PROBLEMS OF STRESS PLACEMENT IN SWAHILI*

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Stress in Swahili is typically penultimate; the only examples of non-pen-
ultimate stress are found in loanwords usually of Arabic or Persian origin.
Even if the stress of the original form were penultimate, it often shifts due
to the breaking up of certain non-Bantu consonant clusters within the form by
the historical addition of epenthetic vowels or the addition of a final vowel
to maintain the canonical form of the open syllable. In some of these forms,
there is variation between penultimate and non-penultimate stress due to the
different degrees of assimilation. Constraints on this variation could also be
stated in sociolinguistic terms. There are very few minimal pairs which demon-
strate contrastive stress.

We will begin by considering three separate analyses of Swahili stress:
Harris [1951], DeLany [1967], and Polomé [1967]. In Harris' analysis, a stress
phoneme is not required. "Non-∅ stress occurs on the penultimate syllable of
every utterance and on various other syllabics but never on two successive syl-
labics." He breaks down the utterance into successive parts so that each of
these parts (i.e. words) will have penultimate stress. He then places a word
boundary symbol, #, directly after the vowel following the stressed vowel.
Stress therefore becomes dependent on phonemic word juncture. For Harris, this
eliminates the problem of whether to assign a C following V# to the next word
since, by definition, it must be.

Harris sees a potential problem of phonemic overlapping where no such prob-
lem exists. He claims that in a cluster $V_1V_2V_3$ where V_2 is /i/ or /u/, stress
will fall on V_1. He posits both [i] and [y] as allophones of /i/, and [u] and
[w] as allophones of /u/. Therefore, in a cluster of this type where V_2 is
either /i/ or /u/, /i/ is realized phonetically as [y] and /u/ as [w]. His
claim here that [y] and [w] are not phonemic is inaccurate. Minimal and near
minimal pairs exist which show a contrast between the two, e.g. kúwa 'to be',
kuúa 'to kill' or, with identical stress patterns, walímu 'teachers',
ualímu 'school for teachers'.

DeLany [1967] claims that stress is not phonemic but "dynamic" although
the latter term is never defined. Three degrees of stress are set up: primary

($\acute{V}$), tertiary ($\grave{V}$) and weak (or $\emptyset$) stress. However, since stress, like tone, is relative and since there is no stress between what is called primary and what is called tertiary, the term "tertiary" is misleading (except perhaps insofar as the study was intended as a contrastive analysis of Swahili and North American English). Primary stress occurs on the penultimate syllable, e.g., nyúmba 'house', nyumbáni 'in the house'; alitengenéza 'he repaired', alimtengenezéa 'he repaired for him', etc. "Irregularities in the accepted stress pattern [i.e. non-penultimate stress] occur in a few isolated cases most of which are words of foreign origin," e.g., lázima 'necessity', gháfula 'suddenness', amérika 'America', áfrika 'Africa'. DeLany fails to point out, however, that many of these forms have been quite well assimilated into the language; in fact, most of his examples are forms in which penultimate stress varies freely with non-penultimate stress.

The minimal pair barabára 'highway', barábara 'exactly' are cited but DeLany simply states that these "may appear to contradict a previous statement that stress is not phonemic." This also partially contradicts what he claims earlier, since both forms are loanwords. Barábara is probably Persian in origin and barabára a doubled form of Arabic barr 'land (as opposed to sea)'.

DeLany's statement that these forms have not been completely assimilated must therefore be modified. Furthermore, forms of this type often demonstrate different degrees of assimilation. Some retain a final consonant or consonant cluster, e.g. sim 'telephone' (from Farsi) but varying with its assimilated counterpart, e.g., símu . Others already had the final open syllable in the original form. That is, a loanword may drop a vowel or a consonant or a combination of the two, depending upon its shape in the original language. For example, certain loanwords with the shape CVCVCV may also have the shapes CVCCV or CVCVC. Cases where the final vowel is dropped are more common among speakers of Arabic. This leveling is further supported by the fact that in some forms, stress is invariant, e.g., itália 'Italy'. In a few cases, the variation occurs infrequently, e.g., afríka 'Africa' but occasionally áfrika . Most, however, have a more flexible variability in stress, a fact which DeLany never mentions, e.g., lázima ~ lazíma 'necessity'; kadhálika ~ kadhalíka 'likewise' where the second form of each pair shows characteristic penultimate stress.

