Studies in African Linguistics
Volume 7, Number 3, December 1976

COMPARATIVE RECONSTRUCTION OF MANDEKAN

Kent D. Bimson
University of California, Los Angeles

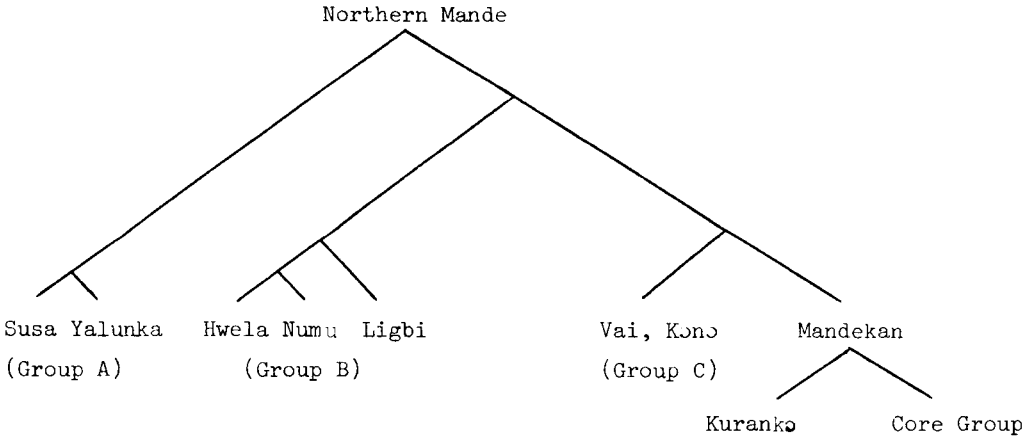
In this article nine languages in the Mandekan subgroup are used to reconstruct the phonological system of Proto-Mandekan, including consonants and vowels in all positions. The standard comparative method is used. Correspondences supporting the reconstruction are presented along with an indication of how many such correspondences are found in the data. Also included are charts of the reconstructed phonological system and word lists at each stage of the reconstruction. Irregular phonological matchings are also discussed in detail in separate sections. This is to be the first in a series of forthcoming papers aimed at reconstructing the phonological system of Proto-Northern Mande, of which the Mandekan languages form a subgroup.

1. Introduction

The objective of this paper is to reconstruct the proto-consonant and vowel system of a group of West African languages known by the cover term Mandekan. It is to be the first in a series of papers aiming at reconstructing the larger subgroup of languages to which Mandekan belongs: Northern Mande. A survey of the linguistic relationship of this subgroup to other African languages, as well as an overview of the geographical setting of these languages, will provide the reader with a better feel for the data to follow.

In 1963 Joseph Greenberg completed a classification of African languages which resulted in the assignment of all African languages into one of four major families: Afro-Asiatic, Nilo-Saharan, Khoisan or Niger-Kordofanian. It has been well argued by Welmers [1958] that Mande may well have been the first major language group to branch from the Niger-Kordofanian family. Further historical developments saw the Mande group branch into two divisions: Northern-Western and Southern-Eastern. Southern-Eastern later divided into the Southern and Eastern subgroups, while Northern-Western divided into the Northern and Southwestern subgroups.

The tree below shows the further development of Northern Mande:



The Northern subgroup of the Mande language group is the prime focus of this study. The languages belonging to Northern Mande are spoken in the heart of West Africa, primarily in and around the countries of Mali, Sierra Leone, Guinea, Gambia, Ivory Coast, and Ghana.

1.1. Materials and method. The material used in this reconstruction was gathered by Long [1971] from a variety of different sources and includes 17 Northern Mande languages. Although a Swadesh list of only 100 words was used, the insufficiency of the word list should be partially overcome by the breadth in number of languages used. Furthermore, a larger word list would have required much greater length of presentation than was possible.

The procedure used in this paper is standard comparative reconstruction methodology. The languages were subdivided into small workable groups of two to five languages each, suggested by the lexico-statistic evidence provided in Long's paper. When Long's calculations seemed questionable for one reason or another they were supplemented with calculations made by Wm. E. Welmers and myself.[1] It should be noted that slight to moderate errors

[1]We found a number of reasons for doubting some of the statistics presented by Long. First of all, we found some words to be listed wrong, such as the word for 'five' appearing under the column for 'four'. Secondly, certain figures did not appear to add up right. For example,

in percentage are not nearly as crucial in the determination of grouping for the reconstruction process as they are for the relative classification of languages, since the reconstruction process will ultimately bring all related languages under the scope of comparison with each other.

The 17 languages were first broken down into four groups: (1) Mandekan: Xassonke, Maninka, Bambara, Dyula, Konyanka, Wassulunka, Diakhanka, Mauka and Bo; (2) Group C: Kuranko, Kono and Vai; (3) Group B: Hwela, Numu and Ligbi; (4) Group A: Susu and Yalunka. Mandekan was then divided into two groups because of its size: (1A) M1: Xassonke, Maninka, Bambara and Dyula; (1B) M2: Konyanka, Wassulunka, Diakhanka, Mauka and Bo.[2]

Languages were considered as belonging to the Mandekan group on the basis of cognate percentage maxima between them ranging from the low 80's to the mid 90's. While a few comparisons showed percentages below the low 80's (i.e. Bo:Xassonke = 75-79%), a comparison of either of these languages to most of the core group shows much higher cognate percentages (i.e. Bo: Bambara = 88-90% or Xassonke:Bambara = 82-88%).

Kuranko, Kono and Vai were originally grouped together because Long's calculations show a closer relationship between them than with the other languages. Recent calculations done by Welmers and myself, however, indicate a closer relationship of Kuranko to Mandekan than to either Kono or Vai, though Kono and Vai are closer to Kuranko than they are to any other

---

Long shows a relationship of 49-69% for Mandinka:Mauka, 81-85% for Mandinka: Bo, and 84-89% for Mauka:Bo. This would mean that of two languages which differ from each other from 11-16% (Mauka:Bo), one differs from Mandinka at about 41% and the other differs from Mandinka at about 17% (averages of minima and maxima). This indicates a percentage spread between the two languages of 24% in their respective relationships to Mandinka, yet the maximum differentiation indicated by Long is 16% between the two languages. Thirdly, figures did not seem to match with those anticipated by Welmers, which naturally led to making some of our own cognate counts.

[2]The groups to be reconstructed were labeled A, B, C, and Mandekan for two good reasons: (1) Of the 4 groups, only Mandekan has a generally accepted cover term in the literature and (2) The labeling of A, B, C will allow the reader to keep in mind what level in the reconstruction he is dealing with, since A represents the first branch-off from Northern Mande, B the second, C the third and Mandekan the fourth. I am indebted to Wm. E. Welmers for the suggestion.

language. As noted above, this ultimately makes no difference in the reconstruction process.

Hwela, Numu and Ligbi show relationships with each other centering in the low 80's, whereas their relationships to the other languages are no better than the mid 50's.

Susu and Yalunka relate at 83-91%, while comparing them to any other language yields no closer relationship than the mid 40's to low 50's.

After having reconstructed the groups above, the proto-forms will be brought together in the following manner. The two proto subgroups, *M1 and *M2, showing the closest relationship, will be used to reconstruct Proto-Mandekan. In this article we will deal only with the reconstruction of Proto-Mandekan. In a future paper Proto C, B and A will be stirred in respectively, rendering Proto-Northern Mande.

A word about correspondences. In any reconstruction there are matchings which do not parallel correspondences and are therefore aberrant for known or unknown reasons. When this occurs, a tentative guess at the proto segment will be made, with the segment reconstructed in this fashion underscored. For example, if a correspondence [o:o:o:o] is reconstructed */o/, what should be done with [u:o:o:o] if cognation is sure and the matching is unique? A reasonable guess will be made for this segment and it will be underscored in the reconstruction (i.e. *bo̲lo). It should be remembered that these word lists come from many sources and were collected as early as 1921, so some of the transcriptions may well be skewed. Tentative reconstructions of this nature may serve to level out the possible inconsistencies, while underscoring will serve to remind the reader that the reconstructed segment is tentative. Matchings of this nature will be discussed following presentation of the correspondences.

2. Reconstructing Mandekan — M1

As mentioned above, nine languages have been used here to represent the Mandekan group. These nine languages were subdivided into two subgroups to facilitate the comparative method. The first subgroup is made up of Xassonke (X), Maninka (M), Bambara (B) and Dyula (D).

2.1. M1 consonants. In the following reconstruction three examples at most

will be given to illustrate the correspondence in question due to the magnitude of this paper. To the right of the examples will be a number indicating the number of such correspondences found in the 100 word list.

Table 1 — Initial Consonants

Labials

		22. 'hand'	28. 'navel'	56. 'big'	No. of Corr.
*/b/	X:	b ulo	b ata	b on	7
	M:	b olo	b ara	b on	
	B:	b olo	b ara	b on	
	D:	b oro	b ara	b on	
		7. 'person'	9. 'woman'	75. 'hear'	
*/m/	X:	m ɔgɔ	m uso	- --	3
	M:	m ɔgɔ	m oso	m ɛn	
	B:	m ɔgɔ	m oso	m ɛn	
	D:	m ɔgɔ	m uso	m ɛ	
		55. 'dog'	73. 'stand'		
*/w/	X:	w ulɔ	w ule		2
	M:	w ulu	w uli		
	B:	w ulu	w uli		
	D:	w uru	w uri		
		11. 'father'	47. 'leaf'	58. 'black'	
*/f/	X:	f a	f itɔ	f in	5
	M:	f a	f ida	f in	
	B:	f a	f ura	f in	
	D:	f a	f la	f in	

Dentals

		10. 'child'	18. 'mouth'	57. 'small'	
*/d/	X:	d enden-ŋɔ	d a	d ɔgɔ	5
	M:	d en	d a	d ɔgɔ	
	B:	d en	d a	d ɔgɔ	
	D:	d en	d a	d ɔgɔ	
		17. 'ear'	33. 'fire'	39. 'sun'	
*/t/	X:	t ulo	t a	t ilo	6
	M:	t olo	t a	t ele	
	B:	t ulo	t a	t ile	
	D:	t oro	t a	t ɛre	

Dentals

		5. 'four'	20. 'tongue'	49. 'milk'	No. of Corr.
*/n/	X:	n aani	n ɛn-ŋɔ	n ɔnɔ	6
	M:	n aanin	n ɛn	n ɔnɔ	
	B:	n aani	n ɛn	n ɔnɔ	
	D:	n aani	n ane	n ɔnɔ	

		41. 'night'	43. 'smoke'	54. 'snake'	
*/s/	X:	s u-o	s isi-o	s a	6
	M:	s u	s isi-o	s a	
	B:	s u	s isi	s a	
	D:	s u-ra	s isi	s a	

Resonants

		6. 'five'	69. 'lie'	
*/l/	X:	l olu	l a	2
	M:	l oolu	l a	
	B:	d uuru	d a	
	D:	l oolu	l a	

Palatals

		16. 'eye'	19. 'tooth'	60. 'good'	
*/ny/	X:	ny a	ny in-ŋɔ	ny in	3
	M:	ny a	ny in	ny in	
	B:	ny a	ny in	ny i	
	D:	ny ɛ	ny in	-- --	

		31. 'blood'	45. 'rope'	93. 'long'	
*/j/	X:	j ɛlo	j ulu	j an	5
	M:	j eli	j ulu	j an	
	B:	j oli	j uru	j an	
	D:	j oli	j uru	j an	

		77. 'see'	95. 'here'	46. 'tree'	
*/y/	X:	j e	j an	y iro	3
	M:	y e	y an	y iri	
	B:	y e	y an	y iri	
	D:	y e	y an	y iri	
		elsewhere		/_i	

Velars

		2. 'one'	13. 'head'	99. 'in'	
*/k/	X:	k elen	k un-ŋɔ	k ɔnɔ	10
	M:	k elen	k un	k ɔnɔ	
	B:	k elen	k un	k ɔnɔ	
	D:	k ɛlɛn	k un	k ɔnɔ	

Velars

		36. 'salt'	40. 'moon'	62. 'old'	No. of Corr.
*/k'/		[x] ɔxɔ	[x] aro	[x] ɔto	3
		[k] ɔgɔ	[k] aro	[k] ɔrɔ	
		[k] ɔgɔ	[k] alo	[k] ɔrɔ	
		[k] ɔɣɔ	[k] ari	[k] ɔrɔ	

Lab.Vel.

		59. 'white'	63. 'hot'	29. 'skin'	
*/gb/	X:	[xw] e	[--] --	[g] ulo	3
	M:	[gb] ɛ	[--] --	[gb] olo	
	B:	[j] ɛ	[g] an	[g] olo	
	D:	[gb] ɛ	[gb] an	[--] --	
		/_V	elsewhere		
		[+high, +front]			

Table 2 — Medial Consonants

Labials

		4. 'three'	38. 'stone'	No. of Corr.
*/b/	X:	sa [b] a	-- [-] -	2
	M:	sa [b] a	ka [b] a	
	B:	sa [b] a	ka [b] a	
	D:	sa [w] a	-- [-] -	

		64. 'cold'	74. 'say'	
*/m/	X:	-- [-] -	xu [m] a	2
	M:	su [m] a	ku [m] a	
	B:	su [m] a	ku [m] a	
	D:	su [m] a	koo [m] a	

Dentals

		28. 'navel'	67. 'new'	94. 'short'	No. of Corr.
*/t/	X:	ba [t] o	ku [t] ɔ	su [t] u	5
	M:	ba [d] a	ku [d] a	su [d] un	
	B:	ba [r] a	ku [r] a	su [r] un-	
	D:	ba [r] a	ku [r] a	su [r] u	

		27. 'belly'	5. 'four'	49. 'milk'	
*/n/	X:	ko [n] o	naa [n] i	nɔ [n] ɔ	5
	M:	kɔ [n] ɔ	naa [n] in	nɔ [n] ɔ	
	B:	kɔ [n] ɔ	naa [n] i	nɔ [n] ɔ	
	D:	kɔ [n] ɔ	naa [n] i	nɔ [n] ɔ	

Dentals

		43. 'smoke'			14. 'hair'			No. of Corr.
*/s/	X:	si	s	i-o	kun-	s	igi	12
	M:	si	s	i-o	kun-	s	i	
	B:	si	s	i	kun-	s	igi	
	D:	si	s	i	kun-	z	igi	

/N_

Velars

		57. 'small'			68. 'sit'			82. 'cut'			
*/g/	X:	dɔ	g	ɔ	si	g	i	ti	g	ɛ	4
	M:	dɔ	g	ɔ	si	g	i	tɛ	g	ɛ	
	B:	dɔ	g	ɔ	si	g	i	ti	g	ɛ	
	D:	dɔ	g	ɔ	si	g	i	ti	g	ɛ	

		7. 'person'			70. 'sleep'			81. 'kill'			
*/g'/	X:	mɔ	g	ɔ	sinɔ	g	ɔ	fa	g	a	3
	M:	mɔ	g	ɔ	sinɔ	g	ɔ	fa	g	a	
	B:	mɔ	g	ɔ	sunɔ	g	ɔ	fa	g	a	
	D:	mɔ	ɣ	ɔ	sunɔ	ɣ	ɔ	fa	ɣ	a	

Resonants

		17. 'ear'			39. 'sun'			48. 'root'			
*/l/	X:	tu	l	o	ti	l	o	li	l	ɔ	11
	M:	to	l	o	te	l	e	li	l	in	
	B:	tu	l	o	ti	l	e	di	l	i	
	D:	to	r	o	tɛ	r	e	li	r	i	

Table 3 — Final Consonants

Dentals

		21. 'neck'			23. 'foot'			56. 'big'		
*/n/	X:	ka	n	-ŋɔ[3]	si	n	-ŋɔ	bo	n	16
	M:	ka	n		se	n		bo	n	
	B:	ka	n		se	n		bo	n	
	D:	ka	n		se	n		bo	n	

2.1.1. Discussion of M1 consonant irregularities. It is a well known axiom of linguistic theory that although phonetic change is regular, words tend to have their own histories, resulting in a paradoxical mismatch

[3]The suffix -ŋɔ is a Xassonke innovation and not reconstructible in Proto-Mandekan.

between two real processes of linguistic change. Northern Mande is no exception, which explains the need for a section on irregular matchings. The following discussion will present certain irregularities in sure cognates, as well as provide argumnets for tentative reconstruction of those segments involved.

