Consideration of the encoding of Garay with updated user feedback (revised)

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1. Introduction

This contribution to Garay encoding has been developed as a response to Michael Everson's 2016 revised proposal (L2/16-069, N4709) and to add further clarification to issues that were addressed in L2/19-163 as responses to the Script Ad Hoc recommendations referenced in L2/18-168 and L2/22-023 based on further reflection by a son of the inventor of the script on current practices in usage.

We mostly adhere to Michael Everson's proposal L2/16-069 regarding the encoding ranges and general principles of character ordering.

2. Consonants

Since the shapes of the Garay diacritic ◌̇ to mark the vowel [ɛ] and the symbol used to write prenasalized consonants (◌̣ ◌̣ ◌̣ ◌̣) are similar, we took into account the UTC feedback L2/19-163 and decomposed the prenasalized letters as follows:

◌̣ [mb] = ◌ + ◌̇ (U+10D74 GARAY SMALL LETTER BA, U+10D69 GARAY VOWEL SIGN E)

◌̣ [mb] = ◌ + ◌̇ (U+10D54 GARAY CAPITAL LETTER BA, U+10D69 GARAY VOWEL SIGN E)

◌̣ [ṇd] = ◌ + ◌̇ (U+10D7A GARAY SMALL LETTER DA, U+10D69 GARAY VOWEL SIGN E)

◌̣ [ṇd] = ◌ + ◌̇ (U+10D5A GARAY CAPITAL LETTER DA, U+10D69 GARAY VOWEL SIGN E)

◌̣ [ɲɟ] = ◌ + ◌̇ (U+10D75 GARAY SMALL LETTER JA, U+10D69 GARAY VOWEL SIGN E)

◌̣ [ɲɟ] = ◌ + ◌̇ (U+10D55 GARAY CAPITAL LETTER JA, U+10D69 GARAY VOWEL SIGN E)

◌̣ [ŋg] = ◌ + ◌̇ (U+10D79 GARAY SMALL LETTER GA, U+10D69 GARAY VOWEL SIGN E)

◌̣ [ŋg] = ◌ + ◌̇ (U+10D59 GARAY CAPITAL LETTER GA, U+10D69 GARAY VOWEL SIGN E)

The combining dot above is used for the original letter of the Garay alphabet

◌̇ [ŋ] = ◌ + ◌̇ (U+10D79 GARAY SMALL LETTER GA, U+10D6B GARAY COMBINING DOT ABOVE)

◌̇ [ŋ] = ◌ + ◌̇ (U+10D59 GARAY CAPITAL LETTER GA, U+10D6B GARAY COMBINING DOT ABOVE)

as well as to represent foreign sounds

/̇/ [sˤ] (Arabic ص) = // + ȯ (U+10D76 GARAY SMALL LETTER SA, U+10D6B GARAY COMBINING DOT ABOVE)

Foreign sounds can be also obtained using the combining double dot above (diaeresis):

/̈/ [z] (Arabic ز) = // + ̈o
        (U+10D76 GARAY SMALL LETTER SA, U+10D6C GARAY COMBINING DOUBLE DOT ABOVE)

and by using digraphs:

ﺣ ﺣ [q] (ق) = ﺣ + ﺣ (U+10D7B GARAY SMALL LETTER XA, U+10D70 GARAY SMALL LETTER A)

//ﺣ š [ʃ] = ﺣ + // (U+10D70 GARAY SMALL LETTER A, U+10D76 GARAY SMALL LETTER SA)

Ꮲﺣ [v] = ﺣ + Ᏼ (U+10D70 GARAY SMALL LETTER A, U+10D77 GARAY SMALL LETTER WA)

Geminate (double or long) consonants are represented using a diacritic akin to the circumflex mark:

⌢ kk [kː] = ⌐ + ̂o
        (U+10D73 GARAY SMALL LETTER KA, U+10D6A GARAY CONSONANT GEMINATION MARK)

In the case of prenasalized consonants, two diacritics are required:

ẑ̇ ndd [ndː] = ᴢ + ̇o + ̂o (U+10D7A GARAY SMALL LETTER DA, U+10D69 GARAY VOWEL SIGN E ,
        U+10D6A GARAY CONSONANT GEMINATION MARK)

For legacy purposes, in order to be able to digitize older Garay manuscripts properly, we suggest encoding old letter shapes for [k] and [n] (with three "teeth") separately at

