

THE HISTORICAL DEVELOPMENT OF SOUTHWESTERN MANDE CONSONANTS¹

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1. Introduction

Southwestern Mande (SWM) constitutes a set of five closely related languages spoken in the republics of Guinea, Liberia, and Sierra Leone. The distribution of the five SWM languages: Mende, Loko, Bandi, Loma and Kpelle is shown on the map in (1) below.

These languages are characterized by a well-developed system of morpheme-initial consonant alternation, a phenomenon which has long been recognized by linguists as an important area of research. Early investigations of SWM initial consonant alternation [Eberl-Elber 1937 and Hintze 1948] focused on the grammatical environments in which these alternations took place, while later investigations [Manessy 1964, Meeussen 1965, and Bird 1971a] sought a phonological explanation for this phenomenon.

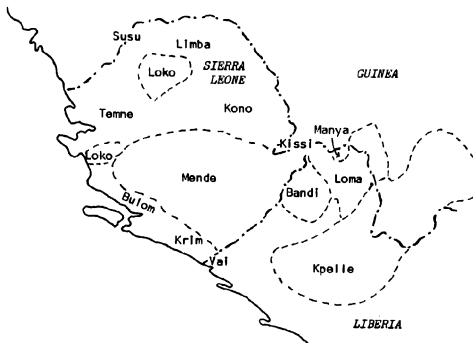
This paper reconstructs the historical development of SWM initial consonant alternation by demonstrating how the consonant system of each of the modern SWM languages developed from the consonant system of Proto-Southwestern Mande as the result of simple, natural phonological changes.²

¹This paper was originally presented to the Fourth Annual Conference on African Linguistics, Queens College, Flushing, New York, April 4-6, 1973. It has greatly profited from discussions which I have had with a number of scholars. I am particularly indebted to William E. Welmers for the insight, wisdom, and information he so graciously offered. And while he does not agree with all the conclusions presented here, this in no way diminishes the importance of his contribution.

Also at this conference, Larry Hyman presented a complementary paper dealing with the same subject, later published as "Notes on the history of Southwestern Mande" [Hyman 1973]. While Hyman did not at that time have access to the additional SWM data gathered during my field investigation of 1971-2, many of his conclusions are in accord with my own. Since the time of the original presentations, each of us has had the opportunity to read and comment on the other's paper. Consequently, this version of my paper has benefited from and incorporated many of Hyman's suggestions as will be noted. This version also contains a discussion of some of the more important discrepancies between the two papers.

²The rules provided in this paper are diachronic. The question of the types of synchronic phonological rules used in the treatment of this phenomenon has not fully been answered. For a more complete discussion of this problem, see Dwyer [1973].

(1) The distribution of the Southwestern Mande languages



Section 2 of this paper describes the consonant alternations of each of the modern SWM languages and the conditions under which they occur. Section 3 describes the historical development of these alternations, and section 4 discusses some alternative proposals concerning the historical development of SWM consonants.

2. The Alternations

The oppositions strong - weak and heavy - light - nasal are useful in the description of SWM consonant mutation. Each alternating consonant has a strong and a weak variant. The strong variant is usually the more fortis member of the two, either a voiced, geminate, or prenasalized consonant. The terms: light, heavy, and nasal, describe the three series of strong - weak alternations. The underlying consonants of the

light series are voiceless obstruents: p, f, t, s, k, and kp. The underlying consonants of the nasal series are: m, n, ny,³ and ŋ. No obvious class, however, describes the heavy series which includes the liquid l, the glides: y, w, and ɣ, and the implosive ɓ. The important characteristics of this series are that the members are voiced, non-nasal, and not true vowels (i.e., not [- consonantal, + vocalic]). The initial consonant alternations of the five Southwestern Mande languages are listed in Table I.⁴

In SWM, strong surface consonants are generally derived from an underlying sequence of a nasal followed by a consonant.⁵ Correspondingly, when the underlying consonant is not preceded by a nasal, its surface realization is weak. A phonological alternation between strong and weak initial consonants can occur because in some grammatical environments, the given initial consonant is preceded by a morpheme bearing a final nasal consonant, and in other grammatical environments the given consonant is not preceded by a morpheme bearing a final nasal consonant. Thus, the conditioning environments of these alternations can be established by identifying those morphemes which bear final nasals and by identifying the environments in which they occur.

The morphemes include three syllabic nasals and a number of (CV)CV(ŋ) nouns and verbs. The three syllabic nasals as reconstructed for Proto-SWM are as follows: *n̩- 'my', *n̩₁ 'his', and *n̩₂ 'prereference'.⁶

While it is not clear whether *n̩₁ 'his' and *n̩₂ 'prereference' consist of one morpheme or two in Proto-SWM, there is no doubt that

³Following traditional orthography, SWM palatal nasals are transcribed with the digraph ny.

⁴The SWM languages also contain morphemes with strong initial consonants which do not mutate. These morphemes can, for the most part, be identified as borrowings which have been acquired since the establishment of consonant mutation in SWM.

⁵Due to the uncertainty of the synchronic status of the phonological rules (see footnote 2), the term underlying can only be taken tentatively.

⁶See section 3.4. for a brief description of the various reflexes of these possessive pronouns.

Table I: Southwestern Mande initial consonant alternationThe Light Series

Loko	Mende ⁷	Bandi	Loma	Kpelle
<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> ₁ <u>St</u> ₂ <u>Wk</u>
p b	p β/w ^b	p v	p β/w ^b	bb mb p
f h	f v	f h	f v	vv mv f
t l	t l	t l	t l	dd nd t
h h	h h	s h	s z	zz nz s
k γ/w ^a	k g	k γ/w ^a	k ŋ/γ/w ^d	gg ng k
kp b	kp gb	kp b	kp b	ggb ngb kp
	s j			

The Heavy Series

Loko	Mende	Bandi	Loma	Kpelle
<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> ₁ <u>St</u> ₂ <u>Wk</u>
mb b	mb b	mb γ/w ^c	bb β/w ^b	ḡ ḡ b
nd l	nd l	nd l	dd l	ḡ ḡ l
nj y	nj y	nj y	zz y	ḡy ḡy y
ng β	ng y	ng y	gg ŋ/γ/w ^d	ḡ ḡ y
ng β	ng w	ng w	gg ŋ/γ/w ^d	ḡw ḡw w

The Nasal Series

Loko	Mende	Bandi	Loma	Kpelle
<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> <u>Wk</u>	<u>St</u> ₁ <u>St</u> ₂ <u>Wk</u>
m β/w ^b	m m	m ỹ/w ^c	m m	ḡ ḡ m
n n	n n	n n	n n	ḡ ḡ n
ny ny	ny ny	ny ỹ	ny ny	ḡy ḡy ny
ŋ ŋ	ŋ ŋ	ŋ ŋ	ŋ ŋ	ḡ ḡ ŋ

- (a) w/ $\frac{V}{[+rd]}$ γ/ $\frac{V}{[-rd]}$ (d) ŋ/ $\frac{\bar{V}}{[-rd]}$ w/ $\frac{V}{[+rd]}$ γ/ $\frac{V}{[-rd]}$
- (b) w/ $\frac{V}{[+bk]}$ β/ $\frac{V}{[-bk]}$ (e) vowels following underlying nasals are nasalized on the surface
- (c) w/ $\frac{V}{[+bk]}$ γ/ $\frac{V}{[-bk]}$

⁷The s - j alternation in Mende represents a recent development. The Mende Reflex of Proto-SWM *s is h (Proto-SWM: *sua 'animal' Mende: hua 'animal').

