Umlaut, paradigmatische Distinktheit und phonologische Intervention

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Claims

Neef (1997):
The interaction of umlaut and ə-epenthesis in German 2sg/3sg verb forms is governed by a paradigmatic distinctivity constraint

This talk:
The interaction of umlaut and ə-epenthesis in German 2sg/3sg verb forms is governed by concatenation + phonology

ə-Epenthesis in German Verbs

	‘to send’	‘to glue’	‘to lend’	‘to rule’
Infinitive	ʃɪk-n	pap-n	mi:t-n	walt-n
2sg	ʃɪk-st	pap-st	mi:t-ə-st	walt-ə-st
3sg	ʃɪk-t	pap-t	mi:t-ə-t	walt-ə-t

⇨ between [t] and [-t/-st] ə is inserted

Umlaut and ə-Blocking in German Verbs (cf. Bendjaballah, this morning)

	‘to put’	‘to carry’	‘to weed’	‘to counsel’	‘to hold’
Infinitive	le:g-n	tʀa:g-n	jɛ:t-n	ʀa:t-n	gɛlt-n
2sg	le:k-st	tʀɛ:k-st	jɛ:tə-st	**ʀɛ:t-st**	**gɪlt-st**
3sg	le:k-t	tʀɛ:k-t	jɛ:tə-t	**ʀɛ:t**	**gɪlt**
					(Raising)

⇨ Umlaut blocks ə-epenthesis

Structure of the Talk

The Analysis of Neef (1997)

Theoretical Background Assumptions

A Phonological Analysis of ə-Blocking

The Analysis of Neef (1997)

Neef's (1997) Word-Design

- Word forms don't consist of morphemes
- Word forms have stems and bases
- Word forms are well-formed,
  if they satisfy all design conditions of a given language
- Design conditions are language-specific & inviolable

Neef (1997): Design Conditions for the 3sg

Design Condition 1: 3sg must end in [t]

Design Condition 2: 3sg must differ phonologically from its base

Neef (1997) on Umlaut and Ablaut

Umlaut and ablaut are due to

arbitrary selection of stem allomorphs

which can not be altered by design conditions

3sg-Forms not ending in [t]

Base: [knak] (Stem)

	-t	**Base ≠ Form**
☞ knakt	✔	✔
knak	★	★

(not umlauting)

Base: [bak] (Stem)

	-t	**Base ≠ Form**
☞ bɛkt	✔	✔
bɛk	★	✔

(umlauting)

3sg-Forms ending in [t]

Base: [jɛ:t] (Stem)

		-t	**Base ≠ Form**
☞	jɛ:tət	✔	✔
	jɛ:t	✔	★

(not umlauting)

Base: [ʀa:t] (Stem)

		-t	**Base ≠ Form**
	ʀɛ:tət	✔	✔
☞	ʀɛ:t	✔	✔

(umlauting)

Umlauting 3sg-Forms with Final [t]

Base: [ʀa:t] (Stem)

		-t	**Base ≠ Form**
	ʀɛ:tət	✔	✔
☞	ʀɛ:t	✔	✔

Problem: What excludes [ʀɛ:tət]?

"The Schwa is . . . a kind of last resort, which steps in, if there are no other means to satisfy a structural requirement." (Neef, 1997:165)

The Problem with 2sg

Base: [ʀa:t] (Stem)

		-st	Base ≠ Form
	ʀɛ:təst	✔	✔
☞	ʀɛ:tst	✔	✔

Base: [jɛ:t] (Stem)

		-st	Base ≠ Form
	jɛ:təst	✔	✔
☛	jɛ:tst	✔	✔

Problem:

If schwa is last-ressort, it should be blocked by an affix which makes the 2sg distinct from the stem

The Problem with 2sg: Neef's Solution

"The consequence . . . is that the design of the [2sg] depends from the design of the [3sg], hence that the base of the [2sg] is the [3sg] and not the verb stem. . . .

In principle the form of the [2sg] is identical to the [3sg] apart from the fact that it must end on [st] instead on [t]"
(Neef, 1997:173-174)

2sg [jɛtəst] is better than [jɛtəst]
because it is closer to the 3sg base [jɛtət]
Hence the schwa in [jɛtəst] is not epenthetic,
but already part of the base.

