

Testing orthographies in the Nko and Roman scripts

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Introduction

This study is a reading test. It records how mother tongue Maninka readers read their own language in the Nko and Roman scripts. An examination of their miscues yields new insight on the problem of writing Maninka tone (or related languages). The result is a new proposal for a practical orthography that is based on reading test results.¹

Early efforts in empirical evaluation of tonal orthographies

There have not been many tone orthographies based on well conceived tests. A notable exception is Mfonyam's experiment with orthographies for the Bafut language of Cameroon (Bird 1999b). He provided extensive training for four parallel groups each corresponding to one of the four experimental orthographies. This method limited the problem of contamination by participants blending tone marking methods in the test. Another exception is Bernard, Mbeh, and Handwerker's experiments with tone for the Kom language of Cameroon. They are praised for including mature readers in their large testing sample. Steven Bird explains why:

Participants come from a wide range of educational backgrounds and ages. This diversity in the pool of subjects makes it possible to determine what class of orthography user has the most difficulty with tone marking. It permits the experimenter to observe which problems disappear with more experience, serving as useful input for teaching tone. Furthermore, it can reveal problems which persist through all levels of experience, perhaps pointing to a problem with the orthography itself (Bird 1999b).

¹ The reading test was conducted among Maninka Mori speakers in Kankan, Guinea. For a history of the Nko movement, see (Oyler 1995).

Steven Bird (1999b) examines the success of phonemic tone marking for a Grassfields Bantu language called Dschang. It uses tone to distinguish lexical items and some grammatical constructions. See table 1 below:

Table 1. Analysis of tone comprehension errors in Dschang

	<i>Zero Marking</i>	<i>Full Marking</i>
<i>Lexical errors</i>	0	3
<i>Grammatical errors</i>	18	11

Bird observed that the same grammatical errors were made in both the zero marked text and the full marked text though errors were less frequent in the full marked text.²

Lexical minimal pairs are the most frequently cited reason for justifying a tonal orthography. Nevertheless, Bird's experiments demonstrated that, for those languages, full tone marking is worse for readers with regard to lexical identification than zero tone marking. He further states (Bird 1999b) that:

The tonal alternations in this language [Dschang] are postlexical, *i.e.* part of the process of uttering words in the context of a phrase. In effect, the tone patterns serve to "glue" words together into phrases. (In this respect the system functions like English phrasal intonation, which is not marked orthographically but for the limited use of punctuation symbols such as the comma.)

Therefore lexical minimal pairs alone are not sufficient reason for marking lexical tone.

Those with an interest in orthography design for tonal languages would do well to read Steven Bird's evaluation of the contributions and weaknesses of early orthography experiments by Efik, Mfonam, and Bernard (Bird 1999b).

Tonal orthography design in Manden languages should be based on empirical tests

Most publications in Manden languages, by foreign NGOs with which this analyst is familiar, mark tone only on the second and third person plural pronouns – if at all. Contrarily, the orthography promoted by indigenous readers of Manden languages in the grassroots Nko literacy movement marks tone fully.³

² Similar results were observed between the full-marked orthography of the Nko script and the present near zero marked orthography in the Roman script.

³ See Omniglot.com/writing/nko.htm for an introduction to the Nko script.

Steven Bird (1999b) argues: "Tone orthographies are often established by fiat and defended by anecdote... Rigorous testing of a variety of tone marking options should be a core part of tone orthography design." He is right. Proposals from linguists working in Maninka and related languages vary widely.

Wm. E. Welmers (1949) recommended that all nouns containing high tone be so marked in the Roman script. He also said that the 2nd and 3rd person pronouns should be distinguished. However, he does not mention the floating low tone that functions as a definite marker in Maninka.

In spite of Welmers' research, in 1976 those who revised the New Testament in Maninka chose not to mark tone in the Roman script. Eugene Nida (n.d.) states, "It would not seem necessary or advisable to write the tones on materials prepared for indigenous use." However, no test or reason is given.

Dyamanati Kaba Kuyaté (1976) for the Roman script and Solomaana Kanté (n.d.) for the Nko script, both Maninka analysts, made a case for a full marking of Maninka tone using 6 minimal paired phrases. However, these phrases are unconnected to natural speech. Therefore referential and discourse clues are missing. Interpretation is more difficult.