historically these two prefixes are cognate. They are distinguished here primarily to facilitate the presentation. The Kpelle version of this morpheme also carries the meaning 'prerference', indicating that the noun to which it is affixed has previously been mentioned in a given dialogue or text. In the remaining SWM languages, this prefix, n_2 (with a non-high tone) in Bandi, Loko, and Mende and \dot{n}_2 in Loma, is prefixed to almost all noun phrases and with no apparent change in meaning.⁸ Examples of the SWM noun phrases both with the $*\dot{n}_2$ prefix and without the $*\dot{n}_2$ prefix are given in (2) below:

(2)	with the $*\dot{n}_2$ prefix	without the $*\dot{n}_2$ prefix
Proto-SWM	$*n_2p\acute{e}r\acute{e}-f$ 'the house'	$*f-p\acute{e}r\acute{e}-f$ 'your house'
Loko	$p-p\acute{e} é-f$ " "	$b f-b\acute{e} é-f$ " "
Mende	$p-p\acute{e}.é-f$ " "	$b f-\beta\acute{e}.é-f$ " "
Bandi	$p-p\acute{e} é-'f $ " "	$f-\beta\acute{e} é-'f $ " "
Loma	$p-p\acute{e} é-f$ " "	$\epsilon-\beta\acute{e} é-f$ " "
Kpelle	$b-b\acute{e}r\acute{e}-f$ " "	$f-p\acute{e}r\acute{e}-f$ " "

In addition to these syllabic nasals, SWM has numerous morphemes, both monosyllabic and bisyllabic, which bear final nasal consonants. These morphemes all conform to the formula $(CV)CV\eta$. Except for Mende, where all morpheme-final nasals have been lost, and for Kpelle, these morpheme-final nasals also interact with following initial consonants to produce strong surface consonants. Examples of these derived strong consonants are given in (3) below in the column glossed 'the old bee'. Corresponding weak consonants are given in the column glossed 'the old house'. The base form of the adjective 'old' is either $w\acute{o}v\acute{a}$ or $p\acute{o}l\acute{i}s$; the base form of 'bee' is $k\acute{o}m\acute{i}\eta$; and the base form of 'house' is either $p\acute{e}r\acute{e}$, $p\acute{e}|é$ or $p\acute{e}.é$, depending on the language.⁹

⁸For a more detailed statement concerning the distribution and meaning of the prefix of prerference and the definite suffix in Kpelle, see Welmers [1970].

⁹The use of a period (.), as in $p\acute{e}.é$ 'house', indicates that a sequence of two vowels separated by the period should be interpreted as long. A sequence of two vowels not separated by a period may then be used to represent short contour tones as a sequence of two tones (e.g., $|f$ and $|i$). For more details, see Dwyer [1973].

(3)	the old bee	the old house
Proto-SWM	*h ₂ kómíŋ+pɔ́ɔ́ɔ́-ʼf	*h ₂ péɛ́ɛ́+pɔ́ɔ́ɔ́-ʼf
Loko	k-kówíŋ+góhǎ-ʼf	p-pé é+óhǎ-ʼf
Mende	k-kómí+wóve-ʼf	p-pé.é+wóve-ʼf
Bandi	k-koŵíŋ+pɔ́ɔ́ɔ́-ʼfi	p-pe 'é+wɔ́ɔ́ɔ́-ʼfi
Loma	k-kómíŋ+pɔ́ɔ́ɔ́-ʼf	p-pé é+wɔ́ɔ́ɔ́-ʼf
Kpelle	g-gómíŋ+pɔ́ɔ́ɔ́-ʼf	b-béɛ́ɛ́+pɔ́ɔ́ɔ́-ʼf

The same morphemes which strengthen following consonants, (CV)CVŋ, also take a strong definite suffix allomorph (-ngí, -ggi, or β , depending on the language); while those followed by weak consonants, (CV)CV, take a weak suffix allomorph (-f, or -i, depending on the language). These allomorphs are exemplified in (4) below:

(4)	the bee	the house
Proto-SWM	*h ₂ kómíŋ-f	*h ₂ péɛ́ɛ́-f
Loko	k-kówíŋg-f	p-pé é-f
Mende	k-kómí-f	p-pé.é-f
Bandi	k-koŵíŋg-f	p-pe ɛ-i
Loma	k-kómígg-f	p-pé é-f
Kpelle	g-gómíŋ- β	b-béɛ́ɛ́-f

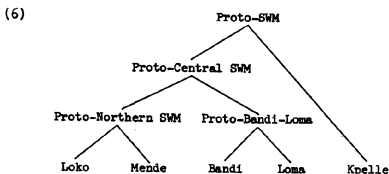
Additional examples showing the correspondence of Kpelle morpheme-final nasals to the strong suffixes of the other SWM languages appear in (5) below:

(5)	the shadow	the (his) hand	the thorn	the cobra
Proto-SWM	*h ₂ nIněŋ-f	*h ₂ wuŋ-f	*h ₂ ya íŋ-f	*h ₂ wurúŋ-f
Loko	nɛn'ěŋg-f	ngúŋg-f	ngal'íŋg-ʼf	ngul'úŋg-ʼf
Mende	něně-ʼf	ngu-ʼf	ngal'í-ʼf	ngul'í-ʼf
Bandi	něněŋg-ʼf	ngungi-ʼi	ngalíŋg-ʼf	ngulung-ʼf

(5)(cont.)	the shadow	the(his)hand	the thorn	the cobra
Loma	nɪnɪgg-i	ggúgg-í	ɲáíígg-í	ggúlugg-í
Kpelle	ɲɪnɪŋ	ɲwɔŋ	ɲaííŋ	ɲwɔrúŋ
	the sun	the leaf	the mortar	the cow
Proto-SWM	*ɲ ₂ fóíó-í	*ɲ ₂ íáyá-í	*ɲ-koníáa-í	*ɲ ₂ nɪnka-í
Loko	f-fó.ó-í	ndáyá-í	k-kond'á-í	nɪkk'á-í
Mende	f-fóíé-í	ndáwé-í	k-kond'é-í	nɪkka-í
Bandi	f-fóíó-í	nday'á-í	k-kondɛ-í	nɪkka-í
Loma	f-fóíó-í	ddáyá-í	k-kóddá-í	nɪkká-í
Kpelle	v-vóíó-í	na.a-í	k-koná-í	nɪŋa-í

3. The Development of the Alternations

This section contains a summary of the major consonant developments which have taken place in SWM including those which have led to the establishment of the initial consonant alternations in SWM. In this presentation, I have assumed the existence of four hypothetical languages: Proto-SWM, the ancestor of all the modern SWM languages; Proto-Central SWM, the ancestor of all of the SWM languages but Kpelle; Proto-Northern SWM, the ancestor of Loko and Mende; and Proto-Bandi-Loma, the ancestor of Bandi and Loma. With the use of these reconstructed languages, the diachronic development of SWM consonants can be presented as a series of natural phonological developments. Furthermore, these hypothetical stages of SWM also permit the description of the diachronic development of the SWM tonal systems in a like manner. The relationship between the modern SWM languages and their reconstructed ancestors is shown in (6) below:



3.1. Proto-Southwestern Mande. Proto-SWM has been reconstructed with three series of underlying consonants. These are given in (7) below.