2.1.1.1. Labials. There are no exceptions to the labial correspondences in initial position, and no labial consonants are found in Proto-M1 in final position. In medial position there is one irregularity out of nine occurences. The matching [b:b:g:ɣ] for 'meat' (35): (X) subɔ , (M) sobo , (B) sogo , (D) soɣo . (Henceforth the words will be arranged in the order, from top to bottom, in which they are presented in the Swadesh list, with no language labels given.) The first question to be answered is whether these are indeed cognates. If not the matter is a simple one, since then both a */b/ and */g/ are easily reconstructed. However, we are not certain one way or the other. Assuming they are cognate, we might be tempted to guess a labio-velar, except for the fact that there is no support in the data for such a reconstruction, either in terms of the medial consonant system of Proto-M1, or in terms of evidence from the other 13 languages. Proto-M2, it will be shown, has the same difficulty with this correspondence. There is some motivation for reconstructing a */b/ tentatively, given the evidence from Group A (Susu-Yalunka), which reconstructs with */b/. If the proto form were */g/, Susu and Yalunka would have had to innovate [b] quite independently from those Mandekan languages which also innovated [b]. Positing a proto */b/ is therefore a more probable reconstruction than */g/.

A second seeming irregularity is found in [m:m:n#:m] for 'eat' (79): dumu, damun, dun, dumu. In Bambara, however, final nasals are in reality phonetically nasalised vowels. Further evidence for an historical [m] in this word is the present participle 'eating', which is phonetically [dumuni]. Clearly, this should be reconstructed as */m/.

Thirdly, the word for 'knee' (24) reveals a unique medial [mb]. Both Groups A and C show exactly the same phonetic realisation of this cluster in the cognate form, yet this is the only example in the Swadesh list attesting to such a cluster. Certain types of attrition (e.g. [k] → [x])

between 'knee' in M1 and Group A point up its having been around in N.M. a good while, and make borrowing unlikely. It is at best a highly tentative *ᵐ/m/ and *ᵐ/b/, and should be entered with a question mark.

2.1.1.2. Dentals. Dentals in initial positions are extremely consistent. There is only one aberrance in twenty-four examples: [t:t:t:n] in 'name' (1) (tɔgɔ, tɔgɔ, tɔgɔ, nɔgɔ). The data in M1 and throughout Mandekan speak for */t/. The explanation for [n] in Dyula is unknown at this point.

The dental series has another similar example in medial position, where only two irregular matchings occur in fourteen examples. The word 'nail' (14) yields [n:r:n:n] (sonin-ŋɔ, sorin, sɔnin, sani). Again the overwhelming evidence from Mandekan and other languages, such as Ligbi, is for */n/.

The second irregularity in medial position is [t:d:r:l] in 'leaf' (14) (fitɔ, fida, fura, fla). This matching only differs from the */t/ correspondence in Dyula's [l], and is probably due to the contact of [f] with [r]. Such [Cl] clusters occur commonly in words syncopating medial vowels. Bambara, for instance, may have [tile] or [tle] for 'sun', but [Cr] clusters do not occur. This may have triggered an [r] to [l] change, a very frequent occurrence in languages of this family.

*ᵐ/n/ is the only final consonant in Proto-M1, and in 16 occurrences there are no exceptions.

2.1.1.3. Resonants. */r/ is very difficult to reconstruct for *M1 which shows only one matching of [r:r:r:r] in 'tree': yirɔ, yiri, yiri, yiri. This is reconstructed as */r/ but only very hesitantly and entered with a question mark in the Proto-M1 consonant chart (section 2.3.).

Medial resonants, as the reader will discover, are a very sticky problem in N.M. Although there exist 11 examples of an [l:l:l:r] correspondence rendering */l/, there are three examples of [l:l:r:r], two examples of [r:r:l:r], one example of [l:l:l:l] and one of [l:r:r:-]. A chart is provided to illustrate these correspondences and matchings:

(1) X	M	B	D		
l	l	r	r	6.	'five': lolu, loolu, duuru, looru;
				45.	'rope': julu, julu, juru, juru;
				98.	'path': sila, -----, sira, sira
r	r	l	r	40.	'moon': xaro, karo, kalo, kari;
				84.	'sew': xara, kara, kala, kara

(1) cont.

X	M	B	D			
l	l	l	l	2.	'one':	kelen, kelen, kelen, kɛlɛn
l	r	r	-	24.	'knee':	kumbalin, kumberen, kumbere, -------

The [l:l:l:l] matching may have an explanation in Dyula's close association with Bambara. Welmers [personal communication] suggests that the borrowing of this particular word in this language area is widespread and that it is not at all unlikely that the form in Dyula was thus influenced. The proto segment was undoubtedly *[l].

[r:r:l:r] is trickier. The prevalence of [r] suggests a proto */r/. The evidence from Southwestern Mande places this interpretation in doubt. The word for 'moon' shows up in S.W.M. as [galon], indicating a probable */l/ reconstruction. It also appears as an [l:l:r:r:l] correspondence in M2 and as [l] in Vai. Furthermore, both examples of this correspondence occur in words with initial */k'/. None of the 11 regular *[l] correspondences occur after */k'/, suggesting that this may well be a conditioned variant of */l/ in this environment. The evidence together points strongly toward a conditioned variant of */l/.

Of all the correspondences, [l:l:r:r] is the most confusing. */l/ is suggested by Susu and Yalunka ([l:l]) and by Group C ([l:l:l]) for 'five'. */r/ is suggested by Susu and Yalunka ([r:r]) and by M2 ([r:r:r:l:-]) for 'path', while Group C suggests */l/ ([l:ø:l]). The evidence is strong for reconstructing */l/ for 'five' and a bit weaker for reconstructing */r/ for 'path', yet they show a correspondence with each other in M1. However, it would be difficult to reconstruct */r/ for 'path' for other reasons, since this is the only example in the Swadesh list warranting such a reconstruction for M1, and a poor one at that. Positing an */l/ for 'path', it appears what may have happened is that Group C retained the original [l]. After the separation of Group C and Mandekan, an [l] to [r] change began to take place, but only after Kuranko had separated from the core of Mandekan. Susu and Yalunka (Group A), then, converged accidently. As noted above, changes of [l] to [r] and the reverse are frequent in N.M. languages. The word for 'rope' shows the same support as 'five'. Since there is no apparent conditioning factor for this correspondence to differ

from the regular */l/ correspondence, we reconstruct a tentative */l'/.

The matching in (24) 'knee' is [l:r:r:Ø]. Although cognate forms exist in Group A, the segment has been lost. Group C supports an */l/. M2 is mixed. Faute de mieux, we reconstruct a highly tentative */l'/.

2.1.1.4. Palatals. Only one of twelve initial palatal consonant correspondences is irregular: (53) 'fish': nyɛgo, jɛgɛ, jɛgɛ, yigɛn yielding an [ny:j:j:y] matching. Group C supports an */ny/ reconstruction, while Group A supports */y/. Only because it is more natural for [ny] to become [y] (loss of nasalisation) than the reverse (gain of nasalisation) is */ny/ selected as a highly tentative reconstruction, leaving accidental convergence to once again explain away the Group A [y] reflex.

2.1.1.5. Velars. Velar anomalies consist of [-:ky:c:c] for 'man' (---, kyɛ, cɛ, kyɛ) and 'sand' (kɛnyɛ, kinyɛ, cɛncɛn, cɛnjɛn) in medial position. Not much can be said about these, since correspondences such as (51) occur (e.g. 'egg': kilo, kili, kili, kiri) in which a high front vowel fails to palatalize [k]. Groups A, B and C suggest */k/ for 'man' and Group C the same for 'sand'. M2, however, shows some reflexes of [t] and [ty] for 'sand'. This is not as irregular as would seem at first blush. Bambara, for example, has free variation between [tle] and [kle] for 'day', and the proto form is undoubtedly [tile]. M2 is probably undergoing the same alternation. A */c/ is not proposed because nowhere else is it reconstructable, and furthermore, a change from [c] to [k] is less probable than the reverse. The tentative reconstruction for these forms is */k/.

2.1.1.6. Labio-velars. There are no examples of labio-velars other than what has been presented above.

A consonant chart will be presented after presentation of the vowels, allowing a presentation of the entire phonological system of Proto-M1 at one time to avoid reduplication.

2.2. M1 vowels. There are no initial vowels presented because none occur in the Swadesh list. The pronouns, monosyllabic vowels, will be treated as final consonants due to this language internal pattern.

Table 4 — Medial Vowels

Front

		19. 'tooth'	43. 'smoke'	48. 'root'	No. of Corr.
*/i/	X:	ny [i] n-ŋɔ	s [i] si-o	l [i] lɔ	10
	M:	ny [i] n	s [i] si-o	l [i] lin	
	B:	ny [i] n	s [i] si-o	d [i] li	
	D:	ny [i] n	s [i] si	l [i] ri	

		10. 'child'	66. 'straight'		
?*/e/	X:	d [e] nden-ŋɔ	til [e] n		2
	M:	d [e] n	tel [e] n		
	B:	d [e] n	til [e] n		
	D:	d [e] n	ter [e] n		

		53. 'fish'	50. 'grease'		
?*/ɛ/	X:	ny [ɛ] go	- [-] -		2
	M:	j [ɛ] gɛ	k [ɛ] n		
	B:	j [ɛ] gɛ	k [ɛ] n		
	D:	y [i] gɛn	k [ie] n		

Mid

		4. 'three'	21. 'neck'	40. 'moon'	
*/a/	X:	s [a] ba	k [a] n-ŋɔ	x [a] ro	11
	M:	s [a] ba	k [a] n	k [a] ro	
	B:	s [a] ba	k [a] n	k [a] lo	
	D:	s [a] ba	k [a] n	k [a] ri	

Back

		45. 'rope'	61. 'new'	91. 'what'	
*/u/	X:	j [u] lu	k [u] tɔ	m [u] n	9
	M:	j [u] lu	k [u] da	m [u] n	
	B:	j [u] ru	k [u] ra	m [u] n	
	D:	j [u] ru	k [u] ra	m [u] n	

		22. 'hand'	29. 'skin'	35. 'meat'	
*/o/	X:	b [u] lo	g [u] lo	s [u] b	3
	M:	b [o] lo	gb [o] lo	s [o] bo	
	B:	b [o] lo	g [o] lo	s [o] go	
	D:	b [o] ro	- [-] --	s [o] ɣo	

		1. 'name'	7. 'person'	49. 'milk'	
*/ɔ/	X:	t [ɔ] gɔ	m [ɔ] gɔ	n [ɔ] nɔ	10
	M:	t [ɔ] gɔ	m [ɔ] gɔ	n [ɔ] nɔ	
	B:	t [ɔ] gɔ	m [ɔ] gɔ	n [ɔ] nɔ	
	D:	t [ɔ] gɔ	m [ɔ] gɔ	n [ɔ] nɔ	

Table 5 — Final Vowels

									No. of Corr.
Front									
	34.	'water'		68.	'sit'		78.	'give'	
*/i/	X:	j [i] -o			sig [i]			d [i]	7
	M:	j [i]			sig [i]			d [i]	
	B:	j [i]			sig [i]			d [i]	
	D:	j [i]			sig [i]			d [i]	
	77.	'see'							
?*/e/	X:	j [e]							1
	M:	y [e]							
	B:	y [e]							
	D:	y [e]							
	44.	'sand'		82.	'cut'		92.	'not'	
*/ɛ/	X:	kɛny [ɛ]			tig [ɛ]			t [ɛ]	3
	M:	kiny [ɛ]			tɛg [ɛ]			t [ɛ]	
	B:	cɛnc [ɛ]	n		tig [ɛ]			t [ɛ]	
	D:	cɛnj [ɛ]	n		tig [ɛ]			t [ɛ]	
Mid									
	4.	'three'		11.	'father'		18.	'mouth'	
*/a/	X:	sab [a]			f [a]			d [a]	13
	M:	sab [a]			f [a]			d [a]	
	B:	sab [a]			f [a]			d [a]	
	D:	sab [a]			f [a]			d [a]	
Back									
	6.	'five'		41.	'night'		45.	'rope'	
*/u/	X:	lo l [u]			s [u] -o			jul [u]	5
	M:	lool [u]			s [u]			jul [u]	
	B:	duur [u]			s [u]			jur [u]	
	D:	loor [u]			s [u] -ra			jur [u]	
	9.	'woman'		17.	'ear'		22.	'hand'	
*/o/	X:	mus [o]			tul [o]			bul [o]	3
	M:	mos [o]			tol [o]			bol [o]	
	B:	mus [o]			tul [o]			bol [o]	
	D:	mus [o]			tor [o]			bor [o]	
	52.	'bird'		57.	'small'		70.	'sleep'	
*/ɔ/	X:	kɔn [ɔ]			dɔg [ɔ]			sinɔg [ɔ]	8
	M:	kɔn [ɔ]			dɔg [ɔ]			sinɔg [ɔ]	
	B:	kɔn [ɔ]			dɔg [ɔ]			sunɔg [ɔ]	
	D:	kɔn [ɔ]			dɔg [ɔ]			sunɔɣ [ɔ]	

2.1.1. M1 vowel irregularities. Much speculation will be advanced in this section in an attempt to offer some possible and plausible explanation for irregularities. It is, of course, impossible to be certain of these interpretations without many more confirming examples.

