Universal Multiple-Octet Coded Character Set
International Organization for Standardization
Organisation Internationale de Normalisation
Международная организация по стандартизации

Doc Type: **Working Group Document**
Title: **Preliminary proposal for encoding the Kpelle script in the SMP of the UCS**
Source: **UC Berkeley Script Encoding Initiative (Universal Scripts Project)**
Authors: **Michael Everson and Charles Riley**
Status: **Individual Contribution**
Action: **For consideration by JTC1/SC2/WG2 and UTC**
Date: **2010-02-23**

1. Introduction. A syllabic script for the Kpelle language was devised in the 1930's by Gbili, a chief of Sanoyea, in Bong County, Liberia, during the 1930's. Accounts usually mention that Gbili was inspired by revelation in a dream. In one retelling, Gbili dictated the script in nearly complete form to Lee-Polu-Mala-Yale, from the village of Zongkai. The script was actively used for a few decades after its invention, by other chiefs, including Bono-Boi of Yanekwele, their scribes, and by one of the wives of Gbili, Neni- Tee. Uses included sending messages, keeping tax and store records, recording legal debts, and compiling a recipe book. (Stone 1990:136-137; Dalby 1967:30, f.n. 2). It has not been determined how many of these texts may have survived the Liberian civil wars, but probably very little if any original material remains.

The first scholarly reference to the Kpelle script comes from Johannes Friedrich (1937), who offered little in the way of accompanying detail. A first attempt at analysis came through with Lassort (1951), who included data from two sources, collected separately in the field. David Dalby published an analysis in 1967 based on the Lassort data, and Ruth Stone (1990) has produced a more recent article, using her own field research, the collection of which dates from 1970. The use of the script has been light, but continued at least through the 1980's among the Kpelle.

2. Structure. One of the unique features of the Kpelle syllabary is that it encodes for pairs of syllables, what Dalby terms "mutational pairs", that are related by the phonological similarity of their initial consonants; thus reducing the total number of characters encoded by about half of what it would be otherwise. In this proposal, only one character has been proposed for these mutational pairs for example, 16C02 KPI-GBI is used for both *kpi* and *gbi*.

Sometimes, however, a mutational pair has two glyphs available for use interchangeably. Thus, for the pair of related syllables *ka* and *ga*, either ⼞ KA-GA or ⼞ GA-KA may be used, and for the pair of related syllables *ka* and *ga*, either ⼞ TI-DI or ⼞ DI-TI may be used. Lassort's data is presented as two full sets of glyphs across the range of characters, and his data is largely repeated in the Dalby source in a compiled tabular form that attempts to unify the two Lassort sources. Comparing the data presented in Lassort and Stone, there are small sets of characters found in one but not the other. The most notable of these are the Kpelle digits, which Stone notes, "were added later also. The late Peter Giddings, a young boy at the time of the script's invention, recalled how he returned to Sanoyea during a school vacation, to be shown the script. Peter said that he pointed out the absence of characters for numbers to Gbili. He then helped him devise a system, which supplemented the original characters of the script." (Stone 1990:139). Most series of syllables can be traced cleanly through from Lassort to Stone.

Dalby's chart shows a number of glyph variants. It is likely that these should be treated as Vai and Bamum glyph variants have been: that if they are required, either a dedicated font for them should be used, or OpenType tables to invoke alternate forms. The forms used in the chart are the primary ones given in Dalby.

3. Collating order. Collation order is as in the code chart. Lassort's method of collation loosely follows a Latin-based sort, using the initial consonant of transliterated syllables as the primary key to the collation, with the ending vowels of the syllable serving to provide the secondary collation weight. Dalby and Stone both opt for a tabular presentation of the data, ordered nearly identically to each other, following Welmers (1973), with the initial consonants beginning each row in their associated pairs—p/b, ɓ/m̀, kp/gb, f/v, t/d, l/n, h(s)/j(z), y/ny, k/g, kw/gw, ɣ(/ŋ̀), ɣ or w, w(/ŋ̀w)—followed by nasal syllables and the syllable lengthening characters ꞔ M, ꟿ Y-NY, and ꞔ NG.

4. Character names. The usual UCS conventions are used, with BH representing *b,* B representing *ɓ,* EE representing *e,* E representing *ɛ,* OO representing *o,* O representing *ɔ,* and NG representing *ŋ*. Nasalized consonants are written with a final -N.

