Exocentric mutation

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January 28th, 2015

OCP 12, Barcelona

Mutation: Morphology by Feature Modification

(1)

V Quality:	Br**u**der	‘brother’	∼ Br**ü**der	‘brothers’	(German)
C Quality:	**d**astah	‘to dig’	∼ **n**astah	‘I dig’	(Texistepec Popoluca)
V Length:	gud**ù**	‘walk’	∼ gud**ù:**	‘walking’	(Hausa)
C Length:	ka**t**ai	‘hard’	∼ ka**tt**ai	‘hard!’	(Shizuoka Japanese)
Tone:	gw**è**	‘swam’ (Sg)	∼ gw**é**	‘swam’ (Pl)	(Ngbandi)

Two Major Models of Mutation

A. Cyclic Feature Transformation: Mutation is triggered by morphological rules (constraints) which execute (require) feature changes

Morphology	**Phonology**
V́ [N +plural] → [−back]	—
Brüder	

Two Major Models of Mutation

A. Cyclic Feature Transformation: Mutation is triggered by morphological rules (constraints) which execute (require) feature changes

Morphology	**Phonology**
V́ [N +plural] → [–back]	—
Brüder	

B. Cyclic Feature Concatenation: Mutation is an effect of feature affixation + association of the feature affix to base material

Morphology	**Phonology**
$[\acute{V}]_{N}$ + [–back][+plural]	$\acute{V}_{[+back]+[-back]} \rightarrow \acute{V}_{[-back]}$
$Bruder+_{[-back]}$	⇒ Brüder

Mutation cum Segmental Affixation

(2)

V Quality:	B**u**ch	‘book’	∼ B**ü**ch-er	‘books’	(German)
C Quality:	**f**amar-ɓe	‘small’ (C2)	∼ **p**amar-o	‘small’ (C1)	(Fula)
V Length:	t**o**	‘take’	∼ t**oː**-ru	‘take’ (Pass.)	(Tarahumara)
C Length:	ca**m**	‘eat’ (tr.)	∼ ca**mm**-o	‘eat’ (intr.)	(Päri)
Tone:	t**á**dà	‘boy’	∼ t**à**dà-wa	‘boys’	(Kanuri)

Cyclicity in Morphology

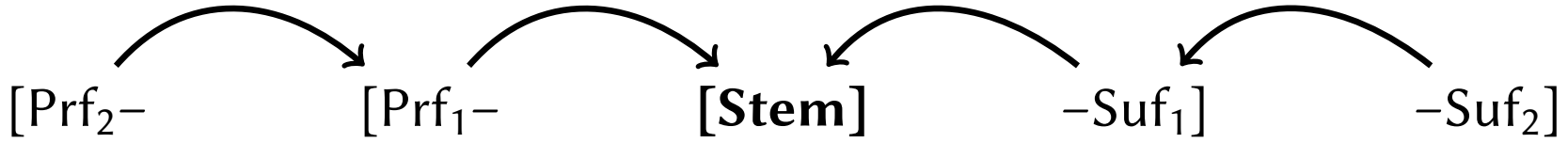
[Stem]

[Prf_1– **[Stem]** –Suf_1]

[Prf_2– [Prf_1– **[Stem]** –Suf_1] –Suf_2]

Directionality of Morphonological Processes

Endocentric:



$=_{def}$ A morphophonological process on a morphological constituent *C* is triggered by a constituent C' that is morphologically more peripheral than *C*.

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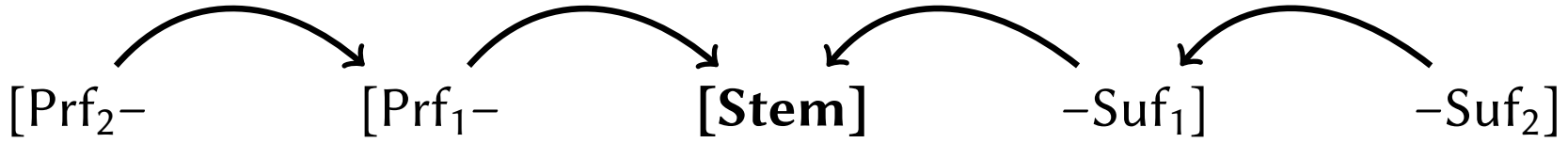

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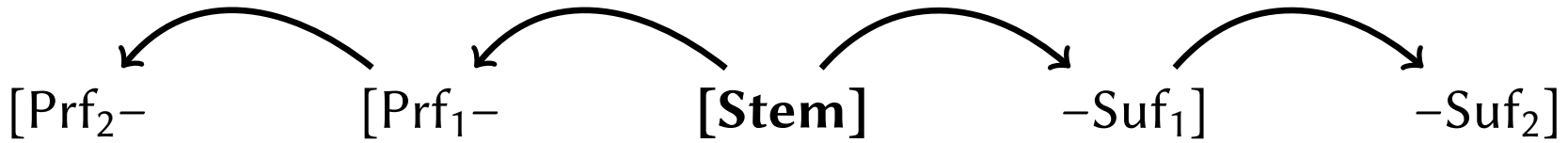