2.2.1.1. Front. High front vowels in medial position are irregular in seven of seventeen cases. Four of these examples involve a change of [i] to [u] and the other three involve a change from [i] to a lower front vowel [e] or [ɛ].

The [i] to [u] change twice involves a [u:i:i:i] correspondence and twice an [i:i:u:u] correspondence:

(2)

X	M	B	D		
u	i	i	i	26.	'breast': sun-ji-o, sin, sin, sin
u	i	i	i	3.	'two': fula, fila, fila, ----
i	i	u	u	70.	'sleep': sinɔgɔ, sinɔgɔ, sunɔgɔ, sunɔɣɔ
i	i	u	Ø	47.	'leaf': fitɔ, fida, fura, fla

Note that Maninka alone does not undergo this change. Little can be said about these correspondences that is not extremely ad hoc. For example, 'two' and 'leaf' provide almost identical environments, yet [i] becomes [u] in Xassonke [fula] but not in [fitɔ]. Likewise, [i] becomes [u] between [s] and [n] in Xassonke [sun-ji-o] but not in [sinɔgɔ], whereas Bambara does the reverse, remaining [i] in [sin] but becoming [u] in [sunɔgɔ]. Environments which are nearly exactly the same treat the same vowel in opposite fashion in Xassonke, Bambara and Dyula. However, we can be quite certain despite this deviant behavior that the proto-segment in these cases was indeed */i/, since Group A supports */i/ for 'breast', 'two' and 'sleep' and Group C further supports it for 'breast' and 'two'. Although no cognate is attested for 'sleep' in the other groups, it can be implied from the general pattern that the proto form was */i/.

The [i] to lower front vowel change in medial position occurred in three words:

(3)

X	M	B	D		
i	e	i	ɛ	39.	'sun': tilo, tele, tile, tɛre
i	e	i	e	66.	'straight': tilen, telen, tilen, teren
i	ɛ	i	i	82.	'cut': tigɛ, tɛgɛ, tigɛ, tigɛ

The interesting point here is the consistency of the assimilation in M1 languages. Anticipatory assimilation takes place in Maninka and Dyula across resonants. In 'cut', Maninka shows an extension of this process across [g]. That this process is extending in Maninka is further illustrated. by the word 'woman'. The Proto-M1 form for this word is */muso/, which renders [moso] in Maninka and remains [muso] in the other three languages. These correspondences, then, are not as irregular as they might seem, but rather appear to be conditioned variants of *[i].

Of the twelve high front vowels in final position, seven are regular correspondences and five appear to be irregular. Three of these irregularities involve the replacement of [i] with [o] or [ɔ] in Xassonke. The [o] reflex may well be a definite suffix, which is sometimes assimilated to the preceding vowel and sometimes not. In many languages of this area, nouns must be elicited in lists in their definite form. Consider [san-ji-o] 'rain' or [su-o] 'night' as compared with [jɛlo] 'blood' (< */jɛli/) or [yirɔ] 'tree' (< */yiri/). Why this vowel takes the form [o] in some instances and [ɔ] in others is not understood. Nevertheless, the words 'tree': yirɔ, yiri, yiri, yiri; 'root': lilɔ, lilin, dili, liri(n); and 'egg': sisɛ-kilo, sisɛ-kili, kili, kiri may all be reconstructed with */i/ in final position, a definite suffix disrupting the otherwise regular correspondences. As will be demonstrated, the same form of definite suffix is used in Diakhanka (cf. M2) with the same results, a strong support for this analysis.

The other two irregularities are 'rain': san-ji-o, san-ji, san-ji, san-ye and 'stand': wule, wuli, wuli, wuri yielding matchings of [i:i:i:e] and of [e:i:i:i]. The reasons for these lowerings are not known, but speculation will be made further along in the discussion in connection with another vowel changing to [e]. The evidence from M2 points towards a tentative */i/ reconstruction.

Medial high-mid front vowels are not found in as frequent use in the Swadesh list as high front vowels. Only two examples of [e:e:e:e] are available with two irregularities in 'one': kelɛn, kelen, kelen, kɛlɛn and 'foot': sin-ŋɔ, sen, sen, sen. The evidence from Group A and C supports */e/ for 'one' and */ɛ/ for 'foot'. There is no possibility of

reconstructing */ɛ/ for 'foot', however, since there is no phonetic justification for it in M1 and */ɛ/ is reconstructable from a totally different correspondence. The most reasonable conclusion is that 'foot' be reconstructed */e/ tentatively, allowing nasalisation in a monosyllable to explain vowel lowering in Groups A and C.

There is only one example of [e:e:e:e] in final position, but there is another case of [o:e:e:e] in 'sun': tilo, tele, tile, tɛre. This, too, reconstructs as */e/ disturbed in its regular correspondence by the vowel suffix once again. This gives a little more credence to the existence of a final */e/, these being the only two examples.

Mid-low front vowels are also sparse medially. Even the suggested correspondences are weak. The two irregularities for this set are 'tongue': nɛn-ŋɔ, nɛn, nɛn, nane and 'sand': kɛnɛ-kɛnyɛ-nyɔ, kinyɛ, cɛncɛn, cɛnjɛn providing matchings of [ɛ:ɛ:ɛ:a] and [ɛ:i:ɛ:ɛ]. Support is adequate from Group C to reconstruct */ɛ/ for 'sand'. 'Tongue' is more difficult, and will be reconstructed */ɛ/ on the strength of number of occurrences alone. Both are very tentative, as is the whole of the */ɛ/ reconstruction in medial position.

The evidence is much stronger for */ɛ/ in final position. Three fine examples are provided and another definite suffix interference in 'fish': nyɛgo, jɛgɛ, jɛgɛ, yigɛn yielding [o:ɛ:ɛ:ɛ]. Evidence from M2 and Group C also supports */ɛ/ for 'white': xwe, gbɛ, jɛ, gbɛ which gives [e:ɛ:ɛ:ɛ]. These may both be reconstructed */ɛ/, 'white' tentatively, and 'fish' more assuredly.

2.2.1.2. Mid. The mid vowel [a] is extremely common in medial and final positions, with no exceptions out of eleven examples in medial position and only three out of sixteen finally. Of the three, two are further examples of phonetic interference with the definite suffix. 'Leaf': fitɔ, fida, fura, fla and 'new': kutɔ, kuda, kuda, kura reconstruct with */a/.

The third irregularity is 'eye': nya, nya, nya, nyɛ. It is interesting that [a] is raised to [ɛ] after [ny] here and [i] is lowered to [ɛ] after [y] in the word 'rain' in the same language. In none of the other eleven examples of [i] in final position is it preceded by another palatal glide type consonant, nor is [a]. Could it be that Dyula likes mid front vowels

after glides? Perhaps [a] is assimilated to the palatal glide, while [i] is dissimilated so that it will not be absorbed, resulting in a phonetic merger produced by two opposing tendencies. Needless to say, this is speculation to the highest degree. Nevertheless, this may be reconstructed */a/ tentatively but strongly.

2.2.1.3. Back. High back vowels are prevalent medially. There are three irregularities to nine regular correspondences. As mentioned earlier, 'ear': tulo, tolo, tulo, toro and 'woman': muso, moso, muso, muso are examples of [u] assimilating to [o] in Maninka (cf. 2.2.1.2.). The word 'say': xuma, kuma, kuma, kooma alone stands as an unexplained irregularity. M2 and Group C indicate a tentative */u/ reconstruction.

Final high back vowels are abnormal in one of six cases, again an example of the definite suffix in 'dog': wulɔ, wulu, wulu, wuru . This reconstructs as */u/ with no problem.

High-mid back vowels occur six times in medial position, three of which are regular [u:o:o:o] correspondences. The final vowel in each of these cases is also reconstructed */o/. This indicates a possible dissimilation rule operating in Xassonke which changes the first of two successive occurrences of [o] to [u], such that */bolo/ 'hand' → [bulo], etc. A would be exception to this dissimilation rule is found in 'belly': kono, kɔnɔ, kɔnɔ, kɔnɔ . Welmers [personal communication] has suggested that this is a problem of transcription in the case of Xassonke. If this suggestion is not correct, then recourse must be made to another explanation for this deviance. This explanation will be presented below in connection with a problem which may be related.

In view of the [o] to [u] dissimilation rule, we have an explanation for shy 'big': bon, bon, bon, bon does not follow the general [u:o:o:o] pattern: there is no need for dissimilation. This then may be reconstructed */o/.

'Five' (lolu, loolu, duuru, looru) is interesting from two points of view. First, this is the only case of assimilation in Bambara thus far and secondly, this is a case of upward assimilation (e.g. [o] > [u]) whereas the cases of Maninka and Dyula have all been downward (e.g. [u] > [o] and [i] > [e], [ɛ]). Another way to view this same phenomenon is that all

three languages assimilate progressively, but Bambara assimilates to high vowels and Maninka and Dyula assimilate to mid. Which interpretation, if either, may be correct is difficult to say without further information. It should also be noted that all of the cases of assimilation in M1 presented in the Swadesh list are examples of assimilation within a series, e.g. a front vowel may raise or lower to assimilate, as may a back vowel, but they may not move cross-laterally from front to back or back to front. These points are far from proven, but highly suggestive, to say the least. */o/ may be tentatively reconstructed for 'five'.

'Nail' is indeed an oddity: sonin-ŋɔ, bolo-sorin, sɔnin, boro-sani . Why the [o:o:ɔ:a] matching is unknown. The support is skimpy and could be either */o/ or */ɔ/ but is reconstructed as an extremely tentative */o/.

'Bone' is also inexplicable: ----, kɔlɔ, kolo, koro . The evidence from M2 and Ligbi point towards a tentative */o/ in medial and final position.

Final [o] is less stable, four of seven cases being irregular. One example, 'bone', was discussed above.

'Meat' is also inexplicable: subɔ, sobo, sogo, soɣo . This [ɔ:o:o:o] matching is reconstructed a tentative */o/.

'Moon', likewise, cannot be adequately explained at this point: xaro, karo, kalo, kari . Why the innovated [i] is not known. This segment should probably be reconstructed */o/.

Only 'wash' appears to have light shed on it from another group. M2 suggests that it was probably a form with the shape [kuo] or [ku-ro], which became [o] in some languages and [u] in others while some, such as Dyula [kwo], still show vestiges of the original form: ku, ko, ko, kwo .

Low-mid back vowels are consistent in medial position, only two of eleven being irregular. 'Belly' was discussed above: kono, kɔnɔ, kɔnɔ, kɔnɔ . One speculative explanation for the aberrant form [konɔ] in Xassonke is found in rule ordering. If we assume that the dissimilation rule ([o] → [u]/__Co) operates prior to an assimilation rule (e.g. 1. kɔnɔ-o → kɔno and 2. kɔno → kono), the result will be correct, and we will have an answer for why in the first place Xassonke has an [o-o] reflex of an [ɔ-ɔ] word, and secondly why it does not undergo the

dissimilation rule. Whether this is the case, or the transcription is in error, the tentative reconstruction should be */ɔ/.

'Who' is also irregular: ----, jɔn, jɔn, jon . This irregularity is not of crucial importance, since the form cannot be reconstructed past Proto-Mandekan. It may have been */o/ or */ɔ/ and */ɔ/ is selected extremely tentatively.

Final low-mid back vowels are also consistent, one irregularity appearing in nine occurrences. 'Old': xɔto, kɔrɔ, kɔrɔ, kɔrɔ shows the same [o] influence as is present in nouns. It may be that this is a citation form even in some words other than nouns, or perhaps this is the noun 'age'? Nevertheless, this is most probably */ɔ/.

2.3. Proto-Ml C and V systems and word list. This section serves to present an overview of the entire Proto-Ml phonological system in initial, medial and final positions. The reconstructed forms of the words from the Swadesh list will also be given.

Table 6 — Proto-Ml System

Initial

Consonants				Vowels
	*t		*k,*k'?	
*b	*d	*j	*gb	
*f	*s			
*m	*n	*ny		
	*l			
*w		*y		

Medial

Consonants			Vowels	
	*t	*g,*g'		
*b			*i	*u
	*s		*e?	*o
			*ɛ?	*ɔ
*m	*n			*a
	*l,*l'?			
	*r??			

Final

Consonants

*n

Vowels

*i *u
*e? *o
*ɛ *ɔ
*a

Table 7 — Reconstructed Word List - Proto-Ml

1.	'name'	*tɔgɔ	26.	'breast'	*sin	51.	'egg'	*sisɛ-kill
2.	'one'	*kelen	27.	'belly'	*kɔnɔ	52.	'bird'	*kɔnɔ
3.	'two'	*fila?	28.	'navel'	*bata	53.	'fish'	*nyɛgɛ(n)
4.	'three'	*saba	29.	'skin'	*gbolo?	54.	'snake'	*sa
5.	'four'	*naanin	30.	'bone'	*kolo?	55.	'dog'	*wulu
6.	'five'	*looI'u	31.	'blood'	*joli	56.	'big'	*bon
7.	'person'	*mɔg'ɔ	32.	'sky'	*san-kolo	57.	'small'	*dɔgɔ
8.	'man'	*kɛ?	33.	'fire'	*ta	58.	'black'	*fin
9.	'woman'	*muso	34.	'water'	*ji	59.	'white'	*gbɛ
10.	'child'	*den(den)	35.	'meat'	*sobo	60.	'good'	*nyin
11.	'father'	*fa	36.	'salt'	*k'ɔg'ɔ	61.	'new'	*kuta
12.	'mother'	*na?	37.	'many'	* ?	62.	'old'	*k'ɔtɔ
13.	'head'	*kun	38.	'stone'	*kaba?	63.	'hot'	*gban?
14.	'hair'	*kun-sigi	39.	'sun'	*tile	64.	'cold'	*suman?
15.	'nose'	*nun	40.	'moon'	*k'alo	65.	'dry'	*ja-len
16.	'eye'	*nya	41.	'night'	*su	66.	'straight'	*tilen
17.	'ear'	*tulo	42.	'rain'	*san-ji	67.	'come'	*na
18.	'mouth'	*da	43.	'smoke'	*sisi (-o)	68.	'sit'	*sigi
19.	'tooth'	*nyin	44.	'sand'	*kɛnyɛn??	69.	'lie'	*la
20.	'tongue'	*nɛn(e)	45.	'rope'	*jul'u	70.	'sleep'	*sinɔg'ɔ
21.	'neck'	*kan	46.	'tree'	*yiri	71.	'die'	*sa
22.	'hand'	*bolo	47.	'leaf'	*fita	72.	'fall'	* ?
23.	'foot'	*sen	48.	'root'	*lili(n)	73.	'stand'	*wuli
24.	'knee'	*kumbel'en	49.	'milk'	*nɔnɔ	74.	'say'	*k'uma
25.	'nail'	*bolo-sonin	50.	'grease'	*kɛn	75.	'hear'	*mɛn?

