

ISO/IEC JTC1/SC2/WG2 N2747

2004-04-23

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

L2/04-143

Doc Type: Working Group Document
Title: Revision of the N1846 Proposal to add Extended Ethiopic to the BMP of the UCS
Source: Quality and Standards Authority of Ethiopia, Ethiopia
Status: Member Body Contribution
Action: For consideration by JTC1/SC2/WG2 and UTC
Date: 2004-04-16

This document requests additional characters to be added to the UCS and contains the proposal summary form. It replaces N1846 and is derived from the current national character set standard of Ethiopia.

A. Administrative

1. **Title:** **Revision of the N1846 Proposal to add Extended Ethiopic to the BMP of the UCS** _____

2. Requester's name: **Quality and Standards Authority of Ethiopia (contact: Daniel Yacob <yacob@geez.org>)**

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

4. Submission date: **2003-04-16** _____

5. Requester's reference (if applicable): **The QSAE standard document ES 781:2002, N1846 (1998-09-11)** _____

6. Choose one of the following:
 This is a complete proposal: **Yes** _____
 or, More information will be provided later: **No** _____

B. Technical - General

1. Choose one of the following:
 a. This proposal is for a new script (set of characters): **No, but it is a proposal for a new block of Ethiopic characters.**
 Proposed name of script: **Extended Ethiopic** _____
 b. The proposal is for addition of character(s) to an existing block: _____
 Name of the existing block: _____

2. Number of characters in proposal: **115** _____

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 _____

4. Proposed Level of Implementation (1, 2 or 3) (see Annex K in P&P document): **Level 3** _____
 Is a rationale provided for the choice? **no spacing characters are proposed.** **Both spacing and** _____
 If Yes, reference: **See the bibliography in Section D** _____

5. 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** _____

6. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard? **QSAE** _____
 If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used: **standards@qsae.org, Macromedia Fontographer** _____

7. References:
 a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? **Yes, see the bibliography in Section D**
 b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached? **Yes** _____

8. 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)?
A collation reference is provided (Note: apart from the use of combining marks no complex rendering processing is required).

9. Additional Information:

Additional information has been provided in an extra "Section D" and appendices A – G.

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? Yes _____
 If YES explain: Many characters in this proposal can be found in N1846. Unlike N1846, the present proposal is based on the national standard of an ISO member nation (Ethiopia). The present proposal may be considered a refinement and follow up to N1846.

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? This proposal is submitted by the Quality and Standards Authority of Ethiopia
 If YES, available relevant documents: ES 781:2002, the national character set standard of Ethiopia

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

4. The context of use for the proposed characters (type of use; common or rare) The characters are essential for commonly used orthographies of the languages of Awngi, Bench, Blin, Me'en, Mursi, Qimant, Sebatbeit (aka Chaha), Suri and Xamtanga. The tonal marks have ecclesiastical use, the gemination mark has education and linguistic use and the paragraph separator is general punctuation in older manuscripts.
 Reference: See the bibliography of Section D _____

5. Are the proposed characters in current use by the user community? Yes _____
 If YES, where? Reference: Ethiopia and Eritrea _____

6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? Yes _____
 If YES, is a rationale provided? Yes _____
 If YES, reference: Living script in current use; also in accordance with the UCS Roadmap

7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? Yes, they should be encoded in a single block as presented here.

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 an existing character? Yes _____
 If YES, is a rationale for its inclusion provided? Yes, the ETHIOPIC ALTERNATE PARAGRAPH SEPARATOR is similar to ETHIOPIC PARAGRAPH SEPARATOR at character address x1368. While the symbols are generally identical in function, the alternate paragraph separator has a distinct appearance and some historical documents contain both symbols. The ability to preserve this distinction in encoded representation of historic documents is considered important enough that the alternate paragraph separator has been included in the ES 781:2002 standard. It is the opinion of some members of the ES 781 committee that the punctuation may also have been applied for indentation. Conclusive evidence of this usage was not available at the time to this request.
 If YES, reference: See the bibliography in Section D under Alternate Paragraph Mark

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: See the bibliography in Section D under Ethiopic Tonal and Gemination Marks
 Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? _____
 If YES, reference: _____

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) _____

<p>13. Does the proposal contain any Ideographic compatibility character(s)? No _____</p> <p style="padding-left: 40px;">If YES, is the equivalent corresponding unified ideographic character(s) identified? _____</p> <p style="padding-left: 40px;">If YES, reference: _____</p>
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D. Proposal

UCS Amendment 10 defines a basic Ethiopic syllabary satisfying the needs of the most widely spoken languages of Ethiopia. This proposal provides an extension to the basic syllabary for languages with smaller populations of speakers. This proposal is derived directly from the Ethiopian national standard of 2002, ES 781:2002, and contains only those elements not addressed by Amendment 10.

The development of ES 781:2002 was an open process where solicitations were made for public participation over the Internet and in the most widely circulated newspaper of Ethiopia. More than 50 government agencies and private experts were contacted directly. These efforts lead to 126 pages of comments from respondents. Public participation was also encouraged in a series of advertised workshops hosted by the Quality and Standards Authority of Ethiopia between 1998 – 2002. We feel that through this extensive process that the ES 781 standard, and this proposal, are representative of the existing and continuing orthographic needs of the peoples of Ethiopia.

The proposed letter symbols share the same property types as do their previously defined counterparts. The 10 tonal marks are identified as annotation symbols, special spacing rules, such as for line breaking, are not applicable to them. The two punctuation symbols assume the common properties of other punctuation in their respective categories. Character names in the following properties table are in keeping with the UCS naming convention for Ethiopic elements.

