

August 23, 2023
1:00PM EDT

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

ᐃᐃᐃᐃᐃ

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

LIBRARY
OF CONGRESS

**ACQUISITIONS &
BIBLIOGRAPHIC
ACCESS**

CONTENT

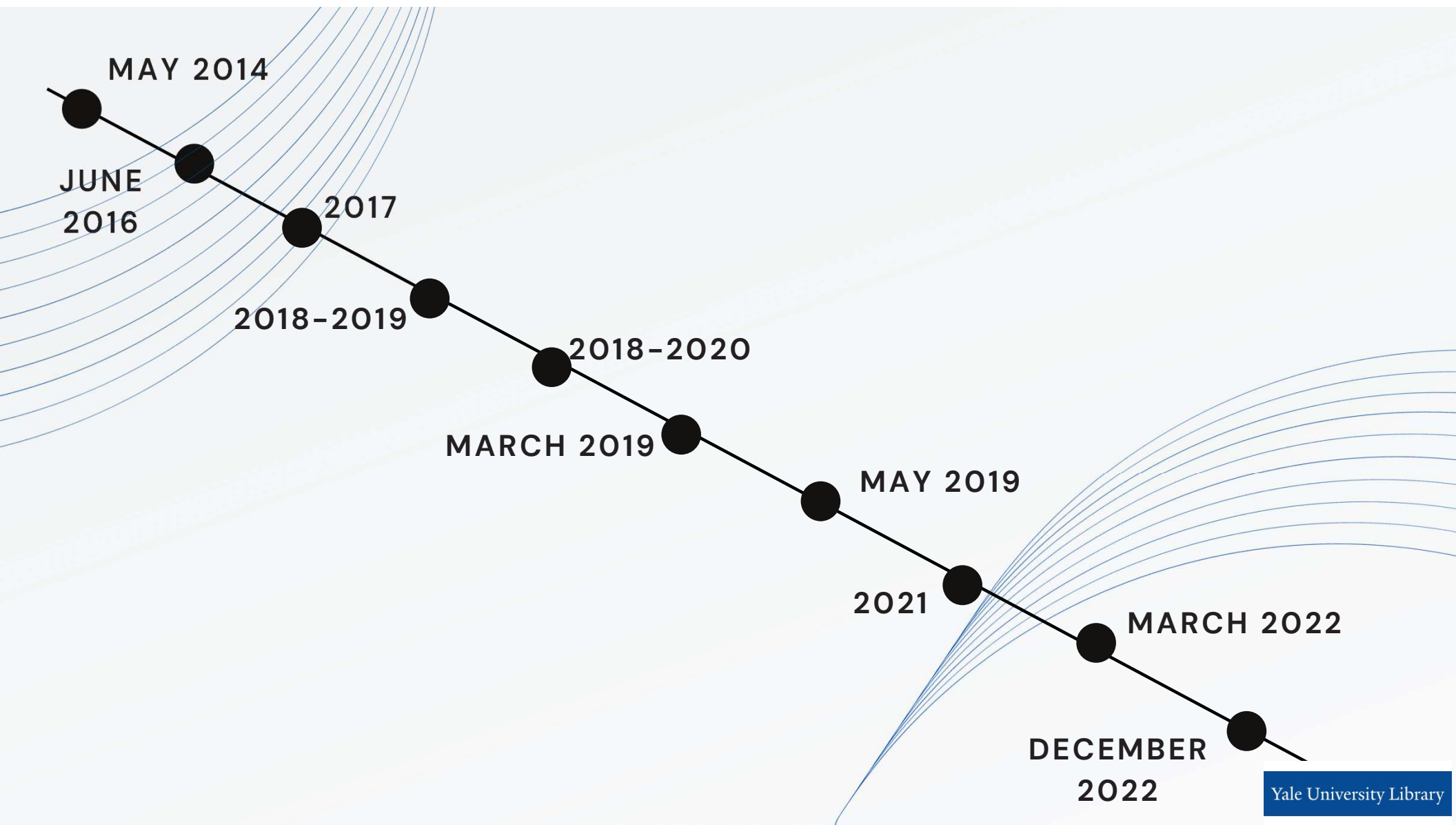
- 01** INTRODUCTION - BEACHER WIGGINS
- 02** CREATING THE ADLaM ROMANIZATION TABLE
- CHARLES RILEY
- 03** REVIEW BOARD SUBCOMMITTEE: COMPOSITION
AND WORK - ERIN FREAS-SMITH
- 04** TECHNOLOGICAL TOOLS: DEVELOPMENT AND
DEMONSTRATIONS- NEIL PATEL
- 05** ROMANIZATION: NECESSITY AND OPPORTUNITIES FOR
TECHNOLOGY- JESSALYN ZOOM
- 06** Q&A - BOUTSABA JANETVILAY

