

Morphology and Phonology in Karimojong Verbal Affixation

Multiple Interfaces within an Amphichronic Model

Diane Lesley-Neuman
Linguistics Program
Michigan State University

Preliminaries...

- **VSO Language**
- **Nilo-Saharan, Eastern Nilotic**
- **Eastern/northeastern Uganda**
- **Karimoja province, Moroto District**
- **85% lexical similarity with Turkana**

Data mainly from Novelli (1985, 1987), but also informed by Bertinazzo (1982), Mantovani (1963).

Inflection and Derivation

INFL DER ROOT DER DER INFL

è - zi - líp - án - àkìn - etè

3p- CAUS - pray – FREQ – DAT - FUT

‘They will cause to pray frequently for’

ATR Harmony & Diachronic Change

Exist in a reciprocal relationship:

- Sound change, vowel mergers and grammaticalization processes create new affixes and harmony processes, and define MP levels.
- Harmony processes provide an evidence trail of affix incorporation and other grammaticalization processes.

(Lesley-Neuman, 2007a,b)

**Part I: ATR Harmony Patterns and the
Model of the Morphology-
Phonology Interface**

**Part II: Morphological Structure and
Diachronic Evolution.**

PART I

ATR Harmony Patterns and the Model of the Morphology- Phonology Interface

Overview I

The model of the morphology-phonology interface accounts for:

- **Surface ATR Specifications**
- **Phonetic Effects**
- **Diachronic Evolution**

Harmonic Vowels (Voiced)

[+ATR]		[-ATR]	
i	u	ɪ	ʊ
e	o	ɛ	ɔ
	(ɑ)¹		ɑ

¹Ultrasound research (Archangeli, 2003; Gick, Pulleyblank, Mutaka & Campbell, 2006; Benus & Gafos, 2007) indicates that vowels heretofore thought to be transparent actually advance phonetically in [+ATR] environments.

Vowels a, ɑ, ɶ

[Based on Dimmendaal, 2002; Hall & Creider 1998, Vossen (1982), Novelli, (1985)]. [+ATR] vowel [a] found in old basic vocabulary.

- Disappearing, not part of 9-vowel harmony system, due to vowel mergers with [ɑ], [o] and [ɔ].
- Proposed to be re-emerging in [+ATR] environments, marked as [ɶ], due to the realities of co-articulation. **Whether [a] is the same as [ɶ] should be subject to further research.**

ATR Harmony

[-ATR]

[+ATR]

- a. ákídóŋ ‘to pinch’ e. ákídóŋ ‘to castrate’
b. ákíbúk ‘to swing south’ f. ákíjúk ‘to smear’
c. ákínók ‘to light fire’ g. ákínók ‘to go near’
d. ákíbé ‘to agree’ h. ákíélè ‘to change’

(Novelli, 1985: 227)

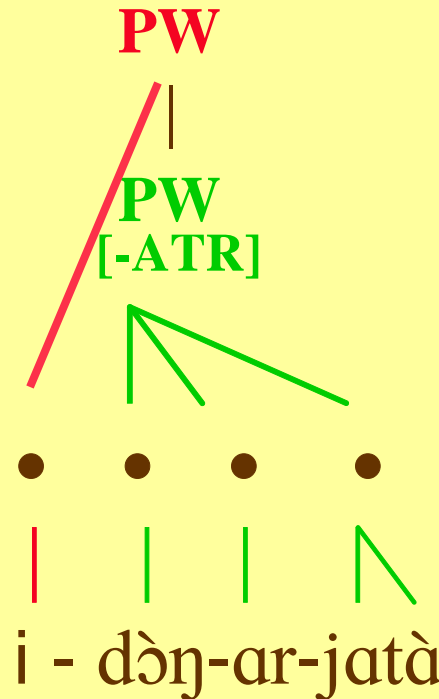
M-Structure and P-Structure

- M-Structure created simultaneously with prosodification algorithms.
- M-structure and prosodic structure are available to phonological rules.
- M-Structure consists of:
 1. The morpheme /phoneme string
 2. A meaning, headmarking
 3. Encoding of morphophonological level.
- Headmarking determines P-Structure.