- (7) light *p , *f , *t , *s , *k , *kp
 heavy *w , *l , *y , *ɣ , *ɓ
 nasal¹⁰ *m , *n , *ny , *ŋ , *ŋw

The reconstructed consonant alternations of Proto-SWM are given in (8) below.¹¹

(8)

<u>light</u>			<u>heavy</u>			<u>nasal</u>		
<u>st</u> ₁	<u>st</u> ₂	<u>wk</u>	<u>st</u> ₁	<u>st</u> ₂	<u>wk</u>	<u>st</u> ₁	<u>st</u> ₂	<u>wk</u>
pp	ɸp	p	m̥	m̄	ɓ	m̥	m̄	m
ff	ɸf	f						
tt	ɸt	t	n̥	n̄	l	n̥	n̄	n
s	ɸs	s	ny̥	nȳ	y	ny̥	nȳ	y
kk	ɸk	k	ŋ̥	ŋ̄	ŋ	ŋ̥	ŋ̄	ŋ
kkp	ɸkp	kp	ŋw̥	ŋw̄	w	ŋw̥	ŋw̄	ŋw

The above alternations (8) are the result of three phonological rules: Nasal Point Assimilation, Nasal Absorption, and Gemination. Each of

¹⁰Vowels following underlying nasals are [+nasal]. This condition must prevail prior to the application of the diachronic rules presented here.

¹¹The two types of strong consonants used in this figure arise because of the selective nature of the Gemination rule (see (12)).

these rules involves the interaction of a nasal and a following consonant. The nasals involved in these processes are as follows: * η_1 - 'my', * η_1 'his' and * η_2 'preference'.

The first rule states that all nasal consonants assimilate to the point of articulation of the following consonant. This rule is commonly found throughout the world's languages and requires no further discussion.

Nasal Absorption can be thought of as two rules, Nasal Manner Assimilation (9) and Nasal Simplification (10). The first of these rules states that a heavy consonant assimilates fully to the manner of articulation of the preceding nasal consonant.

(9) Nasal Manner Assimilation (Proto-SWM)¹²

NC _{heavy}	→	NN	e.g.,	m \bar{b}	→	mm
				ni		nn
				ny		nny ¹³
				ŋŋ		ŋŋ
				ŋw		ŋŋw

Nasal Simplification immediately follows Nasal Manner Assimilation. This rule applies to sequences of two identical nasals, either those which are the result of the nasal being followed by another nasal or as the result of Nasal Manner Assimilation rule. Nasal Simplification reduces a sequence of two identical nasals to a single nasal segment. Without this rule, surface geminate nasals, for which there is no acoustical evidence, would be derived.

(10) Nasal Simplification (Proto-SWM)

NN	→	N	e.g.,	mm	→	m
				nn		n
				nny		ny
				ŋŋ		ŋ
				ŋŋw		ŋw

¹²Nasal Manner Assimilation is essentially the same as the Akan rule known as "Progressive Non-Vowel Assimilation" [Schachter and Fromkin 1968].

¹³The letter sequence nny represents a geminate palatal nasal.

Nasal Manner Assimilation and Nasal Reduction can be written as a single process, Nasal Absorption (11), and is done so in the remainder of this paper because of the lack of evidence to support the independent existence of each rule.¹⁴

(11) Nasal Absorption (Proto-SWM)¹⁵

$NC \left\{ \begin{array}{l} [+heavy] \\ [+nasal] \end{array} \right\} \rightarrow N$	e.g.,	mm	→	m	m̄b	→	m
		nn		n	ni		n
		nn̄y		ny	ny		ny
		ŋŋ		ŋ	ŋy		ŋ
		ŋŋw		ŋw	ŋw		ŋw

Gemination (12), the remaining Proto-SWM consonant rule, states that when an unstressed low-toned nasal prefix, *n̄₁ or *n̄₂, is followed by a voiceless consonant, the feature values of this nasal prefix lose their distinctiveness and assimilate to those of the following consonant producing a fortis or geminate consonant.

(12) Gemination (Proto-SWM)

$NC_{vls} \rightarrow C_{vls} C_{vls}$	e.g.,	n̄p	→	pp	n̄p	→	no change
		n̄f		ff	n̄f		" "
		n̄t		tt	n̄t		" "
		n̄s		ss	n̄s		" "
		n̄k		kk	n̄k		" "
		n̄kp		kkp	n̄kp		" "

¹⁴Hyman (personal communication) has pointed out that Nasal Absorption can be viewed as an example of Jacobsonian rephonologization. The only distinctive characteristic of the preconsonantal nasal is its nasality. The reinterpretation of this nasality as a feature of nasality on the following non-nasal segment does not affect the distinctiveness of the two representations:

$$n+C_hV > NV \quad (C_h = \text{heavy consonant})$$

$$n+NV > N\bar{V}$$

The rephonologization argument supports the view that Nasal Absorption is a single historical process.

¹⁵The natural class of nasals and heavy consonants can be defined as being voiced and not including true ([+vocalic, -consonantal]) vowels.

In Proto-SWM, as in most modern SWM languages, stress is generally assigned to the first high tone in the nominal phrase.¹⁶ Consequently, phrase-initial low-toned nasals are never stressed while phrase-initial high-toned nasals are always stressed. As a result, Gemination applies to low-toned nasals and not to high-toned nasals because of the location of the stress. The reduction of marked features in an unstressed segment is a very common event. Therefore, the fact that low-toned (unstressed) nasals geminate through the reduction of marked features while high-toned (stressed) nasals do not can be considered a natural phonological process.

3.2. The development of modern Kpelle from Proto-SWM. The system of Kpelle initial consonant alternation can be derived by adding one rule, Post-Nasal Voicing (13), to the Proto-SWM list of rules. This rule states that a voiceless obstruent becomes voiced when preceded by a nasal prefix (and in some dialects of Kpelle by any nasal).

(13) Post-Nasal Voicing (Kpelle)

$$N-C_{vls} \rightarrow N-C_{vd}$$

This rule, when coupled with the Proto-SWM gemination rule, produces a three-way surface alternation in the Kpelle light series (between C_{vls} , $\acute{N}-C_{vd}$, and $C_{vd}C_{vd}$). The development of this three-alternation is demonstrated in the following Kpelle derivations (14):

(14)	Gloss	your back	my back	his back
	Base	f-póú	á-póú	á ₁ -póú
	Homorg Nasal		ám-póú	ám-póú
	Nasal Absorption			
	Post-Nas Voice		ám-bóú	ám-bóú
	Gemination			b-bóú
	Surface	f-póú	ám-bóú	b-bóú

¹⁶Stressed syllables are slightly louder and slightly longer than unstressed syllables.

In order to derive voiced geminate consonants from underlying $N-C_{vls}$ sequences, the Post-Nasal Voicing rule must apply before the Gemination rule. Were the ordering reversed, the Gemination rule would destroy the potential input for the Post-Nasal Voicing rule.¹⁷

Voiced geminate consonants in Kpelle have been described by Welmers [1962] as having "heavy voicing." Heavy voicing means that the period of duration of voicing is longer than that used for a normally voiced obstruent. The use of a geminate consonant adequately expresses this fact. Furthermore, the use of geminate consonants permits a fairly natural derivation of surface consonants with extra heavy voicing.

3.3. The development of Proto-Central SWM. In Proto-Central SWM, a very important lexical change took place: the Proto-SWM prefix of preference, $*h_2$, was reinterpreted as a nominal prefix, and, as such, was added to virtually all phrase-initial (non-possessed) nominals in Proto-Central SWM. Because this prefix is a nasal, the initial consonant of all nominals in Central SWM to which it is attached is strong. The distribution of this prefix in Proto-Central SWM sharply contrasts with that of Proto-SWM and Kpelle where, as a prefix of preference, $*h_2$ generally appears only before noun phrases which are definite.

