Linguistic insights into the history of Philippine script

Graphonomic structure  Sociolinguistic variation
Contact phenomena

Christopher Miller
11th Philippine Linguistic Congress
2011-12-08
Theories of geographical origins of Baybayin

- South Sumatra
  - Francisco 1973
  - Holle 1882
  - Kern 1882

- South Sulawesi
  - Fox 1962

- Assam Bengal
  - Diringer 1948
  - Oropilla 2005

- Ashokan Brahmi
  - Gardner 1938

- Tamil
  - Makarenko

- Cham
  - Wade 1993

- Giant clams
  - Izon
  - Comandante 2009

- Acrophonic pictographs
  - Tolentino

- Articulatory diagrams
  - Izon

- Early Gujarati
  - Miller 2010 ff
<table>
<thead>
<tr>
<th>Region</th>
<th>Script Abbreviation</th>
<th>Transliteration</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>10th C Kawi</td>
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<tr>
<td>14th C Sumatra</td>
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<td>Balinese</td>
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<td>ulu, suku</td>
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<tr>
<td>Sundanese</td>
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<td>panghulu, panyuku</td>
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<td>Lampung</td>
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<td>Bugis-Makassarese</td>
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<td>Philippines</td>
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<td>kudlit kulit tulsok</td>
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</tbody>
</table>

← Older Malay *kahuluan?
Intermediate origin of Old Philippine script?

- Philippine script was likely introduced indirectly via speakers of Bugis or Makassarese from South Sulawesi:
  - Old Philippine script did not spell coda Cs: it had a \(C(V)\) syllabographic template.
  - This is the same as Bugis-Makassarese script, which also uses a \(C(V)\) syllabographic template. This is natural for these languages because the range of syllable-final consonants is limited and relatively predictable:
    \[-N_{homorganic} / C_{homorganic}, -\eta/\_\#, \{-C_\alpha / _C_\alpha, -?/\_\#,b,d,g\}\].
  - Fox (1979): only plausible for the script to have this feature if it were adopted from Sulawesi users.
  - in Tagalog and other Philippine languages, there is a wide range of syllable-final consonants and it is difficult to guess which one should appear in a given case; there would be no plausible functional motivation for not spelling these out overtly if the script already allowed for that.
Vowel sign doubling

- Philippine and South Sulawesi scripts also share a unique abbreviation found only in these two scripts: two syllables with same consonant were often spelled with a single consonant letter bearing two vowel marks.

**Bugis-Makassarese script**
- soso
- ‘asesě

**Makassarese jangang-jangang (bird) script**
- mapalapoporo
- tupalilika

(By permission, Noorduyn 1993)
(By permission, KITLV Tropenmuseum 668-216)
Nitong tubigan

Ang pagkatutuo

Don Dionisyo Capolong

Don Agustín Tiualag

(University of Santo Tomas Archives)
Didactic vowel sign combination: *Doctrina* and Tagbanuwa

Conklin (1991), fieldwork observations:
“After pronouncing the three vocalic signs, a common way of reading this exercise aloud was to point to each basic or diacritic sign while chanting as rapidly as possible, *langláylu’*-*langláyli’*, *mangmáymu’*-*mangmáymi’*, etc., ending with *ngangnáguyngu’*-*ngangnáguyngi’*, *wawa’*.”
Didactic vowel sign combination in South Sumatra

“

When teaching spelling the native puts various signs together on the letter, and the learner reads

- ka kejunjung kar, keluan kir, kebitan kur;
- ka duwa di atas kan, keluan kin, kebitan kun;
- ka ketulang kang, keluan king, kebitan kung.

”
The vowel and nasal signs are thus applied: \( \hat{e} \) placed above the letter \( \hat{a} \), for example, changes it to \( \hat{t} \); \( \hat{u} \) under \( \hat{b} \), to \( \hat{t} \); \( \hat{u} \) before \( \hat{f} \), to \( \hat{t} \); \( \hat{o} \) after \( \hat{t} \), to \( \hat{t} \); and \( \hat{n} \) above \( \hat{b} \), to \( \hat{b} \); and in like manner to the other letters, as \( \hat{p} \), \( \hat{r} \), \( \hat{w} \), \( \hat{g} \) for the initial vowels, to \( \hat{a} \), \( \hat{i} \), \( \hat{u} \), \( \hat{y} \) or \( \hat{n} \). The whole of the signs are, by the native teachers, thus combined: \( \overline{\hat{t}} \).

