

Consonant Alternation in the Verbal Morphology of Pāri

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1. Introduction

Pāri is a Western Nilotic language spoken by the Pāri, who inhabit six villages around Lafon Hill in the Torit District of Eastern Equatoria Province in the southern Sudan. According to the 1983 census, the population is about 10,000. The Pāri, who are called Lokoro by some of their neighbours, call themselves /pλrí/, their language /dhí pλrí/, lit. 'mouth of Pāri', and their mountain /lɪpùul/. For ethnographic information on the Pāri, see Kurimoto 1984. The only previously published work dealing with the Pāri language is Simeoni 1978, which outlines its grammatical structure and lists some vocabulary. In Köhler's 1955 classification of the Nilotic languages, Pāri belongs to the Northern Luo subbranch of Western Nilotic.

Like other Western Nilotic languages, Pāri exhibits consonant alternation in root-final position as a means of derivation and inflection. In Pāri, however, this type of morphophonemic alternation is more pervasive than in apparently most of the other languages. Thus, it is more complex than in e.g. Dinka, and it manifests more morphological categories than in e.g. Luo.

In this article, I deal with the nature and role of consonant alternation in the verbal morphology of Pāri. Although consonant alternation is just as pervasive in the nominal morphology, it is less regular there and hence requires more data for an exhaustive treatment than are available to me at present.

I shall proceed as follows. In section 2, I establish the system of consonant phonemes and account for their distribution and allophonic variation. In section 3, I set up an alternation system which shows the regularities of consonant alternation in verbal roots, and I describe and exemplify its role in derivation and inflection. In section 4, I discuss the alternation system from a diachronic point of view. In order to explain its features, I propose a partial reconstruction of a number of verbal derivational suffixes and hypothesize a number of sound changes. Finally, I argue that the internally reconstructed suffixes belong to Proto-Western Nilotic, and I point out some resemblances between them and the suffixes that occur in Eastern and Southern Nilotic.

2. Consonant phonemes

2.1. Introduction

In general, the segmental structure of a Pärì word conforms to the following formula, in which optional segments are enclosed in parentheses:

- (1) ((C)V-) C(w)V(V)(C)((C) -V) (-CV)
 prefix stem suffix enclitic

Thus, a word consists of at most four segmental morphs: a stem and, optionally, a prefix, a suffix, and an enclitic. The stem consists of three parts: (i) an initial, consonantal part, which is either a consonant or a consonant cluster consisting of a consonant and the glide /w/, (ii) a medial, vocalic part, which is either a short or long monophthong or a diphthong, (iii) a final, consonantal part, which is either a consonant, a cluster of two consonants, or zero. Affixes and enclitics cannot have consonant clusters, and their vowels are short monophthongs.

Pärì has 24 vowel phonemes, whose phonetic features are shown in Table 1. Under certain circumstances, contiguous vowels are affected by phonological rules, as discussed in section 2.5. below.

Table 1. Vowel phonemes

			monophthongal				diphthongal	
			short		long			
			-ATR	+ATR	-ATR	+ATR	-ATR	+ATR
un- rounded	front	high	<i>ɪ</i>	<i>i</i>	<i>ɪɪ</i>	<i>ii</i>	<i>ɪɛ</i>	<i>ie</i>
		mid	<i>ɛ</i>	<i>e</i>	<i>ɛɛ</i>	<i>ee</i>		
	central	low	<i>a</i>	<i>ʌ</i>	<i>aa</i>	<i>ʌʌ</i>		
rounded	back	mid	<i>ɔ</i>	<i>o</i>	<i>ɔɔ</i>	<i>oo</i>	<i>ʊɔ</i>	<i>uo</i>
		high	<i>ʊ</i>	<i>u</i>	<i>ʊʊ</i>	<i>uu</i>		

Pärì is a terraced-level tone language with non-automatic, total downstep. According to my analysis, it has the following underlying tones:

- (2a) $H = \text{High} = / \hat{V} /$ $\widehat{HL} = \text{High-Low} = / \hat{V} /$
 $L = \text{Low} = / \check{V} /$ $\underset{\cdot}{L} = \text{floating Low} = / \check{\cdot} /$

In the present article, I use an intermediate level of representation at which an underlying low tone has become high between a high tone and a following floating low tone:

- (2b) L-raising
 $L \rightarrow H / H (+) \text{ ______ } \underset{\cdot}{L}$
 (where "+" is a word boundary)

The surface representation involves the following tonal elements:

- (2c) $H = \text{High}$ $E = \text{Extra Low}$
 $L = \text{Low}$ $! = \text{downstep}$

The surface tonal elements, which may combine into various composite tones, are not indicated by diacritics but by tone symbols after the phonetic transcription of the segments of a word. The surface representation can be derived by means of rules (2d-g). Rules (2d-f) show that a floating low tone is realized E, !, !L, !L!, or L!.

- (2d) $\underset{\cdot}{L}$ -replacement
- (i) $\underset{\cdot}{L} \rightarrow E / \text{______} \parallel$
 - (ii) $\underset{\cdot}{L}-L \rightarrow E / \text{______} \parallel$
 - (iii) $\underset{\cdot}{L} \rightarrow ! / \left\{ \begin{array}{l} H \text{______} + T \\ \text{______} - L + T \end{array} \right\}$
 - (iv) $\underset{\cdot}{L} \rightarrow ! / \left\{ \begin{array}{l} L \text{______} + T \\ \text{______} - H \end{array} \right\}$
 - (v) $\underset{\cdot}{L} \rightarrow !L / \left\{ \begin{array}{l} L \text{______} + T \\ \text{______} - H \end{array} \right\}$
 - (vi) $\underset{\cdot}{L} \rightarrow !L / \left\{ \begin{array}{l} L \text{______} + T \\ \text{______} - H \end{array} \right\}$
- ("||" is a pause; "+" is a word boundary or the boundary before an enclitic; "-" is a morpheme boundary; "T" is any tone)

- (2e) Extra !-insertion
 $\widehat{H!L} \rightarrow \widehat{H!L!} / \text{______} - H$

- (2f) !-deletion
- (i) $\widehat{H!L!} \rightarrow \widehat{HL!} / \left\{ \begin{array}{l} \text{______} - \widehat{HL} \\ \text{______} - H(!) + T \text{ (optionally)} \end{array} \right\}$
 - (ii) $\widehat{H!L!} \rightarrow \widehat{HL!} / \left\{ \begin{array}{l} \text{______} - \widehat{HL} \\ \text{______} - H(!) + T \text{ (optionally)} \end{array} \right\}$

$/ \hat{V} /$ is an underlying suffix vowel which is obligatorily deleted and whose tone, T_j , is regrounded on the stem as an additional component of the stem tone T_i :

(2g) Regrounding

$$T_i - T_j \rightarrow \widehat{T_i T_j}$$

In the following subsections, I concentrate on the consonant system.

2.2. Inventory and distribution

Pärì has 20 consonantal phonemes, whose basic phonetic features are indicated in Table 2. Apart from the glottal stop, the stops and the nasals form a symmetric subsystem with five contrastive points of articulation, the interdentals being symbolized by digraphs. In addition, there are two liquids and two glides, but no fricatives¹. The distinction between obstruents and sonorants, which divides the consonants into two sets, is phonologically relevant in ways to become clear below.

Table 2. Consonant phonemes

point of articulation manner of articulation			bilabial	interdental	alveolar	palatal	velar	glottal
obstruent	stop	voiceless	<i>p</i>	<i>th</i>	<i>t</i>	<i>c</i>	<i>k</i>	ʔ
		voiced	<i>b</i>	<i>dh</i>	<i>d</i>	<i>j</i>	<i>g</i>	
sonorant	nasal		<i>m</i>	<i>nh</i>	<i>n</i>	<i>ɲ</i>	<i>ŋ</i>	
	liquid	lateral			<i>l</i>			
		trill			<i>r</i>			
	glide		<i>w</i>			<i>y</i>		

The number of consonantal contrasts varies according to the position in the word, cf. the examples in (3)². The full set of 20 consonants occurs only in stem-initial position. The glottal stop does not occur stem-finally, and the voiced stops do not occur word-finally. Moreover, there is no contrast between [*j*] and [*y*] in stem-final position. /Ø/ indicates the absence of a consonant in stem-final position.

(3)	stem-initial	stem-final, word-medial	stem-final, word-final
/p/	/píj/	/dùp`-à/	/léep/
	land	goat skin	tongue
/th/	/thím/	/áwèeth-á/	/kòth/
	forest	pipe	rain
/t/	/tòŋ/	/ʔòt-ó/	/bàt/
	eggs	house	arm
/c/	/càŋ/	/léec-à/	/kwàc/
	sun	my elephants	leopard
/k/	/kíc/	/gúuk-à/	/làk/
	honey	my dogs	teeth
/b/	/báp/	/jòob-ì/	—
	swamp	buffalo	
/dh/	/dhók/	/pùodh-ó/	—
	mouth	garden	
/d/	/dèel/	/kìd-í/	—
	skin	stone	
/j/	/jùók/	—	—
	spirit		
/g/	/gùok/	/dháag-ò/	—
	dog	woman	
/m/	/máàn/	/rìm-ó/	/ʔúm/
	women	blood	nose
/nh/	/nhòth/	/thùnh-ò/	/thùònh/
	sucking	breast	male
/n/	/nám/	/cín-ò/	/yín/
	rivers	intestine	trees
/ɲ/	/ɲàaŋ/	/wìŋ-ó/	/cwíŋ/
	crocodile	bird	liver
/ŋ/	/ŋàc/	/rìŋ-ó/	/tóŋ/
	back	meat	spear
/r/	/ràw/	/cèer-ó/	/cèer/
	hippo	star	stars
/l/	/lùum/	/tiel-ò/	/tiel/
	grass	leg	legs
/w/	/wàŋ/	/thèew-í/	/màaw/
	eye	porcupine	oil
/y/	/yàath/	/pàay`-ó/	/láy/
	tree	home	animal

/ʔ/	/ʔith/	—	—
	ear		
/θ/	—	/cò-ó/	—
		bone	

In stem-final position before a suffix vowel, /y/ has three allophones: [j], [y], and zero. Its [j] allophone has only been attested in a few words, in which it varies freely with [y]:

- (4) /pàay`-ó/ → [paajɔ] ~ [paayɔ] ~ [paao] L!LH home
 /ùpíy`-à/ → [uprija] ~ [uprya] ~ [upria] LHE mouse
 /ríy-á/ → [ruja] ~ [ruya] ~ [rua] HH sheath.

By contrast, the zero allophone always varies freely with [y] in that position, cf. also the following examples³:

- (5) /á-ríuy`-é/ → [aruiye] ~ [aruiue] HH!L!H
 C-rub-3S He rubbed it
 /búoy-à/ → [buɔya] ~ [buɔa] HL
 net-1S my net

In the same position, /w/ may also be realized as zero, at least in some words, e.g.

- (6) /káw-ì/ → [kɛwi] ~ [kɛi] HL bamboos
 /máaw-à/ → [maawa] ~ [maaa] HL my oil (oil-1S).

A stem-initial consonant can be followed by /w/, but there are two constraints on such clusters. Firstly, /w/ does not occur after labials and interdentals, nor after /w/ itself, and, maybe incidentally, no instances of /nw/ and /ʔw/ have been encountered. Secondly, /w/ does not occur before rounded vowels. The following words exemplify the possible /Cw/ combinations:

- (7) /t/ àtwáat` adult male elephant /k/ kwàn food
 /d/ dwɛlɛlò fats (S) /g/ àgwátá half gourd
 /n/ (no examples) /ŋ/ ŋwèɛc running
 /c/ cwit`-ò clitoris /r/ rwɛlth chief
 /j/ jwáan` small hut /l/ lwéɛdò finger
 /ɲ/ ɲwìɛɲò iron /y/ ywìɛc broom
 /ʔ/ (no examples).

Before the diphthongs /ɛ/ and /ie/, the /w/ of these clusters is phonetically a labio-palatal glide [ɥ], as in

- (8) /gwɛnɔ̃/ → [gɥɛnɔ̃] LL chicken
 /gwɛn/ → [gɥɛn] L chickens.

Consonant clusters also occur in stem-final position, but not word-finally, i.e. only if the stem is followed by a suffix vowel. In that position, the consonant clusters are (i) nasal plus homorganic voiced stop and (ii) geminate sonorants. The possible clusters are exemplified in (9) and (10). The letter sequences /ndh/ and /nnh/ are used instead of /nhdh/ and /nhnh/, respectively.

