

A phonological account of Length-Manipulation in the Morphology The case of Aymara

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mfm 21

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Length Manipulation in the Morphology (=LMM)

Segment lengthening, shortening,
deletion, or insertion
that is triggered by morphology
not by phonology.

Possible analyses

Transderivational Antifaithfulness (Alderete 2001)

The output of a derived form and the output of its base differ for a specific phonological dimension, triggered by Antifaithfulness constraints.

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RM requires phonological distinctivity of output forms, the type of change is determined by ranking morphologically indexed faithfulness constraints.

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Transderivational Antifaithfulness (Alderete 2001)

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Realize Morpheme (Kurusu 2001)

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Cophonology Theory (Inkelas&Zoll 2005)

Different morphological constructions may be associated with different constraint rankings.

Another possible analysis

Generalized Nonlinear Affixation

‘reduce the role of morphology in all instances of apparently nonconcatenative exponence to the **insertion of pieces of nonlinear phonological representation** whose existence is independently motivated: [...] fully or partially bare prosodic nodes.’
(Bermúdez-Otero 2012:49)

(Lieber 1992, Stonham 1994, Trommer&Zimmermann 2010, Bye&Svenonius 2012)

Main claim

- propose an analysis for Aymara where **four different LMM patterns exist and interact**

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- propose an analysis for Aymara where **four different LMM patterns exist and interact**
- argue that the GNA approach is superior to the alternative accounts relying on cophologies or paradigmatic distinctness

1. Introduction

2. **La Paz Aymara**

2.1 The LMM patterns

2.2 An analysis in terms of GNA

2.3 And the alternative accounts?

3. **The Muylaque dialect of Aymara**

3.1 The LMM patterns in Muylaque Aymara

3.2 An account assuming GNA

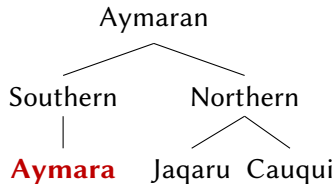
3.3 And the alternative accounts?

4. **Conclusion**

La Paz Aymara

Aymara (Briggs 1976, Cerron-Palomino 2000, Hardman et al. 2001, Hardman 2001, Kim 2003, Adelaar&Muysken 2004, Cerron-Palomino 2008)

(1)



(La Paz) Aymara

- highly agglutinating language, only suffixes

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- highly agglutinating language, only suffixes
- underlying length contrast for vowels
- a syntactically motivated vowel deletion rule:
every word-final vowel that is not phrase-final is deleted

Aymara: LMM+

(2) *Morphological lengthening*

(Beesley 2000, Kim 2003)

- a. warmi 'women' warmi: 'be a women'
b. wawa 'baby' wawa:ŋa 'to be a baby'

Aymara: *Affix & LMM+*

(3) *Suffixes triggering lengthening* (Hardman 2001, Adelaar&Muysken 2004)

a. sara-:ta

go-2->3.FUT

sara:ta

‘(you) will go’

b. naya-ḡa aymara-∅ yatiča-t’a-raki-:ma

INV-TOP Aymara-ACC teach-MOM-ADD-1->2.FUT

nayaḡ aymar yatičt’araki:ma

‘I shall also teach you Aymara’

Aymara: LEX-

- final vowel deletion to mark the accusative or geographic goal, the ‘zero complement’ (Briggs 1976:188)

(4) *Zero complements*

(Adelaar&Muysken 2004:272+273)

a. **uka-∅** sara-ta

that.place-Acc go-1S

uk sarta

‘I went there’

b. kuna-ta **huk’ampi-∅**-raki qul^yqi-∅ muna-ḡa-ta-sti

what-ABL more-Acc-ADD

money-Acc want-COMPL-2S-TOP.CHANGE

kunat **huk’amprak** qul^yq munxtasti

‘And how much money will you need?’

Aymara: LEX-

(5) *No vowel loss for subjects*

(Adelaar&Muysken 2004)

a. **k^hiti-ø**-sa suya-pača

WHO-ACC-IRR WAIT-3S.DEDPST

k^hits suypača

‘He must be waiting for someone?’

b. k^hiti-**sa** uta-ru sara-ni

WHO-IRR HOUSE-ALL GO-3S.FUT

k^hit**is** utar sarani

‘Who will go to the house?’