The National Commission of Voltaic Languages established conventions for a full diacritical marking in the Roman script of both lexical and grammatical tone in the Jula language of Burkina Faso. A sub-committee (Diallo 2001: 24) met in 1998 and found this convention to be inadequate in that it failed to account for the tonal structure of compounds. They made the following recommendations for modifying the statutes of the national commission (28-29): eliminate the diacritics for tone save in technical linguistic works and the initial <a> of the 3rd person plural which would be marked with a grave accent. The definite determiner, it was decided, should be represented by adding a vowel to monosyllabic and polysyllabic nouns. For indefinite nouns, there should be no doubling of the final vowel. However, in the Maninka of Kankan, there could be ambiguity between words with a final long vowel <básíí> 'calm' and words that end with a short vowel and an extra vowel signifying the definite determiner <básíí> 'the medicine'.⁴

Alou Keita (2001: 39) vigorously contends for full tone marking in the Roman script. He suggests that the first high tone in a lexical item should be marked with an acute accent. As for grammatical tone in Dioula, he recommends a modification of the subcommittee's method of representing the definite article by doubling the last vowel of a noun. He writes, « Le ton modulé qui caractérise la syllabe finale des

⁴ If the final vowel were (L), this particular ambiguity would be resolved, but many others would arise.

substantifs (noms) définis est marqué par l’apostrophe postposée » (Keita 2001 : 44). Here are some examples of these rules applied:

Table 2

Phonetic representation	Definite	Indefinite
<i>sóô</i> ‘house’	<i>só’</i>	<i>só</i>
<i>sòô</i> ‘horse’	<i>so’</i>	<i>so</i>
<i>dísî</i>	<i>dísi’</i>	<i>dísi</i>
<i>sárákâ</i>	<i>sáraka’</i>	<i>sáraka</i>
<i>fùnténî</i>	<i>funténi’</i>	<i>funténi</i>
<i>jùkúnân</i>	<i>jukúnan’</i>	<i>jukúnan</i>

Empirical testing of tonal orthographies should lead to more reliable information with which to design efficient and useful orthographies for Mande languages. Such rigor should also promote more of a consensus with regard to orthography among those who write in these languages.

Maninka speakers’ perspective on their phonology should be a valued basis for orthography design

Kenneth Pike (1947: 57) explains why a cultural insider’s perspective is useful in orthographical design:

...foreigners do not intuitively recognize native sound units. On the contrary they are usually 'deaf' to some of the native sound units and tend to 'hear' only their own ... for this reason [they] find it difficult to reduce a language to writing in the manner best adapted to rapid learning by the native ... [they] are likely to symbolize some sub-units which should be left unwritten, but fail to symbolize certain full units which need symbolization.

Pike is right. Valentin Vydrine (1996: 60) critiques the Nko dictionary favorably with regard to its phonology as opposed to some dictionaries produced by cultural outsiders that had neither tone nor even the distinction between the /o : ɔ/ or /e : ε/ represented in the orthography. He writes, “le Dictionnaire n’ko, avec une présentation exacte de la forme phonologique des mots et très riche en informations, s’élève comme une montagne sans égale” (2010:7).

This study follows Pike's emphasis on "observable reactions of speakers to their own sounds" (1947: 64). The Nko script and orthography presents the analyst with an observable reaction of a Maninka intellectual to his own language. This observable reaction should be given careful consideration by those who would design

orthographies in related languages. I endeavored to observe the reactions of Maninka people reading their own language in the Nko and Roman scripts. The Mande specialist is fortunate to have available the Nko dictionary, grammars, historical accounts and poems all written by a cultural insider having given considerable effort to these intellectual pursuits.

It seemed fitting, therefore, to heed the advice of Bird and Pike. The result is a reading test that compares how Maninka readers respond to their own language written in the Nko and Roman scripts.

The reading test

Premises

This study follows the assumptions of miscue analysis developed by Kenneth Goodman.⁵ Delle Matthews (1994, 2) summarizes them:

All responses to print are caused and are not accidental. Responses that are not the same as expected responses are generated through the same process as the expected ones. These unexpected responses are called *miscues* and are not random but follow a pattern. A careful study of this pattern can give us a glimpse of the process that any individual reader employs in the reading processes.

