THE VELAR NASAL IN NYOLE (E. 35)

RESUME
Le nyole (E. 35) est une langue bantu parlée en Uganda (voir carte 1). Il fait partie d'un groupe de dialectes appelé le « Grand Luyia ». En nyole, il y a une règle productive disant qu'un [n] prénasalisé est représenté par [p]. Cette alternance, dans une perspective historique, est le résultat d'une mutation de [p] en [n] et de [mp] en [p]. L'auteur défend l'hypothèse que le bantu [p] est devenu [h] par le stade intermédiaire [0], et qu'en nyole, le [h], en voie de disparition, est devenu [n] par un processus de «nasalisation spontanée» qui est conditionné par des raisons acoustiques, articulatoires et structurelles.


Because of technical problems the hypothetical reconstruction is marked.
ACKNOWLEDGMENTS

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1. NYOLE AND GREATER LUYIA

LoNyole is a Bantu language spoken in Uganda, south-east of Mbale, near the shores of Lake Kyoga (cf. map 1). It appears as "Nyuli E. 35" in Guthrie's referential classification. It seems to me that Nyole belongs to the Greater Luyia cluster of the 20 dialects and/or languages, that has emerged from the comparative work by Williams (1973), Mould (1976, 1981), Angogo Kanyoro (1983) and Möhlig (1985).

The relevant linguistic units are listed here together with their addresses in Guthrie's (1970:11-115) classification.

Gisu N. E.31a Masaba: Gisu
Gisu S. E.31b Masaba: Kisu
Bukusu E.31c Masaba: Bukusu
Saamia E.34 Saamia
Nyala W. E.18 Nyala
Songa
Khayo
Marachi
Wanga E.32a Luhya: Hanga
Marama E.32b Luhya: Tsotso
Tsotso
Kisa
Tachon
Kabras
Nyala E.
Nyore E.33 Nyore
Isukha
Idakho
Tiriki
Logooli E.41 Logooli
Two further languages that may or may not belong to this group are mentioned by Williams (1973:2): Ru-Singa - spoken on Rusinga island in the Kavirondo gulf, and LuKonde - spoken on the west and north-west slopes of Mt. Elgon. Likewise, I have not seen any data from LuGwere (E.17), and I have not formed any opinion about the OruSyan material published by Huntingford (1965).

On the other hand, Greater Luyia appears to be neatly distinct from Soga (E.16) etc. to the west, and also from 'Gusi (E.42) etc. to the south.

The geographical position of these languages is indicated on Map 1, adapted from Heine and Köhler 1978 and from Mould 1981.

While it may be justified to call Nyole a Luyia dialect, there is no reason to view it as being identical with or even particularly close to Nyore (E.33) spoken in Kenya.

There are, as far as I am aware, only two published sources on Nyole, both rather short articles: Morris 1963 and Eastman 1972. (Both sources are misidentified as representing Nyore J/E.33 by Bastin 1975 and 1978)

2. PRENASALIZATION IN NYOLE

Nyole has the following phonological inventory:

\[
\begin{array}{cccccccc}
p & \emptyset & b & \beta & m & mb \\
t & s & d & l/r & n & nd \\
c & j & \rho & nj \\
k & x & g & \eta & ng \\
y & w \\
i & e & a & o & u \\
\end{array}
\]

Morris (1963 : 128), describing "sound changes" occurring in the context of prenasalization, notes the following synchronic rule:

\[n + \eta \rightarrow p\]

This rule is quite regular and productive, occurring, e.g., when the 1st person sg. subject concord is added to a verb stem:

\[
\begin{align*}
oxu-\etauliira & \text{ to hear} & \rhouliira & \text{ I hear} \\
oxu-\etaumula & \text{ to rest} & \rhoumula & \text{ I rest}
\end{align*}
\]
We are facing here a phonological rule that is undoubtedly "unnatural" or "crazy". There does not seem to be any phonetic plausibility in the feature changes involved, nor seems the blame to lie with the assumed feature system since this rule has certainly very few - if any - equivalents in other languages.

