12th International Morphology Meeting
Budapest, 25. 5. 2006

Czech Declension without Paradigms

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The distribution of inflectional markers in the Czech nominal declension is conditioned by gender of the noun and diacritic class features which are assigned to the √ROOTS as well as to the derivational suffixes.

(1) Paradigm (set of markers or inflected forms) is not a primitive notion of grammar but a derived notion.

(2) Paradigms are independent notions because otherwise the distribution of markers cannot be explained (a traditional notion of paradigm).

(3) Paradigms are necessary to state generalizations that are unexpressable in different terms (basically O-O constraints).

1. Against the traditional view: Ziková & Caha (2005)

Table Ia: Traditional masculine paradigms

	NOM	ACC	GEN	DAT		LOC		INSTR
pán 'lord' (MA)	Ø	a	a	u	ovi	u	ovi	em
hrad 'castle'	Ø	Ø	u	u		u	ě	em
stroj 'machine'	Ø	Ø	e	i		i		em
muž 'man' (MA)	Ø	e	e	i	ovi	i	ovi	em
soudce 'judge' (MA)	e	e	e	i	ovi	i	ovi	em
předseda 'chairman' (MA)	a	u	y	ovi		ovi		ou

Table Ib: Traditional feminine paradigms

	NOM	ACC	GEN	DAT	LOC	INSTR
žena 'woman'	a	u	y	ě	ě	ou
píseň 'song'	Ø	Ø	e	i	i	í
kost 'bone'	Ø	Ø	i	i	i	í
růže 'rose'	e	i	e	i	i	í

Table Ic: Traditional neuter paradigms

	NOM	ACC	GEN	DAT	LOC		INSTR
moře 'sea'	e	e	e	i	i		em
kuře 'chicken'	e	e	e	i	i		em
město 'city'	o	o	a	u	u	ě	em

→ **massive redundancy:** 13 x 6 = 84 paradigm cells take only 12 phonologically different exponents

Table II: [+β] classes (markers *-a* and *-u*)

	pán $_{MA}$	hrad $_{M}$	předseda $_{MA}$	žena $_{F}$	město $_{N}$
NOM	Ø	Ø	**a**	**a**	o
ACC	**a**	Ø	**u**	**u**	o
GEN	**a**	**u** (a)	y	y	**a**
DAT	**u** ovi	**u**	ovi	ě	**u**
LOC	**u** ovi	**u** ě	ovi	ě	**u** ě
INSTR	em	em	ou	ou	em

Table III: [-β] classes (markers *-e* and *-i*)

	stroj $_{M}$	muž $_{MA}$	soudce $_{MA}$	píseň $_{F}$	kost $_{F}$	růže $_{F}$	moře $_{N}$	kuře $_{N}$
NOM	Ø	Ø	**e**	Ø	Ø	**e**	**e**	**e**
ACC	Ø	**e**	**e**	Ø	Ø	**i**	**e**	**e**
GEN	**e**	**e**	**e**	**e**	**i**	**e**	**e**	**e**
DAT	**i**	**i** ovi	**i** ovi	**i**	**i**	**i**	**i**	**i**
LOC	**i**	**i** ovi	**i** ovi	**i**	**i**	**i**	**i**	**i**
INSTR	em	em	em	í	í	í	em	em

<u>Our proposal</u>:
We introduce 4 inflectional classes instead of 13 traditional paradigms, unbound to the gender as well as to the phonological features of the stem. We suppose them to be defined by 2 equipolent diacritic features [±α, ± β].

Table IV: Inflectional classes and their featural content

Class [features]	I [-α, -β]	II [+α, -β]	III [-α, +β]	IV [+α, +β]
Traditional paradigms (represented by citation forms)	růž-e $_{F}$ moř-e $_{N}$ soudc-e $_{MA}$	muž-Ø $_{MA}$ stroj-Ø $_{M}$ píseň-Ø $_{F}$ kost-Ø $_{F}$ kuře-Ø $_{N}$	žen-a $_{F}$ předsed-a $_{MA}$	pán-Ø $_{MA}$ hrad-Ø $_{M}$ měst-o $_{N}$

<u>Crucial point</u>:
There are several paradigms in each class. The differences between the paradigms are caused by gender differences.

Table V: Class II [+α, -β]: gender-bound markers

	píseň $_{F}$ 'song'	oheň $_{M}$ 'fire'
NOM	Ø	Ø
ACC	Ø	Ø
GEN	e	e
DAT	i	i
LOC	i	i
INSTR	**í**	**em**

Differences are gender-bound: INSTR markers are in the complementary distribution with respect to genders: *–í* is associated with fem. (Class I: *růž-í,* Class II: *písn-í, kost-í*)
-em is associated with non-fem. (Class I: *moř-em, soudc-em*, Class II: *muž-em, stroj-em, kuřet-em*, Class IV: *pán-em, hrad-em, měst-em*).

