Doc Type: **Working Group Document**
Title: **Proposal for encoding the Garay script in the SMP of the UCS**
Source: **UC Berkeley Script Encoding Initiative (Universal Scripts Project)**
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Status: **Liaison Contribution**
Action: **For consideration by JTC1/SC2/WG2 and UTC**
Date: **2016-03-22**
Replaces: **N4261 L2/12-139), N4044 (L2/11-181)**

N4261 was a preliminary proposal by Michael Everson. N4044 was an exploratory proposal by Anshuman Pandey.

1. Introduction. The Garay script was created by Assane Faye in Senegal and published in January 1961. The script shows influences of the Arabic writing system and is written linearly from right-to-left. The basic repertoire consists of 25 consonant letters (including a "vowel-carrier" letter), a number of basic vowel signs, a vowel-length mark, a zero-vowel mark, a gemination sign, and 10 digits. The official script in Senegal for Wolof is Latin, although the Wolofal script (an Arabic-based script written in the Ajami style) is also used. The user community for Garay is small at present, some 200 people, including women's groups and adult literacy for Mandinka as well as for Wolof. The script has been taught informally for more than fifty years since its invention. Faye designed Garay to be easy to learn, familiar to anyone who had learned some of the Arabic script, but gave it a simpler design. Among the manuscripts Faye has written out include textbooks, folktales, and maps; there exists also a Qurʻān with interlinear text giving the translation into Wolof using Garay script.

2. Structure. Garay is an alphabet, written from right to left. It has no joining behaviour, and is a casing script, where capital letters are generally distinguished by a swash distinguishing them from the small letters, so $\mathcal{V}$ A, ᔆ a, ⊃ C, ⸺ c, ⋀ M, ⋀ m (see Figure 2 and Figures 3–15). Capital letters are used at the beginnings of sentences and are also used for personal names; Assane Faye for instance writes his name ᔆᕞ Asan fay. There are also examples of mathematical diagrams in which capital and small letters are used in isolation (see Figures 18 and 19).

2.1. The "tail". A peculiarity of Garay is the "tail" which, in handwriting, often swings back under a letter when in final position in a word; compare, ᔆᕞ Asaŋ fay with ᔆᕞ Asan fay. This feature of handwriting is rather common, but it is not obligatory and has no semantic significance; it does not appear in most of the examples, such as Figures 4 through 15. The most appropriate way to represent this peculiarity would be via an OpenType feature, turning a swash tail on for letters followed by a space, full stop, question mark, exclamation mark, parenthesis, etc.

Related to this is a style of writing in which the tail of the final consonant turns back to underline the entire word ᔆᕞ. It is difficult to imagine the complexity of an OpenType specification which would draw a line going backwards over an arbitrary number of letters. The examples here were

generated using custom-underlining in typesetting software. A very well-designed font could specify the depth and thickness of a fancy-text underline so that it would merge properly with a swash. Again, this is a stylistic feature and is not meaningful and so is outside the scope of character encoding (See Figures 3 and 17).

2.2 Vowel signs. The script uses five basic vowel signs, one of which is combining, to represent eight distinct vowels. Eight of these vowels are written with a combination of two or more basic vowel signs. Vowels are not casing. In initial position vowels are written using the letter A as a "vowel-carrier" letter, so ⟨ is *i* and ⟨ is *I*. When A is written as a part of the vowel then in initial position the two are found together, so ⟨ is *ü* and ⟨ is *Ü*; compare ⟨ *lü* and ⟨ *Lü*.

a	⟋	⟋ VOWEL SIGN A
a:	⟍⟋	⟋ VOWEL SIGN A + ⟍ VOWEL LENGTH MARK
i	⟍	⟍ VOWEL SIGN I
i:	⟍⟍	⟍ VOWEL SIGN I + ⟍ VOWEL LENGTH MARK
ɔ	،	، VOWEL SIGN O
ɔ:	⟍،	، VOWEL SIGN O + ⟍ VOWEL LENGTH MARK
o	،ʃ،	، VOWEL SIGN O + ʃ LETTER A +، VOWEL SIGN O
o:	⟍،ʃ،	، VOWEL SIGN O + ʃ LETTER A +، VOWEL SIGN O + ⟍ VOWEL LENGTH MARK
ε	؟	؟ VOWEL SIGN E
	ʃ	ʃ LETTER A + ؟ VOWEL SIGN E (*after letters* ⟍ ⟍ ɓ ɗ H Ĥ Ḣ ʒ ʑ)
ε:	⟍؟	؟ VOWEL SIGN E + ⟍ VOWEL LENGTH MARK
	⟍ʃ	ʃ LETTER A + ؟ VOWEL SIGN E + ⟍ VOWEL LENGTH MARK (*after letters* ⟍ ⟍ ɓ ɗ H Ĥ Ḣ ʒ ʑ)
e	ʃ؟	؟ VOWEL SIGN E + ʃ LETTER A
	ʃʃ	ʃ LETTER A + ؟ VOWEL SIGN E + ʃ LETTER A (*after letters* ⟍ ⟍ ɓ ɗ H Ĥ Ḣ ʒ ʑ)
e:	⟍ʃ؟	؟ VOWEL SIGN E + ʃ LETTER A + ⟍ VOWEL LENGTH MARK
	⟍ʃʃ	ʃ LETTER A + ؟ VOWEL SIGN E + ʃ LETTER A + ⟍ VOWEL LENGTH MARK (⟍ ⟍ ɓ ɗ H Ĥ Ḣ ʒ ʑ)
Ø	c	c SUKUN
ə	ʃ⟋	ʃ LETTER A + ⟋ VOWEL SIGN A
ə:	⟍ʃ⟋	ʃ LETTER A + ⟋ VOWEL SIGN A + ⟍ VOWEL LENGTH MARK
ü	ʃ⟍	ʃ LETTER A + ⟍ VOWEL SIGN I
ü:	⟍ʃ⟍	ʃ LETTER A + ⟍ VOWEL SIGN I + ⟍ VOWEL LENGTH MARK
u	ʃ،	ʃ LETTER A + ، VOWEL SIGN O
u:	⟍ʃ،	ʃ LETTER A + ، VOWEL SIGN O + ⟍ VOWEL LENGTH MARK
ö	ʃ،ʃ،	ʃ LETTER A + ، VOWEL SIGN O + ʃ LETTER A + ، VOWEL SIGN O
ö:	⟍ʃ،ʃ،	ʃ LETTER A + ، VOWEL SIGN O + ʃ LETTER A + ، VOWEL SIGN O + ⟍ VOWEL LENGTH MARK
Ø	cʃ	ʃ LETTER A + c SUKUN

The spelling of some vowels differs depending on the consonant letter they precede. The VOWEL SIGN E is a combining mark, but alef and a class of "modified consonants" which contain an inherent diacritical mark do not take that sign, but are rather followed by the vowel carrier with the VOWEL SIGN E atop it. The letters concerned are:

ʃ⟍ *bɛ*   ʃ⟍ *mbɛ*   ʃɓ *jɛ*   ʃɗ *njɛ*   ʃH *gɛ*   ʃĤ *ŋgɛ*   ʃḢ *ŋɛ*   ʃʒ *dɛ*   ʃʑ *ndɛ*

confusing the vowel sign with the diacritical mark, since *⟍ *bɛ* would look like ⟍ *mb* and *ʑ *dɛ* would look like ʑ *nd*. This is a spelling rule. Nothing prevents someone from writing *ʑ. To help to visualize this somewhat unusual way of spelling vowels in the table below, a strict Latin transcription is given in the final column where ⟋ *a* is written a, ⟍ *i* is written i, ، *ɔ* is written ɔ, ؟ *ɛ* is written ɛ, ⟍ *long mark* is written :, c *sukun* is written °, and ʃ *ʔ/a* is written ʔ.

Sign	Dalby	Faye	ʔa	c	m	k	b	mb	j	nj	Latin
	a	a									Ca
	ā	a(:)									Ca:
	i	i									Ci
	ī	i(:)									Ci:
	ɔ	o									Cɔ
	ɔ̄	o(:)									Cɔ:
	o	au									Cɔʔɔ
	ō	au(:)									Cɔʔɔ:
	ɛ	é									Cɛ *or* Cʔɛ
	ɛ̄	é(:)									Cɛ: *or* Cʔɛ:
	e	é									Cɛʔ *or* Cʔɛʔ
	ē	ë									Cɛʔ: *or* Cʔɛʔ:
	Ø	—									C°
	ə	e									Cʔa
	ə̄	e(:)									Cʔa:
	ü	u									Cʔi
	ǖ	u(:)									Cʔi:
	u	ou									Cʔɔ
	ū	ou(:)									Cʔɔ:
	ö	ë									Cʔɔʔɔ
	ȫ	ë(:)									Cʔɔʔɔ:
	(?)	(?)									Cʔ°

Sign	Dalby	Faye	s	w	l	g	ŋg	ŋ	d	nd	
	a	a									Ca
	ā	a(:)									Ca:
	i	i									Ci
	ī	i(:)									Ci:
	ɔ	o									Cɔ
	ɔ̄	o(:)									Cɔ:
	o	au									Cɔʔɔ
	ō	au(:)									Cɔʔɔ:
	ɛ	é									Cɛ *or* Cʔɛ
	ɛ̄	é(:)									Cɛ: *or* Cʔɛ:
	e	é									Cɛʔ *or* Cʔɛʔ
	ē	ë									Cɛʔ: *or* Cʔɛʔ:
	Ø										C°
	ə	e									Cʔa
	ə̄	e(:)									Cʔa:
	ü	u									Cʔi
	ǖ	u(:)									Cʔi:
	u	ou									Cʔɔ
	ū	ou(:)									Cʔɔ:
	ö	ë									Cʔɔʔɔ
	ȫ	ë(:)									Cʔɔʔɔ:
	(?)	(?)									Cʔ°

3

Sign	Dalby	Faye	x	h	y	t	r	ny	f	n	p	Latin
⁄	a	a										Ca
⁄	ā	a(:)										Ca:
⁀	i	i										Ci
⁀	ī	i(:)										Ci:
ʼ	ɔ	o										Cɔ
ʼ	ɔ	o(:)										Cɔ:
	ɛ	é										Cɛ
	ɛ̄	é(:)										Cɛ:
	e	é										Cɛʔ
	ē	ő										Cɛʔ:
c	Ø											C°
	ə	e										Cʔa
	ə̄	e(:)										Cʔa:
	ü	u										Cʔi
	ǖ	u(:)										Cʔi:
	u	ou										Cʔɔ
	ū	ou(:)										Cʔɔ:
	ö	ou										Cʔɔʔɔ
	ȫ	ou(:)										Cʔɔʔɔ:
	(?)	(?)										Cʔ°

2.2.1. Vowel length. A long vowel is indicated by writing a vowel-length mark (‿) at the end of a vowel sequence.

2.2.2. Sukun. An explicit symbol (c) indicates that a consonant has no following vowel. Evidently this is an optional letter (reminiscent of Cyrillic ъ in pre-1918 Russian); the word for 'lamb' or 'sheep' is written ⟨Xar°⟩ in one of Faye's books, and ⟨Xar⟩ in another. The reading of the modified sukun ⟨⟩ is uncertain, though it appears in some of the charts.

2.2.3. Gemination. The gemination mark (ô) is written above a consonant letter and above the VOWEL SIGN E where that applies to a letter (⟨ ⟩). In encoded text, for searching and matching, perhaps the best practice would be to encode the gemination mark (bound to the consonant) first and the VOWEL SIGN E afterward, even though the presentation form appears to be the opposite.

2.2.4. Reduplication. The reduplication mark (X) is written after a word and indicates that it is repeated. (see Figure 10).

3. Confusability. It could be said that the vowels look similar to some other characters in the standard:

- ⁄ VOWEL SIGN A looks something like / SOLIDUS
- ⁀ VOWEL SIGN I looks something like \ REVERSE SOLIDUS
- ʼ VOWEL SIGN O looks something like ʼ RAISED COMMA
- c SUKUN looks something like ᶜ MODIFIER LETTER CENTRED LEFT-HALF RING
- ‿ VOWEL LENGTH MARK looks something like _ LOW LINE
- VOWEL SIGN E looks something like ̓ COMBINING COMMA ABOVE
- ô GEMINATION MARK looks something like ̂ COMBINING CIRCUMFLEX ACCENT.

All of these resemblances are superficial; it is simpler to encode the lot as script-specific characters than to try to unify some or all of them with existing characters in the standard.

4. Digits. The digits represent decimal numbers and are written from left-to-right as in Arabic. Some of the consonant letters also have numeric values as shown below.