5. Linebreaking. Letters behave as in Vai and Bamum.

6. Punctuation and digits. To date, no script-specific punctuation has been seen. Characters exist for the numbers one through ten; no zero has yet been attested.

7. Unicode Character Properties.

```
16C00;KPELLE SYLLABLE PI-BHI;Lo;0;L;;;;;N;;;;;
..
16C69;KPELLE SYLLABLE NG;Lo;0;L;;;;;N;;;;;
16C71;KPELLE DIGIT ONE;Nd;0;L;;1;1;1;N;;;;;
16C72;KPELLE DIGIT TWO;Nd;0;L;;2;2;2;N;;;;;
16C73;KPELLE DIGIT THREE;Nd;0;L;;3;3;3;N;;;;;
16C74;KPELLE DIGIT FOUR;Nd;0;L;;4;4;4;N;;;;;
16C75;KPELLE DIGIT FIVE;Nd;0;L;;5;5;5;N;;;;;
16C76;KPELLE DIGIT SIX;Nd;0;L;;6;6;6;N;;;;;
16C77;KPELLE DIGIT SEVEN;Nd;0;L;;7;7;7;N;;;;;
16C78;KPELLE DIGIT EIGHT;Nd;0;L;;8;8;8;N;;;;;
16C79;KPELLE DIGIT NINE;Nd;0;L;;9;9;9;N;;;;;
16C7A;KPELLE NUMBER TEN;No;0;L;;;;10;N;;;;;
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	16C0	16C1	16C2	16C3	16C4	16C5	16C6	16C7
0	16C00	16C10	16C20	16C30	16C40	16C50	16C60	
1	16C01	16C11	16C21	16C31	16C41	16C51	16C61	16C71
2	16C02	16C12	16C22	16C32	16C42	16C52	16C62	16C72
3	16C03	16C13	16C23	16C33	16C43	16C53	16C63	16C73
4	16C04	16C14	16C24	16C34	16C44	16C54	16C64	16C74
5	16C05	16C15	16C25	16C35	16C45	16C55	16C65	16C75
6	16C06	16C16	16C26	16C36	16C46	16C56	16C66	16C76
7	16C07	16C17	16C27	16C37	16C47	16C57	16C67	16C77
8	16C08	16C18	16C28	16C38	16C48	16C58	16C68	16C78
9	16C09	16C19	16C29	16C39	16C49	16C59	16C69	16C79
A	16C0A	16C1A	16C2A	16C3A	16C4A	16C5A		16C7A
B	16C0B	16C1B	16C2B	16C3B	16C4B	16C5B		
C	16C0C	16C1C	16C2C	16C3C	16C4C	16C5C		
D	16C0D	16C1D	16C2D	16C3D	16C4D	16C5D		
E	16C0E	16C1E	16C2E	16C3E	16C4E	16C5E		
F	16C0F	16C1F	16C2F	16C3F	16C4F	16C5F		

Syllables in -i

16C00   KPELLE SYLLABLE PI-BHI
16C01   KPELLE SYLLABLE BI-MI
16C02   KPELLE SYLLABLE KPI-GBI
16C03   KPELLE SYLLABLE FI-VI
16C04   KPELLE SYLLABLE TI-DI
16C05   KPELLE SYLLABLE DI-TI
16C06   KPELLE SYLLABLE LI-NI
16C07   KPELLE SYLLABLE HI-JI
16C08   KPELLE SYLLABLE YI-NYI
16C09   KPELLE SYLLABLE KI-GI
16C0A   KPELLE SYLLABLE KWI-GWI
16C0B   KPELLE SYLLABLE GHI-NGI
16C0C   KPELLE SYLLABLE NGWI
16C0D   KPELLE SYLLABLE MIN
16C0E   KPELLE SYLLABLE NIN

Syllables in -a

16C0F   KPELLE SYLLABLE PA-BHA
16C10   KPELLE SYLLABLE BA-MA
16C11   KPELLE SYLLABLE KPA-GBA
16C12   KPELLE SYLLABLE FA-VA
16C13   KPELLE SYLLABLE TA-DA
16C14   KPELLE SYLLABLE LA-NA
16C15   KPELLE SYLLABLE HA-JA
16C16   KPELLE SYLLABLE YA-NYA
16C17   KPELLE SYLLABLE KA-GA
16C18   KPELLE SYLLABLE GA-KA
16C19   KPELLE SYLLABLE KWA-GWA
16C1A   KPELLE SYLLABLE GHA-NGA
16C1B   KPELLE SYLLABLE NGWA
16C1C   KPELLE SYLLABLE WANG
16C1D   KPELLE SYLLABLE MAN
16C1E   KPELLE SYLLABLE NAN
16C1F   KPELLE SYLLABLE NYAN