Aymara: *Affix & LMM-*

- some suffixes trigger deletion of a preceding vowel, termed ‘dominant affixes’ by Kim (2003)

(6) *Deletion-triggering suffixes*

(Hardman 2001, Kim 2003)

a.	apa	<u>-xata</u>	-ɲa	apxata ɲa		
	‘carry’	ALL	INF	‘put sthg. on top’	K3	
b.	sara	<u>-naqa</u>	-ɲa	sarnaqa ɲa		
	‘go’	DIFFUSIVE	INF	‘wander’	K3	
c.	uma	<u>-ta</u>	-wa	umtaw a		
	‘to drink’	‘2>3 S’	AFF	‘you drink’	H34	
d.	uma	<u>-ta</u>	<u>-ta</u>	umttaw a		
	‘to drink’	‘up’	‘2>3 S’	‘you drank fast’	H35	
e.	sara	-qa	<u>-xa</u>	-ɲa	sara qxa ɲa	
	‘go’	‘downward’	COMPLETIVE	INF	‘go down/away’	K1

LMM in Aymara: a summary

(7) *Four LMM patterns in Aymara*

base	derived form	
CV#	CV:	LMM+
CV#	CV:CV _{affix}	<i>Affix</i> & LMM+
CV#	C	LMM-
CV#	CCV _{affix}	<i>Affix</i> & LMM-

Analyses

LMM+	$\begin{array}{ccc} \mu_s & \mu_s & \mu_1 \\ & & + \\ w_s & a_s & w_s & a_s \end{array}$	$\begin{array}{ccc} \mu_s & \mu_s & \mu_1 \\ & \downarrow \dots & \\ w_s & a_s & w_s & a_s \end{array}$	complete μ integration
Affix & LMM+	$\begin{array}{cccc} \mu_s & \mu_s & \mu_1 & \mu_1 \\ & & + & \\ s_s & a_s & r_s & a_s & t_1 & a_1 \end{array}$	$\begin{array}{cccc} \mu_s & \mu_s & \mu_1 & \mu_1 \\ & \downarrow \dots & & \\ s_s & a_s & r_s & a_s & t_1 & a_1 \end{array}$	complete μ integration
LMM-	$\begin{array}{ccc} \sigma & \sigma & + \sigma_1 \\ \swarrow \quad \searrow & \swarrow \quad \searrow & \\ \mu_s & \mu_s & \\ & & \\ w_s & a_s & w_s & a_s \end{array}$	$\begin{array}{ccc} & Ft & \\ & \downarrow \dots & \\ \sigma & \sigma & + \sigma_1 \\ \swarrow \quad \searrow & \swarrow \quad \searrow & \\ \mu_s & \mu_s & \\ & & \\ w_s & a_s & w_s & a_s \end{array}$	defective σ integration
Affix & LMM-	$\begin{array}{ccc} \mu_s & \mu_s & \\ & & + \\ u_s & m_s & a_s & t_1 & a_1 \end{array}$	$\begin{array}{ccc} \mu_s & \mu_s & \\ & \neq \dots & \\ u_s & m_s & a_s & t_1 & a_1 \end{array}$	μ usurpation