Transl.	Letter	Garay digit	Digit	Transl.	Letter	Garay digit	Digit
ʔ	ς	I	1	g	H	IO	10
c	⸗	ʅ	2	d	⸜	ʅO	20
m	⋀⋀	⸹	3	x	⸝	⸹O	30
k	⊔⊔	⸹	4	y	∿	⸹O	40
b	⌒	⁇	5	t	⋀⋀	⁇O	50
j	ɑ	φ	6	r	⌣	φO	60
s	‖	ᖯ	7	ñ	∝	ᖯO	70
w	φ	Ɏ	8	f	⸔	ɎO	80
l	∿	P	9	n	ﺱ	PO	90
				p	ﻭ	IOO	100

5. Character names. The names of the consonants end in -A, and the usual UCS conventions are observed, with E representing ɛ, O representing ɔ, and NG representing ŋ.

6. Ordering. Since the consonants have a numeric value, the ordering is based upon this, with modified letters (*mb*, *nj*, *ŋg*, *ŋ*, *nd*, *h*) interfiled after their bases, at a first-level distinction from them.

Vowel signs precede the consonants in the code chart because the simple vowels ⟋ ⟍ ⟋ ⟋̇ precede the consonant ς A, and in a pure binary sort this yields a better result. In the primer (Figures 3 *ff.*) the vowels are presented in the following order. No ordered wordlists are given and it is uncertain as to whether users of the script have expectations regarding sorting.

$$a\ i\ ɔ\ {\color{red}ø}\ ā\ ī\ ɔ̄\ ɛ\ ɛ̄\ ə\ ü\ u\ {\color{red}ø̄}\ ə̄\ ǖ\ ū\ e\ ē\ ɔ̄\ [\,o\,]\ ō\ ū\ [\,ö\,]\ ō̄$$

(with short and long SUKUN, though the latter may have a different reading); a binary sort would yield:

$$a\ ā\ {\color{red}i\ ī}\ ɔ\ ɔ̄\ {\color{red}o\ ō}\ ɛ\ ɛ̄\ {\color{red}e\ ē}\ {\color{red}ø}\ ə\ ə̄\ ü\ ǖ\ u\ ū\ ö\ ō̄\ (\,ɛ\ ɛ̄\ {\color{red}e\ ē}\,)\ {\color{red}ø̄}$$

In a non-binary sort care will have to be taken for the differing representations of ɛ, ɛ̄, e, and ē.

7. Linebreaking. Letters and digits behave as do the letters and numbers in Latin.

8. Punctuation. To date, no script-specific punctuation has been seen. Generic FULL STOP, QUESTION MARK, EXCLAMATION POINT, PLUS SIGN, MINUS SIGN, EQUALS SIGN, left and right CURLY BRACKETS, and left and right PARENTHESES are used; the ARABIC COMMA and ARABIC SEMICOLON are also used.

9. Unicode Character Properties.

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10D40;GARAY DIGIT ZERO;Nd;0;AN;;0;0;0;N;;;;;
10D41;GARAY DIGIT ONE;Nd;1;AN;;1;1;1;N;;;;;
10D42;GARAY DIGIT TWO;Nd;2;AN;;2;2;2;N;;;;;
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10D43;GARAY DIGIT THREE;Nd;3;AN;;3;3;3;N;;;;;
10D44;GARAY DIGIT FOUR;Nd;4;AN;;4;4;4;N;;;;;
10D45;GARAY DIGIT FIVE;Nd;5;AN;;5;5;5;N;;;;;
10D46;GARAY DIGIT SIX;Nd;6;AN;;6;6;6;N;;;;;
10D47;GARAY DIGIT SEVEN;Nd;7;AN;;7;7;7;N;;;;;
10D48;GARAY DIGIT EIGHT;Nd;8;AN;;8;8;8;N;;;;;
10D49;GARAY DIGIT NINE;Nd;9;AN;;9;9;9;N;;;;;
10D4A;GARAY VOWEL SIGN A;Lo;0;R;;;;;N;;;;;
10D4B;GARAY VOWEL SIGN I;Lo;0;R;;;;;N;;;;;
10D4C;GARAY VOWEL SIGN O;Lo;0;R;;;;;N;;;;;
10D4D;GARAY VOWEL SIGN E;Mn;220;NSM;;;;;N;;;;;
10D4E;GARAY SUKUN;Lo;0;R;;;;;N;;;;;
10D4F;GARAY VOWEL LENGTH MARK;Lo;0;R;;;;;N;;;;;
10D50;GARAY CAPITAL LETTER A;Lu;0;R;;;;;N;;;;10D70;
10D51;GARAY CAPITAL LETTER CA;Lu;0;R;;;;;N;;;;10D71;
10D52;GARAY CAPITAL LETTER MA;Lu;0;R;;;;;N;;;;10D72;
10D53;GARAY CAPITAL LETTER KA;Lu;0;R;;;;;N;;;;10D73;
10D54;GARAY CAPITAL LETTER BA;Lu;0;R;;;;;N;;;;10D74;
10D55;GARAY CAPITAL LETTER MBA;Lu;0;R;;;;;N;;;;10D75;
10D56;GARAY CAPITAL LETTER JA;Lu;0;R;;;;;N;;;;10D76;
10D57;GARAY CAPITAL LETTER NJA;Lu;0;R;;;;;N;;;;10D77;
10D58;GARAY CAPITAL LETTER SA;Lu;0;R;;;;;N;;;;10D78;
10D59;GARAY CAPITAL LETTER WA;Lu;0;R;;;;;N;;;;10D79;
10D5A;GARAY CAPITAL LETTER LA;Lu;0;R;;;;;N;;;;10D7A;
10D5B;GARAY CAPITAL LETTER GA;Lu;0;R;;;;;N;;;;10D7B;
10D5C;GARAY CAPITAL LETTER NGGA;Lu;0;R;;;;;N;;;;10D7C;
10D5D;GARAY CAPITAL LETTER NGA;Lu;0;R;;;;;N;;;;10D7D;
10D5E;GARAY CAPITAL LETTER DA;Lu;0;R;;;;;N;;;;10D7E;
10D5F;GARAY CAPITAL LETTER NDA;Lu;0;R;;;;;N;;;;10D7F;
10D60;GARAY CAPITAL LETTER XA;Lu;0;R;;;;;N;;;;10D80;
10D61;GARAY CAPITAL LETTER HA;Lu;0;R;;;;;N;;;;10D81;
10D62;GARAY CAPITAL LETTER YA;Lu;0;R;;;;;N;;;;10D82;
10D63;GARAY CAPITAL LETTER TA;Lu;0;R;;;;;N;;;;10D83;
10D64;GARAY CAPITAL LETTER RA;Lu;0;R;;;;;N;;;;10D84;
10D65;GARAY CAPITAL LETTER NYA;Lu;0;R;;;;;N;;;;10D85;
10D66;GARAY CAPITAL LETTER FA;Lu;0;R;;;;;N;;;;10D86;
10D67;GARAY CAPITAL LETTER NA;Lu;0;R;;;;;N;;;;10D87;
10D68;GARAY CAPITAL LETTER PA;Lu;0;R;;;;;N;;;;10D88;
10D6F;GARAY COMBINING GEMINATION MARK;Mn;230;NSM;;;;;N;;;;;
10D70;GARAY SMALL LETTER A;Ll;0;R;;;;;N;;;10D50;;10D50
10D71;GARAY SMALL LETTER CA;Ll;0;R;;;;;N;;;10D51;;10D51
10D72;GARAY SMALL LETTER MA;Ll;0;R;;;;;N;;;10D52;;10D52
10D73;GARAY SMALL LETTER KA;Ll;0;R;;;;;N;;;10D53;;10D53
10D74;GARAY SMALL LETTER BA;Ll;0;R;;;;;N;;;10D54;;10D54
10D75;GARAY SMALL LETTER MBA;Ll;0;R;;;;;N;;;10D55;;10D55
10D76;GARAY SMALL LETTER JA;Ll;0;R;;;;;N;;;10D56;;10D56
10D77;GARAY SMALL LETTER NJA;Ll;0;R;;;;;N;;;10D57;;10D57
10D78;GARAY SMALL LETTER SA;Ll;0;R;;;;;N;;;10D58;;10D58
10D79;GARAY SMALL LETTER WA;Ll;0;R;;;;;N;;;10D59;;10D59
10D7A;GARAY SMALL LETTER LA;Ll;0;R;;;;;N;;;10D5A;;10D5A
10D7B;GARAY SMALL LETTER GA;Ll;0;R;;;;;N;;;10D5B;;10D5B
10D7C;GARAY SMALL LETTER NGGA;Ll;0;R;;;;;N;;;10D5C;;10D5C
10D7D;GARAY SMALL LETTER NGA;Ll;0;R;;;;;N;;;10D5D;;10D5D
10D7E;GARAY SMALL LETTER DA;Ll;0;R;;;;;N;;;10D5E;;10D5E
10D7F;GARAY SMALL LETTER NDA;Ll;0;R;;;;;N;;;10D5F;;10D5F
10D80;GARAY SMALL LETTER XA;Ll;0;R;;;;;N;;;10D60;;10D60
10D81;GARAY SMALL LETTER HA;Ll;0;R;;;;;N;;;10D61;;10D61
10D82;GARAY SMALL LETTER YA;Ll;0;R;;;;;N;;;10D62;;10D62
10D83;GARAY SMALL LETTER TA;Ll;0;R;;;;;N;;;10D63;;10D63
10D84;GARAY SMALL LETTER RA;Ll;0;R;;;;;N;;;10D64;;10D64
10D85;GARAY SMALL LETTER NYA;Ll;0;R;;;;;N;;;10D65;;10D65
10D86;GARAY SMALL LETTER FA;Ll;0;R;;;;;N;;;10D66;;10D66
10D87;GARAY SMALL LETTER NA;Ll;0;R;;;;;N;;;10D67;;10D67
10D88;GARAY SMALL LETTER PA;Ll;0;R;;;;;N;;;10D68;;10D68
10D8F;GARAY REDUPLICATION MARK;So;0;R;;;;;N;;;;;
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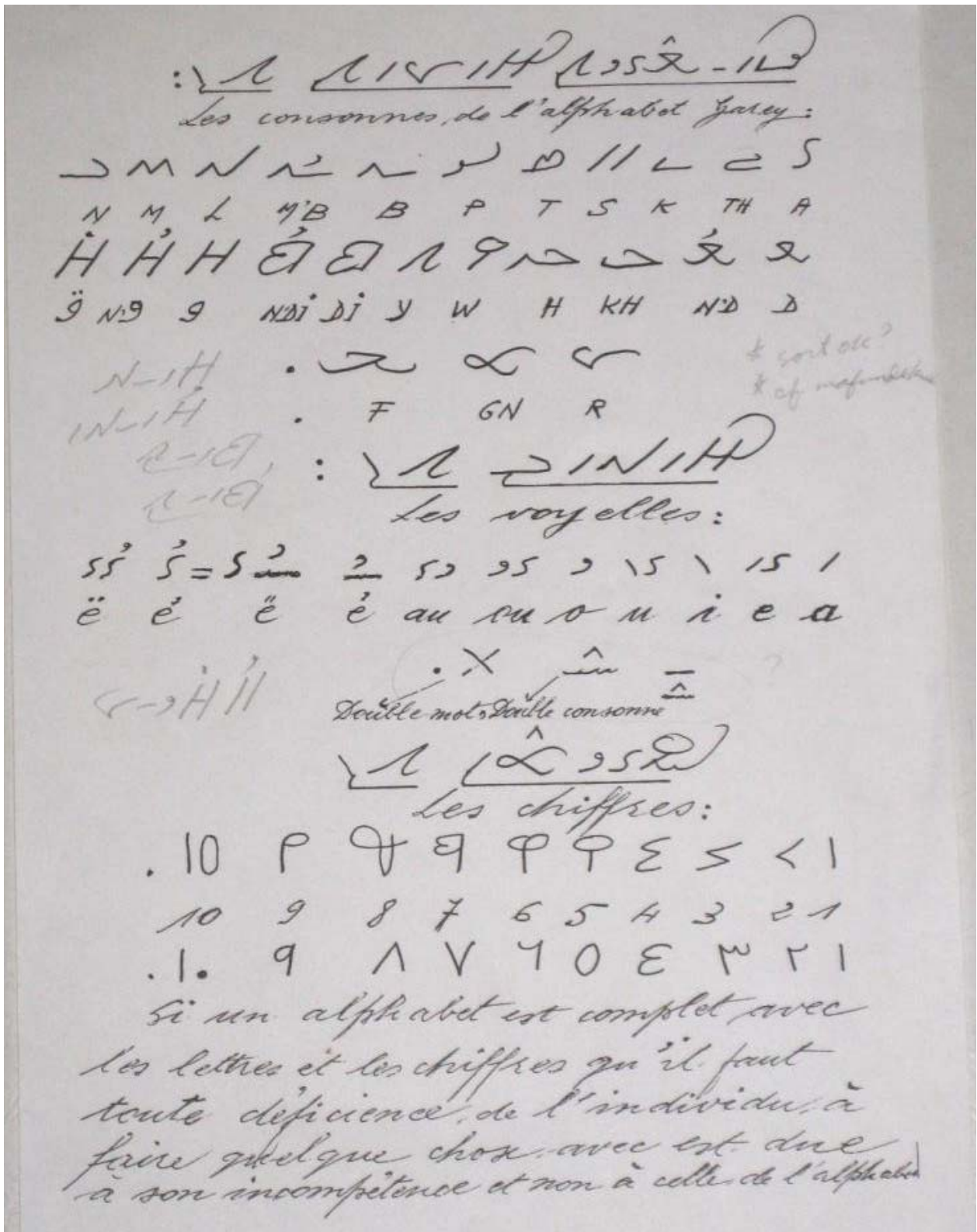
12. Figures.