- | | | | | | | |
|------|-------|-----------|-----------|------|----------|----------|
| (9) | /mb/ | rɔ̃mb-ɔ̃ | sheep (S) | /ɲɲ/ | wɪɲɲ-ɪ̀ | birds |
| | /ndh/ | kúundh-è | rains (P) | | | (N-ERG) |
| | /nd/ | àdúund-ó̃ | heart | /ɲɲ/ | lòɲɲ-ó̃ | fly |
| | /ɲj/ | wɪɲj-á | my bird | /rr/ | lârr-ó̃ | vein |
| | | | (N-1S) | /ll/ | ɲâll-ó̃ | python |
| | /ɲg/ | nèɲg-ó̃ | cane | /yy/ | búɔyy-ɪ̀ | net |
| | | | | | | (N-ERG) |
| (10) | /mm/ | lèemm-ó̃ | jaw | /ww/ | ràww-ɪ̀ | hippopo- |
| | /nnh/ | kèennh-ó̃ | bile | | | tamus |
| | /nn/ | kùonn-ò̃ | nail | | | (N-ERG). |

2.3. Consonant length

In stem-final, word-medial position, all consonants, except voiced stops, can be phonetically either short or long. Only in sonorants, however, is length contrastive. The contrast between short and long (or geminate) sonorants is shown by the following minimal or subminimal pairs:

- | | | | | | | |
|------|------|-----------------------|-------------|-------|----------------------------|------------------------|
| (11) | /m/ | ùbí-m-ɪ̀ (N-2S) | your gibbon | /mm/ | ùbí-mm-ɪ̀ (N-ERG) | gibbon |
| | | kɔ̃m-ɪ̀ (N-P) | chairs | | kɔ̃-mm-ɪ̀ (N-ERG) | chair |
| | /nh/ | á-ɲânnh-é (C-V+CP-3S) | He moved it | /nnh/ | á-ɲânnnh-é (C-V+BEN+AP-3S) | He moved (sth) for him |
| | | dháanh-é̃ (N-ERG) | person | | dháannh-è̃ (N-3S) | his person |

/n/	/nn/
ɲìn-ò (V+AP-INTR)	ɲìnn-ò (V+CP+AP-INTR)
He is rubbing	He is coming to rub
ʒwáan`-í (N-2S)	ʒwáann`-í (N-P)
your hut	huts
/ɲ/	/ɲɲ/
kùɲ`-ò (V+AP-INTR)	kùɲɲ`-ò (V+CP+AP-INTR)
He is digging	He is coming to dig
pòɲ`-ò (V+AP-INTR)	pòɲɲ`-ò (V+CP+AP-INTR)
He is teaching	He is coming to teach
/ɲ/	/ɲɲ/
tóɲ-ì (N-2S)	tóɲɲ-ì (N-ERG)
your spear	spear
kòɔɲ`-ò (N-S)	kòɔɲɲ`-ó` (N-1PIN)
beer	our beer
/r/	/rr/
múgwár-ì (N-2S)	múgwárr-ì (N-ERG)
your zebra	zebra
cùur-í` (N-DEM)	cùurr-ì (N-ERG)
this vulture	vulture
/l/	/ll/
pàl`-è (N-ERG)	pàll`-è (N-3S)
knife	his knife
bòol-ì (N+P-ERG)	bòoll-ì (N-ERG)
handles	handle
/w/	/ww/
káw-à (N-1S)	káww-à (N+P-1S)
my bamboo	my bamboos
á-láaw`-é (C-V-3S)	á-láaww`-é (C-V-3P)
He washed it	They washed it
/y/	/yy/
búɔy-ì (N-2S)	búɔyy-ì (N-ERG)
your net	net
ù-dòɔy-ó (RES-V-SUF)	ù-dòɔyy-ó (RES-V+M-SUF)
It has been weeded	It has been weeded (repeatedly)

While voiced stops are always short, voiceless stops are either short or long when they occur word-medially in stem-final position. However, the length difference is not contrastive, as short and long voiceless stops are in complementary distribution: Voiceless stops are short after long or diphthongal stem vowels, and long after short stem vowels. Cf. the following pairs:

12)	/p/	á-lúup`-é C-speak-3P	[aluvpe] HHE	They spoke it
		á-lùp-é C-speak+M-3S	[aluppe] HLH	He spoke it
	/th/	á-núuth`-í C-show-2S	[anvut̪i] HHE	You showed it
		á-núth`-í C-show+M-2S	[anvut̪i] HHE	You showed it
	/t/	kíit-à stones-1S	[kiita] HL	my stones
		kít-à stone-1S	[kitta] HL	my stone
	/c/	á-rúuc`-é C-rub-3P	[aruuce] HH!L!H	They rubbed it
		á-rúc`-é C-rub+M-3S	[arucce] HH!L!H	He rubbed it
	/k/	á-còɔk-é C-deceive-3S	[acɔkɛ] HLH	He deceived him
		á-cók`-é C-smash-3P	[acɔkkɛ] HH!L!H	They smashed it.

2.4. The glottal stop

The phoneme /ʔ/ is realized phonetically either as a glottal stop or as zero:

(13)	ù-ʔòol	[uʔool] ~ [uool]	LL	He is tired (RES-V)
	àʔídh`-á	[aʔíða] ~ [aíða]	LH!L!H	squirrel.

In spite of its possible realization as zero, /ʔ/ contrasts with the absence of a consonant. This is shown by the fact that certain phonological rules which apply to contiguous vowels cannot apply if /ʔ/

intervenes. For instance, the vowel of the preposition /kí/ 'with' is (optionally, but normally) assimilated by a following vowel:

- (14) *kí ùbúr* [kuubur] HLH with Ubur
kí àbéeł'-á [kaabeela] HLH!L!H with a stick,

but no assimilation can take place across /ʔ/:

- (15) *kí ʔòtó* [kɪ(ʔ)ɔttɔ] HLH with a house.

Similarly, a glide [y] is inserted between the locative particle /i/ and a following vowel:

- (16) *kídí ì àkíiy-è* The stone is beside it
 [ɾyakíiyɛ] LLHL (stone LOC side-3S)
ɣòom ì àlòolá There is sand on the road,
 [ɾyaloola] LLLH (sand LOC road)

but not if /ʔ/ intervenes:

- (17) *lwàak ì ʔòtó* The people are in the house.
 [ɪ(ʔ)ɔttɔ] LLH (people LOC house)

thus, although /ʔ/ need not be present phonetically, there is evidence for its underlying presence⁴. As a consequence, we can maintain the generalization that apart from a few function words, all stems begin with a consonant.

2.5. Stem-final zero

Some nominal and verbal stems have no final consonant. But since in such cases, the absence of a consonant alternates morphophonemically with the presence of one, it is convenient to refer to the absent consonant as zero, /θ/. The zero consonant, which can only occur before a suffix, differs from the zero allophones of the glides /y/ and /w/. This is shown by the fact that it behaves differently from /y/ and /w/ with respect to certain phonological rules. Below, four of these rules are illustrated, viz. vowel deletion, vowel assimilation, diphthong simplification, and vowel shortening. Under certain circumstances, the latter three rules apply to words with stem-final /θ/, thereby affecting their suffix vowel or their stem vowel. For vowels affected in this way, there is no obvious phonemic level of represen-

tation. An underlying representation and a phonetic representation can easily be established, as well as one or more intermediate levels of representation, but there seems to be no non-arbitrary way of positing a phonemic level. Outside this subsection, I use the phonetic representation of the vowels in question as if it were phonemic.

Stem-final /y/ and /w/ are optionally deleted before a suffix vowel (cf. section 2.2) and may thus be phonetically indistinguishable from /Ø/ and from each other. This can be observed in the antigenitive stem of singular nouns before a possessive suffix, as in (18). The corresponding absolutive forms show that /y/ and /Ø/ alternate morphophonemically with /c/ and /k/, respectively⁵.

(18)	N-1S		N	
	my . . .			
	stem-final /y/:			
	/ɲλy-á/	→ [ɲλa]	LH	/ɲλc/ back
	/cwíiy-à/	→ [cwíia]	HL	/cwíic/ right-hand side
	/ríuy-á/	→ [ríua]	H!L!H	/ríuc/ rice
	stem-final /w/:			
	/máaw-à/	→ [maaa]	HL	/màaw/ oil
	/ùbòw-á/	→ [uboa]	LLH	/ùbòw/ lung
	stem-final /Ø/:			
	/dà-á/	→ [daa]	L!LH	/dàk/ pot
	/tí-à/	→ [tia]	HL	/tík/ chin
	/kwλ-á/	→ [kwλa]	L!LH	/kwλk/ sweat
	/rɔ-á/	→ [rɔa]	LH	/rɔk/ kidney
	/rɛɛ-á/	→ [rɛɛa]	LH	/rɛɛk/ line.

On the other hand, the difference between /y/, /w/ and /Ø/ is manifested phonetically when the antigenitive stem is followed by the underlying antigenitive suffix /-i/ ~ /-i/. This suffix is used when the Possessor is expressed by a following noun phrase, and it has a low tone when that noun phrase is singular, as in

- (19) *úkòond-ì dháagò* the woman's gourd.
gourd-AG woman

The suffix vowel is deleted after a non-geminate sonorant consonant, as in (20), but retained after other consonants, as in (19) and (21). The tone of the deleted vowel is transferred to the stem.

(20) N-AG	N
/ùbím-ì/ → [ubim] LHL	/ùbím/ gibbon
/máur-ì/ → [mur] HL	/màur/ duiker
(21) N-AG	N
/jòop-ì/	/jòobì/ buffalo
/léεb-ì/	/léεp/ tongue
/pàll'-ì/	/pàl'-à/ knife
/wìnj-ì/	/wìjós/ bird.

In accordance with the vowel deletion rule, the suffix vowel is also deleted after the non-geminate glides /y/ and /w/, which then become word-final and hence not manifestable as zero:

(22) N-AG	N
stem-final /y/:	
/ɣáy-ì/ → [ɣay] L	/ɣac/ back
/cwíiy-ì/ → [cwíiy] HL	/cwíic/ right-hand side
/rúuy'-ì/ → [ruuy] H!L	/rúuc'/ rice
stem-final /w/:	
/máaw-ì/ → [maaw] HL	/màaw/ oil
/ùbòw-ì/ → [ubow] LL	/ùbòw/ lung.

By contrast, the suffix vowel is retained after /θ/, in which case it is assimilated to the stem vowel. The result is a phonetically long word-final vowel, whether the stem vowel is underlyingly short or long:

(23) N-AG	N
stem-final /θ/:	
/dà'-ì/ → [daa] L!L	/dàk'/ pot
/tí-ì/ → [tíi] HL	/tík/ chin
/kwà'-ì/ → [kwa] L!L	/kwàk'/ sweat
/rò-ì/ → [rɔɔ] L	/ròk/ kidney
/rèε-ì/ → [rεε] L	/rèεk/ line.

While vowel assimilation can take place across /θ/, as it does obligatorily in (23), it normally does not occur across the zero allophone of /y/.⁶ This difference is seen in verbs, where the third person singular subject suffix /-ε/ ~ /-e/ assimilates the short central stem vowels /a/ and /ɔ/ if the stem has final /θ/, but not if the stem has final /y/, see (24). Thus we get minimal pairs like [akεε] HLH 'He cracked it' versus [akae] HLH 'He bit it'. The third person plural forms in (24) show that the underlying stem vowels are in fact /a/ or /ɔ/.

(24) C-V-3S C-V-3P He/They
_____ed it

stem-final /θ/:

/á-kà-é/ → [akεε]	HLH	/á-kàk-é/	crack
/á-nλ-é/ → [anee]	HLH	/á-nλk-é/	kill
/á-tλ-é/ → [atee]	HLH	/á-tλk-é/	start

stem-final /y/:

/á-kày-é/ → [akae]	HLH	/á-kàc-é/	bite
/á-lày-é/ → [alae]	HLH	/á-làc-é/	widen.

Similarly, the intransitive suffix /-o/ is assimilated to the stem vowel /Λ/ across /θ/, but not across /y/, cf. (25). That the underlying stem vowel is /Λ/ is shown by the corresponding centrifugal forms:

(25) He is _____ing He is going to _____
V+AP-INTR V+CF+AP-INTR

stem-final /θ/:

/nλ-ò/ → [nΛΛ]	L	/nλk-ò/	kill
/yλ-ò/ → [yΛΛ]	L	/yλk-ò/	destroy

stem-final /y/:

/kλy-ò/ → [kΛo]	LL	/kλc-ò/	bite
/cwλy-ò/ → [cwΛo]	LL	/cwλc-ò/	mould.