CREATING THE ADLAM ROMANIZATION TABLE

Charles L. Riley
Catalog Librarian for African Languages,
YUL Technical Services

Yale University Library





MAY 2014

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.

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Winden jangen e hāla Pular : deftere tāli e tindi Pular

Title	Winden jangen e hāla Pular : deftere tāli e tindi Pular.
Publication	Place of publication not identified : publisher not identified, [2010?]
Physical Description	56 pages ; 21 cm
Notes	In Fula language, Adlam script.
Format	Books
Language	Fula
Added to Catalog	May 13, 2014
Subjects	Fula language > Texts .
Genre/Form	Tales, Fula - Guinea.
Bookmark As	https://search.library.yale.edu/catalog/11967118
Citation	Cite

Available from:

Library Shelving Facility (LSF)
PL8184 .W56 2010

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[Request scan of article / chapter](#) →

[Send to home address](#) →

✓ Available

Notes: Gift of Ibrahima Barry

[More info at Google books](#)



Ibrahima Jogo Barry, co-inventor of the ADLaM script, and Riley, May 2014, New York City

JUNE
2016

1E900

Adlam

1E95F

	1E90	1E91	1E92	1E93	1E94	1E95
0	𐤀	𐤁	𐤂	𐤃	𐤄	𐤅
1	𐤆	𐤇	𐤈	𐤉	𐤊	𐤋
2	𐤌	𐤍	𐤎	𐤏	𐤐	𐤑
3	𐤒	𐤓	𐤔	𐤕	𐤖	𐤗
4	𐤘	𐤙	𐤚	𐤛	𐤜	𐤝
5	𐤞	𐤟	𐤠	𐤡	𐤢	𐤣
6	𐤤	𐤥	𐤦	𐤧	𐤨	𐤩
7	𐤪	𐤫	𐤬	𐤭	𐤮	𐤯
8	𐤰	𐤱	𐤲	𐤳	𐤴	𐤵
9	𐤶	𐤷	𐤸	𐤹	𐤺	𐤻
A	𐤼	𐤽	𐤾	𐤿	𐥀	𐥁
B	𐥂	𐥃	𐥄	𐥅	𐥆	𐥇
C	𐥈	𐥉	𐥊	𐥋	𐥌	𐥍
D	𐥎	𐥏	𐥐	𐥑	𐥒	𐥓
E	𐥔	𐥕	𐥖	𐥗	𐥘	𐥙
F	𐥚	𐥛	𐥜	𐥝	𐥞	𐥟

Printed using UniBook™
(<http://www.unicode.org/unibook/>)