Figure 1. Chart of the Garay alphabet by Assane Faye.

	CONSONANTS							VOWELS		
	INITIAL	NON-INIT.		INITIAL	NON-INIT.			INITIAL	NON-INIT.	(PROVISIONAL IDENTIFICATION)
[a] (1)			w (8)			y (40)			a	/
c (2)			l (9)			t (50)			ɛ	'
m (3)			g (10)			r (60)			e	ʃ'
k (4)			ŋg			ɲ (70)			ö	ʃʃ
b (5)			ŋ			f (80)			i	\
mb			d (20)			n (90)		[ ]	ɔ	,
j (6)			nd			p (100)			o	,ʃ,
nj			x (30)			DIACRITICS			u	,ʃ
s (7)			ħ			long vowel (postscript)	—		ə	/ʃ
						zero vowel (postscript)	c		ii	\ʃ
						double consonant (superscr.)	^			

NUMERALS	1	2	3	4	5	6	7	8	9	10

Figure 2. Table of Garay characters from Dalby 1966. Dalby identified "initial" and "non-initial" letters, but this is certainly a misidentification. Capital letters do begin words and sentences, but certainly not all words begin with an "initial" letter. Distribution of case in Garay is as normal as it is in French. There are some errors in the vowel transcription.
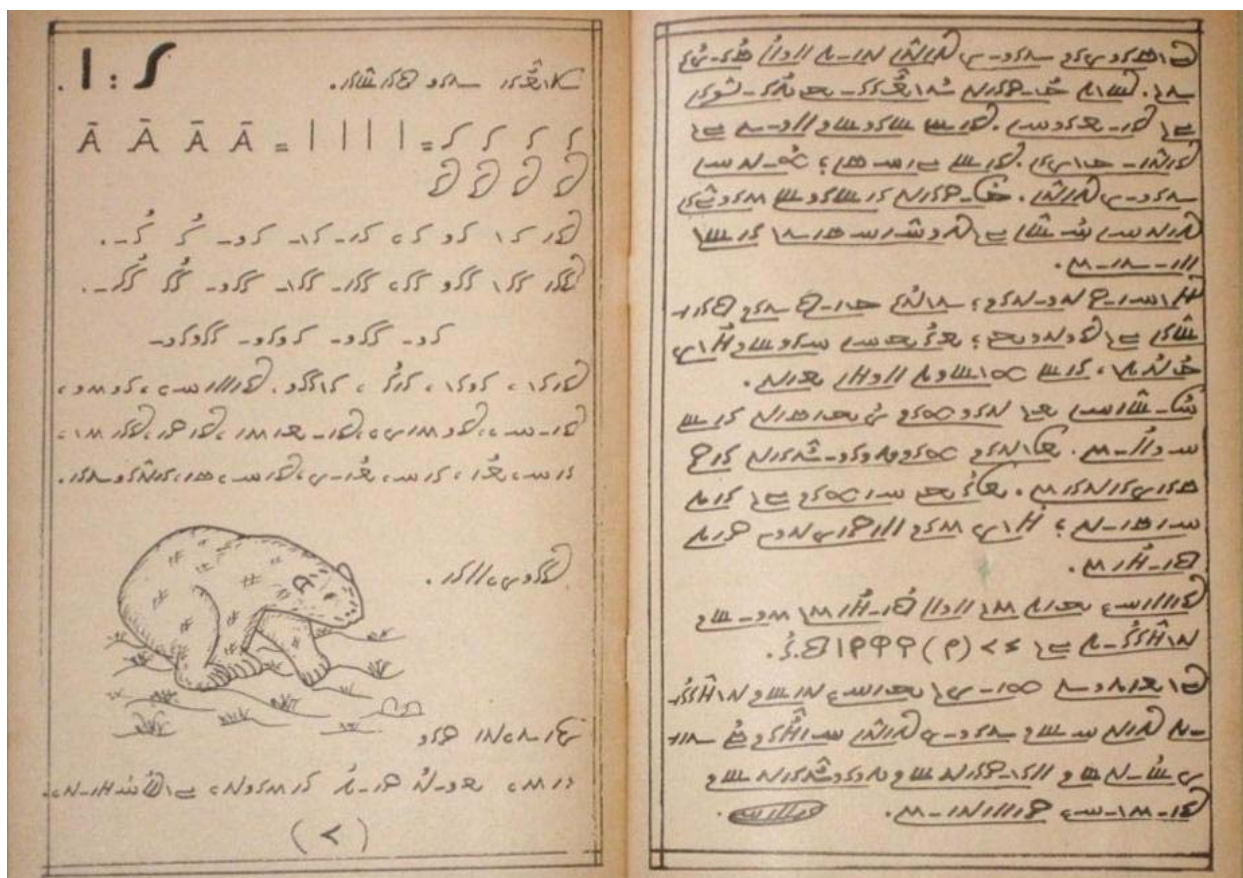
Figure 3. A primer by Assane Faye. On the right, introductory text; on the left, the letter A. In the first line four Latin Ā's are given, four Arabic ﺍ's, four ɢᴀʀᴀʏ ꜱᴍᴀʟʟ ʟᴇᴛᴛᴇʀ ᴀ's ʃʃʃʃ, then four ɢᴀʀᴀʏ ᴄᴀᴘɪᴛᴀʟ ʟᴇᴛᴛᴇʀ ᴀ's immediately below them.
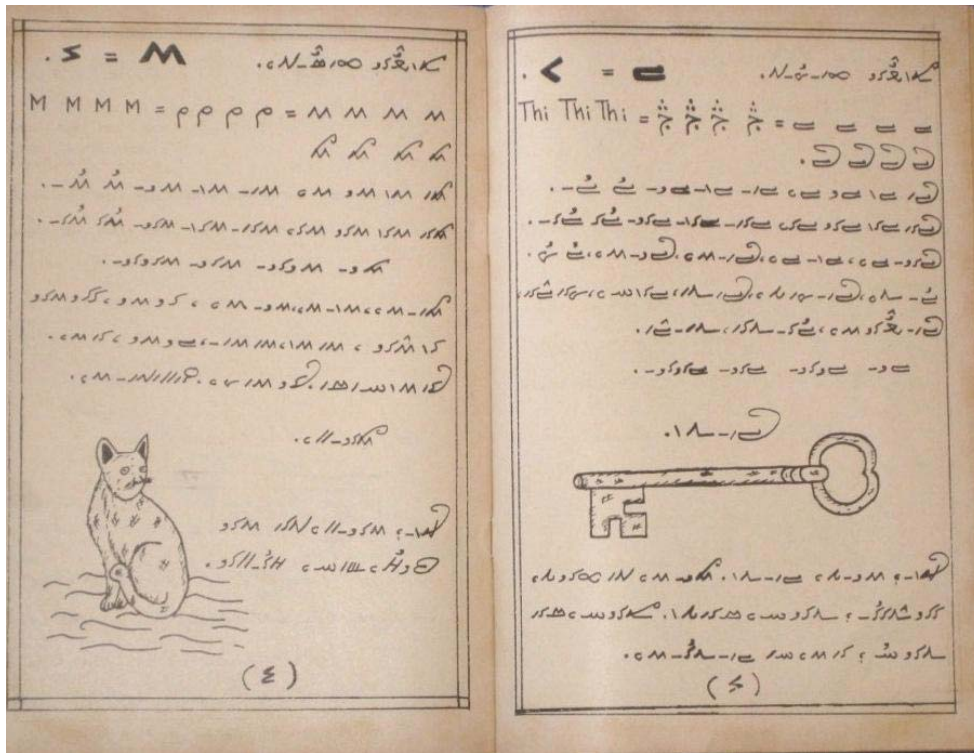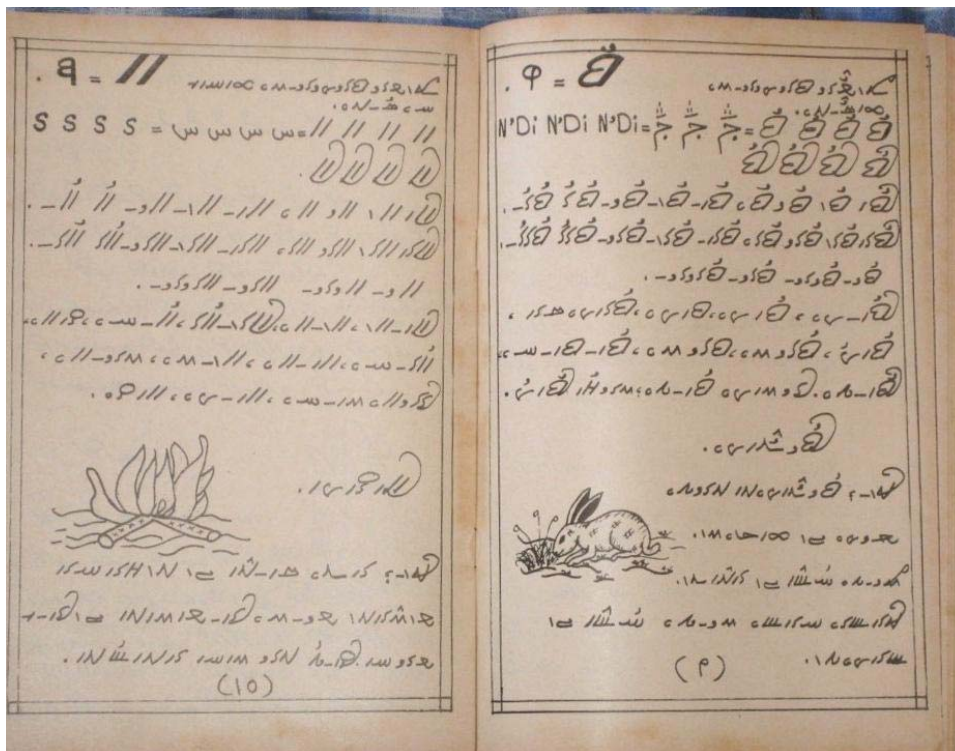
Figure 4. A primer by Assane Faye. On the right, the letter CA. In the first line three Latin *Thi*'s are given, four evidently unencoded Arabic ﺥ's (unless the dot below is a diacritic for -*e*), four GARAY SMALL LETTER CA's ⌣⌣⌣⌣, then four GARAY CAPITAL LETTER CA's ⊃⊃⊃⊃ immediately below them. On the left, the letter MA. In the first line four Latin *M*'s are given, four Arabic ﻡ's, four GARAY SMALL LETTER MA's ⋀⋀⋀⋀, then four GARAY CAPITAL LETTER MA's immediately below them.
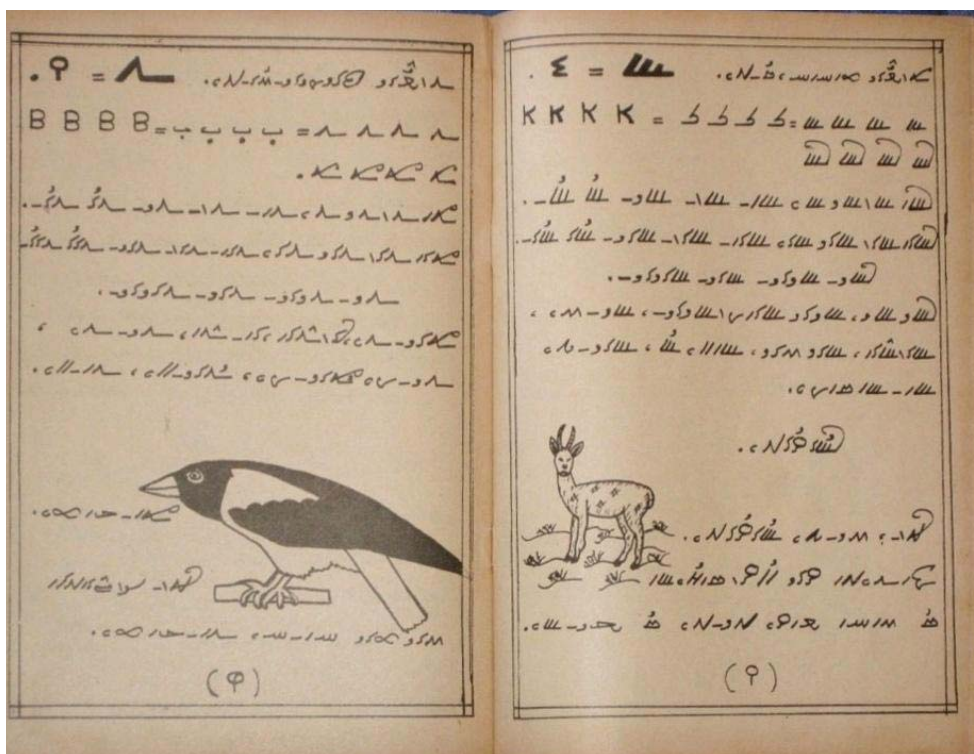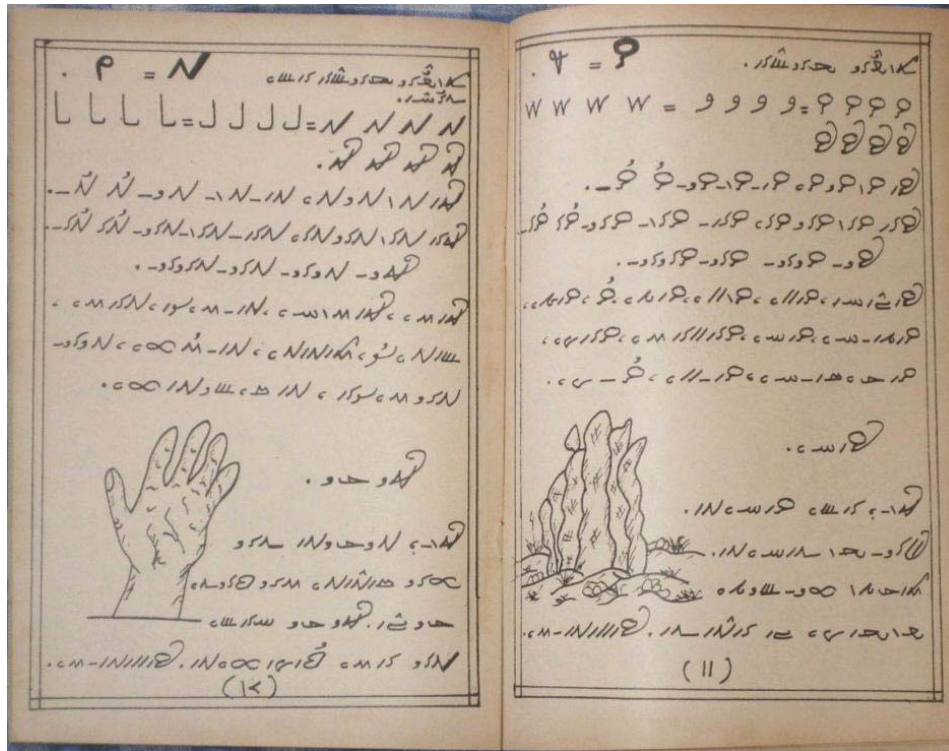