On the other hand, it would also be very costly to account for this change by some kind of suppletion, thus assuming that no phonological rule is involved. Prenasalization is a very general process in Nyole that should and can be described by a set of interrelated and phonetically plausible rules - with this one exception. The available date show the following changes:

\[
\begin{align*}
n + p & \rightarrow n + \theta \rightarrow \emptyset \\
n + t & \rightarrow t n + s \rightarrow s \\
n + c & \rightarrow c n + d \rightarrow nd \\
n + k & \rightarrow n + x \rightarrow k n + g \rightarrow ng \\
n + m & \rightarrow m \\
n + n & \rightarrow n n + \eta & \rightarrow \eta n + \rho & \rightarrow \rho
\end{align*}
\]

It is data of this that make me believe in unnatural, crazy synchronic rules.

3. THE ORIGIN OF NYOLE [p] AND [b]

Such unnatural rules often - maybe always - arise through a series of sound changes, each of which may be natural enough when taken by itself. This is also true in our case : Nyole p is historically derived from °mp. The normal, unconditioned Nyole reflexes of the Bantu consonants are given below:

\[
\begin{align*}
°p & > \eta °b > \emptyset °m, m °mp, p °mb, mb \\
°t > t °d > l/r °n > n °nt, t °nd > nd \\
°c > s °j, j °n, p °nc, s °nj > nj \\
°k > x °g, g °nk, k °ng > ng
\end{align*}
\]

This table does not show the sound changes occurring before the close Bantu vowels °\i and °\u which may be subsumed under the label "spirantization", often accompanied by devoicing and leading to s and ð. The table also fails to show the effect of Dahl's Law.
(i.e., the voicing of the first of two voiceless consonants in a sequence CVC), leading to b, d, j, and g.

In showing that the synchronically crazy rule $n + \eta \rightarrow p$ is quite natural in historical terms, we have uncovered an even more puzzling historical change: how could the voiceless bilabial plosive change into a voiced velar nasal? Before turning to this question, I shall present the available comparative evidence for the development $°p \rightarrow \eta$. Where no reconstructions are available, I cite cognate items from Ganda (E.15) or Masaba (E.31). The unconditioned reflexes of $°p$ are w in Ganda and h in Masaba. The Bantu reconstructions are taken from Meeussen 1967 and 1980, the Ganda cognates from Mulira and Ndawula 1952, and the Masaba cognates from Siertsema 1981.

NPx cl. 16 =formula_1-

- verbal suffix -$\eta$-
- e.g. -lulu$\eta$ be bitter
- enclitic -$\eta$e where?
- e.g. oline where are you?
- $\eta$ula cut, split
- $\eta$a draw water
- $\eta$a burn (of food)
- $\eta$alaana hate
- $\eta$amba hold
- $\eta$ambia light (a fire)
- $\eta$andixa write
- $\eta$anga be able
- $\eta$anixa hang up
- $\eta$era breathe
- $\eta$eresa send
- $\eta$ima hunt
- $\eta$ona get well
- $\eta$olera be silent
- $\eta$ulira hear
- $\eta$umula rest
- $\eta$ani good
- $\eta$eqi long
- olu-ba$\eta$a wing
- embe$\eta$o cold
- omu-$\eta$ofu blind person
- otu-$\eta$ande few groundnuts

< $°$pa-
< $°$-p-
< $°$-dud-u-p-
< $°$-(j) áp-ud- tear
< $°$-tâp-
< $°$-pâ-
< cf. M uli he(e)na
< cf. G -aka?
< $°$-pâd- quarrel
< cf. M -hamba
< $°$-pamb- put cross-wise
< $°$-pand- scratch soil
< $°$-pâng- make
< $°$-pan-ik-
< cf. M -heela
< cf. G -weereza
< cf. M -hi(i)ma look for
< $°$-pôn- be saved
< $°$-pôd- become cool
< $°$-pûd-(ik-)
< $°$-pûm-ud-
< cf. M -lahi
< cf. M -lehi
< $°$-papâ
< $°$-pêpo
< $°$-poku
< cf. G empande
olu-ŋwa   thorn’    cf. M lìi-wa
esôn’ara   fly’    cf. G enswera

