Toward a Reconstruction of Proto-Nilotic Vocalism*

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1. Introduction

There are two theories about the interrelationship of the
Nilotic languages. The first, or traditional, theory has held
that there are two major subdivisions: Nilotic Proper (Dinka and
Nuer plus the Lwo languages) and Nilo-Hamitic or Paranilotic (see
Tucker and Bryan 1966:443; see Köhler 1955 for a history of this
terminology). The second theory, that of Köhler (1955), which was
taken up by Greenberg (1963), holds that there is a single unitary
Nilotic family consisting of three coordinate branches: Western
(the traditional Nilotic Proper); Eastern (Bari, Maasai, etc.);
and Southern (the Kalenjin languages plus Tatoga).

The fact that the Western and Southern sub-divisions form
units within themselves can easily be arrived at by inspection.
The comparison of dictionary pages for any two languages within
either of these sub-groups will yield a very high percentage of
probable cognates between let us say Dinka and Luo or between Nandi
and Päkot. Within Western and Southern Nilotic the unity seems,
in each case, to be at least as tight as that within Romance.

In the case of Eastern Nilotic the unity is somewhat less
immediately transparent. There are, however, many convincing
correspondences which will yield themselves to a few minutes'
inspection.

When it comes to Nilotic as a whole the unity is also clear
but the pieces seem to fit together much less well. On the one
hand there exist clear down-the-line cognate-sets like the word
for 'crocodile':[1]

(1) Shilluk   nyaŋ   TB
     Acholi   nyaŋ   Cr
     Lango   aki-nyaŋ   W
     Alur   nyaŋ   R
     Luo   nyaŋ   Staf
     Dinka   nyaŋ   W
     Nuer   nyaŋ   Cr
     Bari   ki-nyoŋ   TB
     Maasai   ol-ki-nyaŋ   TB
     Lotuho   ne-i-nyaŋ   TB
     Teso   a-ki-nyaŋ-a   TB
     Nandi   tɪ-nɔŋ-ɛ:t   TB
          Proto-Nilotic *nyaŋ

while on the other hand words such as 'bone'

(2) Shil   cɔ:g-ɔ   W
     Ach   co g-o   Cr
     Lan   co g-o   Dr
     Alur   co g-o   R
     Luo   co g-o   Staf
     Din   yu   o-m   Neb
     Nuer   coax   W
     Bari   k ʊ y-ʊ   Sp
     Maa   ol- o i- to   TB
     Lot   a-xo - tyo   EBLAV
     Teso   a-ko j-o   HL
     Kar   a-koi - t   G
     Turk   a-koi - t   G
     Nan   ko w-o   Ho
     Päkot   ko w-o   Be
          Proto-Nilotic *kʸɔgɔ

while they are also clearly cognate, require the postulation of
some rather complex sound changes and morphological reconstruction,
so that Nilotic proto-forms cannot be reconstructed for them at a
glance.
      The work we are reporting on here is a preliminary step in a
long-range project for the reconstruction of Proto-Nilotic by the
application of the traditional comparative-historical method.
Previous work on Nilotic has largely been descriptive and typo-
logical (e.g. Tucker and Bryan 1966) rather than historical or
reconstructive. The major exception would seem to be Köhler's
unpublished dissertation (1948), *Die nilotischen Sprachen.
Darstellung ihres Lautsystems, nebst einer Einleitung über die
Geschichte ihrer Erforschung, ihre Verbreitung und Gliederung,*
of which only the history of their study has been published (equals
Köhler 1955). Appended to this latter work is a table (p. 85), Die
Gliederung der nilotischen Sprachen, which gives a tripartite
division into West Nilotic, East Nilotic, and South Nilotic.
However, no place within the work itself is this division defended
by means of reconstructions and proposed shared innovations which

would serve to support this proposal.