Figure 5. A primer by Assane Faye. On the right, the letter KA. In the first line four Latin *K*'s are given, four Arabic ﻙ's, four GARAY SMALL LETTER KA's ⫿⫿⫿⫿, then four GARAY CAPITAL LETTER KA's immediately below them. On the left, the letter BA. In the first line four Latin *B*'s are given, four Arabic ﺏ's, four GARAY SMALL LETTER BA's ⌃⌃⌃⌃, then four GARAY CAPITAL LETTER BA's immediately below them.
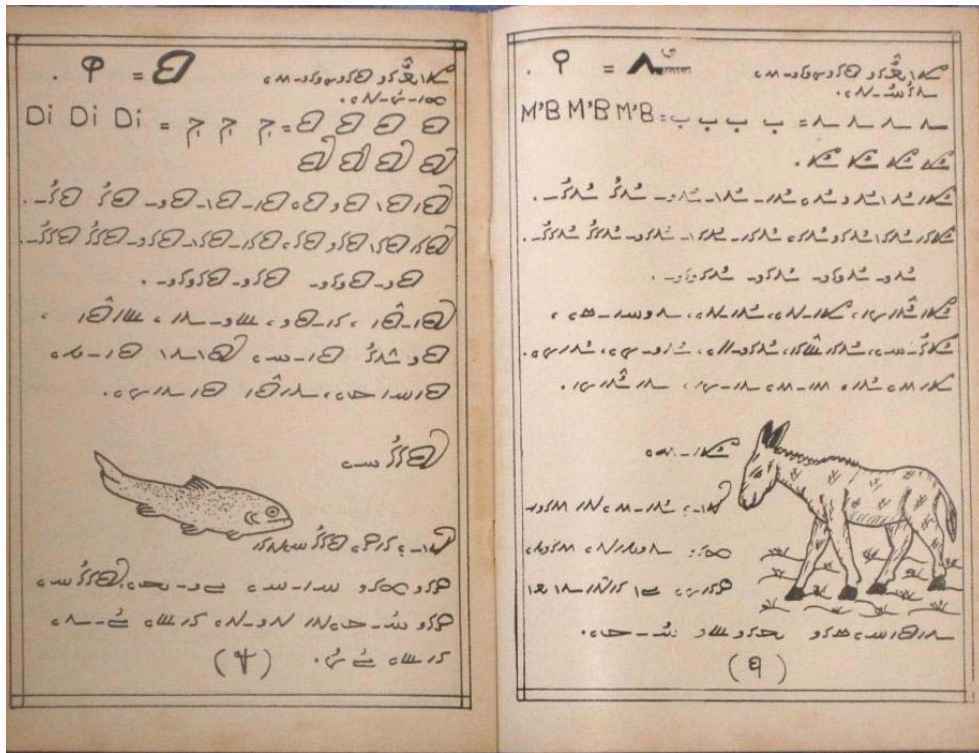
Figure 6. A primer by Assane Faye. On the right, the letter MBA. In the first line three Latin *M'B*'s are given, four Arabic ﺏ's (!), four GARAY SMALL LETTER MBA's ‎�⁓ﹶﹶ, then four GARAY CAPITAL LETTER MBA's ⟋⟋⟋⟋ immediately below them. On the left, the letter JA. In the first line three Latin *Di*'s are given, three Arabic ﺝ's, four GARAY SMALL LETTER JA's ❡❡❡❡, then four GARAY CAPITAL LETTER JA's 𝒜𝒜𝒜𝒜 immediately below them.

Figure 7. A primer by Assane Faye. On the right, the letter NJA. In the first line three Latin *N'Di*'s are given, three unencoded Arabic ﺥ's (perhaps the dot below is a diacritic for *-e*), four GARAY SMALL LETTER NJA's ɡ̇ɡ̇ɡ̇ɡ̇, then four GARAY CAPITAL LETTER NJA's 𝒜̇𝒜̇𝒜̇𝒜̇ immediately below them. On the left, the letter SA. In the first line four Latin *S*'s are given, four Arabic ﺱ's, four GARAY SMALL LETTER SA's ⅠⅠⅠⅠⅠⅠⅠⅠ, then four GARAY CAPITAL LETTER SA's 𝕚𝕚𝕚𝕚 immediately below them.
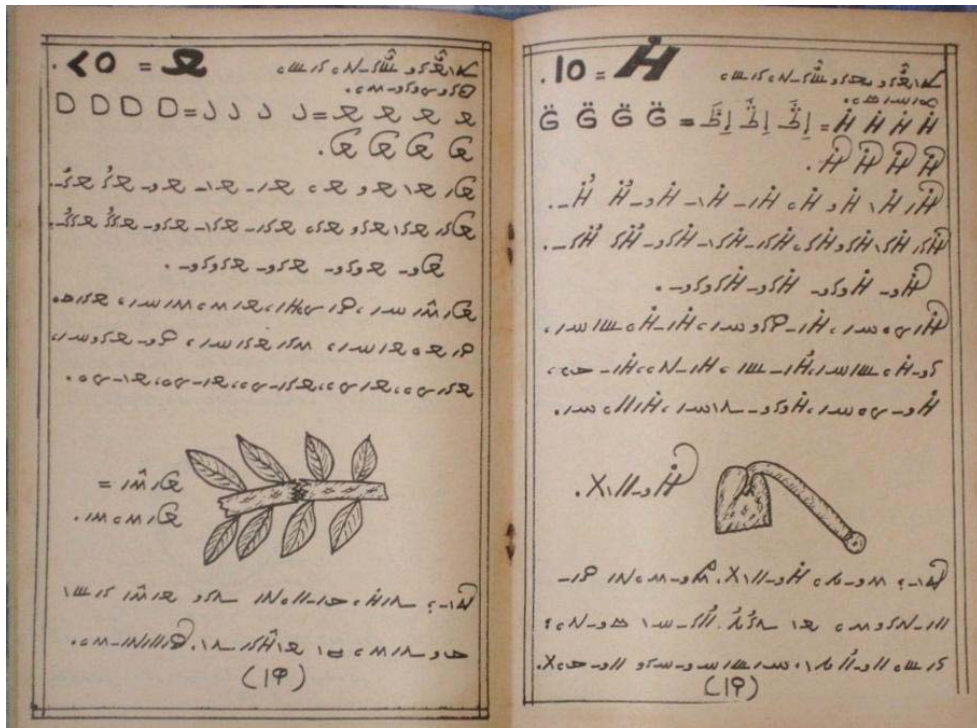
Figure 8. A primer by Assane Faye. On the right, the letter WA. In the first line four Latin *W*'s are given, four Arabic و's, four GARAY SMALL LETTER WA's ٩٩٩٩, then four GARAY CAPITAL LETTER WA's ৩৩৩৩ immediately below them. On the left, the letter LA. In the first line four Latin *L*'s are given, four Arabic ل's, four GARAY SMALL LETTER LA's ∿∿∿∿, then four GARAY CAPITAL LETTER LA's immediately below them.

A full transcription of the left-hand page here:

|			
Ρ = ∿	‏كبكَدِه‎	Binddu fukkə ək bɛnna.	l = 9
L L L L = ل ل ل ل = ∿ ∿ ∿ ∿		l l l l = ل ل ل ل = *L L L L*	
		L L L L	
La li lɔ l' lā lī lɔ̄ lɛ lɛ̄.		La li lɔ l' lā lī lɔ̄ lɛ lɛ̄.	
Lə lü lu l?' lɔ̄ lǖ lū le lē.		Lə lü lu l?' lɔ̄ lǖ lū le lē.	
Lɔ̄ lō lū lɔ̄̄		Lɔ̄ lō lū lɔ̄̄ [Missing are lo and lö]	
		Lam, Lamin. lām pa, ləm	
		kal pe, Malal, lāmeñ 'tongue', lō	
		lum pə, lat kɔlañ.	
		Lɔxɔ.	
		Lī, lɔxɔla bu	
		ñu tallal, mu jub,	
		xɔcca. Lɔxɔ nək,	
		lɔ əm njara ñla. Wasalām.	

Figure 9. A primer by Assane Faye. On the right, the letter GA. In the first line four Latin *G*'s are given, three Arabic ڭ's, four GARAY SMALL LETTER GA's *HHHH*, then four GARAY CAPITAL LETTER GA's 𝐻𝐻𝐻𝐻 immediately below them. On the left, the letter NGGA. In the first line three Latin *N'G*'s are given, four Arabic ڭ's, four GARAY SMALL LETTER NGGA's *ḢḢḢḢ*, then four GARAY CAPITAL LETTER NGGA's 𝐻𝐻𝐻𝐻 immediately below them.