In addition, Marilyn Jager Adams's reading theory of processors is assumed. Namely, four processors interact when someone reads. The first is the orthographic processor. It deciphers the sequence of letters in a text. This information is then given to the phonological processor which determines if the sequence is pronounceable and sends the information back to the orthographic processor. The meaning processor determines the meaning of the word. It also may send information back to the phonological processor for obtaining the correct pronunciation. This process may also work in reverse order. The context processor constructs the ongoing meaning of the text. "If readers have thorough knowledge of letters, spelling patterns, and words and their pronunciations and meaning, the necessary energy will be available to focus on an ongoing understanding of the text" (Matthews 1994: 3).⁶

Methodology

A difficult text was chosen. It contains both prose and poetry originally written by the inventor of the Nko script and orthography Solomaana Kanté. It is an excerpt from *Dàlù Kéndé* 'Sound Reasoning', a book promoting the value of mother tongue literacy. The excerpt is 1620 words long. The Nko script text was copied by machine

⁵ See (Goodman 1973).

⁶ For a recent miscue analysis of an African tone orthography see (Roberts 2010).

just as it was published. I made a transliteration of the same text in the Roman script using an orthography that marks tone only on second person plural pronouns. It is the orthography most used for Roman script Maninka language materials in Guinea.

Ten Maninka adult males literate in the Nko script and ten others literate in the Roman script participated in this research for remuneration. They were isolated from each other in order to avoid cumulative familiarity of the text. Each participant read aloud the research text; Nko script readers read from the research text written in the Nko script and Roman script readers read from the same text transliterated into the Roman script. A Maninka research assistant recruited the readers and made an audio recording of their readings.

Later, I played the recordings, timed each reading, and noted the miscues of each participant. The miscues comprised repeats, omissions, additions, self-corrections, and incorrect attempts (those that were not self-corrected).

Then I examined the miscues for patterns that reveal plausible orthographical causes. My Roman script orthography proposal at the end of this article is based on the results of the miscue analysis.

There are two methodological gaps in this test that I would, in retrospect, encourage those involved with tonal orthography design to fill with respect to their own research.⁷ The first one is to make the research statistically valid in terms of the number of readers and the ratio of dependent variables that they may bring to the results. The second one is to devise an objective test for determining comprehension and to correlate it with what the miscue analysis reveals about the comprehension for each reader. These two improvements will make test results more informative and reliable.

Table 2

<i>Scripts</i>	<i>Group total reading time in minutes</i>	<i>Kinds of miscues</i>					<i>Group total number of miscues</i>
		Repetitions	Self-corrections	Additions	Incorrect attempts	Omissions	
<i>Nko</i>	230.35	662	247	30	177	56	1172
<i>Roman</i>	200.64	845	178	77	220	82	1402

⁷ See (Roberts 2008:236-239).

Analysis of overall performance

The total results of reading miscues for the Nko and Roman scripts are recorded in Table 2.

All self-corrections imply repetition. In order to avoid the redundancy of marking repetition along with each self-correction, only those repetitions not followed by a self-correction of a morpheme within its bounds are noted as repetition miscues. Such repetitions indicate a block in the orthographical, phonological, meaning (lexical), or contextual processing (Marilyn Jager Adams in Matthews 1994:3). When a block (not an incorrect attempt) occurs in processing, the reader attempts to reprocess the new information at that location. After having decoded the new information at the lexical meaning level, it remains to process the meaning of that lexeme in its context. So, typically, readers reread the preceding word, phrase, or even clause to incorporate the new information as it relates to its grammatical constituents. Repetition is the readers' attempt to preserve the cumulative comprehension of the text while experiencing a block in information processing. The reading miscue results show that Maninka readers of the Nko script experience considerably fewer processing blocks than those reading the Roman script.

All self-corrections imply incorrect attempts. But not all incorrect attempts are self-corrected. In this analysis, every incorrect attempt followed by a self-correction of that miscue was marked as a self-correction only. Redundancy in the data is thus avoided. A self-correction proves comprehension of the text in that location. Comprehension is more important for our purpose than reading fluency and one does not always imply the other. A self-correction may occur when the context processor encounters a lexeme that was unexpected in that position. Some readers at this point may employ an addition or omission miscue. If, however, the reader halts and reprocesses the information from the orthographical processor on up the processing hierarchy and decodes the message correctly, the processing block becomes a self-correction. Miscues are not all equal in value. From the perspective of communication, it is better for a reader to have a self-correction miscue and lose some fluency than an incorrect attempt miscue. For incorrect attempt miscues are never corrected and presumably, therefore, never correctly understood. The reading miscue results show that Nko readers correct more of their incorrect attempts than Roman script readers and consequently require more time.