Printed: 27-Oct-2014

7

ADLaM script included
as part of the Unicode
standard, version 9.0

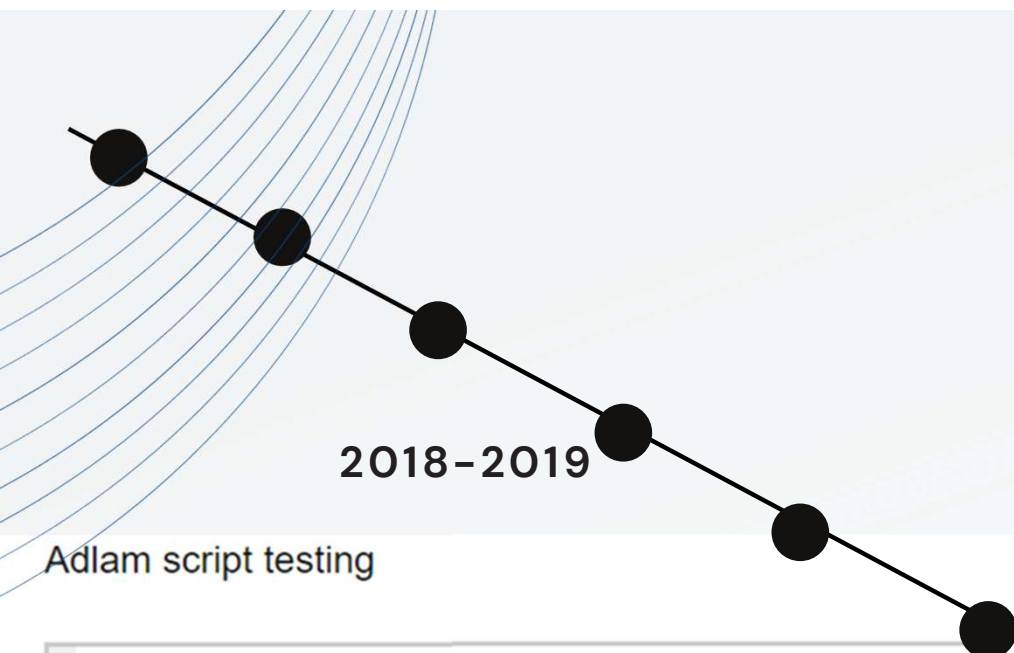
From:

<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.

Fulani (in Adlam script)

ᲀ	A	Ა	K
ᲁ	D	Ბ	Y
ᲂ	L	Გ	U
ᲃ	M	Დ	J
ᲄ	B	Ე	Č
ᲅ	S	Ვ	H



Adlam script testing



From: <http://adlamtesting.appspot.com/>

Fonts, keyboard implementations, and transliteration tools start to become available for ADLaM, easing production of further iterations of the table.

Kigelia Adlam

ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ
ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ
ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ ᑭ

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>

ADLaM romanization
table draft includes a
column for the older-
style glyphs.

2018-2020

Fula language in Adlam script

Upper case

Vernacular, old style

Vernacular, new style

Romanization

ᲀ

ᲁ

A

ᲂ

ᲃ

D

ᲄ

ᲅ

L

ᲆ

ᲇ

M

ᲈ

Ᲊ

B

ᲊ

᲋

S

MARCH 2019

ADLaM nasalization mark
(U+1E94B) added in version 12
of the Unicode Standard.

L2/18-282R

Proposal to encode ADLaM NASALIZATION MARK for ADLaM script

Abdoulaye Barry, Ibrahima Barry, Peter Constable, Andrew Glass

September 17, 2018

Summary

ADLaM script was added to Unicode in version 9.0 (2016) based on Michael Everson's proposal documents submitted in 2013 and 2014 (L2/13-191 & L2/14-219R). The present document addresses a gap in the ADLaM encoding by proposing a new mark character as an addition to the existing ADLaM block:

Glyph	Code	Character name
'	1E94B	ADLaM NASALIZATION MARK

Usage requirements

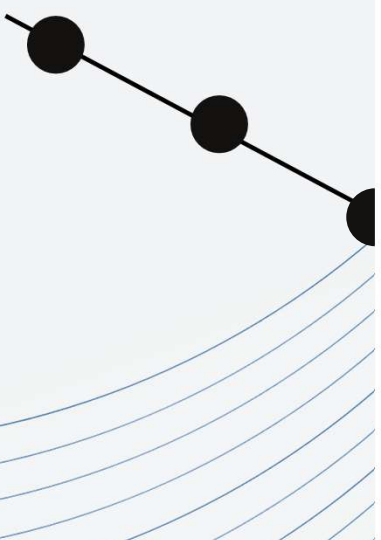
ADLaM script uses an apostrophe-like sign called Nyondal to nasalize a succeeding consonant. For example:

𞤣𞤲𞤸𞤢𞤸𞤣𞤢𞤸	/hin.du/	'ancient'
𞤣𞤲𞤸𞤢𞤸𞤣𞤢𞤸𞤢𞤸𞤣𞤢𞤸	/hi.ɗu/	'it'



MAY 2019

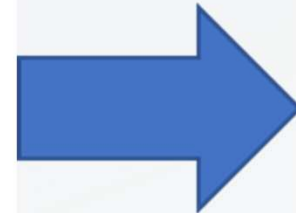
About 25 ADLaM titles spread
across seven US institutions:
Indiana, Harvard, Columbia,
Northwestern, Yale, UCLA, and
Michigan State.