Unicode Character Properties

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xx00;ETHIOPIC SYLLABLE OPEN HO;Lo;0;L;;;;N;;;;;
xx01;ETHIOPIC SYLLABLE OPEN LO;Lo;0;L;;;;N;;;;;
xx02;ETHIOPIC SYLLABLE OPEN MO;Lo;0;L;;;;N;;;;;
xx03;ETHIOPIC SYLLABLE OPEN RO;Lo;0;L;;;;N;;;;;
xx04;ETHIOPIC SYLLABLE OPEN SO;Lo;0;L;;;;N;;;;;
xx05;ETHIOPIC SYLLABLE OPEN SHO;Lo;0;L;;;;N;;;;;
xx06;ETHIOPIC SYLLABLE OPEN QO;Lo;0;L;;;;N;;;;;
xx07;ETHIOPIC SYLLABLE OPEN BO;Lo;0;L;;;;N;;;;;
xx08;ETHIOPIC SYLLABLE OPEN TO;Lo;0;L;;;;N;;;;;
xx09;ETHIOPIC SYLLABLE OPEN CO;Lo;0;L;;;;N;;;;;
xx0A;ETHIOPIC SYLLABLE OPEN XO;Lo;0;L;;;;N;;;;;
xx0B;ETHIOPIC SYLLABLE OPEN NO;Lo;0;L;;;;N;;;;;
xx0C;ETHIOPIC SYLLABLE OPEN NYO;Lo;0;L;;;;N;;;;;
xx0D;ETHIOPIC SYLLABLE GLOTTAL OPEN O;Lo;0;L;;;;N;;;;;
xx0E;ETHIOPIC SYLLABLE OPEN KO;Lo;0;L;;;;N;;;;;
xx0F;ETHIOPIC SYLLABLE OPEN WO;Lo;0;L;;;;N;;;;;
xx10;ETHIOPIC SYLLABLE OPEN ZO;Lo;0;L;;;;N;;;;;
xx11;ETHIOPIC SYLLABLE OPEN YO;Lo;0;L;;;;N;;;;;
xx12;ETHIOPIC SYLLABLE OPEN DDO;Lo;0;L;;;;N;;;;;
xx13;ETHIOPIC SYLLABLE OPEN DDO;Lo;0;L;;;;N;;;;;
xx14;ETHIOPIC SYLLABLE OPEN JO;Lo;0;L;;;;N;;;;;
xx15;ETHIOPIC SYLLABLE OPEN GO;Lo;0;L;;;;N;;;;;
xx16;ETHIOPIC SYLLABLE OPEN THO;Lo;0;L;;;;N;;;;;
xx17;ETHIOPIC SYLLABLE OPEN CHO;Lo;0;L;;;;N;;;;;
xx18;ETHIOPIC SYLLABLE OPEN PHO;Lo;0;L;;;;N;;;;;
xx19;ETHIOPIC SYLLABLE OPEN TZO;Lo;0;L;;;;N;;;;;
xx1A;ETHIOPIC SYLLABLE OPEN PO;Lo;0;L;;;;N;;;;;
xx1B;ETHIOPIC SYLLABLE GGWA;Lo;0;L;;;;N;;;;;
xx1C;ETHIOPIC SYLLABLE GGWI;Lo;0;L;;;;N;;;;;
xx1D;ETHIOPIC SYLLABLE GGWAA;Lo;0;L;;;;N;;;;;
xx1E;ETHIOPIC SYLLABLE GGWEE;Lo;0;L;;;;N;;;;;
xx1F;ETHIOPIC SYLLABLE GGWE;Lo;0;L;;;;N;;;;;
xx20;ETHIOPIC SYLLABLE SSA;Lo;0;L;;;;N;;;;;
    