(8) Complete μ -integration: LMM+

	$\begin{array}{ccc} \mu_s & \mu_s & \mu_1 \\ & & + \\ w_s a_s & w_s a_s & \end{array}$	$\begin{array}{c} \mu \\ \downarrow \\ V \end{array}$	$\begin{array}{c} \sigma \\ \uparrow \\ \mu \end{array}$	$\begin{array}{c} * \\ \vdots \\ \mu \\ S \end{array}$	$\begin{array}{c} \sigma \\ * \\ \vdots \\ \mu \end{array}$	$*\mu\mu V$
a.	$\begin{array}{ccc} & \sigma & \\ & \cdot \cdot \cdot & \\ \mu_s & & \mu_s & \mu_1 \\ & & & \\ w_s a_s & & w_s a_s & \end{array}$	*!	*		**	
b.	$\begin{array}{ccc} & \sigma & \\ & \cdot \cdot \cdot & \\ \mu_s & & \mu_s & \mu_1 \\ & & \cdot \cdot \cdot & \\ w_s a_s & & w_s a_s & \end{array}$		*!	*	**	
c.	$\begin{array}{ccc} & \sigma & \\ & \cdot \cdot \cdot & \\ \mu_s & & \mu_s & \mu_1 \\ & & & \\ w_s a_s & & w_s a_s & \end{array}$	*!			***	
d.	$\begin{array}{ccc} & \sigma & \\ & \cdot \cdot \cdot & \\ \mu_s & & \mu_s & \mu_1 \\ & & \cdot \cdot \cdot & \\ w_s a_s & & w_s a_s & \end{array}$			*	***	

(9) *Defective syllable integration: LMM-*

	σ_1	σ	μ/C	DEP_μ	ONERT^l	Ft \vdots σ_{Af}	Ft \uparrow σ	MAX_S
	$\mu_s \quad \mu_s$ $w_s \ a_s \ w_s \ a_s$							
a.	Ft σ σ_1 \vdots \vdots μ_s μ_s $w_s \ a_s \ w_s \ a_s$					*!		
b.	Ft σ σ σ_1 \vdots \vdots \vdots μ_s μ_s μ $w_s \ a_s \ w_s \ a_s$			*!			*	

(10) *Defective syllable integration: LMM-, contd.*

$ \begin{array}{c} \mu_s \quad \mu_s \quad + \quad \sigma_1 \\ \quad \\ w_s \ a_s \ w_s \ a_s \end{array} $	$ \begin{array}{c} \sigma \\ \downarrow \\ \mu/C \end{array} $	$ \text{DEP}_{\mu} $	$ \text{ONERT} $	$ \begin{array}{c} \text{Ft} \\ \vdots \\ \sigma_{\text{Af}} \end{array} $	$ \begin{array}{c} \text{Ft} \\ \uparrow \\ \sigma \end{array} $	$ \text{MAX}_S $
<p>b.</p>			$ *! $	$ * $		
<p>c.</p>				$ * $	$ * $	

(11) *Mora usurpation: Affix & LMM-*

	μ_s μ_s + u_s m_s a_s t_1 a_1	DEP μ	μ ↑ V	$*_V \mu_V$	μ # S	μ # S	MAX _S
a.				*!			**
b.		*!					
c.				*!		*	*
d.					*	*	*

Deletion ~ Shortening

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An important empirical observation

- the suffixes triggering vowel deletion actually trigger **deletion of a μ**

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(12) warmi-i-ta (Briggs 1976:171)

women-V-1->3.NPst

warmita

'I am a woman'

(13) 'Shortening' as usurpation: Affix & LMM-

	μ_s μ_s + μ_1 + u _s m _s a _s t ₂ a ₂	DEP μ	μ ↑ V	* _V μ _V	μ * † S	μ * ⋮ S	MAX _S
a.	$\begin{array}{c} \sigma \\ \vdots \\ \mu_s \\ \\ u_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu_s \\ \\ m_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu_1 \\ \\ a_s \end{array} \quad \begin{array}{c} t_2 \\ a_2 \end{array}$			*!			**
b.	$\begin{array}{c} \sigma \\ \vdots \\ \mu_s \\ \\ u_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu_s \\ \\ m_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu_1 \\ \\ a_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu \\ \\ t_2 \\ a_2 \end{array}$			*!		*	
d.	$\begin{array}{c} \sigma \\ \vdots \\ \mu_s \\ \\ u_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu_s \\ \\ m_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu_1 \\ \\ a_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu \\ \\ t_2 \\ a_2 \end{array}$				*!	*	**
g.	$\begin{array}{c} \sigma \\ \vdots \\ \mu_s \\ \\ u_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu_s \\ \\ m_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu_1 \\ \\ a_s \end{array} \quad \begin{array}{c} \sigma \\ \vdots \\ \mu \\ \\ t_2 \\ a_2 \end{array}$					*	

