DEVELOPING ALA-LC ROMANIZATION TABLES ALONGSIDE NEW TECHNOLOGIES FOR IMPROVED DISCOVERY

EXAMPLE: ADLAM

Sponsored by:
ALA Core Committee on Cataloging: African and Asian Materials &
ALA-LC Romanization Table Review Board
INTRODUCTION

Beacher Wiggins

Director of the Acquisitions and Bibliographic Access Directorate, Library of Congress
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</table>
New York City workshop on ADLaM script encoding; met Abdoulaye and Ibrahima Barry, inventors of the script. First ADLaM book gifted to Yale and cataloged using provisional romanization.
ADLaM script included as part of the Unicode standard, version 9.0
From: https://unicode.org/L2/L2014/14219r-n4628-adlam.pdf
First work toward an ADLaM romanization table is started, with support of the Africana Librarians Council Cataloging Committee.
Fonts, keyboard implementations, and transliteration tools start to become available for ADLaM, easing production of further iterations of the table.

Kigelia Adlam

The Adlam alphabet was invented in Guinea in the 1980s by Abdoulaye Barry and Ibrahima Barry for the Pular (Fulfulde) language spoken by the Fulani people of West Africa. Adlam reads right-to-left and has upper- and lowercase letters in two variants: connected and unconnected. The designers received feedback from Abdoulaye and Ibrahima Barry throughout the design of this complement.

From: https://learn.microsoft.com/en-us/typography/font-list/kigelia

From: http://adlamtesting.appspot.com/
ADLaM romanization table draft includes a column for the older-style glyphs.

<table>
<thead>
<tr>
<th>Upper case</th>
<th>Vernacular, old style</th>
<th>Vernacular, new style</th>
<th>Romanization</th>
</tr>
</thead>
<tbody>
<tr>
<td>ɓ</td>
<td>ɓ</td>
<td>ɓ</td>
<td>A</td>
</tr>
<tr>
<td>ɰ</td>
<td>ɰ</td>
<td>ɰ</td>
<td>D</td>
</tr>
<tr>
<td>ɓ</td>
<td>ɓ</td>
<td>ɓ</td>
<td>L</td>
</tr>
<tr>
<td>ɓ</td>
<td>ɓ</td>
<td>ɓ</td>
<td>M</td>
</tr>
<tr>
<td>ɓ</td>
<td>ɓ</td>
<td>ɓ</td>
<td>B</td>
</tr>
<tr>
<td>ɓ</td>
<td>ɓ</td>
<td>ɓ</td>
<td>S</td>
</tr>
</tbody>
</table>

2018–2020
ADLaM nasalization mark (U+1E94B) added in version 12 of the Unicode Standard.
Received feedback from Artem Davydov, Maria Kosogorova, and Robert Rendall, mostly on diacritics and table structure, and Diacritics section modified, part 3

Nukta (placed above the character when there is no other diacritic above; as a *hoortobbere*, but below the character when a lengthener or gemination mark is above, as a *lestobbere*; examples with capital S, E, O, and J)

Additional consonants using the **nukta**

*Nukta* (placed above the character when there is no other diacritic above, but below the character when a lengthener or gemination mark is above; examples with capital ſ, Ŕ, Ć and Ԣ)
Romanization Table Review Board accepted proposal for review of the table. A group formed and has been meeting ever since. Received feedback from Thierno Diallo, Aysha Sow, and Robert Rendall, largely on character values.
First ADLaM script record created in production by Marcia Tiede at Northwestern University using Alma and a recent draft of the romanization table.

From: https://search.library.northwestern.edu/permalink/01NWU_INST/h04e76/alma9982095697402441
REVIEW BOARD
SUBCOMMITTEE
charge and process

Erin Freas-Smith

LIBRARY OF CONGRESS
Developed over 6 months, the 2 brothers (aged 10 and 14) took turns drawing letters and assigning sounds.

Recognizing the need for technology, the brothers developed the first ADLaM keyboard and font (2008), culminating in Unicode 9.0 inclusion.

Spreading through 10 countries in W. Africa; taught in educational courses; grammar book; Fulani dictionary; Independent apps for smartphones.

Recognizing small adoption by Big Tech, independent tools, small publishing houses, and the approval of the Romanization Table ensure growth supported by a community of users.
The charge of the subcommittee from the ALA–LC Romanization Table Review Board was in response to the creation of an ADLaM Romanization Table by Charles Riley, a senior cataloger of African languages and materials at Yale University, as well as an uptick in the volume of materials published utilizing the ADLaM script.
TECHNOLOGICAL TOOLS: DEVELOPMENT AND DEMONSTRATIONS

Neil Patel
Known Latin orthographies for Fula vary and don’t have a standard approach for transcribing loan words.

<table>
<thead>
<tr>
<th>Country</th>
<th>Letters</th>
<th>Vowels</th>
<th>Consonants</th>
<th>Diphthongs</th>
<th>Allophones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senegal</td>
<td>a b c d e f g h i j k l m mb</td>
<td>n nd nj η</td>
<td>η g ŋ o p q r s t u w y y'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>a b b c d e f g ŋ h i j k l m</td>
<td>nb n nd nj η</td>
<td>o p r s t u w y y'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>a b b c d ɗ e f g ng</td>
<td>h i j k l m</td>
<td>n nd ny η</td>
<td>o p r s t u w y y'</td>
<td></td>
</tr>
<tr>
<td>Cameroon</td>
<td>a b b c d ɗ e f g</td>
<td>h i j k l m</td>
<td>n ny η</td>
<td>o p r s t u w y y'</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>a b b c d ɗ e f g h i j k l m mb</td>
<td>n nd nj ny η ng</td>
<td>o p r s t u w y y'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Historical Guinean Ortho:**
- bh = ɓ
- nh = η
- dh = ɗ
- yh = ƴ
- q = ꙃ
- ty = c
- ny = Ꙁ/gn
- dy = j
ADLAM ROMANIZATION