The development of Proto-Central SWM further involved the broadening of the Gemination rule to include all nasals and the establishment of the Weak Consonant Voicing rule, the Nasal Expansion rule and the weakening

¹⁷Operating on the hypothesis that new rules usually appear at the end of the ordered list of rules, one would have expected Post-Nasal Voicing to have followed Gemination in Kpelle. Quite possibly this situation existed in an earlier stage of Kpelle (i.e., Pre-Kpelle). Were Gemination to precede Post-Nasal Voicing in Pre-Kpelle, the initial consonant of phrases such as 'his back' would remain voiceless (e.g. $*p-pu'u$ 'his back') because the Gemination rule would eliminate the preconsonantal nasal. Since the sequence: Gemination - Post-Nasal Voicing, is a bleeding order, the reordering of these rules in modern Kpelle can be viewed as a simplification and a natural diachronic development.

rules. The surface alternations produced by these innovations are given in (15) below:

<u>light</u>			<u>heavy</u>			<u>nasal</u>		
base	weak	strong	base	weak	strong	base	weak	strong
p	b	pp	ɓ	ɓ	mb	m	m	m
f	v	ff						
t	d(ɪ)	tt	l	l	nd	n	n	n
s	z	ss	ɣ	ɣ	nj	ny	ny	ny
k	g(ɣ)	kk	ɣ	ɣ	ng	ŋ	ŋ	ŋ
kp	gb(ɓ)	kkp	w	w	ng	ŋw	ŋw	ŋw

(the consonants in brackets are the results of the weakening rules)

In Central SWM, the structural description of the Gemination rule restructured to include all sequences of a nasal followed by a voiceless obstruent. This includes both high and non-high-toned nasals as in (16) below.¹⁸

	Bandi			Kpelle		
underlying	ń-ko.o-í	f-ko.o-í	ŋ-ko.o-í	ń-ko.o	f-ko.o	ŋ-ko.o
surface	k-kó.o-ífi	f-wó.o-ífi	k-ko.o-í	ń-go.o	f-ko.o	g-go.o
gloss	my belly	your ___	his ___	my belly	your ___	his ___

¹⁸Proto-Central SWM differs tonally from Proto-SWM in that Proto-Central SWM has only a two-way tonal contrast (high and non-high), this being the result of the merger of the Proto-SWM *low and *mid levels.

This view differs from that of Hyman [1973] who assumes that Proto-SWM has only four tonal classes with only a two-way tone contrast. I claim that this is an accurate description of Pre-Proto-SWM. The difference between these two positions is the point in the history of SWM when the fifth tonal class (*low-low) appeared. Hyman, citing arguments from Welmers ([1961] "Internal evidence of borrowing in Kpelle") concludes that the fifth tonal class must have been acquired through borrowing in Pre-Kpelle. However, these class 5 nouns have demonstrable cognates in the other four SWM languages which cannot be attributed to borrowing (Me: bɔɔ 'hat', Kp: bɔɔ 'hat'; Me: tɔndɔ 'chisel', Kp: tɔndɔ 'chisel'). Thus, one must conclude that these morphemes must have existed in Proto-SWM. Now, the arguments provided by Welmers for Kpelle can be applied to Proto-SWM with the conclusion that the fifth tonal class was acquired through borrowing in Pre-Proto SWM (for more details, see Dwyer [1973]).

Unlike Kpelle and Proto-SWM, the Central SWM gemination rule also includes morpheme-final nasals as in (17) below:

(17)	Bandi	Kpelle
underlying	n-kówíŋ+kówíŋ-f	kómíŋ+kómíŋ
surface	k-kówíŋk+kówíŋg-'f	kómíŋ+kómíŋ
gloss	bee+honey-the	bee+honey

Virtually all the Central SWM consonants not strengthened by the Gemination rule are found in an intervocalic position. This is due to both a broadened application of the Gemination rule and the above mentioned reinterpretation of the PSWM * \hat{n}_2 prefix. These unstrengthened intervocalic consonants become voiced in Central SWM by a rule called Weak Consonant Voicing (18).

(18) Weak Consonant Voicing (Proto-Central SWM)

$$C_{vls} \rightarrow C_{vd} / V_V$$

The Central SWM Weak Consonant Voicing rule and the Kpelle Post-Nasal Voicing rule apply in mutually exclusive environments. This gives the impression that half of the Kpelle consonants are mutating the wrong way (see Table I above).

Despite the Weak Consonant Voicing rule, voiceless obstruents do appear in the surface structure of all of the Central SWM languages as evidenced by the following Bandi examples (19):

(19) Bandi (tones omitted)¹⁹

lappi	fight
kottu	stone
massa	chief
nikka	cow
tukkpo	walking stick(staff)

¹⁹ As in Loma, Bandi geminate consonants are traditionally written as non-geminate (e.g., nika 'cow' instead of níkka) because of the lack of a contrast between geminate consonants and their non-geminate counterparts.

These voiceless obstruents do not voice because they are geminate and, therefore, do not fit the structural description of the Weak Consonant Voicing rule. These geminate consonants are derived from Proto-SWM sequences of a nasal followed by a voiceless consonant and the broadened Central SWM gemination rule as follows (20):

(20) Proto-SWM ²⁰		Proto-Central SWM	Gloss
*lampɪ	<u>Gemination</u> →	*lappɪ	fight
*kontu		*kottu	stone
*tɪŋkpɔ		*tɪkkpɔ	staff
*nɪŋka		*nikka	cow
*mansa		*massa	chief

Additional support for the reconstructions in (20) is given in section 3.3.

The last major development in Central SWM is the expansion of nasal consonants into a sequence of a nasal consonant followed by a voiced stop. This rule applies only when the vowel following the nasal consonant is non-nasal. It will be recalled (see Table I above) that vowels which follow underlying nasals are nasalized while those derived from sequences of a nasal followed by a heavy consonant are not. This Nasal Expansion rule (21) has also been observed in Matakali [Gudshinsky, Popovitch, and Popovitch 1970].

(21) Nasal Expansion (Proto-Central SWM)

N	→	NC _{vd} / __[-nasal]	e.g.,	m	→	mb
				n		nd
				ny		nj
				ŋ		ng
				ŋw		ng

²⁰The Kpelle reflexes of these forms are as follows: namu 'fight', konu 'stone', tuŋwɔ 'staff', and nɪŋa 'cow'. No Kpelle reflex has been found for PSWM *mänsa 'chief'.

