

Metrically conditioned segmental alternations in Dagaare

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Outline

- Dagaare (Mabia, Gur) is a tone language and there is little evidence for stress.
- However, there is evidence for metrical structure.
- The evidence comes from segmental alternations:
 - Vowel lengthening
 - Vowel shortening
 - Consonant deletion

Dagaare action nominals

	ROOT	CIT.FORM	IMPERF.	NOMINAL	
(a)	/ba-/	bà	bàà-rá	báá-ú	‘stick into ground’
	/baa-/	bàà	bàà-rá	báá-ú	‘grow (of child)’
(b)	/bar-/	bàrì	bà-rá	bár-úú	‘leave’
	/bàrr-/	bárrì	bár!-rá	bár!r-úú	‘bargain’
	/báàr-/	báárì	báá!-rá	báá!r-úú	‘finish’

- If the root ends in V, the suffix is a short -ú.
- If the root ends in C, the suffix vowel is a long -úú.

CV-roots with low and high vowels

	CIT. FORM	IMPERF.	NOMINAL	
(a)	bà	b ^à à-rá	b ^á á-ù	‘stick into ground’
	bú	b ^ú ú-rò	b ^ú ú-ù	‘come (of rain)’
	bú	b ^ú ú-rò	b ^ú ú-ù	‘measure, calculate’
	wà	w ^à à-ná	w ^á á-ù	‘come’
(b)	tá	t ^á à	t ^á á-ù	‘reach’
	ì	ì ^r é	ì ^r í-ù	‘do’
	đĩ	đĩ ^r é	đĩ ^r í-ù	‘take’
	dì	dì ^r é	dì ^r í-ù	‘eat’

CV-roots with mid vowels

	CIT. FORM	IMPERF.	NOMINAL	
(a)	bó	b ^ú ó-r̀	b ^ú ó-ù	‘want, look for’
	kó	k ^ú ó-r̀	k ^ú ó-ù	‘farm’
	yó	y ^ú ó-r̀	y ^ú ó-ù	‘roam’
	kyè	ky ^ì è-ré	ky ^í é-ú	‘cut’
	kpè	kp ^ì è-ré	kp ^í é-ú	‘enter’
	gyé	gy ^í é-rè	gy ^í é-ù	‘refuse to take’
(b)	k̀	k̀- ^ó ró	k ^ú ó-ú	‘dry’
	kó	k ^ó -r̀	k ^ú ó-ù	‘get ready for rain’

CVV-roots

	CIT. FORM	IMPERF.	NOMINAL	
(a)	bàà	bàà-rá	báá-ú	‘grow (of child)’
	fáà	fáá'-rá	fáá'-ú	‘seize’
	tìè	tìè-ré	tíé-ú	‘shoot’
	fìè	fìè-ré	fíé-ú	‘whip’
	dìè	dìè-né	díé-ú	‘play’
(b)	tàá	táá'-rá	táá-ú	‘have, own’
	wàá	wáá-rà	wáá-ú	‘be’
	gàà	gèè-ré	gáá-ú	‘go’

CVCC-roots

CIT. FORM	IMPERF.	NOMINAL	
bèlɿ	bèl-lé	béll- úú	‘deceive’
gòlɿ	gòl-ló	góll- úú	‘go around’
nyùnnì	nyùn-nó	nyúnn- úú	‘smell’
kànnì	kàn-ná	kánn- úú	‘learn’
bárrì	bár ^l -rá	bár ^l -r- úú	‘bargain’

CVVC-roots

CIT. FORM	IMPERF.	NOMINAL	
báárì	báá'-rá	báá'r- úú	'finish'
nàà̀nì	nàà-ná	náán- úú	'get ready, develop'
sàà̀lì	sààl-á	sáál- úú	'sharpen'
fúó̀rì	fúó'-ró	fúó'r- úú	'sip'
pùò̀rì	pùò-ró	pùòr- úú	'thank'
gíé̀rì	gíé'-ré	gíé'r- úú	'belch'
yíé̀lì	yíé'-lé	yíé'l- úú	'sing'
kòò̀rì	kòò-ró	kóór- úú	'delay'
sà̀à	sà̀à-ná	sáàṅ- úú	'spoil'

Analysis in outline: V-final roots

Prosodic subcategorization: /-UU/ attaches to a foot.

Underlying form:	/ba-úu/	/baa-úu/	MOTIVATION
Footing:	(bá)úú	(báá)úú	Build a foot, but...
Stem V lengthening:	(báá)úú	--	no degenerate feet
Suffix V shortening:	(báá)ú	(báá)ú	no unstressed VV
	[bááú]	[bááú]	
	‘stick into ground’	‘grow (of child)’	

Analysis in outline: C-final roots

No C-final feet, hence the first suffix vowel must be incorporated.