- The Romanization table is agnostic to region and dialect.
- Digraph usage is limited to loan sounds and pre-nasalization.

| Romanization | a | d | l | m | b | s | p | ŕ | r | f | l | o | d | y | w | n | k | y | u | j | c | h | q | ŋ | t | ŋ |
| ₡           | A | V |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ₡           | r | V |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ₡           | KH|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ₡           | R | GB|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ₡           | Z |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ₡           | KP|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ₡           | SH|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

- Adlan, new style
  - y₂’āl: ND
    - U+1E9030, U+1E94B, U+1E901
  - y₂’āl: nd
    - U+1E9032, U+1E923
  - m₂: mmb
    - U+1E9332, U+1E928
  - m₂: nj
    - U+1E9332, U+1E936
  - j₂: ng
    - U+1E9332, U+1E93A

- Adlan, new style
  - y₂’āl: ND
    - U+1E9030, U+1E94B, U+1E901
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    - U+1E9332, U+1E93A

- Jamma Patel
BIBFRAME TESTING

Validate that BIBFRAME can handle Adlam text
BIBFRAME TESTING

Validate that BIBFRAME can handle Adlam text
TRANSLITERATION TOOLS

Standalone web-based tool

Adlam Transliteration

This conversion utility is intended for library cataloging purposes. Transliteration is based on the standard developed by the Library of Congress and as a result, this conversion does not generate text using standard Roman orthography in Latin.

- Latin to Adlam
- Adlam to Latin

Enter text to be converted

Converted text

Scriptshifter

Transliterate string

Results will appear here.
The website is built using JavaScript using regex (regular expressions) to re-map characters in cascading fashion.
**CONTEXT-BASED**

word initial vs word medial pre-nasalization

<table>
<thead>
<tr>
<th>Word Initial</th>
<th>Word Medial</th>
</tr>
</thead>
<tbody>
<tr>
<td>ʊs</td>
<td>ʊs</td>
</tr>
<tr>
<td>ʉʒ</td>
<td>ʉʒ</td>
</tr>
<tr>
<td>mʒ</td>
<td>mʒ</td>
</tr>
<tr>
<td>ʊʒ</td>
<td>ʊʒ</td>
</tr>
<tr>
<td>ɨʒ</td>
<td>ɨʒ</td>
</tr>
<tr>
<td>mb</td>
<td>mb</td>
</tr>
<tr>
<td>nd</td>
<td>nd</td>
</tr>
<tr>
<td>nj</td>
<td>nj</td>
</tr>
<tr>
<td>ng</td>
<td>ng</td>
</tr>
</tbody>
</table>
**MANY COMBINATIONS**

non-geminated vowels, diacritic combinations, digraphs

<table>
<thead>
<tr>
<th>MANY-TO-MANY</th>
<th>MANY-TO-ONE</th>
<th>ONE-TO_MANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>ອន</td>
<td>១្ល</td>
<td>១</td>
</tr>
<tr>
<td>២</td>
<td>២</td>
<td>២</td>
</tr>
<tr>
<td>៣</td>
<td>៣</td>
<td>៣</td>
</tr>
</tbody>
</table>
ONE-TO-ONE

simple substitutions

\[\begin{align*}
\text{ג} & \rightarrow \text{א} \\
\text{ד} & \rightarrow \text{ל} \\
\text{ה} & \rightarrow \text{י}
\end{align*}\]
CLEANUP

clean capitalization of digraphs

POST TRANSLITERATION

UFE → KhI → KHI
ScriptShifter has its own implementation but the logic from the web tool is compatible.
https://sites.google.com/jamra-patel.com/loc-text-conversion-utilities/adlam-transliteration

Transliterate string — LoC Transliterator (bibframe.org)
By design the transliteration tools pass through any characters that are not in the romanization table.

FUTURE WORK: ERROR CHECK

E tuugaade ina tenti n'de bamtatoo biynngu yummaagu hakkunnde leydeelee dimd ude
ROMANIZATION:
NECESSITY AND OPPORTUNITIES FOR TECHNOLOGY

Jesselyn Zoom
NEED FOR ROMANIZATION

- Access to Key Data
- Comfort for Non-Native Speaker
- Assistance for Staff
- Facilitate Collocation of Library Material
REVISED PROCEDURAL GUIDELINES FOR PROPOSED NEW OR REVISED ROMANIZATION GUIDELINES

https://www.loc.gov/catdir/cps0/romguid_2010.html
Review Board

- Library of Congress representatives (3)
- CC:DA representatives (2)
- CC:AAM representatives (2)

- Oversees the review and approves or disapproves proposals
- Responsible for appointing the Review Subcommittee to conduct the review of the proposal
WORK ACCOMPLISHED

Updated Tables
- Armenian
- Macedonian
- Japanese
- Church Slavic

New Tables
- ADLaM
- Meetei (ongoing)
OPPORTUNITIES OF TECHNOLOGY

- Machine Transliteration
- Artificial Intelligence
- Mobile Applications
THANK YOU!

Jessalyn Zoom: jiwu@loc.gov
Erin Freas-Smith: efre@loc.gov
Charles Riley: charles.riley@yale.edu
Neil Patel: neil@jamra-patel.com