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xx21;ETHIOPIC SYLLABLE SSU;Lo;0;L;;;;;N;;;;;
 xx22;ETHIOPIC SYLLABLE SSI;Lo;0;L;;;;;N;;;;;
 xx23;ETHIOPIC SYLLABLE SSAA;Lo;0;L;;;;;N;;;;;
 xx24;ETHIOPIC SYLLABLE SSEE;Lo;0;L;;;;;N;;;;;
 xx25;ETHIOPIC SYLLABLE SSE;Lo;0;L;;;;;N;;;;;
 xx26;ETHIOPIC SYLLABLE SSO;Lo;0;L;;;;;N;;;;;
 xx28;ETHIOPIC SYLLABLE CCA;Lo;0;L;;;;;N;;;;;
 xx29;ETHIOPIC SYLLABLE CCU;Lo;0;L;;;;;N;;;;;
 xx2A;ETHIOPIC SYLLABLE CCI;Lo;0;L;;;;;N;;;;;
 xx2B;ETHIOPIC SYLLABLE CCAA;Lo;0;L;;;;;N;;;;;
 xx2C;ETHIOPIC SYLLABLE CCEE;Lo;0;L;;;;;N;;;;;
 xx2D;ETHIOPIC SYLLABLE CCE;Lo;0;L;;;;;N;;;;;
 xx2E;ETHIOPIC SYLLABLE CCO;Lo;0;L;;;;;N;;;;;
 xx30;ETHIOPIC SYLLABLE ZZA;Lo;0;L;;;;;N;;;;;
 xx31;ETHIOPIC SYLLABLE ZZU;Lo;0;L;;;;;N;;;;;
 xx32;ETHIOPIC SYLLABLE ZZI;Lo;0;L;;;;;N;;;;;
 xx33;ETHIOPIC SYLLABLE ZZAA;Lo;0;L;;;;;N;;;;;
 xx34;ETHIOPIC SYLLABLE ZZEE;Lo;0;L;;;;;N;;;;;
 xx35;ETHIOPIC SYLLABLE ZZE;Lo;0;L;;;;;N;;;;;
 xx36;ETHIOPIC SYLLABLE ZZO;Lo;0;L;;;;;N;;;;;
 xx38;ETHIOPIC SYLLABLE CCHA;Lo;0;L;;;;;N;;;;;
 xx39;ETHIOPIC SYLLABLE CCHU;Lo;0;L;;;;;N;;;;;
 xx3A;ETHIOPIC SYLLABLE CCHI;Lo;0;L;;;;;N;;;;;
 xx3B;ETHIOPIC SYLLABLE CCHAA;Lo;0;L;;;;;N;;;;;
 xx3C;ETHIOPIC SYLLABLE CCHEE;Lo;0;L;;;;;N;;;;;
 xx3D;ETHIOPIC SYLLABLE CCHE;Lo;0;L;;;;;N;;;;;
 xx3E;ETHIOPIC SYLLABLE CCHO;Lo;0;L;;;;;N;;;;;
 xx40;ETHIOPIC SYLLABLE QYA;Lo;0;L;;;;;N;;;;;
 xx41;ETHIOPIC SYLLABLE QYU;Lo;0;L;;;;;N;;;;;
 xx42;ETHIOPIC SYLLABLE QYI;Lo;0;L;;;;;N;;;;;
 xx43;ETHIOPIC SYLLABLE QYAA;Lo;0;L;;;;;N;;;;;
 xx44;ETHIOPIC SYLLABLE QYEE;Lo;0;L;;;;;N;;;;;
 xx45;ETHIOPIC SYLLABLE QYE;Lo;0;L;;;;;N;;;;;
 xx46;ETHIOPIC SYLLABLE QYO;Lo;0;L;;;;;N;;;;;
 xx48;ETHIOPIC SYLLABLE KYA;Lo;0;L;;;;;N;;;;;
 xx49;ETHIOPIC SYLLABLE KYU;Lo;0;L;;;;;N;;;;;
 xx4A;ETHIOPIC SYLLABLE KYI;Lo;0;L;;;;;N;;;;;
 xx4B;ETHIOPIC SYLLABLE KYAA;Lo;0;L;;;;;N;;;;;
 xx4C;ETHIOPIC SYLLABLE KYEE;Lo;0;L;;;;;N;;;;;
 xx4D;ETHIOPIC SYLLABLE KYE;Lo;0;L;;;;;N;;;;;
 xx4E;ETHIOPIC SYLLABLE KYO;Lo;0;L;;;;;N;;;;;
 xx50;ETHIOPIC SYLLABLE XYA;Lo;0;L;;;;;N;;;;;
 xx51;ETHIOPIC SYLLABLE XYU;Lo;0;L;;;;;N;;;;;
 xx52;ETHIOPIC SYLLABLE XYI;Lo;0;L;;;;;N;;;;;
 xx53;ETHIOPIC SYLLABLE XYAA;Lo;0;L;;;;;N;;;;;
 xx54;ETHIOPIC SYLLABLE XYEE;Lo;0;L;;;;;N;;;;;
 xx55;ETHIOPIC SYLLABLE XYE;Lo;0;L;;;;;N;;;;;
 xx56;ETHIOPIC SYLLABLE XYO;Lo;0;L;;;;;N;;;;;
 xx58;ETHIOPIC SYLLABLE GYA;Lo;0;L;;;;;N;;;;;
 xx59;ETHIOPIC SYLLABLE GYU;Lo;0;L;;;;;N;;;;;
 xx5A;ETHIOPIC SYLLABLE GYI;Lo;0;L;;;;;N;;;;;
 xx5B;ETHIOPIC SYLLABLE GYAA;Lo;0;L;;;;;N;;;;;
 xx5C;ETHIOPIC SYLLABLE GYEE;Lo;0;L;;;;;N;;;;;
 xx5D;ETHIOPIC SYLLABLE GYE;Lo;0;L;;;;;N;;;;;
 xx5E;ETHIOPIC SYLLABLE GYO;Lo;0;L;;;;;N;;;;;
 xx60;ETHIOPIC SYLLABLE MWA;Lo;0;L;;;;;N;;;;;
 xx61;ETHIOPIC SYLLABLE MWI;Lo;0;L;;;;;N;;;;;
 xx62;ETHIOPIC SYLLABLE MWEE;Lo;0;L;;;;;N;;;;;
 xx63;ETHIOPIC SYLLABLE MWE;Lo;0;L;;;;;N;;;;;
 xx64;ETHIOPIC SYLLABLE BWA;Lo;0;L;;;;;N;;;;;
 xx65;ETHIOPIC SYLLABLE BWI;Lo;0;L;;;;;N;;;;;

xx66;ETHIOPIC SYLLABLE BWEE;Lo;0;L;;;;N;;;;;
 xx67;ETHIOPIC SYLLABLE BWE;Lo;0;L;;;;N;;;;;
 xx68;ETHIOPIC SYLLABLE FWA;Lo;0;L;;;;N;;;;;
 xx69;ETHIOPIC SYLLABLE FWI;Lo;0;L;;;;N;;;;;
 xx6A;ETHIOPIC SYLLABLE FWEE;Lo;0;L;;;;N;;;;;
 xx6B;ETHIOPIC SYLLABLE FWE;Lo;0;L;;;;N;;;;;
 xx6C;ETHIOPIC SYLLABLE PWA;Lo;0;L;;;;N;;;;;
 xx6D;ETHIOPIC SYLLABLE PWI;Lo;0;L;;;;N;;;;;
 xx6E;ETHIOPIC SYLLABLE PWEE;Lo;0;L;;;;N;;;;;
 xx6F;ETHIOPIC SYLLABLE PWE;Lo;0;L;;;;N;;;;;
 xx70;ETHIOPIC TONAL MARK YIZET;So;0;L;;;;N;;;;;
 xx71;ETHIOPIC TONAL MARK DERET;So;0;L;;;;N;;;;;
 xx72;ETHIOPIC TONAL MARK RIKRIK;So;0;L;;;;N;;;;;
 xx73;ETHIOPIC TONAL MARK SHORT RIKRIK;So;0;L;;;;N;;;;;
 xx74;ETHIOPIC TONAL MARK DIFAT;So;0;L;;;;N;;;;;
 xx75;ETHIOPIC TONAL MARK KENAT;So;0;L;;;;N;;;;;
 xx76;ETHIOPIC TONAL MARK CHIRET;So;0;L;;;;N;;;;;
 xx77;ETHIOPIC TONAL MARK HIDET;So;0;L;;;;N;;;;;
 xx78;ETHIOPIC TONAL MARK DERET-HIDET;So;0;L;;;;N;;;;;
 xx79;ETHIOPIC TONAL MARK KURT;So;0;L;;;;N;;;;;
 xx7A;ETHIOPIC GEMINATION MARK;Mn;230;NSM;;;;N;;;;;
 xx7B;ETHIOPIC ALTERNATE PARAGRAPH SEPARATOR;Po;0;L;;;;N;;;;;