Greenberg in his *The Languages of Africa* (1963:128 fn. 1) adopted Köhler's subdivisions which he later (1971) reworked slightly. Greenberg supports this subdivision with his standard technique of mass comparison. In no way does he propose proto-forms, state the nature of the innovations which have set the major groups and their subgroups off from one another, or attempt to account for sound changes systematically. It is just this which we hope to do.

As a working hypothesis we have accepted Köhler's and Greenberg's proposal that all of the Nilotic languages are related in a simple fashion and that there are three coordinate branches.

2. Vocalism: Major processes

We have entitled this study specifically "Toward a Reconstruction of Proto-Nilotic Vocalism" because we believe that only through an understanding of the vocalism can an understanding of the consonantism and of word-structure as a whole be achieved.

In addition to the usual types of historical changes whereby such things occur as o's and e's raising to become u's and i's, and vice versa, there are, we believe, four major phonological processes which must be taken into account in order to relate the vocalisms of the daughter languages to one another via verisimilitudinous proto-forms. These are:

(3) Major Nilotic Phonological Processes
1. Vowel harmony of the cross-height type based on tongue root position.
2. Breaking, in which vowels become diphthongized under certain conditions.
3. Umlaut or the fronting of back vowels or diphthongs due to the influence of a front vowel in an adjacent syllable.
4. Syncope and final vowel loss which results in seeming consonantal interchange.

3. Vowel harmony

3.1. Vowel harmony as a synchronic process. Nilotic vowel harmony is based ultimately on tongue-root position. That is, there are two series of vowels which may differ from each other in either point or manner of articulation or both. Whatever the surface realization, the ultimate phonetic gesture which seems to underlie the differentiation is a retraction or advancement of the tongue root (and hence tongue body) rather than the more familiar gesture of simply raising or lowering the tongue body at the point of articulation. As the tongue root is advanced or retracted there result the characteristic changes in voice quality which have been designated by such terms as 'breathy', 'bright', or 'hollow' for the advanced tongue root vowels and 'hard' or 'creaky' for those pronounced with retracted tongue root.[2] These vowel series, with the symbols which we have chosen to represent them in their most abstract form are:

(4)   +ATR   −ATR

    i   u   I   U

     e   o   ɛ   ɔ

        ɑ   a

What is especially noteworthy about the vowel harmony systems of the Nilotic languages is that the vowels of the [+ATR] series are always dominant in that they cause [−ATR] vowels in the same word to become [+ATR]. [+ATR] vowels never change into [−ATR] ones; the [+ATR] vowel which causes the change may be contained in either a root or an affix. A certain small number of morphemes are not only inherently [−ATR] but also are not affected by the presence of a [+ATR] vowel; these morphemes may be termed opaque to the vowel harmony process. Not only do these opaque morphemes not change [ATR] category themselves, they also block harmony from applying across them. We have discussed Kalenjin and general Nilotic vowel harmony in some detail in Hall, et al. (1974).

3.2. _Vowel harmony as a diacrhonic process_. Since this type of vowel harmony is found in each of the present day Nilotic languages, with no more than the expected variation as to how thoroughgoing its realization is and no more than a slight amount of language-particular variation in the surface phonetic manifestation of some of these vowels, especially the [+low, +ATR] vowel, then it must be assumed that this same vowel harmony system was present in the proto-language.

In all of the daughter languages the general rule seems to be that a shift of vowel harmony series is conditioned, as we have said above, by a morpheme, whether a root or an affix, which contains a dominant, [+ATR], vowel. There are, however, almost as many examples of apparently unconditioned [ATR] category shift, where the change of [ATR] series conveys grammatical information. In the Western languages, which are frequently mono-syllabic, and which have clearly suffered the loss of both prefixes and suffixes in the course of their historical development, given the case of a singular-plural pair such as Dinka[3]