Van der Hulst & van de Weijer (1995); Van der Hulst & Dresher,(1998); Rood (personal communication)

P-Structure and Harmony

/i-/ + /-dɔŋ-/ + /Ar/ + /jAtA/ →



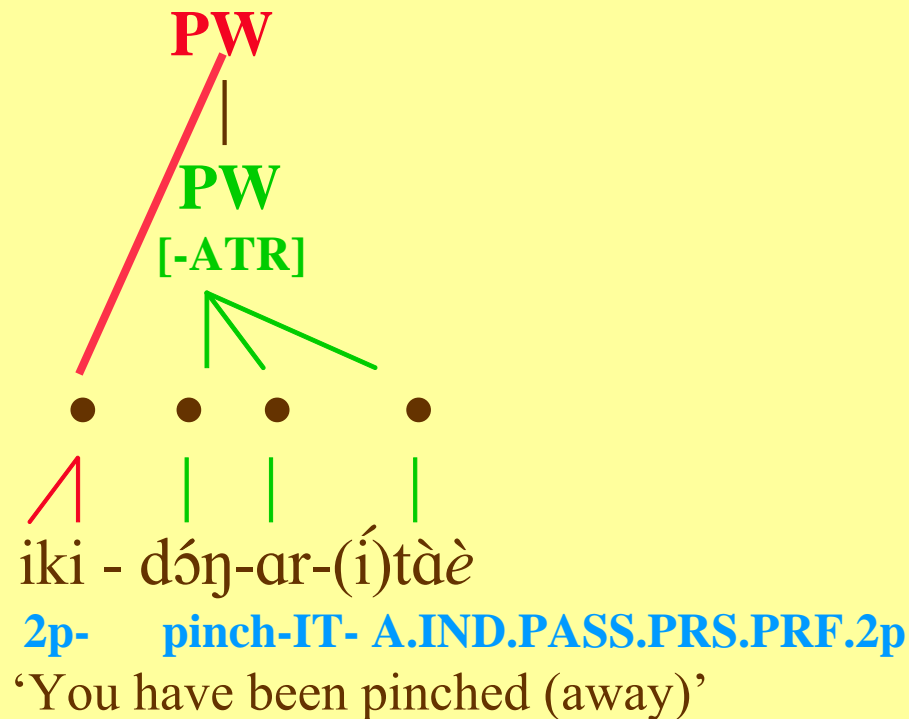
2p -pinch - IT- B.IND.PASS. PST.PROG.2p

‘You were being pinched (away)’

(Novelli, 1985:293)

P-Structure and Harmony (cont'd)

/iki-/ + /-dɔŋ-/ + /-Ar-/ + /-tAe/ →



(Novelli, 1985:294)

Processes Affecting ATR Specification

- **3 ATR Harmony Processes with established domains**
- **Two adjacency effects**

Harmony Process 1: Bi-directional Root Control

[-ATR]

a. áki-tɔ̃-mókí-an-akin
INF-CAUS - handle firmly -FREQ-DAT
‘to frequently cause to handle
firmly (for)’

b. áki-tʃumútʃúmú-ùn
INF -pierce repeatedly -VEN
‘to pierce repeatedly (this way)’

[+ATR]

c. áki-zi-dóŋ-ón-ókin
INF-CAUS- castrate-FREQ-DAT
‘to cause to castrate (for)’

d. áki-rímírímí-ùn
INF -go around repeatedly -VEN
‘to go around repeatedly (this way)’

Harmony Process 2: [-ATR] Suffix Control

‘castrate’

‘produce child’

INF

ákì-dón

ákì-dó

FREQ

ákì-dónón

ákì-dó-on

ITIVE

ákì-dón-èr

ákídó-ɔr

FREQ +

ITIVE

ákídónónɔr

ákídóónɔr

DATIVE

ákídón-ókìn

ákìdo-(ó)kìn

Bi-directionality of [-ATR] Suffix- Controlled Spreading (Form B)

a. é-dónódón-**ó-ó**r-jà

‘...I (will) repeatedly castrate.’

b. kʔí-dónódón-**ó-ɔ**r-jà

‘...that he will repeatedly castrate

c. ì-donodon-**ɔ-ɔ**r-jatà

‘...they (will) repeatedly castrate’

Consonant-Generated [-ATR] Feature

- Tongue retraction in anticipatory co-articulation in V + [r] sequence (Recasens & Espinosa, 2002) produces vowel [ɔ] in [ɑ/o] suffixes.
- **Adjacency effect is proposed to be phonologized** to produce a spreading domain of a maximum of 2 syllables in each direction—within Novelli data.
- The [ɑ/o] suffixes and this alternation are part of diachronic process of mergers between [a] and [ɑ], [a] and [o], and [a] and [ɔ].