Table XX – Row XX: Extended Ethiopic

	xx0	xx1	xx2	xx3	xx4	xx5	xx6	xx7
0	ሀ	ሁ	ሂ	ሃ	ሄ	ህ	ሆ	.
1	ሎ	ሐ	ሑ	ሒ	ሓ	ሔ	ሕ	ሊ
2	ዎ	ደ	ደሺ	ደር	ደቂ	ደኪ	ደጊ	፡
3	ሮ	ደ	ደሻ	ደገ	ደቃ	ደካ	ደም	፡
4	ሰ	ደ	ደሼ	ደሼ	ደቂ	ደኼ	ደቦ	ሰ
5	ሰ	ጎ	ሰ	ሰገ	ሰቀ	ሰክ	ሰሩ	ጎ
6	ቆ	ሐ	ሰ	ሰገ	ቆ	ሰክ	ቆ	ጎ
7	ሰ	ሴ					ሰ	—
8	ቶ	ቶ	ቶ	ሴ	ሰ	ሰ	ሴ	ሴ
9	ቶ	ጎ	ቶ	ሴ	ሰ	ሰ	ሴ	ተ
A	ኘ	ኘ	ቶ	ሴ	ሰ	ሰ	ሴ	ፊ
B	ኘ	ኘ	ቶ	ሴ	ካ	ኘ	ኘ	✳
C	ኘ	ኘ	ቶ	ሴ	ኬ	ኘ	ኘ	
D	ኘ	ኘ	ቶ	ሴ	ክ	ኘ	ኘ	
E	ኘ	ኘ	ቶ	ሴ	ኸ	ኘ	ኘ	
F	ኘ	ኘ					ኘ	