76. 'wash' : *kuo
77. 'see' : *ye
78. 'give' : *di
79. 'eat' : *dumun
80. 'drink': *min
81. 'kill' : *fag'a
82. 'cut' : *tigɛ
83. 'hit' : * ?
84. 'sew' : *k'al'a
85. 'I' : *nɛ
86. 'you' : *i
87. 'he' : *a
88. we' : *an?
89. 'they' : * ?
90. 'who' : *jɔn?
91. 'what' : *mun
92. 'not' : * tɛ
93. 'long' : *jan
94. 'short': *sutun
95. 'here' : *yan
96. 'few' : *dɔɔni?
97. 'all' : *bɛɛ?
98. 'path' : *sil'a?
99. 'in' : *kɔnɔ
100. 'if' : *ni

Key: ___: underscoring reflects tentative reconstruction.

? : indicates that the reconstruction was from less than all four languages.

3. Reconstructing Mandekan - M2

M2, the second Mandekan subgroup, is composed of Bo (B), Konyanka (K), Wassulunka (W), Diakhanka (D) and Mauka (M).

3.1. M2 consonants.

Table 8 — Initial Consonants

Labials

		22. 'hand'	28. 'navel'	97. 'all'	No. of Corr.
*/b/	B:	b o	b a -ku	- -	5
	K:	b oro	b ara-kun	b ɛ	
	W:	b olo	b ara-kun	b ɛ	
	D:	b ulo	b ato-	b ɛ	
	M:	b o o	b a -gun	b a	
		7. 'person'	9. 'woman'	80. 'drink'	
*/m/	B:	m ogo	m uso	m i	5
	K:	m ɔ ɔ	m uso	m in	
	W:	m ɔgɔ	m uso	m in	
	D:	m ɔxɔ	m uso	m i-	
	M:	m ɔ ɔ	m oso	m in	

		55. 'dog'	73. 'stand'	No. of Corr.
*/w/	B:	- ulu	- uli	2
	K:	w ulu	w uli	
	W:	w ulu	w uli	
	D:	w ulo	w uli	
	M:	w u u	w i i	

Note that [w] is absorbed by the following [u] in Bo.

		3. 'two'	58. 'black'	81. 'kill'	
*/f/	B:	- ---	f i	- ---	5
	K:	f ila	f in	f a	
	W:	f ila	f in	f aga	
	D:	f ula	f i	f axo	
	M:	f ila	f in-ni	f a a	

Dentals

		10. 'child'	78. 'give'	
*/d/	B:	d i	d i	2
	K:	d ɛn-nin	d i	
	W:	d en	d i	
	D:	d indin-ŋɔ	d ima-ro	
	M:	d ien	d i	

		18. 'mouth'	57. 'small'	79. 'eat'	
*/d/	B:	d a	- ---	d u	4
	K:	d a	d ɔ-ya	d un	
	W:	d a	d ɔgɔn̈	d ɔn	
	D:	d a	- ---	d omo-ro	
	M:	l a	l ɔɔ	l ɔ	

The [l]:[d] variation in Mauka appears to be conditioned by [i] vs. elsewhere respectively. More evidence is needed to ascertain whether indeed the [l] and [d] in Mauka are allophones in this environment.

		17. 'ear'	39. 'sun'	33. 'fire	
*/t/	B:	t o	t e	- -	4
	K:	t oro	t ɛre	t a	
	W:	t olo	t ɛle	t a-suma	
	D:	t ulo	t ilo	t a	
	M:	t o o	t e	t a	

		49. 'milk'	67. 'come'	100. 'if'	No. of Corr.
*/n/	B:	n ono	n a	- -	5
	K:	n ɔnɔ	n a	n i	
	W:	n ɔnɔ	n a	n i	
	D:	n ɔnɔ	n a	n i	
	M:	n ɔnɔ	n a	n i	
		26. 'breast'	32. 'sky'	43. 'smoke'	
*/s/	B:	s i	s a	s isi	15
	K:	s in	s an	s isi	
	W:	s in	s an	s isi	
	D:	s in-ji-o	s an-ŋɔ	s isi-o	
	M:	s in	s an-gbo	s isi	

Resonants

		6. 'five'	69. 'lie'	
*/l/	B:	- ---	d a	2
	K:	l oru	l a	
	W:	l olu	l a	
	D:	l ulu	l a	
	M:	l oru	l a	

Whether these two examples are actually correspondences cannot be known for certain without further exemplification.

Palatals

		16. 'eye'	19. 'tooth'	
*/ny/	B:	ny a	ny i	2
	K:	ny a	ny in	
	W:	ny a	ny in	
	D:	ny a	ny in-ŋɔ	
	M:	ny a	ny in	
		34. 'water'	65. 'dry'	93. 'long'
*/j/	B:	j e	- -	- - 3
	K:	j i	j a	j ɛ
	W:	j i	j a-le	j an
	D:	j i-o	j a-re	j an
	M:	j i	j a	j an

Velars

		21. 'neck'	36. 'salt'	40. 'moon'	
*/k/	B:	k a	k oko	k alo	16
	K:	k an	k ɔ ɔ	k alo	
	W:	k an	k ɔgɔ	k aro	
	D:	k an-ŋɔ	k ɔxɔ	k aru	
	M:	k an	k ɔ ɔ	k alo	

It should be noted here that the correspondences reconstructed as */k'/ in *M1 reconstruct perfectly as */k/ in *M2.

Lab. Vel.

		63. 'hot'		59. 'white'		83. 'hit'		No. of Corr.
*/gb/	B:	-	--	py	ɛ̀	by	ɛ̀	3
	K:	gb	an	gb	ɛ	gb	asi	
	W:	-	--	gb	ɛ	gb	ɛsɛ	
	D:	g	ando	g	ɛ	g	oso-ro	
	M:	gb	an	gb	a-ni	gb	asi	

Several things speak for a */gb/ reconstruction here. First, nowhere else is [g] found initially. Secondly, the correspondence is good for K-W-D-M and only B presents a problem with voiced [by] vs. voiceless [py]. Thirdly, it is unlikely that a labio-velar would develop from a velar proto-form or from a labial proto-form, yet not so unlikely that velars and labials both would develop independently from a labio-velar ancestor. Finally, the cognates to these words in *M1 reconstruct as */gb/, as they do also in *Group C. A further note is that these two words are two of the only words in the data for which tone was supplied. It should be mentioned that the voiced:voiceless distinction is the only one differentiating these two words and may therefore carry some degree of functional load.

Table 9 — Medial Consonants

Labials		4. 'three'			38. 'stone'			No. of Corr.
*/b/	B:	--	-	-	--	-	-	2
	K:	sa	b	a	ka	b	a	
	W:	sa	b	a	ka	b	a	
	D:	sa	b	a	--	-	-	
	M:	sa	w	a	ka	w	a	

		74. 'say'			No. of Corr.
?*/m/	B:	--	-	-	1
	K:	ku	m	a	
	W:	ku	m	a	
	D:	ku	m	ɔ	
	M:	ku	m	a	

*/m/ is reconstructed here very tentatively due to the nondeviance of the [m] throughout the forms, and because it reconstructs nicely as */m/ in *M1. Two other apparent irregular */m/ matchings will be dealt with in the discussion of irregularities.

Dentals

	28. 'navel'			61. 'new'			62. 'old'			No. of Corr.
*/t/	B: ba	-	-ku	ku	r	a	ko			3
	K: ba	r	a-kun	ku	r	a	kɔ	r	ɔ	
	W: ba	r	a-kun	ku	r	a	kɔ	r	ɔ	
	D: ba	t	o	ku	t	o	--	-	-	
	M: ba	-	-gun	--	-	-	kɔ	-	ɔ-ni	

	5. 'four'			49. 'milk'			70. 'sleep'			
*/n/	B: --	-	-	no	n	o	si	n	ogo	5
	K: na	n	i	nɔ	n	ɔ	su	n	u	
	W: na	n	i	nɔ	n	ɔ	su	n	ɔgɔ	
	D: na	n	i	nɔ	n	ɔ	si	n	ɔxɔ	
	M: na	n	i	no	n	ɔ	si	n	ɔ ɔ-kɛ	

	9. 'woman'			43. 'smoke'			51. 'egg'			
*/s/	B: mu	s	o	si	s	i	--	-	- kli	3
	K: mu	s	o	si	s	i	--	-	- kili	
	W: mu	s	o	si	s	i	si	-	e-kili	
	D: mu	s	o	si	s	i-o	si	s	ɛ-kilɔ	
	M: mo	s	o	si	s	i	si	s	i-kii	

Resonants

	2. 'one'			55. 'dog'			51. 'egg'			
*/l/	B: --	-	-	u	l	u	--k	l	i	10
	K: ke	l	e	wu	l	u	--ki	l	i	
	W: kɛ	l	e	wu	l	u	--ki	l	i	
	D: kɛ	l	ɛ	wu	l	o	--ki	l	ɔ	
	M: kɛ	l	ɛ	wu	-	u	--ki	-	i	

The [l] syncopates medially in Mauka very frequently, which is the case for all resonants. The conditioning factor for deletion does not appear to be environmental, but rather may be a freely varying Ø allophone.

	46. 'tree'			47. 'leaf'			
?*/r/	B: yi	r	i	--- --	-	-	2
	K: ji	r	i	fla -bu	r	u	
	W: yi	r	i	fula-bu	r	u	
	D: yi	r	o	--- --	-	-	
	M: yi	-	i	fia -bo	-		

Here, too, the [r] syncopates medially in M.

Velars

	1. 'name'			7. 'person'			81. 'kill'			No. of Corr.
*/g/	B:	to	g	o	mo	g	o	--	-	-	4
	K:	dɔ	-	ɔ	mɔ	-	ɔ	fa	-		
	W:	tɔ	g	ɔ	mɔ	g	ɔ	fa	g	a	
	D:	tɔ	x	ɔ	mɔ	x	ɔ	fa	x	ɔ	
	M:	dɔ	-	ɔ	mə	-	ɔ	fa	-	a	

Mauka (as well as Konyanka) syncopates [g] medially, much as it treats resonants. In section 2.2.1.1. (p. 210) there is a discussion of how [g] and resonants are treated similarly in Maninka, in which vowel harmony occurs across both [g] and resonants.

Table 10 — Final Consonants

Dentals

	15. 'nose'			21. 'neck'			95. 'here'			No. of Corr.
*/n/	B:	nyu	-		ka	-		ya	-		15
	K:	nu	n		ka	n		ya	n		
	W:	nu	n		ka	n		ya	n		
	D:	nu	n	-ŋɔ	ka	n	-ŋɔ	ja	n		
	M:	nu	n		ka	n		ja	n		

In none of the 15 examples does Bo retain final [n]. The MSC of Bo has changed from allowing a final [n] consonant to admitting none at all.

3.1.1. Discussion of M2 consonant irregularities. This section, as in the *M1 reconstruction, presents irregular matchings in sure cognates with arguments for tentative reconstruction of those segments involved.

3.1.1.1. Labials. Only one irregular matching is attested in initial position which is 'father': fa, fa, fa, fa, baba . This is more than likely non-cognate and */f/ is reconstructed for four of the languages, in accordance with *M1.

Two irregularities present themselves in medial position: 'cold': ---, suman, suma, suma-re, suwa and 'eat': du, dun, dɔn, domo-ro, lɔ .

The final [n] indicated in the monosyllabic forms of 'eat' may be either a case of the transcriber signalling nasalization of final vowels with [n], or it may simply be a case of final phonetic [m] being changed to [n], Mandekan languages allowing no other consonant in final position. In any case, the segment was */m/ originally, as attested by *M1 and Hwela, from Group B. It is significant that in every case in which the present

cognate remains bisyllabic, the [m] reflex obtains and where the cognate has been reduced to a monosyllable, final [n] is attested.

'Cold' is also clearly reconstructable with */m/ as witnessed by *M1 and Groups A, B and C. It is interesting that the weakening here of [m] > [w] is paralleled in the same language with a regular [b] > [w] weakening in medial position.

3.1.1.2. Dentals. There are several irregularities in the dental series in initial position.

Of the three matchings to be reconstructed */t/, only one has a plausible explanation: 'straight': ---, tɛlɛ, tɛlini, tilin, latɛn-ni . This is most probably a case of metathesis if the forms are cognate.

The two other aberrances are 'name': togo, dɔ, tɔgɔ, tɔxɔ, dɔɔ and 'not': --, tɛ, tɛ, te, dɛ . No attempted explanation is offered here. *M1 suggests */t/ for both words, while Ligbi and Group C likewise support this reconstruction for 'name'.

'Not' is difficult in that two negative morphemes exist in these languages (if not more), /ma/ and /tɛ/, which are used differently. Unfortunately, some informants gave one form while others gave the second, making reconstruction of one or the other less complete than might otherwise be expected.

The */s/ series also has three aberrances in seventeen occurrences in initial position.

'Night': syu, su, su, su, su-o is the only example of [s] before [u] in a monosyllable, which may provide an environment for a glide. In spite of this uncertainty, *M1 clearly suggests an */s/ reconstruction, as does Group C.

'Many': ---, sia-ma, ca-ma, siya-ma, sia-ma should probably be reconstructed as */s/ in *M2. *M1 is very questionable and no cognate forms show up in any of the other groups. This, therefore, is of little importance to the reconstruction. Wassulunka is undergoing a palatalization of [s] and [t] in initial position (cf. 'sand' above).

