Multiple-Feature Mutation
and
REALIZE MORPHEME

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Voicing Mutation in Aka (Akinlabi, 1996; Wolf, 2005)

Class 5 - singular	**Class 6 Plural**	
gɔàlà	mà-**g**ɔàlà	(game of imitation)
bèlèlé	mà-**b**èlèlé	'sound of waterfall'
dʒámbà	mà-**dʒ**ámbà	'mud'
dèŋgé	ma-**t**èŋgé	'piercing tool'
gásá	ma-**k**ásá	'palm branch'
bàpùlàkà	ma-**p**àpùlàkà	'lung'

Singular of class 5 is expressed by voicing the initial consonant

Autosegmental Analysis (Lieber, 1987; Zoll, 1996; Wolf, 2005)

[+voice]   ↔   [+sing]

          +   ➔   g$_{[+voice]}$asa

k$_{[-voice]}$asa   ↔   [+N]

Why can a floating feature owervrite?

REALIZE MORPHEME: For every morpheme in the input,
some phonological element
should be present in the output.

(van Oostendorp, 2005; $\approx$ Akinlabi, 1996)

MAXFLT: All autosegments
that are floating in the input
have output correspondents.

(Wolf, 2005; $\approx$ Zoll, 1996)

Conflicting Claims

Wolf (2005):   Both REALIZE MORPHEME and MAXFLT can handle
simple cases as in Aka, but only MAXFLT
can capture overwriting in mutation patterns
involving more than one phonological feature

This talk: REALIZE MORPHEME is sufficient
if an approppriate morphological analysis
of apparently problematic cases is provided

REALIZE MORPHEME should be preferred
since it is simpler and more general

Overview

The Argument for MAXFLT

Discontinuous Exponence in Morphological Theory

Multi-Feature Mutation as Multiple Morphemes

Umlaut and Ablaut in German

How Feature Overwriting could emerge

through

- ▶ Standard Faithfulness Constraints

- ▶ Standard Markedness Constraints

- ▶ MAXFLT

- ▶ REALIZE MORPHEME

Overwriting through Standard Faithfulness?

Input: [+vc] + $k_{[-vc]}$asa

	MAX	DEP	IDENT
a. $g_{[+vc]}$asa			*!
☞ b. $k_{[-vc]}$asa			

MAX and DEP: are indifferent w.r.t. overwriting

IDENT: systematically disfavors overwriting

Overwriting through Standard Markedness?

VOP (Voiced Obstruent Prohibition):   No Obstruent must be voiced
                                             (Kager, 1996:40)

Input: [+vc] k$_{[–vc]}$asa

	VOP
a. g$_{[+vc]}$asa	*!
☞ b. k$_{[–vc]}$asa	

➜ doesn't work for markedness-increasing mutation as in Aka

Overwriting through REALIZE MORPHEME?

Input: [+vc] $k_{[-vc]}$asa

	REALMORPH	IDENT	VOP
☞ a. $g_{[+vc]}$asa		*	*
b. $k_{[-vc]}$asa	*!		

REALIZE MORPHEME: For every morpheme in the input,
some phonological element
should be present in the output.

Overwriting through MAXFLT?

Input: [+vc] $k_{[-vc]}$asa

		MAXFLT	IDENT	VOP
☞	a. $g_{[+vc]}$asa		*	*
	b. $k_{[-vc]}$asa	*!		

MAXFLT: All autosegments
that are floating in the input
have output correspondents.

Multi-Feature Mutation in Texistepec Popoluca

- ▶ 1st person verb forms are marked by nasalizing the initial consonant

- ▶ 2nd person verb forms are marked by nasalizing and palatalizing the initial consonant

- ▶ 3rd person verb forms are marked by denasalizing and palatalizing the initial consonant

Infin.	1P	2P	3P	
dastah	**n**astah	**ɲ**astah	**dʲ**astah	'dig'
naj	—	—	**dʲ**aj	'sprout'

Multi-Feature Mutation in Texistepec Popoluca

Infin.	**1P**	**2P**	**3P**	
dastah	**n**astah	**ɲ**astah	**dʲ**astah	'dig'
naj	—	—	**dʲ**aj	'sprout'

$[+1] \quad \leftrightarrow \quad [+\text{nasal}]$

$[+2] \quad \leftrightarrow \quad [+\text{nasal–back}]$

$[+3] \quad \leftrightarrow \quad [-\text{nasal–back}]$

MAXFLT vs. REALMORPH in Multiple-Feature Mutation

Input: [-nas-bk] + n$_{[+nas+bk]}$aj

	MAXFLT	IDENT
☞ a. d$^{j}_{[+nas+bk]}$aj		**
b. d$_{[-nas+bk]}$aj	*!	*
c. n$_{[+nas+bk]}$aj	*!*	

	REALMRPH	IDENT
a. d$^{j}_{[+nas+bk]}$aj		**!
☛ b. d$_{[-nas+bk]}$aj		*
c. n$_{[+nas+bk]}$aj	*!*	

The Problem for REALIZEMORPHEME

REALIZEMORPHEME . . .