There are two typographical errors in the Roman script research text. One Roman script reader actually corrected these errors without the slightest pause in the reading. The errors were word medial and it is doubtful that he even "saw" them. The orthographical processor of this fluent reader took in the word image as a whole

(beginning and end) and rushed that information to his higher level processors. His context processor, with the information provided by the orthographical processor and his cumulative comprehension of the text correctly predicted the intended noun <ɟɔnbɔɔn> ‘diploma’ rather than reading the adjective that was actually written <ɟɔnjɔɔn> ‘true, genuine’. The predictions of a fluent reader are most often accurate. Some readers’ predictions may add morphemes that are not in the written data. These were recorded as addition miscues. Most of these miscues are grammatically plausible. Some of them make no change in the message. One Nko reader encountered the following elision in the text: <Wò l’à yidà kó>...‘that shows that...’. He read aloud, <Wò lé yé à yidà kó>...‘that shows that...’. Other miscues change the message but remain grammatically plausible. Some addition miscues seem at first to be acceptable but later on in the flow of speech there is found to be no grammatical cohesion. If the reader stops, reprocesses the text, and self-corrects, the addition miscue is not noted. A third of addition miscues make no change in meaning; a third of them are grammatically and contextually possible but change the meaning; and a third cause a processing block for their lack of grammatical cohesion. The reading miscue results show that the Nko script readers make significantly fewer addition miscues than Roman script readers.

From a communication perspective, incorrect attempts are totally dysfunctional. Repetition miscues indicate a block in processing but they help preserve the cumulative comprehension of the text. Self-correction miscues imply an incorrect attempt but reprocessing occurs and the new information is at last understood; that incorrect attempt is annulled. Many addition and omission miscues change the meaning of the text or create a block in processing but a third of them are harmless. Incorrect attempts, however, have no possible redeeming value. They prove that the text in that location was not understood and it cannot be used as a clue to understand the following connected material until the next pause. The reading miscue results show that Roman script readers have significantly more incorrect attempts than Nko readers.

When a reader omits a portion of the text and does not return to self-correct it, an omission is noted. Some omissions do not alter the meaning of the text. The context processor predicts meaning and passes over a final optional suffix or word once the grammatical requirements are met. In Maninka, one may say <sébé> or <sébélí> ‘writing’ with no change in meaning. Other omissions change the meaning slightly without being detected by the context processor because no grammatical irregularity was made. For example, the plural suffix, <-lu>, may be omitted in some sentences without notice. Still other omissions were made, it appears, when the reader just gave

Time: 11:32 Miscues: 44	
Nko reader 5 Time: 33:13 Miscues: 93	[jémô:lúlékòndògbě̀nà kà?àlùlàně̀tòsùnô:dò]
Nko reader 8 Time: 18:47 Miscues 97	[jémô:lúlékòndògbě̀ná kà?àlùlàně̀tòsùnô:dò]
Sentence #22 original text	<p> $\text{ḶḶḶ} \quad \text{ḶḶ} \quad \text{‘Ḷ} \quad \text{:} \quad \text{Ḷ} \quad \text{ḶḶḶḶ} \quad \text{ḶḶ} \quad \text{ḶḶ} \quad \text{ḶḶḶ}$ PFV-lay 2PL COOR at guard EMP PL leader .ḶḶ ḶḶḶḶ ḶḶ in sleep remain ‘Leaders are on guard and allow you to lay asleep.’ </p>
Nko reader 3	[jémô:lúlékòndògbě̀nà kálùlàně̀tòsùnô:dò]
Nko reader 4	[jémô:lúlékòndògbě̀nà kà?lùlàně̀tòsùnô:dò]
Nko reader 5	[jémô:lúlékòndògbě̀ná ká?álùlàně̀tòsùnô:dò]
Nko reader 8	[jémô:lúlékòndògbě̀ná kà?àlùlàně̀tòsùnô:dò]

A) Reader 5 read the last word in both # 21 and # 22 as a low tone (L) as opposed to the high tone (H) of the written text.

B) Reader 5 changed the tone for ḶḶḶḶ [kòndògbě̀] in sentence #22 but not according to the written text.

C) Reader 3 read the last word in both #21 and #22 as (L) but it is written as (H).

D) Reader 3 repeats the first word in sentence #21 then he repeats the first five words. Finally, ḶḶḶḶ [kòndògbě̀] in sentence # 21 changed to ḶḶḶḶḶḶ [kòndògbě̀].

E) Reader 3 changes $\text{Ḷ} \text{ ná}$ ‘at’ to nà , i.e. from (H) to (L) in both sentences.