16C20   KPELLE SYLLABLE NGAN

Syllables in -u

16C21   KPELLE SYLLABLE PU-BHU
16C22   KPELLE SYLLABLE KPU-GBU
16C23   KPELLE SYLLABLE FU-VU
16C24   KPELLE SYLLABLE TU-DU
16C25   KPELLE SYLLABLE LU-NU
16C26   KPELLE SYLLABLE HU-JU
16C27   KPELLE SYLLABLE YU-NYU
16C28   KPELLE SYLLABLE KU-GU
16C29   KPELLE SYLLABLE WU
16C2A   KPELLE SYLLABLE WUNG
16C2B   KPELLE SYLLABLE MUN
16C2C   KPELLE SYLLABLE NUN
16C2D   KPELLE SYLLABLE NGUN

Syllables in -ee

16C2E   KPELLE SYLLABLE PEE-BHEE
16C2F   KPELLE SYLLABLE BEE-MEE
16C30   KPELLE SYLLABLE KPEE-GBEE
16C31   KPELLE SYLLABLE FEE-VEE
16C32   KPELLE SYLLABLE TEE-DEE
16C33   KPELLE SYLLABLE LEE-NEE
16C34   KPELLE SYLLABLE HEE-JEE
16C35   KPELLE SYLLABLE YEE-NYEE
16C36   KPELLE SYLLABLE KEE-GEE
16C37   KPELLE SYLLABLE KWEE-GWEE
16C38   KPELLE SYLLABLE GHEE-NGEE
16C39   KPELLE SYLLABLE WEE
16C3A   KPELLE SYLLABLE NGWEE
16C3B   KPELLE SYLLABLE NEEN

16C3C   KPELLE SYLLABLE NYEEN
16C3D   KPELLE SYLLABLE NGEEN

Syllables in -e

16C3E   KPELLE SYLLABLE PE-BHE
16C3F   KPELLE SYLLABLE BE-ME
16C40   KPELLE SYLLABLE KPE-GBE
16C41   KPELLE SYLLABLE FE-VE
16C42   KPELLE SYLLABLE TE-DE
16C43   KPELLE SYLLABLE LE-NE
16C44   KPELLE SYLLABLE HE-JE
16C45   KPELLE SYLLABLE YE-NYE
16C46   KPELLE SYLLABLE KE-GE
16C47   KPELLE SYLLABLE KWE-GWE
16C48   KPELLE SYLLABLE GHE-NGE
16C49   KPELLE SYLLABLE NGWE
16C4A   KPELLE SYLLABLE E
16C4B   KPELLE SYLLABLE MEN
16C4C   KPELLE SYLLABLE NEN
16C4D   KPELLE SYLLABLE NYEN
16C4E   KPELLE SYLLABLE NGEN

Syllables in -o

16C4F   KPELLE SYLLABLE PO-BHO
16C50   KPELLE SYLLABLE BO-MO
16C51   KPELLE SYLLABLE KPO-GBO
16C52   KPELLE SYLLABLE FO-VO
16C53   KPELLE SYLLABLE TO-DO
16C54   KPELLE SYLLABLE LO-NO
16C55   KPELLE SYLLABLE HO-JO
16C56   KPELLE SYLLABLE KO-GO
16C57   KPELLE SYLLABLE WO
16C58   KPELLE SYLLABLE WONG
16C59   KPELLE SYLLABLE MON
16C5A   KPELLE SYLLABLE NON
16C5B   KPELLE SYLLABLE NYON
16C5C   KPELLE SYLLABLE NGON

Syllables in -oo

16C5D   KPELLE SYLLABLE POO-BHOO
16C5E   KPELLE SYLLABLE BOO-MOO
16C5F   KPELLE SYLLABLE KPOO-GBOO
16C60   KPELLE SYLLABLE FOO-VOO
16C61   KPELLE SYLLABLE TOO-DOO
16C62   KPELLE SYLLABLE LOO-NOO
16C63   KPELLE SYLLABLE HOO-JOO
16C64   KPELLE SYLLABLE YOO-NYOO
16C65   KPELLE SYLLABLE KOO-GOO
16C66   KPELLE SYLLABLE WOO

Syllable lengtheners

16C67   KPELLE SYLLABLE M
16C68   KPELLE SYLLABLE Y-NY
16C69   KPELLE SYLLABLE NG

Numbers

16C71   KPELLE DIGIT ONE
16C72   KPELLE DIGIT TWO
16C73   KPELLE DIGIT THREE
16C74   KPELLE DIGIT FOUR
16C75   KPELLE DIGIT FIVE
16C76   KPELLE DIGIT SIX
16C77   KPELLE DIGIT SEVEN
16C78   KPELLE DIGIT EIGHT
16C79   KPELLE DIGIT NINE
16C7A   KPELLE NUMBER TEN