Like the other Central SWM nasal rules, Nasal Expansion applies to all nasals (not followed by a nasalized vowel). This includes phrase-initial nasal prefixes as in (22):

	Bandi			Kpelle		
underlying	ń-íá-f	í-íá-f	ń-íá-f	ń-íá	í-íá	ń ₂ íá
surface	nda-fí	í-íá-fí	nda-'fí	ńá	í-íá	ńá
gloss	my mouth	your	___ his	___	my mouth	your
						___ his

and morpheme-final nasals as in (23):

	Bandi		Kpelle
underlying	n-kówíŋ+wúíú-f		ń ₂ kómíŋ+wúíú-f
surface	k-kówíŋ+ngúíú-'fí		k-kómíŋ+wúíú-l
gloss	bee+tree-the		Pref-bee+tree-the

and morpheme medial nasals as in (24):

	Proto-SWM	Bandi	Kpelle	Proto-SWM	Bandi	Kpelle
underlying	*konlá ²¹	kondá	konáa	*ŋǝnĩ	ŋǝnĩ́	ŋǝnĩ
surface	*konáa	kondá	konáa	*ŋǝnĩ	ŋǝnĩ́	ŋǝnĩ
gloss	mortar	mortar	mortar	bird	bird	bird

Furthermore, the ngf - f alternation of the definite suffix in Loko and Bandi and the gi - i alternation in Loma are also consequences of the Nasal Expansion rule. In Proto-SWM, the definite suffix is *-f as it is in modern Kpelle.²² In Central SWM, this suffix is said to have two allomorphs. The -ngf allomorph follows nouns which historically end in a nasal consonant. In fact, these nouns generally have cognates in modern Kpelle which still have morpheme-final nasals (see (5) above). This observation was first reported by Heydorn [1940]

²¹The reconstructed form *konla 'mortar' is proposed instead of *konda on the basis of the argument presented in 3.1. that Proto-SWM has no underlying *d. However, either of these forms would produce the observed SWM surface reflexes.

²²The definite suffix in Kpelle is deleted following a nasal consonant:

Kpelle	underlying	ń ₂ kómíŋ-f	'preref-bee-the'
	surface	g-gómíŋ	

and has been reiterated by Bird [1971a] and by Welmers [1971].

With the introduction of the Nasal Expansion morpheme-final velar nasals were converted to *ng*. This development when coupled with the definite suffix **-f* produced the *-ngf* definite suffix allomorph (i.e., ...*ŋ-f* > ...*ng+ɪ* = ...*ngf*). The derivation of Proto-Central SWM 'the bee' and 'the tree' in (25) below further demonstrates the development of the *ngf - f* definite suffix alternation.

(25) Proto-Central SWM	the bee	the tree
Base	$\eta_{\Sigma}kómí\eta-f$	$\eta_{\Sigma}wúíú-f$
Homorganic Nasals	$\eta-kómí\eta-f$	$\eta-wúíú-f$
Nasal Absorption		$\eta wúíú-f$
Gemination	$k-kómí\eta-f$	
Nasal Expansion	$k-kómíng-f$	$ngúíú-f$
Reinterpretation ²³	$k-kómí-f$	
Surface	$k-kómí-ngf$	$ngúíú-f$

The Nasal Expansion rule and the morpheme-final velar nasal are also useful in explaining the development of the plural suffix alternation, *nga - a* (e.g., ...*ŋ+a* > ...*ng+a* = ...*+nga*).

Many of the members of the heavy consonant series of Proto-SWM are the result of the weakening of voiced stops. These weakenings (26) have also been observed in Northern Mande [Bird 1971b, and Welmers 1958].

(26) Velar weakening Alveolar Weakening Labial Weakening

$g \rightarrow \gamma$ $d \rightarrow l$ $b \rightarrow \beta$
 $gb \rightarrow \beta$

(Velar Weakening converts a voiced velar stop into a voiced velar continuant. Because labio-velars have a velar component, voiced labio-velar stops are also weakened by this rule)

²³This reinterpretation may be only one made by some linguists on the basis of the surface data of these languages and not one that has been made by Central SWM speakers.

In Proto-Central SWM, both Velar and Alveolar Weakening apply to the voiced obstruents which were derived as a result of the Weak Consonant Rule. These weakenings resulted in the alternations: k - γ, kp - β, and t - l (see (15)).

Mende weak consonants do not show the effects of the application of the Velar Weakening rule. The rejection of this weakening rule appears to be a Mende linguistic simplification. The fossilized Mende compound *nje+wúlo* 'aunt' (literally mother+small) provides ample evidence that these weakenings used to exist. Normally an initial *k* in Mende, such as the *k* in Mende *kulo* 'small' ought to become a *g* rather than *w* when occurring in a weak environment as in (27):

(27) Mende	underlying	<i>n₂ɣfia+kúlo-f</i>
	surface	<i>ngfia+gule-'f</i>
	gloss	dog+small-the

Thus Mende apparently discarded the Proto-Central SWM weakening rules in all cases save for a few fossilized compounds.

Labial Weakening does not occur in Loko and is apparently a development which took place in Loma, Bandi, and Mende independently.

3.4. The development of Loma. The final major consonant rule development in Southwestern Mande involved the reordering of the Nasal Expansion rule. In Proto-Central SWM and in all of the descendants of Proto-Central SWM but Loma, this rule is ordered following the Gemination rule. In Loma, the Nasal rule is ordered preceding the Gemination rule. The reordering in Loma produces a feeding ordering because the Nasal Expansion rule provides additional input for the Gemination rule. And such a reordering is a simplification in the Kiparskian sense and can be regarded as a natural, anticipated development. As a result of this development, Loma has both voiced and voiceless surface geminate consonants. These are derived in (28) below:

(28)	Loma	underlying voiceless	underlying heavy
	Base	n-t	n-l
	Homorganic Nasal		
	Nasal Absorption		n
	Nasal Expansion		nd
	Gemination	t-t	dd
	Surface	tt	dd

The voiced geminate consonants, like the voiceless geminate consonants in Loma, are usually transcribed in the linguistic literature as a single segment. This is because the corresponding single segment consonants have undergone weakenings (26) and consequently no longer contrast with the geminates only with respect to gemination.

The reordering of the Nasal Expansion rule has resulted in the gemination of all underlying sequences of a nasal followed by a heavy consonant. This includes the strong suffixes (29), morpheme-final nasals (30), morpheme-medial nasals (31), and all nasal prefixes (32):

(29)	Proto-SWM	Bandi	Loma
	underlying	*h ₂ -kóm ^h ŋ-f	h ₂ -komŋ-l
	surface	*k-kóm ^h ŋ-f	k-kóm ^h gg-l
	gloss	bee-the	bee-the

(30)	Bandi	Loma
	underlying	n ₂ kóm ^h ŋ+wúlu-í
	surface	k-kow ^h ŋ+ngúlu-í
	gloss	bee+tree-the

(31)	Proto-SWM	Bandi	Loma
underlying	*n̄₂lám̄báŋ-f	n̄₂lám̄báŋ-f	n̄₂labbaŋ-l
surface	*n̄ám̄áŋ-f	ndamb'áŋg-f	ddábbágg-l
gloss	crocodile	crocodile	crocodile
underlying	*n̄₂konl̄áá-f	n̄₂kondá-f	n̄₂kodda-l
surface	k-konáá-f	k-konda-'fi	k-kóddá-f
gloss	mortar-the	mortar-the	mortar-the

(32) Bandi

underlying	n̄-lá-f	f-lá-f	n̄₁lá-f
surface	ndá-fi	f-lá-fi	nda- fi
gloss	my mouth	your mouth	his mouth

Loma²⁴

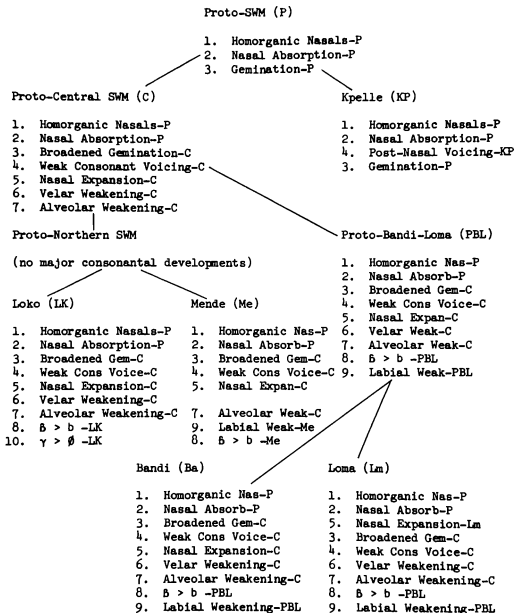
underlying	n-la-i	e-la-l	n̄₁la-i
surface ²⁵	dda-l	e-la-l	ddá-f
gloss	my mouth	your mouth	his mouth

The major consonantal rule developments are summarized in Table II below:

²⁴Loma has also undergone a tonal inversion, an historical development which reversed the values of the underlying Loma tones (see Dwyer [1973]).