Polomé [1967] agrees with the analysis of non-penultimate stress in the case of certain Arabic loans but does not mention loanwords from other languages, many of which have penultimate stress. For example, the English borrowings buráshi 'brush' and bulangéti 'blanket' both contain an epenthetic vowel inserted to break up the initial clusters of br and bl respectively, although the variant blankéti also occurs in certain dialects. Notice, however, that stress could have followed that of the original English form, i.e., *bulángeti or *blánketi but does not, although one would surmise that at some earlier stage of the language, the stress varied for a while and finally shifted. Polomé claims that the pair barabára 'highway', barábara 'exactly' (cf. above) proves that stress is phonemic. Furthermore, he perceptively notices another apparent example of contrastive stress in the pair watáka#kázi 'they

want work', wataka#kázi 'those wanting work', the latter being a reduced
form of the relative construction, i.e., 'those who want work'. This latter
stress alternation, however, is predictable on grammatical grounds defined by
different underlying phrase-markers in much the same way as Adj-Noun and Noun-
Noun pairs are predictable in English, e.g., blùe jéans vs. blúe jèans .

   For descriptive purposes, we can divide loanwords into four major types:
   Type 1: Those with penultimate stress, e.g., barabára 'highway', kitábu
'book';
   Type 2: Those in which stress varies stylistically from pre-penultimate
to penultimate, e.g., kadhálika ~ kadhalíka 'likewise';
   Type 3: Those in which an epenthetic vowel has been inserted into the loan-
word and where stress is penultimate in both assimilated and unassimilated vari-
ants, e.g., heshíma ~ héshma 'honor', warídi ~ wárdi 'pink';
   Type 4: Those in which stress is pre-penultimate, e.g., barábara 'exactly'.
Since certain forms seem to exhibit characteristics of both Type 2 and Type 3,
e.g., occasionally héshima ; wáridi (where, in spite of the epenthetic vowel,
the stress has been shifted), the distinction between Types 2 and 3 may be over-
schematized. Another way of looking at this is to posit a three-fold distinction
between assimilated loans (Type 1), unassimilated loans (Type 4) and partially
assimilated (Types 2 and 3). The term "partially assimilated" here must not be
defined as assimilation of part of the form but rather of variability between
Bantu and non-Bantu characteristics.

   The minimal pair which has been traditionally cited as demonstrating con-
trastive stress turns out to contain one form of Type 1 and the other of Type 4.
The form with non-penultimate stress has a variant form with penultimate stress
but with a slightly modified syllabic structure, e.g., barábara has variants
such as barábar , barába , or even barábr .

   Given the stress patterns of Swahili as described above, we can easily
formalize a set of rules which, inter alia, would account for stress placement
and stress reduction. Each syllable would be assigned primary stress and, by
a subsequent reduction rule, all stresses except that of the penultimate sylla-
ble are reduced. Equivalently, if our only concern were with the assignment
of penultimate stress, we could simplify phonological rules and still correctly
assign stress by using the syllabic structure of the form as a structural index.
Primary stress would automatically be assigned to the penultimate syllable,
using the final word boundary as a reference point. We would also need a rule
deleting a medial or final vowel for those dialects which have either variant
forms or only the unassimilated loan similar to the form in the donor language.
This, by itself, is insufficient, however, since there would still be no way of
predicting stress for those forms with non-penultimate stress, e.g., kadhálika
'likewise', amérika 'America', etc. except to state that these are stylistic
variants of penultimately stressed forms. Nor would there be any way of cor-
rectly assigning stress to the small set of minimal pairs like barabára 'high-
way' vs. barábara 'exactly'.

   To more clearly understand the nature of such pairs, we must draw a dis-

tinction between a *historical loanword* i.e., a form which has come into Swahili
from another language, and a *phonological loanword* i.e., a word which can be
formally defined as unassimilated, in this case one with non-penultimate
stress. A phonological loanword is, by definition, a historical loanword but
the converse is not necessarily the case. Using this distinction, we can divide
the lexicon into two major sets: *Set I* would include those formatives which
have penultimate stress and are unmarked. A set of stress rules can be easily
formulated to account for the canonical penultimate stress. *Set II* would in-
clude those formatives which have non-penultimate (i.e., pre-penultimate) stress
and are marked in the lexicon with some feature $[L_p]$ indicating a phonological
loanword such that regular Swahili stress rules   must be supplemented with
an additional rule which moves the stress to the preceding syllable. A subset
of Set II would include those formatives which have variable phonetic outputs,
i.e., normal penultimate stress and pre-penultimate stress marked in the lexicon
with the feature $[(L_p)]$ indicating that the rule which applies to that form is
variable according   to the speaker, the style, the speech situation and sim-
ilar sociolinguistic concerns.