     10D64   ᴟ   GARAY CAPITAL LETTER OLD KA

     10D65   ᴐᴡ   GARAY CAPITAL LETTER OLD NA

     10D84   ᴟ   GARAY SMALL LETTER OLD KA

     10D85   ᴖ   GARAY SMALL LETTER OLD NA

in addition to modern shapes
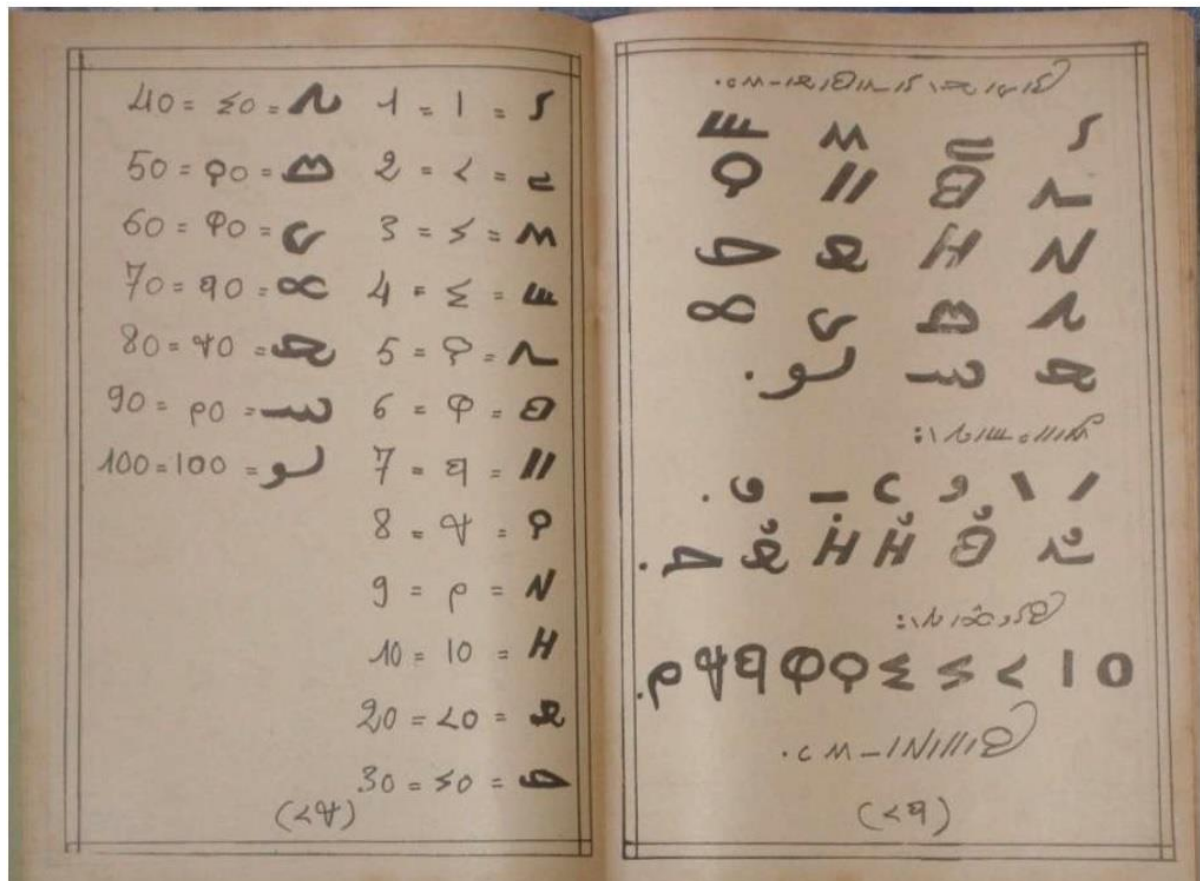
     10D53   ᗡ   GARAY CAPITAL LETTER KA

     10D61   ᝪ   GARAY CAPITAL LETTER NA

     10D73   ⌐   GARAY SMALL LETTER KA

     10D81   ᴅ   GARAY SMALL LETTER NA

The ordering of consonants is based on the numerical values of the respective letters, see Fig. 1.

Figure 1: Letter ordering in Garay. Note old shapes for KA and NA.
Source: Assane Faye's handwritten primer; digitized at
https://catalogingafricana.files.wordpress.com/2016/03/fayems1.pdf

3. Vowels

There are a few changes in the representation of vowels. The major one is the encoding of two shapes of the "squiggle" ſ with different heights (see Fig. 2). This reflects the modern usage of the Garay alphabet. Below, examples of vowels are shown, with the complete list of open syllables given in Table 2 (see page 13). Note that vowel length is marked by a horizontal line

    10D4E   _   GARAY VOWEL LENGTH MARK

Three vowels are denoted by simple symbols:

ba [ba]	/‿	ka [ka]	/∟
baa [ba:]	_/‿	kaa [ka:]	_/∟
bi [bi]	\‿	ki [ki]	\∟
bii [bi:]	_\‿	kii [ki:]	_\∟
bo [bɔ]	,‿	ko [kɔ]	,∟
boo [bɔ:]	_,‿	koo [kɔ:]	_,∟

3

Another two vowels can be marked by a diacritic depending on the preceding consonant:

be [bɛ]	᷉	ke [kɛ]	∠'
bee [be:]		kee [kɛ:]	
bé [be]		ké [ke]	
bée [be:]		kée [ke:]	

Note that in older orthography, bé [be] was ꜝ. The above examples reflect modern usage.

The combining diacritic

     10D69　ȯ　　GARAY VOWEL SIGN E

is used with letters not existing as prenasalized variants. Otherwise, a small "squiggle"

     10D4D　ᷧ　　GARAY VOWEL SIGN EU

is applied. For geminate consonants, the following principle holds:

ndde [nd:ɛ]		kke [k:ɛ]	
nddé [nd:e]		kké [k:e]	

The encoding order for *kke* is the same as for *ndd*:

kke [k:ɛ] = ∠ + ȯ + ȯ̂　(U+10D73 GARAY SMALL LETTER KA, U+10D69 GARAY VOWEL SIGN E ,
　　　U+10D6A GARAY CONSONANT GEMINATION MARK)

Finally, four vowels are denoted by two symbols, one of which is the small "squiggle":

bë [bə]		kë [kə]	
bëë [bə:]		këë [kə:]	
bih* [biʰ]		ki [kih]	
biih [bi:ʰ]		kii [ki:h]	
bó [bo]		kó [ko]	
bóo [bo:]		kóo [ko:]	
bu [bu]		ku [ku]	
buu [bu:]		kuu [ku:]	

* The *ih* digraph is used here to denote a special "strong" articulation of [i] (conventionally designated as [iʰ]). Such pronunciation is not reflected in the official Roman orthography for Wolof and is a dialectal feature. Whether it is related to [i̠], a −ATR (retracted tongue root) pair for [i], requires additional studies in the domain of phonology. In previous Unicode proposals for Garay this sound was incorrectly denoted by ü following Dalby's table (Dalby 1966).

Word-initially, vowels require a special carrier in the role similar to the Arabic *'aleph* (ı) being a larger "squiggle":
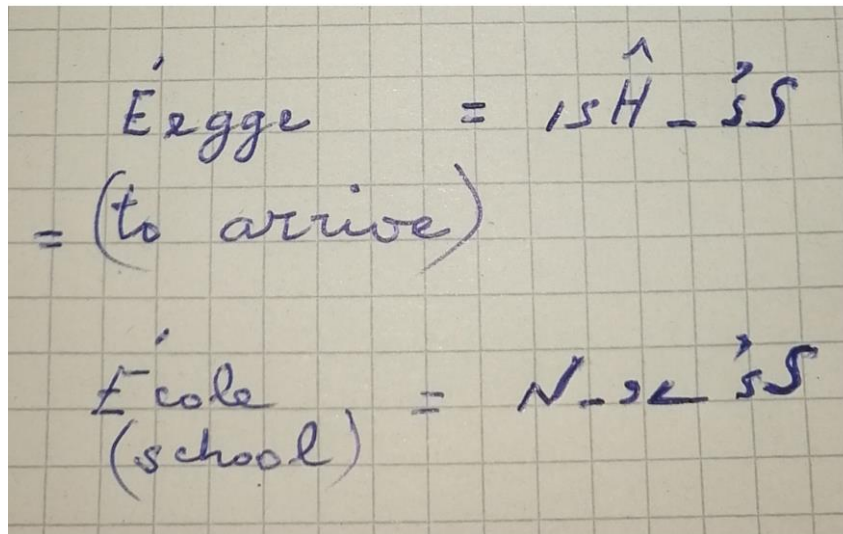
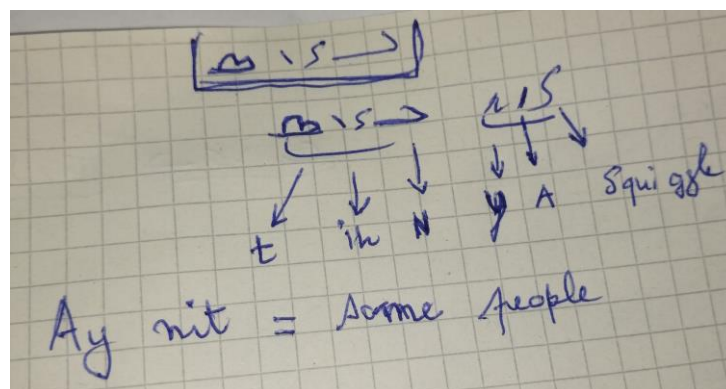10D50　ʓ　GARAY CAPITAL LETTER A