Didactic use of \( \vbreve{e} \) in Makassarese to represent -N:
derived from “CaNceCi? CaNCoCu?”?
Bugis has /a e ĕ i o u/; Makassarese has no /ĕ/.
<table>
<thead>
<tr>
<th>10th C Kawi</th>
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<th>Bugis-Makassarese</th>
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(Tanjung Tanah, post 14th C)
There is little evidence that a relationship with Devanagari script, let alone with Gujarati, has ever been seriously entertained in the literature, however comparing the range of old Philippine lettershapes with early examples of the former as they appear in manuscripts from the 17th-19th centuries (Meherji Rana Library and Bombay University Library) and the 21st century (handwriting samples from Indian Type Foundry) reveals striking correspondences.

This discovery is unexpected, but it is known that Gujarati traders were active in Sumatra in the 14th-16th centuries and traded cloth as far east as Sulawesi and the Moluccas.

The following table compares old Devanagari lettershapes, early Gujarati shapes as they developed out of Devanagari, and Philippine lettershapes.*

Certain Sumatran lettershapes were added for comparison to illustrate relationships that would not be apparent without Gujarati shapes as plausible antecedents.

A set of reconstructed intermediate proto-script shapes are illustrated, continuing the plausible evolution of lettershapes from informal Devanagari, without the further developments typical of the Philippine script itself.

* The fact that the Devanagari and developing Gujarati lettershapes come from manuscripts dating to no earlier than the 17th century may lead one to believe that they are a poor source of comparative data for pre-15th century informal Devanagari. However, since these lettershapes were considered appropriate enough to appear in the formal context of the Avestan scriptures, this can be taken as a clue that they would likely have existed for a considerable length of time as marginal and then low prestige informal variants before they moved into the mainstream, displacing the older variants. It is quite conceivable that it would have taken at least couple of centuries for this to happen, which would place early informal variants in the appropriate timeframe (late 14th to early 15th centuries).
<table>
<thead>
<tr>
<th>North &amp; South Sumatra</th>
<th>Philippines: 17th-20th centuries</th>
<th>Intermediate shapes</th>
<th>Gujarati: 17th-20th centuries</th>
<th>Devanagari: 17th to 19th centuries</th>
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</tbody>
</table>

**Sources:**
- (University of Bombay Archives, Mumbai)
- (Meherji Rana Library, Navsari, Gujarat)
- (Indian Type Foundry)
- (University of Santo Tomas Archives)
- (Marcilla y Martín 1895)
- (España. Real Academia de la Historia)
- (Batak: Uli Kozok)
- (Lampung: van der Tuuk 1868)
- (Makassarese: KITLV Tropenmuseum)
A principled approach to script comparison

- Although the resemblances between the old Philippine script (as well as Sumatran equivalents) and the informal Devanagari from which modern Gujarati script developed are striking, the comparisons drawn remain just as global and impressionistic as in earlier attempts to find an origin for these scripts.

- There is no principled basis to be found in available literature for evaluating the Early Gujarati Mercantile Nāgarī hypothesis as superior to any of the others that have been proposed.

- What is needed to support the Gujarati origin hypothesis is a set of well-motivated, case-independent theoretical postulates, including a well-defined (if basic) model of character structure, to provide a framework for applying the comparative method to script pairs on a principled basis comparable to the standards applied to phonological comparisons between language pairs.

- The following slides illustrate elements of a descriptive language that will allow us to isolate features of character structure that can be compared point for point between letter pairs in different scripts and script varieties.

- This analysis of character structure and change will make it possible to state precisely how the Philippine, Sumatran and informal Devanagari lettershapes relate to each other by systematic, regular changes.
Elements of character structure

- head stroke
- stem
- counter
- stem
- curl
- crossbar
- curl
- on-stroke
- adjunct
- curl
- tail
- cup
- adjunct
- cup
- crossbar
- on-stroke
- adjunct
- curl
- loop
- curl
- body
- stem
- curl
- crossbar
- curl
- join
- arch
- crossbar
- on-stroke
- adjunct
- curl
- counter
- tail
- cup
- adjunct
- cup
- crossbar
- on-stroke
- adjunct
- curl
- loop
- curl
- body
- stem
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- join
- arch
- crossbar
- on-stroke
- adjunct
- curl
- counter
- tail
- cup
- adjunct
- cup
- crossbar
- on-stroke
- adjunct
- curl
Stereotypes