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 \mathfrak{S} , \mathfrak{E} , \mathfrak{O} and \mathfrak{J})



Received feedback from Artem Davydov, Maria Kosogorova, and Robert Rendall, mostly on diacritics and table structure, and Diacritics section modified, part 3

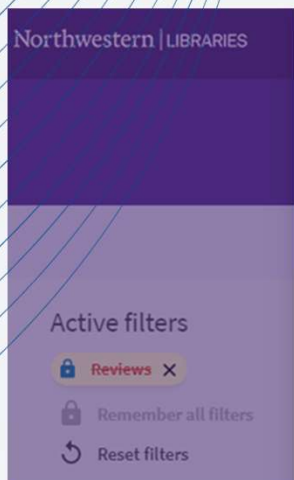
2021

Fula language in Adlam script

Upper case letters Vernacular, new style Romanization		Lower case letters Vernacular, new style Romanization	
ᲀ	A	ᲁ	a
ᲂ	D	ᲃ	d
ᲄ	L	ᲅ	l
ᲆ	M	ᲇ	m
ᲈ	B	Ᲊ	b
ᲊ	S	᲋	s
᲌	P	᲍	p
᲎	B or BH	᲏	b or bh

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.

MARCH 2022



BOOK
(ប្រគេនប្រធាន) ប្រគេន ឈ្មោះ / ប្រគេន ឈ្មោះ : ប្រគេន ឈ្មោះ & ប្រគេន ឈ្មោះ.; Gandal
n'gal e jawdi n'din : hol ko buri?
Bari, Omaru, author.; ប្រគេន ឈ្មោះ, author.
Conakry, Guinea : Winden Jangen Adlam; [approximately 2015?]

Check request options >

TOP

SEND TO

HOW TO GET IT

DETAILS

TAGS

VIRTUAL BROWSE

Send to



QR CODE



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ENDNOTE



ENDNOTE WEB



EXPORT TO
EXCEL



PERMALINK



PRINT



E-MAIL TO:

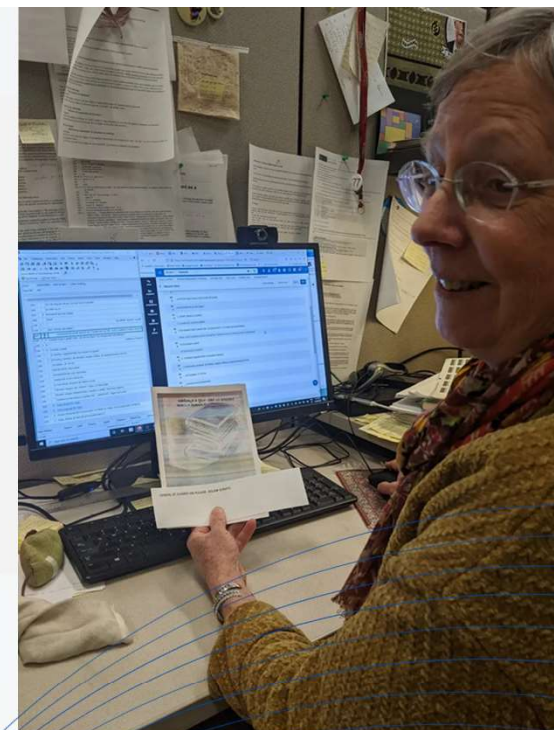


GET CITATION

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](https://search.library.northwestern.edu/permalink/01NWU_INST/h04e76/alma9982095697402441)