In verbs with other stem vowels (or with other suffix vowels), there is no assimilation and hence not necessarily any overt manifestation of the contrast between /θ/ and /y/. Compare (24) with (26), and (25) with (27).

(26) C-V-3S C-V-3P He/They
_____ed it

stem-final /θ/:

/á-yí'-é/ → [ayie]	HH!L!H	/á-yík'-é/	make
/á-lòo-é/ → [alooe]	HLH	/á-lòok-é/	spill

stem-final /y/:

/á-wìy-é/ → [awie]	HLH	/á-wìc-é/	leave
/á-gòoy-é/ → [agooe]	HLH	/á-gòoc-é/	hit

(27) He is _____ing He is going to _____
V+AP-INTR V+CF+AP-INTR

stem-final /θ/:

/cì-ò/ → [cio]	L	/cìk-ò/	listen
----------------	---	---------	--------

stem-final /y/:

/cwìy`-ò/ → [cwio] LE /cwìc`-ò/ suck.

The contrast between /θ/, /y/ and /w/ is also shown by the rule of diphthong simplification: Before /θ/, but not before /y/ or /w/, a diphthongal stem vowel loses its second component when the word has a person-number suffix. This rule is illustrated by the verb forms in (28), which have the third person singular subject suffix. The underlying presence of a diphthong in these forms is shown by the corresponding third person plural forms.

(28) C-V-3S

C-V-3P

He/They
_____ed it

stem-final /θ/:

/á-lúw`-é/ → [alwe] HH!L!H /á-lúk`-é/ wash

stem-final /y/:

/á-túoy`-é/ → [atue] HH!L!H /á-túoc`-é/ tie

/á-kúy`-è/ → [akue] HHE /á-kúc`-è/ sew.

The same rule applies to nouns, as illustrated by the first person singular forms in (29). That the antigenitive stems of these forms have an underlying diphthong, even when the stem-final consonant is /θ/, is shown by the corresponding forms with the underlying antigenitive suffix /-i/ ~ /-i/ mentioned above. This suffix does not cause the second component of the diphthong to be deleted when /θ/ intervenes, but is itself assimilated to it. That is, the antigenitive suffix behaves in the same way here as when the stem vowel is a monophthong, cf. examples (23) above.

(29) N-1S my _____

N-AG _____ of

stem final /θ/:

/jùw`-á/ → [jua] LH
(/jùwk/ spirit)

/jùw`-i/ → [juw] L

/lùo`-á/ → [lua] LH
(/lùok/ molar (?))

/lùo`-i/ → [luo] L

/liè`-á/ → [lia] LH
(/lièk/ ash from grass)

/liè`-i/ → [lie] L

stem-final /y/:

/búy`-à/ → [bua] HL
(/búwc/ castrated bull)

/búy`-i/ → [buy] HL

/ùkíey-à/ → [ukíea] LHL

(/ùkíec/ kind of bird)

/ywíey-à/ → [y^ɥíea] HL

(/ywiéc/ broom)

/ùkíey-ì/ → [ukíey] LHL̄

/ywíey-ì/ → [y^ɥíey] HL̄

stem-final /w/:

/ɣièw-á/ → [ɣíea] LH

(/ɣièw/ price)

/ɣièw-ì/ → [ɣíew] L.

Finally, consider the rule of vowel shortening implicit in the analysis of examples (23) above. According to this rule, a long stem vowel is shortened when adjacent to a suffix vowel of the same quality. Cf. the following examples, in which vowel shortening applies after the vowel of the ergative suffix has been assimilated to the stem vowel:

(30) stem-final /θ/:

a. /dɔ́ɔ́-è/ → [dee] LĒ pots (N-ERG)

b. /thòò-é/ → [tee] L̄LHL̄ desert date (N-ERG).

That the underlying stem vowels of these forms are in fact long is evidenced by the following corresponding forms:

(31) a. /dɔ́ɔ́k-á/ my pots (N-1S)

b. /thòonh-á/ my desert date (N-1S).

However, vowel shortening only applies to forms with a stem-final /θ/, and not to forms with a stem-final zero allophone of /y/ or /w/. Thus, if a stem-final /y/ or /w/ is deleted between a long stem vowel and a suffix vowel that happens to have the same quality as the stem vowel, the result is a phonetically extra long vowel:

(32) stem-final /y/:

/rèey-ê/ → [reee] LHL̄ fish (N-ERG)

/ùbéey-é/ → [ubeee] LHĒ (female name) (N-ERG)

stem-final /w/:

/máaw-à/ → [maaa] HL my oil (N-1S)

/á-ɣèew-é/ → [aɣeee] HLH He bought it (C-V-3S).

2.6. Consonant harmony

The non-liquid alveolars /t d n/ (termed simply „alveolars“ in the following) do not cooccur with the interdentalals /th dh nh/. That is, there are no stems with an initial alveolar and a final interdental, nor

any stems with an initial interdental and a final alveolar. The absence of such stems is not an accidental gap but is due to a phonological constraint, as evidenced by the morphophonology. Both alveolars and interdentals occur as alternants of stem-final /l/, but with a phonologically determined complementary distribution: The alternant of /l/ is interdental if the stem-initial consonant is itself interdental, as in (33 b) and (34 b), but alveolar otherwise, as in (33 a) and (34 a).

- (33) C-V-3S C-V-3P
- | | | | |
|----|------------|--------------|----------------------|
| a. | á-gòol-é | á-gòond-é | He/They scratched it |
| | á-cúol'-è | á-cúond'-è | He/They called him |
| | á-tèel-é | á-tèend-é | He/They pulled it |
| b. | á-tháal'-é | á-tháandh'-é | He/They cooked it |

- (34) N(-P) N(+P)-1S
- | | | | | |
|----|----------|---------|-----------|------------|
| a. | dèel | skin | dèend-á | my skin |
| | bòol-ì | handles | bòot-á | my handles |
| b. | thùol | snake | thúondh-à | my snake |
| | thòol'-ì | ropes | thòoth'-á | my ropes. |

Similarly, in some nouns a stem-final zero consonant alternates with an alveolar nasal, as in (35 a), but with an interdental nasal if the stem-initial consonant is an interdental, as in (35 b). The nasal is either single or geminate.

- (35) N N-1S my ____
- | | | | |
|----|---------|---------------|-------------|
| a. | àbí-í' | cloth | àbíin'-á |
| | cò-ó | bone | cóonn-á |
| | tà-à | pancreas | tàann-á |
| | ùgwí-ò | malleolus (?) | ùgwínn-á |
| b. | ùthó'-ó | fox | ùthóonh'-á. |

The complementary distribution of alveolars and interdentals that are involved in such alternations can be accounted for by positing underlying alveolars which become interdentals if the stem-initial consonant is interdental:

- (36) [alveolar] → [interdental]/[interdental] V ____

Rule (36) is an assimilation rule that harmonizes an alveolar to an interdental. Positing underlying interdentals in this situation would

be unnatural, since interdentalals would then become alveolars when the stem-initial consonant is non-interdental, a change that would lack any phonetic motivation. Rule (36) shows that whenever a morphophonological rule creates an underlying form which violates the constraint mentioned above, then that underlying form is automatically changed in such a way that it conforms to the constraint.

3. Consonant alternation in verbal roots

3.1. Introduction

Verbal morphology in Pāri involves affixation and root-internal phoneme alternation. The latter process gives rise to a set of phonemically different stems for each root. While both types of processes are involved in verbal inflection, verbal derivation is manifested solely by phoneme alternations.

The phoneme alternations that occur in verbal roots concern vowels, tones, and final consonants. In the following, I concentrate on consonant alternation. I start by defining a distinction between simple and derived verb stems without which the regularity of the consonant alternations cannot be captured. Then I set up an alternation system that seems to account for most instances of consonant alternation in verbal roots. Finally, I document the working of the alternation system, first in verbal derivation and then in verbal inflection.

Note that both verbal roots and verbal stems are either strictly transitive or strictly intransitive, as evidenced by their morpho-syntactic behaviour. Transitivity as such, however, is not relevant to the overall features of the consonant alternation system.

3.2. Simple and derived stems

As far as consonant alternation is concerned, there are two categories of verb stems: (i) stems that exhibit consonant alternation in their inflection, and (ii) stems that do not. They will be referred to as simple stems and derived stems, respectively. The two categories are distinguished by other formal features as well, of which three will be illustrated here.

Firstly, simple stems can occur without a suffix, while, in general, derived stems cannot. This state of affairs is exemplified by the

simple transitive stem /*rvut*/ 'to grind' in (37) and the morphologically related derived transitive stem /*rut*-/ 'to grind repeatedly' in the same syntactic constructions in (38).

- (37) a. *rùut béel* Grind (2S) the grain!
grind sorghum
- b. *béel á-rùut dháag-è* The woman ground the
sorghum C-grind woman-ERG grain
- c. *béel á-rúut`* The grain was ground
sorghum C-grind+PAS
- (38) a. *rùt-í` béel* Grind (2S) the grain!
grind+M-2S sorghum
- b. *béel á-rùt-í` dháag-è* The woman ground
sorghum C-grind+M-SUF woman-ERG the grain
- c. *béel á-rút-í`* The grain was ground.
sorghum C-grind+M-PAS

Similarly, the simple intransitive stem /*miel*/ 'to dance' takes no suffix in the sentences in (39), whereas the morphologically related intransitive stem /*miend*-/ 'to go to dance' in (40) requires a suffix in the same syntactic constructions.

- (39) a. *dháagò miel`* The woman is dancing
woman dance
- b. *dháagò bàá miel`* The woman is not dancing
woman NEG dance
- c. *dháagò kíri` miel`* The woman did not
woman NEG+C dance dance
- (40) a. *dháagò miend`-ó* The woman is going to
woman dance+CF-INTR dance
- b. *dháagò bàá miend-í`* The woman is not going
woman NEG dance+CF-SUF to dance
- c. *dháagò kíri` miend`-ó* The woman did not go
woman NEG+C dance+CF-SUF to dance.

Secondly, a third person plural subject is expressed by a suffix after simple stems, but by an ergative enclitic preceded by a suffix

after derived stems. This difference is illustrated by transitive stems in (41) and by intransitive stems in (42).

- (41) a. *á-rūut-é* They ground it
C-grind-3P
- b. *á-rút'-i-gi''* They ground it
C-grind+M-SUF-3P+ERG
- (42) a. *ù-dòɔk-é* Let them go back!
SUB-return-3P
- b. *ù-dú'-ù-gi''* Let them come back!
SUB-return+CP-SUF-3P+ERG

Thirdly, simple and derived stems differ with respect to tonal possibilities, at least if they are transitive. Consider, for instance, transitive verb forms with the completive aspect prefix /á-/ and the third person singular subject suffix /-ɛ/ ~ /-e/. Such verb forms can have one of the following three tone patterns, in terms of which their stems may be classified tonally:

- | | | | |
|-----------|---------|-------------------|---------------|
| (43) | surface | C-V-3S | |
| Class I | HLH | <i>á-gèer-é</i> | He built it |
| Class II | HHE | <i>á-wáan'-è</i> | He burnt it |
| Class III | HH!L!H | <i>á-tháal'-é</i> | He cooked it. |

However, simple stems are subject to tonal constraints that do not apply to derived stems, and vice versa. On one hand, while the vowel of simple Class III stems can be any, the vowel of simple Class I stems is either a short vowel or a long mid vowel, and, conversely, the vowel of simple Class II stems is either a long non-mid vowel or a diphthong. On the other hand, derived stems cannot belong to Class II at all, and any vowel can occur in derived Class I stems as well as in derived Class III stems. Thus, stems like those occurring in the following word must be considered derived, since they belong to Class I and have a long non-mid vowel or a diphthong:

- (44) *á-yìng-é* He made them (one by one)
C-make+M-3S
- á-rìnnh-é* He sewed for him
C-sew+BEN+AP-3S

á-ràanj-é He spoiled it
C-be-bad+CAUS-3S

á-dùog-é He took it back.
C-go-back+CAUS-3S

Some stems can occur without an overt suffix vowel but must nevertheless be categorized as derived, since they exhibit no inflectional consonant alternation and cannot take a third person plural suffix. Examples are /rwλλn/ 'to lose' and /naanh/ 'to move':

(45) a. pàl'-à á-rwλλn ùbúrr-ì Ubur lost the knife
knife C-lose Ubur-ERG

b. pàl'-à á-rwλλn'-ì-gr'' They lost the knife
knife C-lose-SUF-3P+ERG

c. pàl'-à á-rwλλn-é He lost the knife
knife C-lose-3S

(46) a. dàk' á-naanh dháag-è The woman moved the pot
pot C-move woman-ERG

b. dàk' á-naanh'-ì-gr'' They moved the pot
pot C-move-SUF-3P+ERG

c. dàk' á-naanh-é He moved the pot.
pot C-move-3S

All such stems end in a non-geminate sonorant, and, in fact, all derived stems with a final non-geminate sonorant behave in that way. In the syntactic constructions in which they occur without a suffix vowel, all other derived stems take the suffix vowel /-i/ ~ /-i/; compare (45a) and (46a) with (38b), and (45b) and (46b) with (41b). In some of these syntactic constructions, moreover, derived verbs without an overt suffix vowel have tone patterns that can only be explained as being the result of regrounding a suffix tone on the stem. For such verb forms, then, one has to posit an underlying tone-bearing suffix vowel /-i/ ~ /-i/, which is deleted after a non-geminate sonorant, as in (45b) and (46b). This deletion rule is similar to the rule that deletes the antigenitive suffix vowel (cf. section 2.5 above). Incidentally, as shown by the verb forms in (45c) and (46c), the exemplified stems also violate the tonal constraint on simple transitive stems that Class I stems cannot have a long non-mid vowel.

