Pretonic Non-Prominence in Chamorro Umlaut*

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1 Introduction

- In Chamorro umlaut, front-voweled prefixes/particles cause fronting of root-initial vowels (Chung 1983, Topping 1968):

(1) a. nána   'mother'   i nǽna   'the mother'
     b. gúmaʔ   'house'   i gíma ʔ   'the house'
     c. cúpa   'cigarettes'   i cípa   'the cigarettes'
     d. sóŋsuŋ   'village'   i séŋsuŋ   'the village'
     e. hága   'daughter'   i hǽga   'the daughter'
     f. átcuʔ   'rock'   i ǽtcuʔ   'the rock'
     g. dáŋkulu   'big one'   i dǽŋkulu   'the big one'
     h. láhe   'male'   i lǽhe   'the male'
     i. tómo   'knee'   i témo   'the knee'

- Two interesting aspects of umlaut:

(2) Umlaut only occurs if the root-initial vowel is stressed:
     a. pulónnun   'trigger fish'   i pulónnun   'the trigger fish'
     b. mundóŋgu   'cow's stomach'   i mundóŋgu   'the cow's stomach'

- Why not spread to/through unstressed vowels?

- "Reverse" Positional Faithfulness: unstressed vowels block umlaut.

(3) Umlaut optionally targets (a certain kind of) secondary stress:
     a. mí-pìgas,   'abounding in uncooked rice'
        mí-pùgas

     b. i gìma ʔníha,   'their house'
        i gùma ʔníha

     c. i kèbblinmámi,   'our (excl.) cash'
        i kòbblinmámi

- (1) & (2) can be accounted for with Positional Licensing.

- (3) requires Stratal OT (Kiparsky 2000) and multiple grammars (Anttila 2006, 2007).

2 Umlaut, Noniterativity, and Processes

- Umlaut looks noniterative:

- [–back] may spread one syllable to the right. If the stressed syllable can't be reached with this, no spreading may occur.

- Umlaut sheds light on the status of noniterativity and processes in phonology.

- <u>Rule-Based Theories</u>: Grammars are composed largely of processes; languages can directly regulate their application.

  – An iterativity parameter (e.g. Archangeli & Pulleyblank 1994)

- <u>Optimality Theory</u>: Processes aren't formal constructs; they emerge from constraint interactions.

  – Can't directly regulate how a process applies.

  – Constraints for iterative phenomena (ALIGN, SPREAD, PARSE...) can't be turned noniterative with the flip of a switch. Wholly different constraints are needed.

  – Markedness constraints can't see inputs, so true noniterativity shouldn't exist.

- My claim: There are no genuinely noniterative phenomena. Those that look noniterative result from factors not concerned with noniterativity.

3 Umlaut as Root Licensing

3.1 Positional Licensing through Prominence Hierarchies

- More examples of umlaut:[1]

(4)
a.	kátta	'letter'	ni kǽtta	'the letter (obl.)'
b.	húŋuk	'to hear'	in-híŋuk	'we (excl.) heard'
c.	fógon	'stove'	ni fégon	'the stove'
d.	ókso?	'hill'	gi ékso?	'at the hill'
e.	túŋo?	'to know'	en tíŋo?	'you (pl.) know'
f.	góde	'to tie'	g-in-éde	'thing tied'
g.	lágu	'north'	sæn lǽgu	'towards north'
h.	ótdot	'ant'	mi-étdot	'lots of ants'

- Basic idea: [–back] spreads from a weak position to a strong position to enhance its salience.

- Source = prefixes[2] immediately preceding primary stress (= "pretonic")

  – Affixes are weak: They license fewer contrasts than roots (Urbanczyk 2006) and are psycholinguistically weak (e.g. Jarvella & Meijers 1983).

  – Pretonic syllables are weak in Chamorro: Clash is generally tolerated, but pretonic syllables must not be stressed.

(5) *Projection of Universal Constraint Subhierarchies* (Padgett 2002)

  a. Given a scale of articulatory/perceptual/processing difficulty D:
  $D_n > D_{n-1} > D_1$
  (where '>' means 'more difficult than')

  b. Project a universal constraint subhierarchy: $C_n \gg C_{n-1} \gg C_1$
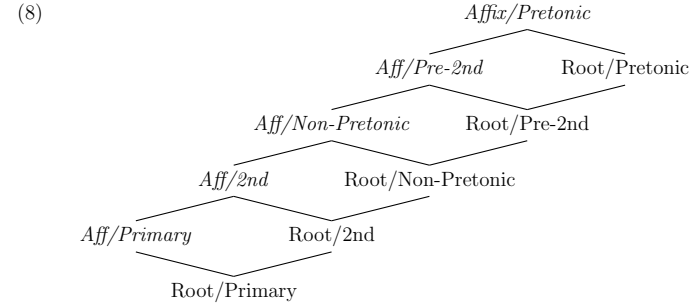 (where $C_i = *D_i$)

- Two prominence scales:

(6) Affix > Root

(7) Pretonic > Pre-Secondary > Non-Pretonic > Secondary Stress > Primary Stress

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[1] Glosses for affixes and particles: *ni* 'oblique case,' *in-* '1pl. exclusive,' *-in-* 'nominalizer,' *gi-* 'local case,' *en* '2pl.,' *sæn-* 'in the direction of,' and *mi-* 'abounding in.'