Analyses, extended

LMM+	$\begin{array}{c} \mu_s \quad \mu_s \quad \mu_1 \\ \quad \quad + \\ w_s \ a_s \ w_s \ a_s \end{array}$	$\begin{array}{c} \mu_s \quad \mu_s \quad \mu_1 \\ \quad \quad \dots \\ w_s \ a_s \ w_s \ a_s \end{array}$	complete μ integration
Affix & LMM+	$\begin{array}{c} \mu_s \quad \mu_s \quad \mu_1 \quad \mu_1 \\ \quad \quad + \quad \\ s_s \ a_s \ r_s \ a_s \quad t_1 \ a_1 \end{array}$	$\begin{array}{c} \mu_s \quad \mu_s \quad \mu_1 \quad \mu_1 \\ \quad \quad \dots \quad \\ s_s \ a_s \ r_s \ a_s \quad t_1 \ a_1 \end{array}$	complete μ integration
LMM-	$\begin{array}{c} \sigma \quad \sigma \quad + \quad \sigma_1 \\ \diagdown \quad / \quad \diagdown \quad / \\ \mu_s \quad \mu_s \\ \quad \\ w_s \ a_s \ w_s \ a_s \end{array}$	$\begin{array}{c} Ft \\ \diagdown \quad / \quad \diagdown \quad / \\ \sigma \quad \sigma \quad \sigma_1 \\ \dots \quad \dots \quad \dots \\ \mu_s \quad \mu_s \\ \quad \\ w_s \ a_s \ w_s \ a_s \end{array}$	defective σ integration
Affix & LMM-	$\begin{array}{c} \mu_s \quad \mu_s \\ \quad \quad + \\ u_s \ m_s \ a_s \quad t_1 \ a_1 \end{array}$	$\begin{array}{c} \mu_s \quad \mu_s \\ \quad \neq \quad \dots \\ u_s \ m_s \ a_s \ t_1 \ a_1 \end{array}$	μ usurpation
LMM-	$\begin{array}{c} \mu_s \quad \mu_s \quad \mu_1 \\ \quad \quad + \quad + \\ u_s \ m_s \ a_s \quad t_2 \ a_2 \end{array}$	$\begin{array}{c} \mu_s \quad \mu_s \quad \mu_1 \\ \quad \quad : \\ u_s \ m_s \ a_s \ t_2 \ a_2 \end{array}$	

And the alternative accounts?

Cophonology Theory

(14) a. Cophonology for Lengthening: $V:\# \gg \text{DEP-}\mu$

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- a. Cophonology for Lengthening: $V:\# \gg \text{DEP-}\mu$
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→ Which ranking could trigger shortening of long vowels and deletion of short vowels at the same time?

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Transderivational Antifaithfulness

- (15)
- a. Lengthening: $\neg \text{DEP-}\mu_V \gg \text{DEP-}\mu$
 - b. Deletion/Shortening: $\neg \text{MAX-}\mu_{TA} \gg \text{MAX-}\mu$

And the alternative accounts?

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Realize Morpheme

- (16) a. Lengthening: $\text{RM} \gg \text{DEP-}\mu_V$
 b. Deletion/Shortening: $\text{RM} \gg \text{MAX-}\mu_{TA}$

The Muylaque dialect of Aymara

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- described in Coler (2010)
- spoken in the village of Muylaque, located on the Peruvian altiplano (district of San Christobal de Calacoa)

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The big difference to La Paz Aymara

- **there are no long vowels**
(Coler 2010:59)

LMM in Muylaque Aymara I

- LMM- patterns are identical to those in La Paz Aymara

(17) *Affix & LMM*—

(Coler 2010)

kuna-∅ muna-ta-sti

WHAT-ACC want-2s-IRR

kun mun**ta**st

‘What do you want?’