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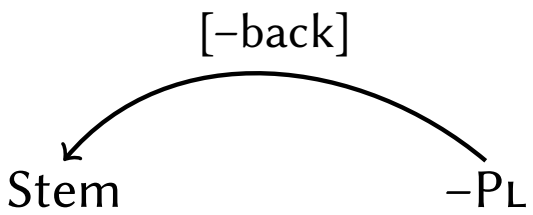
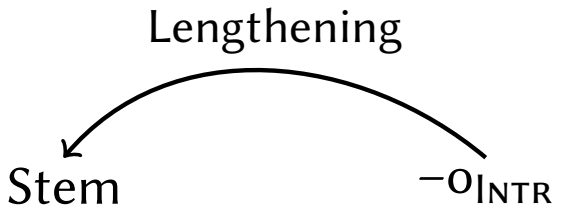
Endocentric mutation

➙ all examples so far ((1) and (2)) are **endocentric**:

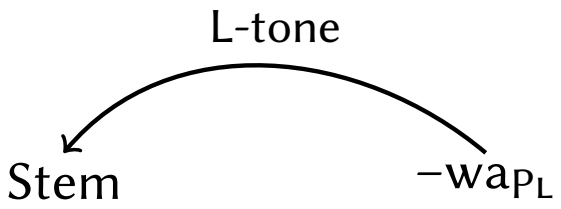
German:



Päri:



Kanuri:



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Where the Models Differ in Their Predictions

Cyclic Feature Transformation

➙ All mutation is endocentric

- Transformations are inherently cyclic base modifications

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Cyclic Feature Concatenation

➙ Mutation may be endocentric, exocentric, or mixed

- Morphology: Every morpheme can introduce floating features
  Phonology: Floating features may attach to any phonological object

Strict Base Mutation (SBM, Alderete 1999:141)

All mutation is endocentric.

Goal of this talk

- Show that SBM is empirically untenable (cf. Wolf 2009).

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- Provide examples of exocentric mutation for different types of features (length, tone, segmental features).
- Present new formal types of counterexamples to the SBM.

Exocentric Mutation: Data

Kpelle

Exocentric stem-to-affix mutation in Kpelle

- tones: H, M, L, HL; TBU=σ
- 5 classes of nouns; class 2 and 5 have same surface tone pattern but affect following morpheme (affix/word) differently

(3)

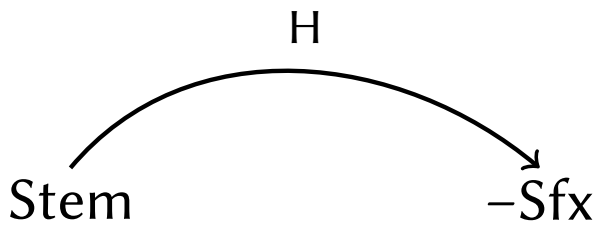
		Base	Pl	
1.	H.H	wúlú	wúlú-ɣáà	'tree'
2.	**L.L**	yàlà	yàlà-**ɣáà**	'lion'
3.	L.HL	yɔ̀wɔ̂	yɔ̀wɔ́-ɣàà	'axe'
4.	H.HL	yílê	yílé-ɣàà	'dog'
5.	**L.L**	gbònò	gbònò-**ɣàà**	'ring'

(Konoshenko 2008:24)

Exocentric stem-to-affix mutation in Kpelle

Analysis

- plural affix is underlyingly low: /-ɣàà/; e.g. **gbònò-ɣàà** (cl.5)
- final HL-contour on N is simplified and L shifts to affix: yílé-ɣàà (cl.3+4)
- final H of N spreads to this affix: wúlú-ɣáà (cl.1)
- class 2 has a final floating H: **gyàlà-ɣáà**



Gã

Gã (Paster 2000, 2003)

- Tense-Aspect is structurally inside of subject agreement

(4)

mí-**n**-cha	'I'm digging'	mí-cha-**a**	'I dig habitually'
1Sg-**Prog**-dig		1Sg-dig-**Hab**	
e-**baá**-cha	'I will dig'	é-**!**lá	'he has sung'
3Sg-**Fut**-dig		3Sg-**Perf**-sing	

(Paster 2000:8, Paster 2003:32)

Exocentric affix-to-affix mutation in Gã

- tonal overwriting of TAM on AGR

(5)

	Habitual (Underlying H/L-Tone)	Perfective (Grammatical H)	Simple Past (Grammatical L)
1Sg	**mí**-cha-a	**mí**-cha	**mi**-dú
2Sg	**o**-cha-a	**ó**-cha	**o**-dú
	('dig')	('dig')	('cultivate')

(Paster 2003:28–30)

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Interim summary

Interim summary: Simple cases of exocentric mutation

- Kpelle: stem triggers mutation on more outwards affix
- Gã: affix triggers mutation on more outwards affix

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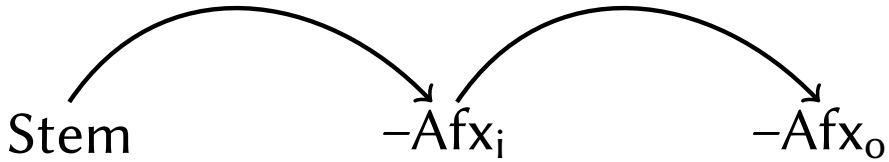
(6) *Simple exocentric mutation: overview*



Chukchee (vow.F)	Gã (tone)
Fula (cons.F)	Gaahmg (tone)
Modern Greek (stress)	Chaha (cons.F.)
Shoshone (length, cons.F (nas, gl))	
Kpelle (tone)	
Awa (tone)	
Fore (tone)	