Latin script: bowl + stem

a b c d e f h j k l m n o p q r

Devanagari: headstroke + body + stem

म क य ज च प ब स अ इ ई

Old Philippine script: (onstroke +) cup/curl + tail

๐ ๑ ๒ ๓ ๔ ๕ ๖ ๗ ๘ ๙ ๐
Sequential structure in written characters

- For purposes of recognition, it does not seem as if letters must be perceived any way but globally.
- When written, though, nearly all letters or written characters have a clear beginning and a clear end, and there may be any number of intermediate pieces of structure in between.
- Letters can normally be subdivided into sequences of segments, each with its own origin and target (final) points.
- The final point of each segment can be either a stop (determinate) or a glide (indeterminate).
- Variation in a script can be described in terms of various graphonomic processes that affect the order and position of different elements of a character’s structure.
Stroke structure

Processes: transition insertion and gliding
Adjunct drift

T writing coldest

Loop excrescence

Γ γ L L l ℓ T Γ

Fusion and splitting at intersection points

Y y T m E ε
Processes observed across scripts

- Segment reordering
- Point reordering (direction change)
- Stopping/gliding
- Loop excrescence
- Fusion and splitting at intersection points
- Fragmenting at intersection points
- Transition insertion/excrescence
- Segmentation
- Adjunct drift
- Segment shortening
- Segment lengthening (swashing)
- Place assimilation
- Initial, final excrescence (serif formation)
- Counter preservation
- Skewing (cursive)
- Rotation
- Stereotyping
- Reflection/mirroring
- Segment deletion
Variation in Philippine script

- Early sources give the impression of related but distinct regional script varieties.
- Second hand sources; no information on methodology. Where, how, by whom was each sample alphabet put together? From whom were data obtained and under what conditions? Possibility of filtering through observer’s untrained perception of phonology and European-influenced perceptions of calligraphic style?
- Variety most widely known and considered the standard exemplar of Philippine script is López typeface used in 1621 Ilocano catechism and two earlier dictionaries.
- This is arguably directly based on the letter shapes of the 1593 Doctrina Christiana, the earliest known material printed in a Philippine language or in the Philippine script.
Doctrina Christiana en lengua estanola y tagala. \(n\) regida por los Religiosos de las \(o\) oxenes. \(p\)ntilla con licencia en S. Gabriel de la orden de S. Domingo en \(e\)manila. 1593.
López typeface: 1593 *Doctrina* and Latin influences

a p y m s w b k d h n g t l n i u

---

**Doctrina Christiana**
1593

---

**Ilocano catechism**
1621

---

**Doctrina Christiana**
Rarer variants

---

kasa**l**an**n**
Variation in Philippine script

- The best source of authentic exemplars of Philippine script is to be found in archives in the Philippines and Spain.
- The texts (mostly signatures) give a fascinating protrait of variation in the script that goes beyond what is seen in either the printed typefaces or the sample alphabets.
- Variants, when plotted out on a graph by time period, yield a picture of ongoing change in the script.
- This apparent change over time can be understood on the basis of the graphonomic notions explored above.
- The variation that we observe also provides important evidence for relationships outside the Philippines.
AGI, ???: Taal 1591, 1619
• 7+17 hands

AGI: Mangaldan 1599
• 3 hands

???: Pampanga 1617, 1632
• 2 hands

UST: Manila area 1602-1660, several undated
• ±100 hands or more?
PNA: a couple dozen more, dates?

PNA: Baco 1679
• 2 hands

AGI, ???: Taal 1591, 1619
• 7+17 hands

AFIO: Longos 1669, Los Baños 1608, Tanay 1702
• 2+3+1 hands

AFIO: Mayubok 1681
• 2 hands

PNA: Iloilo 1647
• 1 hand

RAH: Nauhang 1665
• ±7 hands

???: Source unknown (Antoon Postma photocopies)

AFIO = Archivo Franciscano Ibero-Oriental, Madrid
AGI = Archivo General de Índias, Seville
PNA = Philippine National Archives
RAH = Real Academia de la Historia, Madrid
UST = University of Santo Tomas

Wednesday, 22 August, 12
Variation in Philippine script: ‘a’

1591 1593 1599 1602 1603 1604 1608 1609 1612 1613 1615 1617 1618 1620 1622 1625 1628 1629 1632 1635 1636 1638 1641 1642 1645 1647 1650 1652 1655 1657 1659 1662 1665 1669 1679 1702 1800s 1900s

Doctrina Christiana
Pangasinan
Taal
Mindoro
Mindoro
Mindoro
Pampanga
Palawan
Taal
Palawan
Palawan
Quezon
Palawan
Francisco (1975)
Variation in Philippine script: <u>
Variation in Philippine script: "i"

Year

1599
1591
1593
1602
1603
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1608
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1669
1679
1702
1800s
1900s

Doctrina
Christiania

Pangasinan

Palawan

Mindoro

Quezon
Variation in Philippine script: <h>
Variation in Philippine script: <p>
Variation in Philippine script: \( \langle k \rangle \)