Underlying form:	bar-úu	bárr-úu	báàr-úu
Footing:	(bárú)ú	(bár!rú)ú	(báá!rú)ú
Stem V lengthening:	--	--	--
Suffix V shortening:	--	--	--
	[bárúú]	[bár!rúú]	[báá!rúú]
	‘leave’	‘bargain’	‘finish’

OT analysis: Undominated constraints

*C] ‘A foot must end in a vowel.’ (Exception: /ŋ/)

☞ (bár.rú)ú

*(bár)rúú

*UNARY ‘No monomoraic feet.’

☞ (báá).ú

*(bá).úú

WSP The Weight-to-Stress Principle (Prince 1990):

‘No unstressed heavy syllables’ (*H)

☞ (bár.rú)ú

*(bár.rúú)

OT analysis: Dominated constraints

Vowel lengthening and shortening violate faithfulness:

MAX(V) ‘No vowel deletion’

DEP(V) ‘No vowel insertion’

The alignment constraint

ALIGN(Suffix, L, Foot, R) ‘The left edge of a suffix coincides with the right edge of a foot.’

This constraint triggers root vowel lengthening:

/ba-UU/ → (baa)u

*(**ba.u**)u misaligned -uu

*(**ba.uu**) misaligned -uu

Alignment has morpholexical conditions


Applies regularly (although differently in each case) with

- the action nominalizer /-UU/ [uu, uʊ] -VV
- the perfective suffix /-EE/ [ee, eɛ] -VV
- the plural suffix /-V/ [ɛ, e, ɔ, o, a] -V


Applies somewhat irregularly with

- the number suffix /-rI/ [ri, rɪ] -CV
- the imperfective suffix /-rV/ [rɛ, re, rɔ, ro, ra] -CV


Root lengthening + suffix shortening

/ba-UU/	WSP	ALIGN	DEP(V)	MAX(V)
(a)  (baa)u			1	1
(b) (ba.u)u		1!		
(c) (ba.uu)	1!	1		
(d) (baa)uu	1!		1	
(e) (ba.u)		1!		1

Suffix shortening

/baa-UU/	WSP	ALIGN	DEP(V)	MAX(V)
(a)  (baa)u				1
(b) (ba.u)u		1		1
(c) (ba.uu)	1!	1		1
(d) (baa)uu	1!			
(e) (ba.u)		1		2

No change with C-final roots

/bar-UU/	WSP	ALIGN	DEP(V)	MAX(V)
(a)  (ba.ru)u		1		
(b) (ba.ruu)	1	1		
(c) (baa.ru)u		1	1	
(d) (ba.ru)		1		1

Number morphology (Anttila and Bodomo 2009)

1. Unsuffixed singular CV-roots lengthen (exceptions: *zû* ‘head’)
2. The number suffix /-rI/ triggers root V lengthening, but
 - only if the root V is [+high] (phonological condition)
 - only in some roots (lexical condition)

	ROOT	SINGULAR	PLURAL	N + ‘bad’	
(a)	bi-	(b <i>í</i> é)	(b <i>í</i> í)-rí	bì-fáá	‘child’
	ku-	(k <i>ú</i> ó)	(k <i>ú</i> ú)-rí	kù-fáá	‘wild rat’
(b)	dè-	(d <i>è</i> é)	dè-rí	dè-fáá	‘room’
	dò-	(d <i>ò</i> ó)	dò-rí	dò-fáá	‘pig’

Aspect morphology

CV-roots lengthen the with imperfective /-rV/, but only in some roots (lexical condition):

	CIT. FORM	IMPERF.	NOMINAL	
(a)	bà	(b ^{àà})-rá	(b ^{áá})-ù	‘stick into ground’
	bú	(b ^{úú})-rò	(b ^{úú})-ù	‘measure, calculate’
	kó	(k ^{óó})-rò	(k ^{óó})-ù	‘farm’
(b)	tá	tá-rà	(t ^{áá})-ù	‘reach’
	dì	dì-ré	(d ^{íí})-ú	‘eat’
	kó	kó-rò	(k ^{úó})-ù	‘get ready for rain’

How to analyze such apparent irregularity?

- Our ranking so far: ALIGN >> DEP(V).
- Maybe some suffixes/roots do DEP(V) >> ALIGN?

/-UU/	ALIGN >> DEP(V)	/ba-úu/	→ (báá)ú	‘stick into ground’
/-rV/	ALIGN >> DEP(V)	/bi-rí/	→ (bíí)rí	‘child-PL’
	DEP(V) >> ALIGN	/bí-rí/	→ (bírì)	‘seed-SG’
/-E/	DEP(V) >> ALIGN	/kù-é/	→ (kùé)	‘hoe-PL’

- But this analysis does not cover all cases. Also, it misses the fact that only /-CV/ suffixes seem to have “exceptions”.

Thank you!

References

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