A full transcription of the right-hand page here:

IO = H	.cN‑‑∕∞ ⊔⊔∕ ∖N‑⊔⊔∕‑ ∕∖	Binddu fukkēl ək, ñārēl. g = 10
G G G G = ل ل ل ل = H H H H	g g g g = ڭ ڭ ڭ = *G G G G*
	G G G G
Ga gi gɔ g' gā gī gō gɛ gē.	
Gə gü gu gʔ' gə̄ gǖ gū ge gē.	
Gō̄ gō gū gȫ [Missing are ∕∕∕H go and ∕∕∕∕H gö]	
Garab, gāg, guy, gis, gaw.	
Gāmmu, gɔ. m, gēr, gēr,	
Gɔlɔ, lāggi, gōl, wasagām.	
Gɛyndɛ 'lion'	
Lī, gɛydɛla gū bōf.	

Figure 10. A primer by Assane Faye. On the right, the letter NGA. Next to the drawing, ꡭꡦꡪ reads *ŋōsi ŋōsi* showing the REDUPLICATION MARK. In the first line four Latin *G̈*'s are given, three Arabic إگ's (analysis uncertain), four GARAY SMALL LETTER NGA's Ḣ Ḣ Ḣ Ḣ, then four GARAY CAPITAL LETTER NGA's Ḣ Ḣ Ḣ Ḣ immediately below them. On the left, the letter DA. In the first line four Latin *D*'s are given, four Arabic د's, four GARAY SMALL LETTER DA's ꝶ ꝶ ꝶ, then four GARAY CAPITAL LETTER DA's Ꝺ Ꝺ Ꝺ Ꝺ immediately below them.
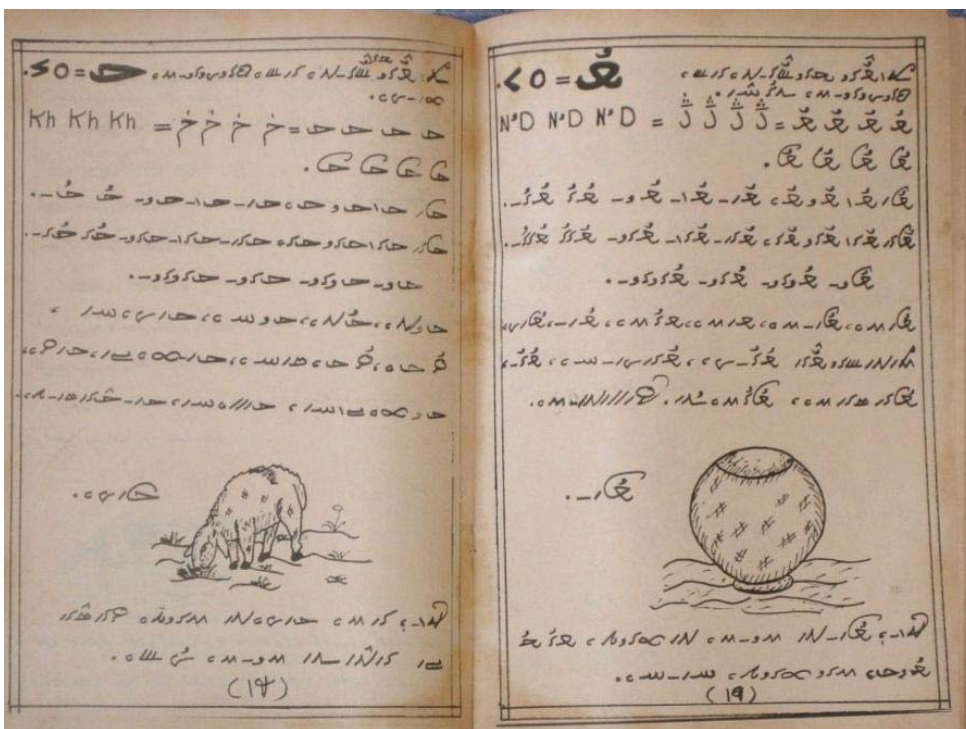
Figure 11. A primer by Assane Faye. On the right, the letter NDA. In the first line three Latin *N'D*'s are given, four unencoded Arabic ز̌'s, four GARAY SMALL LETTER NDA's ز̌ ز̌ ز̌ ز̌, then four GARAY CAPITAL LETTER NDA's Ꝺ Ꝺ Ꝺ Ꝺ immediately below them. On the left, the letter XA. In the first line three Latin *Kh*'s are given, four Arabic خ's, four GARAY SMALL LETTER XA's ﺣﺣﺣﺣ, then four GARAY CAPITAL LETTER XA's Ꝿ Ꝿ Ꝿ Ꝿ immediately below them.
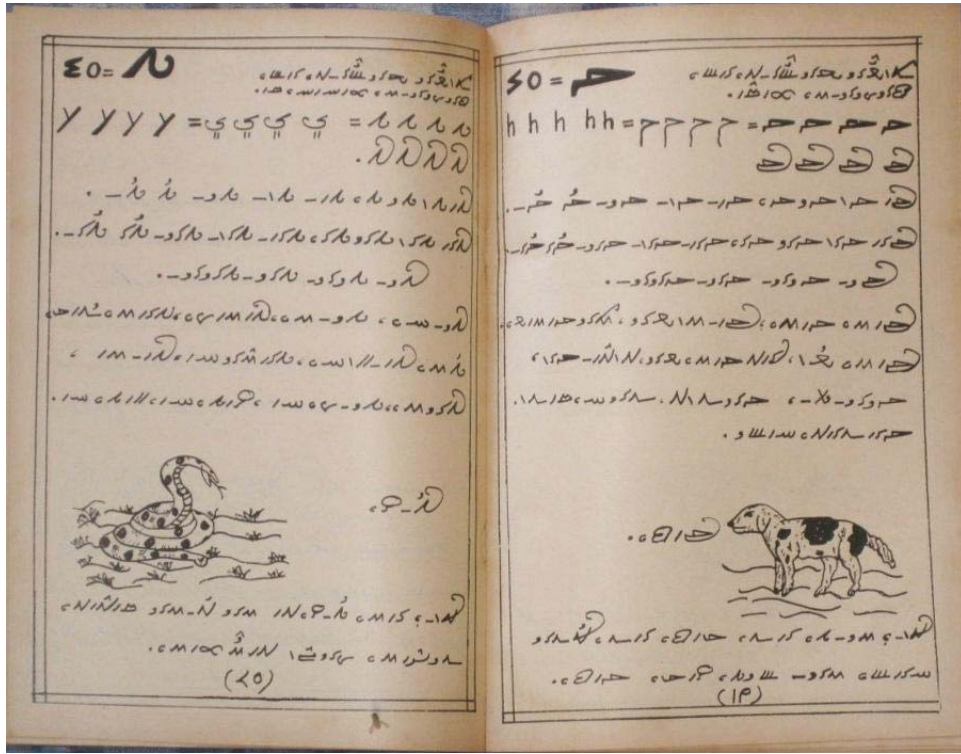
Figure 12. A primer by Assane Faye. On the right, the letter HA. In the first line five Latin *h*'s are given, four Arabic ح's, four GARAY SMALL LETTER HA's ﺤﺤﺤﺤ, then four GARAY CAPITAL LETTER HA's ꧑꧑꧑꧑ immediately below them. On the left, the letter YA. In the first line four Latin *Y*'s are given, four Arabic ي's, four GARAY SMALL LETTER YA's ∧∧∧∧, then four GARAY CAPITAL LETTER YA's immediately below them.
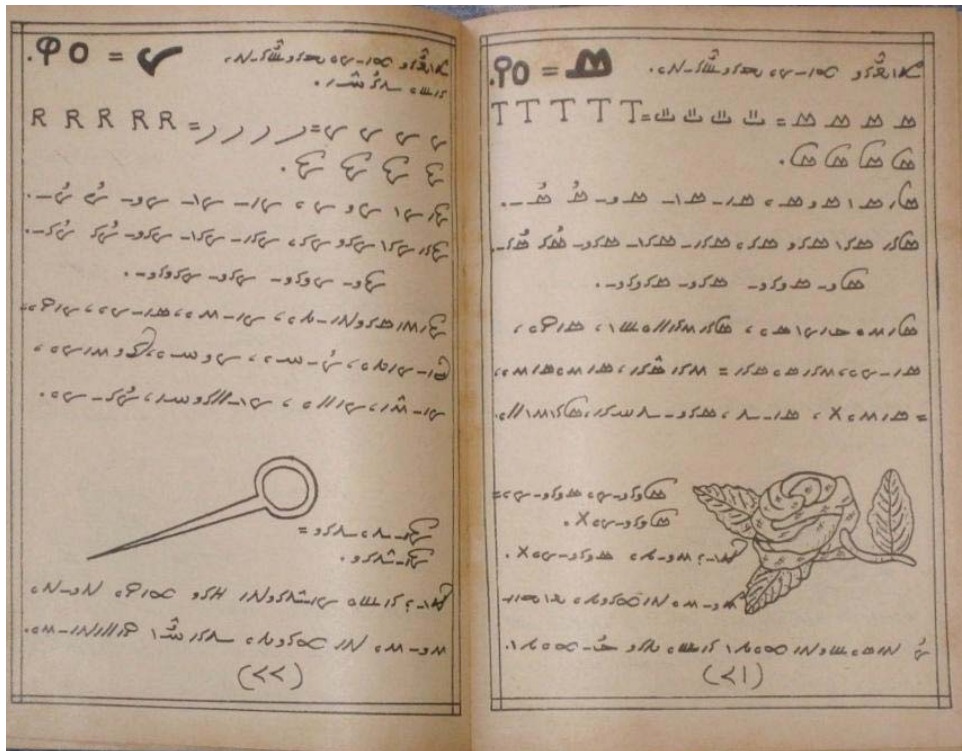
Figure 13. A primer by Assane Faye. On the right, the letter TA. In the first line four Latin *T*'s are given, four Arabic ت's, four GARAY SMALL LETTER TA's ﻻﻻﻻﻻ, then four GARAY CAPITAL LETTER TA's immediately below them. On the left, the letter RA. In the first line five Latin *R*'s are given, four Arabic ر's, four GARAY SMALL LETTER RA's, then four GARAY CAPITAL LETTER RA's immediately below them.

