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NASALITY IN KISI

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This paper presents the various manifestations of nasality in Kisi, a Mel language belonging to the Southern Branch of (West) Atlantic. In this language, as in many West African languages, nasality plays a prominent role in the language's sound system and grammar. Nasality in Kisi is realized phonetically on both consonants and vowels and phonologically on consonants. There are even cases of 'spontaneous nasalization', situations in which there is no nearby nasal segment to contribute the nasal feature. Nasality may also function in the morphology and is used expressively for emphasis. The findings reported here will be of use to those interested in reconstruction and diachronic processes within Niger-Congo, e.g. Stewart 1983, 1985, Hombert 1986, Williamson 1987, as well as to language typologists, e.g. Ferguson 1963, 1975, Ruhlen 1978, Maddieson 1984, Herbert 1986.

Ce travail décrit les différentes réalisations de la nasalité en Kissi, une langue mel du groupe (ouest-) atlantique. Dans cette langue, ainsi que dans plusieurs langues de l'Afrique occidentale, la nasalité est importante tant au niveau phonologique que grammatical. Malgré l'absence de voyelles nasales phonologiques, la nasalité se manifeste phonétiquement sur les consonnes et sur les voyelles. Il y a aussi des exemples de nasalisation spontanée qui montrent que les voyelles peuvent être nasalisées sans qu'elles se trouvent dans le voisinage de consonnes nasales. La nasalité peut également jouer un rôle dans la morphologie pour mettre en valeur des expressions spécifiques. Les résultats de la présente analyse seront utiles à ceux qui s'intéressent à la linguistique diachronie et à la reconstruction des langues Niger-Congo, par exemple, Stewart 1983, 1985, Hombert 1986, Williamson 1987, ainsi qu'à la typologie, par exemple, Ferguson 1963, 1975, Ruhlen 1978, Maddieson 1984, Herbert 1986.

O. INTRODUCTION

I use the term 'nasality' to refer to both the feature [nasal] in segments as well as to nasalization processes. In Kisi, for example, nasality (as a feature) differentiates nasal stops from voiced stops; Kisi also has vowel nasalization, the spread of nasality onto vowels from adjacent nasal segments. Both of these phenomena will be included in my discussion of Kisi nasality.¹

In articulatory terms nasality is easily described as the lowering of the velum, thereby opening up the nasal passage as a resonating chamber. In acoustic terms, nasality produces the same effects as many other processes. In providing anti-resonances or 'zero's', nasality, for example, dampens the resonances of vowels and can lead to neutralizations of vocalic contrasts (Ohala 1975). Although nasalization can blur vocalic distinctions, nasal consonants (nasals) are perceptually salient, as evidenced by their presence in nearly all of the world's languages, their diachronic stability (cf. Bolé-Richard 1985), and their distinctiveness in perceptual tests (Maddieson 1984:70).

From a typological perspective, nasals are expected in segment inventories, according to Ferguson's first 'assumption'.

Every language has at least one primary nasal consonant (PNC) in its inventory, where a PNC is a phoneme whose most characteristic allophone is a voiced nasal stop (Ferguson 1963:44).²

A second relevant assumption is that no language has secondary nasal consonants (SNC's) unless it also has one or more PNC's. An SNC is 'a nasal consonant phoneme

¹ The data for this study were collected with the aid of a Humanities Graduate Research Grant from the University of California at Berkeley, and a Fulbright Research Grant. Thanks go to José Tourville and Kay Williamson for their helpful comments.

² Maddieson finds this generalization to be true in 96% of the languages he surveyed (1984:61).

the most characteristic allophone of which is not a simple voiced nasal' (1963:45).³

Areally and genetically the most remarkable use of nasality in this part of Africa is in prenasalized stops. Although prenasalized stops are relatively uncommon in languages of the world (despite being found in both Oceania and Amerindia (Herbert 1986:6)), they are richly distributed in the languages of Sub-Saharan Africa.

There are several good reasons for looking at how nasality plays itself out in Kisi. One is the abundance of nasal processes and segments, including prenasalized stops. Within the Southern Branch of Atlantic, Kisi is of special interest because Kisi is the only language to have phonemic prenasalized voiced stops. Another reason for examining Kisi nasality is the diachronic stability of nasals cross-linguistically and that fact's importance for comparative work. An understanding of nasality in one language can assist the search for cognates. Because there are similar and more extensive investigations into nasality, e.g. Williamson 1987, even wider comparisons can be made. A final reason is that no such study has yet been performed either for Kisi or for any of its closest congeners.

