

Russian declension without declension features and without contextual allomorphy

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Introduction

Features

Phrasal spellout

The basic intuition

Decomposing case

Number, Gender, declension

Declension III

Declension IV

Conclusions

Introduction

- (1) Two noun stem (roots)
 - a. **metel'** - (snowstorm)
 - b. **nedel'** - (week)

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- ▶ Declension class membership is arbitrary

Introduction

Table 1: The full paradigms (Timberlake 2004)

	lip II (FEM)	notebook, III (FEM)
NOM	gub-á	tetrád'-∅
ACC	gub-ú	tetrád'-∅
GEN	gub-ý	tetrád'-i
LOC	gub-é	tetrád'-i
DAT	gub-é	tetrád'-i
INS	gub-ój	tetrád'-ju

Introduction

Table 2: The four declensions (Timberlake 2004)

	factory I (MASC)	place IV (NEUT)	lip II (FEM)	notebook, III (FEM)
NOM	zavód-∅	mést-o	gub-á	tetrád'-∅
ACC	zavód-∅	mést-o	gub-ú	tetrád'-∅
GEN	zavód-a	mést-a	gub-ý	tetrád'-i
LOC	zavód-e	mést-e	gub-é	tetrád'-i
DAT	zavód-u	mést-u	gub-é	tetrád'-i
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a. I: $[+\alpha, -\beta]$

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- ▶ “Inflection class features are arbitrary and irreducible by definition; this is reflected in the labels. Still, it is worth emphasizing that the features $[+/-\alpha]$, $[+/-\beta]$ are no more arbitrary than standardly adopted features like [class I], [class II].”

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- ⇒ should not be decomposed
- ▶ Arbitrary diacritics are assembly instructions in disguise, needed only to “restore information about the co-occurrence of stems and exponents” (which has been lost after decomposition).

Chomsky (2001)

FL appears to be a species property, close to uniform across a broad range. It has a genetically-determined initial state S_0 , which determines the possible states it can assume. [...] S_0 determines the set $\{F\}$ of properties (“features”) available for languages.

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- ▶ Can we eliminate declension features?
- ▶ What we need:
 - (i) hierarchy of features
 - (ii) phrasal spellout

Introduction

Features

Phrasal spellout

The basic intuition

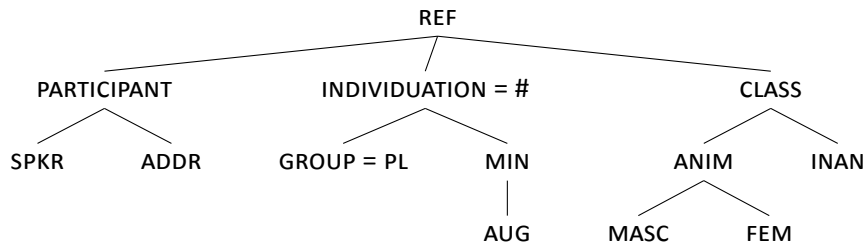
Decomposing case

Number, Gender, declension

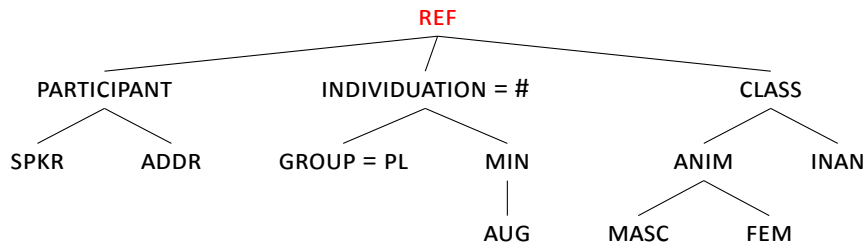
Declension III

Declension IV

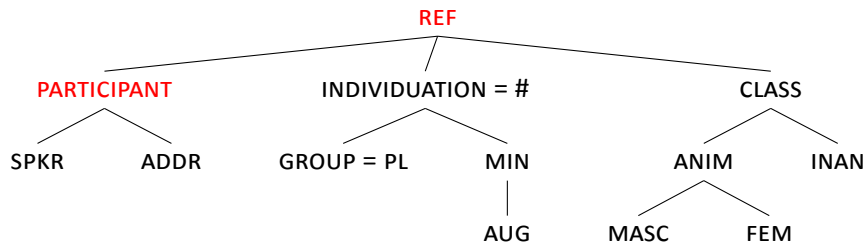
Conclusions



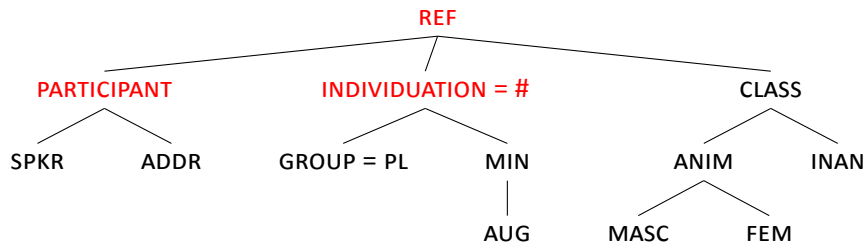
Harley & Ritter (2002)



