

Revised Proposal to Encode N’ko Phonetic Extensions for Bambara

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Changes from previous proposal titled *Preliminary Proposal to Encode N’ko Phonetic Extensions for Malian Languages* [L2/25-081](#):

- Narrowed scope to only Bambara additions
- Fixed missing mark combinations
- Restructured document
- Additional evidence

Changes from previous proposal titled *Preliminary Proposal to Encode N’ko IPA*:

- N’ko renamed N’ko Phonetic Extensions
- Repertoire limited to just the characters required for Malian languages and French loan words with full system in appendix
- Characters renamed from phoneme-based nomenclature to form-based nomenclature
- Updated app install data and current student enrollment numbers
- Updated list of source materials
- Marks previously used for adverb marking now are used for verb marking
- Addition of new tone marks along with combining classes
- Added Unicode Character Properties
- Added all possible mark combinations
- Code chart updated to roadmap codepoints 1E960-1E9CF

Changes from previous proposal titled *Revised Proposal to Encode N’ko Phonetic Extensions for Bambara*

- Added possible option for handling confusability issues with the syncope symbols
- Modified diacritic names for clarity Section 5.3
- Cleaned up mark repertoire to remove marks not related to Bambara 5.3
- Added vowel mark combinations Section 5.3.1
- Updated rendering of high-high tone mark and derivatives/reflected in updated figures in section [12.2.2 Tones and Accents](#) and all tables
- Added [Section 11](#) for collation and string-matching considerations

1. Executive Summary

This proposal is for encoding additional marks and letters needed to write Bambara with greater linguistic precision than standard N’ko. These additions work with the existing N’ko writing system. It should be noted that characters in this proposal are a subset of a larger system called the N’ko Phonetic Extensions that was developed to support many languages including but not limited to the indigenous languages of Mali. Previous proposals included a larger repertoire from this system. However, as Bambara is the lingua franca in Mali the evidence of use for Bambara is more readily available. When used for Bambara the community also refers to this system as N’ko Kakura, which translates to modern N’ko to distinguish it from standard N’ko.

1.1 Proposed Repertoire to Be Encoded

This proposal is to encode 8 base letters, 17 diacritics and 2 modifiers into an extension block for N’ko to support Bambara.

1.2 Education, Awareness & Demographics

- From 2019 to 2025, approximately 1200 students have been taught or are actively studying N’ko Kakura.
- Classes are conducted both in-person at university level in Bamako, Mali and online via Telegram.
- Online students are in Mali, Guinea, Côte D’Ivoire and France.
- The script has been discussed on RT Mali, a streaming news service in Mali which has regular segments on N’ko. [1617] (Figure 27)
- Dr. Diakite maintains a YouTube channel with N’ko Kakura lessons with 2.57K subscribers [15] (Figure 28)

1.3 Stability

- The development of the N’ko Phonetic Extensions involved deploying Arabic-encoded fonts and input methods for both desktop and mobile to accelerate the rate of use.
- Over the course of 6 years, the script has undergone 15 iterations to fine tune character design and repertoire as well as technical font issues.
- Not all iterations involved the characters required for Bambara.
- The design of Bambara letters has not changed since 2019.
- Diacritics have been added as recently as 2025 to disambiguate grammatical features.

Iterations by year

Year	# Iterations	Events	Changes
2018	Initial revision		

2019	7	font deployed with desktop support, promotion in villages (Figure 33), engagement w/government ministries	Repertoire development and refinement
2020	0		
2021	0		
2022	4	mobile support, university classes	Technical issues, Repertoire refinement (Tamashek)
2023	1		Bug fix with script connection Mark addition (Bambara) – dedicated proper nouns rather than combining
2024	2		Technical issues, Mark addition (Bambara) – tonal twists for nouns, definite and indefinite noun complements
2025	1		Technical issues, Mark addition (Bambara) – tonal twists for verbs

1.4 Endorsements and Support

While N’ko Kakura and the larger Phonetic Extensions are not yet recognized as an official writing system in Mali its progress is being followed by government ministries.

- During the development of the N’ko Phonetic Extensions Dr. Diakite along with Dr. Mugane, Director of the Harvard African Language Program, engaged government ministries in Mali and Pan African Council of Traditional and Customary Authorities (CPATC) to gauge interest in the system. (Appendix A, C, D)
- The former Ministère de la Refondation de l’Etat in Mali has used N’ko Kakura to produce some government documents. [2223]
- In October 2023 CPATC made an official declaration to support the efforts to develop the N’ko Phonetic Extensions. (Appendix B)
- Universities in Bamako that offer N’ko Kakura classes are state-run institutions and curricula are approved by department heads. (Figure 34)

1.5 Overview of Material Evidence

Sorted commonplace to pedagogical

Non-fiction Books

Topic	# of Materials	# of Authors	Subset by Inventor
Traditional Medicine [12] (Figure 8)	1	1	0
Spirituality [13] (Figure 9)	1	1	0

Captions in YouTube Videos

Topic	# of Materials	# of Authors	Subset by Inventor
<i>Fictional Web Series</i> (Figure 7)	1	1	0
<i>Cooking Videos</i> [18] (Figure 6)	3	1	0

Government Documents

Topic	# of Materials	# of Authors	Subset by Inventor
<i>Health Bulletin</i> [20] (Figure 3)	1	1	0
<i>Administrative Terminology</i> [22, 2324] (Figure 4, Figure 23, Figure 24, Figure 25)	3	1	0
<i>Translation of Constitution</i> [21] (Figure 22)	1	1	1

Ephemera

Type	# of Materials	# of Authors	Subset Inventor
<i>Calendar</i> [19] (Figure 2)	1	1	0

Pedagogical (health)

Topic	# of Materials	# of Authors	Subset by Inventor
<i>Basic Anatomy Book</i> [14] (Figure 5, Figure 21)	1	1	1

Pedagogical (math)

Type	# of Materials	# of Authors	Subset by Inventor
<i>Primary Education Book</i> [6] (Figure 18)	1	1	0

Pedagogical (writing system/language)

Type	# of Materials	# of Authors	Subset by Inventor
<i>Primary Education Books</i> [12347, 8] (Figure 10, Figure 32)	6	6	1
<i>College Level Education Books</i> [10, 11] (Figure 19, Figure 36, Figure 37)	2	3	1
<i>General Education Videos</i> [15] (Figure 28)	20	1	20

2. Introduction

N’ko Phonetic Extensions, as its name indicates, are an extension of the N’ko script, encoded in 2006 ([L2/04-172](#)), which adds original characters to satisfy the need of other African languages throughout West Africa and the continent. For more in depth introduction to the purpose and justification of the full system see sections I and II in [L2/25-081](#).

This proposal focuses on the additions required for Bambara which are referred to within the community as N’ko Kakura to distinguish it from the standard N’ko as developed by Solomana Kanté in 1949. Kanté’s system was intended provide a unified method of writing generally mutually intelligible Manding languages of Maninka, Bambara, Dioula, and Mandinka, which similar structure but varying pronunciation. To this end Kanté’s created literary language register called Kangbe that borrows from all the languages but is heavily influenced by Maninka or the Maninkamory dialect of Guinea. As a result, certain letters of the N’ko alphabet stand in for multiple phonemes.

While N’ko has been widely adopted by the Manding community, there are limitations. First, the lack of phonetic clarity makes N’ko difficult to adapt to other Mande languages such as Soninke, Dogoso and Senufo, etc. Second, the lack of uppercase in the N’ko script does not offer enough precision in grammatical representation. This concern has come into the forefront as Mali is taking steps towards making indigenous languages official languages and needs to be able to create legal documents without ambiguity. To address these concerns Dr. Boubacar Diakite developed the N’ko Phonetic Extensions. For the remainder of this document N’ko, as developed by Kanté will be referred to as N’ko Maninkamory and the phonetic extensions specifically for Bambara will be referred to as N’ko Kakura.

3. Development

In 2015, a delegation of over ten African kings from the Pan African Council of Traditional and Customary Authorities (CPATC) urged Mali and Guinea to propose N’ko as a continental script to the African Union. This led to discussions about adapting N’ko, similar to Latin script adaptations, for various African languages. N’ko leaders and Harvard's African Language Program found significant interest in a unifying script like N’ko during their visits to several African countries. These early discussions led to the development and deployment of the N’ko Phonetic Extensions in Mali. While there is currently active development of materials for all Malian languages the greatest progress has been made for Bambara as it is the lingua franca of the country.

Development of a working N’ko Phonetic Extensions typeface started in spring 2019 with the first iteration completed by the fall of the same year. This initial iteration was taught at the University of Bamako and in villages throughout 2019-2020 primarily in the Bambara language. Modifications were made throughout 2020 to 2024, to refine the tonal marking system and refine glyph design and language coverage.

The font was distributed alongside desktop keyboards with mobile input available in 2022. Analytics provided by the keyboard app “Clavier Malien,” available for Android, provides insight into the user base and adoption. The chart below shows the app installs in blue tones along the monthly average users in orange tones. The user base has been steadily increasing since 2022. Currently there are about 1200 active monthly users. Sixty to seventy percent of the user base is in Mali with the remainder in the countries of Guinea, Côte D’Ivoire and France. Initially the users outside of Mali were those who installed it out of curiosity however, with the launch of online classes conducted over Telegram these are now known to be users enrolled in the classes.

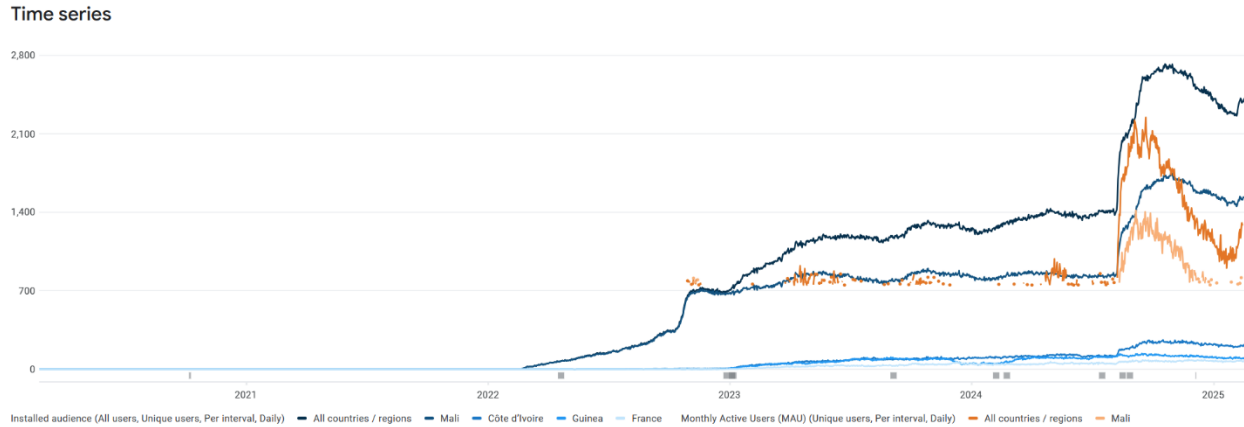


Figure 1: Installation base and monthly active users of the Clavier Malien application since its release.

4. Usage

Since the public introduction of the N’ko Phonetic Extensions in 2019 more than 600 students have been trained in use of the script in public universities in Bamako. In the fall semester of 2023 approximately 100 students were enrolled in language classes that utilize the N’ko Phonetic Extensions with most of the classes teaching Bambara. (Figure 26) As of 2025, the script is being taught at University of Administrative and Political Sciences (FSAP), National Engineering Higher Education (ENI) and African Franco-Arab University (UPAFA). There are also 4 online classes outside of the university system. Currently, there 450 students enrolled in university classes and 226 students in the online program. (Figure 29, Figure 30, Figure 31)

- **Primary Education (script/language):**
 - o *Bamanankan San Folo* [11] (Figure 17)
 - o *Bamanankan San Filanan* [2]
 - o *Language 1er Annee* [3] (Figure 32)
 - o *Language 2eme Annee* [4]
 - o *N’ko Bambara Writing* [7]
 - o *N’ko Lakalanni* [8]
- **Primary Education (math):**
 - o *Math Kakura* [6] (Figure 18)
- **Primary Education (health):**
 - o *The Body Nyesson* (Human body functions) [14] (Figure 5, Figure 21)
- **College Education (script/language):**
 - o *Le 1er Module de l’enseignement du Nko-Bambara à l’université* [9]
 - o *Assike Kakura* (Advanced Nko): [10] (Figure 19)
 - o *Assike Filanan Nyesson* [11] (Figure 36, Figure 37)
- **General Education (script/language):** N’ko Kakura Walada YouTube videos. [15] (Figure 28)

Outside of educational environments N’ko Kakura has been used for a variety of purposes, outlined below.