Dhaasanac

Endo- vs. autocentric mutation in Dhaasanac

- various morphological lengthenings (gemination/V-lengthening)
- plural for certain nouns formed by suffixation of /-an/ and gemination of a preceding stem consonant (7-a)
- restriction: no gemination in polysyllabic words
- if gemination is blocked for polysyllabic nouns, the affix surfaces with a long V (7-b)

(7)

	Base	Pl	
a.	kur	kur**ː**am	‘knee’
	kór	kor**ː**am	‘double-pointed fork’
	ʃar	ʃar**ː**am	‘a kind of stick’
b.	ʔarːoŋoɗ	ʔarːoŋoɗ**aː**m	‘clearing-stick’
	ʔoŋor	ʔoŋor**aː**m	‘black’
	deger	deger**aː**m	‘barren’

(Tosco 2001:87)

Endo- vs. autocentric mutation in Dhaasanac

Analysis

- morphological lengthening strives to be realized on the stem
- if this is blocked, it is realized on the affix itself

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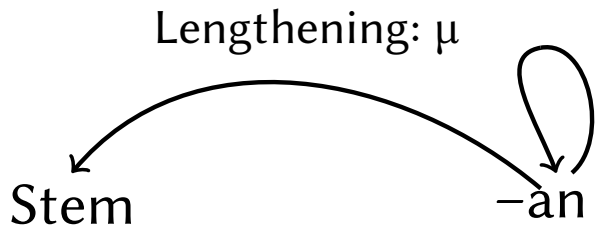


➙ **Alternation between endocentric and autocentric mutation**

Tamil

Endo- vs. Exo-centric mutation in Tamil

- intransitivization marked by gemination of a stem-final C
  → **endocentric mutation**

(8)

TRANS.STEM	PST		INTR.STEM	PST	
uu**d**(u)$_{epenth}$	uu**d**-in-	'blow'	uu**tt**(u)$_{epenth}$	uu**tt**-in	'pour'
tirum**b**(u)$_{epenth}$	tirum**b**-in-	'return'	tiru**pp**(u)$_{epenth}$	tiru**pp**-in-	'return'
suru**ŋg**(u)$_{epenth}$	suru**ŋg**-in-	'shrink'	suru**kk**(u)$_{epenth}$	suru**kk**-in-	'shrink'
uu**r**(u)$_{epenth}$	uu**r**-in-	'ooze'	uu**tt**(u)$_{epenth}$	u**tt**-in-	'pour'

(Sundaresan&McFadden 2014:2+3)

Endo- vs. Exo-centric mutation in Tamil

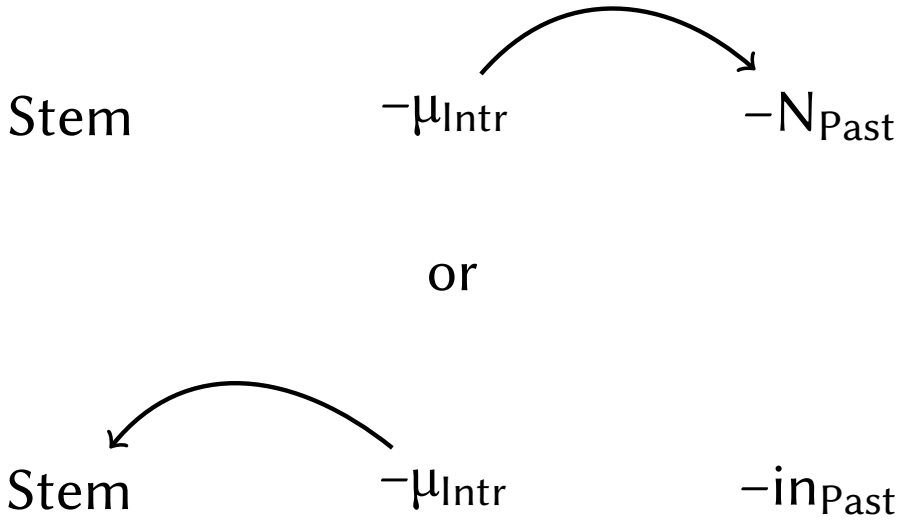
- a different allomorph for the past tense /ndʒ/ for stems in (9) and gemination now affects the past tense suffix (or any suffix in this position)
  ➙ **exocentric mutation**

(9)

Trans.Stem	Pst		Intr.Stem	Pst	
oɖæ	oɖæ-**ndʒ**-	'break'	oɖæ	oɖæ-**čč**-	'break'
veɖi	veɖi-**ndʒ**-	'burst'	veɖi	veɖi-**čč**-	'burst'
vaɭar	vaɭar-**nd**-	'grow'	vaɭar	vaɭar-**tt**-	'grow'
muɖi	muɖi-**ndʒ**-	'be over'	muɖi	muɖi-**čč**-	'finish'

(Sundaresan&McFadden 2014:2+3)