F) Reader 3 alone manifests the elision between $\text{Ḷ} \text{ kà}$ ‘INF’ and $\text{ḶḶ} \text{ álù}$ ‘2PL’ or $\text{ḶḶḶ} \text{ àlù}$ ‘3PL’.

G) Reader 3 changes $\text{ḶḶ} \text{ tó}$ in sentence #22 from (H) to (L) $tò$.

H) The last word in both #21 and #22 is (H) but reader 4 read it as (L).

I) $\text{ḶḶḶ} \text{ ‘Ḷ}$ in the Nko text should be read as $kàlù$ but reader 4 read it as $kà?lù$ with a glottal stop.

J) Reader 4 changed $\text{ḶḶ} \text{ álù}$ in sentence #22 to $àlù$.

K) The last (L) syllable of $\text{ḶḶḶḶ} \text{ kòndògbě̀}$ is changed to $kòndògbě̀$ by reader 8 in sentence #21.

L) The last word in both #21 and #22 is marked (H) but reader 8 reads them as (L).

M) Syllables 2 (L) and 3 (H) of $\text{ḲḲḲḲ} \text{kòṅḳḳḳḳ}$ are changed to kòṅḳḳḳḳ in sentence #22 by reader 8.

N) Reader 8 changed $\text{ḲḲḲ} \text{álú}$ to àlù in sentence #22.

O) Reader 8 made several repeats with various tone changes on $\text{ḲḲḲḲ} \text{kòṅḳḳḳḳ}$. In the end, he read both sentences together as shown.

Notès A, C, H, and L (see alphabetical list) indicate that all readers manifest a low pitch at the sentence border despite the written high tone on postpositions. This drop in pitch is a normal phonetic manifestation of automatic downstep (Creissels 1994: 220-221). The tone remains high phonemically. Notes B, D, I, and K indicate that all readers use the grapheme segments and context for processing but not the suprasegmental diacritics though the message of the text itself states that such diacritics are necessary.

For contrast, the audio performance of the selected Nko readers were also compared with sentence #27 randomly selected in the research text. This time the text was read with its natural context. Observe the results in Table 4 below.

- A) Nko reader 5 changes (H) ḲḲḲ to [dì].
- B) Nko reader 5 changes $\text{ḲḲḲ} \text{ḲḲ}$ from (L) to [wólú].
- C) Nko reader 3 unnaturally reads the first ḲḲḲ as (H).
- D) Nko reader 3 changed the second ḲḲḲ from (H) to [dì].
- E) Nko reader 4 read both ḲḲḲ as [dì].
- F) Nko reader 8 read both ḲḲḲ as [dì].

Table 4

<p>Sentence # 27 original text</p>	<p style="text-align: center;"> $\text{ḲḲḲ} \text{ḲḲḲḲ} \text{ḲḲḲ} \quad \text{ḲḲ} \quad \text{ḲḲḲ} \text{ḲḲ} \quad \text{ḲḲḲ} \quad \text{ḲḲḲḲḲḲ}$ DECL one kind NEG.COP PL REL language but $\text{ḲḲḲḲḲḲ} \text{ḲḲ} \quad \text{ḲḲḲ} \quad \text{ḲḲḲ} \quad \text{ḲḲḲḲḲḲ}$ script PROG do arrive NEG.FUT PL DEM $\text{ḲḲḲḲḲḲ} \text{ḲḲḲḲḲḲ}$ DECL one ‘But languages which are not of the same kind, they cannot be written with one script.’ </p>
<p>Nko reader 3 Time: 21:07 Miscues: 104</p>	<p>[bàrikámě̀nù̀tēsú:kélédì wòlù̀tēsékélásébésú̀kélédì]</p>
<p>Nko reader 4 Time: 11:32 Miscues: 44</p>	<p>[bàrikámě̀nù̀tēsú:kélédì wòlù̀tēsékélásébésú̀kélédì]</p>

Nko reader 5 Time: 33:13 Miscues: 93	[bàrikámě̀nù̀təsú:kélédì wólútəsékélásébésúkélédì]
Nko reader 8 Time: 18:47 Miscues 97	[bàrikámě̀nù̀təsú:kélédì wòlù̀təsékélásébésúkélédì]