- ▶ . . . quantifies existentially, not universally

- ▶ . . . is satisfied if at least one floating feature is realized

- ▶ . . . doesn't enforce realization of all features
  in multiple-feature mutation

Discontinuous Exponence: Person and Number (Muna)

	sg	**pl**
1	**a**-kala	**ta**-kala
1+2	**do**-kala	**do**-kala-**amu**
2	**o**-kala	**o**-kala-**amu**
2 (polite)	**to**-kala	**to**-kala-**amu**
3	**no**-kala	**do**-kala

(van den Berg, 1989:51)

Agreement is partially expressed by one affix (e.g. ta-)

and partially split into person and number (e.g. o- -amu)

Discontinuous Exponence in Distributed Morphology

- ▶ Syntax provides heads with morphosyntactic features, but without phonological content (e.g. [+1+pl])

- ▶ Morphology realizes heads phonologically by vocabulary items (e.g. ta- ↔ [+1+pl])

- ▶ In Discontinuous Exponence features of 1 head are expressed by more than 1 vocabulary item (e.g. [+2+pl] by o- ↔ [+2] and -amu ↔ [+pl])

(Noyer, 1992; Halle & Marantz, 1993; Frampton, 2003; Müller & Trommer, 2006)

(Similar Proposals in OT: Noyer, 1993; Trommer, 2001; Wunderlich, 2003)

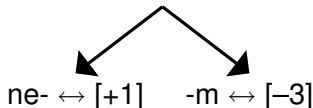# Discontinuous Exponence in Distributed Morphology

$$[+1+pl] \qquad\qquad\qquad [+2+pl]$$

ta- $\leftrightarrow$ [+1+pl]   o- $\leftrightarrow$ [+2]   -amu $\leftrightarrow$ [+pl]
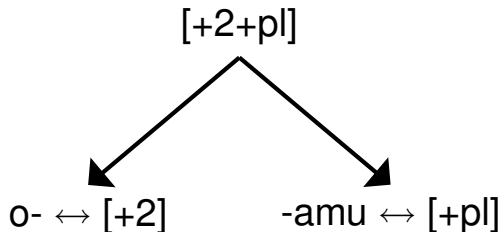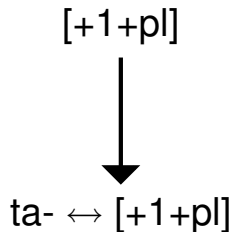
Discontinuous Exponence of Person (Menominee)

ne-po:se-**m**
[+1]-embark-[–3]
'I embark'

ke-po:se-**m**
[+2]-embark-[–3]
'you embark'
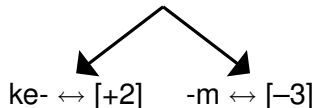
po:se-**w**
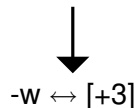embark-[+3]
'he embarks'

[+1–2–3]
ne- ↔ [+1]   -m ↔ [–3]

[–1+2–3]
ke- ↔ [+2]   -m ↔ [–3]

[–1+2–3]
-w ↔ [+3]

(Trommer, 2007; data from Bloomfield, 1962)

Discontinuous Exponence in Sierra Populuca (Müller, 2005)

Abs	
[+1−2−Erg]	a-
[+1+2−Erg]	t-a-
[−1+2−Erg]	m-i-
[−1−2−Erg]	–

Erg	
[+1−2+Erg]	a-n-
[+1+2+Erg]	t-a-n-
[−1+2+Erg]	i-n-
[−1−2+Erg]	i-

Abs	Erg	
[+1−2−Erg]	[−1+2+Erg]	a-n
[−1+2−Erg]	[+1−2+Erg]	m-a-n-
[−1−2−Erg]	[−1−2+Erg]	i-
[−1−2−Erg]	[+1−2+Erg]	a-n-
[−1−2−Erg]	[−1+2+Erg]	i-n-
[+1−2−Erg]	[−1−2+Erg]	a-
[−1+2−Erg]	[−1−2+Erg]	m-i-

$$
\begin{aligned}
\text{n-} &\leftrightarrow [+\text{Erg}] & \\
\text{a-} &\leftrightarrow [+1] & \\
\text{i-} &\leftrightarrow [-1] & \\
\text{m-} &\leftrightarrow [+2] & / [-\text{Erg}] \\
\text{t-} &\leftrightarrow [+2] & / [+2]
\end{aligned}
$$