The terms "simple" and "derived" for the two formally defined stem categories are motivated by the fact that simple stems mostly coincide semantically with their roots while derived stems mostly contain one or more elements of meaning in addition to their root meaning. This is seen clearly in cases where a given root occurs both in a simple stem and in one or more derived stems, cf. examples (37)–(42) above. However, there are also many roots that appear to occur only in derived stems, for instance the transitive stems in (47) and the intransitive stems in (48).

(47) C-V-SUF-3P+ERG

á-mít`-i-gi`	They wanted it
á-wíjij`-i-gi`	They heard it
á-lím`-i-gi`	They visited him
á-jáanh`-i-gi`	They moved it
á-péerij`-i-gi`	They asked him

(48) C-V-INTR

á-ríj`-ò	He ran
á-ηèeth`-ò	He laughed
á-ηùok`-ò	He vomited
á-cλadh`-ò	He walked
á-ci`-ò	He went.

If such stems do not conform morphophonologically, syntactically, and semantically to any analytically established class of derived stems, their derivational elements of meaning may not be synchronically identifiable.

There is at least one class of exceptions to the rule that simple stems are simple in the normal sense of this word. Thus for a number of roots, there are two formally simple stems, one of which is transitive and has a causative meaning, while the other has a non-causative meaning and is either intransitive or transitive:

- | | |
|-------------------------|----------------------|
| (49) a. tòηó á-tòc-é | They broke the egg |
| egg C-break-3P | |
| b. tòηó á-tòc | The egg broke |
| egg C-break | |
| (50) a. càak á-múvyγ`-è | They heated the milk |
| milk C-heat-3P | |

- b. *càak mòr`*
milk be-warm The milk is warm
- (51) a. *ùbúr á-lók`-é*
Ubur C-wash-3P ~~They washed Ubur~~
- b. *ùbúr lók`*
Ubur take-a-bath Ubur is taking a bath
- (52) a. *ɲpònd`-ò á-dhók`th`-è*
child C-suckle-3P They suckled the child
- b. *dháagò á-dhók`th`-é*
woman C-suck-3P They sucked the woman
- (53) a. *pònd`-ò á-cáamb`-è*
child C-spoon=feed-3P They spoon-fed the child
- b. *kwàn á-càmb`-é*
food C-eat-3P They ate the food
- In some other cases, either the causative or the non-causative is formally derived, as in (54) and (55), respectively.
- (54) a. *ʔòtɔ́ á-ráanj`-r-gí`*
house C-spoil-SUF-3P+ERG They spoiled the house
- b. *ʔòtɔ́ ráac`*
house be-bad The house is bad
- (55) a. *dhìeɲ á-dòɲj`-é*
cow C-take-in-3P They took the cow in
- b. *dhìeɲ á-dóɲ`-ò*
cow C-go=in-INTR The cow went in

3.3. The alternation system

Consonant alternation in verbal roots is largely regular and predictable. It can be described in terms of a two-dimensional system of series and grades, which is shown in Table 3. A stem belongs to an alternation series and an alternation grade, whose intersection indicates its final consonant or consonant cluster. Empty slots in the table indicate that relevant data are lacking. There are 14 series, corresponding to the 14 consonants that can occur in word-final position (cf. section 2.2.). The number of grades is 9, but since for 12 of

Table 3. Consonant alternation in verbal roots

	grades								
	1°	2.0°	2.1°	3.0°	3.1°	4.0°	4.1°	5°	6°
series	<i>p</i>	<i>b</i>		<i>p</i>		<i>mm</i>		<i>mb</i>	<i>p</i>
	<i>th</i>	<i>dh</i>		<i>th</i>		<i>nnh</i>		<i>ndh</i>	<i>th</i>
	<i>t</i>	<i>d</i>		<i>t</i>		<i>nn</i>		<i>nd</i>	<i>t</i>
	<i>c</i>	<i>y</i>		<i>c</i>		<i>ɲɲ</i>		<i>ɲj</i>	<i>c</i>
	<i>k</i>	<i>θ</i>		<i>k</i>		<i>γγ</i>		<i>yg</i>	<i>k</i>
	<i>m</i>	<i>m</i>		<i>mb</i>		<i>mm</i>		<i>mb</i>	<i>m</i>
	<i>nh</i>	<i>nh</i>		<i>ndh</i>		<i>nnh</i>			<i>nh</i>
	<i>n</i>	<i>n</i>		<i>nd</i>		<i>nn</i>			<i>n</i>
	<i>ɲ</i>	<i>ɲ</i>		<i>ɲj</i>		<i>ɲɲ</i>		<i>ɲj</i>	<i>ɲ</i>
	<i>ɣ</i>	<i>ɣ</i>		<i>γγ</i>		<i>γγ</i>			<i>ɣ</i>
	<i>r</i>	<i>r</i>	<i>d</i>	<i>yy</i>	<i>t</i>	<i>rr</i>	<i>nn</i>	<i>yy</i>	<i>r</i>
	<i>l</i>	<i>l</i>	<i>d</i>	<i>nd</i>	<i>t</i>	<i>ll</i>	<i>nn</i>	<i>nd</i>	<i>l</i>
	<i>y</i>	<i>y</i>		<i>yy</i>			<i>yy</i>		<i>y</i>
	<i>w</i>	<i>w</i>		<i>ww</i>		<i>ww</i>	<i>mm</i> <i>ww</i>		<i>w</i>

- 1° Unsuffixed simple stems.
- 2.0° Simple stems with the suffixes 1S, 3S (/ -ε/, / -i/), 1PIN, / -ɔ/.
- Locative (TR).
- Centripetal (TR).
- 2.1° Antipassive (TR).
- 3.0° Simple stems with the suffixes 1PEX, 2P, 3P.
- Multiplicative (TR with long or diphthongal root vowel, stative INTR).
- Benefactive (TR).
- 3.1° Antipassive centrifugal (TR).
- 4.0° Ingressive (stative INTR).
- 4.1° Antipassive centripetal (TR).
- Antipassive benefactive (TR).
- 5° Multiplicative (TR with short root vowel).
- 6° Simple stems with the suffixes 2S and FOC.

the 14 series, only 6 grades need to be distinguished, the grades are numbered 1 to 6, and the further differentiation needed for the remaining two series is provided for by subgrading grades 2, 3 and 4. Grade 1 occurs word-finally, while the other grades occur before a suffix, including grade 6, which is otherwise identical to grade 1.

As indicated in the legend to the table, the grade of a stem is determined by its grammatical class and inflectional status and, for at least one grammatical stem class, by the vowel of the corresponding simple stem (termed "root vowel"). In addition to simple stems, whose grade is determined by the suffix they are combined with, the list includes ten classes of derived stems, of which eight are formed from transitive (TR) roots and two from stative intransitive (INTR) roots. There are more classes of derived verb stems in the language, for instance stems formed from non-stative intransitive roots, but they are excluded here for lack of sufficient data. Therefore, the grade system of the table may turn out to be incomplete.

The 14 series correspond to the 14 different consonants in grades 1 and 6. In the other grades, some consonants or consonant clusters are shared by two or more series, the number of different consonants or consonant clusters varying between 13 (in grade 2.0) and 5 or 6 (in grade 4.1). Since the maximum number of contrasts occurs in grades 1 and 6, the consonants of these grades must be considered the morphophonemically basic ones among the alternants within the series. Hence they will be referred to as (final) root consonants, and the series will be named after them.

As shown by the alternation system, there is no verbal lexical contrast between voiced and voiceless stops in stem-final position. Phonemically, the two categories of stops do contrast before a suffix vowel, but the choice between them is grammatically conditioned. If there were an underlying contrast between voiced and voiceless stops, a contrast that were neutralized in word-final position as a result of a phonological rule of devoicing, then that contrast would turn up somewhere else in the alternation system. But since all instances of a given stop behave uniformly, no underlying contrast can be posited.

Note that /g/ does not take part in the alternation system outlined above. Although this consonant can occur in stem-final position before a suffix, as shown in section 2.2., it seems not to occur stem-finally in any of the classes of verb stems on which the alternation system is based. However, it has been attested in some other verb

stems, all of which are derived. The occurrence of such stems is illustrated by the following sentences:

- (56) a. á-dùòg`-ì ùbúrr-ì Ubur took it back
C-go=back+CAUS-SUF Ubur-ERG
- b. á-mág`-ì ùbúrr-ì dháagò Ubur gave it to the
C-give-SUF Ubur-ERG woman
- c. á-cíeg`-ì ùbúrr-ì Ubur shut it.
C-shut-SUF Ubur-ERG

Whether these instances of /g/ are exceptional or regular is not known.

3.4. Derivation

The set of stems derivable from a root depends first of all on the transitivity of the root. Hence I shall deal with transitive and intransitive roots separately. While the class of transitive roots seems to be fairly homogeneous with respect to derivation, the class of intransitive roots consists of subclasses each of which has its own derivational possibilities. Among these subclasses, I shall deal with only one, viz. statives.

viz. statives.

Some classes of derived stems are characterized by having +ATR vowels, whether the root vowel is +ATR or -ATR. Since this phenomenon is relevant to the diachronic considerations in section 4, it will be noticed in passing below.

3.4.1. Transitive roots

From many transitive roots, it is possible to form at least eight different derived stems in addition to a simple stem. This is illustrated by the following sentences, in which the verb stems all have the root /*ɲot*/ 'to cut (with an axe)'.

- (57) a. Simple (1°) Ubur cut the tree
yàath á-ɣòt ùbúrr-ì
 tree C-cut Ubur-ERG
- b. Multiplicative (5°) Ubur cut the trees (one by one)
yín á-ɣóond`-ì ùbúrr-ì
 trees C-cut+M-SUF Ubur-ERG

- Multiplicative stems indicate that the action is performed more than once. Centripetal stems indicate that the action is performed towards the deictic centre, which is typically the speaker. Locative stems are used when the sentence is extended with an adverbial indicating the Goal or Route of the action. Plain antipassive stems are intransitive stems that eliminate the grammatical relation of object associated with transitive roots, and which hence remove the notion of Patient (or demote it to an adverbial). Antipassive centrifugal stems and antipassive centripetal stems further indicate the direction of the action with respect to the deictic centre: away from it and towards it, respectively. Plain benefactive stems are used when the sentence is extended with a noun phrase indicating a Beneficiary, while antipassive benefactive stems are used when a Beneficiary is substituted for the Patient as the object in the sentence.

The formation of each of these eight classes of derived stems is documented below. As far as the data go, one or two examples will be given for each of the fourteen series. No simple transitive stems with final /*n̄h*/ have been encountered. However, the stem /*naanh-*/ 'to move', which is formally derived (cf. section 3.2.), is used as a substitute since other derived stems with the same root relate to this stem with respect to consonant alternation as if it were simple.