- **Non-Fiction:**
 - o *Basiya Nyafoli* - Book on traditional medicine [12] (Figure 8)

5.2 Consonants

The proposed consonants below add phonemes present in Bambara but are not explicitly part of N'ko Maninkamory. [33]

ɔ	ɓ	ʊ	ɛ	ɣ	ɖ	ʔ	ʀ
tʃ	dʒ	ʃ	z	g	v	ŋ	ʔ

5.3 Diacritics

The largest difference between N'ko Maninkamory and N'ko Kakura is the tonal marking system which accomplishes two things. The first is separating vowel length from tone (See 12.2.3 Vowel Length Mark), the second is broadening the repertoire to allow for improved representation of tonal modulation and grammatical precision. Below is the expanded repertoire of diacritics. All marks are centered above the base letter and would have a combining class of 230.

<i>high tone</i>	<i>low tone</i>	<i>low-high tone</i>	<i>paired low tone</i>	<i>paired high tone</i>	<i>paired low-high tone</i>	<i>paired low-high-mid tone</i>	<i>low-high-mid tone</i>
<i>paired high-mid tone</i>	<i>paired high-low tone</i>	<i>double high tone</i>	<i>high-double high tone</i>	<i>low-double high tone</i>	<i>double high-mid tone</i>	<i>nominal low inversion mark</i>	<i>nominal high inversion mark</i>
<i>verbal low tone</i>	<i>verbal high tone</i>	<i>verbal low inversion mark</i>	<i>verbal high inversion mark</i>				

N'ko Kakura also uses existing diacritics from N'ko Maninkamory but with different functions. The following marks *do not need encoding*.

Diacritic	Name	New function
	NKO COMBINING SHORT HIGH TONE (07EB)	mid-tone
	NKO COMBINING SHORT RISING TONE (07ED)	vowel length
	NKO COMBINING LONG DESCENDING TONE (07EE)	high-low tone
	NKO COMBINING LONG HIGH TONE (07EF)	high-mid tone
	NKO COMBINING NASALISATION MARK (07F2)	nasalization/assimilation

Updates:

The rendering of the *double high tone* mark has changed to make it simpler to write and design particularly when used to in combination with other marks. While the rendering has changed the function



NKO COMBINING LOW TONE

low tone



NKO COMBINING SHORT HIGH TONE (07EB)

mid tone

While it is not preferred it is possible for a user to attempt to type the compound marks in a piecemeal fashion. This behavior has not been observed by the current users; therefore, it is likely that well-designed input methods that make compound tone marks readily accessible will be sufficient to ensure proper input.

Tables 1 - 4 show the possible compound marks which could be formed if a mark from the first column were followed by one of the marks in the top row. It should be noted this is not precisely the same as the grammatical rules that dictate how tone marks are modified (Figure 35). The marks that can combine when entered in sequence are in Table 5. See verb marks in [Section 5.3](#) and vowel length mark in [Section 5.3.2](#) for details on their behavior.

Table 1: Basic Mark + Basic Mark Equivalencies

	◌̀	◌́	◌̄
◌̀	◌̀̀	◌̀́	◌̀̄
◌́	◌́̀	◌́́	

Table 2: Basic Mark + Compound Mark Equivalencies

	◌̋	◌̌	◌̍	◌̎	◌̏
◌̀		◌̀̌	◌̀̍		◌̀̏
◌́	◌́̋		◌́̍	◌́̎	◌́̏

Table 3: Compound Mark + Basic Mark Equivalencies

	◌̀	◌́	◌̄
◌̋			◌̋̀
◌̌	◌̌̀		
◌̍		◌̍̀	◌̍̀
◌̎			◌̎̀
◌̏			◌̏̀

Table 4: Compound Mark + Compound Mark Equivalencies

	◌̣
◌̣◌̣	◌̣◌̣

Table 5: Valid Mark to Mark Combinations

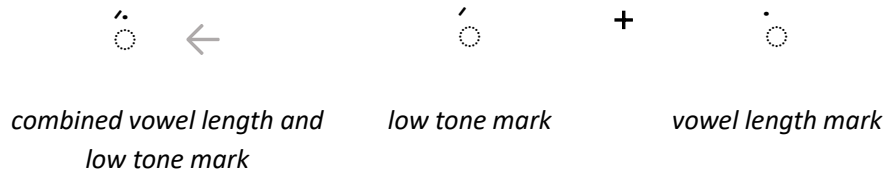
	◌̣	◌̣	◌̣	◌̣◌̣	◌̣◌̣	◌̣◌̣	◌̣◌̣	◌̣◌̣	◌̣◌̣	◌̣◌̣	◌̣◌̣	◌̣◌̣
◌̣		◌̣	◌̣			◌̣						
◌̣	◌̣		◌̣			◌̣						
◌̣		◌̣	◌̣			◌̣						
◌̣	◌̣		◌̣			◌̣						
◌̣	◌̣	◌̣		◌̣◌̣	◌̣◌̣		◌̣	◌̣	◌̣	◌̣	◌̣	◌̣

5.3.2 Vowel Length and Combinations

The NKO COMBINING SHORT RISING TONE mark which *does not need encoding* is repurposed to indicate long vowels in Bambara that are not geminated vowels (Figure 36). Because vowel length and tone marking are treated separately in N’ko Kakura this mark can be used in conjunction with all of the tone marks.

Diacritic	Name	Function
◌̣	NKO COMBINING SHORT RISING TONE (07ED)	vowel length

When combining with tone marks the vowel length mark *must* precede the tone mark. The vowel length mark is never rendered after the tone mark. The illustration below is presented in typing order and is read right-to-left. The combination of the two marks must be centered over the base letter. Some examples can be seen in Figure 9.



The following tone marks (*orange marks do not need encoding*) can be combined with the vowel mark in the same fashion as above:

5.4 Modifiers

N’ko Kakura utilizes three elision symbols. When vowels are elided in Bambara the proper syncope symbol is used to account for the tone of the removed vowel. Note, the representation below is the *isolated* form of the symbols.

’	‘	ı
high tone vowel syncope symbol	low tone vowel syncope symbol	toneless syncope symbol

The syncope symbols in N’ko Kakura have joining behavior which consists of a connecting baseline that is present when adjacent to another letter. The joining behavior is demonstrated below.

high tone vowel syncope symbol	’ ’ ’ ’
low tone vowel syncope symbol	‘ ‘ ‘ ‘
toneless vowel syncope symbol	ı ı ı ı

The current N’ko code block includes 3 apostrophe-like symbols which can lead to some confusion. ’ NKO HIGH TONE APOSTROPHE (07F4), ‘ NKO LOW TONE APOSTROPHE (07F5), and ı NKO LETTER DAGBASINNA (07D1). The first two *do not* join and never have a baseline stroke. Whereas the latter *does* join but has a baseline stroke in all positions including the isolated position. As a result, none of the existing apostrophe-like symbols match the rendering and shaping behavior needed for the N’ko Kakura syncope symbols.

Existing N’ko Symbols	Final	Medial	Initial	Isolated
NKO HIGH TONE APOSTROPHE (07F4)	N/A	N/A	N/A	’
NKO LOW TONE APOSTROPHE (07F5)	N/A	N/A	N/A	‘
NKO LETTER DAGBASINNA (07D1)	ı	ı	ı	ı

The table below shows each of the symbols in use. Note the differences in shaping and rendering when used in connected vs unconnected form.

	Connected	Unconnected
Existing N’ko Symbols		
NKO HIGH TONE APOSTROPHE (07F4)	ḡḡ’ḡ	ḡḡ ’ḡ
NKO LOW TONE APOSTROPHE (07F5)	ı’ıı	ı’ı ı
NKO LETTER DAGBASINNA (07D1)	ḡıı’ııı	ḡııı’ııı

6. Attestation

The proposed repertoire is attested in the examples below from various sources. All sources except for Figure 5, Figure 10 and Figure 11 are from non-pedagogical materials produced by authors other than the inventor. The characters attested in these two figures occur under very specific circumstances and are therefore quite rare.

ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ
ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ
ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ	ⲛ



Figure 2: Calendar produced by the Ministère de la Refondation de l'Etat [19]

9	8	7	6	5	4	3	2
10000	1000	100	10	1	0	0	0



#STOPCOVID-19

تَبْجَلَسْ مَحْصَدْ #



- لَو فَه لَه لَو صَد دَلَّيْ صَلَّيْ لَو تَا تَبْجَلَسْ مَحْصَدْ هَا 19.
 - لَو فَه فَتَحْدَلْهَدَّيْ تَا تَبْهَلْطَسْطَا هَدَّيْ لَو تَبْجَلَسْ.
 - لَو فَو اِ فَو لَو تَبْجَلَسْطَا لَو سَ لَو تَا تَبْهَلْطَسْطَا لَو هَدَّيْ.
 - لَو فَو لَو كَلْبَدْ دَلَّيْ هَا مَسْتَبْهَلْهَلَّيْ دَلَّيْ لَو تَا تَبْجَلَسْ مَحْصَدْ 19.

N° VERT 36061



Figure 3: Sample page from a COVID-19 Health Bulletin [20]

Ⓛ	Ⓜ	Ⓝ	Ⓟ	Ⓠ	Ⓡ	Ⓢ	Ⓣ
Ⓛ	Ⓜ	Ⓝ	Ⓟ	Ⓠ	Ⓡ	Ⓢ	Ⓣ
Ⓛ	Ⓜ	Ⓝ	Ⓟ	Ⓠ	Ⓡ	Ⓢ	Ⓣ

Dictionnaire des mots, expressions et phrases à traduire en Bamanan kan

N°	En français	ⓁⓂⓃⓅⓆⓇⓈⓉ	Bamanan kan
1	Certificat de vie	ⓁⓂⓃⓅⓆⓇⓈⓉ	Nimaya lajeyalan
2	Retraité	ⓁⓂⓃⓅⓆⓇⓈⓉ	Bolobòlen
3	Pension et pensionné	ⓁⓂⓃⓅⓆⓇⓈⓉ	Dèmèndifèn ni èmèndilen
4	Régime de retraite	ⓁⓂⓃⓅⓆⓇⓈⓉ	Bolobòli màràkan
5	Versement de la pension	ⓁⓂⓃⓅⓆⓇⓈⓉ	Dèmèndifèn sàràli
6	Certificat d'hébergement	ⓁⓂⓃⓅⓆⓇⓈⓉ	Jatigiya lasereyalan
7	Attestation sur l'honneur	ⓁⓂⓃⓅⓆⓇⓈⓉ	Sereya keli bonnia kan
8	Preuve de domiciliation	ⓁⓂⓃⓅⓆⓇⓈⓉ	Makeyoro ya dalu
9	Justificatif de domicile	ⓁⓂⓃⓅⓆⓇⓈⓉ	Makeyoro lajeyalan
10	Démarches administratives et commerciales	ⓁⓂⓃⓅⓆⓇⓈⓉ	Mamarali ni julaya siratagama
11	Certificat de résidence	ⓁⓂⓃⓅⓆⓇⓈⓉ	Dagayoro lajeyalan
12	Dernier avis d'imposition sur le revenu	ⓁⓂⓃⓅⓆⓇⓈⓉ	Soro sagalenniali miriya laban
13	Certificat de production	ⓁⓂⓃⓅⓆⓇⓈⓉ	Wolonnayali lajeyalan
14	Document juridique et administratif	ⓁⓂⓃⓅⓆⓇⓈⓉ	Kiri ni mamarali dosere
15	Démarches et actes	ⓁⓂⓃⓅⓆⓇⓈⓉ	Siratagama ni kewalew
16	Agir sans fondement	ⓁⓂⓃⓅⓆⓇⓈⓉ	Ka ko daluntan ke
17	Circonscriit le contenu du mandat	ⓁⓂⓃⓅⓆⓇⓈⓉ	Cikun kono ko lasariyaya
18	Légalisation d'un document	ⓁⓂⓃⓅⓆⓇⓈⓉ	Dosere lasariyamayali
19	Autorisation parentale	ⓁⓂⓃⓅⓆⓇⓈⓉ	Masaw ka yamaruya
20	L'ensemble des droits et devoirs	ⓁⓂⓃⓅⓆⓇⓈⓉ	Hakew ni ketaw lajelen
21	Formulaire	ⓁⓂⓃⓅⓆⓇⓈⓉ	Jurumun
22	Justification de l'identité	ⓁⓂⓃⓅⓆⓇⓈⓉ	Bugunatige lacetigiya
23	L'ouverture d'un compte bancaire	ⓁⓂⓃⓅⓆⓇⓈⓉ	Jatida dayeleli jebon na
24	En fin ou en cours de validité	ⓁⓂⓃⓅⓆⓇⓈⓉ	A be sonmataya tuma laban walima a kono
25	Certificat de résidence	ⓁⓂⓃⓅⓆⓇⓈⓉ	Dagayoro lajeyalan
26	Commune, région et environnement	ⓁⓂⓃⓅⓆⓇⓈⓉ	Kafoda, kafobolo, sigida
27	Casier judiciaire	ⓁⓂⓃⓅⓆⓇⓈⓉ	Kiriyerelen