Why these data are important

- They seem to show that a phonological process (ə-epenthesis)
  is directly sensitive to intra-word distinctness

- This could only be captured in an architecture of morphophonology which is inherently paradigmatic

  and where phonological constraints have detailed access to morphological information
  in the form of constraint indexation or cophonologies (cf. Alber & Arndt-Lappe, this morning)

OT-Approaches Invoking Morphological Distinctivity

- **Antifaithfulness** (Alderete, 2001):
  Paradigmatically related stems must differ according to a specified phonological parameter

- (Paradigmatic) **REALIZE MORPHEME** (Kurisu, 2001):
  Paradigmatically related words must differ according to some phonological parameter

(potentially problematic, cf. Zimmermann, this afternoon)

Theoretical Background Assumptions

Background

- Umlaut is a defective segment **U**
  which can occur in all positions
  which are open to full segments
- In 2sg/3sg forms U is a sub-exponent of verb agreement
  restricted to a specific lexical class of verbs
- Umlaut spreads to stems
  due to phonological licensing constraints

Technical Implementation

- **Morphology:**
  Distributed Morphology
  (Halle & Marantz, 1993; Müller, 2006; Trommer, 2007)

- **Phonology:**
  Autosegmental Phonology +
  the Colored Containment version of Optimality Theory
  (van Oostendorp, 2004; Hermans&van Oostendorp, 2008)

(Defective) Segments can occur as

- parts of exponents
- exponents
- subexponents

(Defective) Segments as parts of exponents

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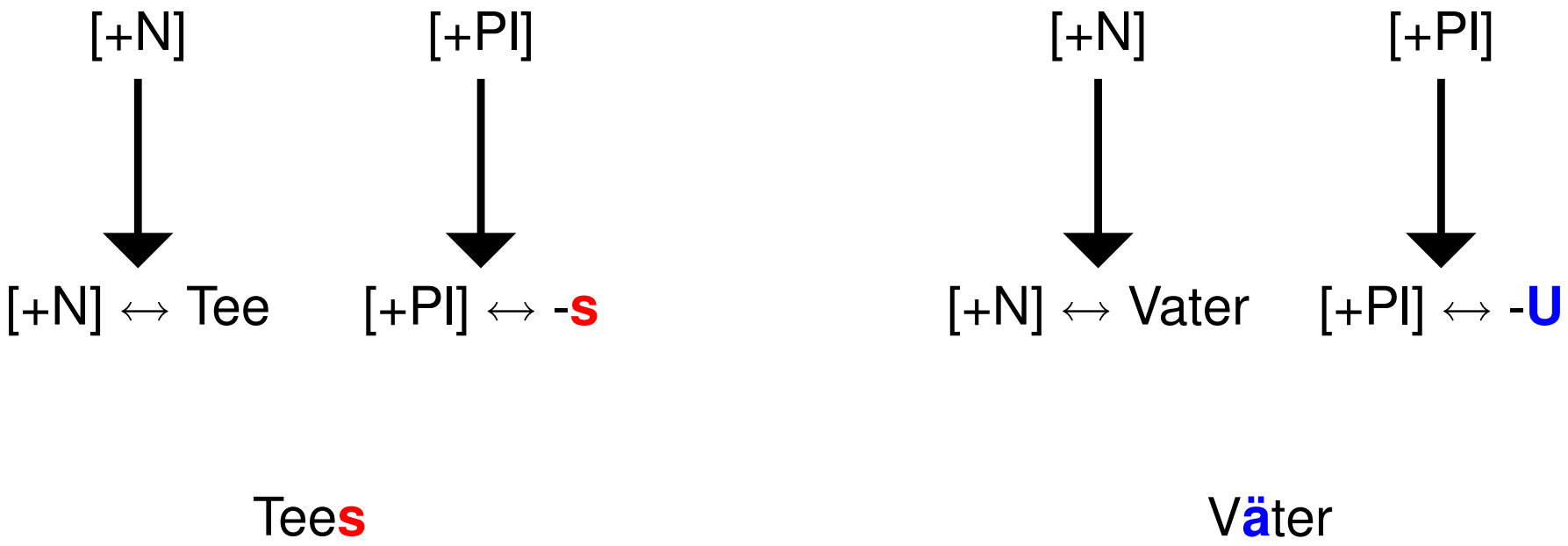
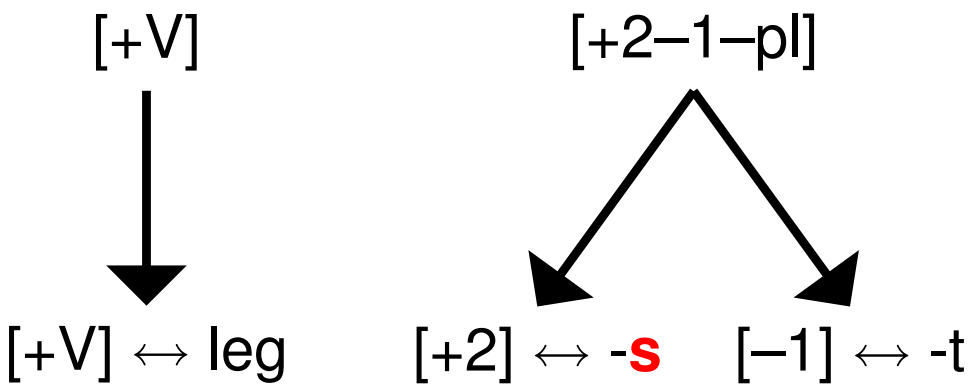
(Defective) Segments as exponents (Trommer, 2007)