A multiplicative stem belongs to grade 3.0 if the vowel of the corresponding simple stem is long or diphthongal, and to grade 5 if that vowel is short. The following verb forms illustrate both subclasses of multiplicative stems:

(58)	1° C-V	3.0° C-V+M-SUF	5° C-V+M-SUF	
/p/	á-yàp á-lùvp	— á-lùp-ì	á-yáamb`-ì —	open speak
/th/	á-nhòth á-rìth	— á-rìth-ì	á-nhóondh`-ì —	suck sew
/t/	á-kàt á-pùot	— á-pòot-ì	á-káand`-ì —	plait beat
/c/	á-kàc á-túoc`	— á-tóoc`-ì	á-káanj`-ì —	bite tie
/k/	á-yík` á-lúok`	— a-lóok-ì	á-yùng-ì —	make wash
/m/	á-càm (no example)	—	á-cáamb`-ì —	eat
/nh/	(no example) (á-nàanh)	— á-nàandh-ì	—	move
/n/	(no example) á-kwàan	— á-kwàand-ì	—	count
/ɲ/	á-cwìɲ á-kúɲ`	— á-kúɲj`-ì	á-cwíɲj`-ì —	light dig
/ŋ/	(no example) á-wàaŋ	— á-wàaŋg-ì	—	burn
/r/	(no example) á-gèer	— á-géeyɣ`-ì	—	build
/ʌ/	á-kwàl á-cúul`	— á-cúnd`-ì	á-kwáand`-ì —	steal pay
/y/	(no example) á-dòoy	— á-dóoyɣ`-ì	—	weed

/w/	(no example)	—	
	á-láaw`	á-láww`-ì	— wash.

The verb forms in (58) have to be followed by a subject noun phrase, as in the following sentences.

- (59) a. á-yàp ùbúrr-ì Ubur opened it/them
C-open Ubur-ERG
- b. á-yáamb`-ì ùbúrr-ì Ubur opened it/them.
C-open+M-SUF Ubur-ERG

Such sentences have an implied third person object.

Both locative stems and centripetal stems belong to grade 2.0, as shown by the examples in (60). Note, however, that the vowel of centripetal stems is always +ATR, while the vowel of locative stems is identical to and thus has the same ATR value as the vowel of the corresponding simple stems.

(60)	1° C-V	2.0° C-V+LOC(-SUF)	2.0° C-V+CP(-SUF)	
/p/	á-yàp		á-yááb`-ì	open
/th/	á-nùuth		á-núudh`-ì	show
/t/	á-γòt	á-γód`-ì	á-γúd`-ì	cut
/c/	á-bàac	á-bàay	á-bλay	throw
/k/	(no example)			
/m/	á-lám		á-lám`	curse
/nh/	(á-nàanh)	á-nàanh	á-nλanh	move
/n/	(no example)			
/ɲ/	á-dòɲ	á-dóɲ`	á-dúɲ`	take in
/ɣ/	á-léεɣ	á-léεɣ`	á-léεɣ`	throw
/r/	á-còor	á-cóor`	á-cóor`	push
/l/	á-téel	á-téel`	á-téel`	pull
/y/	(no example)			
/w/	(no example).			

The verb forms in (60) must be followed by a subject noun phrase, as in (61), and the locative verb forms must furthermore take a locative adverbial after the subject, as in (61c).

- 61) a. á-bàac cícù-é The man threw it (that way)
C-throw man-ERG
- b. á-bλay cícù-é The man threw it (this way)
C-throw+CP man-ERG

c. á-bàay cícù-ê máη-à The man threw it (that
C-throw+LOC man-ERG to-1S way) to me

d. á-bλλay cícù-ê máη-à The man threw it (this
C-throw+CP man-ERG to-1S way) to me.

Unlike simple stems, which are inherently centrifugal, centripetal stems can be used without any modification in a sentence containing a Goal or Route adverbial, as in (61 d).

The three intransitive classes of antipassive stems, plain, centrifugal and centripetal, belong to grades 2.1, 3.1 and 4.1, respectively. All of them invariably have +ATR vowels, whatever the ATR value of the root vowel.

(62)	1° root	2.1° V+AP- INTR	3.1° V+CF+AP- INTR	4.1° V+CP+AP- INTR	
/p/	yap wup	yλb-ò lúub-ó	yλp-ò lùup-ò	yλmm-ò lùumm-ò	open speak
/th/	thuth ruth	thùdh-ò ríidh-ó	thùth-ò rìith-ò	thùnnh-ò rìinnh-ò	pierce sew
/t/	kΔt puot	kλd-ò pòod'-ò	kλt-ò pòot'-ò	kλnn-ò pòonn'-ò	plait beat
/c/	kac tuoc	kλy-ò tòoy'-ò	kλc-ò tòoc'-ò	kλɲɲ-ò tòonɲ'-ò	bite tie
/k/	yík wɔk	yì-ò lò'-ò	yìk-ò lòok'-ò	yìηη-ò lòoηη'-ò	make wash
/m/	cam ɾiem	cλm-ò ɾiem-ó	cλmb-ò ɾiemb-ò	cλmm-ò ɾiemmm-ò	eat discuss
/nh/	(no example)				
/n/	ηin kwaan	ηìn-ò kwλAn-ó	ηìnd-ò kwλAnd-ò	ηìnn-ò kwλAnn-ò	rub count
/ɲ/	cwɲɲ kuyɲ	cwìɲ-ò kùɲ'-ò	cwìɲj-ò kùɲj'-ò	cwìɲɲ-ò kùɲɲ'-ò	light dig
/ɣ/	kaɣ waan	kλɣ-ò wλAɣ-ó	kλɣg-ò wλAɣg-ò	kλɣɣ-ò wλAɣɣ-ò	hoe burn
/r/	par geer	pλd-ò gêed-ó	pλt-ò gèet-ò	pλnn-ò gèenn-ò	think build
/ʌ/	kwal cuul	kwal-ò cùd'-ò	kwal-ò cùt'-ò	kwalnn-ò cùnnn'-ò	steal pay
/y/	dɔɔy	dòoy-ó	dòoyɣ-ò	dòonɲ-ò	weed
/w/	ɣeew	ɣêew-ó	ɣeeww-o	ɣèemm-ò	buy.

The antipassive verb forms in (62) are complete sentences with an implied third person subject, as in

- (63) a. *yλb-ò* He is opening
 b. *yλp-ò* He is going to open
 c. *yλmm-ò* He is coming to open.

Plain benefactive stems and antipassive benefactive stems belong to grades 3.0 and 4.1, respectively. Both stem classes invariably have +ATR vowels.

(64)	1°	3.0°	4.1°	
	C-V	C-V+BEN-SUF	C-V+BEN+AP-SUF	
/p/	á-yàp á-wup	á-yáp`-ì á-lúp`-ì	á-yλmm-ì á-lùmm-ì	open speak
/th/	á-nhòth á-rùth	á-nhúth`-ì á-rúth`-ì	á-nhùnnh-ì á-rìnnh-ì	suck sew
/t/	á-kλt á-pùot	á-kát`-ì á-póot`-ì	á-kλnn-ì á-póonn`-ì	plait beat
/c/	á-bàac á-túoc`	á-bác`-ì á-tóoc`-ì	á-bλλr-ì á-tóorr`-ì	throw tie
/k/	á-yík` á-lòok	á-yík`-ì á-lóok`-ì	á-yìγγ-ì á-lòγγ-ì	make spill
/m/	á-tàm (á-nàanh)	á-tám`-ì á-nándh`-ì	á-tλmm-ì á-nλλnnh-ì	think move
/n/	á-kwàan	á-kwánd`-ì	á-kwλλnn-ì	count
/r/	á-cwìr á-kúur`	á-cwìrj`-ì á-kúurj`-ì	á-cwìrr-ì á-kúurr`-ì	light dig
/η/	á-kàη á-wàaη	á-káηg`-ì á-wáηg`-ì	á-kληη-ì á-wλληη-ì	hoe burn
/r/	á-góor` á-gèer	á-góyy`-ì á-géeyy`-ì	á-gónn`-ì á-gèenn-ì	write build
/l/	á-ηòl á-cúul`	á-ηúnd`-ì á-cúnd`-ì	á-ηùnn-ì á-cúnn`-ì	cut (with knife)
/y/	á-dòoy	á-dóoyy`-ì	á-dòorr-ì	pay
/w/	á-ηèew á-láaw`	á-ηéeww`-ì á-láww`-ì	á-ηèemm-ì á-láww`-ì	weed buy wash.

The verb forms in (64) have to be followed by a subject noun phrase, as in (65), and the plain benefactive forms must furthermore take a Beneficiary noun phrase after the subject, as in (65b).

- (65) a. *á-yàp dháag-è* The woman
C-open woman-ERG opened it
- b. *á-yáp`-ì dháag-è ùbúr* The woman
C-open+BEN-SUF woman-ERG Ubur opened it for Ubur
- c. *á-yámm-ì dháag-è* The woman
C-open+BEN+AP-SUF woman-ERG opened for him.

The sentences in (65) all have an implied third person object. In (65 a) and (65 b) the object is a Patient, while in (65 c) it is a Beneficiary.

3.4.2. Stative intransitive roots

From most stative intransitive roots, at least two derived stems can be formed: a multiplicative stem, which indicates that the state applies to more than one individual, and an ingressive stem, which indicates the coming into being of the state. The following sentences illustrate the use of both simple and derived stems.

- (66) a. Simple (1°)
ʔòtó béer` The house is good
house be=good
- b. Multiplicative (3.0°)
ʔùndì bìyy`-ò The houses are good
houses be=good+M-INTR
- c. Ingressive (4.0°)
ʔòtó bèerr-ò The house will become good.
house be=good+INGR-INTR

Multiplicative stems belong to grade 3.0, while ingressive stems belong to grade 4.0. Ingressive stems are furthermore characterized by having +ATR vowels. These facts are shown by the examples in (67), in which the verb forms are complete sentences with an implied third person subject.

- | | | | | |
|------|---------------|-----------------|-----------------|----------|
| (67) | 1° | 3.0° | 4.0° | |
| | V | V+M-INTR | V+INGR-INTR | |
| /p/ | (no example) | | | |
| /th/ | <i>bìth`</i> | <i>bìth`-ò</i> | <i>bìnnh-ò</i> | be sharp |
| | <i>lèeth`</i> | <i>lèeth`-ò</i> | <i>lèennh-ò</i> | be hot |

/t/	mùt`	mùt`-ò	mùnn-ò	be delicious
	yòot`	yòt`-ò	yòonn-ò	be light
/c/	ɲic`	ɲic`-ò	ɲìɲɲ-ò	be cold
	ràac`	rìc`-ò	ɲìɲɲ-ò	be bad
/k/	jλΔk`	jλk`-ò	jλɲɲ-ò	be lazy
	pèek`	pèk`-ò	pèeɲɲ-ò	be heavy
/m/	yòm`	yòmb`-ò	yòomm-ò	be soft
	thèem`	thèmb`-ò	thèemm-ò	be tasteful
/nh/	thùnh`	—	thùnnh-ò	be few
	thùnh`	thùndh`-ò	thùnnh-ò	be small
/n/	cλΔn`	cλnd`-ò	cλΔnn-ò	be near
	ɲλΔn`	ɲλnd`-ò	ɲλnn-ò	be new
/ɲ/	dùɲ`	dùɲj`-ò	dùɲɲ-ò	be narrow
	wàaɲ`	wàɲj`-ò	wàɲɲ-ò	be clean
/ɲ/	dùɔɲ`	dùɔɲg`-ò	dùɔɲɲ-ò	be big
/r/	mòr`	mòyy`-ò	mùrr-ò	be warm
	bèer`	bìyy`-ò	bèerr-ò	be good
/l/	còl`	cònd`-ò	cùll-ò	be black
	pòol`	pònd`-ò	pòoll-ò	be blunt
/y/	(no example)			
/w/	pìew`	—	pìeww-ò	be fast.

8.5. Inflection

Verbal inflection is primarily manifested by means of suffixation and prefixation. As follows from the definition of simple and derived stems (cf. section 3.2.), only simple stems have consonant alternation in their inflection. Here consonant alternation is bound up with suffixation, each suffix assigning the stem a particular grade. By contrast, the final consonant or consonant cluster of derived stems is invariable. This difference between simple and derived stems can be observed in (68)–(71), which show the range of inflection for person and number of the subject with transitive stems.