Figure 4: Excerpt of document defining terminology for governmental functions [23]

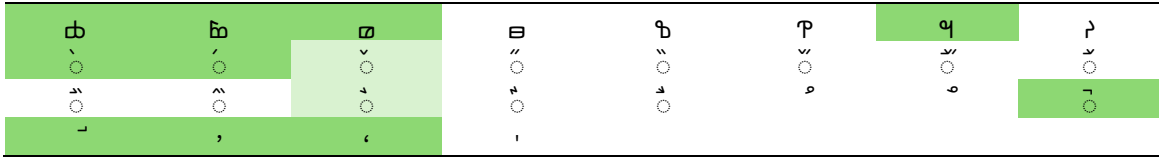






Figure 6: Screenshot of cooking video on YouTube with terminology written in N'ko Kakura. [18]



Figure 7: Screenshot of fictional content on YouTube, captioned using N'ko Kakura

Updated marks		◌̣		
New marks		◌̣		+ assorted combining

			
<p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p>	<p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p>	<p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p>	<p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p>
			
<p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p>	<p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p>	<p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p>	<p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p> <p>ḲḲḲḲḲ</p>

Figure 14: Excerpt from Book on Advanced N'ko 25]

Updated marks				
New marks				+ assorted combining



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Figure 15: Screenshots from YouTube videos on African American History [26]

7. Proposed Unicode Repertoire

<i>Glyph</i>	<i>Code</i>	<i>Proposed Character Name</i>	<i>Phoneme</i>
ɔ	1E960	NKO LETTER TA SA DIGRAPH	tʃ
ɔ̃	1E961	NKO LETTER DA WITH LEFT FLUE	dʒ
ɔ̄	1E962	NKO LETTER SA WITH BOTTOM RIGHT EYELET	ʃ
ɔ̅	1E963	NKO LETTER SA BAR	z
ɔ̆	1E964	NKO LETTER KA WITH LOOPED FLAG	g
ɔ̇	1E965	NKO LETTER REVERSED FA	v
ɔ̈	1E966	NKO LETTER LOOPED NA	ŋ
ɔ̉	1E967	NKO LETTER BENT A	ʔ
ˊ	1E968	NKO HIGH TONE VOWEL SYNCOPE SYMBOL	ˊ
ˋ	1E969	NKO LOW TONE VOWEL SYNCOPE SYMBOL	ˋ
ˊ	1E96A	NKO APOSTROPHE	ˊ
◌̊	1E96B	NKO COMBINING HIGH TONE	
◌̋	1E96C	NKO COMBINING LOW TONE	
◌̌	1E96D	NKO COMBINING LOW HIGH TONE	
◌̍	1E96E	NKO COMBINING PAIRED LOW TONE	
◌̎	1E96F	NKO COMBINING PAIRED HIGH TONE	
◌̏	1E970	NKO COMBINING PAIRED LOW HIGH TONE	
◌̐	1E971	NKO COMBINING PAIRED LOW HIGH MID TONE	
◌̑	1E972	NKO COMBINING LOW HIGH MID TONE	
◌̒	1E973	NKO COMBINING PAIRED HIGH MID TONE	

◌̂ ◌̊	1E974	NKO COMBINING PAIRED HIGH LOW TONE	
◌̊ ◌̊	1E975	NKO COMBINING DOUBLE HIGH TONE	
◌̊ ◌̊	1E976	NKO COMBINING HIGH DOUBLE HIGH TONE	
◌̊ ◌̊	1E977	NKO COMBINING LOW DOUBLE HIGH TONE	
◌̊ ◌̊	1E978	NKO COMBINING DOUBLE HIGH MID TONE	
◌̊ ◌̊	1E979	NKO COMBINING NOMINAL LOW INVERSION MARK	
◌̊ ◌̊	1E97A	NKO COMBINING NOMINAL HIGH INVERSION MARK	
◌̊ ◌̊	1E97B	NKO COMBINING VERBAL LOW TONE	
◌̊ ◌̊	1E97C	NKO COMBINING VERBAL HIGH TONE	
◌̊ ◌̊	1E97D	NKO COMBINING LOW INVERSION MARK	
◌̊ ◌̊	1E97F	NKO COMBINING HIGH INVERSION MARK	

8. Draft Chart Showing Proposed N'ko Extended Block

	1E96	1E97
0	ɓ	⦿
1	ɓ̂	⦿̂
2	ɓ̃	⦿̃
3	ɓ̄	⦿̄
4	ɓ̅	⦿̅
5	ɓ̆	⦿̆
6	ɓ̇	⦿̇
7	ɓ̈	⦿̈
8	ɓ̉	⦿̉
9	ɓ̊	⦿̊
A	ɓ̋	⦿̋
B	⦿̌	⦿̌
C	⦿̍	⦿̍
D	⦿̎	⦿̎
E	⦿̏	⦿̏
F	⦿̐	

9. Arabic Shaping Text

1E960; NKO LETTER TA SA DIGRAPH; D; No_Joining_Group
1E961; NKO LETTER DA WITH LEFT FLUE; D; No_Joining_Group
1E962; NKO LETTER SA WITH BOTTOM RIGHT EYELET; D; No_Joining_Group
1E963; NKO LETTER SA BAR; D; No_Joining_Group
1E964; NKO LETTER KA WITH LOOPED FLAG; D; No_Joining_Group
1E965; NKO LETTER REVERSED FA; D; No_Joining_Group
1E966; NKO LETTER LOOPED NA; D; No_Joining_Group
1E967; NKO LETTER BENT A; D; No_Joining_Group
1E968; NKO HIGH TONE VOWEL SYNCOPE SYMBOL; D; No_Joining_Group
1E969; NKO LOW TONE VOWEL SYNCOPE SYMBOL; D; No_Joining_Group
1E96A; NKO APOSTROPHE; D; No_Joining_Group

10. Unicode Character Properties

1E960;NKO LETTER TA SA DIGRAPH;Lo;0;R;;;;N;;;;;
1E961;NKO LETTER DA WITH LEFT FLUE;Lo;0;R;;;;N;;;;;
1E962;NKO LETTER SA WITH BOTTOM RIGHT EYELET;Lo;0;R;;;;N;;;;;
1E963;NKO LETTER SA BAR;Lo;0;R;;;;N;;;;;
1E964;NKO LETTER KA WITH LOOPED FLAG;Lo;0;R;;;;N;;;;;
1E965;NKO LETTER REVERSED FA;Lo;0;R;;;;N;;;;;
1E966;NKO LETTER LOOPED NA;Lo;0;R;;;;N;;;;;
1E967;NKO LETTER BENT A;Lo;0;R;;;;N;;;;;
1E968;NKO HIGH TONE VOWEL SYNCOPE SYMBOL;Lo;0;R;;;;N;;;;;
1E969;NKO LOW TONE VOWEL SYNCOPE SYMBOL;Lo;0;R;;;;N;;;;;
1E96A;NKO APOSTROPHE;Lo;0;R;;;;N;;;;;
1E96B;NKO COMBINING HIGH TONE;Mn;230;NSM;;;;N;;;;;
1E96C;NKO COMBINING LOW TONE;Mn;230;NSM;;;;N;;;;;
1E96D;NKO COMBINING LOW HIGH TONE;Mn;230;NSM;;;;N;;;;;
1E96E;NKO COMBINING PAIRED LOW TONE;Mn;230;NSM;;;;N;;;;;
1E96F;NKO COMBINING PAIRED HIGH TONE;Mn;230;NSM;;;;N;;;;;
1E970;NKO COMBINING PAIRED LOW HIGH TONE;Mn;230;NSM;;;;N;;;;;
1E971;NKO COMBINING PAIRED LOW HIGH MID TONE;Mn;230;NSM;;;;N;;;;;
1E972;NKO COMBINING LOW HIGH MID TONE;Mn;230;NSM;;;;N;;;;;
1E973;NKO COMBINING PAIRED HIGH MID TONE;Mn;230;NSM;;;;N;;;;;
1E974;NKO COMBINING PAIRED HIGH LOW TONE;Mn;230;NSM;;;;N;;;;;
1E975;NKO COMBINING DOUBLE HIGH TONE;Mn;230;NSM;;;;N;;;;;
1E976;NKO COMBINING HIGH DOUBLE HIGH TONE;Mn;230;NSM;;;;N;;;;;
1E977;NKO COMBINING LOW DOUBLE HIGH TONE;Mn;230;NSM;;;;N;;;;;
1E978;NKO COMBINING DOUBLE HIGH MID TONE;Mn;230;NSM;;;;N;;;;;
1E979;NKO COMBINING NOMINAL LOW INVERSION MARK;Mn;230;NSM;;;;N;;;;;
1E97A;NKO COMBINING NOMINAL HIGH INVERSION MARK;Mn;230;NSM;;;;N;;;;;
1E97B;NKO COMBINING VERBAL LOW TONE;Mn;230;NSM;;;;N;;;;;
1E97C;NKO COMBINING VERBAL HIGH TONE;Mn;230;NSM;;;;N;;;;;
1E97D;NKO VERBAL LOW INVERSION MARK;Mn;230;NSM;;;;N;;;;;
1E97E;NKO VERBAL HIGH INVERSION MARK;Mn;230;NSM;;;;N;;;;;

11. Collation and String-Matching Considerations

Bambara is a tonal concatenative language, in that words are joined to form new concepts. Words are disambiguated from one another based on whether they are high tone or low tone. However, the process affects the audible tone of the components during concatenation. Speakers comprehend this when they hear it, however when written this becomes difficult identify the tonal origin of the components. The marking system in N'ko Kakura separates tone, which is lexical, from accents, which are grammatical and indicate the final audible tone. This allows the reader to understand the root words in a compound noun while also enabling them to recognize when the concatenation process has been completed. The rules for this are outlined in Figure 30. Compound nouns are often represented as separate words with marking to indicate their connection to one another. In specific cases the words may be joined when a concept has certain specificity.

relationship between marks. Fields in orange feature a mark that is already encoded for N'ko (◌̂ 07EF NKO COMBINING LONG HIGH TONE). In general, polysyllabic words longer than 2 syllables will not have marking on the middle syllables. However compound nouns that are conjoined can have marks on middle syllables.