²⁵Because both underlying high tones and non-high tones produce surface voiced geminate consonants, the resultant gemination can no longer be uniquely attributed to low tonedness.

Table II:



4. Alternative Analyses

In this section, four issues are discussed: a) the possibility that all the underlying consonants of the heavy series could have been stops, b) the possibility that heavy voicing and low tone are manifestations of the same distinctive feature, c) the possibility that what I have claimed to be low-toned nasals, \hat{n}_1 and \hat{n}_2 , are not nasals at all, but low-toned vowels, and d) that the underlying Proto-SWM pronouns $*\hat{n}$ - and $*\hat{n}_1$ are $*\eta\delta$ and $*\eta\delta$ respectively.

4.1. Underlying stops. Before resolving the issue of whether all underlying Proto-SWM heavy consonants are stops or not, it is necessary to establish that there is only one series of heavy consonants in SWM. The development of the heavy series in SWM appears to be the result of a number of mergings of voiced stops with liquids and glides. This can be seen in the following comparison (33) of Proto-SWM and Northern Mande cognates.²⁶

(33) 1. Proto-SWM $*w$ corresponds to Northern Mande b or w .

PSWM: $*wuru$	'tree'	Bambara: $yiri$	'tree'
		Susu: $wuri$	'tree'
PSWM: $*wa?$	'big'	Bambara: ba	'big'

2. Proto-SWM $*l$ corresponds to Northern Mande d or l .

PSWM: $*la$	'mouth'	Bambara: da	'mouth'
		Susu: dc	'mouth'
PSWM: $*la$	'place'	Bambara: la	'place, in'

3. Proto-SWM $*y$ corresponds to Northern Mande dj or y .

PSWM: $*ya$	'water'	Bambara: dja	'water'
		Susu: ye	'water'

4. Proto-SWM $*\gamma$ corresponds to Northern Mande x or k .

PSWM: $*\gammaalo$	'moon'	Bambara: $kalo$	'moon'
		Susu: $xalo$	'moon'

²⁶The Bambara data is from Travele [1913] and the Susu data is from Houis [1963].

- (33) 5. No correspondences involving Proto-SWM *b have yet been established with Northern Mande. Possibly, the reconstruction of 'big' in Proto-SWM is *baŋ rather than *wa (see 33-1). This assumption is based on the barely possible interpretation of 'crocodile' as a compound meaning 'big mouth' (Bandi ndamb'áng-f 'the crocodile' < PSWM *la-n-baŋ 'mouth-it-big').

These mergings could have been the result of a weakening of the stop series or a strengthening of the heavy series. The strengthening hypothesis is less likely for the following reasons:

(a) Merging through strengthening would result in a language with no liquids and no glides, an infrequent situation in language.²⁷

(b) Even if the underlying consonants in Proto-SWM are all stops, it is still necessary to postulate weakening rules to account for the weak allophones of the heavy series in SWM (β, l, γ, γ, and w). As long as both hypotheses require weakening rules, it is at least more economical on a synchronic plane to claim that both these mergings and these weak allophones are the result of the same weakening rules.

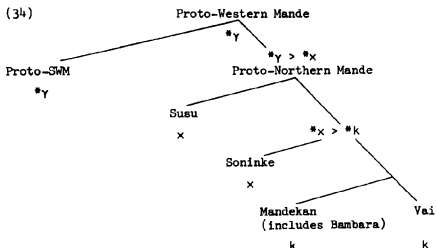
(c) Except for the implosive β, there is no evidence to support the existence of underlying voiced stops in any of the SWM languages.²⁸ All of the surface voiced stops in SWM can be derived from the underlying β, l, γ, γ, and w through the application of the Nasal Absorption, Nasal Expansion and Gemination rules.

(d) Moreover, voiced velar stops have not been observed in Northern Mande either. SWM's voiced velar, γ, corresponds either to Northern Mande's x, as in Susu, or k, as in Bambara. Thus no concrete evidence exists to support an underlying voiced velar stop in either branch of Western Mande. Welmers [1958], assuming that SWM heavy consonants

²⁷ Hyman has pointed out (personal communication) that it is his understanding that Proto-Bantu has been reconstructed without underlying glides

²⁸ The presence of a morpheme-initial implosive d in the north-east dialects of Kpelle [Welmers 1962] in place of an initial l, Hyman argues (personal communication), suggests the possibility of a second non-continuant *d in the Proto-SWM heavy series.

were stops, postulated a voiced velar stop *g for Proto-Western Mande, the immediate ancestor of Northern and Southwestern Mande. Welmers then concluded Proto-Western Mande *g weakened to *x (as in Susu) and then *x > k (as in Bambara). However, if the Proto-SWM heavy velar consonant is *ɣ rather than *g, the Proto-Western Mande equivalent can also be given as *ɣ. This permits the description of the development of voiced velars in Western Mande as follows (34):



(e) The alternations ng-y and ng-w can best be described if each alternation has a distinct underlying consonant. Were the two weak variants of these alternations, y and w, in complementary distribution, only one underlying consonant, say ɣ would be necessary. Yet in Mende, for example, the weak allophones of these alternations are almost, but not completely, in complementary distribution: the allophone y appears when followed by i, e, ɛ, a, and ɔ; the allophone w appears when followed by u, o, and ɔ as in the following examples (35):

(35)	Mende	ngele-i	the sky	nya+yele-i	my sky
		ngɔmbu-i	the fire	nya+wɔmbu-i	my fire
		nguli-i	the tree	nya+wuli-i	my tree
		ngɔɛ-i	the sobbing	nya+wɔɛ-i	my sobbing

If both γ and w are derived from the same source, then it is difficult to show how both γ and w can occur before ɔ . If, on the other hand, the ng-y alternation is derived from an underlying γ (later $\gamma > y$) and the ng-w alternation is derived from an underlying w , then this occurrence can be explained as follows: first the near complementary distribution of γ and w is the result of two phonological processes: one which states that a vowel which follows w must be rounded (e.g., $wi > wu$, $wɛ > wo$, $wɛ > wɔ$, and $wa > wɔ$), and one which states that γ , when followed by u or o must be rounded (e.g., $\gamma u > wu$ and $\gamma o > wo$). These two processes produce the near complementary distribution of γ and w . Once γ and w developed near complementarity, γ shifted to y resulting in the present day Mende situation.

These arguments weigh heavily in favor of * β , * l , * γ , * γ and * w being the underlying consonants of the heavy series in SWM.

4.2. Plus lowered. It has been proposed that extra heavy voicing is related to low tone by the feature [+lowered] [Bird 1971a]. This proposal makes it possible to state that the development of extra heavy voicing in Kpelle is an assimilation of the feature [+lowered] of the low tone of the nasal h- by the following consonant.