No tonal miscues occurred on content words or personal pronouns in sentence #27. In sentences #21 and #22 above, however, no less than 8 such tonal miscues occur. This observation suggests that lexical or syntactical minimal pairs alone are not sufficient evidence for marking tone. Disambiguation in the reading process makes use of contextual clues at even the discourse level of grammar. All the notes A-F occur at phonological boundaries. Note B is normal downstep behavior after a pause. The pitches for $\check{V}+\check{I}F$ *bàrì* and $\check{V} \check{V} \check{V}$ *ò lù* of readers 3, 4 and 8 were only slightly lower than that of the following (H). Note C reflects some non-fluency in reader #3. He did not notice the phonological clause boundary as he decoded $\check{V}\check{m}$. Hence, the high tone marked in the Nko script is performed there though that is not normally the case for fluent readers. This was the only problem of non-fluency in this location. Therefore these notes, with the exception of C, are probably natural readings (note B is probably a variant).

Roman script reader's tonal performance

Next, the most fluent Roman script reader was selected (Reader 1). His oral performance of sentence #21 and #22 was compared with the Nko text. Observe the results in table 5.

Table 5

Original text sentence # 21	<p> $\text{ᠰᠤᠯᠠᠶ} \quad \text{ᠰᠤᠯᠠᠶ} \quad \text{‘ᠶ} \quad \text{:} \quad \text{ᠰᠤ} \quad \text{ᠰᠤᠯᠠᠶ} \quad \text{ᠰᠤᠯᠠᠶ} \quad \text{ᠰᠤᠯᠠᠶ}$ PFV-lay 3PL COOR at to guard EMP PL leader $\text{ᠰᠤᠯᠠᠶ} \quad \text{ᠰᠤᠯᠠᠶ} \quad \text{ᠰᠤᠯᠠᠶ}$ in sleep remain <ɲemɔɔlu le kɔnɔgben na ka alu lanen to sunɔɔ dɔ.> ‘Leaders are guarding while they lay asleep.’ </p>
Roman script reader 1 time: 15:56 Miscues 8	[ɲémó:lúlékɔ̀nɔ̀gbě̀ná kàlù̀láně̀tósùnó:dò] ¹¹
Nko reader 3 Time: 21:07 Miscues: 104	[ɲémó:lúlékɔ̀nɔ̀gbě̀ná kàlù̀láně̀tósùnó:dò]

¹¹ The performance of the Roman script reader 1 and those of the Nko script are recorded in the International Phonetic Alphabet.

attempts on the test text, 8 are content words, 3 are grammatical words, and 1 is a numeral. Of the Roman script reader 1's 3 "incorrect attempts", all of them were from typographical errors made by the analyst in transcribing the research text. Roman script reader 1 corrected these "miscues" without pause so that they were read correctly in accordance with the original Nko text that he had not seen. Nevertheless, they had to be marked as miscues (that is how the typographical errors were discovered). Otherwise, Roman script reader read flawlessly. He paid attention to the tone diacritics of the personal pronouns. He could have, I believe, deciphered the meaning of sentence #22 if determiners were marked and if he were made aware of the convention. A perfect orthography is not going to solve even the majority of the miscue problems Maninka readers have when they encounter a text. Better reading instruction, availability of reading material, and more reading practice are the most significant factors. However, the proposal at the end of this study should make it possible for a fluent reader, like Roman script reader 1, to comprehend even sentence #22.

A new proposal of a Roman script orthographical change for writing Maninka and related languages

Definite nouns should be signified by zero marking. Indefinite nouns that are not followed by a particle of the indefinite (*do*) should be marked with a post-posed apostrophe (see Tables 6, 7).

Table 6

Maninka Noun in proposed orthography	English Translation	Phonetic manifestation of last syllable
wulu	the dog	[lu\]
wulu'	a dog	['lũ]
wulu do	some dog	[lu\]

Rationale for the new proposal

1. The orthography in the Nko script has graphemes that aid the reader to decode the phonological features signifying whether or not nouns are definite or indefinite. This kind of orthographical representation is, of course, necessary for writing Maninka in the Roman script as well.