The purpose of this study is descriptive and is couched in theory-neutral terms, Greenberg's 'language of observation' (1970). A more purely phonological analysis has been presented (Childs 1988), and a consideration of these facts from a diachronic perspective within a process-oriented framework appears in Childs 1990. The first part of my discussion introduces the consonantal inventory of Kisi and the second looks at nasalization processes. I conclude by discussing directions for further research.

1. INVENTORY AND PHONOTACTICS.⁴

Below appear the consonants of Kisi and a schematization of syllable structure. As is common in this part of Africa, there are a number of double-articulated consonants, the labial velars. Parentheses enclose segments of limited distribution and questionable phonemic identity.

1. Kisi consonantal inventory and syllable structure

	Lab	Alv	Pal	Vel	Lab-Vel	Glott	
Nasals	m	n	ny	ng	(ngm)		
Prenas.	mb	nd	nyj	ngg	ngmgb		N
Voiced	b	d			(gb)		C (G) V ({V})
							L
V'less	p	t	c	k	kp		
Fric.		f	s			h	L = /l/
Liq & gl		l	y		w		N = /m/, /ng/

The basic configuration of the Kisi syllable is CV(V) with an optional nasal (only /m/ or /ng/) or a liquid (/l/) closing a short syllable.

³ Maddieson amends this slightly to say that it's true if it applies to each type of secondary nasal, rather than the entire set. Some languages have more than one SNC type. On the basis of several West African languages, Maddieson notes that prenasalized stops in particular are often an exception to this generalization, and that they should be excluded from the definition of SNC's, because they often replace voiced stops (1984:65). As will be seen below, Kisi has equal numbers of nasals (PNC's) and prenasalized stops (SNC's).

⁴ Conventions: ng - velar nasal [ŋ]; ny - palatal nasal [ɲ]; c - alveopalatal affricate [tʃ]. Pre-vocalic glides are represented in the orthography by 'u' for the labiovelar glide and 'i' for the palatal glide. @ - schwa, the mid central (lax) vowel [ə]; E and O - lowered vowels.

Nasal stops. Kisi has a full series of nasal stops, the three most frequently appearing nasals being the bilabial, alveolar, and velar nasals. Some neutralization has taken place with respect to the alveolar and velar nasal in favor of the velar nasal. This neutralization takes place, for the most part, in just those environments identified by Ferguson's assumption V, 'in prejunctural and/or pre-consonantal positions' (1963:45). (Examples illustrating neutralization in pre-consonantal position will be more fully discussed below.)

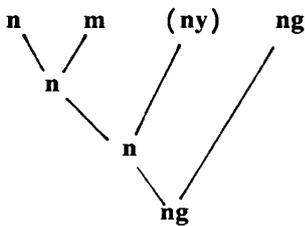
2. [n] alternating with [ng] in Kisi codas

- a. [sun]/[sung] 'later' (cf. **sunsun** 'later')
- b. **hung** 'come (finite)'
hunOO 'come (non-finite)'
hung + OO
 come + non-finite marker
- c. [tunOngndo]/[tungOngndo] 'to deprive oneself'
tung + Ong + o
 deprive + Middle verb extension + non-finite marker

The bilabial nasal, on the other hand, can appear initially, medially, or finally in syllables and morphemes, and always contrasts with the other nasals.

That neutralization should take place between the alveolar and velar nasal does not follow the pattern predicted by Chen based on the facts of Chinese for nasal merger after vowel nasalization (1973, as reported in Ruhlen 1978:225). According to Chen, the bilabial nasal should first merge with the alveolar nasal. After the nasals have nasalized vowels, Chen reports **m** and **n** merge in **n**, then **n** and **ng** merge in **ng**, then **ng** disappears. Ruhlen reports a similar process in French, with the additional feature that the palatal nasal also merges with the dental nasal (Ruhlen 1978:225).

3. Nasal merger after nasalized vowels



If this is indeed the universal or unmarked pattern, some explanation is needed why Kisi does not follow the expected pattern. Language-internal reasons suggest why the velar nasal might be expected to dominate in neutralized contexts, especially in syllable codas. The most important fact is that only the velar nasal appears word-finally. Thus the facts of syllable-final position may be partially recapitulating the facts of word-final position.