'Nail': ---, bolo-kɔnin-fara, bolo-sɔni, sɔnin, soin-va shows a strange [s] > [k] in Konyanka. No environmental or other conditioning factor is known. M1 provides a sure */s/, with no other cognates in other groups.

Initial */n/ has only two irregularities in seven occurrences, both palatalizations.

'Nose': nyu, nun, nun, nun-ŋɔ, nun is interesting because it adds partial confirmation that Bo does tend to palatalize some consonants in monosyllables before [u], as suggested in the initial */s/ reconstruction for 'night' above. This is reconstructed */n/, again strongly supported by *M1.

'Tongue': ne, nɛn, nɛn, nɛn-ŋɔ, nyɛ(n) shows the same tendency in Mauka before high front vowels. In fact, 'if' appears to have free variation between [ni]:[nyi] in this language, pointing up the same palatalization process. */n/ should be reconstructed.

In medial position, */t/ presents one irregularity in four examples. 'Short': sunu, suya, suru, situ, sonta provides this interesting matching with [n:y:r:t:nt]. The [y] reflex in this matching is not understood. The *M1 reconstruction of the cognate form is a strong */sutun/, suggesting a metathesis to explain the [nt] reflex. However, this "explanation" would necessarily have to be invoked for the [n] reflex as well. On the other hand, the proto-form of *M1 may have been the result of metathesis itself: */suntu/ > */sutun/. Mauka and Bo speak for an [nt] reflex in medial position, as does Kuranko. Kuranko was probably the first language to break off from the Mandekan Group. Of the languages remaining in Mandekan, Mauka and Bo were probably the next to break off. If this is the case, the diverse cognate forms for 'short' can be reasonably accounted for: after Group C, Mauka and Bo had broken off from the rest of the core group, the proto-form underwent a metathesis */suntu/ > */sutun/. The former therefore show vestiges of [nt] medially, whereas the other languages show no such reflex. The reason for the metathesis may be found in the relative unacceptability of consonant clusters in these languages.

The reconstructed form for 'hair' is */kun-sigi/ in *M1. This is a compound of "kun-" 'head' and "sigi" 'hair'. Although the */s/ is morpheme initial, it must be treated as a medial consonant. In M2 the cognates are: kun-sye, kun-zi, kun-si, ---, kun-ze . Here, as in *M1, [s] > [z] after [n] in Konyanka and Mauka. In Bo the [s] has been palatalized by the high front vowel. It is interesting to speculate that this type of phenomenon

occasioned the [nt] contact in 'short' discussed above.

Two irregularities occur in seven examples of medial [n], both involving [nd] reflexes.

'Belly': ko, kɔnɔ, kɔndɔ, kɔnɔ, koo reconstructs as */n/ in *M1. There are no cognate forms in Groups A and C. The cognate forms in Group B have been shortened to monosyllables, placing the segment in final position. No segment other than [n] being allowed finally, this does not help the reconstruction a great deal. This must remain a tentative */n/, keeping the phonetic [nd] in mind.

The second example is 'few': ---, dɔɔni, dɔni, dɔndi, --- . Interestingly, although *M1 shows an [n] reflex, Group A, the most distantly related group, shows an [nd] reflex. At this point this should remain an */n/ reconstruction, leaving */nd/ as a possibility.

Only one of sixteen occurrences of final [n] is irregular, if it is cognate: 'hear': me, mɛn, mɛn, mero, ---. The [r] in mero is unexplainable. The reconstruction for the cognate forms in M1 is */n/. Ligbi also has [n]. There is no other evidence of [r], and it will thus be reconstructed in *M2 as */n/.

It should be noted that although there are several words which might tentatively be reconstructed with a medial [-nd-] cluster there is no evidence whatsoever for prenasalized stops in Northern Mande languages. The complete absence of such clusters in initial and final positions is, of course, additional testimony to this fact.

3.1.1.3. Resonants. There are ten regular */l/ correspondences and only one regular */r/ matching. The other examples are a seemingly odd mixture of the two. The resonants in these languages are very unstable in medial positions. The apparent randomness of the change comes to light nicely in the example of the two words 'hand' and 'nail'. In Konyanka the former is [boro] and the latter is [bolo-kɔnin], a compound of 'hand' and 'claw'. The words are from the same cognate ancestor, yet 'hand' shows [r] while [l] is manifested in 'nail'.

Many attempts have been made to uncover a possible pattern in the resonant series, and all have proven to be ad hoc solutions to a sticky problem. The only reasonable presentation at this time is to provide a

chart of the matchings with tentative suggestions made for reconstructions. This is done below.

(4) B	K	W	D	M	*M1		
-	r	l	l	r	*l'	6.	'five': ---, loru, lolu, lulu, loru
Ø	r	l	l	Ø	*l	17.	'ear' : to, toro, tolo, tulo, too
						22.	'hand': bo, boro, bolo, bulo, boo
						30.	'bone': ko, koro, kolo, kulo, koo
						39.	'sun' : te, tɛre, tɛle, tile, te
l	l	r	r	l	*l	40.	'moon': kalo, kalo, karo, karu, kalo
r	r	l	l	Ø	*l'	45.	'rope': yuru, juru, julu, julo, juu
Ø	r	l	r	Ø	*l	84.	'sew' : ka, kara, kala, kara-lo, kaa
r	r	r	l	Ø	*l'	98.	'path': sira, siran, sira, sila, sian

The [Ø:r:l:l:Ø] correspondence is the most striking relationship. The */l/ > [r] change in Konyanka occurs between two [o]s in three of the four words. It is difficult to understand, however, why 'sun' ([tɛre]) has a phonetic [r] while 'straight' ([tɛlɛ]) has a phonetic [l] in almost identical environments. In both cases the evidence is strong that the segment was etymologically */l/. Furthermore, words such as [golo] ('skin') and [bolo] ('hand') rule out the possibility that [l] > [r]/ o___o diachronically.

It is probably significant that Konyanka undergoes the [l] > [r] change in eight of the nine words above. This may indicate that a phonologization process is taking place in this language. In eighteen examples of resonants in medial position, ten have remained [l] while eight have changed to [r]. The environments in which this change has occurred are so similar to the ones in which [l] has been retained that one is drawn to the conclusion that proto */l/ is presently separated into an /l/:/r/ contrast. These two units appear to be of equally frequent occurrence in the language. It is interesting that these words are reconstructed strongly as */l/ in *M1, and that the only language which is irregular in this correspondence from the regular */l/ correspondence in Konyanka, in which there seems to be a much more widespread [l] > [r] change than in any other language. Although this correspondence differs slightly from the regular */l/ correspondence in the Konyanka forms, the evidence nevertheless points to an */l/ reconstruction.

The chart also indicates that the words strongly reconstructed with */l/ in *M1 appear as the [Ø:r:l:l:Ø] correspondence in M2, only Konyanka disturbing the otherwise regular */l/ correspondence. The other words presented in the chart are inconsistent matchings in M2 and it is indicated that this same instability is shared by the cognate forms for these words in M1, as illustrated by the subscript. That is, the forms which were irregular in their [l] ~ [r] variations between languages in M1 continue their inconsistent patterning in M2 languages. The forms which were stable in M1 remain relatively stable in M2, Konyanka notwithstanding.

The [r] in Diakhanka [kara-lo] ('sew') may reflect a dissimilation with the morpheme-initial [l].

The occurrence of [r] in Bo [yuru] ('rope') and [sira] ('path') may not be as irregular as appears at first blush. Resonant deletion occurs in all other examples in Bo with the exception of 'moon'. There are five examples of deletion and three of retention, the environments for retention being quite different from the environments for deletion. Loosely, the rule is to delete resonants between non-high like vowels. That the vowels were originally identical rather than becoming identical due to assimilation after C deletion is suggested by the fact that most of the other languages retaining the medial C attest to identical vowels in words retaining the C in Bo. The same rule holds true in Bo for all examples of resonant deletion and retention attested in the data. Due to the consonant deletion it is impossible to tell which resonant was present in each case. If [r] is assumed to be the phonetic shape in Bo of 'ear', 'hand', 'bone', and 'sun' then the patterning is identical to 'rope': [r:r:l:l:Ø].

This is the extent of the generalizations which can be made about resonants in M2 at present. The corroborative evidence for tentative reconstruction of these forms is found in the *M1 reconstruction. The items reconstructed */l'/ in *M1 have no consistent relationship in M2, lending more weight to the possibility that those forms falling together in the */l'/ correspondence were in fact cases of accidental convergence. These, then, will tentatively be reconstructed as */l/ in *M2.

3.1.1.4. Palatals. Like the resonants, the palatal changes are complex in these languages. A chart is provided for these matchings and correspondences.

The *M1 reconstruction is provided for comparison, as in the resonant chart.

(5) B	K	W	D	M	*M1		
(j)	j	j	j	j	*j	34.	'water': je, ji, ji, ji-o, ji
						65.	'dry' : --, ja, ja-le, ja-re, ja
						93.	'long' : --, jɛ, jan, jan, jan
y	j	j	j	j	*j	45.	'rope' : yuru, juru, julu, julo, juu
y	j	j	y	y	*j	31.	'blood': yu, jɛli, jɛli, yɛlo, ye
y	j	y	y	y	*y	46.	'tree' : yiri, jiri, yiri, yiro, yii
j	y	y	j	y	*y	77.	'see' : je, ye, ye, je-ro, ye
y	y	y	j	j	*y	95.	'here' : ya, yan, yan, jan, jan

All reconstructions for *M1 are solid reconstructions with the exception of 'here', which shows three occurrences of [y] to one of [j].

Bo appears to allow [j] only in monosyllables with high front vowels such as in 'water', and changes an etymologic /y/ to [j] in a similar environment in 'see'. Elsewhere */j/ and */y/ merge to [y].

Wassulunka makes no changes in the reconstructed forms predicted by *M1 and Konyanka changes only [y] to [j] in the word for 'tree'. In Bambara, the same word allows free variation between [yiri] and [jiri] in some dialects.

If the *M1 reconstructions are correct for *Mandekan, then Diakhanka and Mauka aberrances are difficult to explain with any generality. However, this is the case for some languages no matter what the reconstruction. With the reconstruction as it is only two of the nine languages reveal unexplainable irregularities and these in only one and two words respectively. Both Diakhanka and Mauka change */j/ to [y] in 'blood' for no apparent reason, while Diakhanka changes */y/ to [j] in 'see'.

'Fish': yige, jɛɛ, nyɛgɛ, yɛgo, yɛɛ is reconstructed */ny/ for the same reasons offered in the *M1 reconstruction. The Wassulunka form lends further confirmation to this reconstruction.

'Good': dyi, nyi, nyi, ---, nyi has only one exception in [dyi]. The evidence from M1 and the rest of M2 is strong for */ny/.

The problem in reconstructing palatals in *M2 is the apparent randomness of change within the series, along with the general lack of insight

offered by the other groups of languages under study. Often complex general changes give the impression of randomness when the data is insufficient. It should be constantly remembered in a reconstruction from a one hundred word list that this problem will present itself in most instances where complex changes have obtained. This does not mean that the reconstruction, being tentative for various segments, is therefore useless. Rather, it tends to illuminate problem areas for further in-depth research.

Medial position shows what appears to be an example of a palatal [-ny-] in the word 'sand': tye, tinyɛ, cɛn, kɛnyɔ, cɛn . The same word shows [-ny-] in M1 languages. This should be considered a cluster, however, and not a palatal phoneme. As in the cases of [-mb-] and [-nd-] clusters discussed previously, [-ny-] is most likely the result of final [n] and initial [j] or [y] of two separate words which were in compound relation at a former point in time (or perhaps still at present). The fact that there are no other palatal consonants which may occur in medial position strongly suggests such an analysis.

3.1.1.5. Velars Only three of nineteen examples of velars in initial position are irregular.

'Man': ce, cɛ, cɛ, kɛ, cɛ . Although the segment is widely manifest as a palatal affricate, evidence is strong that it derives from [k] with a palatalization change as suggested in the *M1 reconstruction. The segment is tentatively reconstructed */k/.

'Sand': ce, tinyɛ, cɛn, kɛnyɔ, cɛn differs from 'man' only in [tinyɛ] and will also be tentatively reconstructed as */k/ on evidence from Group C.

'Grease': ke, cɛ, --, --, cɛ is another example of the same palatalization process.

Of five medial examples, only one is slightly irregular. 'Salt': koko, kɔɔ, kɔgɔ, kɔxɔ, kɔɔ shows a medial [k] in Bo, rather than [g]. This may be a case of assimilation, assisted by both the phonetic similarity of the velars and of the syllables themselves. The reconstruction is a tentative but firm */g/.

3.1.1.6. Labio-velars. Only one irregularity occurs in four examples of labio-velars in initial position, that being 'skin': wo, golo, golo, wulo, gboo . The one noticeably different environment is the high back vowel. Whatever the reason for the change, the original form was undoubtedly labio-velar and is attested in M1 and Groups B and C.

3.2. M2 vowels. As in M1, there are no initial vowels per se in M2 languages.

Table 11 — Medial Vowels

Front		19. 'tooth'			43. 'smoke'			46. 'tree'			No. of Corr.
*/i/	B:	ny	i		s	i	si	y	i	ri	10
	K:	ny	i	n	s	i	si	j	i	ri	
	W:	ny	i	n	s	i	si	y	i	ri	
	D:	ny	i	n-ŋɔ	s	i	si-o	y	i	ro	
	M:	ny	i	n	s	i	si	y	i	i	

*/e/ */ɛ/ The mid vowels in M2, as in M1, are a messy problem. There is a seemingly random variation in this word list with no recursive pattern, resulting with unique matchings for each word and no correspondences. A further problem lies in the fact that many of these vowels occur in words which historically had a final C which has since been lost, placing the V in final position presently: ---, kɛlɛ, kɛlɛ, kɛlɛ, kɛlɛ < /*kɛlɛn/ . It should be kept in mind that although */n/ has been lost, it may have had an effect on the vowels which have been retained in some languages while being erased in others. These matchings will be discussed in the section on irregularities.