Texistepec Popoluca as Discontinuous Exponence

Inf.	**1P**	**2P**	**3P**	
—	[+nasal]	[+nasal -back]	[-nasal -back]	
dastah	**n**astah	**nʲ**astah	**dʲ**astah	'dig'
naj	—	—	**dʲ**aj	'sprout'

[-3] ↔ [+nasal]

[-1] ↔ [-back]

[+3] ↔ [-nasal]

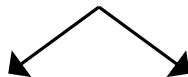# Texistepec Popoluca as Discontinuous Exponence

1p	**2p**	**3p**
nastah	**nʲ**astah	**dʲ**astah

[+1−2−3]   [−1+2−3]   [−1−2+3]

↓   ↙   ↘   ↙   ↘
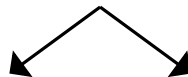
[+nas]↔[−3]   [+nas]↔[−3] [−back]↔[−1]   [−nas]↔[+3] [−back]↔[−1]

(cf. dastah, 'dig')

REALIZEMORPHEME Rehabilitated

Input: [+nas] +[–back] + d$_{[-nas+bk]}$astah

	REALIZEMORPHEME	IDENT
☞ a. n$^j_{[+nas-back]}$astah		**!
b. d$^j_{[-nas–back]}$astah	*!	*
c. n$_{[+nas+back]}$astah	*!	*
d. d$_{[+nas+bk]}$astah	*!*	

▶ REALMORPH refers to Vocabulary Items, not to Heads

▶ Since every floating feature is a morpheme,
  every floating feature must be realized

Multi-Feature Mutation in Nuer Infinite Forms

	'overtake'	'hit'	'pull out'	'scoop hastily'	
Infinitive	*cob*	*jaaç*	*guð*	*kêp*	
Negat. Pres. Ptc.	*còp*	*jaac*	*gut̯*	*kep*	[-voiced -continuant]
Past Ptc.	*cof*	*jaaç*	*guθ*	*kɛ̀f*	[-voiced +continuant]

[+Part] ↔ [-voiced]

[+Pol] ↔ [+continuant]

[-Pol] ↔ [-continuant]

Affixal Split Exponence for Infinite Forms (German)

	Weak	**Strong**
Infinitive	weh-en	seh-en
Present Particicple	weh-en-d	seh-en-d
Past Participle	ge-weh-t	ge-seh-en
Past 2sg	weh-t-est	sah-st

[+Tense +Past] $\leftrightarrow$ -t

[+Tense] $\leftrightarrow$ -n

[+Part] $\leftrightarrow$ -d   / ____ [–Past]

[+Part] $\leftrightarrow$ ge-

German: Affixation + Mutation in Verbal Ablaut

Present 1sg	Present 2sg	Present 3sg
lall-e	lall-st	lall-t
fall-e	f**ä**ll-**st**	f**ä**ll-**t**

MAXFLT vs. REALMORPH in Affixation + Mutation

Input: fa$_{[+bk]}$ll + **[-bk]st**

		MAXFLT	IDENT
☞	a. fä$_{[-bk]}$ll-**st**		*
	b. fa$_{[+bk]}$ll-**st**	*!	

		REALMRPH	IDENT
	a. fä$_{[-bk]}$ll-**st**		*!
☞	b. fa$_{[+bk]}$ll-**st**		

VIs for Agree (following Müller, 2006)

	sg		pl	
1	[+1 −2 −pl]	-e	[+1 −2 +pl]	-en
2	[−1 +2 −pl]	-s-t	[−1 +2 +pl]	-t
3	[−1 −2 −pl]	-t	[−1 −2 +pl]	-en

$[-2+pl]$ ↔ -n

$[+2]$ ↔ -s   / ____ $[-pl]$

$[-1]$ ↔ -t

[−pl] ↔ **−back** / ____ **[−1] Class$_U$**

[   ] ↔ -e

REALMORPH Rehabilitated

Input: $fa_{[+bk]}ll$ + **[-bk]** + **st**

	REALMRPH	IDENT
☞ a. $fä_{[-bk]}ll$-**st**		*!
b. $fa_{[+bk]}ll$-**st**	*!	
c. $fa_{[+bk]}ll$	*!*	