Segments as subexponents (Müller, 2006; Trommer, 2007)



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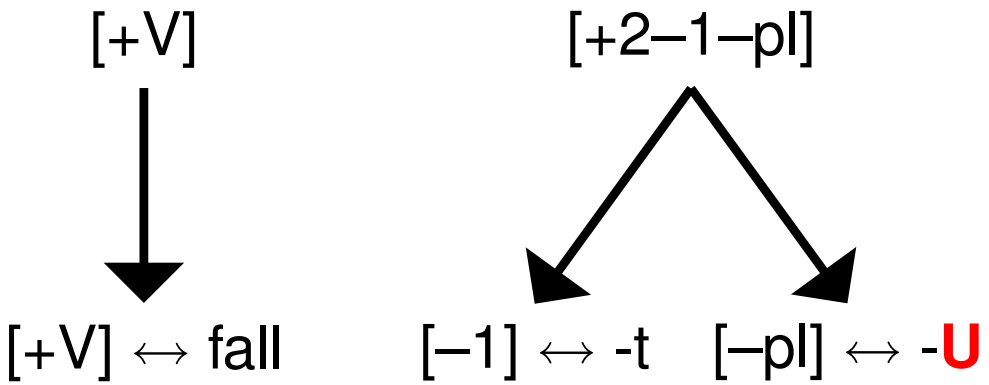

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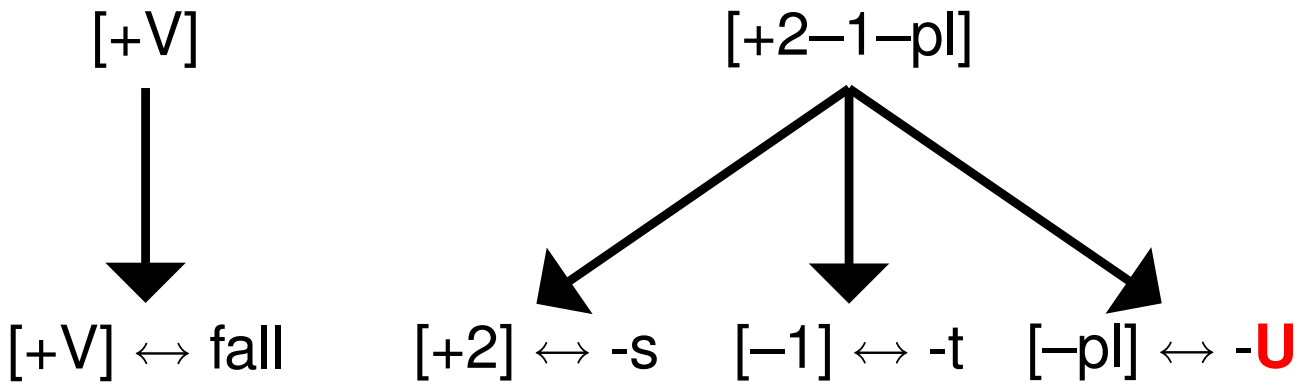

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Discontinuous Exponence in German (Müller, 2006; Trommer, 2007)

	sg		**pl**	
1	[+1 –2 –pl]	-e	[+1 –2 +pl]	-n
2	[–1 +2 –pl]	-s-t	[–1 +2 +pl]	-t
3	[–1 –2 –pl]	-t	[–1 –2 +pl]	-n

[–2+pl] : -n
[+2] : -s /[____ –pl]
[–1] : -t

[-pl] : U / [____ –1] Class_U
[–2] : -e

Limburgian Diminutive Umlaut (Hermans & van Oostendorp, 2008)

