,–obl]			*	*	

Tableau T_8: 1.Sg.Masc.Dat.Nonrefl contexts

Input: Pron ↔ [–refl,+1,–2,–pl,–fem,+gov,+obl] Exp	Ident Pers	Ident Refl	Ident Num	Ident Gen	Ident Case
O_1: lo ↔ [–refl,–1,–2,–pl,–fem,+gov,–obl]	*!				*
O_2: la ↔ [–refl,–1,–2,–pl,+fem,+gov,–obl]	*!			*	*
O_3: li ↔ [–refl,–1,–2,+pl,–fem,+gov,–obl]	*!		*		*
O_4: le$_1$ ↔ [–refl,–1,–2,+pl,+fem,+gov,–obl]	*!		*	*	*
O_5: gli ↔ [–refl,–1,–2,–pl,–fem,+gov,+obl]	*!				
O_6: le$_2$ ↔ [–refl,–1,–2,–pl,+fem,+gov,+obl]	*!			*	
☞ O_7: mi ↔ [–refl,+1,–2,–pl,+fem,+gov,–obl]				*	*
O_8: ti ↔ [–refl,–1,+2,–pl,+fem,+gov,–obl]	*!*			*	*
O_9: ci ↔ [–refl,+1,–2,+pl,+fem,+gov,–obl]			*!	*	*
O_{10}: vi ↔ [–refl,–1,+2,+pl,+fem,+gov,–obl]	*!*		*	*	*
O_{11}: si ↔ [+refl,–1,–2,–pl,+fem,+gov,–obl]	*!	*		*	*

Original Underspecification-Based Analysis

(19) Russian nouns with animacy split in forms that are used in accusative contexts

	inanimates				animates		
	class 2	class 3	class 1	class 4	class 2	class 3	class 1
	fem. ‘map’	fem. ‘door’	masc. ‘table’	neut. ‘word’	fem. ‘squirrel’	fem. ‘mother’	masc. ‘student’
N.sg.	kárt-a	dver’	stol	slov-o	bélk-a	mat’	studént
A.sg.	kárt-u	dver’	stol	slov-o	bélk-u	mat’	studént-a
G.sg.	kárt-y	dvér-i	stol-á	slov-á	bélk-i	máter-i	studént-a
N.pl.	kárt-y	dvér-i	stol-ý	slov-á	bélk-i	máter-i	studént-y
A.pl.	kárt-y	dvér-i	stol-ý	slov-á	bélok	máter-ej	studént-ov
G.pl.	kart	dver-éj	stol-óv	slov	bélok	máter-ej	studént-ov

(20) a. /-u/, $(+\text{hr})_V$ / a] — acc.sg (class 2)

b. /-y/, $(+\text{hr})_N$ / a] $\vee$ PAL] — gen.sg (class 2 & 3)

c. /-a/, +hr / C] $\vee$ o] — acc/gen.sg (class 1 & 4)

(21) Lexical entries for some Russian case affixes in the singular

<table>
<tr><td rowspan="2"></td><td colspan="3">inanimates</td><td colspan="3">animates</td></tr>
<tr><td>class 2</td><td>class 3</td><td>class 1</td><td>class 2</td><td>class 3</td><td>class 1</td></tr>
<tr><td></td><td>‘map’</td><td>‘door’</td><td>‘table’</td><td>‘squirrel’</td><td>‘mother’</td><td>‘student’</td></tr>
<tr><td>N.sg.</td><td>a]</td><td rowspan="2">PAL]</td><td rowspan="2"></td><td>a]</td><td rowspan="2">PAL]</td><td rowspan="2"></td></tr>
<tr><td>A.sg.</td><td>/-u/, (+hr)$_V$</td><td>/-u/, (+hr)$_V$</td></tr>
<tr><td>G.sg.</td><td colspan="2">/-y/, (+hr)$_N$</td><td>/-a/, +hr</td><td colspan="2">/-y/, (+hr)$_N$</td><td>/-a/, +hr</td></tr>
</table>

(22) a. *(+hr)/$_V$ inanim
b. MAX(+hr)
c. Ranking of the constraints:
*(+hr)/$_V$ inanim $\gg$ MAX(+hr) $\gg$ *(+hr)/$_V$ anim

(23) a. MAX(+hr)/ –pl, a]
b. SPECIFICITY
Choose the affix with the more specific selectional information.
c. COMPATIBILITY
Do not insert a form in a context in which the categorial specifications are incompatible.