10D70　�ı　GARAY SMALL LETTER A

Namely,

u [u]	ó [o]	o [ɔ]	ih [ih]	i [i]	é [e]	e [ɛ]	ë [ə]	a [ɐ], à [a]
ꗟꗟ	ꗟꗟ	ꗟ	ꗟꗟ	ꗟ	ꗟꗟꗟ	ꗟꗟ	ꗟꗟꗟ	ꗟꗟ

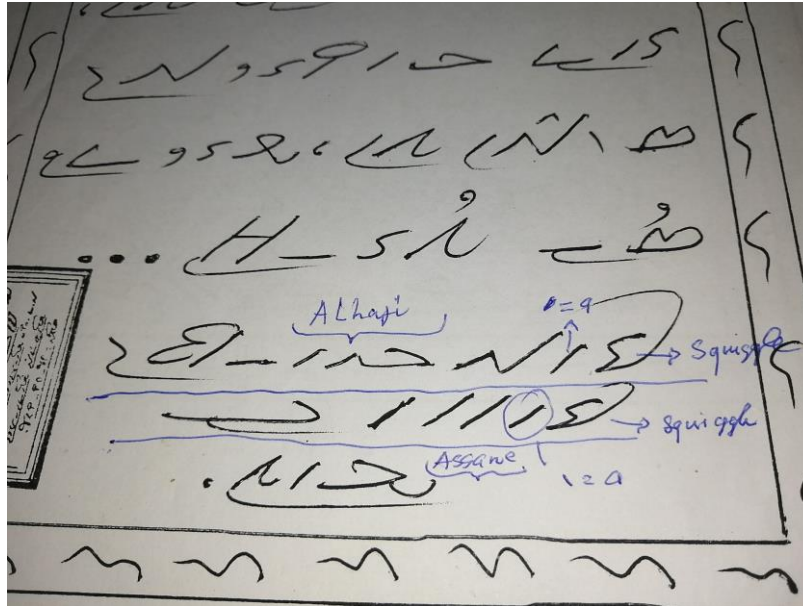Examples of vowel usage are shown in Figs. 2–7.

Figure 2: Examples of word-initial [ɛ] written with "squiggles" of different heights: ꗟꗟ.
Source: handwritten sample by Abdou Souleye Faye

Figure 3: The Wolof words *Ay nit* 'some people': ꗟꗟꗟ　ꗟꗟꗟ.
Source: handwritten sample by Abdou Souleye Faye

Figure 4: The last three lines contain proper names, Alhaji Assane Fay:

Source: handwritten sample by Assane Faye with comments by Abdou Souleye Faye (in blue ink)
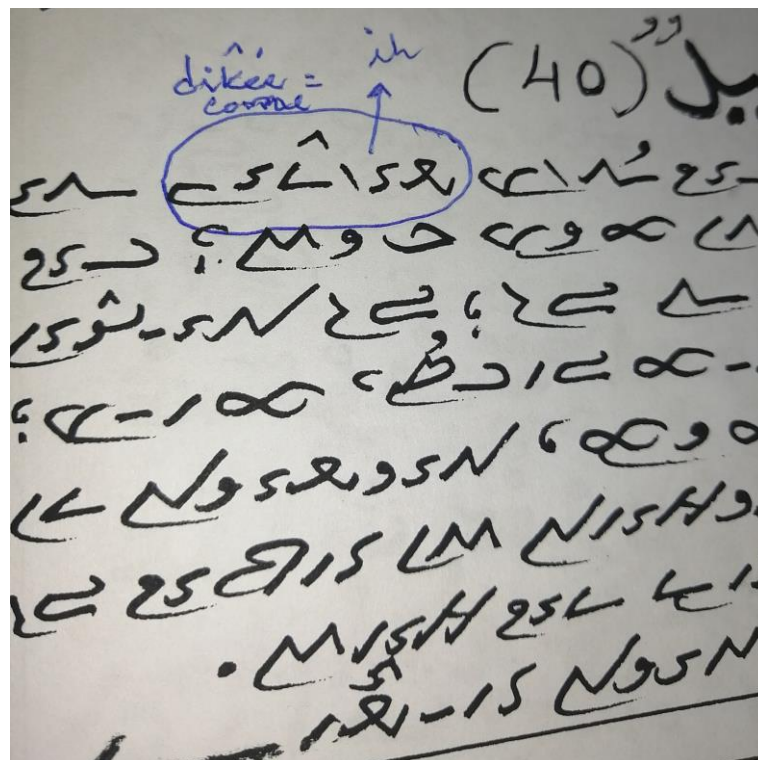
Figure 5: The syllable *kkée* in the encircled word *dikkée* 'come' is written _s͡ instead of _s͡ for simplicity (cf. Fig. 6). Note several occurrences of the Arabic comma (،) and semicolon (؛).
Source: handwritten sample by Assane Faye with comments by Abdou Souleye Faye (in blue ink)

Figure 6: The syllable *nné* (third row from below on the left) in the word G*éennéaji* is written ‎ﺲ᷎ (cf. Fig. 5). Note slanted symbols ⊤ and ⌐ for GARAY PLUS SIGN and GARAY MINUS SIGN, respectively. Page numbers on the top read 122 (‏|٢٢, right) and 123 (‏|٢٣, left), in the order typical of books in right-to-left scripts. Source: Assane Faye's manuscript *Mathematique moderne. Cours secondaire, premier anné*; digitized at https://catalogingafricana.files.wordpress.com/2016/03/fayems2-1.pdf

Vowel symbols do not appear as standalone characters. Words initially, they are preceded by ‎𝔇 or ‎ﺲ (GARAY CAPITAL LETTER A or GARAY SMALL LETTER A). Word internally and word finally, two consecutive vowels or diphthongs are not allowed by Wolof phonotactics, so epenthetic consonants are inserted, cf. Fig. 7.