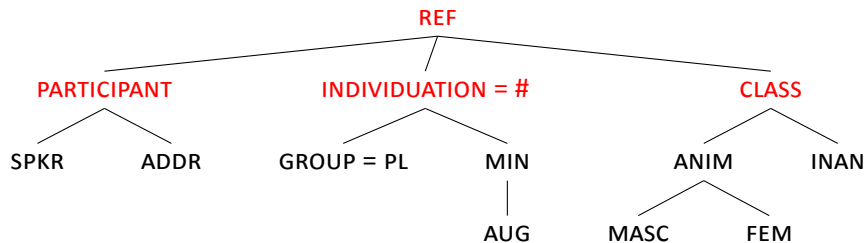
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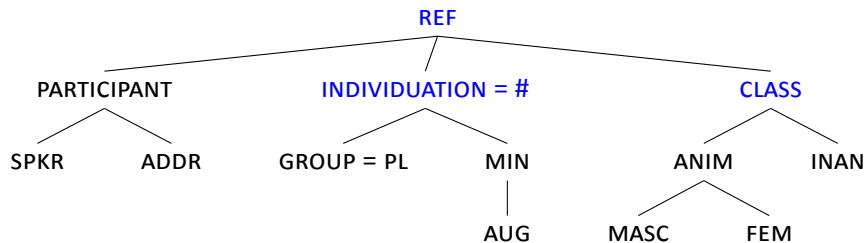
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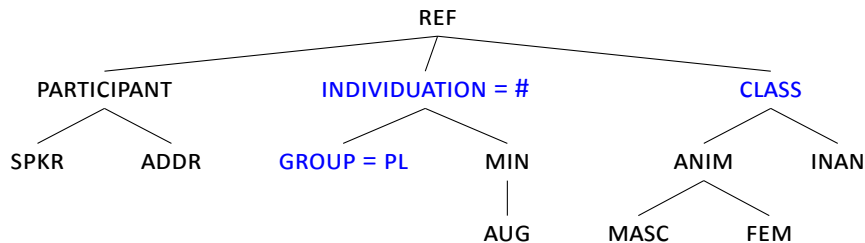
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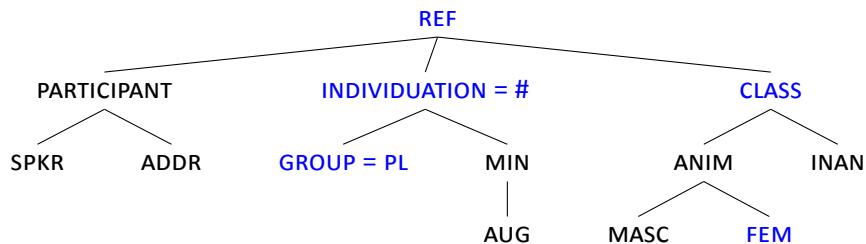
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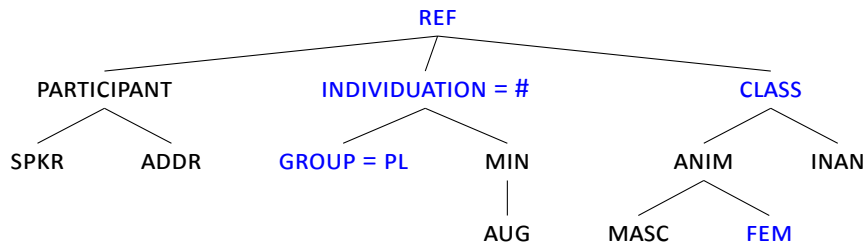
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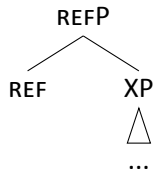
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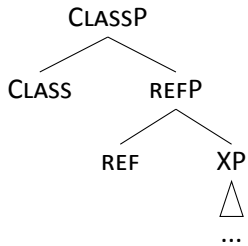


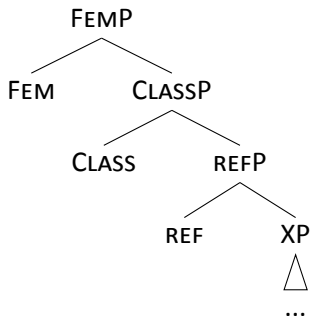
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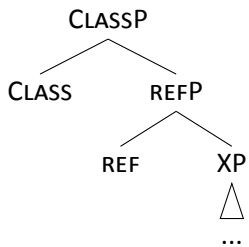


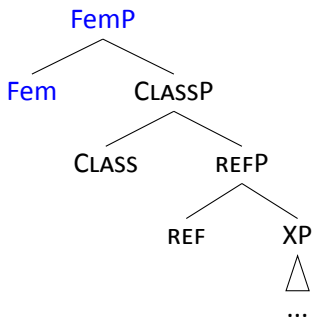
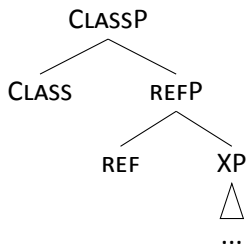
I will also need case features

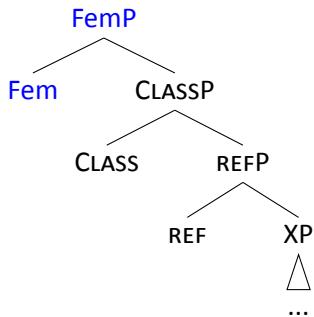
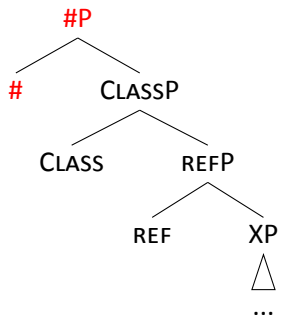


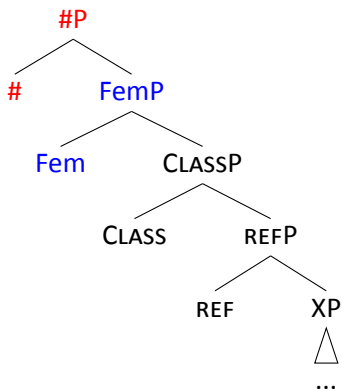
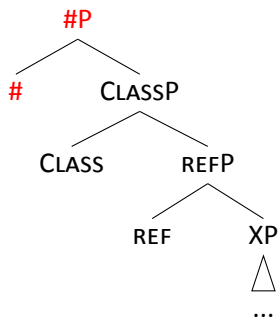


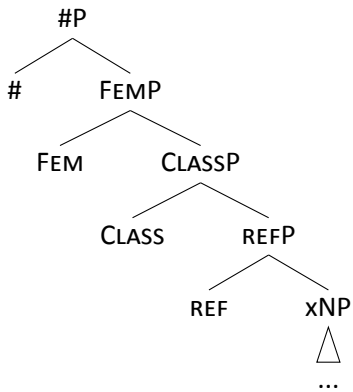


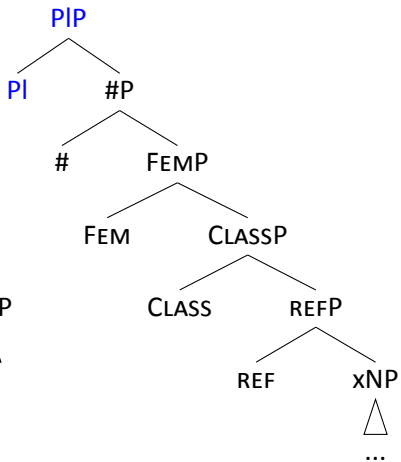
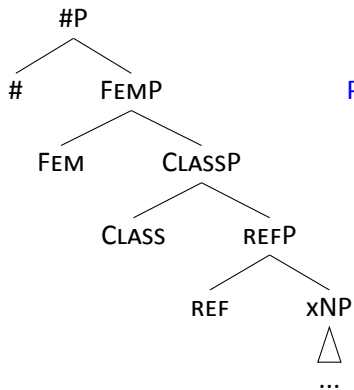