(Dimmendaal, 2002)

Harmony Process 3: [+ATR] Suffix Control

ákì-tó-dzók – ‘to cause to be good’

a. è-tò-dzók-í

1s-CAUS-be good-IND.ACT.PST.PROG.

A.1s

‘I was causing to be good.’

b. ì-tò-dzók-etè

2p-CAUS-be good-ACT.PST.PROG.

A.2p

‘You were causing to be good.’

c. εκε-to-dzók-jó

1s-CAUS-be good-IND.PASS.

PST.PROG. A.1s

‘I was being caused to be good.’

d. εκε-to-dzók-etei

1s-CAUS-be good - NARR.PASS.

PST.PROG.A.1s

‘...and I was being caused to be good.’

(Novelli, 1985: 89,91)

Voiced C, [+hi] / [+ATR] Adjacency Effect

- (Keating & Westbury, 1983)-Effort to continue voicing produces a [+ATR] feature. Tongue root is advanced to expand the supraglottal cavity to decrease pressure and maintain vocal fold vibration.
- In Karimojong, it occurs when **high vowels** follow a voiced consonant—high vowels have a smaller cavity space, thereby leading the speaker to compensate by advancing the tongue root.

Adjacency Effects (cont'd)

<u>Infinitive</u>	<u>Pos. 5</u>	<u>Pos. 10</u>	<u>Gloss</u>
a. ákídóη	ádó η únùn	ádóηódó η únùn	‘pinch’
b. ákísúb	ákísú b únùn	ákísúbúsú b únùn	‘create’
c. ákìtsúm	ákìtsú m únùn	ákìtsúmútsúm m únùn	‘pierce’

(Novelli, 1985: 222-223)

Dominance of Consonant Voicing/[+ATR,hi] Adjacency Effect

a. **áki-ŋú-ɔr**

INF-sniff- IT

‘to sniff away’

b. **áki-ŋu-ón-ɔr**

INF-sniff-FREQ-IT

‘to sniff away frequently’

c. **áki-ŋuí-ŋú-ú-ɔr**

INF-sniff repeatedly-IT

‘to sniff away repeatedly’

(Novelli, 1985: 234)

Adjacency Effects: ATR Dissimilation Effect

a. ákíd^ó + án + ar → a'-d^ó-án-ar

INF-snap one's fingers-FREQ-IT

‘to frequently snap one’s fingers (away)’

b. ákíb^ú + án + ar → áb^ú-án-àr

INF-return-FREQ-IT

‘to return frequently (away)’

Phonology and Levels of Affixation

Level 1:

- Bidirectional Root-Controlled Harmony
- [-ATR] Suffix-Controlled Harmony
(Adjacency Effects)

Level 2:

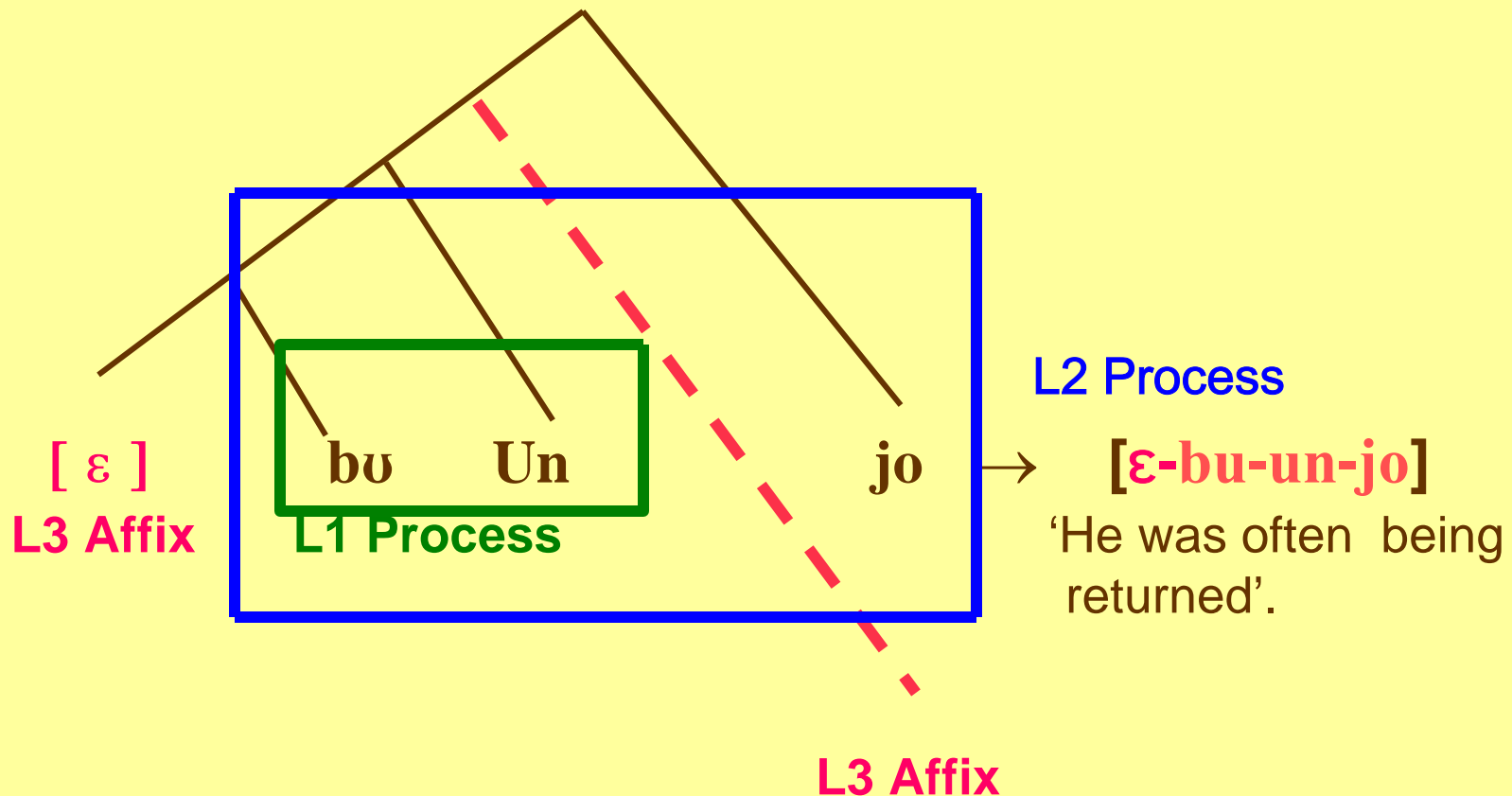
- Dominant [+ATR] Suffix-Controlled Harmony

Level 3:

- No [ATR] Harmony Processes

Levels are proposed to represent historical periods of affix adoption / incorporation.

Phonology-Morphology Interface



Level Ordering: Unique Behavior of [α]

εdoŋakinjo-

he/she/they is/are being pinched
(for...)

Level 1

doŋ-Akin → doŋakin

Level 2

[doŋakin]-jo → doŋαkinjo

Level 3

ε- doŋαkinjo → εdoŋαkinjo

εdoŋokinjo-

he/they is/are being castrated
(for...)'

Level 1

doŋ-Akin → doŋokin

Level 2

doŋokin-jo → doŋokinjo

Level 3

ε-doŋokinjo → εdoŋokinjo

Neutrality of Frequentive Suffix [-eenen]

INF	FREQUENTIVE	GLOSS
ákídón	ε- t -d ó η- é enén- é -t à è	‘He has frequently caused to pinch.’
ákìbú	á-b ú - é enén	‘to return frequently’
ákìdón	ì-d ó η- é enén- é -t ò è	‘He has frequently castrated.’
ákìbú	ákì-b ù - é enén	‘to knock down frequently’

Pronominal Prefixes: Undergoing Change

a. **ókò**-rutʃurrutʃ-**ùì** áḙóḙ
1s-tie repeatedly, NAR.PST 1s
‘...and I was repeatedly tied’

c. **ókorutʃ-itetèì** áḙóḙ
1s-tie-PASS.NAR.PRS PRF 1s
‘...and I have been tied’

b. **ító**-dòḙ-**ì** ijóḙ
2s-pinch-PASS.NAR.PST 2s
‘...and you were pinched’

d. **ító-dòḙ-tetèì** ijóḙ
2s-pinch-PASS.NAR.PRS PRF 2s
‘...and you have been pinched’

(Novelli, 1985: 271-2)

Continuous Aspect Marker [- ere]: Undergoing Change

Active

- a. aka-d^oŋ-eré
1s-pinch-B.ACT.IND.PST PROG
'I was pinching'
- b. a-d^oŋeenen-e-eré
3s-pinch-**FREQ**-B.ACT.IND.PST PROG
'He was frequently pinching.'
- c. óko-d^oŋ-eré
NAR.1s-pinch-IT-B. ACT.NARR.PST.
PROG
'...and I was pinching'