Endo- vs. Exo-centric mutation in Tamil



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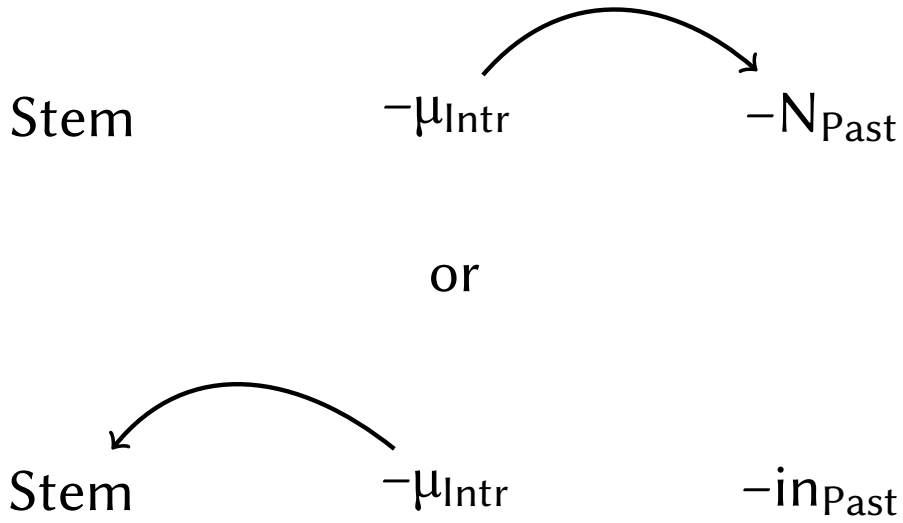
Endo- vs. Exo-centric mutation in Tamil



➙ Alternation between endo- and exocentric mutation

Analysis

- the intransitive lengthening strives to be realized as gemination of the following suffix
- for the V-initial Pst-allomorph, gemination of a suffix-C is impossible: gemination of a stem consonant

Interim summary

Interim summary: Complex cases of exocentric mutation

(10) *Complex mutation: overview*

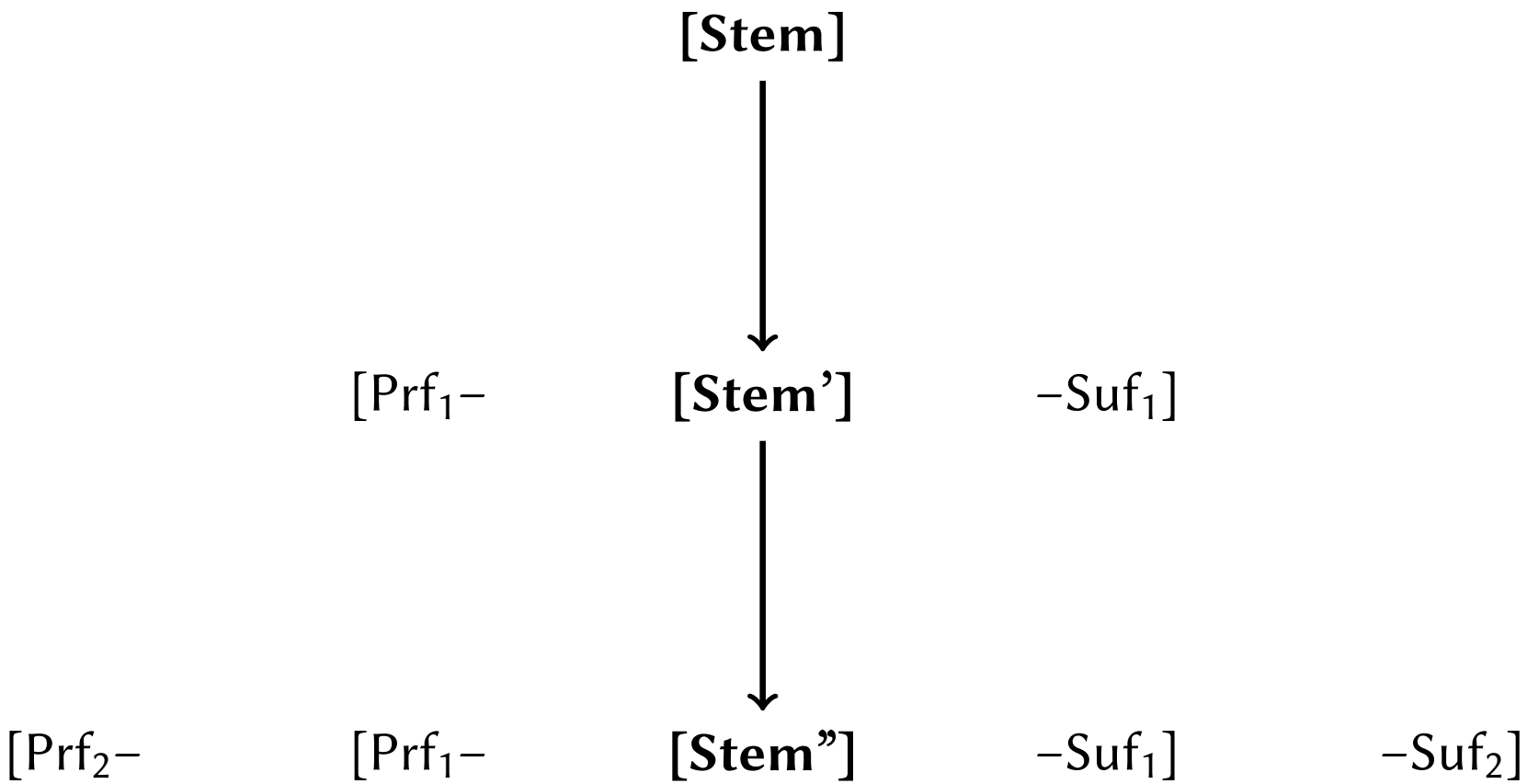
Alternation		
endo- vs. exo-	endo- vs. auto-	exocentric blocking
Tamil (length)	Dhaasanac (length)	Aymara (length)

