

Consonant Polarity in Nilotic*

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Following an analysis offered by Meinhof (1912:12), Chomsky and Halle have suggested the possibility of phonological "polarity": "a process in which two segments exchange position in the phonological pattern, as it were; for example, voiced segments become voiceless while voiceless segments become voiced (1968:355)." Meinhof originally made use of the idea in trying to account for Fulani permutation classes—an explanation subsequently shown to be untenable by Klingenberg (1923-24). Meinhof's use of the presence of some kind of polarity in different languages to establish genetic relationship between them was attacked by Greenberg (1950) in his celebrated demolition of "maximal Hamitic." Clearly the notion of polarity (or "flip-flop," "α-switching," or "exchange," as it is variously known in the literature) has had its ups and downs. Linguists outside the generative tradition should therefore be pardoned the jaundiced glances they cast upon a revival of the idea, since they probably consider it at best just another dazzling ad hoc notational device.

Chomsky and Halle themselves follow Klingenberg and reject Meinhof's use of polarity in Fulani,† but offer as legitimate examples vowel switching in Menomini and verb ablaut in West Semitic. The Great Vowel Shift in English has been cited as a classic example. Other instances are reported in the literature, notably tone switching in Chinese as discussed by Wang (1967). But to my knowledge the hypothetical situation discussed by Chomsky and Halle and quoted above has not been documented. In this paper I examine a situation found in certain Nilotic languages that almost exactly complies with their statement. I suggest, furthermore, that any treatment other than one involving polarity rules would be unacceptably contrived.

Most of my examples will be taken from Luo, a Western Nilotic language spoken in Kenya and Tanzania. A similar situation seems to obtain in some other Western Nilotic languages but not in the closely related "Nilo-Hamitic" ones (i.e., Eastern and Southern Nilotic). I know of nothing comparable in the rest of the Nilo-Saharan family, which Nilotic is part of in Greenberg's 1963 classification. (Köhler 1949 discusses consonant alternations in Nuer, but they do not involve polarity.)

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†A number of word-initial consonant alternation systems have been reported from West Africa. See, among other studies, Klingenberg (1924-25) and Hintze (1947).

Consonant polarity in Luo occurs in nouns in two situations:

(a) before the plural suffix *-E* (realized as *-e* and *-ɛ*)*:

- (1) *gɔt* 'mountain' pl *gɔdɛ* 'mountains'
lwɛdɔ 'hand' pl *lwɛtɛ* 'hands'

(b) in the singular appertentive (=the Status constructus in Semiticist jargon):

- (2) *gɔt* 'mountain' app *gɔd* 'mountain-of'
lwɛdɔ 'hand' app *lwɛt* 'hand-of'

In the following discussion these two situations will receive a single treatment for the most part, although they are often differentiated as to the morphophonemic alternations involved. Undoubtedly they have different historical sources. Compare the following forms. Those for the first noun are "regular"; the other nouns are "overdifferentiated."

Nominative Singular	Appertentive Singular	Nominative Plural	Appertentive Plural	
<i>gɔt</i>	<i>gɔd</i>	<i>gɔdɛ</i>	<i>gɔdɛ</i>	'mountain'
<i>ɕiaŋ</i>	<i>ɕɛr</i>	<i>ɕok</i>	<i>ɕog</i>	'cow'
<i>yaɕ</i>	<i>yand</i>	<i>yɛn</i>	<i>yɛndɛ</i>	'tree'
<i>dɛl</i>	<i>dɛnd</i>	<i>diek</i>	<i>diege</i>	'goat'

Rule (R1) is an initial approximation of an adequate polarity rule for Luo.

$$(R1) \begin{bmatrix} -\text{voc} \\ +\text{con} \\ \text{voiced} \end{bmatrix} \rightarrow [-\text{voiced}] / \text{---} \begin{bmatrix} \text{Pl -E} \\ \text{App} \end{bmatrix}$$

That is, a voiced consonant changes to a corresponding voiceless consonant before the plural suffix *-E* and in the appertentive, and vice versa. The changes that occur in the underlying representation of consonants are represented schematically in (4).

(4)

<i>p</i>	<i>t</i>	<i>t</i>	<i>c</i>	<i>k</i>
<i>b</i>	<i>ɕ</i>	<i>d</i>	<i>j</i>	<i>g</i>

*Before the other common plural suffix, *-ni*, such alternation almost never occurs; for example, the following nouns with variant plurals, each regular:

<i>higa/higni</i> or <i>hike</i>	'season, year'
<i>koɕi/koɕni</i> or <i>koɕe</i>	'seed'
<i>puga/pugni</i> or <i>puke</i>	'calabash'
<i>tawɔ/tewni</i> or <i>tepe</i>	'plate'

The only exceptions seem to involve stem-final *l* and *n*, which are not covered by the strong polarity rule (R1) offered here:

<i>ɕgwalɔ/ɕogwendni</i>	'calf of leg'
<i>siɕana/siɕendni</i>	'story'

The transcription used here is biuniquely phonemic, except that vowel length and tone are not indicated. In the official spelling *t*, *ɕ*, *p*, *ɕ*, *ɕg*, are written *th*, *dh*, *ny*, *ng'*, *ng*, respectively; the difference between tense and lax vowels is not indicated in that orthography.

The actual realization of these changes diverges only in two instances, which can be accounted for by a rule of lenition weakening noninitial *b* and *j* in native words to *w* and *y* (sometimes ϕ). As a matter of fact, comparative evidence suggests that intervocalic *b* and *j* did occur in Proto-Luo and that the scheme given in (4) probably represents an earlier stage accurately.