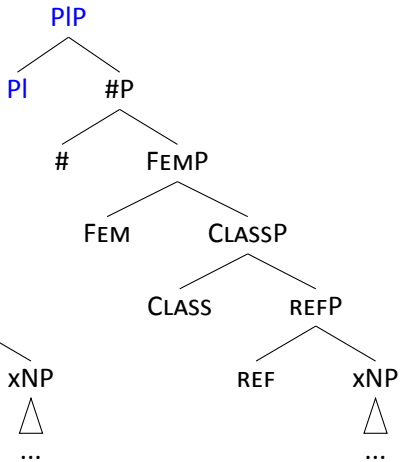
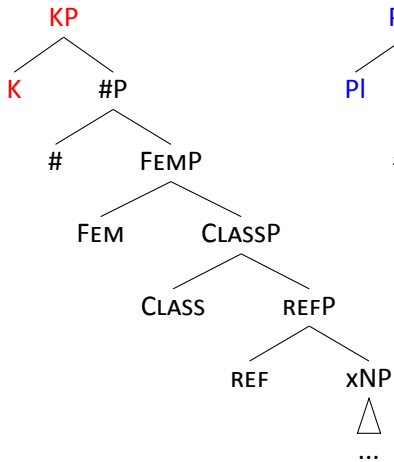


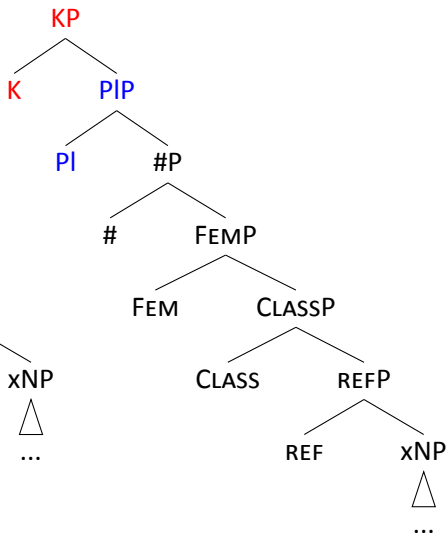
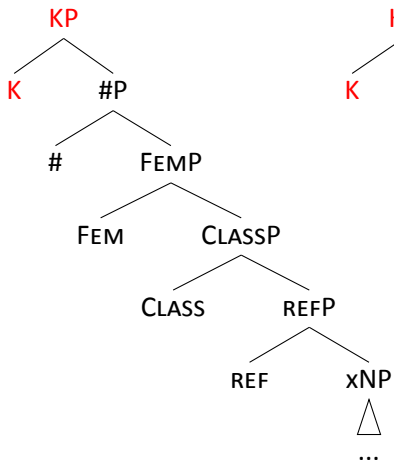












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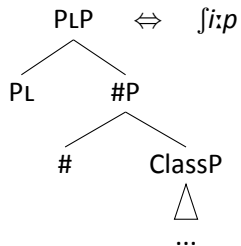
a. cat — cat-s

b. mouse — mice

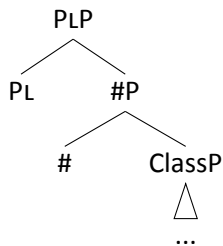
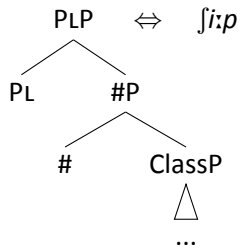
(7) English plural

- a. cat — cat-s
- b. mouse — mice
- c. sheep — sheep

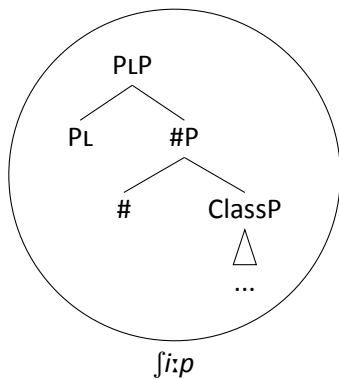
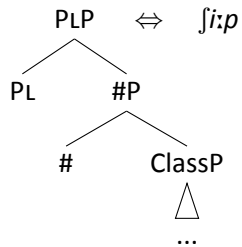
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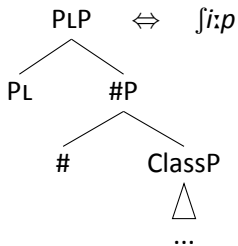


(8) *Superset Principle* (Starke 2009)

A lexically stored tree L matches a syntactic node S iff L contains the syntactic tree dominated by S as a subtree

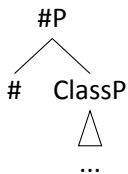
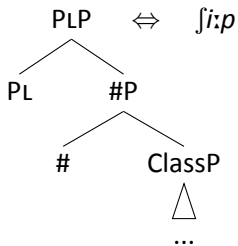
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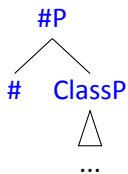
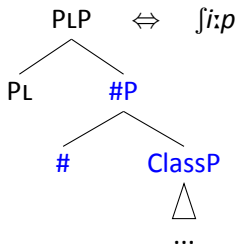
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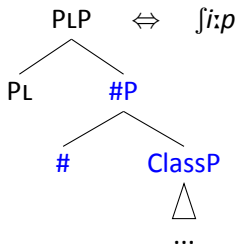
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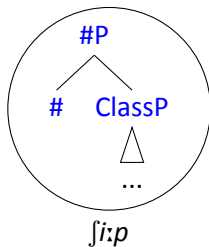
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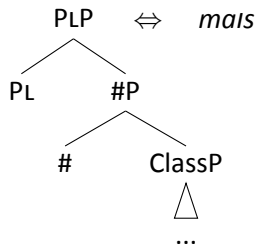


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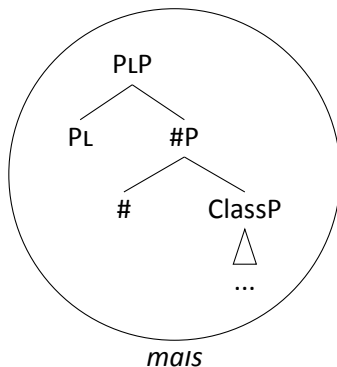
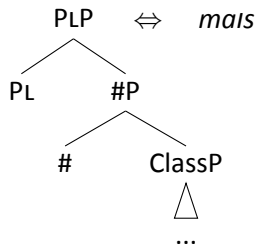
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Phrasal spellout