LMM in Muylaque Aymara II

(18) *'Rescuer' morpheme*

(Coler 2010:359+361)

- a. taxa-**???**-ta-wa
 thin-COP.VERB-2S-AFF
 tax**ata**wa
 'you are thin'
- b. kuntinawu-**???**-ta-wa
 ghost-COP.VERB-2S-AFF
 kuntinaw**ut**wa
 'I am the ghost'
- c. mara-ni-**???**-ta-wa
 year-have-COP.VERB-1S-AFF
 maranitwa
 'I am ... years old'

A ‘rescuer’ morpheme in Muylaque Aymara

- the morpheme that ‘rescues’ a vowel from deletion, is a lengthening morpheme in La Paz Aymara!

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(19) *Copulative verbalizer in La Paz Aymara* (Adelaar&Muysken 2004:275)

a. hanq’**u**:-n^ja

white-COP.VERB-INF

[hanq’**u**:n^ja]

‘to be white’

b. huma-_ᵛxa k^hit**i**:-ta-sa

you-TOP who-COP.V-2S-IRR

[humax k^hit**i**:tasa]

‘Who are you?’

Analyses for Muylaque Aymara

(LMM+)	$\begin{array}{ccc} \mu_s & \mu_s & \mu_1 \\ & & + \\ l_s & a_s & w_s a_s \end{array}$	$\begin{array}{ccc} \mu_s & \mu_s & \mu_1 \\ & & \\ l_s & a_s & w_s a_s \end{array}$	no μ integration
LMM-	$\begin{array}{ccc} \sigma & \sigma & + \sigma_1 \\ / \backslash & / \backslash & \\ \mu_s & \mu_s & \\ & & \\ l_s & a_s & w_s a_s \end{array}$	$\begin{array}{ccc} & Ft & \\ & \cdots & \\ \sigma & \sigma & \sigma_1 \\ / \backslash & / \backslash & \\ \mu_s & \mu_s & \\ & & \\ l_s & a_s & w_s a_s \end{array}$	defective σ integration
Affix &	$\begin{array}{ccc} \mu_s & \mu_s & \\ & & + \\ m_s & u_s & n_s a_s \quad t_1 a_1 \end{array}$	$\begin{array}{ccc} \mu_s & \mu_s & \\ & \neq & \cdots \\ m_s & u_s & n_s a_s \quad t_1 a_1 \end{array}$	μ usurpation
LMM-	$\begin{array}{ccc} \mu_s & \mu_s & \mu_1 \\ & & + \\ t_s & a_s & x_s a_s \quad t_2 a_2 \end{array}$	$\begin{array}{ccc} \mu_s & \mu_s & \mu_1 \\ & & : \\ t_s & a_s & x_s a_s \quad t_2 a_2 \end{array}$	

TAF and the ‘rescuer’ morpheme

(20) *The verbaliser in Muylaque Aymara: no surface effect*

/xata/ + v	MAX	DEP- μ	*VV
☞ a. xata			
b. xat		*!	
c. xata:			*!

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(21) *‘Shortening’ in Muylaque Aymara*

/xata/ + /ta/ _{1->3.Npst}	\neg MAX- μ_{TA}	MAX- μ
☞ a. xatata	*!	
☞ c. xatta		*

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→ An analysis of the ‘rescuer morpheme’ is apparently impossible

RM and the ‘rescuer morpheme’

Recall:

(22) *The RM-rankings for La Paz Aymara*

- a. Lengthening: $RM \gg DEP-\mu_V$
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This will always result in deletion, never in shortening:

there is no existing (or ‘possible’) output form with a long vowel

- (24)
- a. */taxa: / → taxata
 - b. /taxa / → *taxta

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Cophonologies and the ‘rescuer morpheme’

- the ‘rescuing’ cophonology (do not delete!) comes too late or too early to avoid vowel deletion

(25) taxa-**???**-ta-wa
thin-COP.VERB-2S-AF
tax**a**wa
‘you are thin’

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Conclusion

Wrap up

- in Aymara, four different LMM patterns coexist and interact

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Lengthening + Deletion/Shortening = no surface effect

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	TAF	RM	Cophonologies	GNA
Lengthening	✓	✓	✓	✓
Segment deletion	✓	✓	✓	✓
μ deletion	✓	✓	–	✓
the ‘rescuer morpheme’ in MA	–	–	–	✓

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