9. Figures.

Table IV The Kpelle Syllabary							
	i	**a**	**u**	**e**	**ɛ**	**ɔ**	**o**	**-**
p/b							
ɓ/m̀							
kp/gb							
f/v			[= fi/vi]				
t/d	(also di)						
l/ǹ							
h(s)/j(z)							
y/ǹy							(0)

	i	**a**	**u**	**e**	**ɛ**	**ɔ**	**o**	**-**
k/g		(also ga)						
kw/gw								
ɣ (/ŋ̀)			[= ɣⁱ]				
ɣ or w							⊙	
w (/ŋ̀w)		wuŋ / waŋ	woŋ	[= wi]		woŋ	
-		[= ɣa]						
NASAL SYLLABLES	**ĩ**	**ã**	**ũ**	**ẽ**	**ɛ̃**	**ɔ̃**		**SYLLABIC NASAL**
m								
n				[?]				
ny				[?]	[?]			
ŋ								

Figure 1. Table of Kpelle syllables from Dalby 1967.

Fig. 2. The Kpelle Syllabary[1]

Fig.2. THE KPELLE SYLLABARY [1]

Figure 2. Table of Kpelle syllables from Stone 1990.
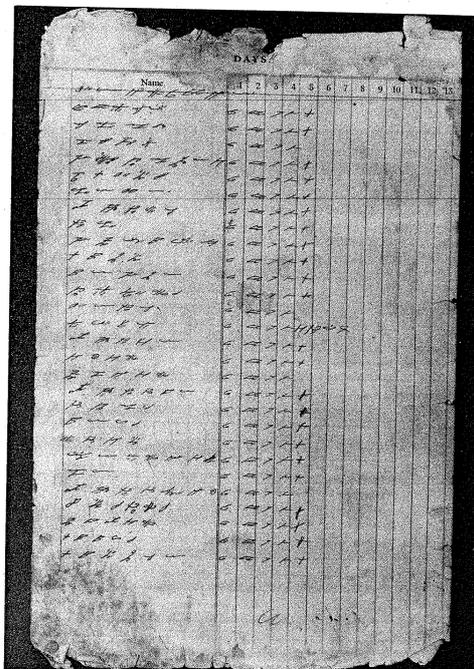
Fig. 1. Tax Records

Figure 3. Sample of handwritten Kpelle text (a tax table).

A. Administrative

1. Title
Preliminary proposal for encoding the Kpelle script in the SMP of the UCS
2. Requester's name
Michael Everson and Chuck Riley
3. Requester type (Member body/Liaison/Individual contribution)
Individual contribution.
4. Submission date
2010-02-23
5. Requester's reference (if applicable)
6. Choose one of the following:
6a. This is a complete proposal
No.
6b. More information will be provided later
Yes.

B. Technical – General

1. Choose one of the following:
1a. This proposal is for a new script (set of characters)
Yes.
1b. Proposed name of script
Kpelle.
1c. The proposal is for addition of character(s) to an existing block
No.
1d. Name of the existing block
2. Number of characters in proposal
114.
3. Proposed category (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. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard?
Jason Glavy and Michael Everson.
5b. If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used:
Michael Everson, FontLab.
6a. 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. 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/Public/UNIDATA/ UnicodeCharacterDatabase.html 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.
No.
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.)?
No.
2b. If YES, with whom?
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?
See above.
4a. The context of use for the proposed characters (type of use; common or rare)

Relatively rare.

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 Guinea and Liberia.

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?

No.

10b. If YES, is a rationale for its inclusion provided?

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)?

No.

11b. If YES, is a rationale for such use provided?

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?