Why diacritics?
The proposed decomposition of classes into features isn't pointless, because these diacritics define natural classes for distribution of the markers.

→ Ø in NOM/ACC SG is connected to [+α] (shared by classes II, IV)
morphological entry for Ø: Ø ↔ [+str, +pred] / [+α]

→ [-back] markers *-i* (elsewhere), *-e* (in NOM/GEN/ACC) are connected to [-β]
morphological entries for-*e, -i*: /e/ ↔ [+str] / [-β], /i/ ↔ [ ] / [-β]

→ [+back] markers: *–u* (elsewhere)*, -a* (NOM/GEN/ACC) are connected to [+β]
morphological entries for *–a, -u*: /a/ ↔ [+str] / [+β], /u/ ↔ [ ] / [+β]

Are there generalizations we are missing? OT accounts
In an alternative OT approach to Czech declension, Kučerová (2005) (indirectly) argues that the diacritic feature +/-β is redundant and the distribution of +back/-back markers follows from an OT constraint *$C_{-bk}V_{+bk}$ = PAL. How does it work?

Table VI: Palatalization of markers (Kučerová 2005)

/ca/	PAL	IDENT[−BACK]	IDENT[+BACK]
ca	!*		
☞ cɛ			*
ta		!*	

Our predictions:
The complementary distribution of the [+back] and [-back] markers in SG follows from their different specification for diacritic feature context and not from phonology.

Table VII: Complementary distribution [+back] and [-back] markers in SG

	[+β]		[-β]	
	√PÁ[n] ‘lord’	√HRA[d] ‘castle’ √HOTE[l] ‘hotel’	√MU[z] ’man’	√STRO[j] ‚maschine’ √PYTE[l] ‘bag’
DAT	u	u	i	i
LOC	u	u	i	i
	√ŽE[n] ‘woman’ √DO[ɲ] ‘dona’	√PŘEDSE[d] ‘chairman’ √MOU[l] ‘mug’	√SOUD[t͡s] ’judge’	√KÓ[j] ‚booth’ √NEDĚ[l] ‘Sunday’
NOM	a	a	e	e
ACC	u	u	e	i

<u>This is a desirable result!</u>
[+back] and [-back] vowels are not in the complementary distribution with respect to the preceding phonological context.

Table VIII: Distribution of palatalC - backV chains

	[ca]	[ɟɔ]	[ɲʊ]
within the √ROOT	[capat] ‘to pitter-patter’	[ɟɔbat] ‘peck’	[ʃɲʊpat] ‘snuff’
at the morpheme boundary	[ka:ca] (NOM SG) hypocoristic [tɪbɛcan] ‘Tibetan’ [balɛca:k] ‘dancer, male’	[be:ɟɔ] (VOC SG) hypocoristic [ɦi:ʒɟɔvi:] ‘gluteal’ [nalɔɟɔvat] ‘embark’	[ɔɦɲu:m] (DAT PL) ‘fire’ [vɪt͡ʃlɛɲʊjʊ] ‘I single out’ [ʊt͡ʃɲu:f] ‘trainee‘s’

a) within the √ROOT: onomatopoeia
b) at the morpheme boundary: √ROOT+case marker, √ROOT+derivational suffix

Furthermore!
There are two productive derivational suffixes, both beginning with [+back] vowel: /an/ (denominals and deadjectives) and /a:k/ (deadjectives), which by contrast cause palatalization of preceding alveolar stops to palatals.

<u>Alternations and augmentation of the basic constraints: Sturgeon (2003)</u>

Table IX: Deriving the alternations

/ʒɛn-^{i}ɛ/(DAT SG)	I-OIdentAffix[dors]	*$C_{-bk}V_{+bk}$
ʒɛnɛ	*!	
☞ ʒɛɲɛ		
ʒɛɲa	*!	

Table X: Gender and phonology mismatch

	MASCULINE		MASCULINE ANIMATE		FEMININE		NEUTER	
	√HOTE[l] 'hotel'	√PYTE[l] 'bag'	√BA[t͡ʃ] 'shepherd'	√RVÁ[t͡ʃ] 'rowdy'	√STÁ[ɲ] hypocor.	√DÝ[ɲ] 'pumpkin'	√KOM[b] 'combo'	√NE[b] 'sky'
NOM	hote[l]	pyte[l]	ba[t͡ʃ]a	rvá[t͡ʃ]	Stá[ɲ]a	dý[ɲ]e	kom[b]o	ne[b]e
ACC	hote[l]	pyte[l]	ba[t͡ʃ]u	rvá[t͡ʃ]e	Stá[ɲ]u	dý[ɲ]i	kom[b]o	ne[b]e
GEN	hote[l]u	pyt[l]e	ba[t͡ʃ]i	rvá[t͡ʃ]e	Stá[ɲ]y	dý[ɲ]e	kom[b]a	ne[b]e
DAT	hote[l]u	pyt[l]i	ba[t͡ʃ]ovi	rvá[t͡ʃ]ovi	Stá[ɲ]e	dý[ɲ]i	kom[b]u	ne[b]i
LOC	hote[l]u	pyt[l]i	ba[t͡ʃ]ovi	rvá[t͡ʃ]ovi	Stá[ɲ]e	dý[ɲ]i	kom[b]u	ne[b]i
INSTR	hote[l]em	pyt[l]em	ba[t͡ʃ]ou	rvá[t͡ʃ]em	Stá[ɲ]ou	dý[ɲ]í	kom[b]em	ne[b]em

<u>Observation</u>: no phonologically driven allomorphy

2. Against the new view!

Allomorphy is not trans-derivational: NOM SG form has no privileged status.