(5) dạk (sg.) däk[h] (pl.) 'pipe'   TB 1966:413

it is easy to postulate that the plural had an additional vowel-- most probably a suffix--which caused the shift of harmony series and subsequently disappeared. However, what does one do in the case of forms from a southern language such as Nandi which not only tends to be polysyllabic but is also replete with affixes? For example, the word for 'bird' in Nandi is

(6) Primary sg.   Secondary Sg.   Primary pl.   Secondary pl.
    tàrí:t   tàrì:tyɛ́t   tɔ̀rí:t   tɔ̀rì:tík

                                                    NCK 197

Does one say that there are two primary suffixes, a singular with
[-ATR] -ɪːt̪ and a plural with [+ATR] -iːt̪? While this solution
might be made to work here, what does one then do with the word
for 'forehead':

> (7)   Primary sg.   Secondary sg.   Primary pl.   Secondary pl.
>   tɔ́gɔ́c [4]   tɔ́gɛ́ːt̪   tògóːc   tògòːcík
>   NCK 197

Obviously one cannot postulate that the second syllable of every
word has two allomorphs, one [+ATR], one [-ATR]. Clearly, even in
Nandi whatever caused the [ATR] shift has disappeared in the course
of time and [ATR] category shift has become morphologized to at
least some degree.

As a synchronic solution, this is perfectly adequate; however
it does not bring us much forward toward our goal of the recon-
struction of the proto-language: from the point of view of
historical explanation phonological changes which are morphologi-
cally conditioned are never satisfactory. A feeling for pattern
regularity led Saussure to postulate laryngeals in Indo-European
in order to account for ablaut long before Hittite was discovered
and any phonetic justification for them had been found. Within
Semitic the historical linguist is forced to accept independent
quasi-morphemic status for the vowel patterns but that is because
there exists so little variation in the patterns between the Semitic
languages that the linguist is not able to recover the more regular
past which he knows underlies the uniquely idiosyncratic present.

4.   Syncope, umlaut, and consonant assimilation

Proto-Nilotic unity would seem to be, from the point of view
of historical linguistics, reasonably recent--probably no more
than three or three and a half millenia ago, and there is much
which can be recovered through the comparative method. Specifically,
the consonantal variations which are found in the realization of
clearly cognate roots when one compares languages across the entire
family provide us with a clue as to the nature of the lost morphemes.

Before we look at any more individual cognate sets, let us
point out that we are not trying, as yet, to account for every
individual form in each language. We are, at this point of our
investigation of the grammar of Proto-Nilotic, trying to postulate
plausible proto-forms which will account for most of the reflexes
without trying to explain those places where a given sound does not
follow the pattern. Specifically, the proto-forms which we are
proposing here are first approximations. They are to be taken only
as our best guesses so far of the possible starting points of the
phonetic processes which must be postulated for there to be
historical explanation. [5]

Let us look at a case in point. Below are listed the forms
in Column A for 'cow', and in Column B for 'cows' or 'cattle'.
In the Nilotic languages these are felt to be the singular and
plural forms of the same noun.

		A		B	
(8)		Singular - 'cow'	Plural - 'cows, cattle'		
	Shil	dhyaŋ		dhok	TB
	Jur	dhiɛŋ		dhak	Br
	Ach	d yaŋ		dyäŋ-i	Cr
	Lan	d yaŋ		d ok	Dr
	Alur	dhyaŋ		dhok	R
	Luo	dhɪaŋ		dhok	Staf
	Din	weŋ		ɣɔk	Neb
	Nuer	yaŋ		ɣɔk	TB/Ki
	Bari	kɪ-t ɛŋ		kɪ-sʊk	TB/EBLAV
	Maa	ɛnkɪ-t ɛŋ		inki-s̆ u	TM
	Lot	nɛ-t ɛŋ		ne-s uŋ	TB
	Teso	akɪ-t ɛŋ		aki-t uk-u	TB
	Nan	t any		tɪc	TB
	Elgeyo	t any (Prim.)		tʊ:g-a	TB/GCh
		t ɛ: ta (Sec.)			
	Päk	t any		t i:c	TB/Be
	Tatoga	d e d			TB