C = generic consonant V = generic vowel u = specific vowel	Lexical High Tone		Lexical Low Tone	
Grammatical Variant	Mono-syllabic	Poly-syllabic	Mono-syllabic	Poly-syllabic
Standalone Nouns				
indefinite	̀̀VC	̀̀VC̀̀VC	́́VC	́́VĆ́VC
nominal	̀̀V̇C	̀̀V̇C̀̀VC	́́V̇C	́́V̇Ć́VC
definite	̀̀V̂C	̀̀V̂C̀̀VC	́́V̇C	̀̀V̂Ć́VC
plural indefinite	̀̀̀̀VC	̀̀̀̀VC̀̀̀̀VC	̀̀̀̀V̇C	̀̀̀̀V̇Ć́VC
plural definite	̀̀̀̀V̂C	̀̀̀̀V̂C̀̀̀̀VC	̀̀̀̀V̇C	̀̀̀̀V̇Ć́VC
Proper Nouns				
nominal	̀̀V̇C	̀̀V̇C̀̀VC	́́V̇C	́́V̇Ć́VC
definite	̀̀V̇C	̀̀V̇C̀̀VC	́́V̇C	́́V̇Ć́VC
plural indefinite	̀̀̀̀V̇C	̀̀̀̀V̇C̀̀̀̀VC	̀̀̀̀V̇C	̀̀̀̀V̇Ć́VC
plural definite	̀̀̀̀V̇C	̀̀̀̀V̇C̀̀̀̀VC	̀̀̀̀V̇C	̀̀̀̀V̇Ć́VC
Noun Complements				
Central Element Starting High				
	̀̀VC	̀̀VĊVC	́́V̇C	̀̀VĊVC
Central Element Starting Low				
	̀̀V̇C	́́VĊVC	́́VC	́́VĆ́VC
Final Element Starting High				
indefinite	̀̀VC	̀̀VĊVC	́́V̇C	̀̀VĊVC
nominal	̀̀V̇C	̀̀V̇ĊVC	̀̀V̇C*	̀̀V̇ĊVC
definite	̀̀V̂C	̀̀V̂ĊVC	̀̀V̇C*	̀̀V̂ĊVC
Final Element Starting Low				
indefinite	̀̀V̇C	́́VĊVC	́́VC	́́VĆ́VC
nominal	̀̀V̇C	̀̀V̇ĊVC	́́V̇C	̀̀V̇Ć́VC
definite	̀̀V̂C	̀̀V̂ĊVC	̀̀V̇C*	̀̀V̂Ć́VC

Categories marked with an * indicate a special set of exceptions that pertain to low tone monosyllabic noun complements. These do not carry a low tone derivative mark. There are only about a dozen words that fit in this category.

Verbals are simpler in that the complex marks are composed of two separate marks otherwise the requirements are the same as nouns.

Grammatical Variant	Lexical High Tone		Lexical Low Tone	
	Mono-syllabic	Poly-syllabic	Mono-syllabic	Poly-syllabic
Standalone Verbs				
verb	$\vec{V}C$	$VC\vec{C}$	$\vec{V}C$	$VC\vec{C}$
Verbal Complements				
Central Element Starting High				
	$\vec{V}C$	$VC\vec{C}$	$\vec{V}C$	$VC\vec{C}$
Central Element Starting Low				
	$\vec{V}C$	$VC\vec{C}$	$\vec{V}C$	$VC\vec{C}$
Final Element Starting High				
indefinite	$\vec{V}C$	$\vec{V}C\vec{C}$	$\vec{V}C$	$\vec{V}C\vec{C}$
nominal	$\vec{V}C$	$\vec{V}C\vec{C}$	$\vec{V}C$	$\vec{V}C\vec{C}$
definite	$\vec{V}C$	$\vec{V}C\vec{C}$	$\vec{V}C$	$\vec{V}C\vec{C}$
Final Element Starting Low				
indefinite	$\vec{V}C$	$\vec{V}C\vec{C}$	$\vec{V}C$	$\vec{V}C\vec{C}$
nominal	$\vec{V}C$	$\vec{V}C\vec{C}$	$\vec{V}C$	$\vec{V}C\vec{C}$
definite	$\vec{V}C$	$\vec{V}C\vec{C}$	$\vec{V}C$	$\vec{V}C\vec{C}$


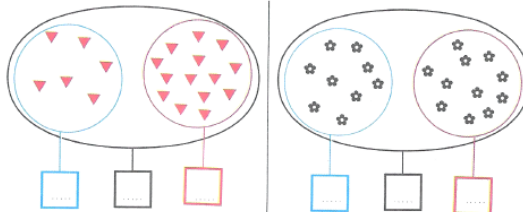
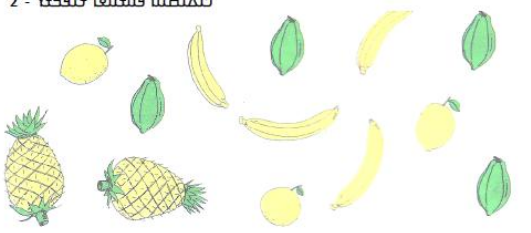
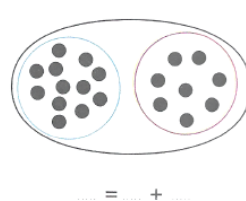
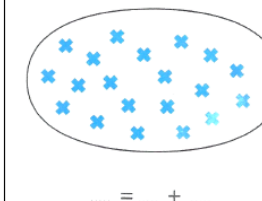
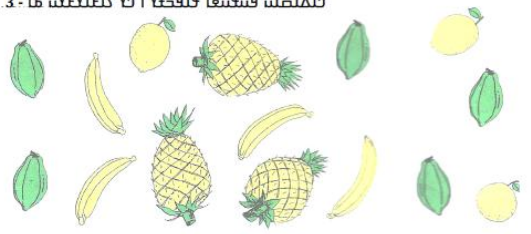

<p>01 P ሕንጻዎች</p> <p>1 - X ነገሮችን ለማወቅ ለማወቅ ለማወቅ ለማወቅ ለማወቅ</p> 	<p>19 P ሕንጻዎች</p> <p>1- ሕንጻዎች</p> 
<p>2 - ሕንጻዎችን ለማወቅ ለማወቅ ለማወቅ ለማወቅ ለማወቅ</p> 	<p>2- ሕንጻዎችን ለማወቅ ለማወቅ ለማወቅ ለማወቅ ለማወቅ</p>  <p>3- ሕንጻዎችን ለማወቅ ለማወቅ ለማወቅ ለማወቅ ለማወቅ</p>  <p>..... = +</p>
<p>3- ሕንጻዎችን ለማወቅ ለማወቅ ለማወቅ ለማወቅ ለማወቅ</p> 	<p>4- ሕንጻዎችን ለማወቅ ለማወቅ ለማወቅ ለማወቅ ለማወቅ</p> <p>20 = 19 + 17 = + 7 15 = + 9</p> <p>18 = + 10 20 = 12 + 20 = 11 +</p>
	<p>5- ሕንጻዎች</p> 

Figure 18: Sample page from primary education book on mathematics, “Math Kakura.” [6]

ᑭᑦᑭᑦᑭᑦ ᑭᑦᑭᑦᑭᑦ ᑭᑦᑭᑦᑭᑦ








			
ᑭᑦᑦ ᑭᑦᑦ ; ᑭᑦᑦ	ᑭᑦᑦ ᑭᑦᑦ ; ᑭᑦᑦ	ᑭᑦᑦ ᑭᑦᑦ ; ᑭᑦᑦ	ᑭᑦᑦ ᑭᑦᑦ ; ᑭᑦᑦ
			
ᑭᑦᑦ ᑭᑦᑦ ; ᑭᑦᑦ	ᑭᑦᑦ ᑭᑦᑦ ; ᑭᑦᑦ	ᑭᑦᑦ ᑭᑦᑦ ; ᑭᑦᑦ	ᑭᑦᑦ ᑭᑦᑦ ; ᑭᑦᑦ

Figure 19: Example of how tone marks vary with noun class from "Assike Kakura." [10]

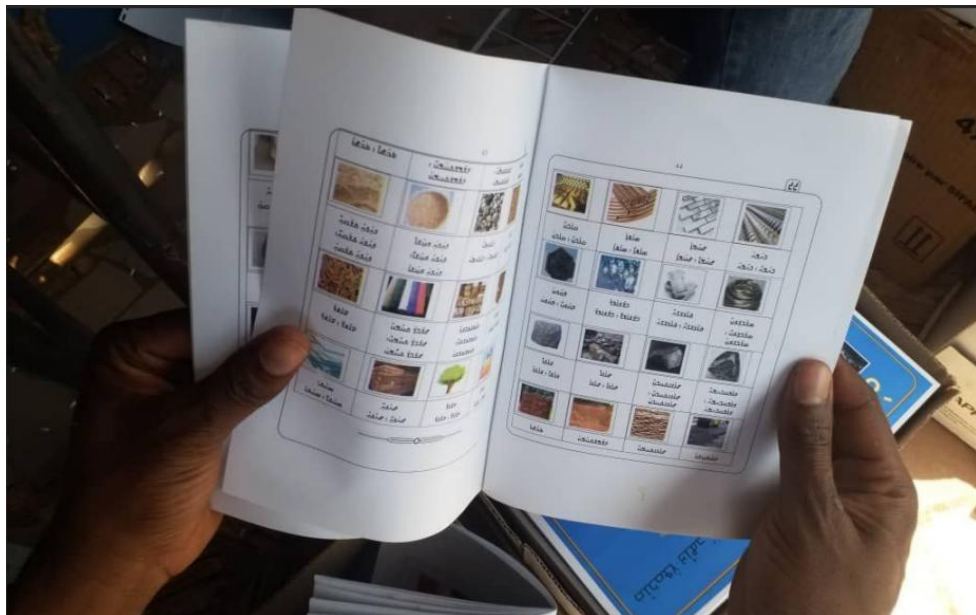


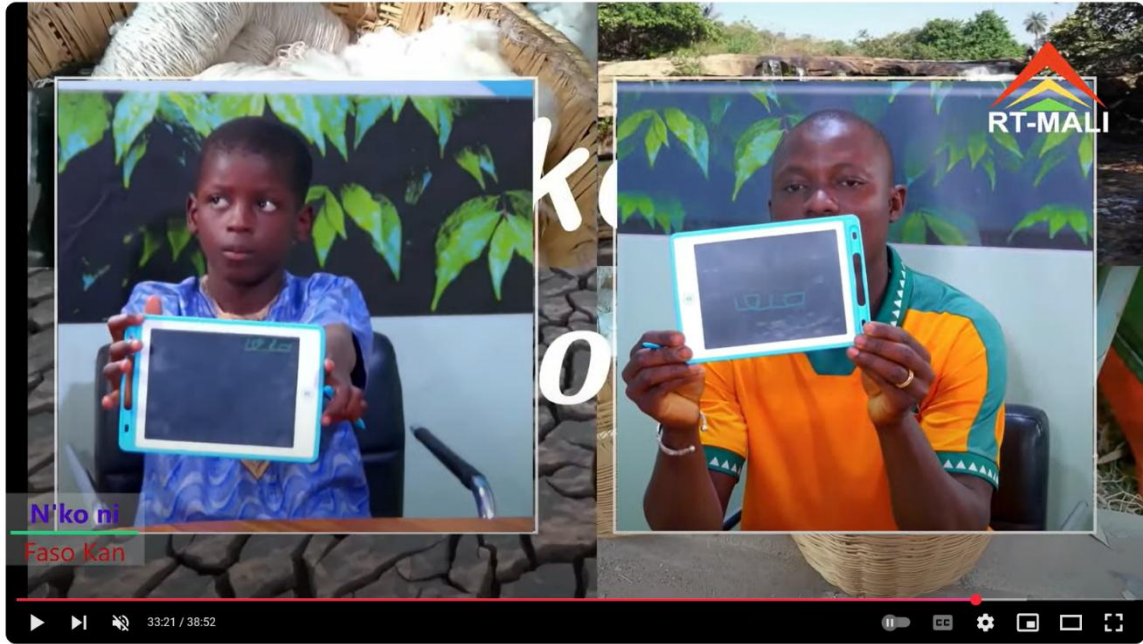
Figure 20: Print edition of "Assike Kakura." [10]