Figure 7: Examples of words with initial vowels. Note initial ‎𝔇. In the second line, 'Australia' is written as ‎ﺲ᷎ [ostɛrɛliya], with ‎∿ [y] separating [i] and [a]. Source: handwritten sample by Abdou Souleye Faye
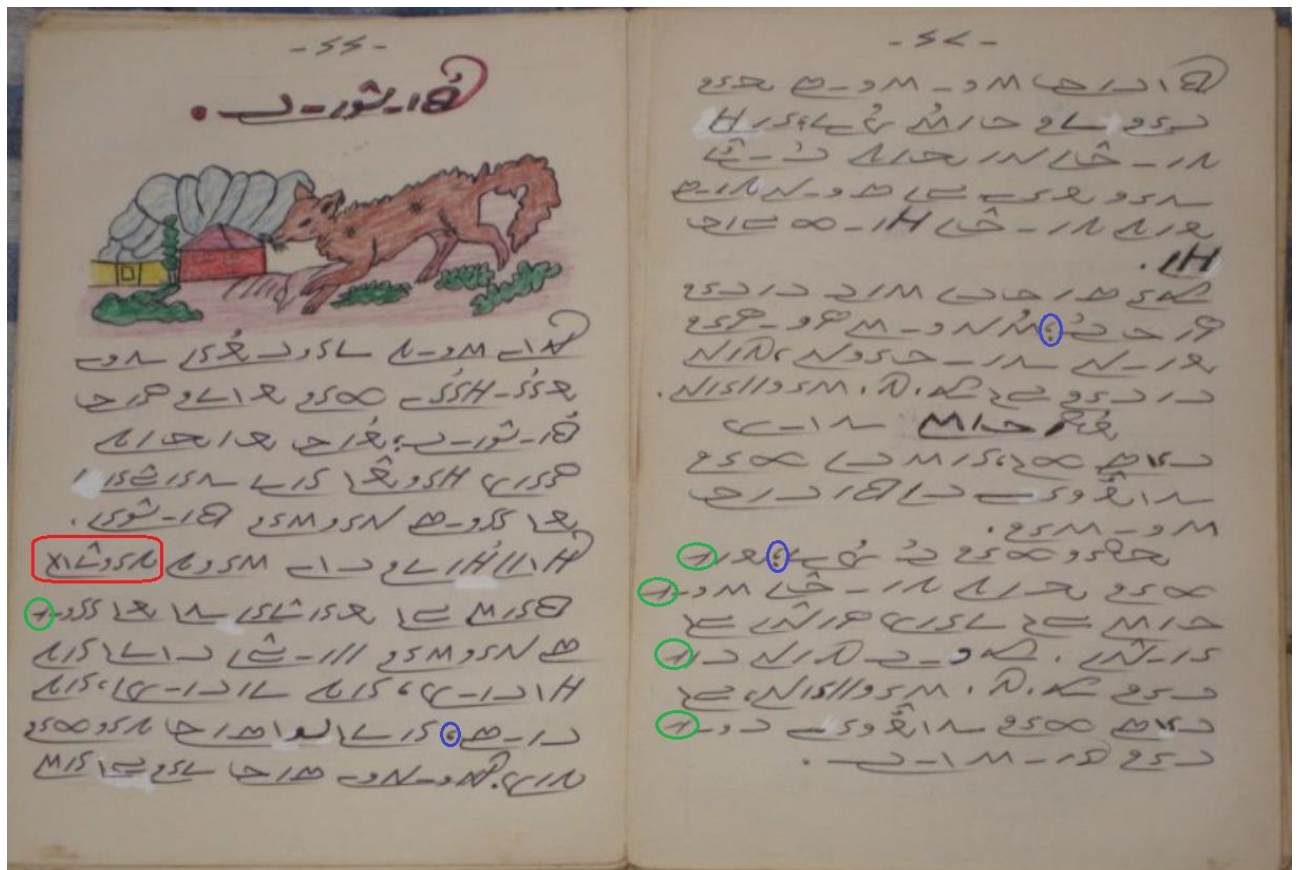
4. Punctuation

The Garay script uses the following punctuation marks:

- U+002E FULL STOP (.), U+003A COLON (:), U+0021 EXCLAMATION MARK (!), and U+2026 HORIZONTAL ELLIPSIS (…)

- U+060C ARABIC COMMA (،) and U+061B ARABIC SEMICOLON (؛)

- Both U+003F QUESTION MARK (?) and U+061F ARABIC QUESTION MARK (؟).

Two script-specific characters are

- U+10D6E ⹁ GARAY HYPHEN

- U+10D6F ⨯ GARAY REDUPLICATION MARK

The reduplication mark doubles the word it follows. The hyphen is used to break words when the first part resides on one line and its continuation is moved to the following line. Examples of punctuation are shown in Fig. 8.

Figure 8: Punctuation marks in Garay. The red selection shows the reduplication mark ⨯ following ⨯ꞇ⹁ꞩ∧ *yukki* yielding ⨯ꞇ⹁ꞩ∧ *yukki yukki* 'to jog'. Green ovals show Garay hyphens ⹁ and blue ovals encircle Arabic commas and Arabic semicolons.
Source: Assane Faye's manuscript; digitized at
https://catalogingafricana.files.wordpress.com/2016/03/fayems3.pdf

5. Mathematical notation

Following our previous proposal L2/19-162 on Garay mathematical notation we added so far two symbols for mathematical operations,

U+10D8E τ GARAY PLUS SIGN

U+10D8F $\angle$ GARAY MINUS SIGN

Such slanted shapes are preferable (see Fig. 6) comparing to upright variants, U+22A5 ⊥ UP TACK and U+22A4 ⊤ DOWN TACK (as mentioned in L2/19-173).