Yet this approach does not explain why only low toned nasals in Kpelle cause extra heavy voicing and why other types of low tones in Kpelle do not. For example, in Kpelle there is a lowering rule which applies to certain nominal compounds and noun-adjunctive adjective constructions. This rule lowers the tones of the vowels of the second constituent of these constructions, but does not cause extra heavy voicing in the consonants. This is true of Southwestern Kpelle, the dialect described by Welmers [1962] and my own observations of Central Kpelle where a morpheme-final nasal causes the voicing of a following voiceless obstruent as in the example in (36) below.

(36)

Southwestern Kpelle	káíòŋ	chief	póíí	old	káíòŋ+póíí	old chief
Central Kpelle	káíòŋ	chief	póíí	old	káíòŋ+bóíí	old chief

Were the feature [+lowered] to apply to the consonants of the second constituent as well as the vowels, extra heavy voicing would be anticipated (e.g., **kádóm+bbǔǔ 'old chief'). If [lowered] is a feature of both sonorant and non-sonorant segments, then the Kpelle Lowering rule must be written so that it excludes non-sonorant segments. If, on the other hand, the feature used to mark low tones were not a characteristic of non-sonorant segments (such as the tone feature [low]), this awkward situation would not arise.

A second weakness of this approach arises with the existence of heavily voiced consonants which cannot be derived from a preceding low tone. In Loma, for example (37 below), heavily voiced consonants are derived from nasals which are high-toned as well as from nasals which are not.

(37)	Loma	surface	underlying	gloss
		ddɛɣɛ	n-lɛɣɛ	my brother
		ddéɣé	ń-léɣé	his brother

My investigations of heavily voiced consonants indicate that the difference between heavily and normally voiced consonants in Kpelle and Loma is not primarily one of quality, but one of the duration of the voicing of the segment. This fact is aptly rendered by representing heavily voiced consonants as geminate.

4.3. The possibility of *ǰ. It has been suggested that what I and others have called a low-toned nasal, *ń-, is actually a low-toned vowel, most likely *ǰ [Welmers 1971]. The basis of this argument is that the third person singular pronoun in Northern Mande is not a nasal, but a vowel, usually ǰ. This argument would be stronger, were it not for the rather poor correspondence, as evidenced by (38) below, of the SWM and Northern Mande personal pronouns.

(38)	Bandi	Kpelle	Bambara [Sauvant 1956]	
	my	ń-	ń-	ne
	your	f-	f-	l
	his	n-	ń-	a
	our ₁	muú	kú	an
	our ₂	nif		
	your	wú	ká	au
	their	ttif	ddf	u (PSWM: *ńtf)

Nevertheless, because there is some pronoun correspondence between Northern and Southwestern Mande, *ǎ would be a likely candidate for this particle were it not for a number of situations which require that this particle bear a nasal component. Nasality is, after all, the crucial difference between these two proposals. Both *ǎ and *ń- are sonorant (tone-bearing) and low-toned; only *ń-, however, is [+nasal].

The first of these situations is the broadening of the Gemination rule in Proto-Central SWM (see 3.3.) to include both the particle in question and the high-toned nasal *ń- 'my', but not the high-toned non-nasal *f- 'your'. This development can be seen as a simplification of the Gemination rule (the inclusion of all nasals) only given the *ń- hypothesis. Given the *a proposal, the motivation behind this development is unclear at best.

The second of these situations concerns the process which has been termed Nasal Absorption (11). This process states that when the particle in question combines with a heavy consonant, the result is a nasal with the point of articulation of the heavy consonant. The resultant nasality is a natural consequence of the *ń- proposal, but a spurious development given the *ǎ proposal.

Thirdly, the Nasal Absorption process is necessary to describe the development of SWM medial consonants. If the *ǎ proposal is followed, then the development of SWM initial and medial consonants must be considered as the result of different processes, even though their result

is the same. Again, given the *h- hypothesis, the development of SWM initial and medial consonants can be seen as the result of the same processes.

One of these processes, Nasal Absorption, is necessary to demonstrate why Kpelle medial nasals may correspond with either Central SWM nasals, NC_{vd} sequences or voiceless stops. Some comparisons of Mende (a Central SWM language) and Kpelle are given in (39) below.

(39) 1. Kpelle medial nasal corresponds to Central SWM medial nasal:

Kpelle: ɔ̃nĩ 'bird' Mende: ɔ̃nĩ 'bird'

Kpelle: m̃nĩ 'hear' Mende: m̃nĩ 'hear'

2. Kpelle medial nasal corresponds to Central SWM NC_{vd}:

Kpelle: kpĩnĩ 'night' Mende: kpĩndi 'night'

Kpelle: kona 'mortar' Mende: konda 'mortar'

3. Kpelle medial nasal corresponds to Central SWM voiceless stops:

Kpelle: tɔ̃wɔ 'staff' Mende: tikkɔ 'staff'

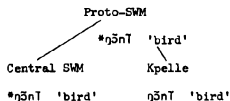
Kpelle: fuɔ̃ 'powder' Mende: fukka 'powder'

Kpelle: nĩɔ̃ 'cow' Mende: nĩkka 'cow'

Kpelle: mĩna 'spoon' Mende: mĩta 'spoon'

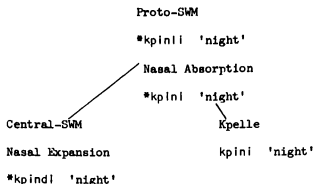
The first set of correspondences represent reflexes of Proto-SWM medial nasals (40):

(40)



The second set of correspondences represent reflexes of Proto-SWM medial *NC_{heavy} sequences and the effects of the Nasal Absorption and Nasal Expansion rules (41):

(41)



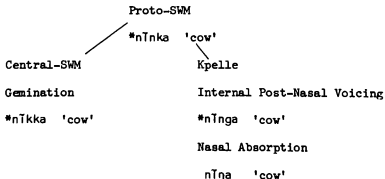
The third set of correspondences represent reflexes of Proto-SWM medial *NC_{vls} sequences and the effects of the Gemination rule, and a rule called Internal Post-Nasal Voicing (42), a Kpelle rule which applies before Nasal Absorption and voices medial consonants which are preceded by a nasal.

(42) Internal Post-Nasal Voicing (Kpelle)

$$C_{vls} \rightarrow C_{vd} / +...N_...+$$

The third set of correspondences are derived as follows (43):

(43)



The intermediate stage of the Kpelle development is supported by the following set of Vai (a Northern Mande language) cognates (44). Here, the Internal Post-Nasal Voicing rule applies in the absence of

the Nasal Absorption rule:²⁹

(44) Vai [Westermann 1927]

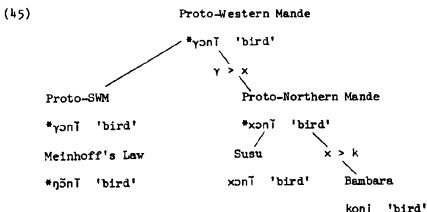
tungbe 'staff'

fungu 'powder'

ninge 'cow'

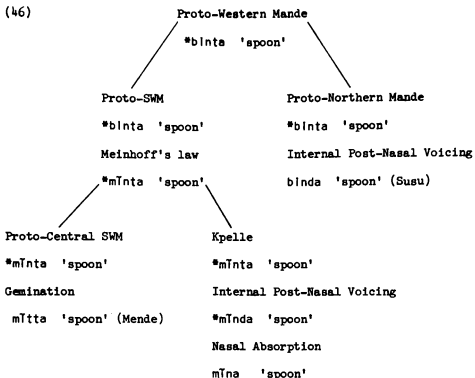
manja 'chief' (c.f. Bandi: mǎssa 'chief')

Further evidence of nasality before voiceless stops in Proto-SWM comes from the morphemes glossed 'bird' and 'spoon'. Each of these morphemes illustrates a SWM development akin to Meinhoff's law [Bennett 1967]. This variant states that morpheme-initial heavy consonants become nasal if the medial consonant is nasal. The development of Proto-Western Mande *ɣɔŋɪ 'bird' is illustrated in (45) below:



The Western Mande morpheme *binta 'spoon' also undergoes Meinhoff's law (*binta > *mɪnta) indicating the presence of a medial nasal and the presence of medial NC_{vls} sequences in Proto-SWM. The medial consonant development of Proto-SWM *mɪnta 'spoon' (46) follows the same medial consonant development as Proto-SWM *nɪŋka 'cow' (43).