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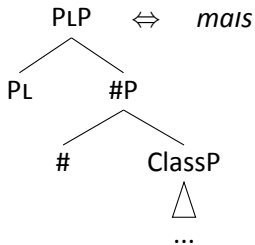


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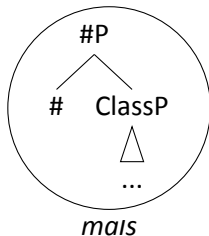
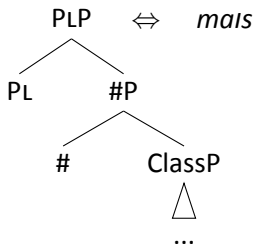
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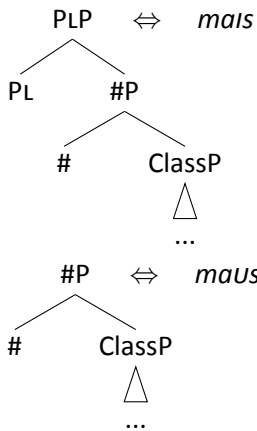
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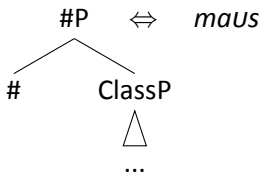
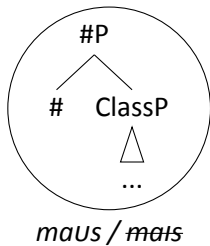
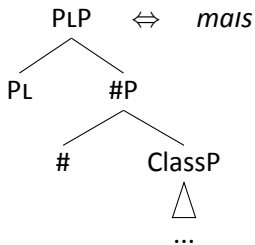


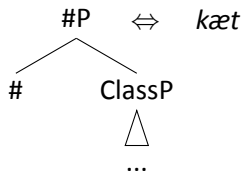
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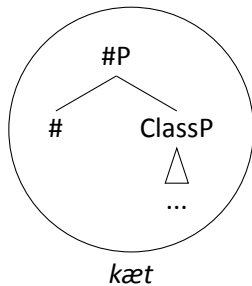
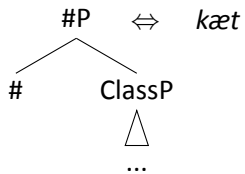
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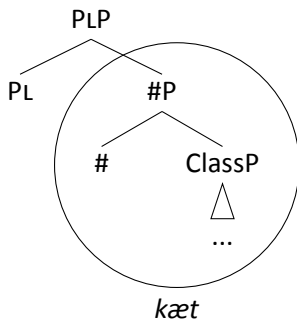
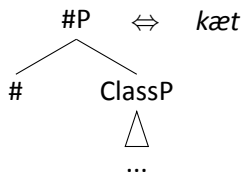




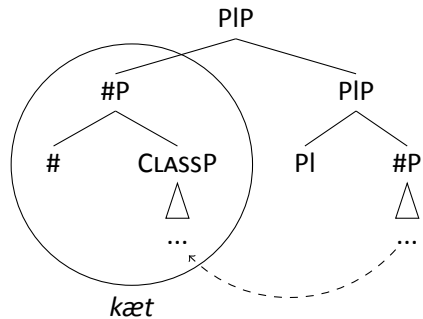




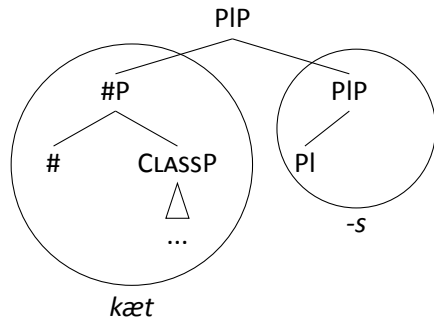
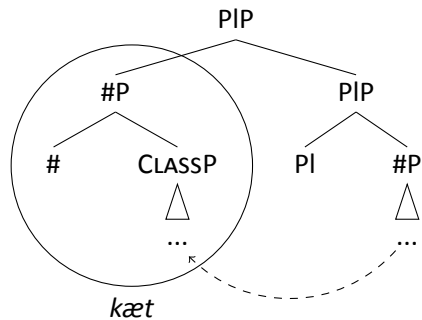




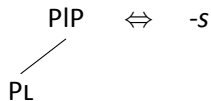
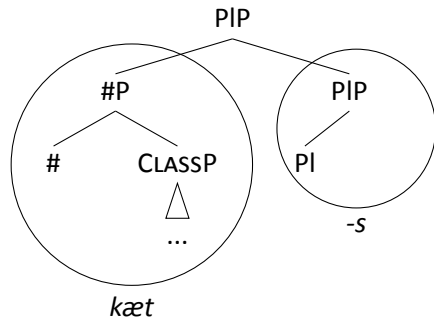
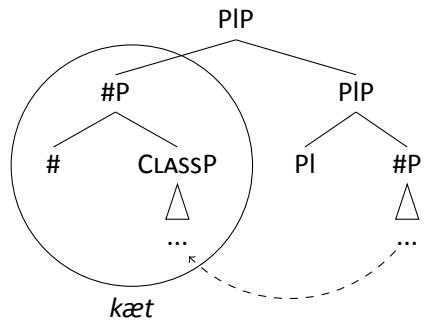
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- ▶ Different roots have different 'sizes'
 - ▶ *sheep* and *mice* are of the size PLP (these do not need the plural -s)
 - ▶ *cat* is of the size #P (it can not express plural)
 - ▶ When a root cannot express all the features, it moves to the left and a suffix appears