The multiplication sign λ is identical to U+10D5C GARAY CAPITAL LETTER YA. A symbol identical to U+002B PLUS SIGN (+) is used as the division mark.

The Bidi_Class of the Garay digits is AN (Arabic_Number) since they behave like decimal digits in the Arabic script: the highest digit is placed on the left although the script direction is right-to left, e. g.: 30 is ⚡○, not ○⚡, see Figs. 9 and 10 and also Fig. 6. Note that presently Garay can occur with both Arabic and Latin text and the two options are equally possible.
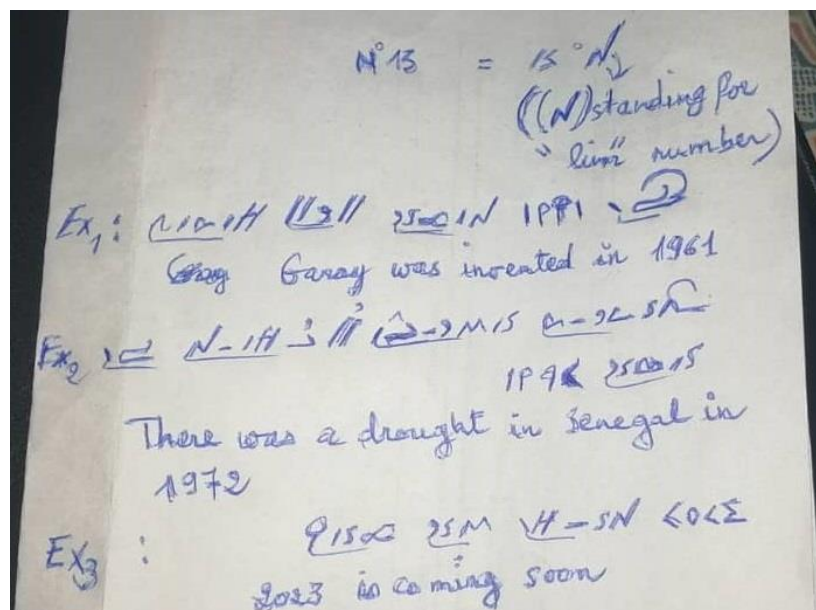
Figure 9: Examples of numbers in Garay. The first line contains a numero analog based on ⩑ GARAY SMALL LETTER LA.
Source: handwritten sample by Abdou Souleye Faye
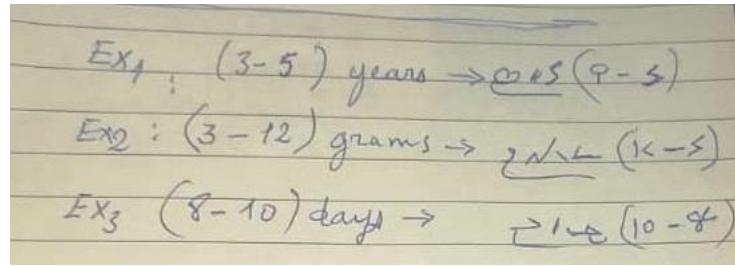
Figure 10: More examples of numbers in Garay showing ranges.
Source: handwritten sample by Abdou Souleye Faye

6. Characters not proposed

There are three additional characters in the Garay script aimed at representation of French. They are:

- Ŧ Ð for J

- ‿ ⌐ for V

- ‿ ⌒ for Z

So far, we do not include them in the proposal but reserve codepoints in the third and fifth columns of the encoding table, after consonants. Further clarification is required with respect to representation of similar foreign sounds mentioned in Section 2 by means of diacritics and digraphs.

7. Collation order

The first column of the encoding table contains ten digits followed by four vowel signs, vowel length mark, and *sukun*. The latter is now obsolete zero-vowel mark. Originally, it was aimed at representing explicitly the absence of a vowel after the consonant it follows, similarly to the Arabic *ḥarakāt* mark ـْ *sukūn.*

Consonant characters are ordered according to their numerical values (as given by Dalby 1966; see Table 1 and also Fig. 1). The last consonant in the sequence, ⌂ GARAY CAPITAL LETTER HA, is added after the letter ⌐ GARAY CAPITAL LETTER PA with the highest numerical value 100. These are followed by two old shapes for letters KA and NA. Codepoints for small letters are shifted by 32 (hexadecimal x20) with respect to their capital counterparts.

Vowel diacritics and punctuation marks are placed in the third column of the code chart, after capital letters. The two signs used in mathematical notation are moved to two last codepoints in the fifth column of the code chart.

Table 1: Numerical values of Garay letters

1	𝟤	10	H
2	⊃	20	⏣
3	⋀	30	⏠
4	⊃	40	⋋
5	⋌	50	⏢
6	𝟪	60	⋒
7	//	70	⊘
8	𝟫	80	⏡
9	⋏	90	△
		100	⊌

The collation order for consonants is as follows (green highlights show foreign letters not being a part of the alphabet and blue highlights mark obsolete letter shapes):

𝟤 ≪ ſ < ⊃ ≪ ⊇ < ⋀ ≪ ⋀ < ⊃ ≪ ∟ [= ⊚ ≪ ⅲ] < ⋌ ≪ ∟ <

⋌ ≪ ∿ < 𝟪 ≪ 𝟪 < 𝟪 ≪ 𝟪 < // ≪ // < // ≪ // < // ≪ // <

𝟫 ≪ ℙ < ⋏ ≪ ⋏ < H ≪ H < H ≪ H < H ≪ H < ⏣ ≪ ⏢ <

⏣ ≪ ⏣ < ⏠ ≪ ⏠ < ⋋ ≪ ⋋ < ⋒ ≪ ⋒ < ⋒ ≪ ⋒ < ⊘ ≪ ⊘ <

⏡ ≪ ⏡ < △ ≪ △ [= ⊚ ≪ ⅲ] < ⊌ ≪ ⊌ < 𝟫 ≪ ⏢

Obsolete letter shapes OLD NA and OLD KA are just visual variants and collate the same as NA and KA.

The order of vowels is mostly based on that given by Assane Faye (Fig. 1). In view of modern practice, symbol ⸯ U+10D4F GARAY SUKUN, which is considered obsolete, is moved to the end of the sequence; its phonetic value is marked by Ø.