The synchronic pervasiveness of polarity is exemplified by the treatment of Swahili loanwords such as *kitabu* 'book' borrowed with intervocalic *b*. There are no native Luo words that could serve as a model for incorporating *b* into the polarity scheme, and some presumably earlier loanwords such as *ndawa* 'tobacco' (from a form like **taba?*—cf. Shilluk *atabo*) changed *b* to *w* either in the borrowing or later. Nevertheless, the polarity rule holds and we find the appertentive *kitap* and the plural *kitepe*.

The following examples, almost exclusively showing singular/plural alternations, may make the situation clearer.

- (5) *p/w* *pap/pewe* 'field'

This plural alternation is rare; cf. the appertentive alternations:

	<i>ip/iw</i> (pl <i>ipe</i>)	'tail'
	<i>ɛp/ɛw</i> (pl <i>ɛp</i>)	'tongue'
<i>w/p</i>	<i>kɪɔwɔ/kɪɔpɛ</i>	'bag'
	<i>ndɔwɔ/ndɔpɛ</i>	'pail'
	<i>ɕkɛwɔ/ɕkɛpɛ</i>	'nephew'
	<i>ɾɪwɪ/ɾɪpɛ</i>	'needle'
	<i>sawo/sepe</i>	'religious feast'
<i>b/p</i>	<i>dɛbɛ/depe</i>	'four-gallon tin can'
	<i>msalaba/msalepe</i>	'cross'
<i>t/d</i>	<i>kueɕ/kueɕe</i>	'herd'
	<i>luɕ/luɕe</i>	'stick'
	<i>yaɕ/yeɕe</i>	'tree'
<i>ɕ/t</i>	<i>buɕo/buɕe</i>	'pumpkin'
	<i>kuɕɔ/kuɕe</i>	'thorn'
	<i>mbiɕi/mbiɕe</i>	'pig'
	<i>puoɕo/puoɕe</i>	'garden'
<i>t/d</i>	<i>alɔt/alode</i>	'vegetable'
	<i>ɾet/ɾede</i>	'rib'
	<i>okot/okode</i>	'cowbell'
	<i>sit/side</i>	'sheet'
<i>d/t</i>	<i>atudo/atute</i>	'duck'
	<i>kɛdɛ/kɛtɛ</i>	'twig'
	<i>kidi/kite</i>	'stone'
	<i>kido/kite</i>	'type, kind'

c/y	<i>kic/kiye</i>	'orphan'
	<i>kwac/kweye, kwaye</i>	'leopard'
	<i>mric/mriye</i>	'razor'
	<i>ɲec/ɲeye</i>	'neck'
	<i>wic/wiye</i>	'head'
y/c	<i>apwɔɔ/apwɔcɛ</i>	'rabbit'
	<i>ɔɔwɔɔ/ɔɔcɛ</i>	'hyaena'
	<i>taya/tece</i>	'lamp'
k/g	<i>agak/agege</i>	'crow'
	<i>buk/buge</i>	'book'
	<i>lɛk/lɛgɛ</i>	'pasture'
	<i>lɔk/lɔge</i>	'handle'
	<i>sanduku/sanduge</i>	'box'
g/k	<i>cogo/coke</i>	'bone'
	<i>higa/hike</i>	'year'
	<i>misigo/misike</i>	'burden'
	<i>mɔgɔ/mɔkɛ</i>	'gruel, posho'
	<i>omuga/omuke</i>	'rhino'
	<i>tugo/tuke</i>	'game, joke'

The same rule holds even if the singular has (presumably) incorporated a demonstrative element in *-n-* (cf. *ni* 'this', *no* 'that').

(6)	<i>w/p</i>	<i>ɪrwnɪ/tɪpɛ</i>	'chain'
	<i>d/t</i>	<i>kudni/kute</i>	'insect'
	<i>g/k</i>	<i>kogno/koke</i>	'finger or toe nail'
		<i>ɲarɔgnɔ/ɲiroke</i>	'kidney'

Similar examples occur in Shilluk, although polarity does not pervade noun morphology to the same extent as in Luo. Examples include: *p/b* *lɛp/lɛb* 'tongue', *q/t* *bɔqɔ/bɔti* 'master', *d/t* *okodo/okoti* 'durra-basket', *c/j* *tuyɔ/twaj* 'rifle', *j/c* *rejo/ric* 'fish', *k/g* *bak/bag* 'fence', *g/k* *jago/jyak* 'chief'. (There are a number of plural formations in Shilluk.) In Alur, the situation is somewhat different from what we find in Luo because an original appertentive form has become a variant of the nominative, which it apparently sometimes ousts altogether: *rwoɪ* or *rwoɔ* 'king' (Luo *ruoɪ* nominative, *ruoɔ* appertentive), *ɲec* or *ɲei* 'back' (Luo *ɲec*, *ɲɛ*).

The other consonants in Luo (*r, l, m, n, ɲ, ɲ, h, s, f*) have no natural counterpart in the polarity scheme, except for *r*, which almost invariably alternates with *c*: *ler/lece* 'vein', *orɛr/orɛce* 'monkey', and in loanwords such as *gari/gacɛ* 'train', *askari/askece*, *askace*—both from Swahili. This alternation poses few problems given an intermediary step with **r₀*, which becomes *c* by a later rule. There are no alternations in modern Luo that I know of with stems in *c* changing to *r* in the plural, but at least one noun has *r* in the appertentive: *paco* 'homestead'—appertentive *par* (the plural is suppletive, *mier*).

If we take into account the alternations the remaining consonants of Luo undergo, then rule R1 would have to be changed somewhat. But it would remain a polarity rule, albeit somewhat attenuated.

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