Let us look at 'cow' first:

We would reconstruct the first consonant of the root as [dh].
In general, the dental-non-dental distinction has been lost in
Acholi and Lango, and the same merger has occurred in the East and
South and is voiceless since East and South have lost the voicing
distinction; always in the South and sporadically in the East.
Since the West has retained a voiced-voiceless opposition and here
is voiced, the underlying form must have been voiced. Since in the
languages which have dental and non-dental d̲ the use of either seems
to be unconditioned, then we most postulate the [dh] as underlying
in this word. The final consonant is, by inspection, [ŋ] with the
only variation occurring in the South. The vowel poses rather more
of a problem, but since East and South agree in general in having
[ɛ] and there are numerous examples showing this sort of glide +
vowel diphthong in the West corresponding to simple vowels in the
East and South, we are led to postulate that the underlying vowel
was [ɛ] and the Western languages all participated in a shared
innovation of what we have termed (section 2 above) breaking. The
obvious reconstruction thus would be **dhɛŋ.[6]

In the plural again, for much the same reasons, the initial
consonant must have been [dh]--although the [s] in Bari and Lotuho
and the [s̆] in Maasai do pose a problem. The final consonant must
have been [k].   The vowel is much more of a problem. Even after
we discard Acholi dyäŋi as probably not the inherited plural form
but a new one formed from the singular dyaŋ by the addition of a
[+ATR] [i], we are left with, on the one hand, the Western languages
having o̲, both [+ATR] and [-ATR], and on the other, the Eastern
languages having u̲, both [+ATR] and [-ATR], while the South has
not only ɪ (that is, one can't really say about Päkot since Beech,
our only source for the plural, did not record [ATR] variations),
but also [c] for the expected [k]. However, if one postulates a
unitary cause for both the front vowel and the c̲ for k̲, one comes
up with an older [-ATR][ɪ], causing both fronting of the vowel and
palatalization of the consonant, so the Proto-Southern-Nilotic vowel

would be [-ATR][ʊ], agreeing with Bari, and the consonant a [k].
Thus, one has both evidence for underlying [ɔ] and underlying
[ʊ], both [-ATR] since we do find a variation in [ATR] value and
we can take it as established that under such conditions [-ATR]
is underlying and [+ATR] conditioned. Considering the plural
alone, there is no basis for selecting between [ʊ] and [ɔ] as the
inherited vowel. However, since one would like to postulate that
the singular and plural are at least tangentially related and the
singular has a mid vowel, we therefore would postulate a mid
vowel in the plural as well. Thus the plural would seem to
reconstruct to **dhɔk.

However, while these are the obvious reconstructions, they
are by means satisfying ones in that the singular and plural
resemble each other too much to be satisfactory candidates for a
case of suppletion, but not enough to be paradigmatically the
same root. One could, of course, simply invoke Margaret Bryan's
well-known hypothesis of an N/K substratum (Tucker and Bryan 1966:
23f), and shrug one's shoulders at the vowel difference. However,
an N/K substratum is intuitively disturbing. If two languages
share some feature, this is the result of either their common
origin or the outright borrowing of a morpheme from one language
by another. Mere juxtaposition of two language groups does not
cause the one to get a feature of the other. What is really
disturbing is that this N/K variation is almost always part of
the root, as Miss Bryan herself notes. It is most interesting to
note that the nasal occurs in the singular and the non-nasal in
the plural. The borrowing of a condition on root formation would
be noteworthy indeed! This sort of variation in a language family
which is notorious for the non-predictability of its plural
formation on the basis of the singular leads one to wonder if the
line of attack by previous linguists has not grabbed the problem
at the wrong end.