(24) SPEC, COMP, MAX(+hr)/–pl, a] $\gg$ *(+hr)/$_V$ –anim $\gg$ MAX(+hr)

Tableau T_9: Accusative singular exponents with inanimate class 1 stems

	Spec | Comp | Max(+hr)/ –pl, a]	*(+hr)/*v* –anim	Max(+hr)
☞ stol			*
stol-a		*!	
stol-y	*!		

Tableau T_{10}: Accusative singular exponents with inanimate class 2 stems

	Spec | Comp | Max(+hr)/ –pl, a]	*(+hr)/*v* –anim	Max(+hr)
karta	*!		*
kart-y	*!		
☞ kart-u		*	

Tableau T_{11}: Accusative singular exponents with animate class 1 stems

	Spec | Comp | Max(+hr)/ –pl, a]	*(+hr)/v –anim	Max(+hr)
student			*!
☞ student-a			
student-y	*!		

Tableau T_{12}: Accusative singular exponents with animate class 3 stems

	SPEC	COMP	MAX(+hr)/ –pl, a]	*(+hr)/ V –anim	MAX(+hr)
☞ mat'					*
mater'-i		*!			

(25)	a.	/-y/, +pl	nom.pl (class 1,2 & 3)
	b.	/-a/, +pl/neuter	nom.pl (class 4)
	c.	C], +pl,+hr / a] $\vee$ o]	acc/gen.pl (class 2 & 4)
	d.	/-ej/, +pl,+hr / PAL]	acc/gen.pl (class 3)
	e.	/-ov/, +pl,+hr	acc/gen.pl (class 1)

Tableau T_{13}: Accusative plural exponents with inanimate class 2 stems

	Spec | Comp | Max(+hr)/ –pl, a]	*(+hr)/*v* –anim	Max(+hr)
☞ kart-y			*
kart-ov	*!	*	
kart		*!	

Tableau T_{14}: Accusative plural exponents with animate class 2 stems

	Spec	Comp	Max(+hr)/ –pl, a]	*(+hr)/*v* –anim	Max(+hr)
belk-i					*!
belk-ov	*!				
☞ belok					

Revised Analysis without Underspecification

(26) Feature decomposition of Russian cases and inflection classes:

a. Case

NOM:	[–obl,–gov,+subj]
ACC:	[–obl,+gov,–subj]
GEN:	[–obl,+gov,+subj]

b. Inflection class

CLASS 1:	[+a,–b]
CLASS 3:	[–a,–b]
CLASS 2:	[–a,+b]
CLASS 4:	[+a,+b]

(27) Leading forms in Russian noun inflection:

/u/ ↔ [–obl,+gov,–subj,–a,+b]
/y/ ↔ [–obl,+gov,+subj,–a,+b]
/a/$_1$ ↔ [–obl,+gov,+subj,+a,–b]
/Ø/ ↔ [–obl,–gov,+subj,+a,–b]
/a/$_2$ ↔ [–obl,–gov,+subj,–a,+b]

(28) Incomplete paradigm with leading forms only

	[+a,–b]	[–a,+b]
[–obl,–gov,+subj]	/Ø/	/a/
[–obl,+gov,–subj]		/u/
[–obl,+gov,+subj]	/a/	/y/

(29) *Gov/Inanim:
*[+gov]/__[–obl,–subj,–anim]

(30) IdentGov(Cl2,Sg):
[±gov] of the input must not be changed in the output of a stem in the context [–pl,–a,+b].

Tableau T_{15}: Animate accusative contexts, class 1 stems

Input: student ↔ [–obl,+gov,–subj,+a,–b,+anim], Exp	IdentGov (Cl2Sg)	*Gov Inanim	Ident Stem	Ident a,b	Ident Gov	Ident Obl	Ident Subj
O_1: stud.-u ↔ [–obl,+gov,–subj,–a,+b]				*!*			
O_2: stud.-y ↔ [–obl,+gov,+subj,–a,+b]				*!*			*
☞ O_3: stud.-a_1 ↔ [–obl,+gov,+subj,+a,–b]							*
O_4: stud.-Ø ↔ [–obl,–gov,+subj,+a,–b]					*!		*
O_5: stud.-a_2 ↔ [–obl,–gov,+subj,–a,+b]				*!*	*		*
O_6: stud.$_{[-\text{gov}]}$-u ↔ [–obl,+gov,–subj,–a,+b]			*!	**	*		
O_7: stud.$_{[-\text{gov}]}$-y ↔ [–obl,+gov,+subj,–a,+b]			*!	**	*		*
O_8: stud.$_{[-\text{gov}]}$-a_1 ↔ [–obl,+gov,+subj,+a,–b]			*!		*		*
O_9: stud.$_{[-\text{gov}]}$-Ø ↔ [–obl,–gov,+subj,+a,–b]			*!				*
O_{10}: stud.$_{[-\text{gov}]}$-a_2 ↔ [–obl,–gov,+subj,–a,+b]			*!	**			*