²⁹Because the Post-Nasal Voicing rule appears in only some of the Northern Mande languages and only one of the SWM languages, I feel that its presence in Kpelle and Vai must be due to some reason other than common genetic inheritance.



From the arguments and data presented here, one can see that the development of SWM medial consonants must be viewed in terms of nasal-consonant sequences and the Nasal Absorption, Nasal Expansion and Gemination rules, exactly those rules which were proposed for the development of SWM initial consonants. Were the low-toned nasal *ń- replaced by the non-nasal *ɖ, this generalization would be lost.

4.4. The possibility of ɲɔ. The reconstruction of Proto-SWM 'my' and 'his' presented here differs from Hyman [1973] who reconstructs them as *ɲɔ and *ɲɔ respectively. We both believe that the two sets of pronouns are related, but through different processes: Hyman believes that *ń- 'my', for example, is derived from *ɲɔ through vowel deletion and tone transferral, while I claim that *ɲɔ is morphemically complex, containing the pronoun *ń- and the particle of alienation *wɔ. Because the development of the SWM pronouns is extremely complicated and irregular, it could be the topic of a lengthy article itself.

Table III: Southwestern Mande possessive pronouns

Familial Possession	Mende	Loko	Bandi	Loma	Kpelle	PSWM
my	nyá	ní	ní	n	ń	*ń
your	bí	bí	f	e	f	*f
his	ngí	ngí	ngí	ń	ń	*n-
our ₁ ³⁰	--	ní	ní	dée	--	--
our ₂	muú	muú	muú	gée	kú	?
your	wuú	wú	wú	wo	ká	?
their	tí	tí	tí	tée	ddf	*ń-tf
Corporal Possession						
my	nyá	nyá	ń	n	ń	*ń
your	bí	bí	f	e	f	*f
his	ngí	aláa	n	n	ń	*ń
our ₁	--	ní	ní	dée	--	--
our ₂	muú	muú	muú	gée	kú	?
your	wuú	wú	wú	wo	ká	?
their	tí	tí	tí	tée	ddf	*ń-tf
Alienable Possession						
my	nyá	ní	ní	na-n	ń	?
your	bí	bí	f	ya	f	?
his	ngí	ngí	ngí	ná-ń	ń	?
our ₁	--	ní	ní	dáa	--	?
our ₂	muú	muú	muú	gáa	ká	?
your	wuú	wuú	wú	wa	ká	?
their	tí	tí	tí	táa	ddf	*ń-tf

³⁰Loma, Bandi, and Loko draw a distinction between inclusive (our₁)

The sketchy outline of the SWM possessive pronouns (Table III) is offered in order to demonstrate why I differ with Hyman [1973] with respect to the Proto-SWM form of the above mentioned prnouns.

Southwestern Mande expresses three types of possession: familial, corporal, and alienable. Familial possession concerns one's relationship with his family (my father); corporal possession, with body parts (my foot); and alienable possession, with all other objects (my rice). These different types of possession not only correspond to different semantic categories, but to different morphological and phonological (including segmental and tonal) differences as well. The following discussion concerns only the morphological differences of the various SWM pronouns whose underlying representations are given in Table III above.

With the exception of the syllabic, tone-bearing nasals, which have already been discussed, and the short rising tone (e.g., íf, úú), which is reduced to either a simple high or non-high tone, the underlying representations of (47) are virtually identical to their corresponding surface representations. Yet, in order to clearly demonstrate this relationship, the following corporal possessive paradigm is offered.

(47) Corporal possession in SWM³¹

	Loko	Mende	Bandi	Loma	Kpelle
my	nyá-wo.o-'f	nyá-go.e-'f	k-kó.o-'fi	k-ko.ogg-'f	ń-go.o
your	bf-wo.o-'f	bf-go.e-'f	f-wó.o-'fi	e-wo.ogg-'f	f-ko.o
his	alá-wo.o-'f	ngf-go.e-'f	k-ko.o-'fi	k-kó.ógg-f	g-go.o
our ₁	nf-wo.o-'f	---	ni-w'ó.o-'fi	df-wó.ogg-'f	---
our ₂	mú-wo.o-'f	mú-go.e-'f	mu-w'ó.o-'fi	gf-wó.ogg-'f	kú-ko.o
your	wú-wo.o-'f	wú-go.e-'f	wú-wó.o-'fi	wo-wo.ogg-'f	ká-ko.o
their	ttf-wo.o-'f	ttf-go.e-'f	ttil-w'ó.o-'fi	ttf-wó.ogg-'f	ddf-ko.o

and exclusive (our₂) first person plurals. Eastern Kpelle, according to Lassort [1952] also has this distinction.

³¹The morpheme glossed as 'belly' has shifted its class membership in Loma, for here it behaves like those morphemes which historically end in a velar nasal. This suggests the possibility that in Loma this class distinction may be marked with a diacritic feature rather than phonetically.

While the SWM pronoun development is not entirely regular, a few observations can be made. First, the Loma alienable possessive pronouns can be easily derived from the corporal possessive pronouns through the addition of a particle -a and the elision of the pronoun vowel (note, however ya from i-a). Likewise, the Kpelle pronoun ŋɔ́ 'my' can be viewed as morphemically complex (ŋ+wo). Furthermore, this situation can be seen even more clearly in an eastern dialect of Kpelle where in careful, deliberate speech, as reported by Lassort [1952:329] in (48) below, the entire paradigm of corporal pronoun plus wo is present.

(48)	Alienable	Alienable	Corporal
	Careful Speech	Normal Speech	Familial
my	ṽo (high tone)	ŋə (high tone)	ŋə (high tone)
your	e wo	ye	e
his	ṽo (low tone)	ŋə (low tone)	ŋə (low tone)
our	ku wo	kuo	ku
your	ka wo	ka	ka
their	di wo	die	di

(Lassort uses the schwa in the above examples to indicate a syllabic nasal. Thus ŋə is equivalent to ŋ.)

Lassort further mentions that po 'trace' and 'ye 'hand' can be used in place of wo. This fact demonstrates that the sequence: pronoun - particle of alienation - alienable noun, is quite common in Kpelle. In contrast to the eastern dialect of Kpelle described by Lassort [1952], the dialect described by Welmers [1962] has preserved the morphological distinction between alienable on one hand, and corporal and familial on the other in the first and third person singular only.

5. Summary

This paper has outlined the major consonant developments of Southwestern Mande. It has shown that only one set of rules is necessary to describe the development of both medial and final consonants and initial consonant alternation. It has shown that initial consonant alternation has risen through the interaction of a low-toned nasal prefix with a

following consonant. Subsequent consonantal developments were shown to be natural developments which in most cases appeared to be simplifications in the Kiparskian sense.

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