Let us see if a solution cannot be achieved which is more in
line with what is known in general about the directions of
historical linguistic change. As general tendencies in the world's
languages we know that back vowels front much more often than front
vowels back, that [k] goes to [c] and not vice-versa and that
stops frequently become nasalized while the change of a nasal stop
to an oral one is extremely rare. With these general historical
tendencies in mind let us examine the singular and plural which we
have reconstructed, **dhɛŋ and **dhɔk. These forms do permit a
rational analysis if we decide, on the basis of back vowel vs.
front vowel and k vs. ŋ that the plural we have reconstructed is
indeed the original root. Such an analysis is not only phonolo-
gically desirable but also semantically justifiable--the 'singular'
still retains in many of the languages the meaning 'one head of
cattle' as well as the meaning 'cow'; that is, the singular was,
in origin, a singulative derived from a collective. What then
was the nature of the derivational morpheme involved? Well, while
it has disappeared, its traces have not. It must have contained
a front vowel, in order to account for the fronting of the root
vowel, and a nasal, which would account for the nasalization of

the root-final consonant.[7] This would suggest a suffixal morpheme of the shape *-In (which is still present in Eastern Nilotic as an affix--a prefix in Maasai, a suffix in Lotuho). The derivational history we would see is:

(9)   Base form   *dhɔk
      Singulative formation   *dhɔk + ɪn
      Fronting   *dhɛk + ɪn
      Vowel syncope   *dhɛk + n
      Consonant assimilation   *dhɛŋ

This still leaves unaccounted for the variation between [+ATR] and [-ATR] u and o, and, indeed, the raising of o to u in the Eastern and Southern languages. However, since the [ATR] variation, at least, is sporadic, it is obviously something which happened in individual languages at some time between Proto-Nilotic and today, and we are by no means, at this early stage of our investigations, prepared to even guess about the individual development of each of the languages.

The word for 'cow/cattle' is but one example of many where one would wish to posit what surfaces as the plural in the modern languages as the base form from which the singular is derived. In Hall, et al. (1974) we suggested that it was precisely such a process of derivation of singulars from collectives which accounts for what Tucker and Bryan (1966) have termed 'Reverse Category Shift', that is, a seeming case of a [+ATR] vowel becoming [-ATR] under conditions of inflectional derivation.

5. Breaking
    To continue our discussion of vowel processes let us turn to breaking and to the word for 'dog':

(10) Shil   guŏk   TB
      Jur   guok   Br
      Ach   gwok   Cr
      Lan   gwok   Dr
      Alur   gwok   R
      Luo   guok   TB
      Din   j o   Neb
      Nuer   jiok   TB
      Bari   lʊ-j i -nte   EBLAV
      Lot   xi-ŋ ok   Mur
      Teso   eki-ŋ ok   TB
      Kar   e-ŋ ok   W
      Nan   s es-e   Ho
      Päk   k u:k-îy   TB
              Proto-Nilogic *gok

Here we assume that the form in the protolanguage was a true singular with a shape something like *gok. The initial consonant poses no real problem, except that it leads one to postuldate a prefix in Dinka, Nuer and Bari which caused the *g to palatalize to j, i.e.

a prefix with a front vowel which also caused the root vowel to
front. It is equally obvious that this was a Proto-Nilotic prefix
not to be equated with the lʊ- prefix in Bari (in fact, the apparent
prefix in Bari is probably cognate with Proto-Nilotic *lɔ 'wild
animal' and we have in Bari a nominal compound which is quite
literally 'wild dog' which is its gloss in Bari today). Again the
initial ŋ in Lotuxo, Teso and Karamajong argues that the prefix
in these languages was not e- or eki- but *en- or *ekin-, that is,
some common Eastern Nilotic prefix was involved which resulted in
a juxtaposition of -n + k- and assimilation to a nasal velar stop.
We have included the Nandi word sese for the sake of completeness
but, while g to k to s is not outside the bounds of possible sound
change, the fact that the word in Päkot is ku:kî̯y leads us to doubt
seriously that the Nandi word is cognate.[8]