Tableau T_{16}: Inanimate accusative contexts, class 1 stems

Input: stol ↔ [–obl,+gov,–subj,+a,–b,–anim], Exp	IdentGov (Cl2Sg)	*Gov Inanim	Ident Stem	Ident a,b	Ident Gov	Ident Obl	Ident Subj
O_1: stol-u ↔ [–obl,+gov,–subj,–a,+b]		*!		**			
O_2: stol-y ↔ [–obl,+gov,+subj,–a,+b]		*!		**			*
O_3: stol-a_1 ↔ [–obl,+gov,+subj,+a,–b]		*!					*
O_4: stol-Ø ↔ [–obl,–gov,+subj,+a,–b]		*!			*		*
O_5: stol-a_2 ↔ [–obl,–gov,+subj,–a,+b]		*!		**	*		*
O_6: stol$_{[-\text{gov}]}$-u ↔ [–obl,+gov,–subj,–a,+b]			*	*!*	*		
O_7: stol$_{[-\text{gov}]}$-y ↔ [–obl,+gov,+subj,–a,+b]			*	*!*	*		*
O_8: stol$_{[-\text{gov}]}$-a_1 ↔ [–obl,+gov,+subj,+a,–b]			*		*!		*
☞ O_9: stol$_{[-\text{gov}]}$-Ø ↔ [–obl,–gov,+subj,+a,–b]			*				*
O_{10}: stol$_{[-\text{gov}]}$-a_2 ↔ [–obl,–gov,+subj,–a,+b]			*	*!*			*

Tableau T_{17}: Inanimate accusative contexts, class 2 stems

Input: kart ↔ [–obl,+gov,–subj,–a,+b,–anim], Exp	IdentGov (Cl2Sg)	*Gov Inanim	Ident Stem	Ident a,b	Ident Gov	Ident Obl	Ident Subj
☞ O_1: kart-u ↔ [–obl,+gov,–subj,–a,+b]		*					
O_2: kart-y ↔ [–obl,+gov,+subj,–a,+b]		*					*!
O_3: kart-a_1 ↔ [–obl,+gov,+subj,+a,–b]		*		*!*			*
O_4: kart-Ø ↔ [–obl,–gov,+subj,+a,–b]		*		*!*	*		*
O_5: kart-a_2 ↔ [–obl,–gov,+subj,–a,+b]		*			*!		*
O_6: $kart_{[-gov]}$-u ↔ [–obl,+gov,–subj,–a,+b]	*!				*		
O_7: $kart_{[-gov]}$-y ↔ [–obl,+gov,+subj,–a,+b]	*!				*		*
O_8: $kart_{[-gov]}$-a_1 ↔ [–obl,+gov,+subj,+a,–b]	*!			**	*		*
O_9: $kart_{[-gov]}$-Ø ↔ [–obl,–gov,+subj,+a,–b]	*!			**			*
O_{10}: $kart_{[-gov]}$-a_2 ↔ [–obl,–gov,+subj,–a,+b]	*!						*

Morphology without Underspecification

Underspecification-based approaches to syncretism (within optimality theory as well as outside of optimality theory) give rise to certain conceptual problems.

- The deep morphology/syntax asymmetry that necessarily arises as a result of morphological underspecification is an open problem: It is unclear why syntactic operations (e.g., agreement rules, or subcategorization/selection) can never access underspecified morpho-syntactic information.
- If there is no morphological underspecification to begin with, the problem of accounting for what is otherwise a curious asymmetry between morphology and syntax disappears.