The collation of vowels is demonstrated for combinations of consonants (C) + vowels:

C < Ca < Caː < Ci < Ciː < Cɔ < Cɔː < Cɛ < Cɛː <

Cə < Cəː < Ciʰ < Ciːʰ < Cu < Cuː < Ce < Ceː <

Co < Coː < CØ < Cː < Cːa < …

There are two different approaches to mark vowels *ɛ/e* (highlighted in yellow), so two graphically different vowel representations are suggested to collate in the same order after different consonants. This is demonstrated below for initial *k-*. *b-*. and *mb-*:

$$⌐ < /⌐ < \_/⌐ < \backslash⌐ < \_\backslash⌐ < \text{,}⌐ < \_\text{,}⌐ < \underline{\ell\text{'}} < \underline{\_\ell\text{'}} <$$

$$/s⌐ < \_/s⌐ < \backslash s⌐ < \_\backslash s⌐ < \text{,}s⌐ < \_\text{,}s⌐ < \underline{s\ell\text{'}} < \underline{\_s\ell\text{'}} <$$

$$s\text{,}⌐ < \_s\text{,}⌐ < {}_c⌐ < \hat{⌐} < /\hat{⌐} < \ldots$$

$$\wedge⌐ < /\wedge⌐ < \_/\wedge⌐ < \backslash\wedge⌐ < \_\backslash\wedge⌐ < \text{,}\wedge⌐ < \_\text{,}\wedge⌐ < \underline{s\wedge⌐} < \underline{\_s\wedge⌐} <$$

$$/s\wedge⌐ < \_/s\wedge⌐ < \backslash s\wedge⌐ < \_\backslash s\wedge⌐ < \text{,}s\wedge⌐ < \_\text{,}s\wedge⌐ < \underline{ss\wedge⌐} < \underline{\_ss\wedge⌐} <$$

$$s\text{,}\wedge⌐ < \_s\text{,}\wedge⌐ < {}_c\wedge⌐ < \hat{\wedge⌐} < /\hat{\wedge⌐} < \ldots$$

$$\wedge⌐\text{ȝ} < /\wedge⌐\text{ȝ} < \_/\wedge⌐\text{ȝ} < \backslash\wedge⌐\text{ȝ} < \_\backslash\wedge⌐\text{ȝ} < \text{,}\wedge⌐\text{ȝ} < \_\text{,}\wedge⌐\text{ȝ} < s\wedge⌐\text{ȝ} < \_s\wedge⌐\text{ȝ} <$$

$$/s\wedge⌐\text{ȝ} < \_/s\wedge⌐\text{ȝ} < \backslash s\wedge⌐\text{ȝ} < \_\backslash s\wedge⌐\text{ȝ} < \text{,}s\wedge⌐\text{ȝ} < \_\text{,}s\wedge⌐\text{ȝ} < \underline{ss\wedge⌐\text{ȝ}} < \underline{\_ss\wedge⌐\text{ȝ}} <$$

$$s\text{,}\wedge⌐\text{ȝ} < \_s\text{,}\wedge⌐\text{ȝ} < {}_c\wedge⌐\text{ȝ} < \hat{\wedge⌐\text{ȝ}} < /\hat{\wedge⌐\text{ȝ}} < \ldots$$

The collation rules for letters with three combining diacritics, ◌̂ U+10D6A GARAY CONSONANT GEMINATION MARK, ◌̇ U+10D6B GARAY COMBINING DOT ABOVE, and ◌̈ U+10D6C GARAY COMBINING DOUBLE DOT ABOVE, are explained above. It should be noted that ◌̄ U+10D6D GARAY CONSONANT NASALIZATION MARK is ignored in collation.

Table 2: Open syllables in Garay

u [u] uu [u:]	ó [o] óo [o:]	o [ɔ] oo [ɔ:]	ih [ih] iih [i:h]	i [i] ii [i:]	é [e] ée [e:]	e [ɛ] ee [ɛ:]	ë [ə] ëë [ə:]	a [ɐ], à [a] aa [a:]		
										[ʔ] (word-initially)
										b [b]
										bV:
										bb [b:]
										mb [ṃb]
										mbb
										c [c]
										cV:
										cc
										d [d]
										dd
										nd [ṇd]
										ndd
										f [f]
										ff
										g [g]
										gg
										ng [ŋ̇g]
										ngg
										ŋ [ŋ]
										ŋŋ
										h [ħ]
										hh
										j [ɟ]
										jj
										nj [ɲɟ]
										njj

u [u] uu [u:]	ó [o] óó [o:]	o [ɔ] oo [ɔ:]	ih [ih] iih [i:h]	i [i] ii [i:]	é [e] ée [e:]	e [ɛ] ee [ɛ:]	ë [ə] ëë [ə:]	a [ɐ], à [a] aa [a:]		
										k [k]
										kk
										l [l]
										ll
										m [m]
										mm
										n [n]
										nn
										ñ [ɲ]
										ññ
										p [p]
										pp
										q [q] (ق)
										r [r]
										rr
										s [s]
										ss
										ş [sˤ] (ص)
										š [ʃ]
										t [t]
										tt
										v [v]
										w [w]
										ww
										x [x~χ]
										xx
										y [j]
										yy
										z [z] ()