16
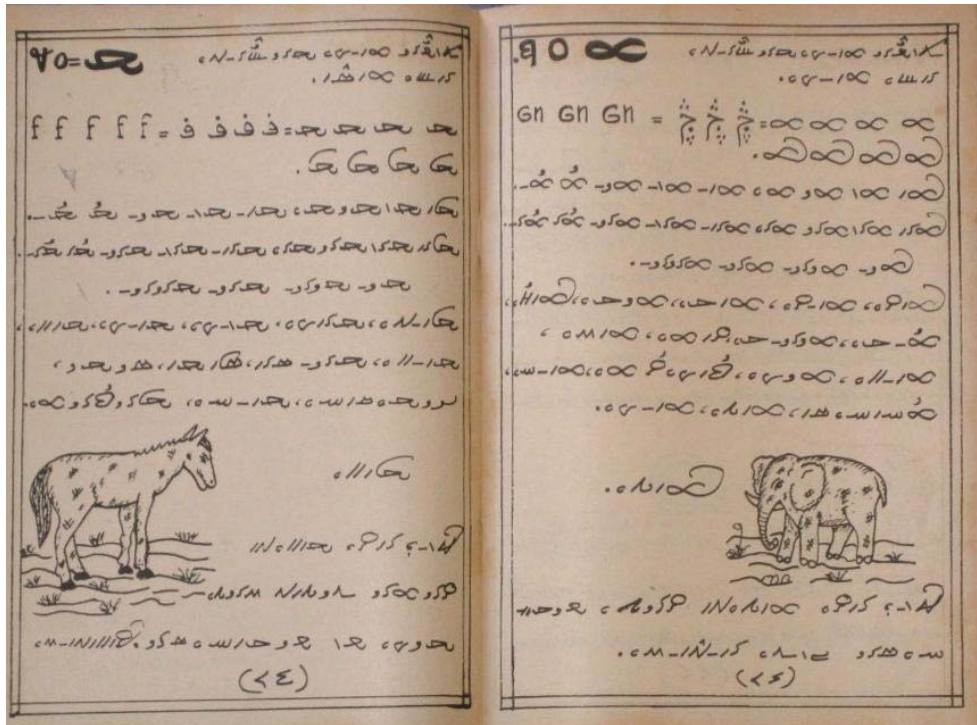
Figure 14. A primer by Assane Faye. On the right, the letter NYA. In the first line three Latin *Gn*'s are given, three unencoded Arabic ‌‌چ's (perhaps the dot below is a diacritic for -*e*), four GARAY SMALL LETTER NYA's ∞∞∞∞, then four GARAY CAPITAL LETTER NYA's ∽∽∽∽ immediately below them. On the left, the letter FA. In the first line five Latin *f*'s are given, four Arabic ف's, four GARAY SMALL LETTER FA's ى‌ى‌ى‌ى then four GARAY CAPITAL LETTER FA's ᏟᏟᏟᏟ below them.
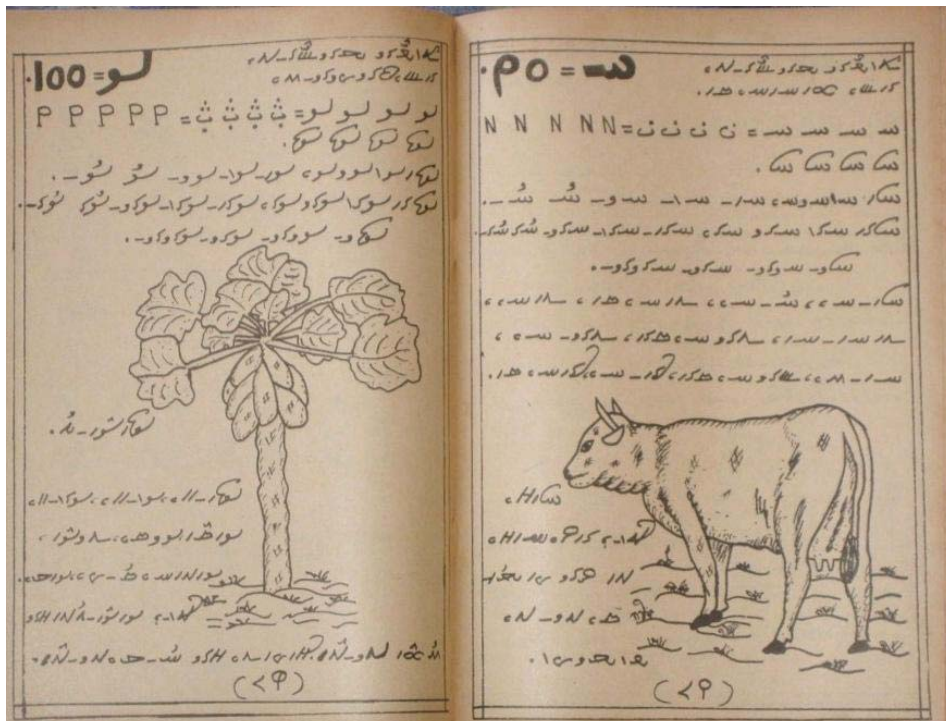
Figure 15. A primer by Assane Faye. On the right, the letter NA. In the first line five Latin *N*'s are given, four Arabic ن's, four GARAY SMALL LETTER NA's سسسس, then four GARAY CAPITAL LETTER NA's ᏟᏟᏟᏟ immediately below them. On the left, the letter PA. In the first line five Latin *P*'s are given, four Arabic ث's (perhaps the dot below is a diacritic for -*e*), four GARAY SMALL LETTER PA's وووو, then four GARAY CAPITAL LETTER PA's ᏔᏔᏔᏔ immediately below them.
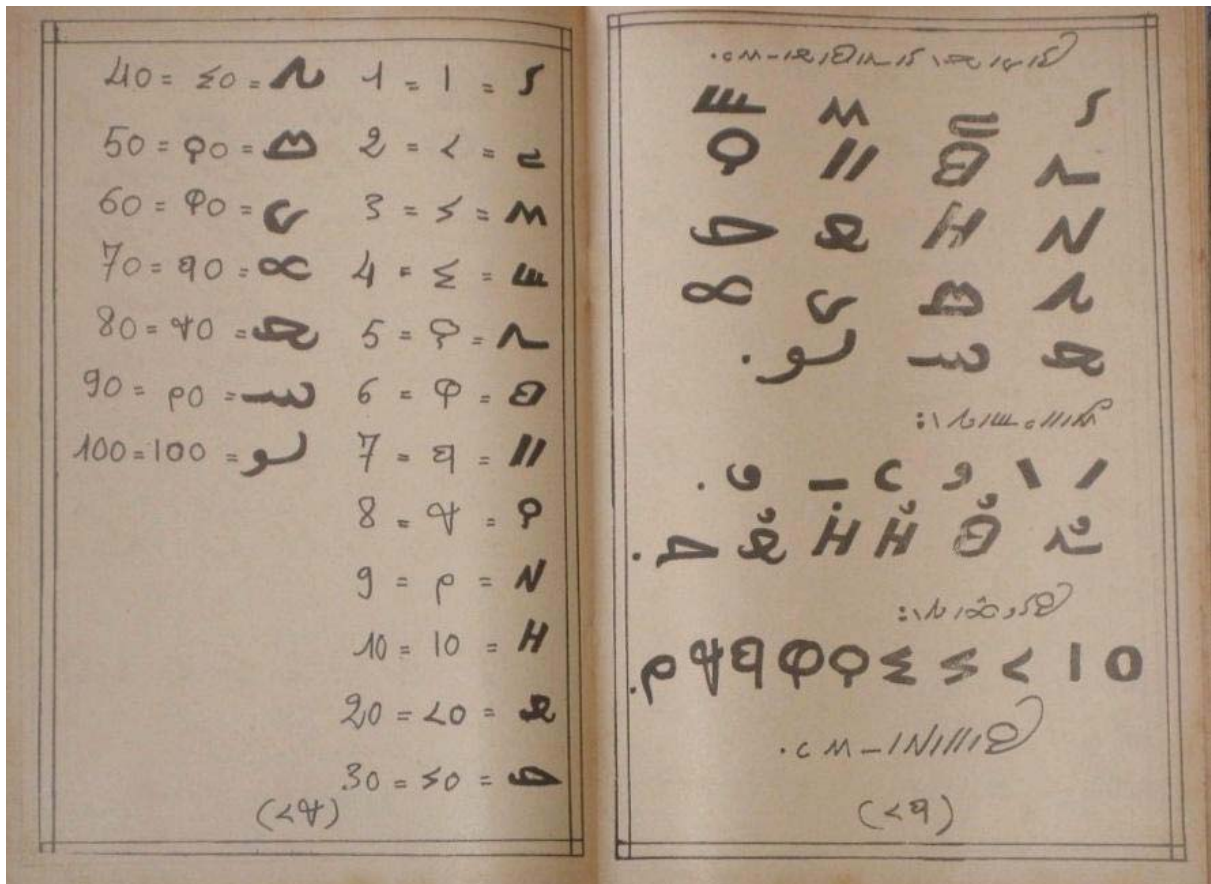
Figure 16. A primer by Assane Faye. On the right, a summary of lower-case forms; note the capital letter at the beginning of each rubric line. On the left, the digits and numeric values of the letters.
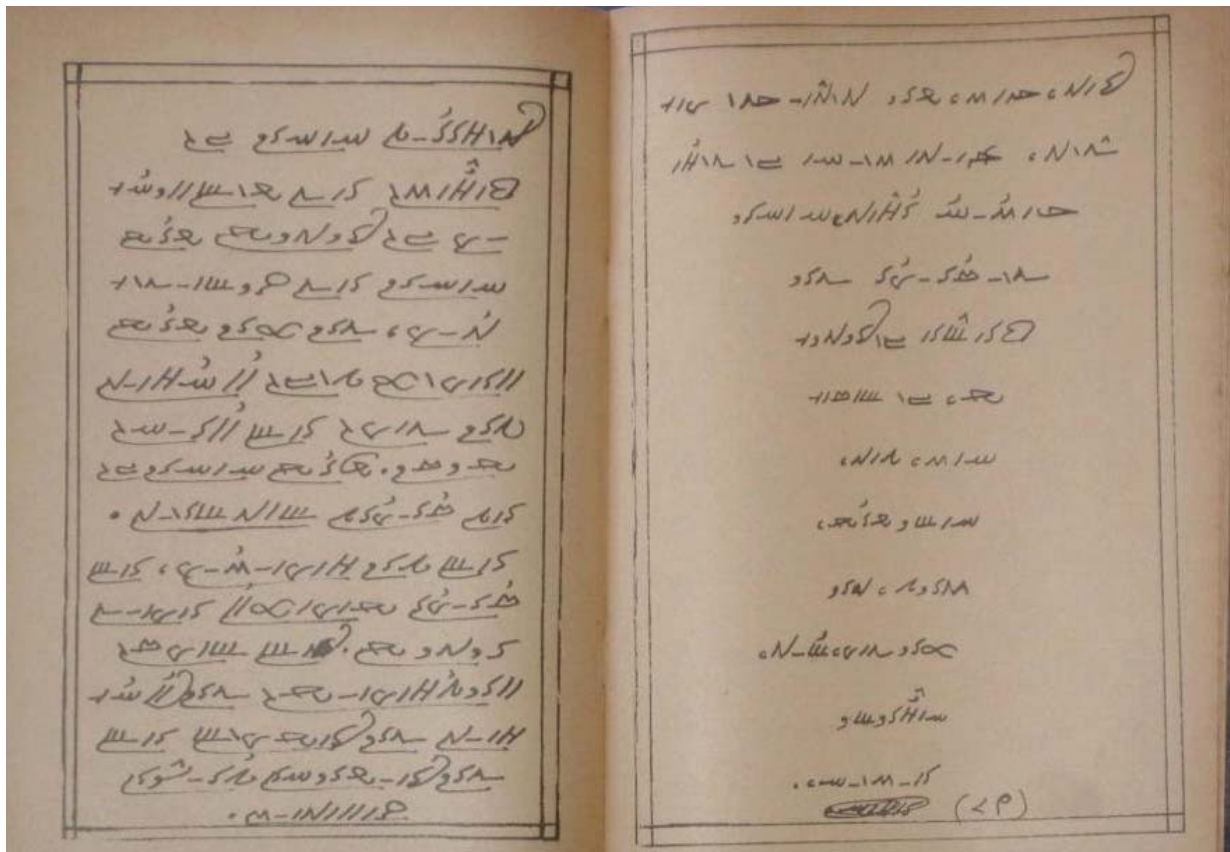

Figure 17. The final pages of a primer by Assane Faye.
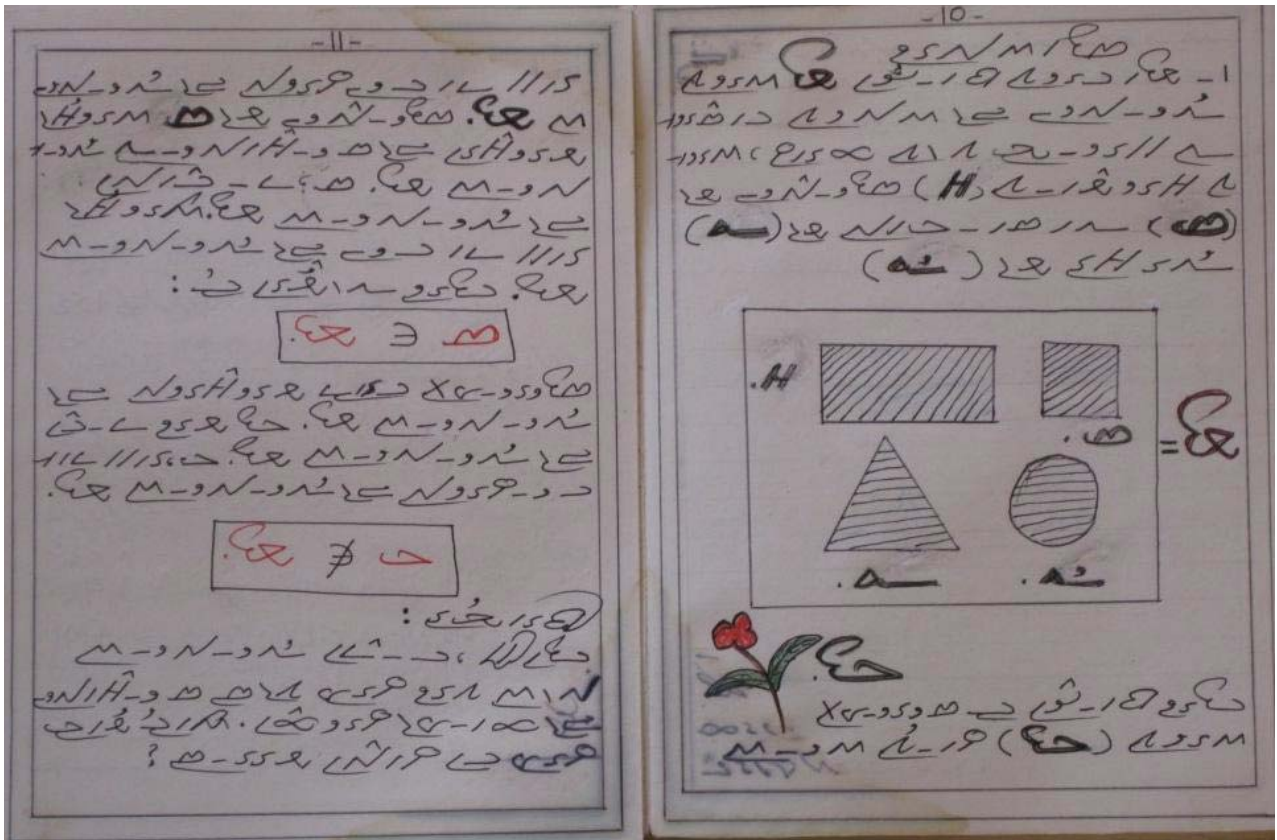Note the word-underlining on the left but not on the right.