Cognates in related languages suggest that the word-final velar nasal may be unique to Kisi. In the noun class systems of these languages, where Kisi has a velar nasal finally, its close relatives, Sherbro and Krim, have nothing.

4. Sherbro, Krim, and Kisi correspondences

(Data from Pichl 1964 and author)

Kisi		Sherbro	Krim	Kisi
		0#	0#	ng#
Class	Gloss			
<u>le</u>	inan. sg	li-/li	li-/li	-leng
<u>ng</u>	col/pl	ng-/	mo-/mō	-Vng
<u>ma</u>	liquid	ng-/	ma-/ma	-ang
<u>la</u>	inan. pl	thE-/thE	ta-/ta	-lang/-tang

'V' represents the partially specified vowel of the ng-class suffix.

Another reason for the prominence of the velar nasal is that it operates as a do-everything morpheme or as the final segment of other morphemes in this position, much in the same way as alveolars operate in English (-s, -ed).

5. The multifunctional velar nasal

-ng/-ung/-nung	middle verb extension
-ng/-Vng	noun class suffix, ng-class

As the second example suggests, ng functions importantly in the noun class system, being the final segment, for example, in four of the seven noun class suffixes (see also examples below in 7.). It also appears as a yet-to-be-identified morpheme in ideophones. That the velar nasal is encroaching on the territory of the alveolar nasal before the alveolar nasal has merged with the bilabial nasal (as in 3. above), then, is not surprising on the basis of the velar nasal's prominence throughout the language.

Syllabic nasals. Kisi has no syllabic nasals phonemically. All syllabic nasals can be transparently related to vowel-nasal sequences (See examples in discussion of pronoun reduction in 23. below). When syllabic nasals do appear, however, the velar nasal, once again, is the featured nasal.

6. Syllabic nasals in Kisi

ng	default pronoun, 'it, they, you, we'
ng-	third person plural (animate) prefix, 'they'

Possibly related to the frequent syllabicity of the velar nasal is the allomorphy of the noun class suffix of ng-class nouns. After consonants or i, it is realized as -ong. After all other vowel-final noun stems (with unfilled codas), it only affects the place features of the stem-final vowel and does not surface as a full vowel. It backs front vowels and lowers the high back vowel. These facts suggest that the vowel of the ng-class suffix possesses less than full independent vocalic substance.

7. The ng-class suffix

/ C + _____		-Cong
/ V + _____	i	-iong
	u e o	-ong
	E O	-Ong
	a	-ang

In this latter set of cases, we need to say that the underlying representation of the noun class suffix is an unassociated pair of features ([–high, +back]) followed by the velar nasal.

8. The underlying form of the ng-class suffix

$$\left[\begin{array}{c} \text{–high} \\ \text{+back} \end{array} \right] \text{ ng}$$

The lack of a vocalic segment here may foreshadow the reduction of this suffix to a syllabic nasal, as has taken place with many of the personal pronouns (see pronoun reduction in 23. below). Comparative evidence reveals a comparable alternation; in closely related languages there are cognates with and without vowels (see ng-class suffixes of Sherbro and Krim in 4. above).

Prenasalized stops. All of the prenasalized stops in Kisi consist of a homorganic series of sounds beginning as a nasal stop and ending as a voiced (non-nasal) stop. There are five phonemes in the series, the bilabial, the alveolar, and the velar being the most common. The general distributional pattern is that the prenasalized stops are found medially rather than initially;⁵ they never occur finally. (Prenasalized stops are regularly barred from initial position in many languages (Herbert 1986:91).)

The number of prenasalized stops accords with Ferguson's (1963) assumption as revised by Maddieson, 'a prenasalized obstruent does not occur unless an obstruent of the same class (stop, affricate, fricative) occurs without prenasalization at the same (or similar) place of articulation' (1984:68). All prenasalized stops in Kisi have a counterpart in the voiced or voiceless series of stops.

Voiced stops. The two members of the voiced series of stops in Kisi are imploded. These stops are produced only at the lips and the alveolar ridge and are found primarily in initial position.

Distributional facts thus suggest that voiced stops and the corresponding prenasalized stops may once have been allophones of the same phoneme. Prenasalized stops are rare initially and voiced stops are even rarer medially. Because prenasalized stops are more highly marked, it is likely that they are derived. The source of the nasal component of the prenasalized stops, however, remains unexplained. The likely source is a preceding nasal or nasalized vowel. Other processes are available but are extremely rare (Herbert 1986; see Childs 1990 for a discussion of this topic).