8. 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;;;;;
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 EE;Lo;0;R;;;;;N;;;;;
10D4E;GARAY VOWEL LENGTH MARK;Lo;0;R;;;;;N;;;;;
10D4F;GARAY SUKUN;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 JA;Lu;0;R;;;;;N;;;;10D75;
10D56;GARAY CAPITAL LETTER SA;Lu;0;R;;;;;N;;;;10D76;
10D57;GARAY CAPITAL LETTER WA;Lu;0;R;;;;;N;;;;10D77;
10D58;GARAY CAPITAL LETTER LA;Lu;0;R;;;;;N;;;;10D78;
10D59;GARAY CAPITAL LETTER GA;Lu;0;R;;;;;N;;;;10D79;
10D5A;GARAY CAPITAL LETTER DA;Lu;0;R;;;;;N;;;;10D7A;
10D5B;GARAY CAPITAL LETTER XA;Lu;0;R;;;;;N;;;;10D7B;
10D5C;GARAY CAPITAL LETTER YA;Lu;0;R;;;;;N;;;;10D7C;
10D5D;GARAY CAPITAL LETTER TA;Lu;0;R;;;;;N;;;;10D7D;
10D5E;GARAY CAPITAL LETTER RA;Lu;0;R;;;;;N;;;;10D7E;
10D5F;GARAY CAPITAL LETTER NYA;Lu;0;R;;;;;N;;;;10D7F;
10D60;GARAY CAPITAL LETTER FA;Lu;0;R;;;;;N;;;;10D80;
10D61;GARAY CAPITAL LETTER NA;Lu;0;R;;;;;N;;;;10D81;
10D62;GARAY CAPITAL LETTER PA;Lu;0;R;;;;;N;;;;10D82;
10D63;GARAY CAPITAL LETTER HA;Lu;0;R;;;;;N;;;;10D83;
10D64;GARAY CAPITAL LETTER OLD KA;Lu;0;R;;;;;N;;;;10D84;
10D65;GARAY CAPITAL LETTER OLD NA;Lu;0;R;;;;;N;;;;10D85;
10D69;GARAY VOWEL SIGN E;Mn;230;NSM;;;;;N;;;;;
10D6A;GARAY CONSONANT GEMINATION MARK;Mn;230;NSM;;;;;N;;;;;
10D6B;GARAY COMBINING DOT ABOVE;Mn;230;NSM;;;;;N;;;;;
10D6C;GARAY COMBINING DOUBLE DOT ABOVE;Mn;230;NSM;;;;;N;;;;;
10D6D;GARAY CONSONANT NASALIZATION MARK;Mn;230;NSM;;;;;N;;;;;
10D6D;GARAY HYPHEN;Pd;0;ON;;;;;N;;;;;
10D6F;GARAY REDUPLICATION MARK;So;0;R;;;;;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 JA;Ll;0;R;;;;;N;;;10D55;;10D55
10D76;GARAY SMALL LETTER SA;Ll;0;R;;;;;N;;;10D56;;10D56
10D77;GARAY SMALL LETTER WA;Ll;0;R;;;;;N;;;10D57;;10D57
10D78;GARAY SMALL LETTER LA;Ll;0;R;;;;;N;;;10D58;;10D58
10D79;GARAY SMALL LETTER GA;Ll;0;R;;;;;N;;;10D59;;10D59
10D7A;GARAY SMALL LETTER DA;Ll;0;R;;;;;N;;;10D5A;;10D5A
10D7B;GARAY SMALL LETTER XA;Ll;0;R;;;;;N;;;10D5B;;10D5B
10D7C;GARAY SMALL LETTER YA;Ll;0;R;;;;;N;;;10D5C;;10D5C
10D7D;GARAY SMALL LETTER TA;Ll;0;R;;;;;N;;;10D5D;;10D5D
10D7E;GARAY SMALL LETTER RA;Ll;0;R;;;;;N;;;10D5E;;10D5E
10D7F;GARAY SMALL LETTER NYA;Ll;0;R;;;;;N;;;10D5F;;10D5F
10D80;GARAY SMALL LETTER FA;Ll;0;R;;;;;N;;;10D60;;10D60
10D81;GARAY SMALL LETTER NA;Ll;0;R;;;;;N;;;10D61;;10D61
10D82;GARAY SMALL LETTER PA;Ll;0;R;;;;;N;;;10D62;;10D62
10D83;GARAY SMALL LETTER HA;Ll;0;R;;;;;N;;;10D63;;10D63
10D84;GARAY SMALL LETTER OLD KA;Ll;0;R;;;;;N;;;10D64;;10D64
10D85;GARAY SMALL LETTER OLD NA;Ll;0;R;;;;;N;;;10D65;;10D65
10D8E;GARAY PLUS SIGN;Sm;0;R;;;;;N;;;;;
10D8F;GARAY MINUS SIGN;Sm;0;R;;;;;N;;;;;
```

	10D4	10D5	10D6	10D7	10D8
0	O	∂	⌒	ς	┙
1	I	⌐	⋒	⌐	⌐
2	ι	⋒	ℰ	Ⱳ	ﻻ
3	⌇	⊃	⨭	⌐	┙
4	⌇	⌧	⨜	⌒	⫴
5	⍴	ℬ	⌒	ℬ	ﺳ
6	φ	⫽		∥	
7	⫾	ℐ		℘	
8	⋎	⫰		∧	
9	ℙ	⫘	ȯ	H	
A	/	ℰ	ô	⍑	
B	\	⌧	ȯ	⊿	
C	,	ℛ	ö	∿	
D	ℐ	⋒	ō	⋀⋀	
E	_	ℰ	⌁	ℭ	⊤
F	c	ℬ	×	⍺	⌐

Obsolete letters are highlighted in yellow.

Digits

10D40	O	GARAY DIGIT ZERO
10D41	I	GARAY DIGIT ONE
10D42	(	GARAY DIGIT TWO
10D43	ϟ	GARAY DIGIT THREE
10D44	ϟ	GARAY DIGIT FOUR
10D45	♀	GARAY DIGIT FIVE
10D46	φ	GARAY DIGIT SIX
10D47	Ꮁ	GARAY DIGIT SEVEN
10D48	Ѵ	GARAY DIGIT EIGHT
10D49	�P	GARAY DIGIT NINE

Vowel signs

10D4A	/	GARAY VOWEL SIGN A
10D4B	\	GARAY VOWEL SIGN I
10D4C	,	GARAY VOWEL SIGN O
10D4D	ς	GARAY VOWEL SIGN EE
10D4E	_	GARAY VOWEL LENGTH MARK
10D4F	c	GARAY SUKUN

Capital consonant letters

10D50	∂	GARAY CAPITAL LETTER A
10D51	⊃	GARAY CAPITAL LETTER CA
10D52	ᴡ	GARAY CAPITAL LETTER MA
10D53	⊃	GARAY CAPITAL LETTER KA
10D54	⦟	GARAY CAPITAL LETTER BA
10D55	ᴈ	GARAY CAPITAL LETTER JA
10D56	//	GARAY CAPITAL LETTER SA
10D57	℘	GARAY CAPITAL LETTER WA
10D58	ᴫ	GARAY CAPITAL LETTER LA
10D59	ᴙ	GARAY CAPITAL LETTER GA
10D5A	⅏	GARAY CAPITAL LETTER DA
10D5B	ᾍ	GARAY CAPITAL LETTER XA
10D5C	ᴧ	GARAY CAPITAL LETTER YA
10D5D	ᴂ	GARAY CAPITAL LETTER TA
10D5E	Ꮢ	GARAY CAPITAL LETTER RA
10D5F	ᴔ	GARAY CAPITAL LETTER NYA
10D60	ᴳ	GARAY CAPITAL LETTER FA
10D61	△	GARAY CAPITAL LETTER NA
10D62	ᵞ	GARAY CAPITAL LETTER PA
10D63	ᴐ	GARAY CAPITAL LETTER HA

Obsolete capital letter shapes

10D64	⅏	GARAY CAPITAL LETTER OLD KA
10D65	ᴼ	GARAY CAPITAL LETTER OLD NA

Reserved range

10D66		(Reserved)
10D67		(Reserved)
10D68		(Reserved)

Garay diacritical marks

10D69	◌	GARAY VOWEL SIGN E
10D6A	◌	GARAY CONSONANT GEMINATION MARK
10D6B	◌	GARAY COMBINING DOT ABOVE
10D6C	◌	GARAY COMBINING DOUBLE DOT ABOVE
10D6D	◌	GARAY CONSONANT NASALIZATION MARK
10D6E	⟋	GARAY HYPHEN
10D6F	×	GARAY REDUPLICATION MARK

Small consonant letters

10D70	∫	GARAY SMALL LETTER A
10D71	⇌	GARAY SMALL LETTER CA
10D72	⋀	GARAY SMALL LETTER MA
10D73	∟	GARAY SMALL LETTER KA
10D74	∧	GARAY SMALL LETTER BA
10D75	ℬ	GARAY SMALL LETTER JA
10D76	//	GARAY SMALL LETTER SA
10D77	℘	GARAY SMALL LETTER WA
10D78	∿	GARAY SMALL LETTER LA
10D79	ℋ	GARAY SMALL LETTER GA
10D7A	⋓	GARAY SMALL LETTER DA
10D7B	⏝	GARAY SMALL LETTER XA
10D7C	∿	GARAY SMALL LETTER YA