(68) /baac/ to throw (a spear)

	C-V-_____	C-V+LOC-_____	C-V+CP-_____
1S	á-báay`-à	á-báay`-à	á-bλΔy-á
2S	á-báac`-ì	á-báay`-ì	á-bλΔy`-ì
3S	á-báay`-è	á-báay`-è	á-bλΔy-é
1PEX	á-báac`-à	á-báay`-ù-wà`	á-bλΔy`-ù-wà`
1PIN	á-báay-ó`	á-báay-ó`	á-bλΔy-ó`

2P	á-báac`-ù	á-báay`-ù	á-báay`-ù
3P	á-báac`-è	á-báay`-ì-gì`	á-báay`-ì-gì`
(69) /lɛɛŋ/	to throw		
	C-V-_____	C-V+LOC-_____	C-V+CP-_____
1S	á-lɛɛŋ-á	á-lɛɛŋ`-á	á-lɛɛŋ`-á
2S	á-lɛɛŋ`-ì	á-lɛɛŋ`-ì	á-lɛɛŋ`-ì
3S	á-lɛɛŋ-é	á-lɛɛŋ`-é	á-lɛɛŋ`-é
1PEX	á-lɛɛŋg-á	á-lɛɛŋ`-ù-wà`	á-lɛɛŋ`-ù-wà`
1PIN	á-lɛɛŋ-ó`	á-lɛɛŋ-ó`	á-lɛɛŋ-ó`
2P	á-lɛɛŋg-ù	á-lɛɛŋ`-ù	á-lɛɛŋ`-ù
3P	á-lɛɛŋg-é	á-lɛɛŋ`-ì-gì`	á-lɛɛŋ`-ì-gì`
(70) /ɲuuth/	to show		
	C-V-_____	C-V+M-_____	C-V+BEN-_____
1S	á-ɲúvdh`-à	á-ɲúth-á	á-ɲúth`-á
2S	á-ɲúvdh`-ì	á-ɲúth`-ì	á-ɲúth`-ì
3S	á-ɲúvdh`-è	á-ɲúth-é	á-ɲúth`-é
1PEX	á-ɲúvdh`-à	á-ɲúth`-ù-wà`	á-ɲúth`-ù-wà`
1PIN	á-ɲúvdh-ó`	á-ɲúth-ó`	á-ɲúth-ó`
2P	á-ɲúvdh`-ù	á-ɲúth`-ù	á-ɲúth`-ù
3P	á-ɲúvdh`-è	á-ɲúth`-ì-gì`	á-ɲúth`-ì-gì`
(71) /thaal/	to cook		
	C-V-_____	C-V+M-_____	C-V+BEN-_____
1S	á-tháal`-á	á-thándh`-á	á-thándh`-á
2S	á-tháal`-ì	á-thándh`-ì	á-thándh`-ì
3S	á-tháal`-é	á-thándh`-é	á-thándh`-é
1PEX	á-tháandh`-á	á-thándh`-ù-wà`	á-thándh`-ù-wà`
1PIN	á-tháal-ó`	á-thándh-ó`	á-thándh-ó`
2P	á-tháandh`-ù	á-thándh`-ù	á-thándh`-ù
3P	á-tháandh`-é	á-thándh`-ì-gì`	á-thándh`-ì-gì`

In (68) and (69), the transitive roots /baac/ 'to throw (a spear)' and /lɛɛŋ/ 'to throw' have the morphophonemic variants /baac/ ~ /baay/ and /lɛɛŋ/ ~ /lɛɛŋg/ in the simple stems, while their locative stems are invariably /baay/ and /lɛɛŋ/, and their centripetal stems invariably /báay/ and /lɛɛŋ/. In (70) and (71), similarly, the transitive roots /ɲuuth/ 'to show' and /thaal/ 'to cook' are manifested by the alternants /ɲuuth/ ~ /ɲúvdh/ and /thaal/ ~ /thaandh/ in the simple stems, but by one single alternant in the derived stems: multiplica-

tive /*nuth*/ and /*thandh*/, benefactive /*nuth*/ and /*thandh*/. In (68) and (69), the forms with simple or centripetal stems are complete sentences, while the forms with locative stems need to be followed by a locative adverbial:

- (72) a. *á-báac`-ì* You threw it (that way)
C-throw-2S
- b. *á-báay`-ì* *kúndò* You threw it that way
C-throw+LOC-2S there
- c. *á-báay`-ì* You threw it (this way).
C-throw+CP-2S

In (70) and (71), the forms with benefactive stems need to be followed by a Beneficiary noun phrase, whereas the other forms are complete sentences:

- (73) a. *á-núvdh`-à* I showed it
C-show-1S
- b. *á-nùth`-á* I showed it (repeatedly)
C-show+M-1S
- c. *á-núth`-á* *rwáth* I showed it to the chief.
C-show+BEN-1S chief

The difference between simple and derived stems with respect to inflectional consonant alternation also holds good for intransitive stems, as shown by the examples in (74), in which the person-number inflected verb forms have the subjunctive mood. The intransitive root /*pár*/ 'to jump' has the alternants /*pár*/ ~ /*páay*/ in the simple stem, while the multiplicative stem is /*pár*/ throughout.

- (74) /*pár*/ to jump
- | | (SUB)-V-_____ | (SUB)-V+M-_____ | |
|------|------------------|---------------------|----------------|
| 1S | <i>pár-á`</i> | <i>pár-á</i> | Let me jump! |
| 2S | <i>pár-í`</i> | <i>pár-í</i> | Jump! |
| 3S | <i>ù-pár-é`</i> | <i>ù-pár-é</i> | Let him jump! |
| 1PEX | <i>páay-á`</i> | <i>pár`-ù-wà`</i> | Let us jump! |
| 1PIN | <i>pár-ó`</i> | <i>pár-ó`</i> | Let's jump! |
| 2P | <i>páay-ú`</i> | <i>pár`-ù</i> | Jump! |
| 3P | <i>ù-páay-é`</i> | <i>ù-pár`-ì-gí`</i> | Let them jump! |

Simple stems alternate among grades 2.0, 3.0 and 6 when they are followed by a suffix. The distribution of the grades in terms of the suffixes is as follows:

- (75) 2.0°: 1S, 3S (/ε/, /-I/), 1PIN, /-ɔ/.
 3.0°: 1PEX, 2P, 3P
 6° : 2S, FOC

The distribution of the stem alternants before the subject person-number suffixes is illustrated in (68)–(71) and (74) above. Another way of saying that 2S selects grade 6 is to say that it selects the same alternant as 1PEX, 2P and 3P when the root consonant is an obstruent (as in (68) and (70)), and the same alternant as 1S, 3S and 1PIN when the root consonant is a sonorant (as in (69), (71) and (74)).

Note that the choice of grade is the only feature distinguishing forms with 1S and 1PEX, both of which have the suffix /-a/, and forms with 3S and 3P, which share the suffix /-ε/ ~ /-e/. This is further illustrated by the pairs of transitive third person forms in (76), which are complete sentences meaning 'He/They ____-ed it'.

(76)	1°	2.0°	3.0°	
	root	C-V-3S	C-V-3P	
/p/	yap	á-yàb-é	á-yàp-é	open
	wup	á-lúub`-è	á-lúup`-è	speak
/th/	nhɔth	á-nhòdh-é	á-nhòth-é	suck
	rɪth	á-rídh`-è	á-ríth`-è	sew
/t/	kɔt	á-kɔd-é	á-kɔt-é	plait
	puot	á-púod`-è	á-púot`-è	beat
/c/	kac	á-kàɣ-é	á-kàc-é	bite
	tuoc	á-túoy`-é	á-túoc`-é	tie
/k/	yɪk	á-yí`-é	á-yík`-é	make
	wɔk	á-lú`-é	á-lúɔk`-é	wash
/m/	cam	á-càm-é	á-càmb-é	eat
	piem	á-píem`-è	á-píemb`-è	discuss
/nh/	(no example)			
/n/	ɪm	á-ɪín`-é	á-ɪínd`-é	rub
	kwaan	á-kwáan`-è	á-kwáand`-è	count
/ɲ/	cwɪɲ	á-cwìɲ-é	á-cwìɲj-é	light
	kuɪɲ	á-kúuɲ`-é	á-kúuɲj`-é	dig
/ŋ/	kaŋ	á-kàŋ-é	á-kàŋg-é	hoe
	waan	á-wáan`-è	á-wáanng`-è	burn

/r/	<i>par</i>	<i>á-pàr-é</i>	<i>á-pàyy-é</i>	think
	<i>geer</i>	<i>á-gèer-é</i>	<i>á-gèeyy-é</i>	build
/ʌ/	<i>kwal</i>	<i>á-kwàl-é</i>	<i>á-kwànd-é</i>	steal
	<i>cuvl</i>	<i>á-cúul-é</i>	<i>á-cúund-é</i>	pay
/y/	<i>dɔɔy</i>	<i>á-dòɔy-é</i>	<i>á-dòɔyy-é</i>	weed
/w/	<i>laaw</i>	<i>á-láaw-é</i>	<i>á-láaww-é</i>	wash.

In the corresponding forms with derived stems, the lack of consonant alternation is compensated for by encliticization in the plural. Thus 1PEX and 3P are expressed by the enclitic ergative pronouns /-wà/ and /-gɪ/ added to the suffixes /-ù/ ~ /-ù/ and /-ì/ ~ /-ì/, which are deleted after a non-geminate sonorant.

The intransitive verb forms in (77) provide documentation that the subject suffixes select the same grades in simple intransitive stems as in simple transitive stems.

(77) 1°	2.0°	3.0°	6°	
V	SUB-V-3S	V-2P	V-2S	
<i>tùuk`</i>	<i>ù-túu-é`</i>	<i>tuuk-u</i>	<i>túuk-í`</i>	play
<i>yùom`</i>	<i>ù-yúom-é`</i>	<i>yúomb-ú`</i>	<i>yúom-í`</i>	rest
<i>mìel`</i>	<i>ù-míel-é`</i>	<i>míend-ú`</i>	<i>míel-í`</i>	dance
<i>tìer`</i>	<i>ù-tíer-é`</i>	<i>tíeyy-ú`</i>	<i>tíer-í`</i>	quarrel
<i>yíey`</i>	<i>ù-yíey-é`</i>	<i>yíeyy-ú`</i>	<i>yíey-í`</i>	accept
<i>thúɔw`</i>	<i>ù-thúɔw-é`</i>	<i>thúɔww-ú`</i>	<i>thúɔw-í`</i>	get dry.

The verb forms in (77) are complete sentences. The forms in the first column are indicative forms with an implied third person subject, while those in the other columns are subjunctive (or imperative) forms, e.g.

- (78) a. *yùom`* He is resting
 b. *ù-yúom-é`* Let him rest!
 c. *yúomb-ú`* Rest!
 d. *yúom-í`* Rest!

The focus suffix /-a/ selects grade 6, as shown by the following sentences, the final root consonant being an obstruent in (79)–(80) and a sonorant in (81)–(82).

- (79) a. *ùbúr púot-à dháag-è* The woman beat Ubur
 Ubur beat-FOC woman-ERG
 b. *ùbúr á-pùot dháag-è* The woman beat Ubur
 Ubur C-beat woman-ERG

- (80) a. *nr̀p̀nd̀-ò ǹák-à dàk̀* The child broke the pot
 child break-FOC pot
 b. *dàk̀ á-ǹák nr̀p̀nd̀-è* The child broke the pot
 pot C-break child-ERG
- (81) a. *ʔ̀ud̀ì géer-à c̀òww-ì* The men built the houses
 houses build-FOC men-ERG
 b. *ʔ̀ud̀ì á-gèer c̀òww-ì* The men built the houses
 houses C-build men-ERG
- (82) a. *c̀íc̀ùó kwál-à dh̀èèŋ* The man stole the cow
 man steal-FOC cow
 b. *dh̀èèŋ á-kwàl c̀íc̀ù-é* The man stole the cow.
 cow C-steal man-ERG

The focus suffix, which occurs in the (a)-sentences, indicates that the focus is on the subject noun phrase if the latter follows the verb, as in (79) and (81), and on either the verb or the object noun phrase or both if the verb is followed by the object noun phrase, as in (80) and (82). The (b)-sentences, in which the verb has no suffix, have focus on the completion of the action, as indicated by the prefix /á-/.