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(12) The nominative

a. **metel'**-∅

(12) The nominative

a. metel'-∅

b. nedel'-a

(12) The nominative

a. metel'-∅

b. nedel'-a

(13) The plural

a. sheep-∅

(12) The nominative

a. metel'-∅

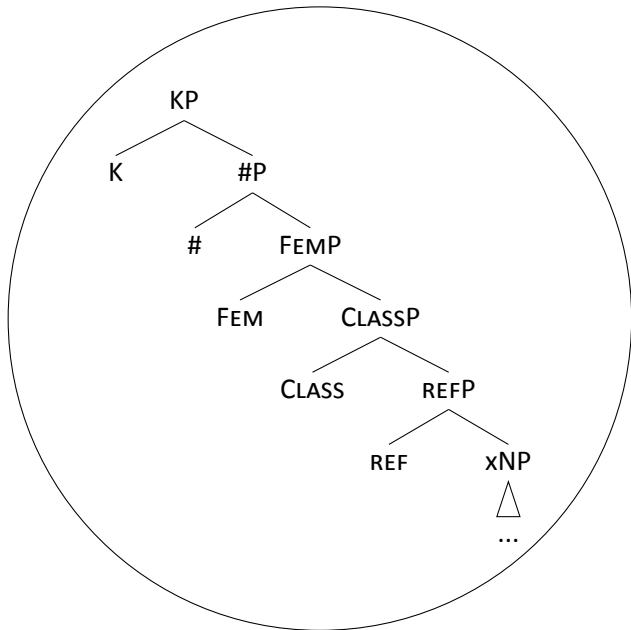
b. nedel'-a

(13) The plural

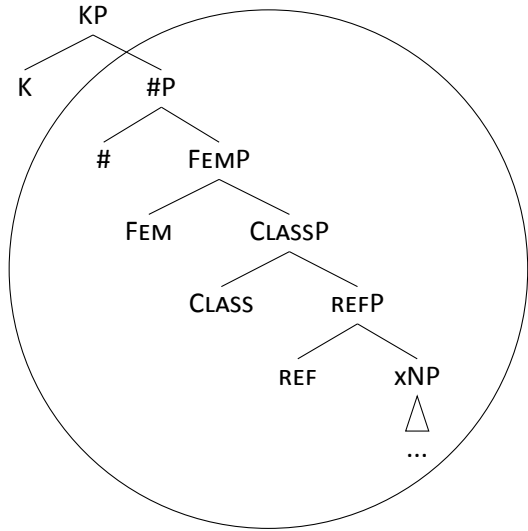
a. sheep-∅

b. cat-s

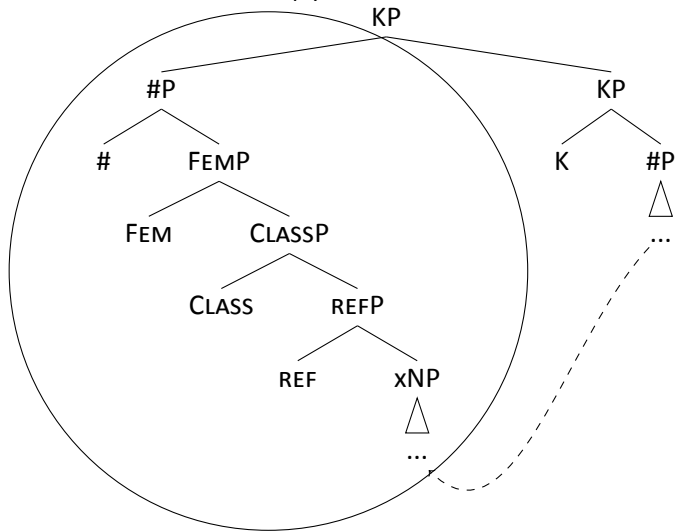
metel' (III)



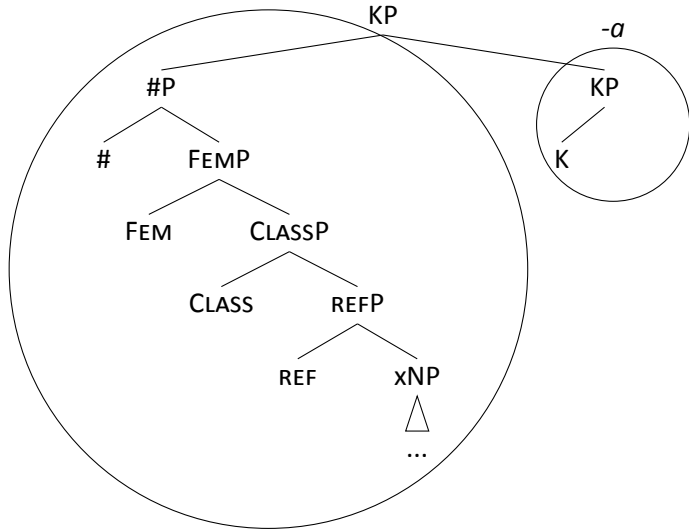
nedel' (II)



nedel' (II)



nedel' (II)



- ▶ Declension classes reduce to differences in 'root size'

- ▶ Declension classes reduce to differences in 'root size'
- ▶ The difference in root size is arbitrary → declension classes are arbitrary

- ▶ Declension classes reduce to differences in ‘root size’
- ▶ The difference in root size is arbitrary → declension classes are arbitrary
- ▶ Declension classes exist – but are not encoded via features

Introduction

Features

Phrasal spellout

The basic intuition

Decomposing case

Number, Gender, declension

Declension III

Declension IV

Conclusions

(14) The locative

a. **metel'**-i (snowstorm)

(14) The locative

- a. **metel'**-i (snowstorm)
- b. **nedel'**-e (week)

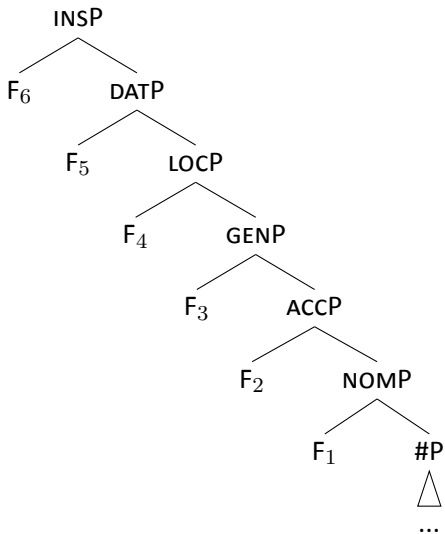
Syncretism in Russian (McCreight & Chvany 1991)

	window, sg.	teacher, pl.	both, m.i.	book, sg.	100
NOM	OKN-O	učitel-ja	dv-a	knig-a	st-o
ACC	OKN-O	UČITEL-EJ	dv-a	knig-u	st-o
GEN	okn-a	UČITEL-EJ	DV-UX	knig-y	ST-A
PREP	okn-e	učitel-jax	DV-UX	KNIG-E	ST-A
DAT	okn-u	učitel-am	dv-um	KNIG-E	ST-A
INS	okn-om	učitel-ami	dv-umja	knig-oj	ST-A

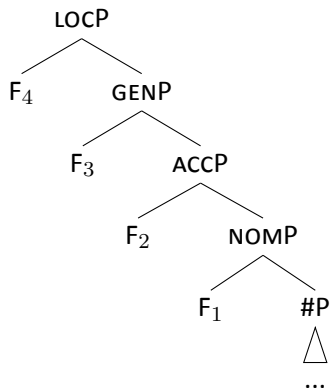
Table 3: Cumulative feature decomposition