G = 00
 P = 00

Table XX – Row XX: Extended Ethiopic

hex	Name	hex	Name
U+xx00	ETHIOPIC SYLLABLE OPEN HO	U+xx40	ETHIOPIC SYLLABLE QYA
U+xx01	ETHIOPIC SYLLABLE OPEN LO	U+xx41	ETHIOPIC SYLLABLE QYU
U+xx02	ETHIOPIC SYLLABLE OPEN MO	U+xx42	ETHIOPIC SYLLABLE QYI
U+xx03	ETHIOPIC SYLLABLE OPEN RO	U+xx43	ETHIOPIC SYLLABLE QYAA
U+xx04	ETHIOPIC SYLLABLE OPEN SO	U+xx44	ETHIOPIC SYLLABLE QYEE
U+xx05	ETHIOPIC SYLLABLE OPEN SHO	U+xx45	ETHIOPIC SYLLABLE QYE
U+xx06	ETHIOPIC SYLLABLE OPEN QO	U+xx46	ETHIOPIC SYLLABLE QYO
U+xx07	ETHIOPIC SYLLABLE OPEN BO	U+xx47	(This position shall not be used)
U+xx08	ETHIOPIC SYLLABLE OPEN TO	U+xx48	ETHIOPIC SYLLABLE KYA
U+xx09	ETHIOPIC SYLLABLE OPEN CO	U+xx49	ETHIOPIC SYLLABLE KYU
U+xx0A	ETHIOPIC SYLLABLE OPEN XO	U+xx4A	ETHIOPIC SYLLABLE KYI
U+xx0B	ETHIOPIC SYLLABLE OPEN NO	U+xx4B	ETHIOPIC SYLLABLE KYAA
U+xx0C	ETHIOPIC SYLLABLE OPEN NYO	U+xx4C	ETHIOPIC SYLLABLE KYEE
U+xx0D	ETHIOPIC SYLLABLE GLOTTAL OPEN O	U+xx4D	ETHIOPIC SYLLABLE KYE
U+xx0E	ETHIOPIC SYLLABLE OPEN KO	U+xx4E	ETHIOPIC SYLLABLE KYO
U+xx0F	ETHIOPIC SYLLABLE OPEN WO	U+xx4F	(This position shall not be used)
U+xx10	ETHIOPIC SYLLABLE OPEN ZO	U+xx50	ETHIOPIC SYLLABLE XYA
U+xx11	ETHIOPIC SYLLABLE OPEN YO	U+xx51	ETHIOPIC SYLLABLE XYU
U+xx12	ETHIOPIC SYLLABLE OPEN DO	U+xx52	ETHIOPIC SYLLABLE XYI
U+xx13	ETHIOPIC SYLLABLE OPEN DDO	U+xx53	ETHIOPIC SYLLABLE XYAA
U+xx14	ETHIOPIC SYLLABLE OPEN JO	U+xx54	ETHIOPIC SYLLABLE XYEE
U+xx15	ETHIOPIC SYLLABLE OPEN GO	U+xx55	ETHIOPIC SYLLABLE XYE
U+xx16	ETHIOPIC SYLLABLE OPEN THO	U+xx56	ETHIOPIC SYLLABLE XYO
U+xx17	ETHIOPIC SYLLABLE OPEN CHO	U+xx57	(This position shall not be used)
U+xx18	ETHIOPIC SYLLABLE OPEN PHO	U+xx58	ETHIOPIC SYLLABLE GYA
U+xx19	ETHIOPIC SYLLABLE OPEN TZO	U+xx59	ETHIOPIC SYLLABLE GYU
U+xx1A	ETHIOPIC SYLLABLE OPEN PO	U+xx5A	ETHIOPIC SYLLABLE GYI
U+xx1B	ETHIOPIC SYLLABLE GGWA	U+xx5B	ETHIOPIC SYLLABLE GYAA
U+xx1C	ETHIOPIC SYLLABLE GGWI	U+xx5C	ETHIOPIC SYLLABLE GYEE
U+xx1D	ETHIOPIC SYLLABLE GGWAA	U+xx5D	ETHIOPIC SYLLABLE GYE
U+xx1E	ETHIOPIC SYLLABLE GGWEE	U+xx5E	ETHIOPIC SYLLABLE GYO
U+xx1F	ETHIOPIC SYLLABLE GGWE	U+xx5F	(This position shall not be used)
U+xx20	ETHIOPIC SYLLABLE SSA	U+xx60	ETHIOPIC SYLLABLE MWA
U+xx21	ETHIOPIC SYLLABLE SSU	U+xx61	ETHIOPIC SYLLABLE MWI
U+xx22	ETHIOPIC SYLLABLE SSI	U+xx62	ETHIOPIC SYLLABLE MWEE
U+xx23	ETHIOPIC SYLLABLE SSAA	U+xx63	ETHIOPIC SYLLABLE MWE
U+xx24	ETHIOPIC SYLLABLE SSEE	U+xx64	ETHIOPIC SYLLABLE BWA
U+xx25	ETHIOPIC SYLLABLE SSE	U+xx65	ETHIOPIC SYLLABLE BWI
U+xx26	ETHIOPIC SYLLABLE SSO	U+xx66	ETHIOPIC SYLLABLE BWEE
U+xx27	(This position shall not be used)	U+xx67	ETHIOPIC SYLLABLE BWE
U+xx28	ETHIOPIC SYLLABLE CCA	U+xx68	ETHIOPIC SYLLABLE FWA
U+xx29	ETHIOPIC SYLLABLE CCU	U+xx69	ETHIOPIC SYLLABLE FWI
U+xx2A	ETHIOPIC SYLLABLE CCI	U+xx6A	ETHIOPIC SYLLABLE FWEE
U+xx2B	ETHIOPIC SYLLABLE CCAA	U+xx6B	ETHIOPIC SYLLABLE FWE
U+xx2C	ETHIOPIC SYLLABLE CCEE	U+xx6C	ETHIOPIC SYLLABLE PWA
U+xx2D	ETHIOPIC SYLLABLE CCE	U+xx6D	ETHIOPIC SYLLABLE PWI
U+xx2E	ETHIOPIC SYLLABLE CCO	U+xx6E	ETHIOPIC SYLLABLE PWEE
U+xx2F	(This position shall not be used)	U+xx6F	ETHIOPIC SYLLABLE PWE
U+xx30	ETHIOPIC SYLLABLE ZZA	U+xx70	ETHIOPIC TONAL MARK YIZET
U+xx31	ETHIOPIC SYLLABLE ZZU	U+xx71	ETHIOPIC TONAL MARK DERET
U+xx32	ETHIOPIC SYLLABLE ZZI	U+xx72	ETHIOPIC TONAL MARK RIKRIK
U+xx33	ETHIOPIC SYLLABLE ZZAA	U+xx73	ETHIOPIC TONAL MARK SHORT RIKRIK
U+xx34	ETHIOPIC SYLLABLE ZZEE	U+xx74	ETHIOPIC TONAL MARK DIFAT
U+xx35	ETHIOPIC SYLLABLE ZZE	U+xx75	ETHIOPIC TONAL MARK KENAT
U+xx36	ETHIOPIC SYLLABLE ZZO	U+xx76	ETHIOPIC TONAL MARK CHIRET
U+xx37	(This position shall not be used)	U+xx77	ETHIOPIC TONAL MARK HIDET
U+xx38	ETHIOPIC SYLLABLE CCHA	U+xx78	ETHIOPIC TONAL MARK DERET-HIDET
U+xx39	ETHIOPIC SYLLABLE CCHU	U+xx79	ETHIOPIC TONAL MARK KURT
U+xx3A	ETHIOPIC SYLLABLE CCHI	U+xx7A	ETHIOPIC GEMINATION MARK
U+xx3B	ETHIOPIC SYLLABLE CCHAA	U+xx7B	ETHIOPIC ALTERNATE PARAGRAPH SEPARATOR
U+xx3C	ETHIOPIC SYLLABLE CCHEE	U+xx7C	(This position shall not be used)
U+xx3D	ETHIOPIC SYLLABLE CCHE	U+xx7D	(This position shall not be used)
U+xx3E	ETHIOPIC SYLLABLE CCHO	U+xx7E	(This position shall not be used)
U+xx3F	(This position shall not be used)	U+xx7F	(This position shall not be used)

References

Quality and Standards Authority of Ethiopia, *Ethiopian Standard ES 781:2002 Ethiopic Character Set*, October, 2002, Addis Ababa

Quality and Standards Authority of Ethiopia, *DES 5214 Workshop*, April 18, 2002, Addis Ababa

Quality and Standards Authority of Ethiopia, *Challenges in the Standardization of Ethiopic Script for Use in Computers* (A Workshop). July 4, 1998, Addis Ababa

Agaw

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Appendix A: The ES 781:2002 Ordered Character Set

The collation of Ethiopic text elements is defined on a per language basis as each language employs only a subset of the national unified syllabary and may do so in different orders. Language specific collation rules are left to the representative bodies of each language to define. The following table specifies the collation order, as a whole in a language independent context, of Ethiopic text elements as defined in the ES 781:2002 national standard of Ethiopia. Extension elements are highlighted in red.