28	Les condamnations pénales d'un individu	مَوَاقِفَ قَلْبِي وَتَوَاقِفَ فِي عَمَلِي	Mogo kelen niankili jalaki
29	Secteur public et privé	مَجْتَمَعِي لِكَلْمَا وَ مَجْتَمَعِي لِكَلْمَا	Foroba cakeda ni donduguma cakeda
30	Condamnation infamante par la justice	وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ لِكَلْمَا مَوَاقِفَ	Lakololi niankili keli kirida fe
31	Fonction publique et une demande de naturalisation	مَجْتَمَعِي لِكَلْمَا وَ وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ	Foroba cakeda ni lasunguniali lanyinin
32	Certificat d'hérédité	لِكَلْمَا قَلْبِي وَتَوَاقِفَ	Centa lasereyalan
33	Le versement d'une pension de réversion	مَجْتَمَعِي لِكَلْمَا مَوَاقِفَ وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ	Dantigeli demendifen do sarali
34	Une créance détenue par l'administration	فِي عَمَلِي لِكَلْمَا مَوَاقِفَ لِكَلْمَا قَلْبِي وَتَوَاقِفَ	Bolomafen marali mamaralida fe
35	C'est une partie du département qu'administre le sous préfet	وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ مَوَاقِفَ لِكَلْمَا مَوَاقِفَ لِكَلْمَا قَلْبِي وَتَوَاقِفَ	Nin ye kotigiyada fan do de ye kaforen dugula kuntigi be min mamara
36	La représentation de l'État dans sa circonscription ou pour un domaine spécifique relevant d'une priorité nationale	لِكَلْمَا قَلْبِي وَتَوَاقِفَ وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ مَوَاقِفَ لِكَلْمَا مَوَاقِفَ وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ مَوَاقِفَ لِكَلْمَا مَوَاقِفَ	Kafo koyirali a ka latintanw kono walima dakun kerenkerenen do la min sirilen be faso foloya ko do la
37	La mise en œuvre des politiques publiques de l'État dans sa circonscription	لِكَلْمَا قَلْبِي وَتَوَاقِفَ مَجْتَمَعِي لِكَلْمَا مَوَاقِفَ وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ	Kafo ka foroba berebereli bolodali a ka latintan kono
38	La coordination des activités des services techniques déconcentrés de l'État	لِكَلْمَا قَلْبِي وَتَوَاقِفَ مَجْتَمَعِي لِكَلْمَا مَوَاقِفَ وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ	Kafo ka senkolaya baara dennyogonabaliw donjurumali
39	La certification conforme des actes administratifs et civils	مَجْتَمَعِي لِكَلْمَا مَوَاقِفَ وَلِكَلْمَا قَلْبِي وَتَوَاقِفَ	Mamarali kow ni nantanya ko dalabenenw lajeyali
40	Acte de naissance	مَجْتَمَعِي لِكَلْمَا مَوَاقِفَ	Bankeli seben

Figure 24: Excerpt of “Dictionnaire des Mots Administratifs” published by former state Refondation Minister. [22]



Figure 26: Images of students learning N'ko Kakura at the University of Bamako.



N'ko ni Faso Kan avec Dr Boubacar DIAKITE 2è partie



N'ko ni Faso Kan avec Dr Boubacar DIAKITE 2è partie

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Figure 27: Screenshots of YouTube video about N'ko Kakura. In addition to an introduction of the writing system the video features students writing words for images they are shown. [16]

ʃ, ʃ̄; ʃ̄ + ʃ; ʃ̄ / ʃ̄ / ʃ̄
 ʃ̄, ʃ̄; ʃ̄ + ʃ̄; ʃ̄ / ʃ̄ / ʃ̄
 ʃ̄, ʃ̄; ʃ̄ + ʃ̄; ʃ̄ / ʃ̄ / ʃ̄

ʃ̄ ʃ̄	ʃ̄ + ʃ̄	ʃ̄ ʃ̄	ʃ̄ + ʃ̄
ʃ̄ ʃ̄	ʃ̄ + ʃ̄	ʃ̄ ʃ̄	ʃ̄ + ʃ̄
ʃ̄ ʃ̄	ʃ̄ + ʃ̄	ʃ̄ ʃ̄	ʃ̄ + ʃ̄
ʃ̄ ʃ̄	ʃ̄ + ʃ̄	ʃ̄ ʃ̄	ʃ̄ + ʃ̄

ʃ̄ ʃ̄	ʃ̄ + ʃ̄	ʃ̄ ʃ̄	ʃ̄ + ʃ̄
ʃ̄ ʃ̄	ʃ̄ + ʃ̄	ʃ̄ ʃ̄	ʃ̄ + ʃ̄
--	--	ʃ̄ ʃ̄	ʃ̄ + ʃ̄
ʃ̄ ʃ̄	ʃ̄ + ʃ̄	ʃ̄ ʃ̄	ʃ̄ + ʃ̄
ʃ̄ ʃ̄	ʃ̄ + ʃ̄	ʃ̄ ʃ̄	ʃ̄ + ʃ̄

Nko Kakura Disambiguation


Boubacar Diakite
 2.54K subscribers

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Figure 28: Screenshot from one of the videos on Boubacar Diakite’s channel giving lessons on how tone marking with N’ko Kakura helps disambiguate noun classes. [15]

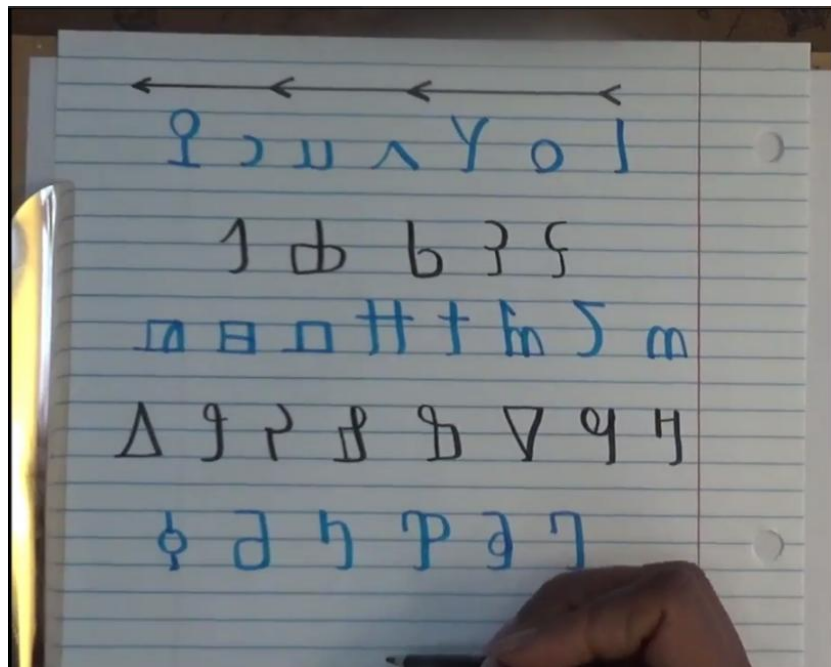


Figure 29: Video posted to Telegram online classes showing how all Bambara letters are written.

L2-S4/3ème PASSAGE

MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE SCIENTIFIQUE

Université des Sciences Juridiques et
Politiques de Bamako - USJPB

Faculté des Sciences Administratives
et Politiques (FSAP)

GROUPE D
Salle: Bloc administratif/2ème étage/salle 2

REPUBLIQUE DU MALI
Un Peuple - Un But - Une Foi
FSAP
Faculté des Sciences Administratives et Politiques

EMPLOI DU TEMPS L2 - S4
3ème passage :
23 janvier au 08 février 2025

LUNDI	MARDI	MERCREDI	JEUDI	VENREDI	SAMEDI
08H-10H N'KO (Drissa DOUMBIA) Sport (Moussa SOGORE) Groupes C et D (20H)		08H-10H N'KO (Drissa DOUMBIA) Sport (Moussa SOGORE) Groupes C et D (20H)		08H-10H N'KO (Drissa DOUMBIA) Sport (Moussa SOGORE) Groupes C et D (20H)	
10H-12H Grands problèmes politiques contemporains (20H) Walama SANGARE		10H-12H Grands problèmes politiques contemporains (20H) Walama SANGARE		10H-12H Grands problèmes politiques contemporains (20H) Walama SANGARE	
12H-14H Introduction à la sociologie politique (20H) Sory I MAIGA		12H-14H Introduction à la sociologie politique (20H) Sory I MAIGA		12H-14H Introduction à la sociologie politique (20H) Sory I MAIGA	

P/Le Doyen/P.O
Le Chef du Département Sciences Administratives
Pr. Ahmed SAMAKE
Maître-Assistant

P/Le Doyen/P.O
Le Chef du Département Sciences Politiques
Pr. Oumar T. DIALLLO
Maître-Assistant

Figure 34: Official 2025 class schedule from FSAP with N'ko Kakura classes identified. The curriculum is stamped and signed by department heads at the university.

12.2 Details of N'ko Kakura Grammatical System

12.2.1 N'ko Kakura vs. N'ko Maninkamory

Compound tone marks represent a sequence of tones that are conjoined to reflect tonal modulation that occur in Bambara as well disambiguate specific grammatical features, such as noun class, compound nouns, substantives, etc.

This improves upon the tonal marking system of N'ko Maninkamory which can be ambiguous as illustrated in the following examples. The table below shows how common neuter nouns are marked when they change from definite and indefinite nouns. For comparison the same conversions are shown in N'ko Maninkamory. For a complete demonstration of grammar rules for all tone marks see 12.2.2 Tone and Accents.

Common Nouns in N'ko Maninkamory			Common Nouns using N'ko Kakura		
Indefinite	Definite	Neuter	Indefinite	Definite	Neuter
ɓ	ɓ	ɓ	̀ɓ	̂ɓ	̇ɓ
̃ɓ	̂ɓ	̂ɓ	̂ɓ	̃ɓ	̃ɓ
̄ɓ	̄ɓ	̄ɓ	̄ɓ	̄ɓ	̄ɓ
̃̄ɓ	̄̃ɓ	̄̃ɓ	̄̃ɓ	̄̃ɓ	̄̃ɓ

When the same common nouns above are changed into proper nouns the tones shift accordingly.

Proper Nouns in N'ko Maninkamory			Proper Nouns using N'ko Kakura		
Indefinite	Definite	Neuter	Indefinite	Definite	Neuter
̄ɓ	ɓ	̄ɓ	̄̄ɓ	̄̄ɓ	̄̄ɓ
̃̄ɓ	̂ɓ	̂ɓ	̃̄̄ɓ	̃̄̄ɓ	̃̄̄ɓ
̄̄̄ɓ	̄̄̄ɓ	̄̄̄ɓ	̄̄̄̄ɓ	̄̄̄̄ɓ	̄̄̄̄ɓ
̃̄̄̄ɓ	̄̄̄̄̃ɓ	̄̄̄̄̃ɓ	̄̄̄̄̄̄ɓ	̄̄̄̄̄̄ɓ	̄̄̄̄̄̄ɓ

It is worth noting that in N'ko Maninkamory if two syllables use the same vowel/tone combination the first vowel is omitted (see bottom two rows in table above). In other words, for a word structured in the following way, $C_1V_1C_2V_2$ where V_1 equals V_2 , the word is written as $C_1V_2V_1$. This rule is not used when writing with N'ko Kakura. Without this rule there is no need to make a notation for loan words that have intentional consonant clusters using the NKO LETTER DAGBASINNA (07D1). (See Elision12.2.5)

12.2.2 Tone and Accents

Bambara has 2 fundamental tones, high ̀ and low ́ and 3 accents, high ̂, mid ̄ and low ̇. These marks are the basis for more complex marks which are used to represent various grammatical features. The tables below outline the complete tone marking. These tables are from *Assike Filanan Nyeson*. [11].

The * shows relationship of the accents in low tone words. The actual marking is simplified in polysyllabic words.