Table 7

Maninka Noun Phrase in proposed orthography	English Translation	Phonetic manifestation on the last syllable of the first noun	Phonetic manifestation on the last syllable of the last noun
wulu sen	the dog's leg	[lu\]	[sẽɿ]
wulu sen'	a dog's leg	[lu\]	[sẽɿ]
silama moso	the woman of the Muslim/the Muslim's woman	[ma\]	[so\]
silama moso'	a woman of the muslim	[ma\]	[söɿ]
silama' moso	the woman-a Muslim one/the Muslim woman	[mä\]	[so\]
silama' moso'	a woman-a Muslim one/a Muslim woman	[mä\]	[söɿ]

1.1. Nko grammarians differ from those of other analysts in that they posit a suprasegmental phoneme that they call <*kán mǎfǎnén*> ‘calm voice’. Valentine Vydrine (1999) describes it as a “descending tone, i.e. a high tone followed by a ‘floating low tone’ (the latter causes a final lowering)”. Another phoneme posited by Nko grammarians is called <*kán nábàràné*> ‘surprised voice’ (Jaane 1998: 44).¹² It features stress and is extra short in length. Solomaana Kante used the human emotions of calm and surprise to describe the manner of articulating the suprasegmental features that make the distinction between definite and indefinite nouns. His readers would intuitively position their speech articulators in the desired position when he wrote “high calm voice” [v\], “high surprised

¹² The Nko dictionary entry for *labàrà: kà kó ké tùmà lá mǎdò yíí tǎ à lá mén dó* ‘to do something when someone is not expecting it’ (Kante, Jaane 2003). The Nko dictionary entry for *mǎfǎ* is: *kà sǐ jírí ní làmàà sí tǎ* ‘to sit without any noise or movement’.

voice” [‘ǎ], “low calm voice” [vλ], or “low surprised voice” [‘ǎ]. When the calm (unstressed) voice occurs as the vowel in the final syllable of a noun, that noun is considered definite. When the surprised (stressed) voice occurs as the vowel in the final syllable of a noun, that noun is considered indefinite (Jaane 1998:44). It makes no difference whether the vowel’s tone level is high or low. The calm voice (henceforth, unstressed vowel) that accompanies a high tone is un-marked orthographically by Nko scholars. This fact may indicate that the unstressed vowel is ordinary from a cultural insider’s point of view. This orthographic proposal for writing the Maninka language in the Roman script may appear counter intuitive to linguists who use the terms definite and indefinite as grammatical categories. This is because, in their view, the positive phonological feature that makes a noun definite – the floating low tone – is unmarked and the negative of this feature (or its absence) is marked.¹³ In the cultural insider’s view, the unstressed vowel requires less effort than its counter part, the surprised voice (henceforth, stressed vowel). A case may be made that it is counter intuitive for the mother tongue Maninka speaker to represent the stressed vowel with zero marking. It therefore seems fitting, in a practical orthography, to represent the unstressed vowel with zero marking and the stressed vowel with the post-posed apostrophe.

1.2. The linguist seeks to become aware of the precise nature of the phonological features which make a given noun definite or indefinite. But Maninka non-specialists need not do so in order to take part in the process of written communication. They need only to associate a grapheme with whatever phonetic behavior accompanies their cognition when they intend to convey a definite or indefinite semantic item. Therefore, the technical orthography of a linguist need not be the same as an orthography designed for practical use.

2. Besides its correspondence with a cultural insider’s view of Maninka phonology, this recommendation has the advantage of being more efficient than an orthography that marks the definite determiner. There is more economy of effort for the writer and reader because the marked indefinite nouns (without the segmental indefinite determiner <do>) are less frequent than the zero marked definite nouns.

¹³ Linguists researching Mande languages should continue with the well established convention of marking floating low tone for the definite determiner in linguistic literature. This proposal, rather, is for a practical orthography in Maninka and related languages in which the definite determiner is manifested by a suprasegmental phoneme. It does not apply to Mande languages in which the definite determiner is manifested by a segmental phoneme. These language should represent the definite determiner with a segmental grapheme corresponding to the phoneme.

3. Definite and indefinite determiners are still underrepresented in the orthographies of non-linguistic Mande language literature using the Roman script. These grammatical functions are necessary for communication and may have grammatical significance beyond the sentence level of a discourse.

4. This proposal would disambiguate qualitative and associative noun phrases.

4.1. What Baba Jaane (1998: 47) calls <*cé-ń-kánín*> ‘joining’, I will call a qualitative noun phrase in which a modifier describes a quality of the head noun. Examples are: <*silàmà’ mósó’*> ‘a Muslim woman’ and <*lâtèn’ sébésún*> ‘the Latin alphabet’ (from sentence #4 of the research text). The stressed vowel on the last syllable of the modifier (first formant) of the noun phrase renders that noun less concrete, more abstract, and conveys quality or attribution.