1	2	3	4	5	6	7	8	9	10
ሀ	ሁ	ሂ	ሃ		ሄ	ህ	ሆ	ሐ	
ለ	ሉ	ሊ	ላ	ሏ	ለ	ል	ሎ	ሐ	
ሐ	ሑ	ሒ	ሓ	ሔ	ሕ	ሖ	ሐ		
መ	ሙ	ሚ	ማ		ሚ	ም	ሞ	ሞ	
መ		ማ	ሚ		ሚ	ም			ሚ
ሠ	ሡ	ሢ	ሣ	ሤ	ሥ	ሦ	ሧ		
ረ	ሩ	ሪ	ራ	ረ	ሪ	ሮ	ሮ	ሮ	ረ
ሰ	ሱ	ሲ	ሳ	ሴ	ስ	ሶ	ሷ	ሰ	
ሸ	ሹ	ሺ	ሻ	ሼ	ሽ	ሾ	ሿ	ሸ	
ሽ	ሾ	ሿ	ሻ		ሾ	ሽ	ሾ		
ቀ	ቁ	ቂ	ቃ		ቄ	ቅ	ቆ	ቇ	
ቈ		቉	ቊ		ቋ	ቌ			
ቍ	቎	቏	ቐ		ቑ	ቒ	ቓ		
ቔ		ቕ	ቖ		቗	ቘ			
ቘ	቙	ቚ	ቛ		ቜ	ቝ	቞	቟	
ቡ	ቢ	ቢ	ባ		ቤ	ብ	ቦ	ቦ	
ቦ		ቦ	ቧ		ቧ	ቦ			
ቨ	ቩ	ቪ	ቫ	ቬ	ቮ	ቯ	ተ		
ተ	ቱ	ቲ	ታ	ቴ	ት	ቶ	ቷ	ቸ	
ቸ	ቹ	ቺ	ቻ		ቼ	ቾ	ቿ		
ሀ	ሁ	ሂ	ሃ		ሄ	ህ	ሆ	ሐ	
ሐ		ሐ	ሑ		ሐ	ሑ			
ነ	ኑ	ኒ	ና	ኔ	ኖ	ኘ	ኙ	ኙ	
ኘ	ኙ	ኚ	ኛ	ኜ	ኞ	ኟ	አ	ኡ	
አ	አ	አ	አ		አ	አ	አ	አ	አ
ከ	ከ	ከ	ከ		ከ	ከ	ከ	ከ	
ከ		ከ	ከ		ከ	ከ			
ከ	ከ	ከ	ከ		ከ	ከ	ከ		
ከ	ከ	ከ	ከ		ከ	ከ	ከ		
ከ		ከ	ከ		ከ	ከ			
ከ	ከ	ከ	ከ		ከ	ከ	ከ		
ወ	ወ	ወ	ወ		ወ	ወ	ወ	ወ	

1	2	3	4	5	6	7	8	9	10
ዐ	ዑ	ዒ	ዓ		ዔ	ዕ	ዖ		
ዘ	ዙ	ዚ	ዛ	ዝ	ዞ	ዟ	ዠ	ዡ	
ዢ	ዣ	ዤ	ዥ	ዦ	ዧ	የ	ዩ		
ዪ	ያ	ዬ	ዦ		ዪ	ያ	ዬ		
የ	ዩ	ዪ	ያ		ዬ	ዦ	የ	ዩ	
ደ	ዱ	ዲ	ዳ	ዴ	ድ	ዶ	ዷ	ዸ	
ደ	ዱ	ዲ	ዳ	ዴ	ድ	ዶ	ዷ	ዸ	
ጀ	ጁ	ጂ	ጃ	ጄ	ጅ	ጆ	ጇ	ገ	
ገ	ጉ	ጊ	ጋ		ጌ	ግ	ገ	ጊ	
ጎ		ጎ	ጏ		ጎ	ጏ			
ኀ	ኁ	ኂ	ኃ		ኄ	ኅ	ኆ		
ኘ		ኘ	ኙ		ኘ	ኙ			
ሃ	ሄ	ህ	ህ		ህ	ህ	ህ		
ጠ	ጡ	ጢ	ጣ	ጣ	ጤ	ጥ	ጦ	ጧ	
ጨ	ጨ	ጨ	ጨ	ጨ	ጨ	ጨ	ጨ	ጨ	
ጮ	ጮ	ጮ	ጮ		ጮ	ጮ	ጮ		
ጸ	ጸ	ጸ	ጸ	ጸ	ጸ	ጸ	ጸ	ጸ	
ጸ	ጸ	ጸ	ጸ	ጸ	ጸ	ጸ	ጸ		
ፀ	ፁ	ፂ	ፃ		ፄ	ፅ	ፆ	ፇ	
ፈ	ፉ	ፈ	ፉ		ፈ	ፉ			ፈ
ፎ		ፎ	ፉ		ፈ	ፉ			ፈ
ፐ	ፑ	ፒ	ፓ		ፔ	ፕ	ፖ	ፘ	
ፒ		ፒ	ፓ		ፔ	ፕ			
፩	፪	፫	፬	፭	፮	፯	፰	፱	፲
፳	፴	፵	፶	፷	፸	፹	፺	፻	፼
1	2	3	4	5	6	7	8	9	0
::	:	?	:	:	:	:	!	!	.
'	'	«	»	“	”	/	()	[
]	{	}	<	=	>	\	#	%	&
*	-	+	±	×	÷	∴	∴	∴	—
.	˘	˙	˚	˛	˜	˘	˙	˚	˛
ö	<	>							

Appendix C: A Blin Syllabary from “ጠፍሐት ብሊና ክታቦቱኸ”