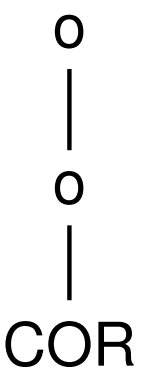
Regular Umlaut

		Diminutive
v[u:]s	‘fist’	v[y:]s-ke
b[o:]k	‘book’	b[ø:]k-ske
m[ɑ]n	‘man’	m[æ]n-ke

Blocking by Intervening Vowel

		Diminutive
j[u:]d[ɑ]s	‘rotter’	–
[o:]m[a]	‘grandma’	–
c[a:]mer[a]	‘camera’	–

The Representation of Umlaut (Hermans & van Oostendorp, 2008)

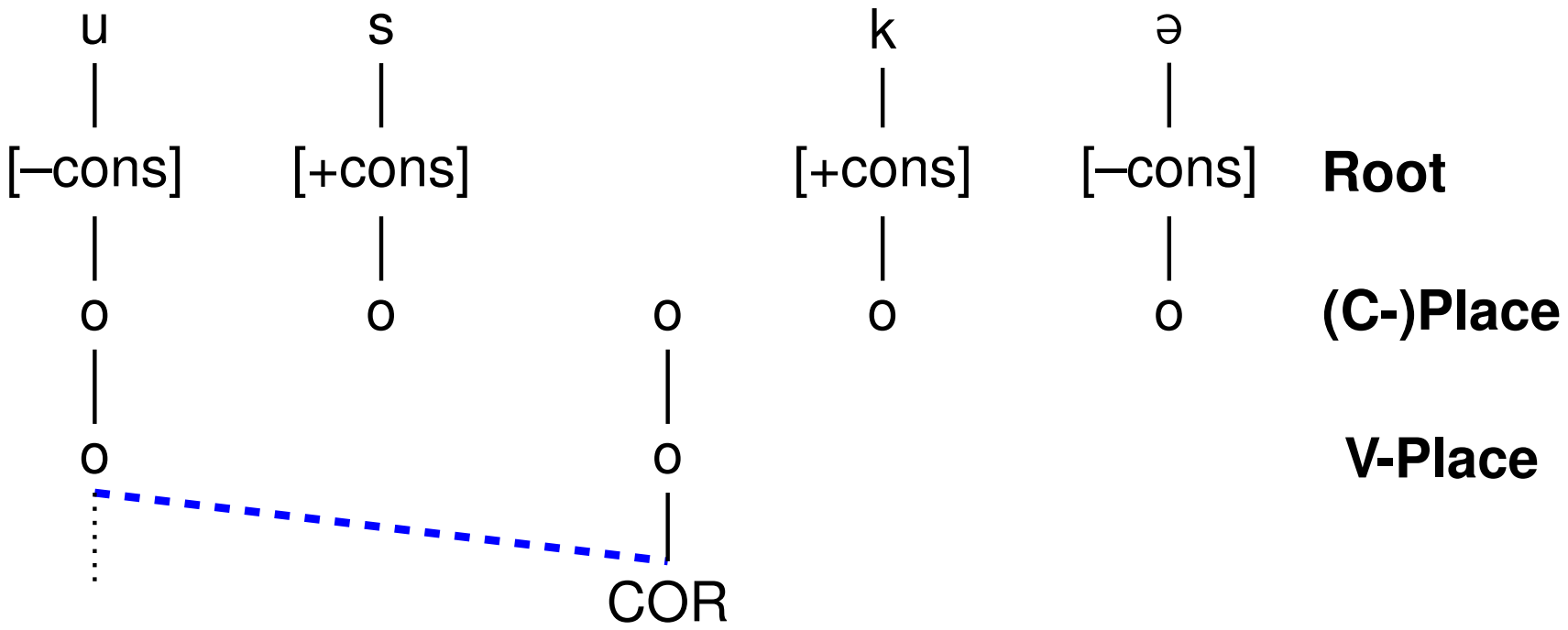
U = 

Root

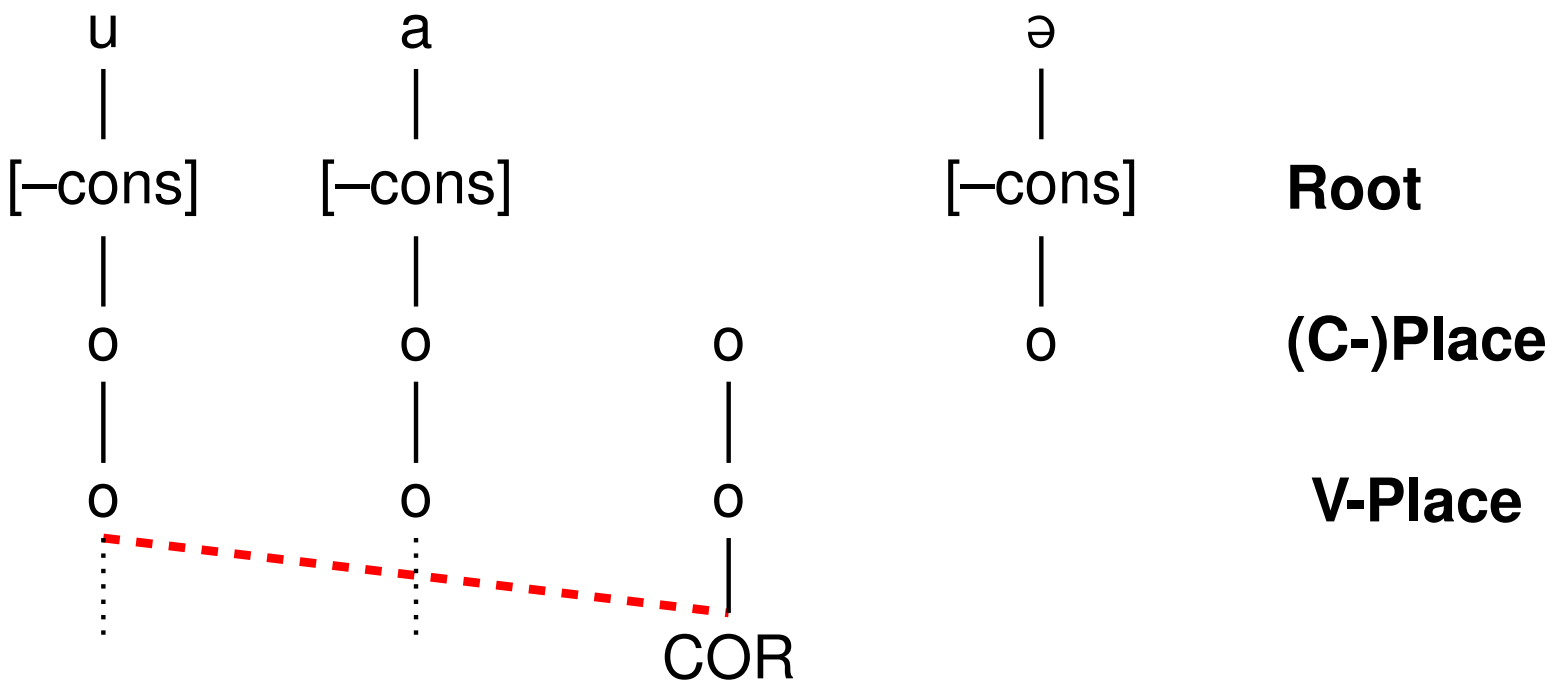
(C-)Place

V-Place

Successful Umlaut (Hermans & van Oostendorp, 2008)



Blocked Umlaut (Hermans & van Oostendorp, 2008)



j[u:]d[ɑ]s-ke

Constraints (Hermans & van Oostendorp, 2008)

- **LIC-COR:** A coronal feature must be licensed by association to a stem vowel
- (**HEAD=HEAD**: The head of a harmonic span should be the head of a foot.)
- **BIN-SPAN**: A feature span is (maximally) binary
- ***Ø**: Avoid the Ø-parse

Blocked Umlaut (Hermans & van Oostendorp, 2008)

Input: j[u:]d[ɑ]s-k**U**ə

	LIC-COR	BIN-SPAN	*Ø
a. j[**y:**]d[**ɛ**]s-k**U**ə		*!	
b. j[u:]d[**ɑ**]s-k**U**ə	*!		
c. j[u:]d[ɑ]s-k**U**ə	*!		
☞ d. Ø			*

Evidence for the Phonological Analysis (Hermans & van Oostendorp, 2008)

- Phonological intervention cannot be captured as paradigmatic distinctness
- Intervention even applies if fronting would be vacuous:

z[e:]br[a]	‘zebra’	*z[e:]br[E]-ke	*z[e:]br[a]-ke
T[i:]n[a]	girl’s name	*T[i:]n[ɛ]-ke	*T[i:]n[a]-ke
t[y]b[a]	‘tuba’	*t[y]b[ɛ]-ke	*t[y]b[a]-ke
t[y]m[ɔ]r	‘tumor’	*t[y]m[œ]r-ke	*t[y]m[ɔ]r-ke