Cyclic accounts restricted by SBM

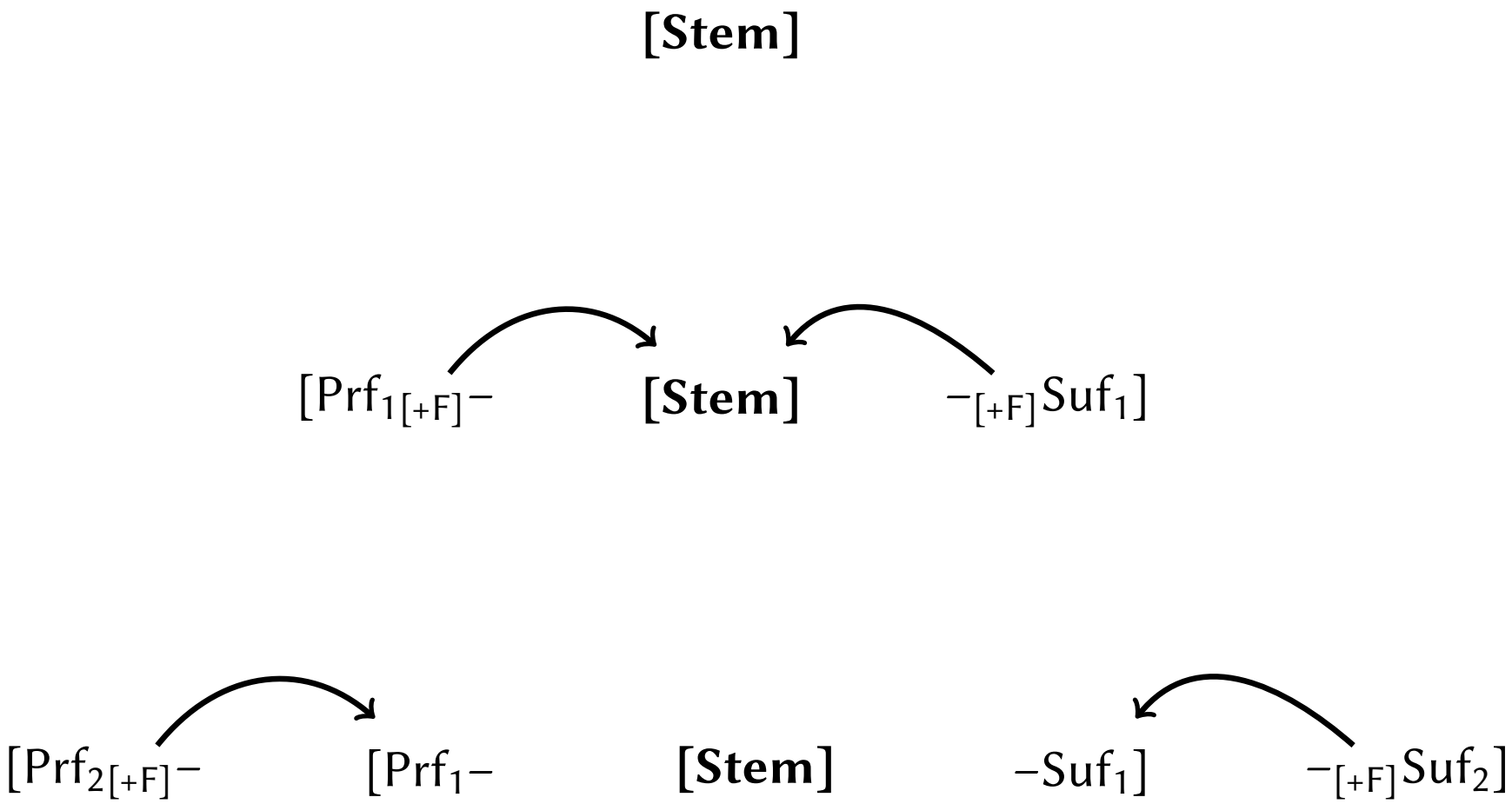
Cyclic Transformational Approaches to Morphophonology

1. Word and Paradigm Morphology (Anderson 1992)
2. Transderivational Antifaithfulness Theory (Alderete 1999)
3. Realize Morpheme (Kurisu 2001)

Cyclic Featural Transformations are Inherently Endocentric



Featural Concatenation may have Endocentric Effects...