The suffix vowel /-ɔ/ ~ /-o/ can have three different functions when combined with a simple stem, but it always selects grade 2. Firstly, it can be a subject suffix, indicating first person plural inclusive, cf. (68)–(71) and (74) above. Secondly, it is used with transitive stems that are governed by an auxiliary verb, such as the completive negative one in (83) or the resultative one in (84).

- (83) a. *g̀ùòk ká-á` t̀ùud-ó* I didn't pull the dog
 dog NEG+C-1S pull-SUF
 b. *dh̀èèŋ ká-á` kwàl-ó* I didn't steal the cow
 cow NEG+C-1S steal-SUF
- (84) a. *ùb̀úr é-é` p̀ùod-ó* He has beaten Ubur
 Ubur RES-3S beat-SUF
 b. *ʔ̀òt́ó é-é` g̀èer-ó* He has built the house.
 house RES-3S build-SUF

Thirdly, it is used with transitive stems in sentences like the following, which express the non-completive aspect:

- (85) a. *ùbúr pùlot dháag-è pùod-ò* The woman will beat
 Ubur beat woman-ERG beat-SUF Ubur
- b. *ʔùudì gèer cùww-ì gèer-ò* The men can build the
 houses build men-ERG build-SUF houses.

The (a) and (b)-sentences in (83)–(85) illustrate the behaviour of obstruents and sonorants, respectively.

Grade 2 is also selected by the third person singular object suffix /-i/ ~ /-ì/, which is used in imperative verb forms with an implied second person singular subject:

- (86) a. *màadh'-ì* Drink it! b. *càm-ì* Eat it!
 drink-3S eat-3S

This suffix does not cooccur with an object noun phrase, and it is different from the segmentally homonymous second person singular subject suffix, which is not used in the imperative form of simple transitive stems:

- (87) a. *màath' càak* Drink the milk!
 drink milk
- b. *càm béel* Eat the grain!
 eat grain

4. Internal reconstruction and comparative evidence

4.1. Introduction

I shall now examine the consonant alternation system from a diachronic point of view. In section 4.2., I argue that the system can be explained as the result of a number of sound changes, some of which presuppose the existence of suffix consonants at an earlier stage of the language. In this way, a set of verbal derivational suffixes can be partially reconstructed. In section 4.3., I demonstrate that the verbal derivational system of Pärì is a retention from Proto-Western Nilotic rather than an innovation, and then I point out some similarities between the system reconstructed for pre-Pärì and the systems existing in Eastern and Southern Nilotic.

4.2. Internal reconstruction

In the consonant alternation system, grades 1, 2 and 6 have only single consonants, grade 3 has both single consonants and consonant clusters, and grades 4 and 5 have only clusters. Since all roots, as opposed to stems, end in a single consonant (grade 1), it seems reasonable to assume that stems ending in clusters have arisen from roots and a following suffix consonant. Thus, the first consonant in a cluster must reflect the final root consonant, and the second consonant must reflect a suffix consonant. In simple stems, the suffix consonant must have been part of a subject suffix (grade 3), while in derived stems, it must have been part of a derivational suffix (grades 3, 4 and 5). With a few exceptions, the clusters have the same point of articulation as the corresponding grade 1 consonants. This means that the suffix consonant must generally have been assimilated to the preceding root consonant with respect to point of articulation. As shown in the following paragraphs, it is possible to specify certain features of the hypothetical suffix consonants assumed to have given rise to grades 3, 4 and 5. Since some of these grades characterize more than one stem class, there may have been more than one suffix consonant for each grade, different consonants possibly having formed different stem classes. Thus each grade possibly subsumes a set of suffix consonants that have merged as a result of the assimilation to the final root consonant.

In grade 4.0, the suffix consonant must have been a nasal **/N/*, since not only the nasal series but also the stop series have geminate nasals. That is, root-final stops were once assimilated to the suffix consonant with respect to manner of articulation:

$$\begin{array}{ll}
 (88) \quad *pN > mm & *cN > nn \\
 \quad \quad *thN > nnh & *kN > \eta\eta. \\
 \quad \quad *tN > nn
 \end{array}$$

In that way, the stop series merged with the nasal series:

$$\begin{array}{ll}
 (89) \quad *mN > mm & *nN > nn \\
 \quad \quad *nhN > nnh & *\eta N > \eta\eta. \\
 \quad \quad *nN > nn
 \end{array}$$

In the liquid series and the glide series, the nasal was totally assimilated to the root consonant:

$$\begin{array}{ll}
 (90) \quad *rN > rr & *yN > ?yy \text{ (not attested)} \\
 \quad \quad *\ell N > \ell\ell & *wN > ww.
 \end{array}$$

In grade 3.0, the nasal series have a nasal plus a homorganic voiced stop. This would seem to indicate that the suffix consonant was a stop **/C/* rather than a sonorant. This stop was assimilated to the preceding nasal with respect to point of articulation (and with respect to voice if the stop was originally voiceless):

- (91) $\begin{array}{ll} *mC > mb & *nC > nj \\ *nhC > ndh & *ŋC > ŋg. \\ *nC > nd \end{array}$

The stop also appears in the */l/-*series, whose cluster */nd/* is likely to go back to **/ld/* at an intermediate stage, at which the stop had been assimilated to the alveolar point of articulation of the lateral:

- (92) $*lC > *ld > nd.$

In the glide series, the stop was totally assimilated to the root consonant:

- (93) $*yC > yy \qquad *wC > ww.$

The */r/-*series has a geminate palatal glide, although */r/* is alveolar. Whatever intermediate stages there may have been, the following change must have taken place:

- (94) $*rC > \overset{1}{yy}.$

Unlike the sonorant series, the stop series do not have clusters in grade 3.0, at least not on my phonemic analysis, but single voiceless stops. However, in order to maintain the hypothesis that grade 3.0 reflects the presence of a suffix stop at an earlier stage of the language, we have to assume that the single voiceless stops have resulted from shortening of geminate voiceless stops at an intermediate stage:

- (95) $\begin{array}{ll} *pC > *pp > p & *cC > *cc > c \\ *thC > *tth > th & *kC > *kk > k. \\ *tC > *tt > t \end{array}$

Grade 5, which has not been attested for all of the 14 series, seems to equal grade 3.0, except that the stop series have nasal+stop clusters instead of voiceless stops. Since, for at least one stem class, the choice between grades 5 and 3.0 is determined by the length of the root vowel (cf. section 3.4.1.), the consonant changes in the stop series must somehow have been influenced by that feature. Whatever

er the explanation, the stop series have merged with the nasal series in grade 5.

In grade 2.0, there are no clusters. Hence we must assume that grade 2 stems have had no suffix consonant immediately after the root at any internally reconstructable stage. Grade 2.0 equals grade 1 in the sonorant series, but differs from it in the obstruent series. The voiceless stops in grade 1 correspond to homorganic voiced stops in grade 2, except that the palatal voiceless stop /c/ corresponds to the palatal glide /y/, and that the velar voiceless stop /k/ corresponds to zero. The asymmetry induced by the latter two series can readily be explained by assuming that the grade 2 equivalents of the voiceless stops /c/ and /k/ have developed from the homorganic voiced stops */j/ and */g/, the latter probably first becoming a fricative:

$$(96) \quad *j > y \qquad *g > *ɣ > \emptyset.$$

The hypothesis that */j/ has weakened to /y/ is supported by the fact that [y] varies freely with [j] in some words, as noted in section 2.2. Apparently, the [j] variant is less frequent in the younger generations than in the older ones, which indicates that the sound change is still in progress but near completion. The corresponding hypothesis that */g/ has disappeared is confirmed by evidence from Luo, another Western Nilotic language⁷. Luo cognates of some Pāri nouns with a stem-final zero consonant have stem-final /g/ and /k/ word-medially and word-finally, respectively:

(97) Pāri	Luo	
<i>ajv-a</i>	<i>àjûɔg-á</i>	sorcerer, witch-doctor
<i>cò-ó</i>	<i>còg-ó</i>	bone
<i>ùmáúu'-á</i>	<i>òmûg-á</i>	rhinoceros
<i>yú-ú'</i>	<i>yúg-î</i>	rubbish (plural in Pāri)
<i>mà-à</i>	<i>mùok</i>	aardvark.

However, the sound change */g/ > ∅ has not had the effect of eliminating all instances of /g/ in stem-final position before a vowel, cf. the examples in sections 2.2. and 3.3. In nouns, a retained /g/ corresponds to a word-medial /k/ in Luo:

(98) Pāri	Luo	
<i>dháag-ò</i>	<i>dhák-ò</i>	woman
<i>bòɔg'-ò</i>	<i>òbòk-è</i>	dry leaf (Pāri), leaf (Luo).

The matter is further complicated by the fact that zero in Pāri corresponds to word-medial /k/ in Luo in at least one noun:

- (99) Pāri Luo
 tā-à tāk-ò pancreas, spleen.

Notice that at the stage of pre-Pāri reconstructed in the previous paragraphs, there was no phonemic contrast between voiced and voiceless stops in root-final position. Their distribution was complementary and phonologically conditioned: The stops were voiceless word-finally (grade 1), voiced intervocalically (grade 2), and of an uncertain voice value (but above implicitly assumed to be voiceless) before a consonant (grades 3, 4 and 5). This allophonic variation was phonemicized by the shortening of geminate voiceless stops in grade 3. The allophonic variation could itself have arisen in one of two ways. Either the root-final stops were originally voiceless and became voiced intervocalically:

- (100) $*\zeta > \zeta / ______ -V$

or they were originally voiced and became voiceless word-finally:

- (101) $*\zeta > \zeta / ______ \#$

The first alternative implies that the sound change of voicing preceded the shortening of geminate voiceless stops, since otherwise grade 3 stops would also have become voiced. The second alternative is neutral with respect to the relative chronology of the sound changes. There seems to be no language-internal evidence favouring either alternative. Hence I shall assume the phonetically and typologically more plausible one, which is that the root-final stops were originally voiceless, and that they became voiced intervocalically, i. e. before a suffix vowel:

- (102) $\begin{array}{l} *p > b \\ *th > dh \\ *t > d \end{array} \qquad \begin{array}{l} *c > *j > y \\ *k > *g > *γ > \emptyset. \end{array}$

This hypothesis is in line with Hieda's 1983a hypothesis that root-initial voiced stops in Western Nilotic have resulted from voicing of voiceless stops intervocalically⁸. Combined, the two hypotheses imply that Western Nilotic originally had no voiced stops at all.

Grade 6 equals grade 1, except that its consonants are followed by a suffix vowel. Like grade 2, it has single consonants in the sonorant

series, and therefore no suffix consonant should be hypothesized for this grade. On the other hand, it has voiceless stops in the obstruent series, like grade 3. That is, grade 6 stems have not been affected by the sound change of voicing that affected grade 2 stems. Therefore, verb forms with grade 6 stems must only have come into existence after that sound change had taken place. That this is actually a likely explanation for grade 6 is shown by the fact that this grade, as opposed to all the other grades (apart from grade 1), is not involved in derivation but only in inflection and hence probably has a relatively recent origin.

Grades 2.1, 3.1 and 4.1 equal grades 2.0, 3.0 and 4.0, respectively, except that the two liquid series have alveolar stops or nasals, thereby both merging with the /t/-series⁹. An explanation for these special alternations in the liquid series should probably be based on the facts that the liquids themselves have an alveolar point of articulation and that the stem classes belonging to grades 2.1, 3.1 and 4.1 are all antipassive. Still, no obvious explanation is readily available. Hieda 1983b hypothesized that proto-Western Nilotic had four liquids, viz. voiceless */r/ and */l/ in addition to voiced */r/ and */l/. If this hypothesis is correct, then the alveolars /d t n/ in the liquid series might be reflexes of root-final voiceless liquids, while the other consonants in the liquid series would be reflexes of root-final voiced liquids. If so, the former reflexes must have been generalized to all antipassive stems derived from roots with final liquids, and the reflexes of root-final voiced liquids must correspondingly have been generalized to all other stems that embody a root with a final liquid.