DECEMBER
2022

Yale University Library

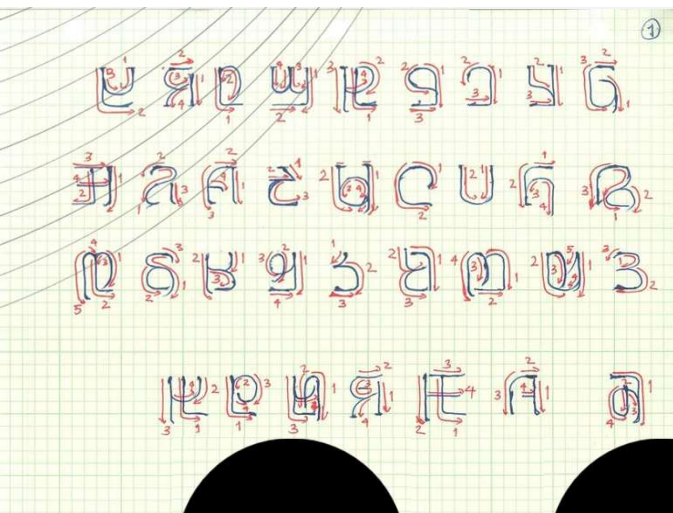


REVIEW BOARD SUBCOMMITTEE

charge and process

Erin Freas-Smith





1990

1999

2014

2019

2023

SCRIPT CREATED

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

CLASSES

Breakthrough with a radio interview in Conakry, Guinea in 1993; knowledge and usage of ADLaM spreads; creation of student groups (Windén Jangen)

UNICODE

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

ADOPTION

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

TECHNOLOGY

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

SUBCOMMITTEE MEMBERS



Erin
Freas-Smith

Chair,
Subcommittee



Jessalyn
Zoom

Member,
Review Board



Edward
Miner

Member,
Subcommittee



Neil
Patel

Consultant,
JamraPatel



Charles
Riley

Table
Creator



Abdoulaye
Barry

Script
Co-Creator



Ibrahima
Barry

Script
Co-Creator

PROCESS

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.

SUBCOMMITTEE
RECEIVED CHARGE FROM
REVIEW BOARD;
CONVENED AND
OUTLINED PROCESS;
CONSIDERED EXISTING
TABLE

JULY-AUGUST
2022

TABLE POSTED TO
VARIOUS SITES AND SENT
DIRECTLY TO INDIVIDUAL
STAKEHOLDERS
OUTSIDE COMMENTS
RECEIVED AND
INCORPORATED

AUGUST-OCTOBER
2022

OUTSIDE COMMENTS
INCORPORATED;
UNICODE POINTS ADDED
TO TABLE;
TRANSLITERATION TOOL
REFINED AND TESTED

OCTOBER-DECEMBER
2022

ENHANCED TESTING
PHASE FOR
TECHNOLOGICAL
INTEGRATION:
UNICODE, MARC, AND
MARVA

DECEMBER 2022-
FEBRUARY 2023

FINAL TESTING; REPORT
DRAFTED AND SENT TO
REVIEW BOARD FOR
FINAL APPROVAL;
UNANIMOUS APPROVAL

FEBRUARY-APRIL
2023



TECHNOLOGICAL TOOLS: DEVELOPMENT AND DEMONSTRATIONS

Neil Patel

JP JamraPatel



FULA LATIN ORTHOGRAPHIES

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

Senegal	a	b	ɓ	c	d		e	f	g		h	i	j	k	l	m	mb		n	nd	nj		ŋ		ŋg	ñ	o	p	q	r	s	t	u	w	y	ƴ	'
Guinea	a	b	ɓ	c	d		e	f	g	ɠ	h	i	j	k	l	m		nb	n	nd	nj		ŋ				o	p		r	s	t	u	w	y	ƴ	'
Burkina Faso	a	b	ɓ	c	d	ɗ	e	f	g	ng	h	i	j	k	l	m			n	nd		ny	ŋ				o	p		r	s	t	u	w	y	ƴ	'
Cameroon	a	b	ɓ	c	d	ɗ	e	f	g		h	i	j	k	l	m			n			ny	ŋ				o	p		r	s	t	u	w	y	ƴ	'
Niger	a	b	ɓ	c	d	ɗ	e	f	g		h	i	j	k	l	m	mb		n	nd	nj	ny	ŋ	ng			o	p		r	s	t	u	w	y	ƴ	'