That the prenasalized stops and voiced stops may once have been allophones of single phonemes does not mean that the sounds exhibit such a synchronic relationship. There is no complementary distribution; prenasalized stops occur in word-initial position and contrast with the voiced stops there.

⁵ Prenasalized stops are fully represented in ideophones - here, too, they appear medially:

mb	dambele	'abruptly, suddenly'
nd	fando-fando	'light in weight'
ngg	dOnggu-dOnggu	'lasting a long time'
ngmgb	fEngmgbEndEng	'surprisingly'

9. Prenasalized stops and voiced stops in initial position

ndé	'Mother, Mom'
lé	negative particle
ndá	'there'
lá	<u>la</u> -class pronoun
mbàà	response to a salutation
bàà	'or, whether, if'
mbìlîyó	'drum'
biléyó	'a round basket made of cane or palm'

Nonetheless, the connection between prenasalized stops and voiced stops is strong and is supported by findings elsewhere (Maddieson 1984:67, Herbert 1986).

When discussing the nasal series above, I noted that the velar nasal was the unmarked nasal in Kisi codas. If the velar nasal is the unmarked nasal there, the alveolar prenasalized stop is the unmarked member of its series in both derived and underived environments. As will be seen below, the contrast between the prenasalized stops in several morphological environments is neutralized, most prominently in the noun class system when vowel-initial suffixes are attached to nasal-final noun stems (Childs 1985).

The alveolar prenasalized stop will sometimes alternate with the voiced alveolar stop in rapid speech.

10. Rapid speech changing /d/ to [nd]

daama	'only, sole' (citation form)
mEE kong [nd]aama yE cyE ni	
then that only	Prt-I see Focus
'That's the only one that I can see.'	

The close relationship between voiced stops and prenasalized stops can also be seen in the nativization of **g**-initial words. Some Kisi speakers pronounce such words with a prenasalized stop.

11. Nativization of [g]

guava -> nggòiyàwèiléng (cf. kùlàwèiléng 'guava')

Voiceless stops. Voiceless stops, unlike voiced stops, occur not uncommonly in medial position. The distribution of voiceless stops thus also supports the hypothesis that voiced stops and prenasalized stops were once allophones of single phonemes.

2. PHONOLOGY AND MORPHOLOGY

Nasality is also important to the phonology and morphology. In this section, I first discuss 'phonetic' or low-level processes and continue on to several highly restricted, more lexically oriented processes.

12. Nasal processes in Kisi

Perseveratory nasalization of vowels
 Anticipatory nasalization of vowels by /ng/
 Nasalization at morpheme boundaries
 Nasal cluster reduction and place assimilation
 Nasality as a morpheme

Perseveratory nasalization of vowels. An unexceptional rule nasalizes vowels following a nasal consonant.

13. Perseveratory Nasalization

[-cons] → [+nasal] / N _____

nũũ	‘my (o-class)’
mĩ̃suuwo	‘to dunk or submerge’
nyã̃OO	‘scratch, write’
ngõõ	‘burned’
ngm̃wẽ̃iyo	‘crab’

This process of nasalization has partially neutralized the contrast between e:E and o:O after nasals in favor of the lower vowels, a not unexpected consequence (Ohala 1974, Wright 1986). Few words in Kisi begin with a nasal followed by either e or o. The lower vowels, E and O, are much more common in this position. Because the higher vowels are less heavily nasalized, it seems likely that the contrast between the mid vowels has been neutralized in favor of the lower vowel.

Anticipatory nasalization of vowels by /ng/ in Kisi codas. Another unexceptional rule is vowel nasalization before the velar nasal, the universally more common direction for vowel nasalization (Hyman 1972, Ruhlen 1978, Hombert 1986). Early French writers on Kisi first noticed the process.

14. Anticipatory nasalization by the velar nasal

<u>Phonemic</u>	<u>Transcribed</u>	
tabilt[ã̃]ng	tambittã (Schaeffner 1951)	‘long drum’
koow[ã̃]ng	kowã (Paulme 1954)	‘blood’
leel[ã̃]ng	lirã (Paulme 1954)	‘horn’

The two rules of vowel nasalization combine to give words such as those below almost solid nasality.