Restrictiveness and Empirical Coverage

(31) Incomplete paradigm of German determiner inflection: a wrong prediction

dies 'this'	FEMININE.SG [–masc,+fem]	PLURAL [–masc,–fem]
[+gov,+obl]		/n/$_7$
[–gov,+obl]	/r/$_8$	

Tableau T_{18}: A wrong prediction for Gen.Pl. contexts if /r/$_9$ is not present

Input: dies ↔ [–masc,–fem,–gov,+obl], Exp	Match	Ident Masc	Ident Obl	Ident Fem	Ident Gov
☛ O_7: dies-n_7 ↔ [–masc,–fem,+gov,+obl]					*
O_8: dies-r_8 ↔ [–masc,+fem,–gov,+obl]				*!	

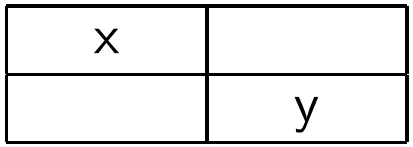
Tableau T_{19}: A wrong prediction for Dat.Fem.Sg. contexts under reranking

Input: dies ↔ [–masc,+fem,+gov,+obl], Exp	Match	Ident Masc	Ident Obl	Ident Gov	Ident Fem
☛ O_7: dies-n_7 ↔ [–masc,–fem,+gov,+obl]					*
O_8: dies-r_8 ↔ [–masc,+fem,–gov,+obl]				*!	

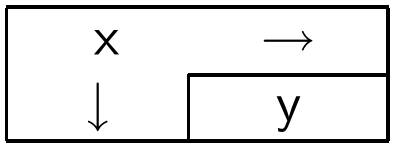
Tableau T_{20}: Correct prediction for Gen.Pl. contexts without /r/$_9$: contextual faithfulness

Input: dies ↔ [–masc,–fem,–gov,+obl], Exp	Match	Ident Masc	Ident Obl	Ident Gov([–fem])	Ident Fem	Ident Gov
O_7: dies-n$_7$ ↔ [–masc,–fem,+gov,+obl]				*!		*
☞ O_8: dies-r$_8$ ↔ [–masc,+fem,–gov,+obl]					*	

(32) a. Leading forms



b. Intended spreading



Bidirectional spreading:
It seems that in order to derive something like (32-b), contextual faithfulness is needed in the absence of radically underspecified elsewhere markers

An Obvious Challenge: Verb Inflection in English

(33)

	Singular	Plural
1	am	are
2	are	are
3	is	are

(34) Underspecification approach (Subset Principle; standard):

a. /am/ ↔ [–2,–pl]
b. /is/ ↔ [–1,–2,–pl]
c. /are/ ↔ [ ]

(35) Overspecification approach (Superset Principle; Starke (2006), Caha (2007, 2008)):

a. /am/ ↔ [pres,part]
b. /is/ ↔ [pres]
c. /are/ ↔ [pres,part,addr,group]

Even more interesting: /s/ vs. Ø with regular verbs.

Pertsova

Pertsova (2007) devises three learning algorithms for inflectional systems that differ with respect to the complexity of the systems that need to be acquired: The "No-Homonymy Learner" is the most restricted algorithm. It can only acquire systems where all instances of syncretism can be derived by reference to natural classes, without reference to elsewhere or default exponents; Pertsova calls an exponent a "homophone" or "homonym" in the technical sense if "its distribution cannot be described in terms of a single necessary and sufficient set of semantic values" (Pertsova (2007, 8)). A second, less restrictive "Elsewhere Learner" is an algorithm that can also acquire patterns that involve elsewhere exponents, and require a principled resolution of marker competitions, like the three-out-of-four distribution above. Finally, the least restrictive acquisition algorithm envisaged by Pertsova is the "General Homonymy Learner", which can also learn overlapping patterns of marker identity, by postulating different entries. The kinds of syncretism that the underspecification-free optimality-theoretic approach developed here can cover in the original, simple form (i.e., without contextual faithfulness) can all be learned by the No-Homonymy Learner in an underspecification-based approach, and would not require the additional complications induced by the Elsewhere Learner in such an approach. (For instance, no recourse to existing word forms and their properties would be necessary, in contrast to what is the case for the Elsewhere Learner, which needs access to global memory (or some related concept); see Pertsova (2007, 130).)