3. Noun complement forms:

ἄσπερος	ὁ ἄσπερος	ἄσπερος	ἄσπερος + ἄσπερος
Indefinite noun	Definite form	Citation form	Noun+ noun
ἄσπερος οἶκος	ὁ ἄσπερος οἶκος	ἄσπερος οἶκος	ἄσπερος + οἶκος
An iron house	The iron house	iron house	iron + house
ἄσπερος ἵππος	ὁ ἄσπερος ἵππος	ἄσπερος ἵππος	ἄσπερος + ἵππος
An iron horse	The iron horse	iron horse	iron + horse
οἶκος ἄσπερος	ὁ οἶκος ἄσπερος	οἶκος ἄσπερος	οἶκος + ἄσπερος
A house iron	The house iron	House iron	House + iron
ἵππος ἄσπερος	ὁ ἵππος ἄσπερος	ἵππος ἄσπερος	ἵππος + ἄσπερος
A horse's iron	The horse's iron	Horse's iron	horse + iron

4. to make verbs:

to put hair	ἄσπερος / ἄσπερος
to pass the night	ἄσπερος* / ἄσπερος
to beat/ to group	ἄσπερος* / ἄσπερος
to bubble	ἄσπερος* / ἄσπερος
to season	ἄσπερος* / ἄσπερος
to scarf	ἄσπερος* / ἄσπερος

5. Pour marker les noms propres :

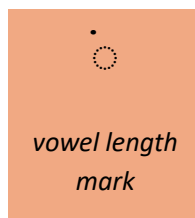
Common nouns	
Maman	ǎ̃
La maman	ǎ̃
Une maman	ǎ̃
Chèvre	ǎ̃
Une chèvre	ǎ̃
La chèvre	ǎ̃
Noms propres (avec une lettre capitale)	
-	ǎ̃*
Ba (nom d'une personne)	ǎ̃
Ba (nom d'une personne)	ǎ̃
Ba (nom d'une personne)	ǎ̃
Ba (nom d'une personne)	ǎ̃
Ba (nom d'une personne)	ǎ̃
Ba (nom d'une personne)	ǎ̃
Ba (nom d'une personne)	ǎ̃

The formation of compound tone marks depends on the underlying tone of a word or phrase and the grammatical context. The figure below demonstrates the rules for which compound tone mark is formed in different circumstances.

5. Les accents et les tons sont associés en quatre étapes : le moment de la nominalisation, le temps de la formation des noms définis, le temps d'ajout d'un complément de nom, et le moment de la préfixation.
- Si le ton haut original est associé à l'accent haut du nom, il donne high-high (° = ˘)
 - Si le ton haut original est associé à l'accent haut du nom, accompagné de l'accent moyen du défini, cela donne deux hauts et un moyen (° = ˘)
 - Si le ton haut original est associé à l'accent haut du nom et à l'accent haut du complément nominal, il donne trois hauts (° = ˘)
 - Si le ton haut original est associé à l'accent haut du complément nominal et à l'accent moyen du défini, cela donne deux hauts et un moyen (° = ˘)
 - Si le ton bas original est associé à l'accent haut du nom, il donne le bas-haut (ˇ = ˘)
 - Si le ton bas original est associé à l'accent haut du nom, accompagné de l'accent moyen du défini, cela donne le bas-haut-moyen (ˇ = ˘)
 - Si, par l'effet du complément nominal, le haut est devenu bas, c'est ainsi qu'il sera marqué (˘) s'il est nom, ou ainsi (˘) s'il s'agit d'un nom verbal
 - Si par l'effet du complément nominal le bas est devenu haut, il sera marqué ainsi (°) s'il s'agit d'un nom ou ainsi (°) s'il s'agit d'un nom verbal
 - Si le haut du complément nominal est ajouté au ton haut original d'un mot polysyllabique, c'est ainsi (°) que le début sera marqué.
 - Mais si le haut du complément nominal est ajouté au ton bas original d'un mot polysyllabique, c'est ainsi que le début sera marqué (°) s'il s'agit d'un nom, ou ainsi (°) s'il s'agit d'un nom verbal.

Figure 35: Rules for the application of compound tone marks [11]

12.2.3 Vowel Length Mark



The NKO COMBINING SHORT RISING TONE (07ED) has been repurposed to indicate vowel length. Bambara has three different vowel lengths, short, long and geminated. This mark is used to indicate long vowels. This is a change from N’ko Maninkamory where NKO COMBINING SHORT RISING TONE (07ED) indicated *both* a shortening of the vowel length and a rise in tone.

Non-nalisées 𞤀𞤁𞤂𞤃𞤄𞤅𞤆𞤇𞤈𞤉								
𞤀	𞤁	𞤂	𞤃	𞤄	𞤅	𞤆	𞤇	𞤈𞤉𞤊𞤋 Les courtes voyelles
ɔ	o	u	ɛ	i	e	a		
𞤀̣	𞤁̣	𞤂̣	𞤃̣	𞤄̣	𞤅̣	𞤆̣	𞤇̣	𞤈𞤉𞤊𞤋𞤌 Les longue voyelles
ɔ:	o:	u:	ɛ:	i:	e:	a:		
𞤀𞤀	𞤁𞤁	𞤂𞤂	𞤃𞤃	𞤄𞤄	𞤅𞤅	𞤆𞤆	𞤇𞤇	𞤈𞤉𞤊𞤋𞤌𞤍 Les doubles voyelles
ɔɔ	oo	uu	ɛɛ	ii	ee	aa		

Figure 36: Table from “Assike Filanan Nyseon” demonstrating how non-nasal vowels are written with different lengths

Nalisées 𞤀𞤁𞤂𞤃𞤄𞤅𞤆𞤇𞤈𞤉								
𞤀̣	𞤁̣	𞤂̣	𞤃̣	𞤄̣	𞤅̣	𞤆̣	𞤇̣	𞤈𞤉𞤊𞤋 Les courtes voyelles
ɔ̣	ọ	ụ	ɛ̣	ị	ẹ	ạ		
𞤀̣̣	𞤁̣̣	𞤂̣̣	𞤃̣̣	𞤄̣̣	𞤅̣̣	𞤆̣̣	𞤇̣̣	𞤈𞤉𞤊𞤋𞤌 Les longue voyelles
ɔ̣̣:	ọ̣:	ụ̣:	ɛ̣̣:	ị̣:	ẹ̣:	ạ̣:		
𞤀̣𞤀̣	𞤁̣𞤁̣	𞤂̣𞤂̣	𞤃̣𞤃̣	𞤄̣𞤄̣	𞤅̣𞤅̣	𞤆̣𞤆̣	𞤇̣𞤇̣	𞤈𞤉𞤊𞤋𞤌𞤍 Les doubles voyelles
ɔ̣̣	ọ̣	ụ̣	ɛ̣̣	ị̣	ẹ̣	ạ̣		

Figure 37: Table from “Assike Filanan Nyseon” demonstrating how nasal vowels are written with different lengths. Note that nasalization mark (dot below) is placed only under the second vowel when doubled.

12.2.4 Assimilation



N’ko Maninkamory only allows for two specific cases of assimilation to be indicated. This is achieved by replacing Ɔ NKO LETTER LA and ɔ NKO LETTER YA with ɔ̃ NKO LETTER NA WOLOSO and ɔ̄ NKO LETTER NYA WOLOSO, respectively, when they follow ɲ NKO LETTER NA or a nasalized vowel.

N’ko Kakura, however allows for assimilation to be indicated by expanding the role of the NKO COMBINING NASALIZATION MARK (07F2). When placed below a vowel, the mark indicates that the vowel is post-nasalized just as it does in N’ko Maninkamory. While this mark is never placed under a consonant in N’ko Maninkamory, in N’ko it can be placed under a consonant to indicate it has assimilated a neighboring sound. The following sample words show this usage.

Example:

ḱḱḱḱḱḱ – kumunya ḱḱḱḱḱḱ – kumunɲa
 ḱḱḱḱḱḱ – kendeɲa ḱḱḱḱḱḱ – kenndeɲa

With this expanded use of the NKO COMBINING NASALIZATION MARK, NKO LETTER NA WOLOSO and NKO LETTER NYA WOLOSO are no longer used with this system.

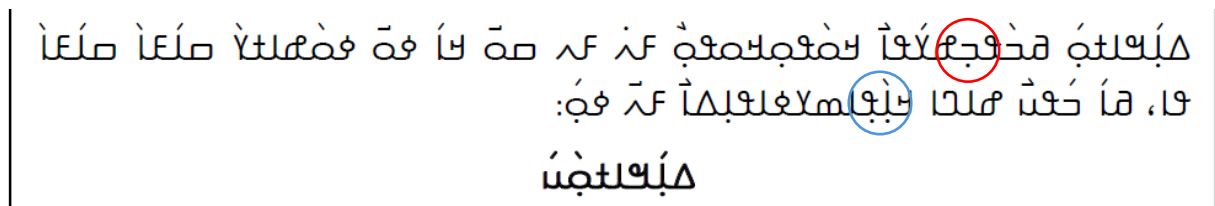
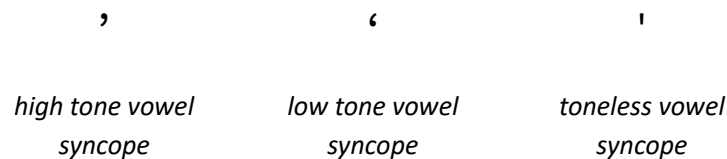


Figure 38: Sample of assimilation occurring between a / and la Ɔ (blue) and nasalization of o (red).

12.2.5 Elision



N'ko Kakura includes three elision symbols. The first two are used when vowels are elided in tonal languages. During this process the omitted vowel is replaced with the appropriate symbol to indicate the tone of the omitted vowel. The HIGH TONE VOWEL SYNCOPE SYMBOL and LOW TONE VOWEL SYNCOPE SYMBOL are the like the NKO HIGH TONE APOSTROPHE (07F4) and NKO LOW TONE APOSTROPHE (07F5), however in N'ko Kakura these symbols have joining behavior. (See part 0 Script Connections) In *unconnected text*, the apostrophes in N'ko Maninkamory and the syncope symbols in N'ko Kakura system are indistinguishable. However, in *connected text* the LOW TONE SYNCOPE SYMBOL appears like the NKO LETTER DAGBASINNA (07D1). Discussion on shaping differences can be found in part 5.4 Modifiers.

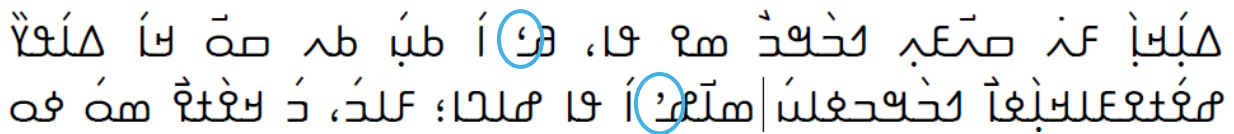
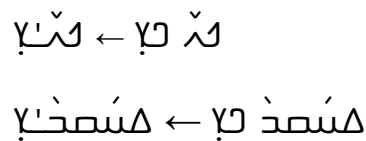


Figure 39: Sample of syncope marks in Bambara language text (blue circles)

The third symbol NKO APOSTROPHE is used for omitting consonants or vowels where tone is not a factor. Although this resembles and functions much like the APOSTROPHE (0027), this symbol has joining behavior which requires separate encoding. (See part 0 Script Connections) The following example shows the NKO APOSTROPHE being used to replace the consonant ʄ which has no underlying tone.



12.2.6 Tone Inversion

There are four symbols to identify tone inversion of noun complements. Two are for nouns and two are for verbal nouns.

◌̣	◌̤	◌̥	◌̦
<i>nominal low inversion mark</i>	<i>nominal high inversion mark</i>	<i>verbal low inversion mark</i>	<i>verbal high inversion mark</i>

During the process of forming compound nouns complements inherit the tone of first element of the compound. Complete compound nouns in definite and citational forms of the compound end in a high tone.

Example:

In Bambara the term for *short quill* is formed by combining the words *porcupine* + *feather* + *short*.