Neutral

- d. aka-d^oŋ-ar-eré
1s-pinch-IT-B.ACT.IND. PST PROG
'I was pinching (away)'
- e. aka-d^oŋ-akin-eré
1s-pinch-DAT-B.ACT.IND.PST.PROG
'I was pinching (for)'
- f. ókɔ-d^oŋ-ar-eré
NAR.1s-pinch-IT-B. ACT.NARR.PST.
PROG
'...and I was pinching (away)'

(Novelli, 1985: 269-424)

PART II

**Morphological Structure
and
Diachronic Evolution**

Overview

- **Evolution of the agreement system follows a modified Jespersen cycle.**
- **Infix genesis shows process of “templatic grammaticalization”.**
- **Paradigm evolution:**
 - 1. Maximum differentiation**
 - 2. Uniformity**
 - 3. Erosion processes (paths not uniform).**

All revealed through ATR harmony patterns.

Agreement System Evolution

Universal Grammaticalization Path

independent pronoun → weak pronoun → **clitic pronoun** → **agglutinative (affixal) agreement marker** → **fused agreement marker** → ∅

è-lò-āzì

íkèz

3- dry in the sun- **REFL.IND.FUT** **3p**

‘They will dry themselves in the sun’

Evolution of Affixes

Neutrality →

Participation in Harmony →

Tendency toward Paradigm Uniformity →

Attrition and Loss

Dynamic Change in Agreement Paradigms

- Patterns of differentiation by person and number **(Example A)**
- Patterns of Uniformity **(Example B)**
- Patterns of Loss **(Example C)**
- Subsequent Loss **(Example D)**

Relationship: Affix Evolution and Jespersen Cycle

Increase in uniformity and phonological erosion limit differentiation of inflections, stimulating strategies for ambiguity resolution.

Loss of suffix information generates preposed pronouns, which evolve into prefixes through incorporation processes.

Loss of prefix information generates postverbal pronouns, which become suffixes.

Infix Genesis

The Evolution of the Frequentive Suffixes

- Frequentive suffixes develop from TAM markers in a process of re-analysis and reduplication.
- This process has 5 phases.
- Frequentive affixes **[-An]**, **[-Un]**, **[-eenen]**, and **[-itit]** are at different stages in the evolutionary process.

Phase 1: Non-Alternating TAM Marker

a. à-dón-ít

1s-pinch- ACT. A. PRS.PERF.1s

‘I have pinched’

b. è-dón-ito

3p-pinch- ACT. A.
PRS.PERF.3p

‘They have pinched.’

(Novelli, 1985:269)

Phase 2: Affix Reduplication

a. **ì-dòŋ-ítít** íjòŋ

2 -pinch-ACT.A.PST.PERF 2s
FREQ.

‘You (s.) had pinched.’

b. **ì-dòŋ-ítito** íèz

2 -pinch-ACT.A.PST.PERF 2p
FREQ.

‘You (p.) had pinched.’

c. **è-tìjà-ítít**

1s-do-ACT.A.PST.PERF. FREQ.

‘..I used to do’

(Novelli, 1985:214-215)

Phase 3: **FREQ** Derivational Affix

a. **ì-dòη-éénèn-èt** **íjòη**

2-pinch-FREQ-PRS.PERF. **2s**

‘You (s) have frequently pinched.’

b. **ì-dòη-eeenen-eto** **íèz**

2-pinch-FREQ-PRS.PERF. **2p**

‘You (p) have frequently pinched.’

(Novelli, 1985:214)

Phase 4: Incorporation into the Harmony Process

a. ábÚ-ún-ún- ùn
INF-return-FREQ-VEN

‘to frequently return this way’

b. ábÚ-án-án-àr
INF-return-FREQ-IT

‘to frequently return that way’

(Novelli, 1985:213)

Phase 5: Loss of Reduplicant

a. á-bÚ-ún- ùn

INF-return-FREQ-VEN

‘to frequently return this way’

b. á-bÚ-án-àr

INF-return-FREQ-IT

‘to frequently return that way’

(Novelli, 1985:213)

Special thanks to....

Gerrit Dimmendaal

Manuela Noske

David Rood

Ricardo Bermudez-Otero

William Raymond

Andy Cowell

Doris Payne

Daniel Recasens

J.R. Westbury

Bob Kennedy

Larry Hyman