A Phonological Analysis of ə-Blocking

ə-Insertion before [-t]

- $[V\ t\ t]_\sigma$ is phonetically interpreted as $[V\ t]_\sigma$
- $[V\ t\ t]_\sigma$ is possible (*rä[tt]*), but marked (**wa[tt]*)
- ***TT:** No adjacent coronal stops
- Repair by ə-insertion

similar to the standard treatment of ambisyllabic/geminate consonants, cf. Caratini this morning

ə-Insertion before [-t]

Input: mi:t-t

	*TT	DEP V
a. mi:tt	*!	
☞ b. mi:t-ə-t		*

ə-Insertion before [-s-t]

- [V t s]$_\sigma$ is harmonically bounded by [V t͡s]$_\sigma$ (*des Ra[t͡s]*) due to **SONORITY SEQUENCING**
- [t͡st] is possible (*rä[t͡st]*), but marked by *TT (**wa[t͡st]*)
- ə-insertion between [s] and [t] is excluded (*(du) *watset*)
- **CONTIGUITY$_{\text{SUBEXPONENTS:}}$** No insertion between subexponents of the same head

ə-Insertion before [-s-t]

Input: mi:t-s-t

	*TT	SON-SEQ	CONTIG$_{SUBEX}$	DEP V
a. mi:t-s-t		*!		
b. mi:t͡s-t	*!			
c. mi:t-s-ə-t			*!	
☞ d. mi:t-ə-s-t				*

Umlaut and Blocking of ə-Insertion

Input: ʀa:t-t-**U**

	LIC-COR	BIN-SPAN	*Ø	*TT	DEP V
a. ʀa:t-ə-t-**U**	*!				*
b. ʀ**ɛ:**t-**ə**t-**U**		*!			*
c. Ø			*!		
☞ d. ʀ**ɛ:**t-t-**U**				*	

Input: ʀa:t-s-t-**U**

	LIC-COR	BIN-SPAN	*Ø	*TT	DEP V
a. ʀa:t-ə-s-t-**U**	*!				*
b. ʀ**ɛ:**t-**ə**-s-t-**U**		*!			*
c. Ø			*!		
☞ d. ʀ**ɛ:**t-s-t-**U**				*	

Umlaut and ə-Deletion in Diminutives

Rose	Rös**e**-chen	*Röse-chen
Bude	Büd**e**-chen	*Büde-chen
Dame	Däm**e**-chen	*Däme-chen

Monat	*Mönat-chen	*Mön**a**t-chen
Wodka	*Wödka-chen	*Wöd**ka**-chen
Europa	*Euröpa-chen	*Euröp**a**-chen

Umlaut and ə-Deletion in Diminutives

- With stems where the stressed vowel is not final, stem-final ə is deleted to satisfy LIC-COR and BIN-SPAN
- Full vowels are retained leading to ineffability (just as in Limburgian)

⇨ Different Ranking of MAX V (for full vowels) and MAX ə

Umlaut and ə-Deletion in Diminutives

Input: bude-**U**chen

	MAX V	LIC-COR	BIN-SPAN	*Ø	MAX ə
a. bude-**U**chen		*!			
b. b**ü**d**e**-**U**chen			*!		
c. Ø				*!	
☞ d. b**ü**d-**U**chen					*

Input: monat-**U**chen

	MAX V	LIC-COR	BIN-SPAN	*Ø	MAX ə
a. monat-**U**chen		*!			
b. m**ö**n**ä**t-**U**chen			*!		
☞ c. Ø				*	
d. m**ö**nt-**U**chen	*!				

ə-Non-Blocking in Diminutives

Bruder	Brüder-chen	*Brüder-chen
Vater	Väter-chen	*Väter-chen
Gabel	Gäbel-chen	*Gäbel-chen
Sockel	Söckel-chen	*Söckel-chen

but:

Haken	*Häken-chen	Häken-chen
Laden	*Läden-chen	Läden-chen
Korken	*Körken-chen	Körken-chen