4. THE HISTORICAL PATH OF NYOLE [ŋ]

In reconstructing the path from °p to ŋ it is useful to look at the reflexes of °p in the neighbouring, and certainly closely related languages. Map 2 shows the geographical distribution of the normal, unconditioned reflexes of °p as they occur, for example, in the locative NPx of class 16 °pa-. (Thanks to Angogo Kanyoro, this is the item for which we have the most complete documentation.) The most common general reflexes are h and ŋ. Other Luyia dialects have h/w/y (e.g., North Gisu) as reflexes of °p in complementary distribution, depending on the neighbouring vowel. Very likely, other conditioned sets of reflexes also exist, usually involving various subsets of h - w - y - ŋ. (On Map 2, dialects for which it is known that there is more than one reflex are marked with the difference sign ~.)

Leaving aside the case of Nyole ŋ, we may assume the following chain of changes:

°p  > °f  > h  > ŋ  > w

Mould (1976, 1981) assumes that the change from °f to h must have passed an intermediate stage °, i.e. a voiceless labialvelar approximant. He argues that both h and w could be derived from w by changing just one single feature. I am not convinced by this hypothesis, firstly, because no language seems to attest this stage, and secondly, because the change from ° to h - which occurs widely in the languages of the world - could well be motivated by acoustic similarity rather than seen as a process of articulatory lenition.

Mould is not certain whether the change to h is a characteristic for the whole of Greater Luyia, or whether it only occurred within (part of) Luyia. The problem is as follows: It does not seem to be plausible to assume an unconditioned change h > w; hence, if a language has a general reflex w for °p then we have to assume that this w emerged before the emergence of h. This is the case for Soga (and Ganda) - both clearly non-Luyia. However, it is
also true for South Gisu (Brown 1972:139), and there are isolated instances of it elsewhere; e.g., Bukusu (which dialect?) and (West or East?) Nyala -wa 'give <°-pà-. Therefore, it seems reasonable to assume that the proto-Luyia reflex of °p had preserved some labial articulation.

Returning to our question of Nyole η, we may ask, which of the sounds h/w/∅ is the most likely - or least unlikely - source of the velar nasal η?

One could argue that w is the most likely candidate since it is the only one of these consonants that involves the raising of the back of the tongue and thus shares at least one feature with η. Of course, this does not explain why a perfectly normal oral approximant should become nasal. A shift from w to η is also doubtful because Nyole does have a glide w which is certainly older than the shift w > η; e.g., ewe 'you' weeta (‘o-ita) 'you kill'. Also, Eastman 1972 usually notes w before rounded vowels where Morris 1963 has p; e.g., Eastman -wona 'see' vs. Morris -Bonexa 'appear'. I think, we have to rule out w as the historical source for Nyole η.

The development of η ex nihilo is even less likely. Suppose °pa-had changed to a-, then how could the speakers re-introduce the new consonant exactly in the right positions e.g., a- > ηa- in class 16, but not replacing the locative prefix e- by ηe-.

This leaves us with the hypothesis h > η. In order to understand this assumed sound change, we have to recall some details about the phonetic nature of these two sounds.

5. THE PHONETICS OF [h] and [η]

Following Peterson and Shoup 1966 we assume that h is not just air passing through the glottis which is held open in the position that is characteristic for the production of voiceless sounds. Rather, the vocal cords are initially held together or narrowed except between the arytenoid cartilages. The sound that is characteristic for h is then heard during the transition from the whisper position to the following vowel. This transition can be either directly to the voiced vowel position, or first to a voiceless
position. This is presumably the difference between the Dutch and the English h, the latter being "noisier" and less "soft" than the former.