CASE	FEATURES
NOM	F1
ACC	F1, F2
GEN	F1, F2, F3
LOC	F1, F2, F3, F4
DAT	F1, F2, F3, F4, F5
INS	F1, F2, F3, F4, F5, F6

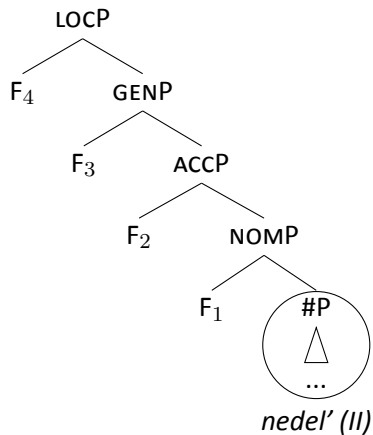
(15)



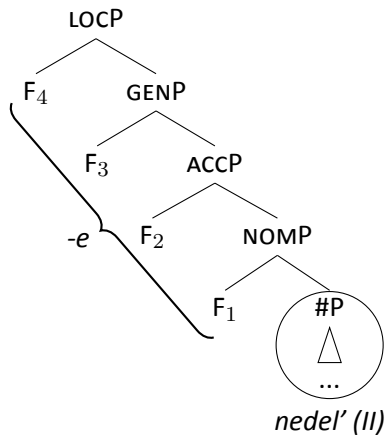
Decomposing case



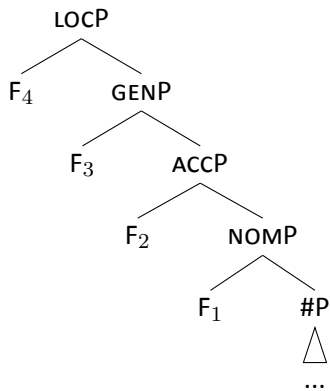
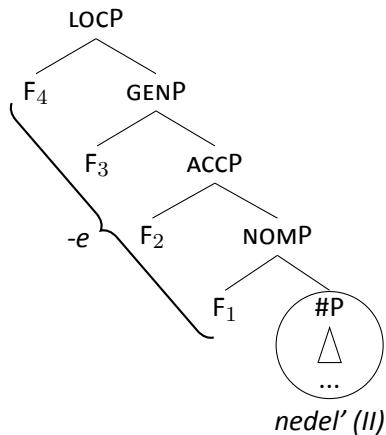
Decomposing case



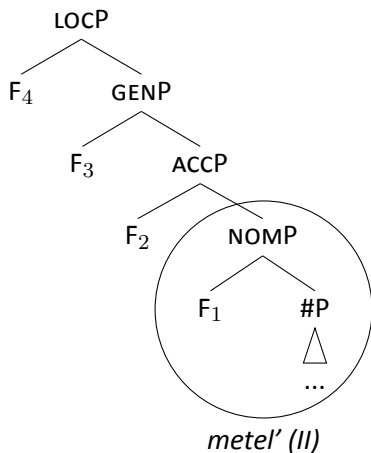
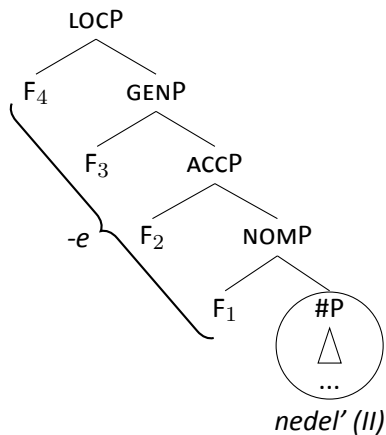
Decomposing case



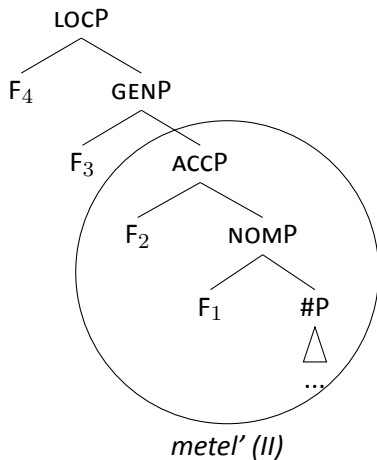
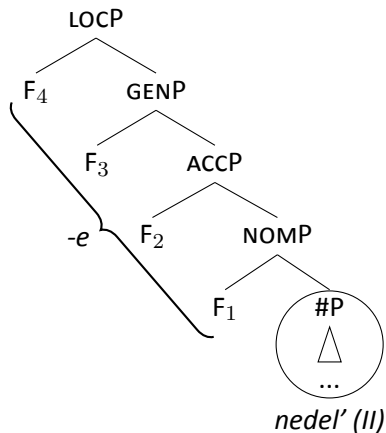
Decomposing case



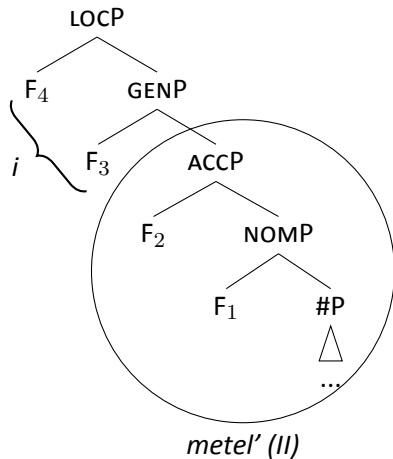
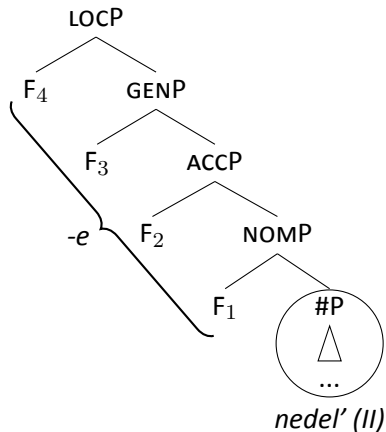
Decomposing case



Decomposing case



Decomposing case



Decomposing case

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			tetrád'								
ACC			tetrád'								
GEN			tetrád'					i			
LOC			tetrád'					i			
DAT			tetrád'						i		
INS			tetrád'							ju	