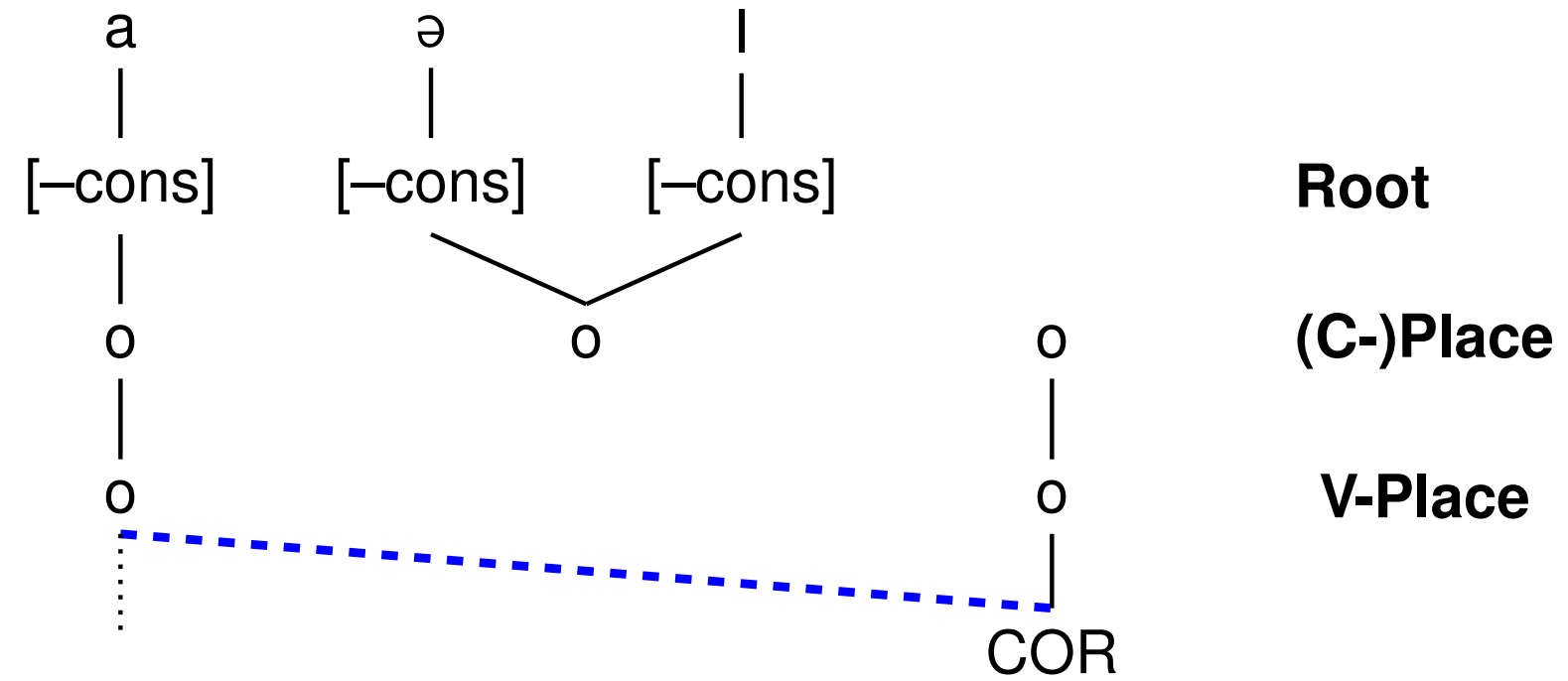
ə-Non-Blocking in Diminutives

Generalization: [ə] does not intervene in umlaut licensing if it precedes [l] or is vocalized [ɐ]

Intuition: [ə] must lean on the place features of another segment

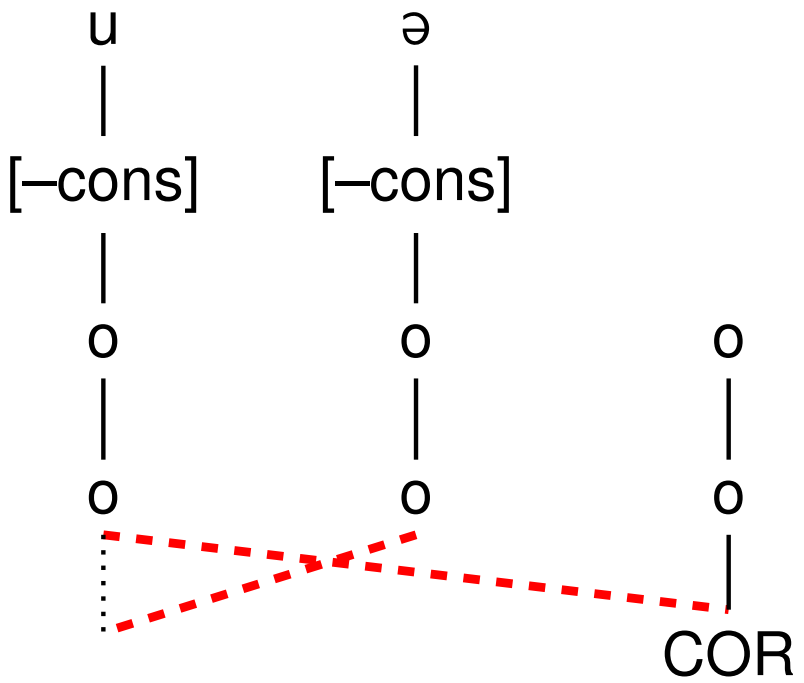
Assumption: [ə] either shares the C-Place node of an appropriate right-adjacent consonant or links its V-Place node to V-Place of a preceding vowel