5











ፍደላት ብሊናው ፍተማምድ

ሀ	ሁ	ሂ	ሃ	ሄ	ሀ	ሁ
ለ	ሉ	ሊ	ላ	ሌ	ለ	ሉ
ሐ	ሑ	ሒ	ሓ	ሔ	ሐ	ሑ
መ	ሙ	ሚ	ማ	ሚ	ም	ሞ
ሰ	ሱ	ሲ	ሳ	ሴ	ሰ	ሱ
ሸ	ሹ	ሺ	ሻ	ሼ	ሸ	ሹ
ረ	ሩ	ሪ	ራ	ራ	ር	ሮ
ቀ	ቁ	ቂ	ቃ	ቄ	ቅ	ቆ
ቸ	ቹ	ቺ	ቻ	ቼ	ቸ	ቹ
ቦ	ቦ	ቦ	ቦ	ቦ	ቦ	ቦ
ተ	ተ	ተ	ተ	ተ	ተ	ተ
ነ	ነ	ነ	ነ	ነ	ነ	ነ
አ	አ	አ	አ	አ	አ	አ
ከ	ከ	ከ	ከ	ከ	ከ	ከ
ኸ	ኸ	ኸ	ኸ	ኸ	ኸ	ኸ
ወ	ወ	ወ	ወ	ወ	ወ	ወ
ዐ	ዐ	ዐ	ዐ	ዐ	ዐ	ዐ
የ	የ	የ	የ	የ	የ	የ
ደ	ደ	ደ	ደ	ደ	ደ	ደ
ጀ	ጀ	ጀ	ጀ	ጀ	ጀ	ጀ
ገ	ገ	ገ	ገ	ገ	ገ	ገ
* ገ	ገ	ገ	ገ	ገ	ገ	ገ
ጠ	ጠ	ጠ	ጠ	ጠ	ጠ	ጠ
ጨ	ጨ	ጨ	ጨ	ጨ	ጨ	ጨ
ሬ	ሬ	ሬ	ሬ	ሬ	ሬ	ሬ
ዘ	ዘ	ዘ	ዘ	ዘ	ዘ	ዘ
ዠ	ዠ	ዠ	ዠ	ዠ	ዠ	ዠ
ቸ	ቸ	ቸ	ቸ	ቸ	ቸ	ቸ
ኘ	ኘ	ኘ	ኘ	ኘ	ኘ	ኘ
ጸ	ጸ	ጸ	ጸ	ጸ	ጸ	ጸ
ጸ	ጸ	ጸ	ጸ	ጸ	ጸ	ጸ
ፐ	ፐ	ፐ	ፐ	ፐ	ፐ	ፐ
ሰ	-	ሰ	ሰ	ሰ	ሰ	-
ገ	-	ገ	ገ	ገ	ገ	-
* ገ	-	ገ	ገ	ገ	ገ	-
ኸ	-	ኸ	ኸ	ኸ	ኸ	-
ቁ	-	ቁ	ቁ	ቁ	ቁ	-
ቸ	-	ቸ	ቸ	ቸ	ቸ	-

Appendix F: Ethiopic Tonal Marks

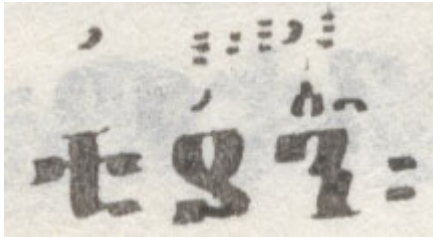
The Ethiopian Orthodox Church uses a system of annotation to record and recite hymns. Under church canon the system was devised by St Yared who lived from 513 – 579 CE (505-571 EC). The system in modern form is composed of roughly 150 annotations and contains the set of the 20 Ethiopic numerals (often sans the lower line), 121 abbreviated words and 10 unique marks not represented by letter symbols. The annotation is made on three rows above a line of text (from bottom upward formally named: Ge’ez, Ezel and Ararai). Each row is a different mode for how the passages are to be voiced during different ceremonies. Ge’ez (the name of the language but also meaning “the first” in many contexts) is the plain chant for ordinary days; Ezel is a more measured beat for funerals, the Ezel row is often written in red ink for distinction; Ararai is a lighter, freer mood for festivals.

The hymns are a vital part of Orthodox liturgy in the present day and the additional symbols are essential to preserving this nearly 1500 year old tradition. The Zaima symbols (tonal marks) are continually published in books year after year but in hand written calligraphic form as they remain unsupported by publishing technology. In some cases the symbols are handwritten above typeset text. As hand rendered text, the shapes of the symbols may vary from calligrapher to calligrapher. The following table presents the symbols in representative forms and approximate translations and associate religious symbolism as presented in *YeZaima Arist Milikt*:

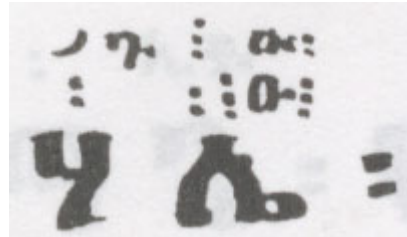
	Yizet (ደዘት) – Indicates a pause or emphasis on the letter of a word while chanting. It symbolizes God’s omnipotence.
	Deret (ደረት) – Indicates the letter where the rhythm stops and the pitch rises. It symbolizes how God raised Jesus from the dead.
	Rikrik (ርከርከ also አረከርከ) – Indicates where the rhythm stays on one word and the vocal chord shows the repeat of the rhythm. It symbolizes the dripping of Jesus’ blood when he was struck and hung on the cross.
	Short-Rikrik (ጎጲር ፡ርከርከ) – The second form of Rikrik used to indicate a shorter duration.
	Difat (ደፋት) – Indicates the voice pitch should fall at the start of the letter. It symbolizes that our Lord Savior Jesus Christ descended onto earth and came into this world.
	Kinat (ቅናት) – Helps the rhythm to hold the last breath and rises. It symbolizes how jealously lead to the death of Jesus.
	Cheret (ቄረት) – Indicates where the rhythm picks up over a word or can pull it backward and forward. It symbolizes the scars where Jesus Christ was whipped.
	Hidet (ኢደት) – Indicates that the chant spans more than 2, 3 or 4 words and shows how the rhythm progresses. It symbolizes how Jesus teaches all over.
	Deret-Hidet (ደረት፡ኢደት) – Deret and Hidet as they occur together to indicate a continuing and rising pitch.
	Kurts (ቀርቆ also ቁርቁ) – Indicates how the rhythm holds the last word and pauses. In this case the rhythm does not have the characteristic of literature when read. It symbolizes how Jesus came to the world to save the people, it shows his determination.

The symbols are generally written ¼th the height of regular letters and in a few cases have additive properties. Most notably the full and short Rikrik marks can be stacked (preferred when row context conflicts do not occur) or placed side-by-side as space allows. Each dot then provides a measured “count” for the duration that the tone is held. Two short Rikriks combine for a 4 beat count, a full and short Rikrik combine for a 5 beat count and two full Rikriks combine for a 6 beat count. Note that the full Rikrik *can not* combine with Yizet to indicate a sequence of 4 dots as an equivalence to two short Rikriks as their functions are strictly different.