...or Exocentric Effects

$$[_{+F}]\mathbf{[Stem]}_{[+F]}$$

Antifaithfulness (Alderete 1999)

1. transderivational faithfulness relations (Benua 1997): allow to compare (morphologically related) output forms

+

2. every standard faithfulness constraint exists in a negative version demanding *un*faithfulness

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+

2. every standard faithfulness constraint exists in a negative version demanding *un*faithfulness

→ transderivational antifaithfulness constraints demand **unfaithfulness** with respect to a certain phonological dimension that distinguishes **two morphologically related words**

Antifaithfulness and endocentric mutation

(11) *Antifaithfulness analysis for endocentric mutation in Texistepec Popoluca*

dastah + 1.SG	MAXS	¬OO-IDENT NAS[dastah]	IDENT-NAS
a. dastah		*!	
b. astah	*!	*!	
☞ c. nastah			*

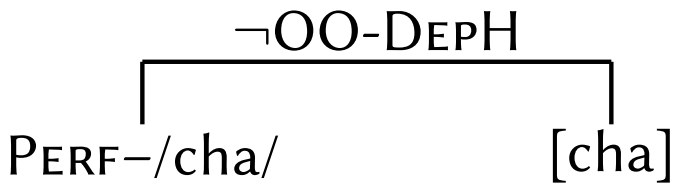
Recall: exocentric mutation in Gã

(12) *TAM overwrites tone on the subject prefix*

	Perfective (Grammatical H)	Simple Past (Grammatical L)
1Sg	**mí**-cha	**mi**-dú
2Sg	**ó**-cha	**o**-dú
	(‘dig’)	(‘cultivate’)

Antifaithfulness: no mutation on more peripheral affix

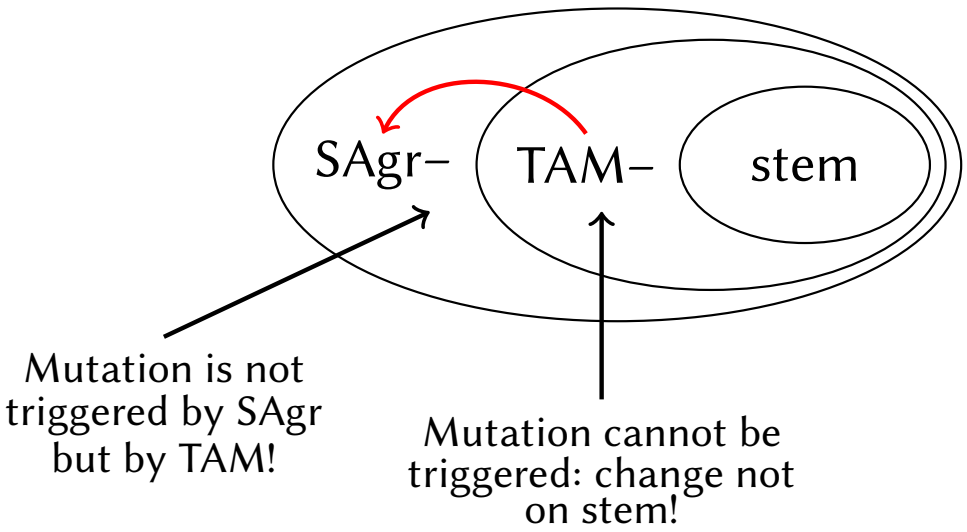
(13) *Antifaithfulness analysis for Gã?*



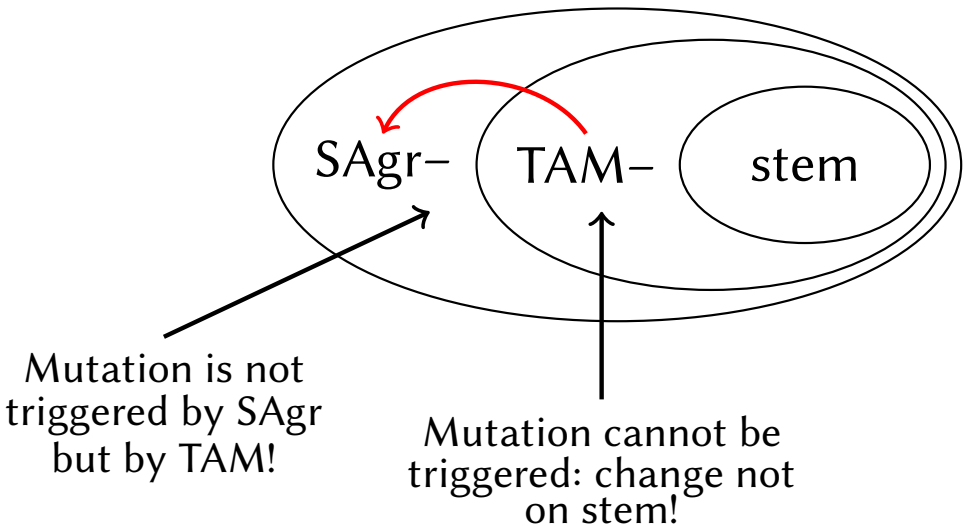
→ incorrect prediction *[chá]

- no antifaithfulness constraint indexed to PERF can ever enforce a change on a prefix (/mi–/ or /o–/)

Antifaithfulness and exocentric mutation



Antifaithfulness and exocentric mutation



- Only a mutation can be demanded that **distinguishes a morphologically more complex word from a less complex base**

Antifaithfulness and SBM

(14) *Strict Base Mutation, illustrated (Alderete 1999:141)*

	Base	Derivative	¬OO-Faith	OO-Faith
☞	root	ROOT-af		*!
	root	root-AF	*!	