English	Bambara	Tone	Part of Speech
porcupine	فُلُوْأ	low	noun
feather	كَنْتُوْأ	high	noun
short	سَنْتُوْأ	low	qualitative verb

Short quill written in N'ko Kakura appears as follows.

فُلُوْأ كَنْتُوْأ سَنْتُوْأ

Since *porcupine* is a low tone word *feather* must switch from high tone to low tone. This is marked in blue with the *nominal low inversion mark* on the first syllable and a low tone mark on the final syllable. The low tone of the word *short*, however, needs to be converted to high tone to indicate this last part of the compound noun in citational form. This is marked in red using the *verbal high inversion mark* on the first syllable and followed by a *double high tone* on the final syllable marked in green. Prior to the addition of the verbal tone inversion marks the word feather would have been marked only with a *verbal high tone* mark. While this does indicate a high tone is being applied to the element the inherent tone of the word is lost making it lexically indistinct.

This example shows an application of the *verbal high inversion mark* and *nominal low inversion mark*. The *verbal low inversion mark* and *nominal high inversion mark* work in the same fashion except for situations where the tone needs to be converted in the opposite direction.

13. References

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14. Appendices

- A. Pictures from meetings with various African leaders to build support for N'ko Phonetic Extensions



Figure A-1: Administrators of the National Language Center in Cameroon during meeting to discuss the N'ko Phonetic Extensions.



Figure A-2: Dr. Diakite and Dr. Mugane meeting with African Kings to build support for N'ko Phonetic Extensions.



Figure A-3: Meeting with African Kings in Guinea to build support for N'ko Phonetic Extensions.



Figure A-4: King's meeting with Malian Minister in support of N'ko Phonetic Extensions

B. DECISION N°02/ML/PBC/CAB/N/23 of October 10, 2023 in support of the Nko-Phonetic Extensions system Nko-IPA writing and teaching within the CPATC.



DÉCISION N°02/ML/PBC/CAB/N/23 du 10 Octobre 2023 portant soutien à l'écriture Nko-IPA et son enseignement au sein du CPATC.

Le Président du Bureau Continental

- Vu les Statuts du CPATC ;
- Vu les Résolutions de l'Assemblée Générale CPATC, du 10 au 12 septembre 2018, à Abidjan en Côte-d'Ivoire ;
- Vu les Recommandations de la Réunion du Bureau continental tenue les 11 et 12 janvier 2019, à Dahè au Bénin ;
- Vu les Résolutions de l'Assemblée Générale Extraordinaire du CPATC du 27 novembre 2021 tenue à Dahè au Bénin ;

Décide :

Article 1 : *Le CPATC a décidé de soutenir les efforts des adeptes du Nko-IPA, allant dans le sens de généraliser l'écriture à toutes les langues africaines.*

Article 2 : *Dr Boubacar Diakité et son équipe sont chargés de l'initiation et de la formation du collège des rois souhaitant apprendre l'écriture et l'instituer dans leurs communautés.*

Article 3 : *Dr Diakité exercera cette tâche, cumulativement avec ses fonctions de Conseiller Spécial du Président du CPATC, dans le cadre des dispositions prévues par les textes réglementaires du CPATC et de la Convention citée supra.*

Ampliations :

1. Secrétariat Général
2. Autorités Nationales du Mali
3. Autorités Nationales de la Guinée
4. Intéressé
5. Archives/Chrono

Fait à Cotonou, le 10 octobre 2023


Professeur Ostave Cossi HOUDÉGBE
(Majesté Dada AWYAN KOKPON)
Bou de Dahè, Président du CPATC

Accréditation N°210/MISP/DC/SGM/DAIC/SC/SA, République du Bénin
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C. Letter from Dr. John Mugane, Director of the Harvard African Language Program (ALP) in support of N'ko Phonetic Extensions

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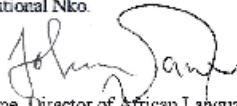
To Whom This May Concern

I, Dr. John Mugane, Director of the Harvard African Language Program (ALP), am pleased to note that Nko script, the most dynamic in West Africa, has reached an unparalleled level of implementation among the West Africans communities. I have been fortunate to invite, many times, the Nko leaders to the Harvard Conference on African Languages in the Disciplines and Professions (ALDP) and I have always been amazed and surprised by the progress of writing in West African countries. I worked with Dr. Bouhacar Diakité, a linguist and Nko teacher, to develop the idea of making some African scripts usable at the same time for many languages on the continent. On this ground, Nko has a chance if it is improved as planned by the codification of the Nko-IPA.

In 2015, Dr. Diakité and I traveled to several African countries to promote the use of Nko as an international African script. To this end, we have garnered support from many African traditional leaders ready to take the idea to the African Union. I remember that some of the difficult questions, which were not addressed satisfactorily, were that the Nko script of the time did not have all the sounds and used a lot of diacritics to write unfamiliar sounds. I think that's where the idea of improving the script to allow it to write all the sounds correctly came about.

Therefore, I support this project and look forward to writing Gikuyu, my mother tongue, in the new international Nko.

Sincerely,


John Mugane, Director of African Languages Program
Harvard University, 1280 Mass Ave, 3rd Floor, Cambridge, MA 02138

D. L'enseignement Nko au Mali : Réalités, ambitions et perspectives, Dr. Boubacar Diakite, 2021

L'enseignement Nko au Mali : Réalités, ambitions et perspectives

Dr. Boubacar Diakité

L'invention de l'écriture Nko

Nko est une écriture inventée par Solomana Kanté, suite à la publication par Gamal Marwa dans un journal ivoirien que « les langues africaines sont douces à écouter mais ne peuvent être transcrites ». Le jeune Kanté, qui a quitté son village, réputé pour son éducation religieuse, pour se lancer dans le commerce, a vite compris la nécessité de se consacrer à la recherche d'une solution pour écrire, de manière adéquate, les langues africaines. Dans un premier temps, il a essayé d'adapter l'écriture arabe à sa langue maternelle, le maninka, mais c'était très limité, surtout dans les trois dimensions de l'écriture: un système vocalique insuffisant (3 voyelles), un système consonantique qui manquait de sons importants de la langue mandingue. (p, j, ŋ, v etc.), et le système tonal est complètement absent. Après trois ans de tests, l'écriture arabe a été abandonnée. Ce fut alors le tour de l'écriture latine. À son tour, elle n'a pas tardé à montrer ses faiblesses, notamment au niveau des signes diacritiques (ton et accent). Le ton est un élément essentiel de désambiguïsation en lecture et en compréhension. Au bout de quatre ans, Kante, insatisfait de l'écriture latine, renonce à essayer les écritures étrangères et se consacre à l'invention d'une écriture originale, adaptée à sa langue.

L'origine du nom Nko

Après avoir inventé l'écriture, Kanté a songé lui donner un nom rassembleur et générique car il avait constaté que les noms existants contiennent en eux même les germes de la division. C'est ainsi qu'il a évité les noms bases sur les ethnies comme Maninkakan, Bamanankan, Julakan et

Mandingokan, ceux basés sur les lieux tel que Segukakan, Wasolonkakan, Khasonkakan, Beledugukakan etc. A leurs places, il trouva un nom que Soundiata avait, à l'occasion, utilise lors de son discours solennel du grand rassemblement de Kurukanfuga en 1236 en ces termes : « Je m'adresse à vous qui dites *Nko* quand vous parlez ... ». Une seconde raison liée a l'utilisation du nom **Nko** (je dis) est qu'il se distingue des autres noms de langue en ce sens qu'il est une phrase traductible dans toutes les langues africaines. Au vu de ce qui précède, le **Nko** est à la fois une écriture et une langue.

Le système de propagation de l'écriture Nko

Nko a été inventé en Côte d'Ivoire, grandit au Mali et propagé en Guinée. Dès les premières heures de son invention, Kanté a compris que son nouveau-né sera confronté à double rejet de ceux qui sont sensé l'embrasser les premiers, notamment les deux catégories d'instruits de ses concitoyens : les arabophiles et les francophiles. Les premiers la rejeteront pour des raisons religieuses tel que « l'Arabe est la langue de la religion musulmane et ou les gens du paradis ne parle que l'arabe » ; les seconds la rejeteront pour des raisons de privilèges et de prestiges, car le français leur donne le privilège d'être fonctionnaire, entre autres, et le prestige d'être appelé 'instruit ou intellectuel'. A son entendement, ces deux couches l'adopteront uniquement, d'une part, quand les premiers verront qu'elle a été tolérée par les religieux d'autre cieux, d'où la traduction du Coran et Hadith en Nko dès les premières heures au risque d'être taxée d'une écriture a propension religieuse. Et d'autre part quand les second verront qu'il y'a des connaissances qu'eux ignorent malgré leur multiples diplômes et qualifications d'où l'écriture de nos histoires, tradition et médecine non-conventionnelle. Maintenant ceux qui n'ont aucune raison de la rejeter sont nos parents analphabètes. On les trouve généralement dans les marches et les mines, d'où l'envoi des premiers

élèves herboristes formés dans les marches et mines pour vendre les médicaments traditionnels, venter et enseigner le Nko en même temps. C'est ainsi que le Nko a pu gagner du terrain dans nos villes et campagnes.

La capacité du Nko à écrire les langues nationales

A l'origine, le Nko désignait un système d'écriture composé de 27 lettres, dont 7 voyelles et un neutre. Bien que l'intention ait été d'écrire toutes les langues africaines, Kanté avait tout naturellement commencé par son propre dialecte qui est le Maninkamorikan de Kankan en République de Guinée. D'autres professeurs du Nko, comme Karamogo Baba Diane, ont par extension, utilisé les diacritiques existants, et autre fois utilisée par Kanté pour marquer les tons, pour représenter des sons non-existants dans le système Maninkamorikan. Le hic étant que les voyelles sont déjà chargées de diacritiques et s'il faut en ajouter autant aux consonnes, ça rendrait la lecture beaucoup plus difficile et confuse. Si pour Kanté des sons humains attestés manquaient, en revanche pour Diane, il y'avait une possibilité effrénée de transcrire l'impossible. Pour ce dernier, le nombre de syllabe qu'il prétend pouvoir écrire dépasserait les possibles sons que l'humain pourrait physiologiquement produire de sorte qu'il n'y avait d'incohérence entre la transcription et les sons. N'étant pas linguistes de formation, tous les deux avaient produit des systèmes fort perfectibles. Ce que Dr. Diakité a tenté de faire, au terme de sa thèse intitulée : *Quelques aspects de la phonologie tonale de Nko.*

À l'origine, Nko faisait référence à un système d'écriture composé de 27 lettres, dont 7 voyelles et une neutre. Bien que l'intention ait été d'écrire toutes les langues africaines, Kanté a naturellement commencé avec son propre dialecte qui est le Maninkamorikan de Kankan en République de Guinée. D'autres professeurs de Nko, comme Karamogo Baba Diane, ont par extension, utilisé des signes diacritiques existants, et à d'autres moments utilisés par Kanté pour marquer les tons, pour

représenter des sons inexistant dans le système Maninkamorian. Le hic, c'est que les voyelles sont déjà chargées de diacritiques et que son ajout a un grand nombre de consonnes rendrait la lecture beaucoup plus difficile et déroutante. Si pour Kanté les sons humains attestés faisaient défaut, en revanche pour Diane, il y avait une possibilité effrénée de retranscrire l'impossible. Pour ce dernier, le nombre de syllabes qu'il prétend pouvoir écrire dépasserait les sons que les humains pourraient possiblement produire physiologiquement, alimentant les possibilités d'une incohérence entre la transcription et les sons. N'étant pas linguistes de formation, tous deux avaient produit des systèmes très perfectibles. Ce que Dr. Diakité essaya de faire, à l'issue de sa thèse intitulée : *Quelques aspects de la phonologie tonale de Nko*.