The vowel is the feature on which we are focusing our attention.
In the Western languages we have a diphthong uo/wo[9] which has fronted
in Nuer and lost its first member in Dinka. In the Eastern and
Southern languages we have a monophthong o or u (the i in Bari being
the result of fronting by the same prefix which palatalized the
consonant). One can argue either that we are dealing with an
original diphthong which has monophthongized in the East and South
or with an original monophthong which has undergone breaking in the
Western languages. On the basis of words like 'bird'

(11)	Shil	wɪny-ɔ̗	TB
	Jur	winy-o	W
	Anyuak	wɛ -yo	W
	Ach	wɪny-ɔ	TB
	Lan	wɪny-o	BC
	Alur	winy-o	BC
	Luo	wɪny-ɔ	TB
	Bari	k-wɛn (pl.)	Sp
	Lot	x- eny	Mur
	Teso	ek-weny	HL
	Proto-Nilotic *wɛny		

(where, except in Lotuho, an inherited glide plus vowel is
retained in all languages) we believe we are here dealing with a
breaking. On the basis of what we now know about Proto-Nilotic,
it seems to be the case that inherited e and inherited o, both plus
and minus [ATR] broke in the Western dialects under conditions which
are still to be determined.

This becomes even more apparent when we compare the word for
dog with one of the 'blood' words,

(12)	Shil	kwar-ɔ	'red'	W
	Ach	kwar	'red'	Cr
	Lan	kwar	'red'	Dr
	Alur	ma-kwar-u		G
	Luo	ma-kwar	'red'	Staf
	Nuer	kwar		G
	Bari	k ar-i	'redness'	G
	Maa	o-s ar-gɛ		TM
	Lot	a-x ɔ-tɔ		Mur
	Teso	ao-k o -t		HL
	Nan	k or-oti		Ho
	Päk	ki:s-en		Be
		Proto-Nilotic *kɔr		

'grandfather',

(13)	Shil	kwar-o		Koh
	Ach	kwar-o		Cr
	Din	kɔ-kwar		W
	Nuer	kwar-o	'chief'	W
	Bari	kuar-ityo	'grandchild'	Sp
	Maa	ɔla-k u -yia		TM
	Lot	a-x o -nyi		EBLAV
	Nan	maca-k or	'grandchild'	Ho
	Päk	ku-k o	'grandparent-grandchild relationship'	Be
		Proto-Nilotic *kor		

and 'eye'

(14)	Shil	waŋ		Koh
	Jur	γɔŋ		Br
	Ach	wa·ŋ		Cr
	Lan	waŋ		Dr
	Alur	waŋ		BC
	Luo	waŋ		Staf
	Din	ny- in		Neb
	Bari	k- ɔŋ-ɛ		EBLAV
	Maa	ɛnk- ɔŋ-ʋ		TB
	Lot	x- ɔny-ɛk		Mur
	Teso	ak- oŋ-u		HL
	Nan	k- ɔ:ŋ		TB
	Päk	k- ɔ:ŋ		TB
		Proto-Nilotic *ɔŋ		

If one started with the diphthong as inherited it would be difficult to explain why both <u>wa</u> and <u>wo</u> would monophthongize to <u>o</u>; the breaking assumption, on the other hand, poses a less difficult question.

Concerning the ultimate cause of breaking we are, as yet, completely unclear. Three possibilities suggest themselves: <u>First</u>, that the specific type of breaking was conditioned by the quality

of the vowel in the following syllable. Perhaps a following u caused o to break to wo whereas a following a caused it to break to wa. The second possibility is that the kind of breaking which resulted was caused by a shift in stress and/or tone (cf. Spanish and Italian) with, perhaps, the position of the affix playing some role, that is, prefixes causing one kind of breaking and suffixes another.