(capitalization: change/mutation)

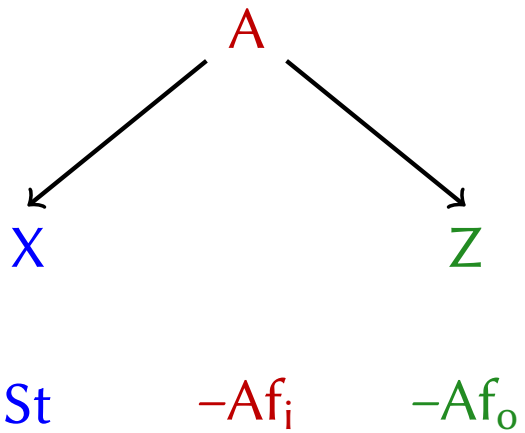
(15) *Thesis of Strict Base Mutation (Alderete 1999:141)*
Transderivational Anti-Faithfulness may only affect the base of affixation.

Predicting exocentric mutation in a GNA account

Generalized Nonlinear Affixation (=GNA)

- all mutation and non-concatenative morphology is the result of affixation (Lieber 1987, Bermúdez-Otero 2012, Trommer&Zimmermann 2015)
- a (nonlinear) morpheme may in principle affect the preceding or the following morpheme

(16) *Autosegmental analysis for mutation*

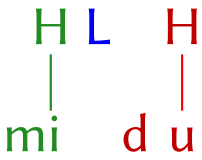
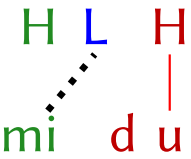
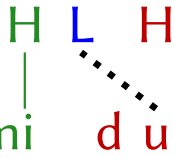


Endocentric mutation: Texistepec Popoluca Mixtec and GNA

(17) *A GNA account for Texistepec Popoluca*

[+nas] + d a s t a h	MAX[+NAS]	*FLOAT	MAX[−NAS]
a. [−nas] d a [−nas] s [−nas] t a [−nas] h	*!		
b. [+nas] [−nas] d a [−nas] s [−nas] t a [−nas] h		*!	
☞ b. [+nas] n a [−nas] s [−nas] t a [−nas] h			*

Exocentric mutation: Gã and GNA (Simple Past)

H L H mi + + d u	*SpreadRight	τ ⇒ π	τ → π
a. 		*	*!
☞ b. 		*	
c. 	*!	*	

τ → π: Each tone must be associated phonetically or morphologically to a prosodic unit

τ ⇒ π: Each tone must be associated phonetically to a prosodic unit

Alternating mutation: Tamil and GNA

(18) *Tamil and GNA*

o ɖ æ + + ndʒ	*FL	*V:	*SPRL	*C:
a.	*!			
☞ b.				*
c.		*!	*	

u d + + i n	*FL	*V:	*SPRL	*C:
a.	*!	*		
b.		**!		
☞ c.		*	*	*

(An undominated constraint preserves *underlying* vowel length)

Conclusion

Summary

- different types of mutation exist in the languages of the world which are not endocentric

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- different types of mutation exist in the languages of the world which are not endocentric
- theories that are cyclic-transformational and hence restricted by the SBM suffer from a severe undergeneration problem

Appendix I: languages

	ISO639.3	mbranch	stock	area
Chaha	sgw	West Semitic	Semitic	Greater Abyssinia
Coatzospan Mixtec	miz	Mixtecan	Otomanguean	Mesoamerica
Dhaasanac	dsh	Eastern Cushitic	Cushitic	Greater Abyssinia
Gã	gaa		Kwa	African Savannah
Kpelle	kpe	West Mande	Mande	African Savannah
Tamil	tam	South Dravidian	Dravidian	Indic

Appendix II: Chukchi (cited in Wolf (2007))

- [+low] dominant vowel harmony: affix- or stem-vowels alternate

–low	i	u	e_1	↓
+low	e_2	o	a	

(19)

a.	milute-nu	'rabbit'-Desig	wopqa-no	'moose'-Desig
	tutlik-u	'snipe'-Desig	orw-o	'tent'-Desig
b.	milute-t	'rabbit'-Abs	ɣa-melota-ma	'rabbit'-Com
	ləle-t	'eye'-Abs	ɣa-ləla-ma	'eye'-Com

[+low] V in stem: suffix alternates

[+low] V in affix: stem alternates

(Bobaljik 2009:2)

Exocentric stem-to-affix mutation in Chukchi

- some stems trigger [+low] on affixes but are underlyingly vowel-less

(20) *Vowel-less stems*

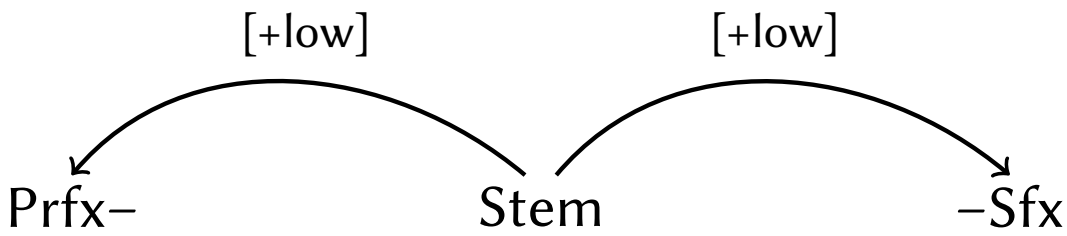
a.	ɣe-nt-ə-lin	'he has cut off'
	ɣe-rɣ-ə-lin	'he has dug, scratched'