Mid		4. 'three'			40. 'moon'			84. 'sow'			
*/a/	B:	-	-	--	k	a	lo	k	a		11
	K:	s	a	ba	k	a	lo	k	a	ra	
	W:	s	a	ba	k	a	ro	k	a	la	
	D:	s	a	ba	k	a	ru	k	a	ra-lo	
	M:	s	a	wa	k	a	lo	k	a	-a	

Back		13. 'head'			45. 'rope'			55. 'dog'			
*/u/	B:	k	u	ngo	y	u	ru	-	u	lu	9
	K:	k	u	n	j	u	ru	w	u	lu	
	W:	k	u	n	j	u	lu	w	u	lu	
	D:	k	u	n-ŋɔ	j	u	lo	w	u	lo	
	M:	k	u	n	j	u	u	w	u	u	

		6. 'five'			22. 'hand'			30. 'bone'			No. of Corr.
*/o/	B:	-	-	--	b	o		k	o		5
	K:	l	o	ru	b	o	ro	k	o	ro	
	W:	l	o	lu	b	o	lo	k	o	lo	
	D:	l	u	lu	b	u	lo	k	u	lo	
	M:	l	o	ru	b	o	o	k	o	o	

The [u] reflex of */o/ in Diakhanka may be explained by the [l] environment. Only one example of the six does not have medial [l]: 'meat': sogo, so, sogo, subo, soo . Here it may be the case that [subo] is non-cognate with the other forms, but this is only speculation.

		1. 'name'			7. 'person'			49. 'milk'			
*/ɔ/	B:	t	o	go	m	o	go	n	o	no	8
	K:	d	ɔ		m	ɔ	ɔ	n	ɔ	nɔ	
	W:	t	ɔ	gɔ	m	ɔ	gɔ	n	ɔ	nɔ	
	D:	t	ɔ	xɔ	m	ɔ	xɔ	n	ɔ	nɔ	
	M:	d	ɔ	ɔ	m	ɔ	ɔ	n	ɔ	nɔ	

Bo, it appears, does not permit [ɔ] in medial position.

Table 12 — Final Vowels

Front		5. 'four'			43. 'smoke'			73. 'stand'			No. of Corr.
*/i/	B:	---	-		sis	i		-ul	i		7
	K:	nan	i		sis	i		wul	i		
	W:	nan	i		sis	i		wul	i		
	D:	nan	i		sis	i	-o	wul	i		
	M:	nan	i		sis	i		wi	i		
		85. 'I'			39. 'sun'			77. 'see'			
?*/e/	B:	-	-		t	e		j	e		4
	K:	n	e		tɛr	e		y	e		
	W:	n	e		tɛl	e		y	e		
	D:	n			til		o	j	e	-ro	
	M:	n	e		t	e		y	e		

The */e/ examples are correspondences by virtue of the fact that the [o] in Diakhanka [tilo] is the same as in Diakhanka [sisi-o] above, i.e. some type of suffix which sometimes absorbs the preceding vowel. The reason for ascertaining [e] of [te] in final position in Bo and Diakhanka is that most of these languages appear to assimilate across resonants first, and then drop the resonant, leaving a homophonous succession of vowels.

		8. 'man'	82. 'cut'	50. 'grease'	No. of Corr.
?*/ɛ/	B:	c e	--- -	k e	3
	K:	c ɛ	tɛ ɛ	c ɛ	
	W:	c ɛ	tɛg ɛ	- -	
	D:	k ɛ	--- -	- -	
	M:	c ɛ	tɛ ɛ	c ɛ	

Mid

		16. 'eye'	18. 'mouth'	3. 'two'	
**/a/*	B:	ny a	d a	--- -	16
	K:	ny a	d a	fil a	
	W:	ny a	d a	fil a	
	D:	ny a	d a	ful a	
	M:	ny a	l a	fil a	

Back

		6. 'five'	41. 'night'	55. 'dog'	No. of Corr.
**/u/*	B:	--- -	sy u	-ul u	5
	K:	lor u	s u	wul u	
	W:	lol u	s u	wul u	
	D:	lul u	s u	wul - o	
	M:	lor u	s u -o	wul u	

There are five examples of this correspondence, two of which have this /-o/ suffix in Diakhanka.

		9. 'woman'	17. 'ear'	30. 'bone'	No. of Corr.
**/o/*	B:	mus o	t o	k o	6
	K:	mus o	tor o	kor o	
	W:	mus o	tol o	kol o	
	D:	mus o	tul o	kul o	
	M:	mus o	to o	ko o	

Bo's final vowel in 17 and 30 actually corresponds to both the medial and final vowels of the other languages (as exemplified in Mauka), and was either shortened after resonant syncopation or the transcriber may have failed to hear length.

		1. 'name'	7. 'person'	49. 'milk'	No. of Corr.
**/ɔ/*	B:	tog o	mog o	non o	7
	K:	d ɔ	mɔ ɔ	nɔn ɔ	
	W:	tɔg ɔ	mɔg ɔ	nɔn ɔ	
	D:	tɔx ɔ	mɔx ɔ	nɔn ɔ	
	M:	dɔ ɔ	mɔ ɔ	nɔn ɔ	

As is clear from these examples and those for **/ɔ/* in medial position, Bo has merged proto **/o/* and **/ɔ/* into /o/.

3.2.1. M2 vowel irregularities. Many of the vowel irregularities in this section are unsolved problems, as is the case with M1 languages. The following presentation is meant to be as brief as possible.

3.2.1.1. Front. There are four exceptions in fourteen examples of high front vowels in medial position:

(6) 'two' : ---, fila, fila, fula, fila
'leaf' : ---, fla-buru, fula-buru, ---, fia
'sleep': sinogo, sunu, sunɔgɔ, sinɔxɔ, sinɔɔ-kɛ
'you' : -, e, i, i, e

In 'leaf', the [i] > [u] change is probably due to the [l] environment. In Diakhanka there are six examples of V > [u] / __[l]. Arguments for an */i/ reconstruction for 'leaf', 'two', and 'sleep' are put forth in the *M1 reconstruction and they apply here as well.

The lowering of [i] to [e] in 'you' cannot be adequately dealt with since only one example exists. *M1 strongly suggests */i/ as do Groups A and C.

As aforementioned, the mid front vowels present problems. The only three words which appear to correspond are:

(7) 'tongue': ne, nɛn, nɛn, nɛn-ŋɔ, nyɛ(n)
'hear' : me, mɛn, mɛn, mɛro, ---
'cut' : ---, tɛgɛ, tɛgɛ, ---, tɛɛ

These should be reconstructed */ɛ/. A few examples differ slightly from the above:

(8) 'fish': yige, jɛɛ, nyɛgɛ, yɛgo, yɛɛ
'foot': sen-, sɛn, sɛn, sin-ŋɔ, sɛ(n)
'sand': tye, tinyɛ, cɛn, kɛnyɔ, cɛn

All of the above examples involve a [ɛ] > [i] change, two of the three in palatal environments, shedding some light on the matter. All should be reconstructed tentatively as */ɛ/. The reconstructions for 'fish' and 'sand' are supported by *M1. Though 'foot' is tentatively reconstructed */e/ in *M1, the evidence from Groups A and C support the */ɛ/ suggestion. There are reflexes of [i], [e] and [ɛ] throughout Mandekan languages for 'foot'. */ɛ/ is chosen only because it is best supported by all groups.

The problem for 'one': ---, kele, kɛle, kɛlɛ, kɛlɛ is one of an [e] reflex in Konyanka. Although the majority of the M2 languages signal an */ɛ/

reconstruction, *M1 as well as Groups A and C support an */e/ reconstruction, Kuranko being the one exception. The proto-form was probably */ɛ/ with subsequent lowering in M2.

'Child': di, dɛn-ma, den, dindin-ŋɔ, diɛn poses problems with variations between high and mid front vowels. The body of the data points equally to both possibilities. *M1 shows an */e/ reconstruction. The other groups, however, are mixed equally. Group C attests to */e/. Group B shows two languages with [e] and one with [i]. Group A reconstructs with */i/. Without further evidence, the most reasonable approach appears to be to infer vowel lowering in prenasal position and reconstruct a proto */i/. The word 'child' is one word which is cognate through all the languages under study, indicating that it is a form of long ancestry in N. Mande. The attrition attested in vowel lowering, therefore, may have occurred in this form over time, whereas younger forms may not have undergone the same change.

The following words all have unique matchings with no apparent explanations:

(9) 'blood': yu, jɛli, jɛli, yɛlo, ye
'sun' : te, tɛre, tɛle, tilo, te
'fall' : --, pe, bi, --, bi

*/ɛ/ is a reasonable reconstruction for 'blood' with *M1 as support.

Although the patterning of M1 languages appears to support an */i/ reconstruction for 'sun', the same does not hold true for *M2 (cf. p.339). The tentative "explanation" offered in M1 of vowel assimilation is a very general process throughout N. Mande. However, Groups B and C firmly suggest an */ɛ/ or */e/ reconstruction, unless the assimilation process occurred in most of these languages after their separation. Neither of these possibilities should be ruled out. The *M2 form should be reconstructed as */ɛ/ very tentatively, having taken all the evidence into consideration.

The forms for 'fall' are probably cognate. A choice of */e/ or */i/ as the proto-vowel again is extremely difficult. In M1 the proto-form was not reconstructed due to the diversity of its phonetic representation in

the different languages: bɔye, be, bin, be . From the M2 evidence it is fairly clear that the be forms are cognate. The other forms, however, are extremely suspicious. The sure cognates from both corpuses are: (M1) be, be (M2) pe, bi, bi . The cognate forms in Group C are: ---, bia, ɓela, and from Group A: bira, --- . In view of this evidence, the vowel chosen will be */i/ since it appears to be the most widespread throughout the languages. Again, the reconstruction is tentative.

'Straight': ---, tɛlɛ, tɛlini, tilin, latɛn-ni is probably a case of metathesis in the final form. The other three forms make the consonant structure clear, but the vowel structure again is guesswork. The two vowels in the proto-form were probably different high front vowels, with assimilation leveling the difference in languages such as Konyanka and Diakhanka. *M1 speaks for a */tilen/ reconstruction, whereas W above and Kuranko from Group C speak for */tɛlinin/. Which is the correct reconstruction is impossible to say, and both will be entered as possible reconstructions, one in *M1 and one in *M2.

Seven words have straight [i] correspondences in M2 in final position. Three words have an [o] reflex in Diakhanka, found in many cognate forms just as was seen in M1. These may be reconstructed */i/.

The other four irregularities concerning high front vowels in final position are: 'water': je, ji, ji, ji-o, ji ; 'hair': kun-sye, kun-zi, kun-si, ---, kun-ze; 'rain': ---, san-ji, ---, san-ji-o, san-ge, and 'hit': ---, gbasi, gbɛsɛ, goso-ro, gbasi .

'Water' and 'rain' are from the same word */ji/ and are clearly cases of vowel lowering. The same should be said for the other two words. *M1 clearly supports this reconstruction for both words, and Group C adds confirmation for 'hit'. The /-o/ suffix is seen again in 'water' and 'hit', assimilating in the one and not the other.

The high-mid front vowels are consistent in four cases in M2, the only irregularity being 'one': ---, kele, kɛle, kɛlɛ, kɛlɛ . The consensus of the languages with this cognate form is for an */e/ reconstruction for final position.

There are two exceptions in five occurrences of low-mid front vowels in final position: 'fish': yige, jɛɛ, nyɛgɛ, yɛgo, yɛɛ and 'not': --, tɛ, tɛ,

te, dɛ . The support for an */ɛ/ reconstruction for 'fish' is given strongly in M1 and Group A. It is evenly divided between */ɛ/ and */e/ in Groups B and C. The choice is a tentative */ɛ/.

The cognate forms in M1 also suggest an */ɛ/ reconstruction for 'not'.

3.2.1.2. Mid. In medial position there is only one aberrance in twelve occurrences of [a]: 'hit': ---, gbasi, gbɛsɛ, goso-ro, gbasi . This vowel is reconstructed as */a/ on very skimpy evidence. There is only one example of it in M1, and two of three forms confirm it in Group C, the other supporting */ɛ/. The fact that the latter language in Group C is Kurankɔ, much more closely related to the Mandekan Group than the other two languages, suggests a shared change in Kurankɔ and the core of Mandekan not undergone in Group C. The [o] reflex in Diakhanka may again be the suffix absorbing the final vowel followed by assimilation across [s].

The mid vowel is extremely stable in final position in M2 as it is in M1. Only four of twenty examples are irregular, and those deviate only slightly. All of these irregularities involve the /-o/ replacement of final [a] in Diakhanka. These reconstructions are strongly */a/. The curious circumstance here is that this suffix appears in the verbs 'kill' and 'say'. It may be that the /-o/ suffix is a citation form for many kinds of words, or it may be that the informant supplied the nominal forms of these verbals to the investigator. The question cannot be answered here.

3.2.1.3. Back. The high back vowels in medial position are relatively consistent. There are only four exceptions in thirteen occurrences.

'Stand': uli, wuli, wuli, wuli, wii shows a [u] to [i] assimilation.

'What': ---, mun, mun, mun, min shows the same apparent change as 'stand' in a completely different environment. This may be a confusion of 'what' with 'which', a relative pronoun in languages such as Bambara which phonetically are identical to the Mauka elicitation in these data. If this is not the case, then there is no explanation offered. All of the groups suggest a */u/ reconstruction.

'Eat': du, dun, dɔn, domo-ro, --- is problematic. When compared with M1, there is a strong prejudice to opt for a */u/ reconstruction with vowel lowering to explain the [ɔ] and [o] reflexes above. However,

Kuranko also shows an [o] reflex, as do the rest of Groups A and C. This suggests an */o/ to [u] change after the Mandekan Group split from Group C and possibly after Kuranko separated from the core of Mandekan. Nevertheless, a couple of the languages in Mandekan have retained the */o/. Interesting to note also is that it is Diakhanka, one of the [o] retaining languages which shows vestiges of bisyllabicity not shown in the other languages of M2. M1 also retains bisyllabic forms in three of the four languages, all pointing up an */m/ nasal.

'Ear': to, toro, tolo, tulo, too appears to fit well into the pattern of the */o/ correspondence with [o:o:o:u:o]. There is evidence, however, that it in fact should be reconstructed as */u/. M1 languages are divided, two suggesting */o/ and two suggesting */u/. Group C also shows an [o] reflex. On the other hand, Groups A and B show a [u] reflex. It is much more probable in these languages for [u] to assimilate across [l] to the final [o] than to assume some type of [o] raising to [u], Diakhanka notwithstanding. Furthermore, it is more likely to assume that Group C changed in accordance with some of the Mandekan languages to which it is closely related, than to assume Groups A and B changed in accordance with the other Mandekan languages to which they are more distantly related. The support lends itself more probably to a */u/ reconstruction with a widespread assimilation process in Mandekan to explain the [o] reflex. If this is the case, then the Diakhanka [u] either did not change because of its environment, or it changed to [o] and then later changed back to [u] because of the [o] to [u] vowel change current in Diakhanka in this environment.