Our third tentative hypothesis is that the breaking to wa occurred with inherently short vowels whereas the breaking to wo occurred with long vowels. This last, at least by itself, is probably the least attractive proposal because at least some breakings co-occur with a change in the final root consonant, which suggests that some additional morpheme was present which caused the change.

Of course, it may be the case that the true historical causes for the different breakings were some combination of all three.

6. Conclusion

In the etymologies which we have presented we have dealt only with nominal stems. This was by design because the verb in the Western languages presents such complexity that to even outline the scope of the problem would require much more space than is available. Suffice it to say that in Dinka, Nuer and Shilluk, breaking seems to be a living morphologically-conditioned process which exhibits great complexity. While not a living process in Acholi or Luo today, it certainly was once one. By means of breaking and lengthening of the stem vowel, and change of [ATR] category, as well as changes in the final consonant of the root there are produced verb tenses; the active vs. passive distinction; the difference of applicative vs. qualitative function; as well as the derivative verbal roots of the frequentative, intensive and directional. (Tucker 1955 is the most detailed presentation of this.)

Although we have found considerable evidence for reconstructing plus and minus [ATR] categories as a property of the proto-language, we have found absolutely no evidence, other than perhaps the different breaking phenomena, to suggest that there was distinctive vowel length in Proto-Nilotic, despite the fact that vowel length plays a major lexical and morphological role in many of the daughter languages.

There is much that we have learned about Proto-Nilotic that we have not had space enough to discuss. There are also many questions that remain, for example the origin of the s's which occur in Luo and in the Eastern and Southern languages; some would seem to be derived from Proto-Nilotic k or g but the evidence is far from clear.

Footnotes

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enthusiastic interest in our project. Coming as it does from
someone who has detailed and intimate knowledge of several of
these languages, his encouragement has meant a great deal to us.

This is primarily a work of library research and, as such, it
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verance of the members of the Interlibrary Loan Department of the
Paul Klapper Library of Queens College. We would like to take this
opportunity to express our gratitude to the Director of the Inter-
library Loan Department, Mrs. Mimi B. Penchansky, and to her able
assistants, Mrs. Ruth Hollander and Mrs. Beatrice S. Sheiken.

[1]In our citation of forms we have attempted to follow our
sources exactly; however, we have normalized the orthography of
consonants in our sources to the Rejaf Conference conventions (cf.
Tucker 1971:624f.) wherever it was possible to do so unambiguously.
We therefore represent the interdental series of stops as [th], [dh],
[nh]; we use [ny] for the palatal nasal. In the case of vowels we
have not altered our sources with the exceptions of Westermann (1912)
where we have substituted IPA symbols according to the values given
in his table on p. 2ff., and also in the case of Tucker and Bryan
where we have substituted a̠ for their æ to represent the [+low,
+ATR] vowel of Southern Nilotic. The exact source of each form
which we cite is indicated by an abbreviation following it; these
abbreviations are given to the left of the bibliographical citation
of each work in the Reference section which follows.

[2]It is worth noting as a historical aside that priority for
the recognition of voice quality as a phonologically significant
phonetic event would seem to belong to Fr. J. P. Crazzolara, F.
S.C.J. who first pointed this out in his *Outlines of a Nuer Grammar*
(1933:2f.). This phenomenon was first drawn to the attention of
linguists in general by A. N. Tucker in his report "The function of
voice quality in the Nilotic languages" at the II International
Congress of Phonetic Sciences (1936).

[3]Here we are following Tucker and Bryan (1966) exactly in their
phonetic representation: underlined vowels are [-ATR], non-underlined
are [+ATR]. In Dinka--as in Nuer and Shilluk--voice quality (the
direct concomittant of tongue root position) and tongue body place-
ment seem to vary absolutely independently of one another (cf. Tucker
and Bryan 1966:402f.--we have confirmed their comments there from
our own informant work on two dialects of Dinka). Thus in Dinka one
may find both "open" and "closed" o̠ as both plus and minut [ATR]
(i.e. [ɔ], [o], [ɔ̠], [o̠]) and so too with the other vowels. Neither
tongue root position/voice quality nor tongue body height and place-
ment seem to equate in any simple way in the Nilotic languages with
the categories "tense" and "lax" which have been used for describing
Western European languages (cf. Stewart 1971:198ff. for a similar
disclaimer for West African languages). It is also worthy of note
that vowel length is a third, completely independent variable.