We may assume that it is the "soft" h (the direct transition to the voiced state of the glottis) that is particularly prone to be lost, or to develop w and y as allophones in the environment of a following round or front vowel. It may also be this kind of h that can develop into a velar nasal.

Ohala (1975) gives three reasons why this may happen. The first two apply to all glottal and pharyngeal consonants and merely explain why nasalization COULD occur; the third argument applies specifically to h and shows why it WOULD occur.

"An open velopharyngeal port would not prevent the build-up of air pressure behind the glottal or pharyngeal constrictions since it is in front of those constrictions" (pp. 300-301).

"The noise produced by voiceless glottal and pharyngeal obstruents is so diffuse, so low in intensity, and with higher frequencies dominating in the spectrum that oral-nasal coupling, would have little acoustic effect on it" (p.301).

"[h] may produce an effect on vowels that "mocks" that of nasalization... The spectrum of the vowel will be changed in the following ways: there will be upward shifting of formants, especially F1 ..., increased bandwidth of the formants, presence of anti-resonances in the spectrum and an over-all lowering of the amplitude of the vowel... This is identical to the effect of nasalization on vowels" (p. 303).

Spontaneous nasalization of h can therefore be seen as having an acoustic rather than an articulatory motivation. It has been observed to occur sporadically in far-apart linguistic areas of the world though not – as far as I am aware – from Luyia. An East-African example is Digo (E.73) where h is optionally nasalized and this nasalization may extend over neighbouring vowels. (This has been pointed out to me by D. Nurse, pers. comm., and it can be verified by comparing different sources on Digo in the
The only remaining question is, why the newly introduced nasal consonant is velar rather than some other point of articulation. There are good reasons for this, both language specific and general phonetic ones. In Nyole, as in many other Bantu languages, the velar nasal has a rather marginal status. Prior to its introduction as a replacement for h, the velar nasal occurred in Nyole only (?) as the result of Meinhof’s Rule, e.g. in qombe ‘cow’. Its low functional load left it free to take on new tasks without creating ambiguous words. Phonetically speaking, its acoustic properties make the velar nasal less perceptible than other nasals. Ohala (1975:297) therefore expects "[ŋ] to be most prone to change or deletion" and - we might add - also to be created.

The Nyole sound change h > η is certainly rare, but probably not unique. Matisoff (1975) describes a variety of cases exhibiting something which he calls "rhinoglottophilia", i.e., the affinity between nasality and the "glottal" sounds ? and h. He lists such correspondences as Thai ‘snake’, which is ηuu in Bangkok and huu in Southern Thailand. He also deals with the letter "a-chung" in This letter occurs either in word-initial position representing a CV syllable, or as a purely consonantal prefix before root-initial voiceless aspirated and voiced obstruents. Its prevocalic pronunciation is zero in Central (Lhasa), ? in Western, and η in Eastern Tibetan. However, before a voiced consonant, the a-chung is realized as a homorganic nasal.

written Tibetan: ...V + hC... example:k’a-hdon
pronunciation: ...VN $ C... kʰ an$dön
written prayer’

According to Matisoff, the sound represented by a-chung has changed from an original glottal sound to a nasal. Unfortunately for me, Matisoff favours ? as the proto-a-chung. While certainly not qualified to
challenge his reconstruction, I think that $h$ (the "soft", Dutch type, that is immediately followed by voice) should be reconsidered as an alternative: In Tibetan, (1a) there is a $\beta$ that is distinct from both $h$ (the "strong", English type?) and a-chung, and (1b) the reflex $\varphi$ is probably more easily derived from $h$ than from $\beta$. Also, more generally, (2a) Matisoff's case for a glotto-nasal link is stronger for $h$ than for $\beta$, and (2b) the change $h > N$ is phonetically more plausible than $\beta > N$.

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MAP 2: General reflexes of *p