10D7D	⋀⋀	GARAY SMALL LETTER TA
10D7E	⌒	GARAY SMALL LETTER RA
10D7F	∝	GARAY SMALL LETTER NYA
10D80	⏝	GARAY SMALL LETTER FA
10D81	⌐	GARAY SMALL LETTER NA
10D82	⤨	GARAY SMALL LETTER PA
10D83	⏝	GARAY SMALL LETTER HA

Obsolete small letter shapes

10D84	⅏	GARAY SMALL LETTER OLD KA
10D85	ﺳ	GARAY SMALL LETTER OLD NA

Reserved range

10D86		(Reserved)
10D87		(Reserved)
10D88		(Reserved)
10D89		(Reserved)
10D8A		(Reserved)
10D8B		(Reserved)
10D8C		(Reserved)
10D8D		(Reserved)

Mathematical notation

10D8E	⊤	GARAY PLUS SIGN
10D8F	∠	GARAY MINUS SIGN

References

Dalby, David. 1966. "Further Indigenous Scripts of West Africa: Manding, Wolof, and Fula Alphabets and Yoruba 'Holy' Writing," *African Language Studies* 10: 161–181.

Riley, C. L. 2016. "Links to texts drafted by El Hadj Assane Faye using the Garay script for the Wolof language," *Cataloging Africana*, https://catalogingafricana.wordpress.com/2016/03/25/links-to-texts-drafted-by-el-hadj-assane-faye-using-the-garay-script-for-the-wolof-language/

Script_Metadata

Name	Garay
Size	69
Origin	Senegal
Density	1
Likely language	Wolof
Lang_Code	wol
ID Usage	Exclusion
RTL?	yes
LB letters?	no
Shaping req?	yes
IME?	no
Case?	yes

ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646[1]
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:** *Consideration of the encoding of Garay with updated user feedback (revised)*
2. Requester's name: *Andrij Rovenchak, Abdou Souleye Faye, and Charles L. Riley*
3. Requester type (Member body/Liaison/Individual contribution): *Liaison (SEI)*
4. Submission date: *2022-02-02*
5. Requester's reference (if applicable):
6. Choose one of the following:
   This is a complete proposal: *YES*
   (or) More information will be provided later:

B. Technical – General

1. Choose one of the following:
   a. This proposal is for a new script (set of characters): *YES*
      Proposed name of script: *Garay*
   b. The proposal is for addition of character(s) to an existing block:
      Name of the existing block:
2. Number of characters in proposal: *69*
3. Proposed category (select one from below - see section 2.2 of P&P document):
   A-Contemporary **X**   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
4. Is a repertoire including character names provided? *YES*
   a. If YES, are the names in accordance with the "character naming guidelines"
      in Annex L of P&P document? *YES*
   b. Are the character shapes attached in a legible form suitable for review? *YES*
5. Fonts related:
   a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?
      Andrij Rovenchak
   b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):
      Andrij Rovenchak
6. References:
   a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? *YES*
   b. Are published examples of use (such as samples from newspapers, magazines, or other sources)
      of proposed characters attached? *NO*
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*
   information on sorting

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.

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before?	*YES*
If YES explain *L2/16-069 (=N4709)*	
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.)?	*YES*
If YES, with whom? *User groups, Mamarame Seck, Mamadou Diaw, and Mamy Faye*	
If YES, available relevant documents: *YES*	
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?	*YES*
Reference: *see page 1 of proposal, where N4709 is referenced*	
4. The context of use for the proposed characters (type of use; common or rare)	*rare*
Reference: *Dalby (1968)*	
5. Are the proposed characters in current use by the user community?	*YES*
If YES, where? Reference: *Senegal*	
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?	*NO*
If YES, is a rationale provided?	
If YES, reference:	
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?	*YES*
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?	*NO*
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?	*NO*
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
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?	*YES*
If YES, is a rationale for its inclusion provided?	*YES*
If YES, reference: *Sections 2, 3, 4, and 5*	
11. Does the proposal include use of combining characters and/or use of composite sequences?	*YES*
If YES, is a rationale for such use provided?	*YES*
If YES, reference: *Section 7*	
Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?	*YES*
If YES, reference: *Section 7, Table 2*	
12. Does the proposal contain characters with any special properties such as control function or similar semantics?	*NO*
If YES, describe in detail (include attachment if necessary)	
13. Does the proposal contain any Ideographic compatibility characters?	*NO*
If YES, are the equivalent corresponding unified ideographic characters identified?	
If YES, reference:	