Storage

The present, underspecification-free analysis differs from standard underspecification-based approaches (again, be they optimality-theoretic or not) in its consequences for the mental storage of inflectional systems. In underspecification-based approaches, all different occurrences of an exponent have the same status because the exponent does not treat any of the contexts in which it can occur differently from any other one. In contrast, in the underspecification-free analysis advanced here, there is a clear primacy of certain contexts of occurrence over others. For instance, under the present analysis of German determiner inflection, /m/$_3$ is underlyingly a masculine dative marker, which is then also used in neuter dative contexts; /s/$_5$ is first and foremost an accusative neuter marker which is then also used in nominative neuter contexts; and so forth. To some extent, the decisions on which occurrence of an exponent's distribution is to count as primary (i.e., qualify as the leading form), and which occurrences of the distribution are secondary (involving a violation of faithfulness) have been arbitrary in sections 3 and 4, at least from a purely synchronic, grammar-internal point of view. However, given this approach, one would expect there to be evidence for occurrence asymmetries of inflectional exponents in other domains (i.e., outside grammatical theory) which can be addressed by research in areas like diachronic linguistics, corpus linguistics, and psycholinguistics. Indeed, it does not strike me as unreasonable to assume that occurrence asymmetries can be detected with markers when diachronic evidence is taken into account (see, e.g., Baerman, Brown & Corbett (2005) on neuter exponents in Indo-European). Similarly, evidence from language acquisition and frequency distributions based on corpus data may well support an asymmetry of marker occurrences as it is predicted by the underspecification-free approach based on leading forms.

In general, it should be possible to come up with experimental psycholinguistic evidence for or against underspecification; however, it seems that so far, no convincing evidence for or against underspecified morpho-syntactic specifications of inflectional exponents has been provided on the basis of psycholinguistic experiments. (However, see Clahsen (2006) for a possible exception. Clahsen reports on a priming study in favour of underspecification which, however, I take to be inconclusive since it abstracts away from phonology as the possible source of marker priming.) It is likely, though, that future studies in this area (both behavioural studies and ERP studies) will have some bearing on this issue, and might eventually help to decide between the models.

Acquisition

A few speculations on how inflectional systems with syncretism that are derived by spreading of leading forms (rather than by underspecification) can be acquired: For underspecification-based systems, it can be assumed that children look for properties that the various environments in which exponents with the same form occur have in common; i.e., they learn underspecified feature structures of exponents by intersecting the sets of the different (fully specified) environments; see Harley (2001) and Pertsova (2007) for proposals along these lines (essentially, this is what Pertsova's No-Homonymy learner does). On this view, the child assumes a syncretism to be systematic (i.e., going back to a single entry) whenever possible (see Pertsova (2007, 135)), and postulates two separate entries only as a last resort (e.g., when the interaction of (i) the Subset Principle and (ii) a system of decomposed features that is assumed as given fail to permit a coherent underspecified feature structure underlying two occurrences of one exponent form); this is essentially the meta-grammatical Syncretism Principle argued for in Müller (2007a) and Alexiadou & Müller (2008). Evidently, such an approach is not available in an underspecification-free approach such as the one developed here: Intersection invariably leads to underspecification.

Sketch

Given the Syncretism Principle, the child assumes a syncretism to be systematic whenever possible (given restrictions on what can act as a decomposed morpho-syntactic feature, and given a set of faithfulness constraints that refer to these features). Suppose now that it is a characteristic property of leading forms that they "come first", i.e., they are highly prominent in the child's input (at least more so than the forms that the analysis classifies as gaps in the input), e.g., because they are more frequent. The child then fixes its input EXP by integrating a recognized leading form. Upon discovering identical output forms with a different syntactic distribution, it attempts to derive the form from one of the existing members of EXP, by demoting the relevant faithfulness constraints (see Tesar & Smolensky (2000)). If successful (and compatible with the data that the child's earlier grammar can generate), the new grammar is adopted; otherwise, a new exponent with a new feature specification (that of the syntactic context in which that form was encountered) is postulated. – Needless to say, such a model would ultimately have to be worked out in much more detail. Questions arise with respect to the acquisition of impoverishment-like mechanisms resulting from optimal faithfulness violations with stems, as discussed above (although these questions arise in exactly the same way in standard impoverishment-based approaches, and in Wunderlich's original account). It should also be emphasized that other acquisition scenarios are conceivable as well.

Alternative

It might turn out that the initial recognition of leading form exponents can be a complicated task in those cases where two (or more) environments exhibit a similar prominence (or frequency) in the child's input. In response to this, one could then assume that the child at first postulates as many separate exponents (form-content pairs) as there are environments. Driven by the Syncretism Principle, it would subsequently abandon separate exponents that can be traced back to other exponents that have been identified as leading forms, with the latter violating (appropriately demoted) faithfulness constraints. In effect, this would imply abandoning input optimization in favour of the Syncretism Principle.

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