



## Puzzle

- Western Nilotic (WN) languages show a strong preference for non-concatenative morphophonological processes
- **Puzzle: Why would a language prefer non-concatenative morphology?**

## Background

- WN roots are generally monosyllabic: C (G) V (V) (V) C
- Root contrasts:
  - Ternary length (V, VV, VVV)
  - Three/four tones (H, L, Fall, Rise)
  - Modal/Creaky vs. breathy voice
- Inflected forms:
  - Mostly changes to root
  - Vowel lowering & fronting processes (“vowel grades” – see below)
  - Lengthening and tonal overlays

e.g. Dinka: Forms of <i>m̄iit</i> ‘pull’			
	Simple	Centrifugal	Centripetal
UNM	m̄iit	m̄īiit	m̄j̄iit
1SG	m̄j̄ɛɛt	m̄j̄ɛ̄ɛt	m̄j̄ɛ̄ɛt
3SG	m̄īiit	m̄īīiit	m̄j̄īiit
2PL	m̄j̄ɛ̄t-k̄á	m̄j̄ɛ̄ɛ̄t-k̄á	m̄j̄ɛ̄ɛ̄t-k̄á

## Proposal

- Observation:** WN show constraints on contrasts in suffixes (word-final position) - cf. roots.
  - Maximally –CV
  - Optional onsets, no codas
  - No length, tonal, voice quality contrasts
  - Little suffix stacking
- Proposal:** Non-concatenative morphology results from:
  - Surface phonological well-formedness constraints on suffixes and how each language chooses to resolve violations of them
- **tl;dr: Phonological constraints drive root integration**

## Case study: Dinka

Vowel Grades	Creaky					Breathy						
Grade 1	i	e	a	ɔ	o	ĩ	ɛ̄	á	ɔ̄	ō	ū	<b>Basic – UR of root</b> -i triggers fronting -a triggers lowering
Grade 2	i	e	ɛ	ɔ	o	ĩ	ɛ̄	ɛ̄	ɔ̄	ō	ū	
Grade 3	jɛ	ɛ	a	a	wɔ	jɛ̄	ɛ̄	á	á	ɔ̄	wɔ̄	

- Few verbal suffixes: -V (-ɛ̄ only) or -CV (-k̄á/k̄ū/k̄ɛ̄)
- Word-final position is prosodically weak – reduction of vowel contrasts
  - Reduced vowels are preferred, OR
  - Are required to integrate into the root

## Case study: Dinka

### A. Basic pattern of root intergration of -V suffixes

- Word-final position cannot licence a mora (prominence reduction: Crosswhite 2001, 2004)
  - \*μ#: Assign one violation mark for every word-final mora
- Explains prevalence of [-e] in suffixes: [e] can be a non-moraic vowel in Dinka (see Andersen 2007:fn. 20; Remijsen and Gilley 2008:335)

➤ **Vocalic suffixes incorporate into root to avoid violation of \*μ#**

➤ Incorporation/metathesis preferred to deletion (MAX-μ >> LINEARITY)

Input:	I-ADJ	MAX-μ	*μ#	LINEARITY
[c̄ɔ̄ɔl+à <sub>1SG</sub> ] ‘call’				
a. càaal				*
b. c̄òɔl		*!		
c. c̄aal-à			*!	
c. c̄aal-ɛ̄		*!		

### B. No vowel reduction occurs with any -CV suffixes

- Monosyllabic output (b, c) violates \*COMPLEXCODA and MAX-C
- Non-contiguous metathesis (d) violates I-ADJACENCY (Carpenter 2002)
- Final reduction (e) violates MAX-μ (or constraint favoring moraic syllables)

➤ **No root lengthening occurs with -CV suffixes**

➤ Lowering due to vowel grade (Grade 3) still occurs at a distance, harmony with vowel in 2pl [-k̄á]

Input:	MAX-C	*COMPLEXCODA	I-ADJ	MAX-μ	*μ#	LIN
[c̄ɔ̄ɔl+k̄á <sub>2PL</sub> ] ‘call’						
a. càal-k̄á					*	
b. càaal	*!					*
c. càaal-k		*!	**			**
d. càaal-k̄ɛ̄			*!*			**
e. càal-k̄ɛ̄				*!		

Local metathesis occurs with 2PL perfect auxiliary (vs. (c)):  
 c̄ɛ̄ + k̄á<sub>2PL</sub> → c̄aak  
 Local metathesis doesn't violate O-ADJACENCY

## Zooming out: WN suffixation

➤ WN languages show phon. restrictions on suffixes → changes to the root through inflection:

- Shilluk:** suffixes only short [-ATR] vowels, i.e. no length/ATR contrast (-a, -ɛ and -ɔ on verbs, and -ɔ and -ɪ on nouns: Remijsen and Ayoker 2022).
  - Some morphological categories lengthen roots to overlong
  - Some morphological categories cause the root vowel to become [+ATR] e.g., cam ‘eat’ → c̄állm̄ ‘eat.CP’ (Remijsen et al. 2015)
- Nuer:** suffixes only short vowels with no voice contrast (Reid 2020:52)
  - The applicative and antipassive shift the root vowel to breathy (“Grade 2”)
- Anywa:** suffixes only [-ATR] vowels, i.e. no contrast in ATR (Reh 1996)
  - The antipassive shifts root vowel to [+ATR] (sec. 3.6.1)