Nonblocking by [əl]



N**ä**del**U**-chen

Blocking by [ə]



Root

(C-)Place

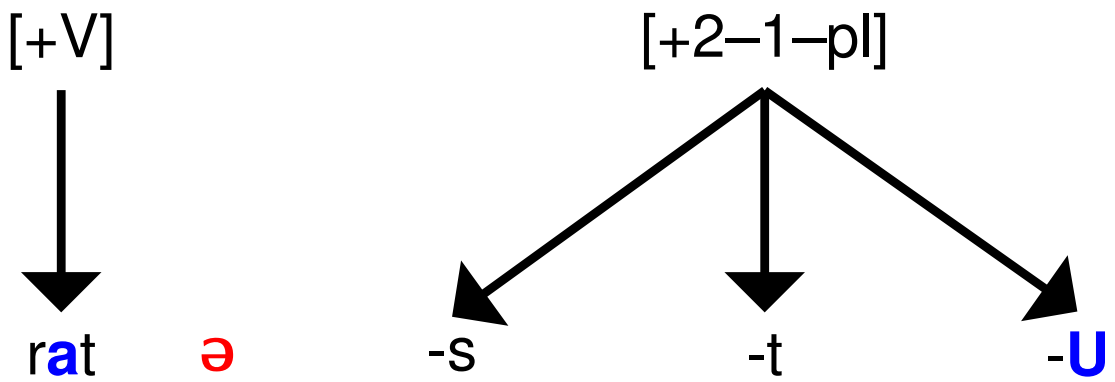
V-Place

*B**u**d**ə**-**U**chen

Umlaut & ə-Non-Blocking in Subjunctive Forms

	‘to do’	‘to lie’	‘to come’
Past 1sg	ta:t	la:g	ka:m
Subjunctive 2sg	tɛ:t-ə-st	lɛ:g-st	kɛ:m-st
Subjunctive 2pl	tɛ:t-ə-st	lɛ:g-t	kɛ:m-t

ə-Blocking in 2sg/3sg Indicative Forms



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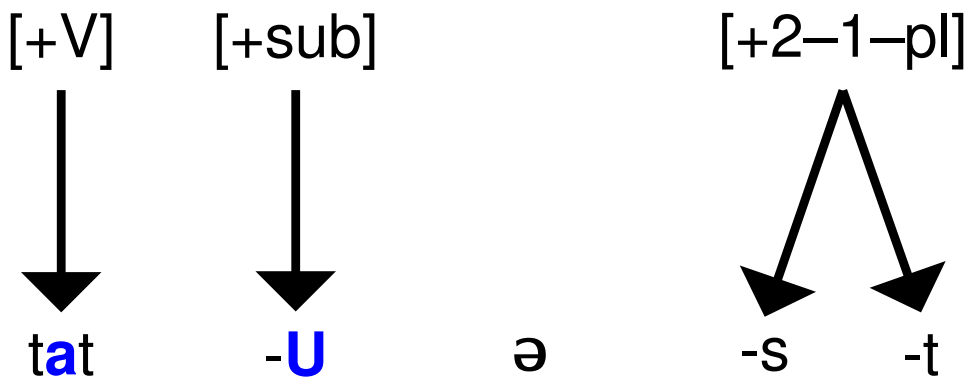
ə-Non-Blocking in Subjunctive Forms



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Summary

- The interaction of umlaut and ə-epenthesis can be captured without recurring to paradigmatic distinctness
- The relevant phonological licensing conditions have widespread consequences for the morphophonology of German (and related dialects)
- ə acts as a context-sensitive intervenor