Historical Guinean
Ortho:

bh = ɓ nh = ŋ

dh = ɗ yh = y

q = ɠ ty = c

ny = n/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 ɓ r e f l o ɗ y w n k y u j c h q ñ t ɲ

ʀ	V	ʀ	v
U+1E91C		U+1E93E	
Ɔ	KH	Ɔ	kh
U+1E91D		U+1E93F	
ʀ	GB	ɓ	gb
U+1E91E		U+1E940	
ʁ	Z	ɹ	z
U+1E91F		U+1E941	
ʁ	KP	ɹ	kp
U+1E920		U+1E942	
ʀ	SH	ʁ	sh
U+1E921		U+1E943	

Adlam, new style	Romanization	Adlam, new style	Romanization
ʁ'a	ND	ʁ'a	nnd
U+1E910, U+1E94B, U+1E901		U+1E932, U+1E923	
ʁ'a	nd	ʁ'a	mmb
U+1E932, U+1E94B, U+1E923		U+1E932, U+1E926	
ʁ'a	MB	ʁ'a	nnj
U+1E910, U+1E94B, U+1E904		U+1E932, U+1E936	
ʁ'a	mb	ʁ'a	nng
U+1E932, U+1E94B, U+1E926		U+1E932, U+1E93A	
ʁ'a	NJ		
U+1E910, U+1E94B, U+1E914			
ʁ'a	nj		
U+1E932, U+1E94B, U+1E936			
ʁ'a	NG		
U+1E910, U+1E94B, U+1E918			
ʁ'a	ng		
U+1E932, U+1E94B, U+1E93A			

BIBFRAME TESTING

Validate that BIBFRAME can handle Adlam text

The screenshot shows the top portion of the web application. The main input area contains the Armenian text "ՀԴՅ ՀԴՅ ՍԵՇԵՑԱԶ ԸՁ ԱԸՏ". To the right of the input area is a vertical dropdown menu titled "Custom Diacritics". The menu is open, displaying a list of diacritical marks with their corresponding descriptions:

- Ç cedilla
- É acute e
- Â circumflex a
- Ê circumflex e
- Î circumflex i
- Ô circumflex o
- Û circumflex u
- à grave accent a
- è grave accent e
- ì grave accent i
- ò grave accent o
- ù grave accent u

Below the input area, there are three colored boxes: a light blue box on the left containing the text "Romanization / Non-LC/ALA compliant" and "• No auto-suggest, use manual below"; a yellow box in the center containing the text "Manual language settings here"; and a pink box on the right containing the text "Toolbox" and "What are common text editing actions that could go here? [Add suggestion](#)". At the bottom right, there are two dark buttons labeled "Cancel" and "Save". A small "Manual Select" dropdown menu is also visible at the bottom left.

BIBFRAME TESTING

Validate that BIBFRAME can handle Adlam text

The screenshot displays the BIBFRAME interface for creating or editing a Work and its Instance. The left sidebar shows a navigation menu with categories like Work, Title Information, Form/Genre, and Classification numbers. The main area is divided into sections for Work, Title Information, and Form/Genre. The Work section shows fields for Creator of Work (Person), Title Information (Work Title), and Form/Genre (Form/Genre). The Instance section shows fields for Title Information (Instance Title), Media type (unmediated), and Carrier type (volume). The Adlam text 'ርክዔ ርክዔ ህይሮፕላን ርዳ ዝሮ' is entered in the Work Title field, and 'ርክዔ ርክዔ ህይሮፕላን ርዳ ዝሮ' is entered in the Instance Title field. The right sidebar shows the Admin Metadata for the Work and Instance, including fields for Title Information, Content Type, Admin Metadata, and Media type.