15. Perseveratory meets anticipatory nasalization

[mã̃ngndã̃ng]	‘houses of ancestor worship’
[nyĩ̃ngndẽ̃ng]	‘fire’

The only non-nasal portion of the word is the second half of the medial prenasalized stop.

This process again runs counter to Ruhlen’s findings regarding vowel nasalization (1978:224).

. . . evidence from Chinese dialects (Chen 1975:97-99) shows that vowel nasalization occurs first before front NCs [nasal consonants], and only later before back NCs; in other words, **m** is more likely to nasalize a vowel than **n**, and **n** more likely than **ng**.

The nasalization of vowels before velar nasals is common throughout the Southern Branch of Atlantic (cf. Mukarovsky 1958:144).

Nasalization at morpheme boundaries. In an earlier paper (Childs 1985) I characterize the spread of nasalization in the noun class system. The rule proposed there, however, has greater generality, applying at other boundaries in the language. An assimilation rule changes **l** to **nd** when the liquid appears after a morpheme closed with a nasal.

16. Assimilation of **l** to a preceding nasal

cing + leng —> **cingndeng** 'tooth'
ming + lang —> **mingndang** 'noses'

This process also applies to the particle **IE** 'anymore', but not to the negative particle **le** nor to the benefactive morpheme **-lul**.

17. **l** assimilation and non-assimilation following a nasal

o **hing [nd]E le** 'He doesn't come anymore.'
 he come anymore Neg

o **hing [t]e** 'He didn't come.'
 he come Neg

hing + lul + o --> **hinullo** 'to come (Ben)'
 come Ben Inf

Glide-initial particles which assimilate to a preceding nasal are **wO** 'yet, still'; **wO**, the politeness particle; **yE**, a binding particle; and **yE**, the question particle. In all cases the first consonant of these particles assimilates to the preceding consonantal segment.

18. Particle assimilation

hung wO --> **hung ndO** 'Come (polite)!'
 come Prt

hing yE --> **hing nyjE** 'come (question)'
 come Q

Some of the same processes are at work on pronouns that begin with the same consonants, e.g. **ya** 'me', **lang** 'these (la class)'.
 19. Pronoun assimilation

cum ya —> **cum nyja** 'Wait for me!'
iyangndang lang —> **iyangndang ndang** 'these thoughts'

This same spreading of nasality can take place when the following onset is filled by an epenthesis rule or 'Onset Strengthening'.

Onset strengthening. Several rules preserve canonical syllable structure by filling empty onsets. One inserts a glide (homorganic with the preceding vowel) before an onsetless suffix.

20. Glide epenthesis

suu + a —> **suuwa** 'fish (pl)'
sii + ong —> **siiyong** 'tops'

Another rule inserts an l in the same position when the preceding coda is filled with l.

21. l epenthesis

hEl + e —> hElle ‘salt’
fal + o —> fallo ‘elder’

When the stem ends in a nasal, a third rule inserts the alveolar prenasalized stop.

22. nd epenthesis

ying + i —> yingnde ‘hair’
hem + o —> hemndo ‘gourd’

These rules fill empty onsets of vowel-initial morphemes with the content of a preceding (filled) coda. The slightly problematic appearance of the alveolar prenasalized stop has no straightforward explanation.

Nasal place assimilation and cluster reduction. Velar nasals in codas assimilate to the place of articulation of a following stop or prenasalized stop, while bilabial nasals in codas do not. The velar nasal may disappear completely (see Greenberg 1978). (All of the intermediate forms are possible.)

23. Place assimilation and nasal cluster reduction

tung + ndo --> tungndo --> tunndo --> tuundo --> tundo ‘dog’
dog Suffix

tOm + ndo --> tOmndo (--> tOmdo) ‘monkey’

The bilabial nasal is unaffected; the only possible change is for [nd] to lose its initial nasal component, as shown in the second example.

General nasal cluster reduction rules are likely responsible for the pronoun alternations below. The alternations accord with Ferguson’s assumption that, ‘A nasal syllabic phoneme, apart from borrowings and analogical formations, always results from loss of a vowel’ (1963:46-47).

24. Pronoun reduction

<u>Full form</u>		<u>Reduced</u>
num	‘you’	n/ng
ndu	‘him, her’	ng
nang	‘we’	ng

The reduced forms in the second column are all syllabic, except when cliticized to verbs. Note how all pronouns are reduced to the velar nasal, underscoring the close link between vowels and the velar nasal discussed above.

Nasality as a morpheme. The noun class system features alternations involving nasality.