The last high back vowel exception concerns what must be a recent suffix in 'leaf': ---, fla-buru, fula-buru, ---, fla-bo . This suffix form is only shared by Dyula in M1 and is therefore not of great importance to the overall reconstruction. The vowel was most likely a final */u/.

There are no aberrances in five examples of final high back vowels.

Only three occurrences of high mid back vowels are deviant.

'Moon': kalo, kalo, karo, karu, kalo shows an [o] to [u] change in final position. Little insight can be offered here, except that this is

the only example in the data in which the vowel [u] follows [a]. */o/ is indicated as the proto-segment in *M1 and Group C.

'Big': bu, buyə, bo, bon, bo is a case of questionable cognation. If the first two words are cognate with the last three, the [o] to [u] change is not understood. The last three words correspond nicely with M1 and Groups A and B. In the absence of further evidence, 'big' will be reconstructed on the basis of the last three languages alone with */o/.

'Nail': ---, bolo-kɔnin-fara, bolo-sɔni, sonin-ŋɔ, soin-va is an extremely tentative */o/ reconstruction, as in *M1.

There are three exceptions to the */ɔ/ correspondence in medial position in twelve occurrences.

'Belly': ko, kɔnɔ, kɔndɔn, kɔnɔ, koo was tentatively reconstructed */ɔ/ in *M1, with one reflex of [o] and three of [ɔ]. Studying the other groups is not much help, since Group B, the only group with cognate forms, shows both reflexes also. S.W. Mande shows a [ko] cognate form, however, suggesting the vowel may have been [o] with lowering in nasal environments throughout these languages. The reconstruction will be a tentative */o/ for that reason.

'Bird': ko, kɔnɔ, ---, kɔnɔ, koon reconstructs strongly as */ɔ/ in *M1. The support from the other languages under study is scattered. A tentative */ɔ/ is reconstructed in *M2.

'Sleep': sinogo, sunu, sunɔgɔ, sinɔxɔ, sinɔɔ-kɛ reconstructs as */ɔ/ in *M1. Here, too, it is tentatively reconstructed */ɔ/.

One exception exists in eight examples of low mid back vowels in final position: 'belly': ko, kɔnɔ, kɔndɔn, kɔnɔ, koo. If in fact this final vowel was [ɔ] and the medial vowel was the same, then it is difficult to know which vowel changed and which was assimilated subsequently. The reconstruction is guesswork at best, with the possibility of both vowels having been either [o] or [ɔ]. Choosing the former would necessarily imply more widespread change. The latter will tentatively be assumed with a subsequent change of the vowel in monosyllables.

Table 13 — Proto-M2 System

Initial

Consonants

	*t		*k	
*b		*d	*j	*gb
*f	*s			
*m		*n	*ny	
		*l		
*w			*(y)	

Vowels

Medial

Consonants

	*t		
*b		*g	
	*s		
*m?		*n	
		*l	
		*r?	

Vowels

*i	*u
*e?	*o
*ɛ?	*ɔ
*a	

Final

Consonants

*n

Vowels

*i	*u
*e	*o
*ɛ	*ɔ
*a	

Table 14 — Reconstructed Word List - Proto-M2

1. 'name'	: *tɔgɔ	8. 'man'	: *kɛ	15. 'nose'	: *nun
2. 'one'	: *kele	9. 'woman'	: *muso	16. 'eye'	: *nya
3. 'two'	: *fila	10. 'child'	: *din	17. 'ear'	: *tulo
4. 'three'	: *saba	11. 'father'	: *fa?	18. 'mouth'	: *da
5. 'four'	: *nani	12. 'mother'	: *ma?	19. 'tooth'	: *nyin
6. 'five'	: *lolu	13. 'head'	: *kun	20. 'tongue'	: *nɛn
7. 'person'	: *mɔgɔ	14. 'hair'	: *kun-si( )	21. 'neck'	: *kan

22. 'hand' : *bolo
23. 'foot' : *sɛn
24. 'knee' : ?
25. 'nail' : *bolo-sonin
26. 'breast': *sin
27. 'belly' : *kon(d)o
28. 'navel' : *bata-kun
29. 'skin' : *gbolo
30. 'bone' : *kolo
31. 'blood' : *jɛli
32. 'sky' : *san
33. 'fire' : *ta
34. 'water' : *ji
35. 'meat' : *sogo
36. 'salt' : *kɔgɔ
37. 'many' : *sia-ma
38. 'stone' : *kaba
39. 'sun' : *tɛle
40. 'moon' : *kalo
41. 'night' : *su
42. 'rain' : *san-ji
43. 'smoke' : *sisi
44. 'sand' : *kɛnyɛ
45. 'rope' : *julu
46. 'tree' : *yiri
47. 'leaf' : *fila
48. 'root' : *lili?
49. 'milk' : *nɔnɔ
50. 'grease' : *kɛ *tulu?
51. 'egg' : *kili
52. 'bird' : *kɔnɔ
53. 'fish' : *nyɛge
54. 'snake' : *sa
55. 'dog' : *wulu
56. 'big' : *bon?
57. 'small' : *dɔgɔ(n)?
58. 'black' : *fin
59. 'white' : *gbɛ
60. 'good' : *nyɬ
61. 'new' : *kuta
62. 'old' : *kɔtɔ
63. 'hot' : *gban(do)
64. 'cold' : *suma(n)
65. 'dry' : *ja-le?
66. 'straight': *tɛlini
67. 'come' : *na
68. 'sit' : *sigi
69. 'lie' : *la
70. 'sleep' : *sinɔgɔ
71. 'die' : *sa?
72. 'fall' : *bi
73. 'stand' : *wuli
74. 'say' : *kuma
75. 'hear' : *mɛn
76. 'wash' : *k(w)o
77. 'see' : *ye
78. 'give' : *di
79. 'eat' : *domo
80. 'drink': *min
81. 'kill' : *faga
82. 'cut' : * tɛgɛ
83. 'hit' : *gbasi
84. 'sew' : *kala
85. 'I' : *ne
86. 'you' : *i
87. 'he' : *a
88. 'we' : *an?
89. 'they' : *a(n)?
90. 'who' : *jon
91. 'what' : *mun
92. 'not' : *tɛ
93. 'long' : *jan
94. 'short' : *suntu?
95. 'here' : *yan
96. 'few' : *dɔn(d)i
97. 'all' : *bɛ
98. 'path' : *sila
99. 'in' : *kɔnɔ
100. 'if' : *ni

Key: ___: underscoring reflects tentative reconstruction of a segment.
( ): indicates uncertainty of a reconstructed segment having existed.
? : indicates that the reconstruction was from less than all four languages.

4. Reconstructing Proto-Mandekan

Proto-Mandekan will be reconstructed using *M1 and *M2 cognates.

4.1. Mandekan consonants.

Table 15 — Initial Consonants

		22. 'hand'	28. 'navel'	56. 'big'	No. of Corr.
Labials					
*b	*M1:	b olo	b ata	b on	4
	*M2:	b olo	b ata-kun	b on?	
		7. 'person'	9. 'woman'	75. 'hear'	
*m	*M1:	m ɔg'ɔ	m uso	m ɛn?	7
	*M2:	m ɔgɔ	m uso	m ɛn	
		55. 'dog'	73. 'stand'		
*w	*M1:	w ulu	w uli		2
	*M2:	w ulu	w uli		
		3. 'two'	11. 'father'	58. 'black'	
*f	*M1:	f ila	f a	f in	5
	*M2:	f ila	f a?	f in	
Dentals					
		10. 'child'	78. 'give'	18. 'mouth'	
*d	*M1:	d en	d i	d a	5
	*M2:	d in	d i	d a	
		17. 'ear'	39. 'sun'	33. 'fire'	
*t	*M1:	t ulo	t ile	t a	7
	*M2:	t ulo	t ɛle	t a	
		49. 'milk'	67. 'come'	15. 'nose'	
*n	*M1:	n ɔnɔ	n a	n un	7
	*M2:	n ɔnɔ	n a	n un	
		4. 'three'	23. 'foot'	26. 'skin'	
*s	*M1:	s aba	s ɛn	s in	16
	*M2:	s aba	s ɛn	s in	
Resonants					
		6. 'five'	69. 'lie'	48. 'root'	
*l	*M1:	l ool'u	l a	l ili	4
	*M2:	l olu	l a	l ili	

Palatals

		34. 'water'	45. 'rope'	65. 'dry'	No. of Corr.
*/j/	*M1:	[j] i	[j] uu	[j] a-len	4
	*M2:	[j] i	[j] ulu	[j] a-le	
		16. 'eye'	19. 'tooth'	60. 'good'	
*/ny/	*M1:	[ny] a	[ny] in	[ny] in	4
	*M2:	[ny] a	[ny] in	[ny] i	
		46. 'tree'	77. 'see'	95. 'here'	
*/y/	*M1:	[y] iri	[y] e	[y] an	3
	*M2:	[y] iri	[y] e	[y] an	

Velars

		13. 'head'	30. 'bone'	36. 'salt'	
*/k/	*M1:	[k] un	[k] olo	[k'] ɔgɔ	17
	*M2:	[k] un	[k] olo	[k] ɔgɔ	

The [k:k] correspondences and the [k':k] correspondences do not differ in their environments and appear to both be etymologically reconstructed */k/ in Proto-Mandekan. The Xassonke [x] reflex in M1 appears to be some type of random variant.

Labio-velars

		63. 'hot'	59. 'white'	83. 'hit'	
*/gb/	*M1:	[gb] an?	[gb] ɛ	[gb] ?	3
	*M2:	[gb] an(d)o	[gb] ɛ	[gb] asi	

Table 16 — Medial Consonants

Labials

		4. 'three'	38. 'stone'	No. of Corr.
*/b/	*M1:	sa [b] a	ka [b] a	2
	*M2:	sa [b] a	ka [b] a	
		64. 'cold'	74. 'say'	79. 'eat'
*/m/	*M1:	su [m] an	k'u [m] a	du [m] un	3
	*M2:	su [m] an	k u [m] a	dɔ [m] ɔ	

Dentals

		28. 'navel'	61. 'new'	62. 'old'	
*/t/	*M1:	ba [t] a	ku [t] a	k'ɔ [t] ɔ	3
	*M2:	ba [t] a-kun	ku [t] a	kɔ [t] ɔ	

		5. 'four'	49. 'milk'	70. 'sleep'	No. of Corr.
*/n/	*M1:	naa [n] in	nɔ [n] ɔ	si [n] ɔg'ɔ	7
	*M2:	na [n] i	nɔ [n] ɔ	si [n] ɔgɔ	
		9. 'woman'	43. 'smoke'		
*/s/	*M1:	mu [s] o	si [s] i		2
	*M2:	mu [s] o	si [s] i		

Resonants

		2. 'one'	3. 'two'	22. 'hand'	
*/l/	*M1:	ke [l] en	fi [l] a	bo [l] o	14
	*M2:	ke [l] e	fi [l] a	bo [l] o	
		46. 'tree'	47. 'leaf'		
?*/r/	*M1:	yi [r] i	---- -- [-] -		2
	*M2:	yi [r] i	fila-bu [r] u		

Velars

		1. 'name'	53. 'fish'	57. 'small'	
*/g/	*M1:	tɔ [g] ɔ	nyɛ [g] ɛ	dɔ [g] ɔ	8
	*M2:	tɔ [g] ɔ	nyɛ [g] ɛ	dɔ [g] ɔ(n)	

Table 17 — Final Consonants

Dental					No. of Corr.
		10. 'child'	15. 'nose'	23. 'foot'	
*/n/	*M1:	de [n]	nu [n]	sɛ [n]	22
	*M2:	di [n]	nu [n]	sɛ [n]	

4.1.1. Discussion of Mandekan consonant irregularities. Many of the irregularities which would have normally obtained have been leveled by the reconstruction methods used in this paper. Since irregular matchings are submitted to comparison with other language groups, the tentatively reconstructed forms tend to be much more homogeneous at the level where *M1 and *M2 are stirred together to reconstruct Proto-Mandekan.

4.1.1.1. Labials. Only one inconsistency exists in the labial series in any position. 'Mother': *na, *ma shows an [n:m] matching in initial position. It is most probable that these forms are not cognate. In fact, three forms seem to vary throughout the Mandekan languages: [ma], [na] and [ba]. These may be but are probably not cognate.

4.1.1.2. Dentals. 'Short': *sutun, *suntu is the only inconsistent dental matching. As argued in section 3.1.1.2., the best tentative guess is that the form was originally */suntu/ in Proto-Mandekan and underwent a metathesis.

4.1.1.3. Resonants. The resonants, irregular in the languages of Mandekan, are regular at this level of the reconstruction. The assumption made, and the tentative reconstructions proposed, point to the conclusion that */l/ was the primary resonant in Proto-Mandekan, the exception being */yiri/. The [r] has developed in medial position since that time to various degrees in the different languages.

4.1.1.4. Palatals. Palatals likewise are very irregular throughout the languages. */j/ is the most reconstructable palatal, with a few tentative reconstructions of both */y/ and */ny/.

4.1.1.5. Velars. The velar irregularities have also been ironed out, especially as concerns what appears to be a somewhat random palatalization of */k/ to [c] in some present forms. There also appears to be no reasonable explanation for what was reconstructed as */k'/ and */g'/ in M1. These forms appear to reconstruct nicely with */k/ and */g/ in Proto-Mandekan. All that can be said at this point is that Xassonke (M1) developed an [x] in some words which etymologically had */k/ in initial position, while other words retained the [k]. Similarly, Dyula (M1) developed [ɣ] in some words which etymologically had */g/, while retaining [g] in others.

4.1.1.6. Labio-velars. These also show no irregularities.

4.1.1.7. Proto-Mandekan consonant system. It is important after having discussed individual proto-segments in depth to spend some time discussing the proto-system as a whole. The first major observation to be made is the absence of palatal consonants in medial position. Medial position is also devoid of */f/, */w/, */d/ and */gb/. Although initial position has a system of labials, dentals, palatals, velar and labio-velar, medial position has only labials, dentals and a velar. The only proto-segment occurring in medial position to the exclusion of initial position is */r/ which, as previously mentioned, is a highly tentative reconstruction. It is clear that many of the occurrences of [r] in the modern languages come from original */t/ or */l/.