Decomposing case

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			tetrád'								
ACC			tetrád'								
GEN			tetrád'					i			
LOC			tetrád'					i			
DAT			tetrád'						i		
INS			tetrád'							ju	
NOM			žen			a					
ACC			žen			u					
GEN			žen			y					
LOC			žen			e					
DAT			žen			e					
INS			žen					oj			

Introduction

Features

Phrasal spellout

The basic intuition

Decomposing case

Number, Gender, declension

Declension III

Declension IV

Conclusions

Number, Gender, declension

Table 4: SG. vs. PL. (Timberlake 2004)

	notebook, III (SG)	notebook, III (PL)
NOM	tetrád'-∅	tetrád'-i
ACC	tetrád'-∅	tetrád'-i
GEN	tetrád'-i	tetrád'-ej
LOC	tetrád'-i	tetrád'-ax
DAT	tetrád'-i	tetrád'-am
INS	tetrád'-ju	tetrád'-ami

Number, Gender, declension

(16) Declensions and gender, inanimates (Corbett 1982)

Number, Gender, declension

- (16) Declensions and gender, inanimates (Corbett 1982)
- a. I → masculine

Number, Gender, declension

(16) Declensions and gender, inanimates (Corbett 1982)

a. I → masculine

b. II → feminine

Number, Gender, declension

- (16) Declensions and gender, inanimates (Corbett 1982)
- a. I → masculine
 - b. II → feminine
 - c. III → feminine (15 exceptions)

Number, Gender, declension

- (16) Declensions and gender, inanimates (Corbett 1982)
- a. I → masculine
 - b. II → feminine
 - c. III → feminine (15 exceptions)
 - d. IV → neuter

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			žen			a					
ACC			žen			u					
GEN			žen			y					
LOC			žen			e					
DAT			žen			e					
INS			žen			oj					

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			žen			a					
ACC			žen			u					
GEN			žen			y					
LOC			žen			e					
DAT			žen			e					
INS			žen			oj					
	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6	

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			žen			a					
ACC			žen			u					
GEN			žen			y					
LOC			žen			e					
DAT			žen			e					
INS			žen			oj					
	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6	
NOM			meuter		a						

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			žen			a					
ACC			žen			u					
GEN			žen			y					
LOC			žen			e					
DAT			žen			e					
INS			žen					oj			

	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6	
NOM			meuter			a					
ACC			meuter			u					
GEN			meuter			y					
LOC			meuter			e					
DAT			meuter			e					
INS			meuter					oj			

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			žen			a					
ACC			žen			u					
GEN			žen			y					
LOC			žen			e					
DAT			žen			e					
INS			žen					oj			

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			žen			a					
ACC			žen			u					
GEN			žen			y					
LOC			žen			e					
DAT			žen			e					
INS			žen					oj			

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM		žen			a						
ACC		žen			u						
GEN		žen			y						
LOC		žen			e						
DAT		žen			e						
INS		žen			oj						

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							
	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6	
NOM	meut			*a							

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6	
NOM	meut			*a							
ACC	meut			*u							
GEN	meut			*y							
LOC	meut			*e							
DAT	meut			*e							
INS	meut			*oj							

Number, Gender, declension

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6	
NOM	mest			o							
ACC	mest			o							
GEN	mest			a							
LOC	mest			e							
DAT	mest			u							
INS	mest			om							

Introduction

Features

Phrasal spellout

The basic intuition

Decomposing case

Number, Gender, declension

Declension III

Declension IV

Conclusions

Declension III

- (17) Declensions and genders for inanimates (Corbett 1982)
- a. I → masculine
 - b. II → feminine
 - c. III → feminine (15 exceptions)
 - d. IV → neuter

Declension III

- (18) Declensions and genders for inanimates (Corbett 1982)
- a. I → masculine
 - b. II → feminine
 - c. III → feminine (15 exceptions)
 - d. IV → neuter

Declension III

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			tetrád'								
ACC			tetrád								
GEN			tetrád					i			
LOC			tetrád					i			
DAT			tetrád					i			
INS			tetrád					ju			

Declension III

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			tetrád'			∅					
ACC			tetrád			∅					
GEN			tetrád			i					
LOC			tetrád			i					
DAT			tetrád			i					
INS			tetrád			ju					

Declension III

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

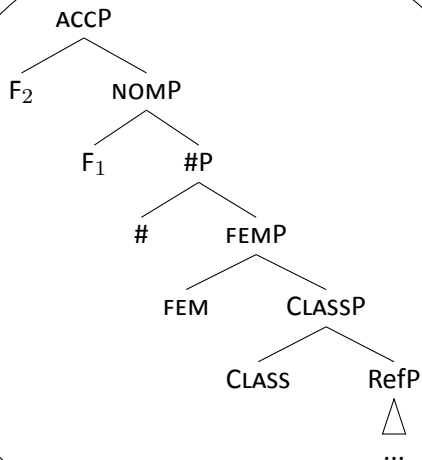
	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM		tetrád'				∅					
ACC		tetrád				∅					
GEN		tetrád				i					
LOC		tetrád				i					
DAT		tetrád				i					
INS		tetrád				ju					

Declension III

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen					a					
ACC	žen					u					
GEN	žen					y					
LOC	žen					e					
DAT	žen					e					
INS	žen						oj				

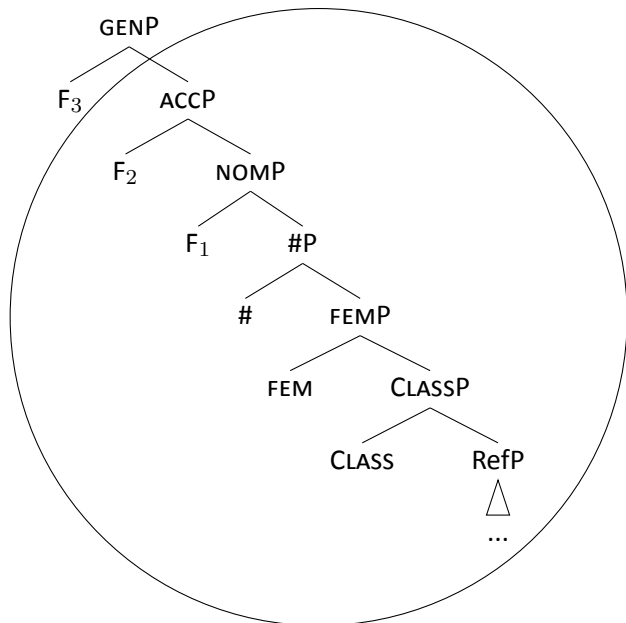
	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	tetrád'					∅					
ACC	tetrád					∅					
GEN	tetrád					i					
LOC	tetrád					i					
DAT	tetrád						i				
INS	tetrád						ju				