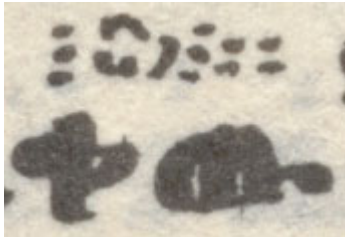
The following samples illustrate the mixed use of the short and full Rikrik marks:



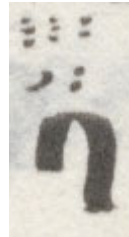
Selot Kidasie p. 9



YeZaima Arist Milikt p. 264

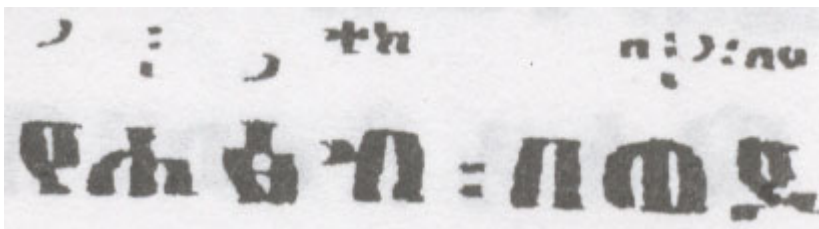


Zimarie WeMewas'et p.1



Selot Kidasie p. 35

Noteworthy in the following sample are the disproportional sizes in the dots of the Yizet and Short Rikrik marks above the 2nd and 6th letters:



YeZaima Arist Milikt p. 21

As a calligraphic system of annotation up to this point, there is no known precedence for the rendering of the symbols in typesetting software. It is anticipated however that software capable of handling Kanbun marks, Ruby and similar systems of interlinear annotation, will be readily adaptable to the requirements of Ethiopic tonal notation.

The following page presents a basic sample of the notation system from page 25 of *YeZaima Arist Milikt*. The ten symbols are identified within the sample.

- Yizet
- Deret
- Rikrik
- Short-Rikrik
- Diffat
- Kenat
- Chiret
- Hidet
- Deret-Hidet
- Kurt

መ ል ጠ ጃ ::

ተ፡ ቡሩክ፡ ዘነሥ ለ፡ እመ ቀ

ደ ስ፡ ዘ ደ ሠ ረ፡ ን ጠ ለ ተ፡ ወ

ደ ደ ም ለ ስ፡ ን ጋ ሆ፡ ዝ ወ ለ ቀ

ዘ ለ ግ ዚ ለ ብ ለ ር፡ ያ ል ፡ ዘ ተ

ሰ ብ ለ፡ እ ም ሰ ኒ ኪ፡ ዘ ለ ሰ ረ ገ፡

ለ ለ ቡ ሆ፡ ር ለ ሰ ፡ ህ ግ ገ፡ ወ መ

ሥ ሞ ህ ተ፡ ሥ ሠ ሙ ረ፡ ን ስ ግ ድ

ለ ክ፡ ክ ር ለ ቶ ስ፡ ም ስ ለ፡ ለ ቡ

ክ፡ ን ር ር፡ ስ ጣ ሞ ፎ፡ ወ መ ገ ል

ክ ክ፡ ቀ ሂ ስ፡ ጣ ለ ሞ ፎ፡ እ ስ

መ፡ መ ጸ ለ ክ፡ ወ ለ ሞ ን ገ ክ

ግ ህ ዝ፡ ሠ ራ ሞ ቶ፡ መ ላ ለ

ክ ቲ ሆ፡ ለ መ ሞ ን ኒ፡ ዓ ላ ለ ም፡

ደ ቀ ወ መ ፡፡ ቀ ድ ጣ ሆ ፡ ለ

መ ሞ ን ኒ፡ ዓ ላ ለ ም ፡፡ ወ ደ ኪ

ል ል ሞ፡ ለ መ ሞ ን ኒ፡ ዓ ላ ለ ም

ሥ ጋ ሆ፡ ወ ም ፡፡ ለ መ ሞ

ን ኒ፡ ዓ ላ ለ ም ፡፡ ወ ግ ስ ጸ ለ፡

Appendix G: Ethiopic Gemination Sample from “Traité de langue Amharique”

TABLEAU XXXII.
CONJUGAISON DES VERBES
COMME COMPOSÉS DESCRIPTIFS.

avec አለ ፣ አደረገ ፣ አሰኘ ፣ ; tous les exemples sont donnés ici avec አለ ፣
Voir les sens des verbes Chap. VI, D.

RADICAL.	COMPOSÉ ATTÉNUATIF.	COMPOSÉ INTENSIF.
Trilitère type A.	ሰበር ፣ አለ ፣	ሰብር ፣ አለ ፣
» type B.	መለሰ ፣ አለ ፣	ምልሰ ፣ አለ ፣
» à deux radicales semblables.	ሰከከ ፣ አለ ፣	ስክክ ፣ አለ ፣
» à voyelle -a-	መለድ ፣ አለ ፣	ምልድ ፣ አለ ፣
Bilitère à finale -a	ነካ ፣ አለ ፣	
à finale -a (type A)	ሰጠጥ ፣ አለ ፣	ስጥጥ ፣ አለ ፣
(type B)	ለየጥ ፣ አለ ፣	ልይጥ ፣ አለ ፣
à voyelle -ā-	ራቆ ፣ አለ ፣	
à voyelle -o-	ዘር ፣ አለ ፣	
à voyelle -e-	ሐድ ፣ አለ ፣	
Quadrilitère	ለምጠጥ ፣ አለ ፣	ልምጥጥ ፣ አለ ፣
» abrégé à -a	ዘርጋ ፣ አለ ፣	ግርጥጥ ፣ አለ ፣
» abrégé à -a	ሰርጅጥ ፣ አለ ፣	ስርጅጥ ፣ አለ ፣
» doublement abrégé	ሳሳ ፣ አለ ፣	
Quinquilitère	ሰበርበር ፣ አለ ፣	ሰብርብር ፣ አለ ፣
Sexilitère	ሰንጠቅጠቅ ፣ አለ ፣	ሰንጥቅጥጥ ፣ አለ ፣