[2] Some sources of umlaut are actually clitics, but they behave phonologically like prefixes. I use the term "prefix" to encompass true prefixes, clitics, and infixes that participate in umlaut.

⇒ Combining these scales:

(8)
```
                              Affix/Pretonic
                          /                \
                Aff/Pre-2nd                 Root/Pretonic
              /            \              /
    Aff/Non-Pretonic        Root/Pre-2nd
        /        \        /
  Aff/2nd         Root/Non-Pretonic
    /      \      /
Aff/Primary  Root/2nd
        \    /
      Root/Primary
```

⇒ Extracting the italicized part:

(9) Affix/Pretonic > Affix/Pre-Secondary > Affix/Non-Pretonic > Affix/Secondary Stress > Affix/Primary Stress

⇒ Projecting Positional Licensing (Kaplan 2008, Walker 2001, Zoll 1998) constraints:

(10) LICENSE-Pretonic ≫ LICENSE-Pre-Secondary ≫ LICENSE-Non-Pretonic ≫ LICENSE-$\grave{\sigma}$ ≫ LICENSE-$\acute{\sigma}$

(11)
  a. LICENSE-Pretonic: Pretonic [–back] features must be linked to root segments.
  b. LICENSE-Pre-Secondary: [–back] features that immediately precede secondary stress must be linked to root segments.
  c. LICENSE-Non-Pretonic: Non-pretonic [–back] features must be linked to root segments.
  d. LICENSE-$\grave{\sigma}$: Secondary stressed [–back] features must be linked to root segments.
  e. LICENSE-$\acute{\sigma}$: Primary stressed [–back] features must be linked to root segments.

- I.e., *prosodically* weak features must be *morphologically* prominent.

- LICENSE-X motivates spreading to the root from X; IDENT[back] blocks spreading.

- IDENT[back] belongs between LICENSE-Pretonic and LICENSE-Pre-Secondary:

(12)
/i gúma?/	LIC-Pretonic	IDENT[back]	LIC-Elsewhere
a. i gúma?	*!		
☞ b. i gíma?		*	
c. i gímæ?		**!	

- When the prefix isn't pretonic, IDENT blocks spreading:

(13)

/i pulónnun/	Lic-Pretonic	Ident[back]	Lic-Elsewhere
☞ a. i pulónnun			*
b. i pilónnun		*!	
c. i pilénnun		*!*	

- Cf. Crosswhite (1996), Klein (2000): Spreading to the root, but they need additional machinery to block spreading to unstressed syllables.

3.2 Ruling out Other Strategies

- Why don't we find spreading from all pretonic front vowels (e.g. mìmantikáɲa 'more abounding in fat')?

(14)

/mì-mantiká-ɲa/	Lic-Pretonic	Ident[back]	Lic-Elsewhere
☞ a. mì-mantiká-ɲa			*
b. mì-mantikǽ-ɲa		*!	*

- To block regressive spreading, split IDENT[back] into IDENT[+back] and IDENT[-back]:

(15)

/i gúmaʔ/	Ident[–back]	Lic-Pretonic	Ident[+back]	Lic-Elsewhere
☞ a. i gíimaʔ			*	
b. u gúmaʔ	*!			
c. i gúmaʔ		*!		

- LICENSE doesn't distinguish prefixes from suffixes; why only left-edge umlaut?

(16)

/kwentús-i/ 'to speak to'	Ident[–bk]	Lic-Pretonic	Ident[+bk]	Lic-Else
☞ a. kwentús-i				*
b. kwentís-i			*!	

- Suffixes aren't pretonic.

- Or, a prefix/suffix could be made in (6).

3.3 Summary

- Stress triggers umlaut; the root is the target.

- No spreading through unstressed syllables to reach stress: umlaut doesn't target stress.

- No "reverse" Positional Faithfulness: unstressed vowels simply don't trigger umlaut.

- Positional Licensing motivates umlaut in just the right places.

- Noniterativity is only apparent: LICENSE motivates spreading to the root, so spreading just once is sufficient.

4 Optional Umlaut

4.1 Umlaut Triggered by Cyclic Stress

- Chamorro has two kinds of secondary stress. One optionally triggers umlaut.

- Cyclic stress: Affixes can relocate primary stress, and the previous location of primary stress receives secondary stress.