Work

- Creator of Work
- Title Information
 - Work Title
 - Variant Title
 - Parallel Title
- Form/Genre
- Government publication
- Date of Work
- Place of Origin of the Work
- (Geographic) Coverage of the Content
- (Time) Coverage of the Content
- Intended Audience
- Contribution
- Notes about the Work
- Contents
- Summary
- Subject of the Work
 - Subject components
 - Geographic subjects
 - Work as subject
- Classification numbers
 - Library of Congress Classification
 - Dewey Decimal Classification
 - National Library of Medicine Classification
 - Other Classification number
- Content Type
- Language

Work

/resources/works/570a1a25-19cf-4a06-8996-5c082ae9c697

Creator of Work

Person

Search LCNAP

Relationship Designator

Title Information

Work Title

Preferred Title for Work

ርክዔ ርክዔ ህይሮፕላን ርዳ ዝሮ

Part number

Part name

Form/Genre

Search LCGFT

Thesaurus (if not LCGFT)

Work

Title Information

ርክዔ ርክዔ ህይሮፕላን ርዳ ዝሮ

Content Type

text

Admin Metadata

Neil S Patel

DLC

pcc

rda

English

lc:R:T:bf2:MonographNR:Work

2023-05-02T16:50:00Z

create work

Instance

Mode of Issuance

single unit

Media type

unmediated

Carrier type

volume

Admin Metadata

Neil S Patel

DLC

pcc

rda

English

lc:R:T:bf2:MonographNR:Instance

2023-05-02T16:50:00Z

create work

TRANSLITERATION TOOLS

Standalone web-based tool

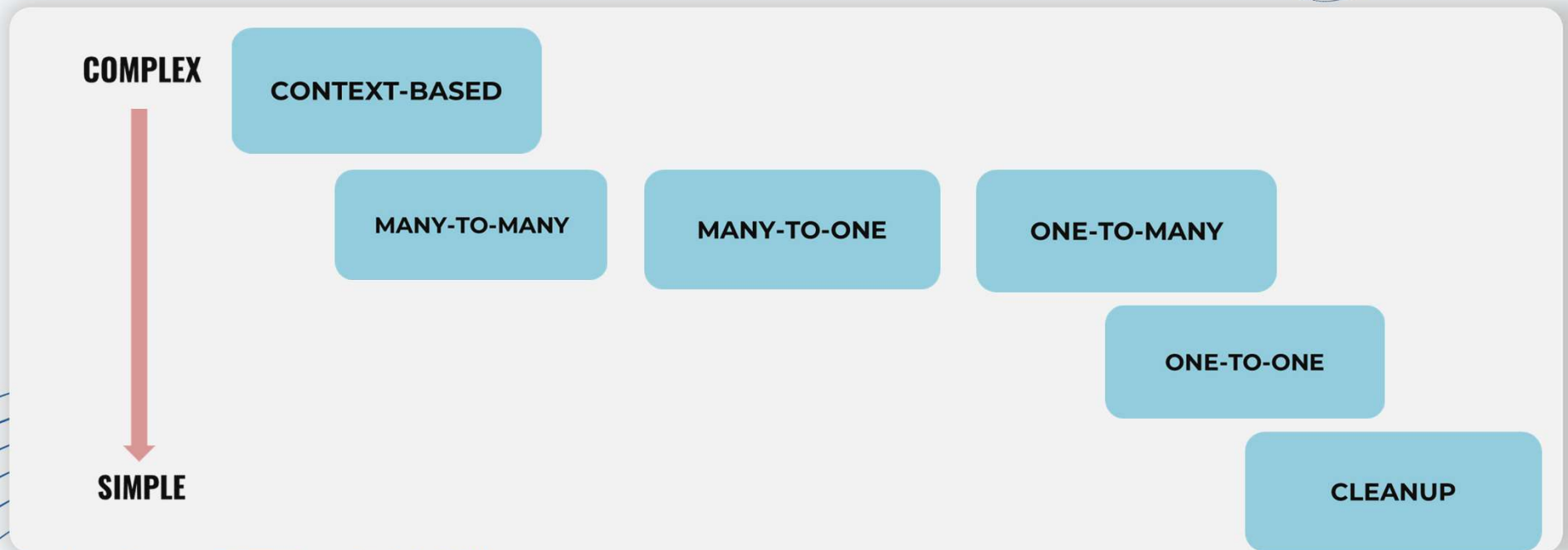
The screenshot shows the 'Adlam Transliteration' web tool. At the top, there is a header with the JamraPatel logo and the text 'LOC Text Conversion Util...'. Below the header, the title 'Adlam Transliteration' is prominently displayed. A disclaimer states: 'This conversion utility is intended for library 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 Fulah orthographies in Latin.' Below this, there are two radio buttons: 'Latin to Adlam' (selected) and 'Adlam to Latin'. A section labeled 'Enter text to be converted' contains a large text input area. To the right of this area is a 'Convert' button. Below the input area is a section labeled 'Converted text' with another large text input area. To the right of this area is a 'Copy' button.