In OT, allomorphy is assumed to be trans-derivational: paradigm uniformity is responsible for distribution of allomorphs (Output-to-Output Correspondence):

Output-to-Output Correspondence (Kager 1999:257)
"The maximization of phonological identity between morphologically related output forms."

<u>Illustrating the point</u>:

Table XI: Motivation for an O-O constraint

	[-β] masculine	[-β] feminine
	√OHE[ɲ] 'fire'	√PÍSE[ɲ] 'song'
GEN PL	u:	i:
DAT PL	u:m	i:m

Table XII: O-O constraint in action: overapplication

/ɔɦɲ-u:/ (GEN PL)	O-O Ident	*C$_{-bk}$V$_{+bk}$
☞ ɔɦɲu:		*
ɔɦnu:	*!	

Table XIII: Distribution of -ů- (paradigm version)

	masculine						feminine			neuter		
	pán	hrad	stroj	muž	soudce	sluha	žena	růže	píseň	město	kuře	moře
GEN	ů	ů	ů	ů	ů	ů	Ø	í	í	Ø	Ø	í
DAT	ům	ům	ům	ům	ům	ům	ám	ím	ím	ům	ům	ím

Table XIV: Declension classes in PL – after class features neutralization

class [features]	I [-α, -β]	II [+α, -β]	III [-α, +β]	IV [+α, +β]
Paradigms	růž-e $_F$ moř-e $_N$ soudc-e $_{MA}$	muž-Ø $_{MA}$ stroj-Ø $_M$ píseň-Ø $_F$ kost-Ø $_F$	žen-a $_F$	pán-Ø = předsed-a $_{MA}$ hrad-Ø $_M$ měst-o = kuře-Ø $_N$

Table XV: The distribution of -ů- (class version)

	I [-α, -β]	II [+α, -β]	III [-α, +β]	IV [+α, +β]
ů	soudc-ů	muž-ů		pán-ů
	soudc-ům	muž-ům, kuřat-ům		pán-ům, měst-ům

→ morphological entry for *-ů*: /u:/ ↔ [PL] / [M] v [+α, +β]

<u>Generalizing the case: a case of two pairs of allomorphs</u>

<u>Predictions</u>:
If O-O constraint holds, we would expect that stems of the same gender will prefer those markers, which do not require any phonological change on them.

But the following data prove it to be far off reality!

→ NOM PL allomorphs with MA stems: *-i, -ové*
-i - causes palatalization: [t,d,n] → [c,ɟ,ɲ]; [k,g,x,ɦ] → [t͡s,z,ʃ,z]
-ové - leaves the stem unaltered

<u>O-O expectation</u>: These stems which end in alveolar stops or velars, both appearing in privileged NOM SG, should prefer [ɔve:] allomorph.

<u>Unmet expectation</u>: Data from the Czech National Corpus (SYN2000) show that the palatalizing allomorph is preferred.

Table XVI: Stem-changing vs. stem-preserving allomorphs in NOM PL

	[ɪ] allomorph	[ɔve:] allomorph
MA stems with [d,t,n]	48 430	20 907
MA stems with [k,g,x]	116 193	11 304

→ LOC PL allomorphs with M stems: *-ech, -ích*

[+β] masculine stems take in LOC PL either [ɛx] or [i:x] allomorphs and their distribution is phonologically driven.

O-O expectation: These stems which end in alveolar stops or velars, both appearing in privileged NOM SG, should prefer a non-palatalizing allomorph [ɛx].

Unmet expectation: Only stems with alveolar stops take [ɛx], stems with velars and glottal fricative always take [i:x] which triggers their palatalization.

Table XVII: Stem-changing vs. stem-preserving allomorphs in LOC PL

	[ɛx]	[i:x]
M stems with coronals √HRA[d] 'castle' √AGEN[t] 'agent' √PÁ[n] 'lord'	 hra[dex] agen[tex] pá[nex]	
M stems with velars √MLO[k] 'salamander' √DIALO[g] 'dialouge' √HRO[x] 'hippo'		 mlo[t͡si:x] dialo[zi:x] hro[ʃi:x]

Conclusion:

No convincing evidence for O-O constraints, no evidence for paradigms.

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