(17)
a.	swéddu	'salary'	swèddunmámi	'your (sg.) salary'
	inéŋŋuluʔ	'peeping'	inèŋŋulóʔɲa	'his peeping'
b.	néŋkanuʔ	'food'	mìnéŋkanuʔ	'abounding in food'
	adǽhi	'be careful'	gófadàhi	'be very careful'
	kwentúsi	'to speak to'	ǽkwentùsi	'to speak to one another'

- Cyclic secondary stress optionally triggers umlaut:

(18)

púgas	'uncooked rice'	mípìgas, mipùgas	'abounding in uncooked rice'
gúmaʔ	'house'	i gìmaʔníha, i gùmaʔníha	'their house'
kóbbli	'cash, money'	i kèbblinmámi, i kòbblinmámi	'our (excl.) cash'

- Syllables that should have cyclic stress but don't because of pretonic clash can still trigger umlaut:

(19) cúpa   'cigarettes'   i cupáɲa,   'his cigarettes'
                                         i cipáɲa

        sóɲsuŋ   'village'   i suŋsóɲɲa,   'his village'
                                           i siŋsóɲɲa

- _Rhythmic stress:_ Secondary stress on alternating syllables to the left of primary stress:

(20) àtmaygósu   'vegetable sp.'
        kìmasón   'to burn'
        magágu   'clothes'   màgagúɲa   'his clothes'
        bapót   'ship'   bàpotníha   'their ship'

- Rhythmic stress does not trigger umlaut:

(21) pùtamunéda   'wallet'   i pùtamunéda,   'the wallet'
                                         *i pìtamunéda

- My analysis, in Stratal OT (Kiparsky 2000, Rubach 1997): Umlaut occurs before rhythmic stress is added and clash is resolved.

- Output-Output Faith (Benua 1997, Crosswhite 1996) won't work: There's not always a viable base (Klein 2000).

4.2   Stratal OT

- Let's assume just two levels.
- First level: affixes are present, primary and cyclic stress is assigned, and umlaut occurs.
  - I assume correct stress in all candidates (see Crosswhite 1996, Klein 2000).
  - Optionality: non-crucial ranking between IDENT[+back] and LICENSE-Pre-Secondary (cf. multiple grammars (Anttila 2006, 2007)).
  - A ranking between these constraints is chosen for each evaluation.

⇒ _i gimáʔ-ɲa/i gumáʔ-ɲa_ 'his house' (deleted cyclic stress):

- LICENSE-Pre-Secondary ≫ IDENT:

(22)   Level 1: _i gimáʔ-ɲa_

//i gùmáʔ-ɲa//	IDENT[–bk]	LIC-1st	LIC-2nd	IDENT[+bk]	LIC-Else
a. /i gùmáʔ-ɲa/			*!		
☞ b. /i gìmáʔ-ɲa/				*	

- Level 2: rhythmic stress appears (STRESS-ALT), pretonic syllables are destressed (*CLASH), and IDENT is promoted to prevent further umlaut.

(23)   Level 2: _i gimáʔ-ɲa_

/i gìmáʔ-ɲa/	STRESS-ALT	*CLASH	IDENT[+bk]	IDENT[–bk]	LICENSE
a. i gìmáʔ-ɲa		*!			
☞ b. i gimáʔ-ɲa					
c. i gùmáʔ-ɲa		*!		*!	*
d. i gumáʔ-ɲa				*!	*

- Again, with IDENT ≫ LICENSE-Pre-Secondary:

(24)   Level 1: _i gumáʔ-ɲa_

//i gùmáʔ-ɲa//	IDENT[–bk]	LIC-1st	IDENT[+bk]	LIC-2nd	LIC-Else
☞ a. /i gùmáʔ-ɲa/				*	
b. /i gìmáʔ-ɲa/			*!		

(25)   Level 2: _i gumáʔ-ɲa_

/i gùmáʔ-ɲa/	STRESS-ALT	*CLASH	IDENT[+back]	IDENT[–back]	LICENSE
a. i gìmáʔ-ɲa		*!	*!		
b. i gimáʔ-ɲa			*!		
c. i gùmáʔ-ɲa		*!			*
☞ d. i gumáʔ-ɲa					*

⇒ *i pùtamunéda* 'the wallet' (rhythmic stress):

(26) Level 1: *i pùtamunéda*

//i putamunéda//	IDENT[–bk]	LIC-1st	LIC-2nd	IDENT[+bk]	LIC-Else
☞ a. /i putamunéda/					*
b. /i pitamunéda/				*!	

(27) Level 2: *i pùtamunéda*

/i putamunéda/	STRESS-ALT	*CLASH	IDENT[+bk]	IDENT[–bk]	LICENSE
a. i putamunéda	*!				*
☞ b. i pùtamunéda					*
c. i pìtamunéda			*!		
d. i pitamunéda	*!		*!		

- Corroboration for this sequence: Gemination and Vowel Lowering distinguish the two kinds of stress.

- Chung (1983) rejects a cyclic account: an optional rule can't produce obligatory umlaut on primary stress.

- Licensing: optional vs. obligatory umlaut comes from the ranking of IDENT within the Licensing constraint hierarchy.

- Another solution: All umlaut is optional lexically, umlaut on primary stress is obligatory postlexically (Kiparsky 1986).

5 Conclusion

- With unstressed syllables as blockers, umlaut is puzzling.

- Umlaut is driven by the non-prominence of pretonic syllables.

⇒ Stress is the trigger, not the target.

- Positional Licensing constraints used here are based on prosodic and morphological prominence.

- Optional umlaut provides evidence for Stratal OT.

- Umlaut is not inherently noniterative; perhaps nothing is truly noniterative?

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