Scriptshifter

The screenshot shows the 'Transliterate string' tool. It features a large 'Input text' area at the top. Below this is a 'Language' dropdown menu set to 'Pulaar (Adlam)'. Underneath the dropdown is a checkbox labeled 'Roman to Script' which is checked. Below these options is a 'Capitalize' section with three radio buttons: 'No change' (selected), 'First word', and 'All words'. At the bottom of the tool is a 'Transliterate!' button. Below the button, a grey box contains the text 'Results will appear here.'

DEVELOPMENT: WEB TOOL

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

Word Initial

ḽ

mb

ɣ

nd

ṁ

nj

ɮ

ng



Word Medial

ḽ'

mb

ɣ'

nd

ṁ'

nj

ɮ'

ng



MANY COMBINATIONS

non-geminated vowels, diacritic combinations, digraphs

MANY-TO-MANY

œ œ → u' u
ǔ → Aa
ē → ḳḳh

MANY-TO-ONE

č → ɔ
ð → ɛ

ONE-TO_MANY

Ṛ → Gb
Ɛ → Kh
Ɔ → Kp

ONE-TO-ONE

simple substitutions

ONE-TO-ONE

ב
ג
ד
ה



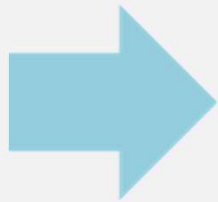
a
d
l
?

CLEANUP

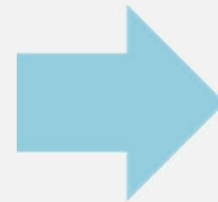
clean capitalization of digraphs

POST transliteration

WƎ



Khl



KHI

DEVELOPMENT: SCRIPTSHIFTER

ScriptShifter has its own implementation but the logic from the web tool is compatible.

COMPLEX



SIMPLE

CONTEXT-BASED

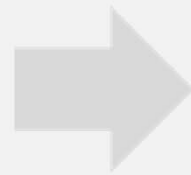
MANY-TO-MANY

MANY-TO-ONE

ONE-TO-MANY

ONE-TO-ONE

CLEANUP



**PREPROCESSING
HOOKS**



MAPPING TABLES



**POST PROCESSING
HOOKS**

DEMO

<https://sites.google.com/jamra-patel.com/loc-text-conversion-utilities/adlam-transliteration>

[Transliterate string — LoC Transliterator \(bibframe.org\)](#)

FUTURE WORK: ERROR CHECK

By design the transliteration tools pass through any characters that are not in the romanization table.

ᄒᄃᄃᄃᄃ ᄃᄃᄃᄃᄃᄃᄃ ᄃᄃ'ᄃ ᄃᄃᄃᄃᄃ ᄃᄃᄃ ᄃᄃᄃᄃᄃᄃ ᄃ
,ᄃᄃᄃ ᄃᄃᄃᄃ ᄃᄃᄃᄃᄃᄃᄃ ᄃᄃᄃᄃᄃᄃ ᄃᄃᄃᄃᄃᄃ

,E tuugaade ina tenti n'de bamtattoo biynngu
yummaagu hakkunnde leydeele dimɗ uɗe



ROMANIZATION:

NECESSITY AND OPPORTUNITIES FOR TECHNOLOGY

Jessalyn Zoom



NEED FOR ROMANIZATION

Access to
Key Data

Assistance
for Staff

Comfort for
Non-Native
Speaker

Facilitate
Collocation
of Library
Material





REVISED PROCEDURAL GUIDELINES FOR PROPOSED NEW OR REVISED ROMANIZATION GUIDELINES

https://www.loc.gov/catdir/cpsa/romguid_2010.html

ALA-LC ROMANIZATION REVIEW BOARD

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!

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