4.2. What Jaane (1998: 47) calls <*lâkàfòlí*> ‘assembly’, I will call an associative noun phrase which translates as X’s Y. For example, <*silama moso*> ‘the woman of the Muslim/the Muslim’s wife’ and <*laten sebesun*> ‘the alphabet of the Latin people’ (from sentence #30 of the research text). The unstressed vowel on the last syllable of the modifier (first formant) of the noun phrase is a definite determiner. It makes that noun an associative modifier.

4.3. The research text is only 1620 words long yet there is a contrast in analogous environments of the qualitative and associative noun phrases within that short sample (sentences #4 and # 30 referred to in 4.1 and 4.2 above).

It is important for non-mother tongue speakers who write in the Maninka language to understand the difference. Study the following examples:

Table 8

Associative noun phrases	Qualitative noun phrases
silama moso’ ‘A Muslim’s wife’	silama’ moso’ ‘A Muslim woman’
laten sebesun ‘The alphabet of the Latin people’	laten’ sebesun ‘The Latin alphabet’
nisidaba sebeli ‘the script of the cow-plough’	
damina yila ko ‘the issue concerning the place of the beginning’	nisidaba sebeli’ damina yila ko’ ‘an issue of the bi-directional script starting place ’

Rationale continued.

4.4. There are four possible explanations for the Nko readers' higher comprehension on the reading test. The best one suggests that the new proposal will improve Maninka readers' performance.

4.4.1. The first explanation is that incorrect attempt miscues may have been understood correctly by the readers after all – that my assumption to the contrary is erroneous. But this explanation is unlikely because it is easier for readers to read aloud what they believe is in the text than to conjure up a false performance while comprehending the true sense.

4.4.2. The second explanation for the superior comprehension of the Nko readers over Roman script readers may be rooted in language-use issues. Namely, Roman script readers are typically taught in a second language, French. Dictionaries are often unavailable. Maninka readers of the French language may have developed, in the context of substandard teaching, a value for rapid decoding and a tolerance for understanding merely the gist of a text. This poor reading habit may transfer to their reading of Maninka texts.

4.4.3. A third explanation for the unfavorable test results of the present orthography in the Roman script is that it does not disambiguate the qualitative and associative noun phrases. In Nko, when the semantic and syntactic processors fail, a reader may stop, note the tone diacritics, repeat the phrase (self-correcting if necessary), and continue. A reader of the Maninka language in the Roman script has no such possibility in an orthography that does not indicate the definite and indefinite determiners. If his first guess does not make sense, he may repeat it. When he finds that he read it correctly and it still makes no sense, he tolerates his lack of comprehension and moves on. The same results were found in the Dschang orthography test; the readers of the full marked text in the Dschang test made less frequent grammatical miscues than the readers of the zero marked text.

4.4.4. The fourth and most likely explanation for the lag of the Roman script readers is that language-use issues combine with orthographical under-representation of the definite and indefinite determiners on the nouns creating ambiguity in the identification of some verbs and nouns (i.e. test text sentence #21 and #22) and in distinguishing qualitative noun phrases from associative ones (i.e. test text sentence #4 and #30).

4.5. Careful observation and further testing, over a long period of time, with readers who have been taught how the definite determiner apostrophe relates to speech, is the best way to learn if marking these nouns in the Roman script will improve comprehension. This knowledge can only be gained by changing the present orthographies for non-linguistic literature.

Abbreviations

2 (as gloss) second person	INF	infinitive
3 (as gloss) third person	(L)	low tone
COOR coordinating conjunction	NEG	negation
COP copula	NGO	Non-Governmental Organization
DECL declarative	PL	plural
DEM demonstrative	PFV	perfective
EMP emphatic marker	REL	relater
FUT future	v	vowel
(H) high tone		

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Abstract

There is, historically, a wide variation in the proposals concerning tonal orthography design in Mande languages using the Roman script. Few of these proposals are based on the results of empirical reading tests. Equally rare in these proposals is consideration given to the cultural insider's perspective of their own phonology. The orthography of Solomaana Kantè, inventor of the Nko script, can provide much intuitive information on this perspective for Maninka and related languages. Therefore I have tested how Maninka readers interact with the orthographies of the Nko and Roman scripts. The paper concludes with a new proposal for indicating the definite and indefinite determiners on nouns in a practical orthography. This proposal is informed by a cultural insider's perspective the phonology of his own language and it is strengthened by testing.

Key words: tonal orthography, Maninka, Nko script, reading test.