Figure 18. From a maths primer by Assane Faye, 1982, showing lower-case letters and upper case letters.
On the left is shown $\mathcal{G}$ ∋ ⋀ (*D* ∋ *t*) and $\mathcal{G}$ ∌ ⌣ (*D* ∌ *x*).
On the right, $\mathcal{G}$, ⋀, *H*, ⌣, ⌣ (*D, t, g, b, mb*).

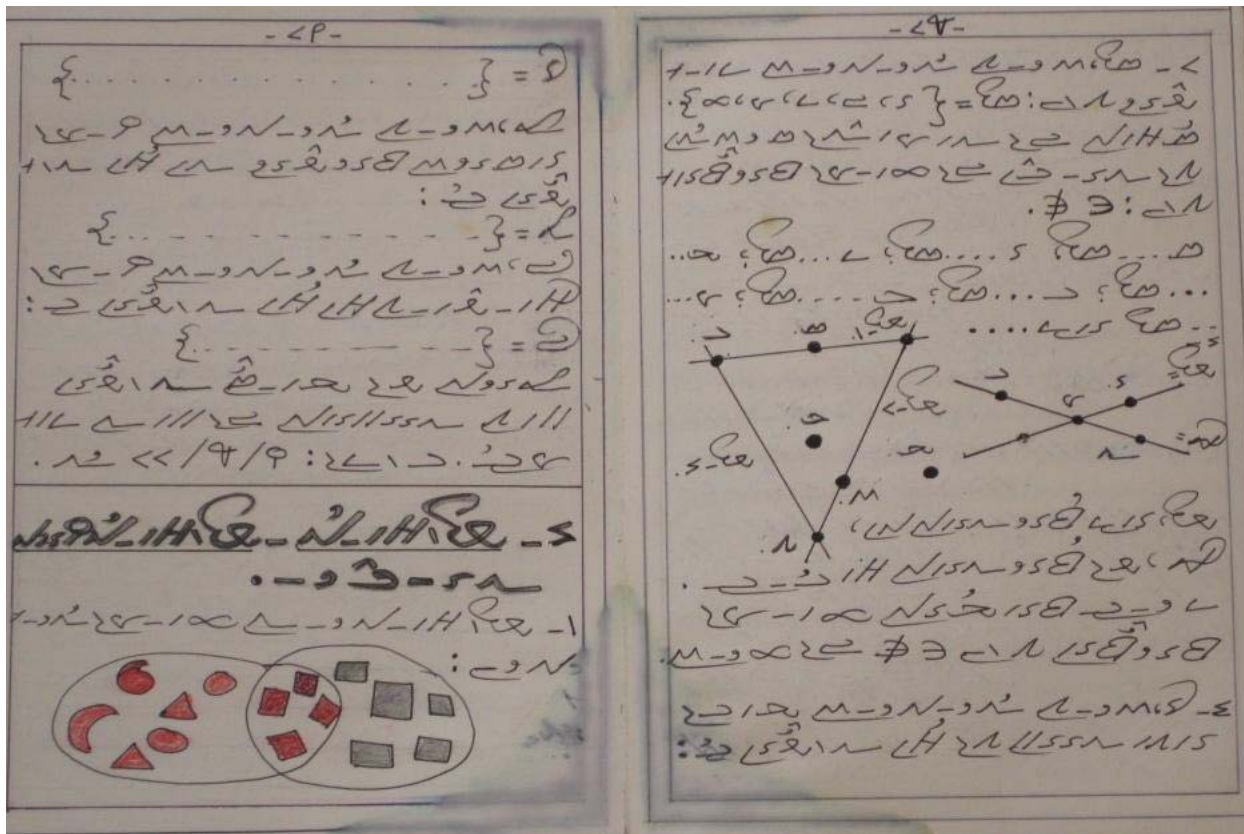**Figure 19.** From a maths primer by Assane Faye, 1982. showing lower-case letters and upper case letters.
In the triangle, the terms I-$\mathcal{G}$, ɭ-$\mathcal{G}$, ⅂-$\mathcal{G}$, ⋀, ⋏, ⋍, ⋀, ⌣ (*D-1, D-2, D-3, m, y, n, t, x*) appear.
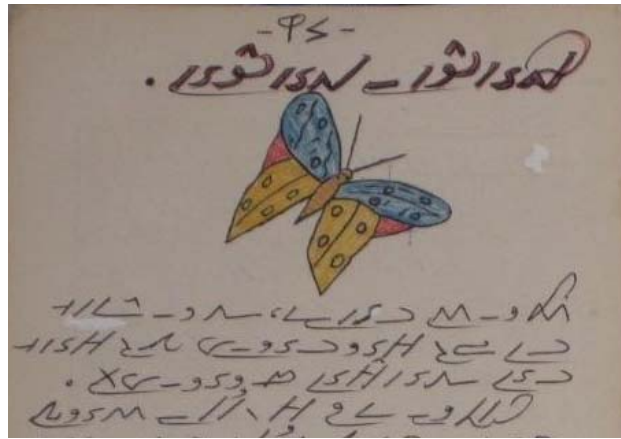
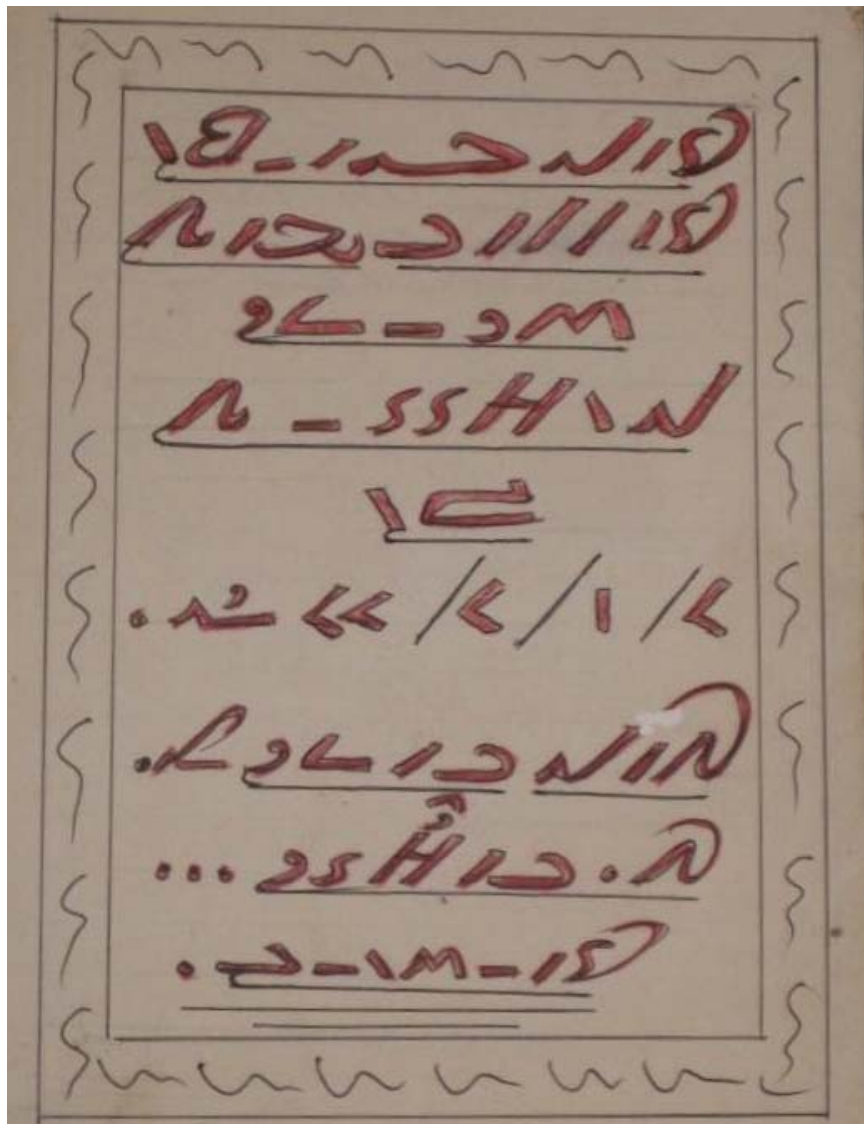**Figure 20.** From a book of stories by Assane Faye. The title reads ﻣ*Ləppāləppə*

Figure 21. Title page of a book by Assane Faye.
In the transcription below, letters with a swash tail are written in Latin italic.

ﻣﻰﻟﺴﺎﻟ	Alhāj*i* Asan fa*y*
ﻣﺴﻰﻟﺴﺎﻟ	mɔkɔ ligē*y* c*i* 22/2/1/2 mb.
ﻣﺴﻰﻟ...	Yalnakɔ B. Y. naŋg*u*…
ﻣﺴﻰ	Āmī*n*.

Figure 22. A woman writing in Garay. Note the map to the left with names written in Garay script.
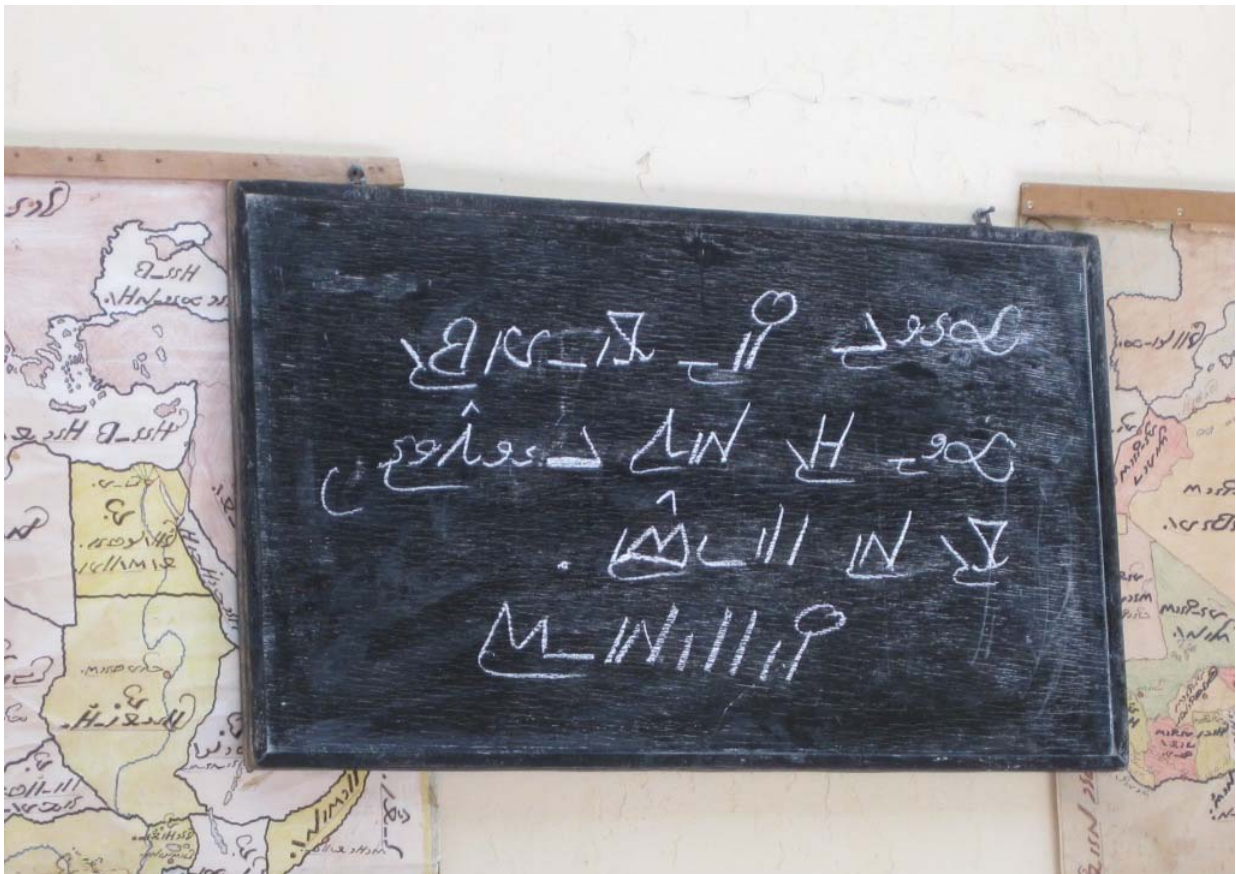
Figure 23. Garay text. The final swash has been added to the glyphs, but note that on the map it is not present. This indicates that it is a stylistic variant, not an obligatory feature of the writing system.
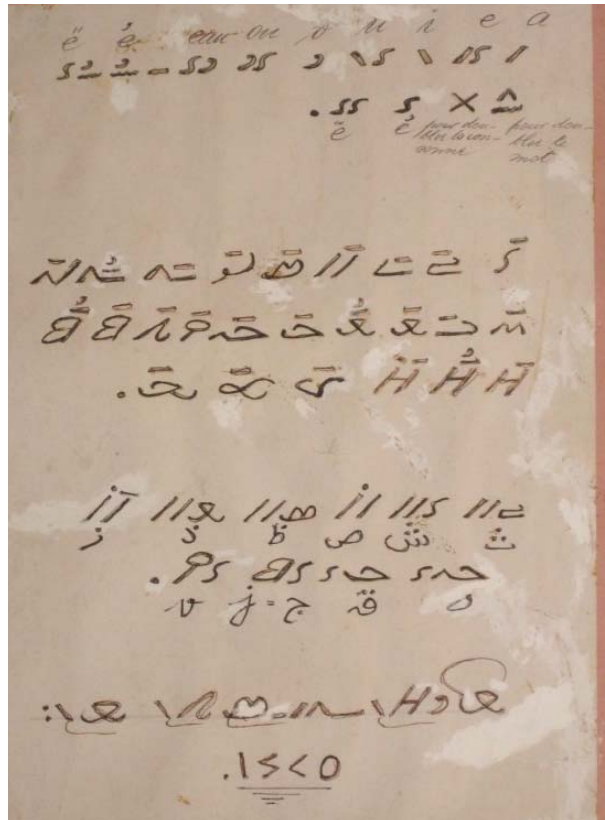
Figure 24. A primer by Assane Faye. Shown here are some examples of characters used for transliteration of Arabic and Latin. Below is a transcription in Garay, Latin, Arabic, and Latin.