     The phonological rules which would be needed to correctly assign stress to
all forms are as follows:
     Stress Placement which assigns primary stress to each syllable. Such a
rule is necessitated within a wider description of Swahili phonology since var-
ious degrees of non-primary stress must be described as well;
     Vowel Deletion which deletes the vowel of the penultimate syllable variably
along parameters of style, education, religion (i.e., Islam which would necessi-
tate some knowledge or use of Arabic), speaking speed, and the like. This would
provide, for example, for a more "Arabicized" pronunciation. Thus, the form
heshíma 'honor' is alternately heard as héshma ; warídi 'pink' as wárdi ,
and so on. There is a related rule which will not be discussed here in which a
final vowel may be deleted along the same lines as the deletion of the penulti-
mate vowel, e.g., símu 'telephone' is sometimes realized as sim ; lázima
'necessity' as lazm ;
     Stress Reduction which reduces all stresses except that of the penultimate
syllable, e.g., barabára 'highway', kadhalíka 'likewise' and so on. Stress
Reduction, like Stress Placement, is necessitated only if describing non-primary
stress as well;
     Stress Shift which allows the primary stress to shift to the preceding
(i.e. pre-penultimate) syllable. This rule is triggered by the presence of the
feature $[L_p]$ which marks the form as a phonological loanword. Note, however,
that the   feature is obligatory in some forms and optional in others, e.g.,
kadhalíka 'likewise', afríka 'Africa' can also be realized as kadhálika ,
áfrika , but barábara 'exactly' and amérika 'America' only as such.

     The following chart shows how these rules apply to the various types of
loanword:

Rule	Type 1	Type 2	Type 3	Type 4
Stress Placement	ˈba ˈra ˈba ˈra barabara	ˈka ˈdha ˈli ˈka kadhalika	ˈhe ˈshi ˈma heshima	ˈba ˈra ˈba ˈra barabara
Vowel Deletion	---	---	ˈhe ˈshma heshma	---
Stress Reduction	ˈbarabara	ˈkadhalika	ˈheshma	ˈbarabara
Stress Shift	---	kadhaˈlika	---	baraˈbara
Meaning	'highway'	'likewise'	'honor'	'exactly'

It could be argued that the actula historical processes which create this vari-
ability in Swahili stress patterns proceeded in the opposite direction. That
is, forms like heshíma 'honor' are really assimilated from the Arabic and not
the other way around. Therefore, a question might arise as to why we need such
rules as vowel (and perhaps syllable) deletion to account for the more Arabi-
cized (i.e. non-Bantu) pronunciation.

The rationale for this directionality is two-fold. First, there is no way
of predicting which vowel would be inserted in the assimilated form. While cer-
tain patterns may emerge under careful scrutiny, e.g., that /i/ is statistically
quite frequent as in warídi 'pink', lazíma 'necessity', etc., or that /u/
is often found after labials as in bulangéti 'blanket', buráshi 'brush',
símu 'telephone', the precise vowel remains unpredictable. Secondly, direction-
ality of phonological rules should not necessarily be predicated on historical
direction, since we are describing Swahili and not English or Arabic or Farsi.
Therefore, it is the Swahili form which is basic and the loanwords which must
be described in terms of the Bantu pattern. Furthermore, while a certain per-
centage of Swahili speakers do have a more Arabicized pronunciation of certain
words, most do not. This is precisely why the distinction between the histori-
cal and the phonological loanword is a crucial one.

The analysis of the basic stress patterns of Swahili outlined above would
clearly have been more complex had we attempted to describe the assignment of
non-primary degrees of stress as well. However, our purpose here has been
simply to demonstrate that there is a systemicity to stress which has been am-
biguously handled in the past. And although we have concentrated primarily on
specific stress-assignment rules, it seems clear that any reasonable theory of
phonology must take into account not only the formal mechanisms of rule applica-
tion but also the dimensions of dialect differentiation and sociolinguistic
variance. While this has been done to a certain extent in the past, it remains
for future research to incorporate such data into a workable theory of phonology.

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