Derived stem classes which invariably have a +ATR vowel, whether the vowels of the corresponding simple stems are +ATR or -ATR, must once have contained an affix with a +ATR vowel. Since many of these stem classes must have contained a suffix, as evidenced by their root-final consonant alternation, the hypothesized +ATR vowel is likely to have been part of that suffix rather than having been (part of) a prefix. On the basis of this hypothesis, we can now make a partial reconstruction of the following derivational suffixes:

(103)	grade	category	formative
	2.0°	centripetal	*/V/
	2.1°	antipassive	*/V/
	3.0°	multiplicative	*/C/

3.0°	benefactive	$*/\ddot{V}^{\circ}C/$
3.1°	antipassive centrifugal	$*/\ddot{V}^{\circ}C/$
4.0°	ingressive	$*/\ddot{V}^{\circ}N/$
4.1°	antipassive centripetal	$*/\ddot{V}^{\circ}N/$
4.1°	antipassive benefactive	$*/\ddot{V}^{\circ}N/$

The evidence allows only a partial specification of the segments that are involved in the formatives in (103). Thus, $*/\ddot{V}/$ is a +ATR vowel, $*/C/$ is a stop consonant, and $*/N/$ is a nasal consonant. For each of the formatives, one or two segments can be reconstructed, but the formatives may, of course, have contained more segments. In formatives with two reconstructed segments, no particular order between the segments is implied, as indicated by the symbol “°”. However, if the vowel preceded the consonant, the vowel must have been lost prior to the assimilation between the consonant and the final root consonant, since otherwise the two consonants could not have been adjacent at any stage of the development.

4.3. Comparative evidence

Some of the verbal derivational categories that occur in Pāri also occur in some of the other Western Nilotic languages. Cf. the following examples from the Agar dialect of Dinka:

- (104) a. \dot{a} -cɔɔl tɛik The woman is calling him
 D-call woman
- b. \dot{a} -cɔot He is calling
 D-call+AP
- (105) a. \dot{a} -rɛiɲ He is running
 D-run
- b. \dot{a} -riɛiɲ He is running (this way)
 D-run+CP
- (106) a. \dot{a} -kɛt dɛt He is singing a song
 D-sing song
- b. \dot{a} -keɛet mɛth He is singing for the child.
 D-sing+BEN child

In Dinka, as in Pāri, verbal derivation is manifested exclusively by phoneme alternation in the root. In general, derived stem classes

that have a +ATR vowel in Pāri have a breathy vowel in Dinka, as illustrated by the antipassive in (104b), the centripetal in (105b), and the benefactive in (106b)¹⁰. This cannot be a coincidence, since the binary voice quality contrast between creaky and breathy in Dinka regularly corresponds to the binary contrast between -ATR and +ATR in Pāri, as shown by the following pairs of cognate nouns:

(107) Dinka	Pāri	
[creaky]	[-ATR]	
p̣ɪ̣n	píŋ	land
ỵɛ̣ịth	ʔịth	well
lịɛ̣p	léep	tongue
rịɛ̣ɛ̣m	rịmó	blood
p̣ạ́al	pàl`-à	knife
ṃạ̀ac	màac	fire
ṇạ̀aŋ	nàaŋ	crocodile
ŋụạ̀an	áŋwèɛnó	four
kụạ́c	kwàc	leopard
ṛɔ̣w	ràw	hippopo- tamus
ṭɔ̣ŋ	tóŋ	spear
tụɔ̣ɔ̣ŋ	tòŋó	egg
tḥọ̀k	dhók	mouth
c̣ọ̀or	cùur	vulture

(108) Dinka	Pāri	
[breathy]	[+ATR]	
rịịŋ	rịŋó	meat
ỵị́c	ʔíth	ear
ḷẹ́ec	lèeyó	tooth
nẹɛ̣el	ṇạ́lló	python
ḍẹ́el	dèel	skin
ṛẹ́ec	rèeyó	fish
ɣ̣ạ̀am	ʔáam	thigh
cụạ́n	cwíŋ	liver
ṇọ̀ɔ̣k	ṇụ́uṇnó	louse
j̣ọ́	gùok	dog
ṭụ̀uŋ	tùŋó	horn
c̣ụ̀l	cúl	penis
ṃạ̀r	máur	vagina.

Therefore, the verbal derivational morphemes in the two languages must be assumed to be cognate. Since Dinka and Pāri belong to different main branches of Western Nilotic, it can further be assumed that the verbal derivational morphemes existed in Proto-Western Nilotic. On the other hand, Dinka has little consonant alternation in verbal roots, at least in the Agar dialect, one of the few examples being the alternation between /l/ and /t/ illustrated by (104), which also occurs in Pāri. Thus, Dinka data cannot immediately tell much about the suffix consonants hypothesized on the basis of internal reconstruction in Pāri.

Widening the perspective further, we find that several of the verbal derivational categories that exist in Pāri and Dinka also exist in the Eastern and Southern Nilotic languages, i.e. in the two other branches of the Nilotic language family. In Eastern and Southern Nilotic, these categories are not expressed by root-internal phoneme alternations but by suffixes, see e.g. Tucker and Bryan 1966: 451ff. Thus, they are expressed in the same manner as hypothesized for pre-Pāri (and Proto-Western Nilotic). This, of course, does not guarantee that the reconstructed pre-Pāri suffixes are cognate with their extant counterparts in Eastern and Southern Nilotic. However, some of the suffixes exhibit phonological similarities that are likely to reflect a common origin. To see this, compare the following items from the list of partially reconstructed suffixes in pre-Pāri with the semantically more or less equivalent suffixes in Bari, an Eastern Nilotic language¹¹:

(109)	Pāri	Bari
ingressive	*V [•] N	-an
centripetal	*V [•]	-un
centripetal & antipassive	*V [•] N	-un-dya
benefactive	*V [•] C	-akin
benefactive & antipassive	*V [•] N	-akin-dya.

Like Pāri, Bari has vowel harmony in terms of the feature ATR (see Hall and Yokwe 1978), its vowel system being as follows:

(110)	+ATR	i	e	ɛ	o	u
	-ATR	ɪ	ɛ	a	ɔ	ʊ

Some suffix vowels are underlyingly and invariably +ATR. Others are underlyingly -ATR but vary between -ATR and +ATR in

agreement with the ATR value of the root vowel. The vowels of the Bari suffixes given in (109) are underlying ones.

The ingressive suffix $*/\check{V}^{\circ}N/$ in pre-Päri contains a nasal as does the suffix $/-an/$ in Bari. The latter, which Spagnolo 1933: 130 terms "inchoative", is an unproductive suffix occurring in many intransitive verb stems, several of which appear to be either ingressive or stative according to Spagnolo's glosses, e.g.

- (111) *bur-an* to rot (§§ 234f.) *bus-an* to be good
 bot-an to become big *jar-an* to be absent.

The centripetal suffix $*/\check{V}/$, which was used with transitive roots in pre-Päri, contains a +ATR vowel as does the corresponding suffix $/-un/$ in Bari. The latter is used productively with both transitive and intransitive roots, as in (112) and (113), respectively.

- (112) *dum-un* to pick up (towards oneself) (§ 256)
 jun-un to avenge completely

- (113) *babaŋ-un* to dawn, to rise (§ 286)
 wak-un to run here.

In the reconstructed pre-Päri suffix, there is no nasal corresponding to $/n/$ in the Bari suffix. However, in centripetal stems derived from intransitive roots in Päri, there is in fact a trace of a nasal suffix consonant. Thus, the centripetal stems have grade 4, while the corresponding non-centripetal (centrifugal) stems have grade 2:

- (114) 2° $\acute{a}\text{-}^{\circ}f\acute{d}h\text{'-}\acute{o}$ He climbed (that way)
 C-climb-INTR

- 4° $\acute{a}\text{-}^{\circ}i\acute{n}n\acute{h}\text{'-}\acute{o}$ He climbed (this way)
 C-climb+CP-INTR

- (115) 2° $\acute{a}\text{-}d\acute{o}ŋ\text{'-}\acute{o}$ He entered (that way)
 C-enter-INTR

- 4° $\acute{a}\text{-}d\acute{u}ŋŋ\text{'-}\acute{o}$ He entered (this way).
 C-enter+CP-INTR

A nasal also appears in $*/\check{V}^{\circ}N/$, which combines the centripetal with the antipassive. This suffix has approximately the same function as the suffix combination $/-un-dya/$ in Bari:

- (116) *bok-un-dya* to dig out (§ 256)
 kur-un-dya to come borrowing.

The suffix */-dya/*, which is termed "emphatic" by Spagnolo, is functionally (but not phonologically) reminiscent of the antipassive in Pāri. When used with a transitive root, as in (116), in a sentence without an overt object, it indicates that no object is implied, whereas a similar sentence without this suffix has an implied object.

The benefactive suffix **/V̥C/* in pre-Pāri contains a +ATR vowel and a stop consonant like the corresponding suffix */-akin/* in Bari:

- (117) *bo-kin* to weed for (§ 258)
kit-akin to plane for.

In addition, the Bari suffix has a nasal, and, as in the case of the centripetal, a nasal also shows up in Pāri (at the expense of the stop) when the benefactive is combined with the antipassive. In Bari, again, the emphatic suffix plays the same role as the antipassive morpheme in Pāri:

- (118) *gub-akin-dya* to throw to (somebody) (§ 258)
kɛl-akin-dyɛ to leave alone.

Some of the similarities of the Bari suffixes */-an/* and */-un/* to remnants of the ingressive and centripetal suffixes in Western Nilotic were also pointed out by Greenberg 1966: 93 f., as two among several pieces of evidence for the genetic relationship between Western Nilotic, on one hand, and Eastern and Southern Nilotic, on the other. The Western Nilotic languages in which Greenberg had identified these remnants were Shilluk and Nuer. He also gave consideration to the Bari suffix */-akin/*, but he did not find any traces of that suffix in Western Nilotic.

Note, finally, that Pāri also shares some of its verbal derivational categories with the Moru-Madi languages, a neighbouring language group, which belongs to the Central Sudanic family, and with which Pāri is therefore at best only distantly genetically related. As might be expected, the formatives in the Moru-Madi languages bear no obvious resemblance to the reconstructed formatives in pre-Pāri, cf. the following examples of simple and derived stems in Lulubo, one of the Moru-Madi languages¹²:

- (119) a. simple (holistic) */kū/* to weed
 b. multiplicative */ū-kū/* to weed (repeatedly)
- (120) a. simple (centrifugal) */tū/* to pull (that way)
 b. centripetal */è-tū/* to pull (this way)

- (121) a. simple (transitive) /nā/ to insult
 b. antipassive /à-nā/ to make an insult.

In the Moru-Madi languages, verbal derivation is not expressed by suffixes but by prefixes, and there are no specific phonological similarities between them and the equivalent suffixes in pre-Päri. In the light of this, the resemblances between Päri and Bari pointed out above would seem less likely to be coincidental.

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Notes

¹ However, in stem-final position, the stops /th/, /dh/ and /c/ may be realized phonetically as the fricatives [θ], [ð] and [ç] as an alternative to [t], [d] and [c].

² Absence of tone marks on full word forms indicates that the tones are unknown to me.

³ The following abbreviations are used in literal translations:

1PEX/1PIN	= first person plural exclusive/inclusive		
1S/2S/3S	= first/second/third person singular		
2P/3P	= second/third person plural		
AG	= antigenitive	FOC	= focus
AP	= antipassive	INGR	= ingressive
BEN	= benefactive	INTR	= intransitive
C	= completive	LOC	= locative
CAUS	= causative	M	= multiplicative
CF	= centrifugal	N	= noun or noun stem
CP	= centripetal		
D	= declarative	NEG	= negative
DEM	= demonstrative	P	= plural
ERG	= ergative	PAS	= passive

RES	= resultative	SUF	= suffix
S	= singular	V	= verbal root or
SUB	= subjunctive		verb stem.

⁴ Similar arguments for the existence of a stem-initial zero consonant in Lango, another Western Nilotic language, have been put forward by Tucker 1958.

⁵ Pāri has three cases: absolutive, ergative, and antigenitive. The absolutive form of a nominal is identical to its citation form. The ergative is the case of the subject when the latter follows the verb. The antigenitive is the case of the Possessed in a noun phrase of possession.

⁶ For lack of data, nothing is said about /w/ in this respect.

⁷ The Luo data are from Creider 1977.

⁸ However, in the same article, Hieda implicitly assumes an original contrast between voiced and voiceless stops in root-final position.

⁹ Furthermore, grade 4.1 sometimes has /mm/ instead of /ww/ in the /w/-series.

¹⁰ For an account of the phonemic system of Dinka, see Andersen 1987a.

¹¹ The Bari data are from Spagnolo 1933. Although Bari is a tone language, Spagnolo did not indicate tone.

¹² For an introduction to Lulubo, see Andersen 1987b.

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