Declension III



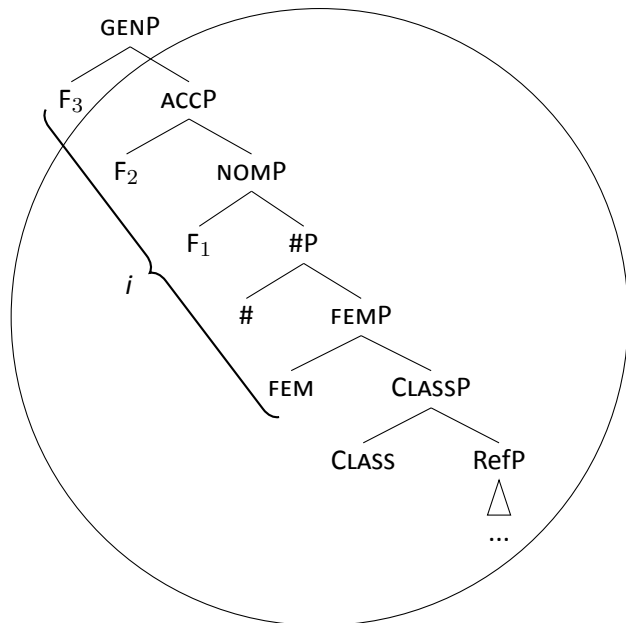
tetrád' (III)

Declension III



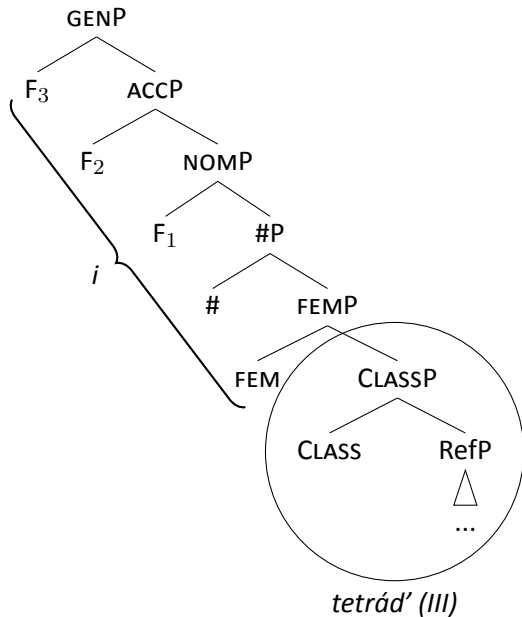
tetrád' (III)

Declension III



tetrád' (III)

Backtracking (Starke 2018; Vanden Wyngaerd et al. 2020)



Declension III

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM	žen			a							
ACC	žen			u							
GEN	žen			y							
LOC	žen			e							
DAT	žen			e							
INS	žen			oj							

	xNP	REF	CLASS	FEM	#	F1	F2	F3	F4	F5	F6
NOM			tetrád'								
ACC			tetrád								
GEN	tetrád					i					
LOC	tetrád					i					
DAT	tetrád					i					
INS	tetrád					ju					

Introduction

Features

Phrasal spellout

The basic intuition

Decomposing case

Number, Gender, declension

Declension III

Declension IV

Conclusions

Declension IV

- (19) Declensions and genders for inanimates (Corbett 1982)
- a. I → masculine
 - b. II → feminine
 - c. III → feminine (15 exceptions)
 - d. IV → neuter

Declension IV

Table 5: The non-feminine declensions (Timberlake 2004)

	factory I (MASC)	place IV (NEUT)
NOM	zavód-∅	mést-o
ACC	zavód-∅	mést-o
GEN	zavód-a	mést-a
LOC	zavód-e	mést-e
DAT	zavód-u	mést-u
INS	zavód-om	mést-om

Declension IV

	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6
NOM	mest		o							
ACC	mest			o						
GEN	mest				a					
LOC	mest					e				
DAT	mest						u			
INS	mest							om		

Declension IV

	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6
NOM	mest		o							
ACC	mest			o						
GEN	mest				a					
LOC	mest					e				
DAT	mest						u			
INS	mest							om		

	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6
NOM			zavód							
ACC				zavód						

Declension IV

	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6
NOM	mest		o							
ACC	mest			o						
GEN	mest				a					
LOC	mest					e				
DAT	mest						u			
INS	mest							om		

	xNP	REF	CLASS	#	F1	F2	F3	F4	F5	F6
NOM			zavód							
ACC				zavód						
GEN	zavód				a					
LOC	zavód					e				
DAT	zavód						u			
INS	zavód							om		

Introduction

Features

Phrasal spellout

The basic intuition

Decomposing case

Number, Gender, declension

Declension III

Declension IV

Conclusions

Conclusions

- ▶ How to account for declensions without declension features?

Conclusions

- ▶ How to account for declensions without declension features?
- ▶ Arbitrary root size (Caha et al. 2019; Vanden Wyngaerd et al. 2020)

Conclusions

- ▶ How to account for declensions without declension features?
- ▶ Arbitrary root size (Caha et al. 2019; Vanden Wyngaerd et al. 2020)
 - i No need for declension features

Conclusions

- ▶ How to account for declensions without declension features?
- ▶ Arbitrary root size (Caha et al. 2019; Vanden Wyngaerd et al. 2020)
 - i No need for declension features
 - ii No need for contextual rules

The end

Thank you!

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Table 6: The three genders of the 3rd decl. (Timberlake 2004)

	notebook	journey	time
	FEM.SG	MASC.SG	NEUT.SG
NOM	tetrád'-∅	pút'-∅	vrém- ja
ACC	tetrád'-∅	pút'-∅	vrém- ja
GEN	tetrád'-i	puť-í	vrém-en-i
LOC	tetrád'-i	puť-í	vrém-en-i
DAT	tetrád'-i	puť-í	vrém-en-i
INS	tetrád'-ju	puť-óm	vrém-en-em

Table 7: The plural of Declension III (Timberlake 2004)

	notebook III, FEM. PL	time NEUT.PL	place I_B (NEUT.PL)
NOM	tetrád'i	vrém-en-á	mest-á
ACC	tetrád'i	vrém-en-á	mest-á
GEN	tetrád'ej	vrém-en-∅	mest-∅
LOC	tetrád'ach	vrém-en-áx	mest-áx
DAT	tetrád'am	vrém-en-ám	mest-ám
INS	tetrád'ami	vrém-en-ámi	mest-ámi