[+low] on vowel-less stems

b.	ɣ**a**-nm-ə-l**e**n	'he has killed'
	ɣ**a**-tw-ə-l**e**n	'he has said'
	ɣ**a**-rw-ə-l**e**n	'he has split'

(Bobaljik 2009:2)

Exocentric stem-to-affix mutation in Chukchi



Appendix III: Chaha (Rose 2007)

- Chaha suffixation template:

  VERB STEM– Subject – Object-Case – Object/Per-Num – Tense

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  VERB STEM– Subject – Object-Case – Object/Per-Num – Tense

- object suffixes are marked for case (Acc, Mal, Ben)

Appendix III: Chaha (Rose 2007)

- Chaha suffixation template:

  VERB STEM– Subject – Object-Case – Object/Per-Num – Tense
- object suffixes are marked for case (Acc, Mal, Ben)
- specific (inner) subject agreement affixes trigger consonant hardening in (outer) object agreement

(21)

jɨ-rəxɨβ-β-a	jɨ-rəxɨβ-o-**p**-a
S3-find-MAL-O3SgF	S3-find-S3Pl-Mal-O3SgF
‘he finds (sth) to her detriment’	‘they find (sth) to her detriment’

(Rose 2007:40)

Exocentric affix-to-affix mutation in Chaha

- two allomorph sets for object marker:

'heavy' forms after PL subject affixes, 2SGFEM subject affixes, and impersonal
'light' forms after all other SG subject affixes

(22)

	MALFACTIVE		BENEFACTIVE	
	LIGHT	HEAVY	LIGHT	HEAVY
1SG	-β-i	-**p**-i	-n-i	-n-i
1PL	-β-ndə	-**p**-ndə	-n-ndə	-n-ndə
2SGF	-β-**x**^{j}	-β-**k**^{j}	-n-**x**^{j}	-n-**k**^{j}
2PLF	-β-**x**ma	-β-**k**ma	-n-**x**ma	-n-**k**ma
3SGF	-β-a	-**p**-a	-r-a	-r-a
3PLF	-β-əma	-**p**-əma	-r-əma	-r-əma

(Rose 2007:39)

Exocentric affix-to-affix mutation in Chaha

Appendix IV: Exocentric blocking in Muylaq' Aymara

- a class of suffixes (arbitrary, lexically marked) triggers deletion of a preceding vowel (23-a)
- the verbalizer has no surface effect in most contexts (23-b)

(23)

a.	muna-t-χa	muntχa	'want'-1Sg-Top
	sara-ta-sti	sartast	'go'-2Sg-Irr
b.	jiwa-ta-□-wa-ʧi-χaː	jiwatawʧiχaː	'die'-Re-Vb-Buf-3.Dub-Dis
	jaqi-□-tan-wa	jaqitanwa	'people'-Vb-4.S-Af

(Coler 2010:74, 118, 165, 359)

Exocentric blocking in Muylaq' Aymara

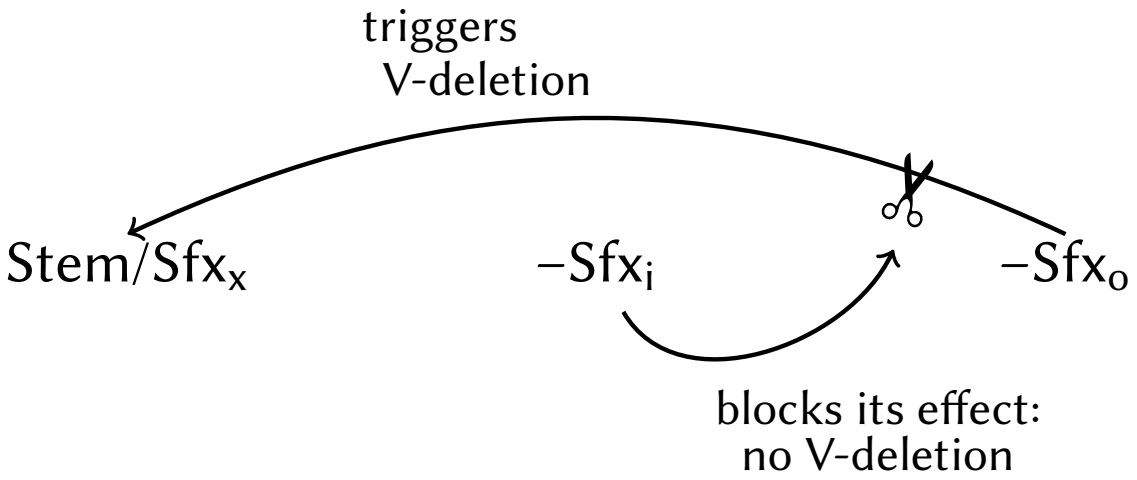
- if a vowel deletion-triggering suffix follows a verbalized base, vowel deletion is blocked (24)

(24)

taχ**a**-□-t**a**-wa	taχ**a**tawa	thin-Vb-2Sg-Aff
kuntinaw**u**-□-t-wa	kuntinaw**u**twa	ghost-Vb-1Sg-Aff
mara-n**i**-□-t-wa	maran**i**twa	year-OS-Vb-1Sg-Aff

(Coler 2010:359-361)

Exocentric blocking in Muylaq' Aymara



➙ **An effect expected from outer affix$_o$ on base$_x$ is blocked by affix$_i$**