The patterning of these series (i.e. dentals, velars, etc.) is also an interesting phenomenon in Proto-Mandekan. By far the most frequently used phonemes in both initial and medial positions were dental and velar. Within the dental series it is most interesting to note that */l/ was very common in medial position but not in initial position. On the other hand */s/ was very common and */t/ relatively common in initial position but not in medial position. */n/ was relatively common in both positions, as well as being the only consonant permitted in final position (where it was very frequent). */k/ and */g/ were in complimentary distribution, the former occurring initially and the latter medially. One might prefer to analyze [k] and [g] as allophones of one phoneme */K/ but this does not seem necessary for the purposes of this paper. */k/ and */g/ best preserve the phonetic quality of these segments in their respective positions. Whatever the analysis, velars were very common especially in initial position.

The most problematic aspect of the reconstruction of Proto-Mandekan consonants concerns laterals in medial position and palatals in initial position. Further data must be gathered before these problems can be solved with any assurance of success.

4.2. Mandekan vowels.

Table 18 — Medial Vowels

Front						No. of Corr.
	19. 'tooth'	43. 'smoke'	51. 'egg'			
*/i/	M1: *ny **i** n	s **i** si	k **i** li			16
	M2: *ny **i** n	s **i** si	k **i** li			
	2. 'one'	65. 'dry'				
?*/e/	*M1: k **e** l **e** n	ja-l **e** n				3
	*M2: k **e** l **e**	ja-l **e** ?				
	20. 'tongue'	23. 'foot'	53. 'fish'			
?*/ɛ/	*M1: n **ɛ** n	s **ɛ** n	ny **ɛ** gɛ			5
	*M2: n **ɛ** n	s **ɛ** n	ny **ɛ** gɛ			
Mid						
	4. 'three'	21. 'neck'	28. 'navel'			
*/a/	*M1: s **a** ba	k **a** n	b **a** ta			14
	*M2: s **a** ba	k **a** n	b **a** ta-kun			

Back

		9. 'woman'	13. 'head'	61. 'new'	No. of Corr.
*/u/	*M1:	m [u] so	k [u] n	k [u] ta	13
	*M2:	m [u] so	k [u] n	k [u] ta	
		22. 'hand'	29. 'skin'	56. 'big'	
*/o/	*M1:	b [o] lo	gb [o] lo	b [o] n	6
	*M2:	b [o] lo	gb [o] lo	b [o] n?	
		1. 'name'	7. 'person'	49. 'milk'	
*/ɔ/	*M1:	t [ɔ] gɔ	m [ɔ] g'ɔ	n [ɔ] nɔ	10
	*M2:	t [ɔ] gɔ	m [ɔ] gɔ	n [ɔ] nɔ	

Table 19 — Final Vowels

		31. 'blood'	34. 'water'	43. 'smoke'	No. of Corr.
Front					
*/i/	*M1:	jol [i]	j [i]	sis [i]	13
	*M2:	jɛl [i]	j [i]	sis [i]	
		39. 'sun'	77. 'see'		
?*/e/	*M1:	til [e]	y [e]		2
	*M2:	tɛl [e]	y [e]		
		8. 'man'	53. 'fish'	59. 'white'	
*/ɛ/	*M1:	k [ɛ]	nyɛg [ɛ]	gb [ɛ]	6
	*M2:	k [ɛ]	nyɛg [ɛ]	gb [ɛ]	
Mid					
		3. 'two'	4. 'three'	16. 'eye'	
*/a/	*M1:	fil [a]	sab [a]	ny [a]	20
	*M2:	fil [a]	sab [a]	ny [a]	
Back					
		6. 'five'	41. 'night'	55. 'dog'	
*/u/	*M1:	lool' [u]	s [u]	wul [u]	4
	*M2:	lo l [u]	s [u]	wul [u]	
		9. 'woman'	22. 'hand'	30. 'bone'	7
*/o/	*M1:	mus [o]	bol [o]	kol [o]	
	*M2:	mus [o]	bol [o]	kol [o]	
		1. 'name'	7. 'person'	49. 'milk'	
*/ɔ/	*M1:	tɔg [ɔ]	mɔg' [ɔ]	nɔn [ɔ]	9
	*M2:	tɔg [ɔ]	mɔg [ɔ]	nɔn [ɔ]	

4.2.1. Discussion of Mandekan vowel irregularities. Only a few problems remain to be solved in the vowel series.

4.2.1.1. Front. There are three irregularities in medial position which accidentally converge into an [i:ɛ] correspondence. 'Sun':*tile, *tɛle, 'straight':*tilen,*tɛlin and 'cut':*tigɛ,*tɛgɛ all share the same correspondence.

'Cut' was probably an [i-ɛ] vowel sequence in which [i] assimilated to [ɛ] in some of the languages of M1. The high front vowel is also attested in Group C in Vai [tiɛ]. Kuranko also shows the high front vowel in the monosyllable [ti], while Kono has assimilated it to [ɛ] in [tɛ] after consonant deletion. This will tentatively be reconstructed as */tigɛ/.

'Straight' is best reconstructed as as [ɛ-i] sequence. Kuranko [tɛlinin] supports this reconstruction. Ligbi [tɛlene] at least supports a reconstruction of [ɛ] with the second vowel having been lowered. This will tentatively be reconstructed as */tɛlin/.

'Sun' is more difficult even to guess at. Since these languages do not as a rule raise mid front vowels to high front vowels, the assumption will be made that the *M1 form */tile/ is correct, with lowering in *M2 being an assimilatory process across [l].

'Child': *den(den), *din poses a similar problem to 'sun' requiring much the same solution. The other N. Mande groups support the */din/ reconstruction.

'I': *nɛ, *ne is easily resolved. All languages of M1 except Dyula have deleted the final vowel leaving [n] as the phonetic shape of this word. The vowel needed to be reconstructed in *M1 since it is attested. However, this is the only instance of [ɛ] in all of the languages under consideration, the rest having deleted the vowel or attesting [e]. This should then be reconstructed */ne/.

4.2.1.2. Mid. These vowels are entirely regular.

4.2.1.3. Back. There are four problems to be resolved concerning back vowels in Proto-Mandekan.

'Belly': *kɔnɔ, *kon(d)o has been previously dealt with (cf. section 3.2.1.3.). The evidence from S.W. Mande suggests */o/.

'Eat': *dumun, *domon has also been discussed (section 3.2.1.3.). The tentative reconstruction will be */o/.

'Who': *jɔn, *jon is difficult to sort out. The best solution appears to be a tentative */o/ reconstruction with vowel lowering explaining the [ɔ] reflex.

Reconstruction of vowels in the words above is difficult because of the inconsistent patterning within the vowel system change. Although there appear to be general tendencies, such as vowel lowering in prenasal positions, the exceptions are so many that any attempt at explanation is ad hoc. This is especially true concerning slight vowel changes such as [u] to [o] or [o] to [ɔ]. However, a few words showing great divergence in vowel forms are difficult problems also. For example, 'blood': *jolí, *jɛlí shows an [o:ɛ] matching for which a solution has not yet been found. The most distantly related cognates show high back vowels, so */o/ will be opted for tentatively.

4.2.1.4. Proto-Mandekan vowel system. It is important especially for the Mande languages to investigate the vowel system as a whole because of the harmony systems involved. The chart below illustrates the point. Words of two or more syllables were compared to each other for vowel sequences. The i-i or e-e listings represent the vowel sequences in the words. The numbers to the right of these listings indicate the number of occurrences of the listing found in the data.

Table 20 — Vowel Sequence

Like Vowels

i-i (7) u-u (4)
e-e (2) o-o (8)
ɛ-ɛ (1) ɔ-ɔ (9)
a-a (5)

TOTAL: 36

Other Combinations

?u-e (1), u-a (3), u-o (2)
o-u (1), a-o (2)
?ɛ-e (1)

TOTAL: 10

'i' Combinations

---	---
i-e (1)	---
i-ɛ (1)	i-ɔ (1)
i-a (4)	
---	u-i (1)
---	o-i (2)
ɛ-i (1)	ɔ-i (1)
a-i (2)	

TOTAL: 14

The "like vowel" combinations were not counted in the "non-like vowel" combinations. The breakdown for "like vowel" combinations and "non-like vowel" combinations is as follows:

(11) Like vowel combinations = 36
i combinations = 14
a combinations = 11
u combinations = 8
o combinations = 7
e combinations = 3
ɛ combinations = 3
ɔ combinations = 2

It should be mentioned that the totals do not add up for a reason. "Non-like vowel" combinations such as a-i were entered twice in the breakdown above, once as an a combination and once under i .

These statistics are significant evidence of the preference of Proto-Mandekan for like vowel sequences, explaining in part the rampant vowel assimilation occurring in these languages.

A few other interesting facts can be drawn from the data. First of all, the most likely vowels to combine with other vowels are [i] and [a], the least likely being the mid vowels [e], [ɛ] and [ɔ] which are very rare in "non-like vowel" combinations. This is not particularly remarkable for [e] and [ɛ] which are difficult to reconstruct even in "like vowel" sequences. They are simply vowels which are infrequently used (in these data). [ɔ], on the other hand, is extremely common in "like vowel" sequences yet very rare in "non-like vowel" sequences, occurring only twice, both times in combination with [i].

In Proto-Mandekan, then, the overwhelming tendency seems to have been vowel harmony. When this did not obtain in polysyllabic words [i] and [a] played a neutral role, combining with the other vowels fairly frequently. The mid vowels ([o] excepted) had a much more restricted frequency of occurrence.

Table 21 — Proto-Mandekan System

Initial

Consonants

	*t		*k	
*b		*d	*j	*gb
*f		*s		
*m		*n	*ny	
		*l		
*w			*y?	

Vowels

Medial

Consonants

	*t			
*b			*g	
	*s			
*m?		*n		
		*l		
		*r?		

Vowels

*i	*u
*e?	*o
*ɛ?	*ɔ
*a	

Final

Consonants

		*n		

Vowels

*i	*u
*e?	*o
*ɛ	*ɔ
*a	

Table 22 — Reconstructed Word List - Proto-Mandekan

1. 'name' : *tɔgɔ	9. 'woman' : *muso	17. 'ear' : *tulo
2. 'one' : *kelen	10. 'child' : *din	18. 'mouth' : *da
3. 'two' : *fila	11. 'father': *fa?	19. 'tooth' : *nyin
4. 'three' : *saba	12. 'mother': *ma? ~ *na?	20. 'tongue': *nɛn(e)
5. 'four' : *naani(n)	13. 'head' : *kun	21. 'neck' : *kan
6. 'five' : *loolu	14. 'hair' : *kun-si(gi)?	22. 'hand' : *bolo
7. 'person': *mɔgɔ	15. 'nose' : *nun	23. 'foot' : *sɛn
8. 'man' : *kɛ	16. 'eye' : *nya	24. 'knee' : *kumbelen?

Table 22 (continued)

25. 'nail'	: *bolo-sonin	50. 'grease'	: *kɛn~*tulu?	75. 'hear'	: *mɛn
26. 'breast'	: *sin	51. 'egg'	: *(sisɛ-)kili	76. 'wash'	: *k(w)o
27. 'belly'	: *kondo	52. 'bird'	: * kɔnɔ	77. 'see'	: *ye
28. 'navel'	: *bata(-kun)	53. 'fish'	: * nyɛge	78. 'give'	: *di
29. 'skin'	: *gbolo	54. 'snake'	: *sa	79. 'eat'	: *domo(n
30. 'bone'	: *kolo	55. 'dog'	: *wulu	80. 'drink'	: *min
31. 'blood'	: *joli	56. 'big'	: * bon?	81. 'kill'	: *faga
32. 'sky'	: *san(-kolo)	57. 'small'	: *dɔgɔ(n)?	82. 'cut'	: *tigɛ
33. 'fire'	: *ta	58. 'black'	: *fin	83. 'hit'	: *gbasi?
34. 'water'	: *ji	59. 'white'	: *gbɛ	84. 'sew'	: *kala
35. 'meat'	: *sogo?~*sobo?	60. 'good'	: *nyi(n)	85. 'I'	: *ne
36. 'salt'	: *kɔgɔ	61. 'new'	: *kuta	86. 'you'	: *i
37. 'many'	: *sia-ma?	62. 'old'	: *kɔtɔ	87. 'he'	: *a
38. 'stone'	: *kaba	63. 'hot'	: *gbando	88. 'we'	: *an?
39. 'sun'	: *tile	64. 'cold'	: *suma(n)	89. 'they'	: *a(n)?
40. 'moon'	: *kalo	65. 'dry'	: *ja-le(n)?	90. 'who'	: *jon
41. 'night'	: *su	66. 'straight'	: *tɛlini	91. 'what'	: *mun
42. 'rain'	: *san-ji	67. 'come'	: *na	92. 'not'	: *tɛ
43. 'smoke'	: *sisi	68. 'sit'	: *sigi	93. 'long'	: *jan
44. 'sand'	: *kɛnyɛ(n)	69. 'lie'	: *la	94. 'short'	: *suntu?
45. 'rope'	: *julu	70. 'sleep'	: *sinɔgɔ	95. 'here'	: *yan
46. 'tree'	: *yiri	71. 'die'	: *sa?	96. 'few'	: *dɔndi
47. 'leaf'	: *fila	72. 'fall'	: *bi?	97. 'all'	: *bɛ
48. 'root'	: *lili(n)?	73. 'stand'	: *wuli	98. 'path'	: *sila
49. 'milk'	: *nɔnɔ	74. 'say'	: *kuma	99. 'in'	: *kɔnɔ
				100. 'if'	: *ni

Key: ___ : underscoring reflects tentative reconstruction of a segment.

( ) : indicates uncertainty of a reconstructed segment having existed.

? : indicates that the reconstruction was from less than all languages.

REFERENCES

Greenberg, Joseph H. 1963. The Languages of Africa. International Journal of Linguistics 29.1, part 2, and Indiana University Research Center in Anthropology, Folklore, and Linguistics, publ. 25. Bloomington: Indiana University Press.

Long, Ronald W. 1971. "A comparative study of the Northern Mande Languages." Doctoral dissertation, Indiana University.

Welmers, Wm. E. 1958. "The Mande languages." In William M. Austin (ed.), Report on the Ninth Annual Round Table Meeting on Linguistics and Language Studies, pp. 9-24. Washington: Georgetown University Press.