Le système consonantique Nko de Kanté :

	Labial	Labio-Dental	Alveolar	Palato-Alveolar	Palatal	Velar	Velo-labial	Glottal
Nasal	m Δ		n ŋ		ɲ ʝ	ŋ		
Stop	p b ɸ β		t d ɸ ɓ	c ʝ ɟ ʎ		k g ɣ	gb ɣ	
Fricative		f v ɸ β	s z ɸ ɓ	ʃ				h ɦ
Affricate				tʃ dʒ				
Approximant	w ɸ				j ɟ			
Liquid			l, r ɸ ɓ					

Le système consonantique Nko de Diane :

7voyelles		19consonnes																			1
		b		T	Z	D	D		#	S	G	V	X	t		N		H		Y	
A	I	f	i	b	r	l	B	j	#	D	v	ɸ	ɬ	ɰ	Δ	ɸ	ɾ	h	ɛ	ɸ	
E	O																				
I	Y																				
ε	^																				
U	u																				
O	ɔ																				
ɔ	ɛ																				

7voyelles		19consonne																			2
		f	ɸ	b	r	l	B	j	#	S	v	ɸ	ɬ	ɰ	Δ	ɸ	ɾ	h	ɛ	ɸ	
a	I																				
e	O																				
i	Y																				
ε	^																				
u	u																				
o	ɔ																				
ɔ	ɛ																				

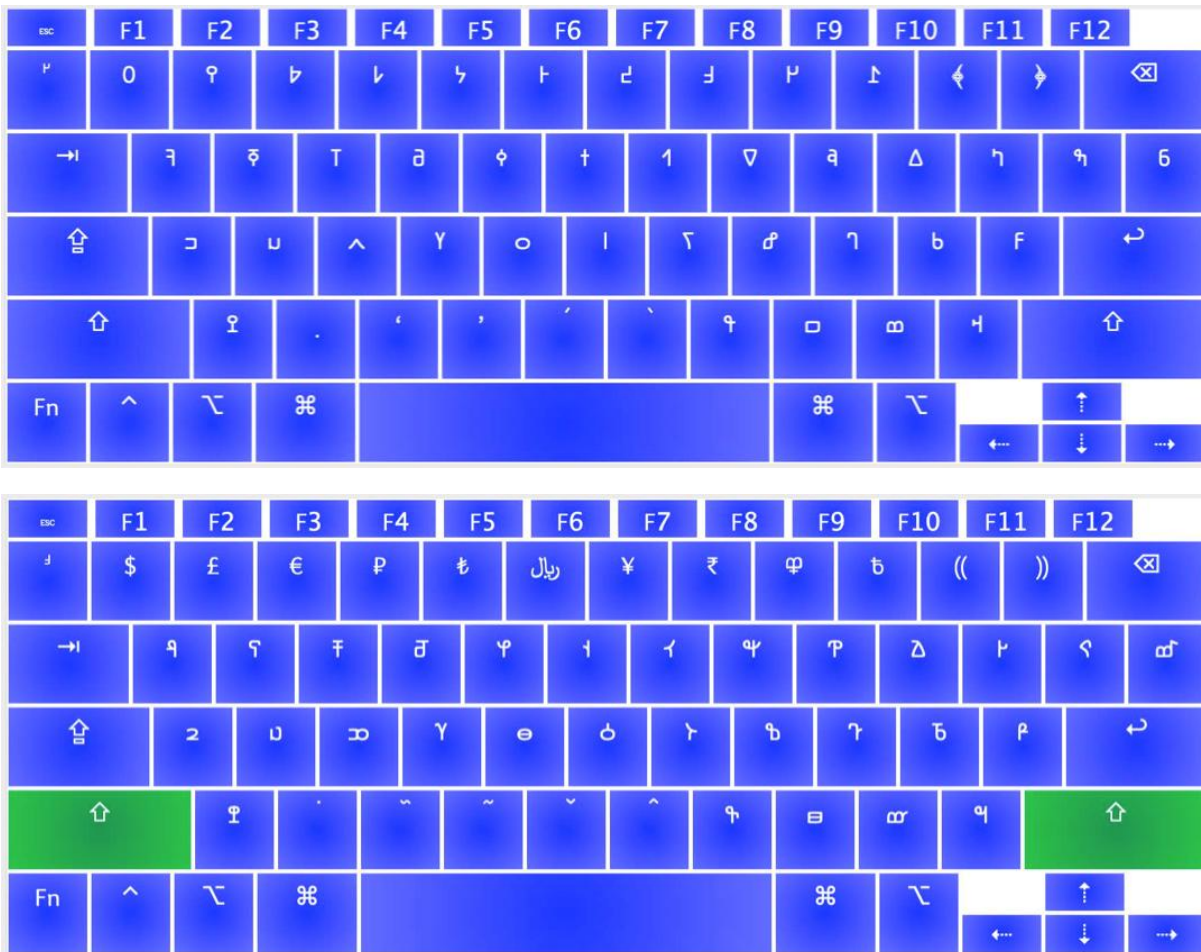
7voyelles		19consonnes																			3
		f	ɸ	Z	S	f	ɸ	j	#	e	v	ɸ	ɬ	ɰ	Δ	ɸ	ɾ	h	ɛ	ɸ	
a	I																				
e	O																				
i	Y																				
ε	^																				
u	u																				
o	ɔ																				
ɔ	ɛ																				

Sur les voyelles, Kanté et Diane se sont limités à sept (7) alors que pour transcrire les langues africaines, il faut seize (16) des (28) de l'Alphabet Phonétique International (IPA). Si nous nous en tenons au système de Diane, nous pourrions avoir plusieurs signes diacritiques sur la même consonne.

Diakité, se référant au système Kanté et s'inspirant du système IPA, a pu concevoir un système complet prenant en compte les sons attestés et ceux qui peuvent être éventuellement produits par l'homme. C'est ce système qui sert à transcrire toutes les langues du monde comme le latin IPA.

Android et Open Source) d'utiliser le script Nko pour le traitement d'Input et de Output (Entrée et Sortie). En revanche, celui de Diakité est en phase d'introduction dans le système Unicode. Néanmoins, les polices et les claviers pour les langues maliennes sont déjà opérationnels. C'est ainsi qu'un alphabet commun pour les langues nationales du Mali est créé, suivi d'alphabets dérivés pour chacune de nos langues et la liste est ouverte.

Clavier pour Nko Phonétique International :





Clavier Commun pour les langues du Mali :



Clavier dérivé Soninke:



Clavier dérivé Songhoi:



Clavier dérivé Fulfulde:



Conclusion:

Les langues africaines, à travers Nko, sont désormais dotées d'un système d'écriture universel. Il appartient à ceux qui sont au pouvoir aux niveaux national et continental d'adopter une stratégie d'inaliénation de nos langues ; en particulier dans les domaines de la connaissance, de l'information, de la communication, de la science et de la technologie. Cette stratégie consiste à adopter une écriture qui intègre tous les peuples africains. À ce jour, seul le Nko peut le faire et il a déjà fait ses preuves en publiant, continuellement, des centaines de livres par an. La politique et la planification linguistiques relèvent de la responsabilité des gouvernements. Et, il est important de noter que l'origine de l'Écriture est l'Afrique et que les autres continents se sont dotés de systèmes d'écriture qui renforcent leur intégration, affirment leurs identités et confirment leur souveraineté. La question de la langue et de l'écriture est avant tout une question de souveraineté.

MERCI.

- E. Letter from Tiekura Setigui Diakite, CEO of AfroLangConnect LLC in support of the new verbal tone inversion marks.

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Publications :
Book Review of State Building And Multilingual Education In Africa Link:
<https://tinyurl.com/a8cp38vd>

https://www.youtube.com/live/lxb2btSaXW8?si=gVBcx1LlFD_tdn4i

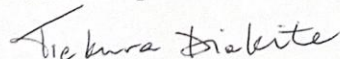
To whom this may concern

I, Tiekura Setigui Diakite, acknowledge that Nko Kakura, with its improvement is well adapted to perfectly write African Languages in general and the Bambara language in particular. Its diacritic system makes it most appropriate phonetically and lexically. For example, the recently added tonal signs make it possible to differentiate between words of the same phonetic output stemming from different underlying lexical inputs. In other words, when verbs become nouns and are pronounced the same way as other nouns with different semantic outcome, there was no way of knowing that. The new addition has resolved that issue and made the semantic difference clearer based on the orthography, relying on the tone and accent demarcations.

For this reason and many more, I support the Nko Kakura with outstanding ability to write complex tonal languages, especially Bambara.

Regards,

Tiekura Setigui Diakite



**PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646¹**

Please fill all the sections A, B and C below.

Please read Principles and Procedures Document (P & P) from <http://std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html> for guidelines and details before filling this form.

Please ensure you are using the latest Form from <http://std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html>.

See also <http://std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html> for latest Roadmaps.

A. Administrative

1. Title:	<i>Revised Proposal to Encode N'ko Phonetic Extensions for Malian Languages</i>
2. Requester's name:	<i>Boubacar Diakite, Neil Patel</i>
3. Requester type (Member body/Liaison/Individual contribution):	<i>Individual Contribution</i>
4. Submission date:	<i>3/22/2025</i>
5. Requester's reference (if applicable):	
6. Choose one of the following:	
This is a complete proposal:	
(or) More information will be provided later:	<i>X</i>

B. Technical – General

1. Choose one of the following:		
a. This proposal is for a new script (set of characters):	<i>No</i>	
Proposed name of script:		
b. The proposal is for addition of character(s) to an existing block:	<i>No</i>	
Name of the existing block:	<i>New block: N'ko Extensions</i>	
2. Number of characters in proposal:	<i>28</i>	
3. Proposed category (select one from below - see section 2.2 of P&P document):		
A-Contemporary <input checked="" type="checkbox"/>	B.1-Specialized (small collection) <input type="checkbox"/>	B.2-Specialized (large collection) <input type="checkbox"/>
C-Major extinct <input type="checkbox"/>	D-Attested extinct <input type="checkbox"/>	E-Minor extinct <input type="checkbox"/>
F-Archaic Hieroglyphic or Ideographic <input type="checkbox"/>	G-Obscure or questionable usage symbols <input type="checkbox"/>	
4. Is a repertoire including character names provided?	<i>Yes</i>	
a. If YES, are the names in accordance with the “character naming guidelines” in Annex L of P&P document?	<i>Yes</i>	
b. Are the character shapes attached in a legible form suitable for review?	<i>Yes</i>	
5. Fonts related:		
a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?	<i>JamraPatel</i>	
b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):		
6. References:		
a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?	<i>Yes</i>	
b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?	<i>Yes</i>	
7. Special encoding issues:		
Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?		

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at <http://www.unicode.org> for such information on other scripts. Also see Unicode Character Database (<http://www.unicode.org/reports/tr44/>) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

¹ Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? If YES explain	<i>Preliminary proposal was review in Jan 2024 and March 7 2025. This is a revision</i>	<i>Yes</i>
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? If YES, with whom? If YES, available relevant documents:	<i>University of Bamako</i> <i>Section 13: Appendices</i>	<i>Yes</i>
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? Reference:	<i>Enclosed</i>	<i>Yes</i>
4. The context of use for the proposed characters (type of use; common or rare) Reference:		<i>common</i>
5. Are the proposed characters in current use by the user community? If YES, where? Reference:	<i>Enclosed</i>	<i>Yes</i>
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? If YES, is a rationale provided? If YES, reference:		<i>No</i>
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?		<i>No</i>
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? If YES, is a rationale for its inclusion provided? If YES, reference:		<i>No</i>
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? If YES, is a rationale for its inclusion provided? If YES, reference:		<i>No</i>
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character? If YES, is a rationale for its inclusion provided? If YES, reference:	<i>Section 5: Structure. Part 5.4: Modifiers</i>	<i>Yes</i> <i>Yes</i>
11. Does the proposal include use of combining characters and/or use of composite sequences? If YES, is a rationale for such use provided? If YES, reference: Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? If YES, reference:	<i>Section 5.3: Diacritics</i>	<i>Yes</i> <i>Yes</i>
12. Does the proposal contain characters with any special properties such as control function or similar semantics? If YES, describe in detail (include attachment if necessary)		<i>No</i>
13. Does the proposal contain any Ideographic compatibility characters? If YES, are the equivalent corresponding unified ideographic characters identified? If YES, reference:		<i>No</i>