[4]In Nandi-Kipsigis-Elgeyo (but not in Päkot) [-coronal]
consonants voice automatically in intervocalic position. We are
following the convention established by Tucker and Bryan of indica-
ting this change in the orthography.

[5]Our ultimate goal in our historical study of the Nilotic languages is, of course, thoroughgoing explanation, not piecemeal lists. That is, here in this paper we are presenting tentative Proto-Nilotic roots the exact shapes of which we cannot as yet defend. Our goal is to present unitary defensible roots for each reconstructable word. In order for a statement of linguistic change in Nilotic to reach explanatory adequacy there are two major preliminary steps which must be completed:

   i. The data base throughout the family must be really sound. At present it is only the data in the various works of Tucker, Tucker and Bryan, and Crazzolara, and perhaps Spagnolo which is credible on simple terms of observational adequacy. All of the other authors, without exception, tend to be casual about vowel length and quality and cavalier about tonal distinctions (when not utterly oblivious of their existence).

   ii. There must be a study for each of the daughter languages of both the morphophonology (including, necessarily, internal reconstruction) and the morphosemantics, using comparative evidence to establish for each the morphological categories which in it are more or less covert but which in other, closely related, languages find overt expression.

[6]This is a starred starred-form. That is to say, the star nearest the form indicates that it is a reconstructed form, the star preceding this that it is an incorrect reconstruction.

[7]The interchange between root final oral and root final nasal stops is an active morphological process in Dinka and Shilluk today. As it is realized in these languages, the oral stops become homorganic nasals when they are root final on nouns which are followed by possessives, adjectives, or noun modifiers (see Tucker and Bryan 1966:407). In Luo and Adhola an analogous and almost certainly historically related process occurs whereby under similar syntactic conditions final nasal stops become nasal plus homorganic voiced oral stop clusters (see Tucker and Bryan 1966:407f.). In both of these cases the triggering mechanism was quite clearly the relativizer *na. The morpheme which we postulate below which caused the change from *dhɛk to *dhɛŋ was certainly not the relativizer but we believe it is reasonable to assume that the historical phonological process was the same.

[8]Sese is an example of the sort of maddening problems which face the historical linguist. In the discussion following our presentation of this paper, Chet Creider volunteered the information that Kipsigis (which is almost identical with Nandi) has the word ŋok 'selfish person' which is probably cognate with the Proto-Nilotic word for 'dog' and the semantic shift of which is certainly well within the bounds of possibility. He said he had always assumed that sese was borrowed from Gusii esēse 'dog'. However, Derek Nurse, who has done a great deal of work on Gusii, informed us that esēse does not fit the phonological pattern of Gusii and he had always assumed it was a Nilotic loan in Gusii. While it is, of course, possible to postulate the steps whereby P-N *gok became Proto-Kalenjin *kuk (cf. the form in Päkot), and then sese in Nandi and Kipsigis, there is no compelling evidence available to show that in fact this did happen.

[9]Our sources vary considerably on whether a given word has uo or wo, ie or ye. From the descriptions of the various languages it is not clear to us that there is any case where there is a contrast between u and w or i and y as the onglide of the diphthong. We suspect that such differences may exist for some languages but that, if they do, they are interrelated with other facts of voice quality and tongue height in the articulation of the following vowel. In this paper we are assuming that, whether uo and wo, ie and ye represent orthographic variations of the same phonetic reality or are phonologically significant, the historical process of which they are the end product was the same and hence any distinction between them can be ignored for our purposes.

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