η š ز z	₨ ds ذ *d̲*	₪ ts ظ *ẓ*	*ii* ص *ṣ*	₪S Ɂs ش š	₪ cs ث *t*
	₨S Ɂw v	ℰS Ɂj ج j	₪S xɁ ق q	₨S hɁ ه h[?]	
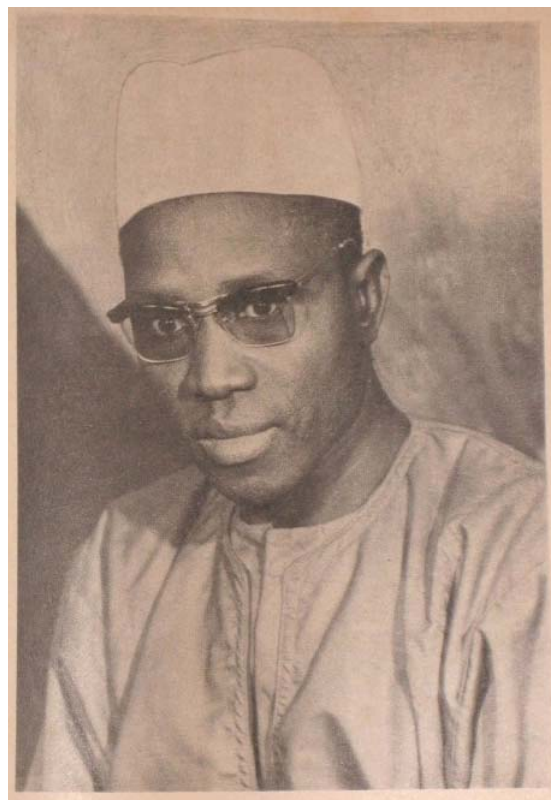
Figure 25. Assane Faye, some years ago.

	10D4	10D5	10D6	10D7	10D8
0	10D40	10D50	10D60	10D70	10D80
1	10D41	10D51	10D61	10D71	10D81
2	10D42	10D52	10D62	10D72	10D82
3	10D43	10D53	10D63	10D73	10D83
4	10D44	10D54	10D64	10D74	10D84
5	10D45	10D55	10D65	10D75	10D85
6	10D46	10D56	10D66	10D76	10D86
7	10D47	10D57	10D67	10D77	10D87
8	10D48	10D58	10D68	10D78	10D88
9	10D49	10D59	▨	10D79	▨
A	10D4A	10D5A	▨	10D7A	▨
B	10D4B	10D5B	▨	10D7B	▨
C	10D4C	10D5C	▨	10D7C	▨
D	10D4D	10D5D	▨	10D7D	▨
E	10D4E	10D5E	▨	10D7E	▨
F	10D4F	10D5F	10D6F	10D7F	10D8F

Digits

10D40	O	GARAY DIGIT ZERO
10D41	I	GARAY DIGIT ONE
10D42	ℓ	GARAY DIGIT TWO
10D43	ƻ	GARAY DIGIT THREE
10D44	ꝥ	GARAY DIGIT FOUR
10D45	♀	GARAY DIGIT FIVE
10D46	φ	GARAY DIGIT SIX
10D47	ꝗ	GARAY DIGIT SEVEN
10D48	Ɏ	GARAY DIGIT EIGHT
10D49	P	GARAY DIGIT NINE

Vowel signs and other marks

10D4A	◌	GARAY VOWEL SIGN A
10D4B	◌	GARAY VOWEL SIGN I
10D4C	◌	GARAY VOWEL SIGN O
10D4D	◌	GARAY VOWEL SIGN E
10D4E	◌	GARAY SUKUN
10D4F	◌	GARAY VOWEL LENGTH MARK

Capital consonant letters

10D50	ꝟ	GARAY CAPITAL LETTER A
10D51	ꝏ	GARAY CAPITAL LETTER CA
10D52	ꝏ	GARAY CAPITAL LETTER MA
10D53	ꝏ	GARAY CAPITAL LETTER KA
10D54	ꝏ	GARAY CAPITAL LETTER BA
10D55	ꝏ	GARAY CAPITAL LETTER MBA
10D56	ꝏ	GARAY CAPITAL LETTER JA
10D57	ꝏ	GARAY CAPITAL LETTER NJA
10D58	ꝏ	GARAY CAPITAL LETTER SA
10D59	ꝏ	GARAY CAPITAL LETTER WA
10D5A	ꝏ	GARAY CAPITAL LETTER LA
10D5B	ꝏ	GARAY CAPITAL LETTER GA
10D5C	ꝏ	GARAY CAPITAL LETTER NGGA
10D5D	ꝏ	GARAY CAPITAL LETTER NGA
10D5E	ꝏ	GARAY CAPITAL LETTER DA
10D5F	ꝏ	GARAY CAPITAL LETTER NDA
10D60	ꝏ	GARAY CAPITAL LETTER XA
10D61	ꝏ	GARAY CAPITAL LETTER HA
10D62	ꝏ	GARAY CAPITAL LETTER YA
10D63	ꝏ	GARAY CAPITAL LETTER TA
10D64	ꝏ	GARAY CAPITAL LETTER RA
10D65	ꝏ	GARAY CAPITAL LETTER NYA
10D66	ꝏ	GARAY CAPITAL LETTER FA
10D67	ꝏ	GARAY CAPITAL LETTER NA
10D68	ꝏ	GARAY CAPITAL LETTER PA

Reduplication mark

10D6F	◌	GARAY COMBINING GEMINATION MARK

Small consonant letters

10D70	ꝇ	GARAY SMALL LETTER A
10D71	ꝇ	GARAY SMALL LETTER CA
10D72	ꝇ	GARAY SMALL LETTER MA
10D73	ꝇ	GARAY SMALL LETTER KA
10D74	ꝇ	GARAY SMALL LETTER BA
10D75	ꝇ	GARAY SMALL LETTER MBA
10D76	ꝇ	GARAY SMALL LETTER JA
10D77	ꝇ	GARAY SMALL LETTER NJA
10D78	ꝇ	GARAY SMALL LETTER SA
10D79	ꝇ	GARAY SMALL LETTER WA
10D7A	ꝇ	GARAY SMALL LETTER LA
10D7B	ꝇ	GARAY SMALL LETTER GA
10D7C	ꝇ	GARAY SMALL LETTER NGGA
10D7D	ꝇ	GARAY SMALL LETTER NGA
10D7E	ꝇ	GARAY SMALL LETTER DA
10D7F	ꝇ	GARAY SMALL LETTER NDA
10D80	ꝇ	GARAY SMALL LETTER XA
10D81	ꝇ	GARAY SMALL LETTER HA
10D82	ꝇ	GARAY SMALL LETTER YA
10D83	ꝇ	GARAY SMALL LETTER TA
10D84	ꝇ	GARAY SMALL LETTER RA
10D85	ꝇ	GARAY SMALL LETTER NYA
10D86	ꝇ	GARAY SMALL LETTER FA
10D87	ꝇ	GARAY SMALL LETTER NA
10D88	ꝇ	GARAY SMALL LETTER PA

Reduplication mark

10D8F	X	GARAY REDUPLICATION MARK

A. Administrative

1. Title

Proposal for encoding the Garay script in the SMP of the UCS

2. Requester's name

UC Berkeley Script Encoding Initiative (Universal Scripts Project)

3. Requester type (Member body/Liaison/Individual contribution)

Liaison contribution.

4. Submission date

2016-03-22

5. Requester's reference (if applicable)

6. Choose one of the following:

6a. This is a complete proposal

Yes.

6b. More information will be provided later

No.

B. Technical – General

1. Choose one of the following:

1a. This proposal is for a new script (set of characters)

Yes.

Proposed name of script

Garay.

1b. The proposal is for addition of character(s) to an existing block

No.

Name of the existing block

2. Number of characters in proposal

68.

3. Proposed category (select one from below – see section 2.2 of P&P document): (A-Contemporary; B.1-Specialized (small collection); B.2-Specialized (large collection); C-Major extinct; D-Attested extinct; E-Minor extinct; F-Archaic Hieroglyphic or Ideographic; G-Obscure or questionable usage symbols)

Category A.

4a. Is a repertoire including character names provided?

Yes.

4b. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?

Yes.

4c. Are the character shapes attached in a legible form suitable for review?

Yes.

5a. Font related: Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?

Andrij Rovenchak and Michael Everson.

5b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.)

Andrij Rovenchak

6a. References. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?

Yes.

6b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?

Yes.

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)?

Yes.

8. 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.

See above.

C. Technical – Justification

1. Has this proposal for addition of character(s) been submitted before? If YES, explain.

Yes. N4044 (L2/11-181), N4261 (L2/1)

2a. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)?

Yes.

2b. If YES, with whom?

Assan Faye.

2c. If YES, available relevant documents

3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?

No.

4a. The context of use for the proposed characters (type of use; common or rare)
Relatively rare, but with potential for revival.
4b. Reference
5a. Are the proposed characters in current use by the user community?
Yes.
5b. If YES, where?
Scholars and some local use in Senegal and the Gambia.
6a. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?
No.
6b. If YES, is a rationale provided?
6c. If YES, reference
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?
Yes.
8a. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?
No.
8b. If YES, is a rationale for its inclusion provided?
8c. If YES, reference
9a. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?
No.
9b. If YES, is a rationale for its inclusion provided?
9c. If YES, reference
10a. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character?
Yes.
10b. If YES, is a rationale for its inclusion provided?
Yes. Resemblances are superficial.
10c. If YES, reference
11a. Does the proposal include use of combining characters and/or use of composite sequences (see clauses 4.12 and 4.14 in ISO/IEC 10646-1: 2000)?
Yes.
11b. If YES, is a rationale for such use provided?
No.
11c. If YES, reference
11d. Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?
No.
11e. If YES, reference
12a. Does the proposal contain characters with any special properties such as control function or similar semantics?
No.
12b. If YES, describe in detail (include attachment if necessary)
13a. Does the proposal contain any Ideographic compatibility character(s)?
No.
13b. If YES, is the equivalent corresponding unified ideographic character(s) identified?