25. Alternations within the noun class system

	<u>Pronoun</u>	<u>Marker</u>	<u>Dem Prox</u>	<u>Dem Dist</u>
<u>ma</u> class	mà	-áng	mâng	máng
<u>ng</u> class	ng	-Vng	mông	móng

The personal pronouns show a similar use of nasality. Most of the general-purpose pronouns have a nasal component.

26. Nasality in the personal pronoun system

	<u>Subj</u>	<u>General purpose</u>
1st	i	ya
2nd	a	num
3rd	o	ndu
1st	ng	nang
2nd	la	nyaa
3rd	a	nda

Although we cannot identify a single phonetic sequence representing 'general purpose', it is clear that nasality forms part of such a meaning. Only the first person singular general-purpose has no nasal component, and others even have two nasal segments.

3. OTHER NASAL PROCESSES

The processes I discuss in this section are not, strictly speaking, part of the grammar. They are, nonetheless, processes which use nasalization for their expression.

Two other forms for the second person singular pronoun **num** are used for emphasis.

27. Emphatic forms of **num** 'you'

numbo hing	'Did <u>you</u> come?'
nunggo hing	'Did <u>you</u> come?'

The nasal component gives the word more prominence, and parallels emphatic forms of the Swahili copula **ni** and various pronouns.

28. Emphatic forms in Swahili

<u>Non-emphatic</u>	→	<u>Emphatic</u>	
ni ninyi		ndinyi	'It is you (pl).'
Cop you (pl)			
ni hao		ndio	'It is they.'
ni hapo		ndipo	'It is here.'

The same explanation of emphasis may be available for the unexpected presence of [mb] when **mi** is combined with the third person singular pronoun **o**. The consecutive conjunction **mi** combines with subject pronouns as shown below.

29. The consecutive conjunction **mi** + subject pronoun

<u>Person</u>	<u>Sing</u>	<u>Plur</u>
1st	mi (mi + i)	ming (mi + ng)
2nd	ma (mi + a)	mila (mi + la)
3rd	<u>mbo</u> (mi + o)	ma (mi + a)

The form of the third person singular pronoun is not an easily analyzable combination of conjunction and pronoun, as is the case with all of the other pronouns. It is **mbo** rather than the expected (analagous form) **mo**. Thus **mbo** also may have arisen out of some emphatic function.

Spontaneous nasalization. Several ideophones display nasalized vowels with no nasals in the immediate vicinity, exhibiting what has been called 'spontaneous nasalization',

often associated with heavy airflow (Ohala 1975).

Vowel nasalization frequently occurs in the environment of laryngeals because (1) a nasal-oral coupling has a negligible acoustic/perceptual effect on laryngeals; (2) there is no aerodynamic requirement for velar closure in the articulation of laryngeals; and (3) in the case of [h], the open glottis exerts a positive acoustic effect on the vowel similar to that exerted by a lowered velum (Matisoff 1975:272).

What is unusual about the ideophonic subsection of the Kisi lexicon is that nasalization occurs in both expected and unexpected environments.

30. Nasalized ideophones

hã-ã-ã 'going on for a long time'
tẽ-ẽ-ẽ 'going on for a long time'

In the first case nasalization is not unexpected because of the glottal fricative beginning the word. (Other Southern Branch languages of the Bullom subgroup nasalize vowels after **h**.) In the second case there is no such explanation. The nasalization is furthermore unexpected because the second ideophone is etymologically related to **te**- 'time, period'.

4. SUMMARY AND CONCLUSION

Generalizations that emerge from this consideration of Kisi nasality are summarized below.

31. Nasality in Kisi

- * Nasality is basically a perseveratory process, the exception being vowel nasalization before the velar nasal.
- * Nasality is fully involved in the language's phonology at different levels.
- * Prenasalized stops may once have been allophones of voiced stops.
- * Neutralizations exist among both the prenasalized and the nasal series of stops.
- * The alveolar prenasalized stop can arise as part of a general onset-building process.
- * Emphasis may strengthen nasals to prenasalized stops.

The next step is to compare the facts of Kisi nasality with those of other languages within Atlantic, and eventually of Niger-Congo as a whole. A fruitful line would be to investigate the most highly marked features of Kisi, namely, the prenasalized stops and the patterns of vowel nasalization. These comparisons should help to clarify Kisi's place within Atlantic and perhaps even Atlantic's place within Niger-Congo.

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