- Taal
- Pangasinan
- Pampanga
- Palawan
- Mindoro
- Quezon

Timeline:
- 1591
- 1593
- 1599
- 1602
- 1603
- 1604
- 1608
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- 1636
- 1641
- 1642
- 1645
- 1647
- 1650
- 1652
- 1655
- 1659
- 1660
- 1665
- 1669
- 1702
- 1800s
- 1900s
Variation in Philippine script: <s>
Variation in Philippine script: <l>
Variation in Philippine script: `<t>`
Variation in Philippine script: <n>
Variation in Philippine script: 〈b〉

Taal, Pangasinan, Doctrina Christiana, Pampanga, Mindoro, Quezon, Palawan, Mangyan.

- Taal
- Pangasinan
- Pampanga
- Mindoro
- Quezon
- Palawan
- Mangyan
Variation in Philippine script: ‘m’
Variation in Philippine script: <g>
Variation in Philippine script: 〈d〉
Variation in Philippine script: ⟨y⟩
Variation in Philippine script: <ng>

<table>
<thead>
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<th>Year</th>
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</table>

Taal

Mindoro

Palawan

Doctrina Christiana
Variation in Philippine script: \( \langle w \rangle \)
Nāgarī and Philippine scripts: regular correspondences

1. Body+stem join in formal Devanāgarī becomes looser and eventually a glide in informal Nāgarī.

2. Stem reduces to a short tail in Philippine script, usually downward but upward in ʻbʼ and ʻwʼ.

3. Base body shape corresponds closely and systematically between Nāgarī and Philippine scripts for each form class.

4. The Nāgarī headstroke is retained in Philippine ʻtʼ, ʻbʼ, ʻnʼ, curving directly into the short tail that corresponds to the Nāgarī stem.

5. Some Philippine letters undergo slight further changes:
   - ʻmʼ keeps the Nāgarī counter, but the base loop shaped bowl is reanalysed as the base body shape common to ʻaʼ, ʻpʼ and ʻyʼ, closed at the top by a crossbar.
   - ʻgʼ and ʻngʼ, otherwise quite similar, undergo elaborations that increase their visual contrast.
   - ʻhʼ loses its final adjunct stroke while ʻpʼ gains one found in no other Indic script: a possible explanation for this later.
   - The initial three-stroke adjunct of ʻaʼ is directly reflected by the fork- or cross-like adjunct in the Philippine scripts: the Tagbabuwa position is probably the oldest.
   - The initial curl of Devanāgarī ʻyʼ is reflected in the (apparently displaced) extra curl that appears as a “knot” at the end of some variants of the Philippine letter.
Old Philippine/informal Nāgarī and Bugis-Makassarese: Structural correspondences

1. Bugis-Makassarese script is maximally simple:
   • arch shapes for the most part with dots below the arches or extra strokes above
   • rare (single) cup shapes, with or without a dot.

2. Recall strong evidence for close relationship between Philippine and Bugis-Makassarese scripts.

3. Philippine script letters are more complex in shape: implausible that they would derive from simpler B-M letter shapes.

4. An alternative, plausible hypothesis: if Philippine script was derived from B-M script, then early B-M script would have been more similar to the Philippine shapes. Since Philippine script is already so close to early informal Nāgarī, this seems likely to be the case.

5. In this case, modern B-M letters would have derived from more complex earlier shapes.


7. These earlier variants in many cases relate directly to Philippine (or pre-Philippine) letter shapes in ways the modern variants don’t:
   • dots are located in the same position as Philippine adjunct strokes;
   • B-M letters sometimes develop an extra stroke or lose one for purposes of paradigmatic contrast.
<table>
<thead>
<tr>
<th>Bugis-Makassarese Shapes</th>
<th>Intermediate Shapes</th>
<th>Extra variant shapes – Philippines</th>
<th>Post-Gujarati shapes</th>
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</table>

Wednesday, 22 August, 12
Later Gujarati shapes

Nagari, Gujarati shapes

Bugis-Makassarese

c j r

v ज न

्र

ः ङ

०
Some loose ends

- derivation of \textlangle ny\textrangle and \textlangle ng\textrangle in B-M and Sumatran scripts: result of contact between disparate phonologies

- the extra stroke on Philippine \textlangle p\textrangle and early recitation orders

- alleged Philippine \textit{baybayin} on the Butuan Ivory Seal

- left-handed mirror writing

- the Calatagan Pot (inscription) and its likely antecedents
〈ny〉, 〈ng〉 vs Gujarati-Devanagari 〈ɳ〉, 〈ɲ〉

Devanagari
(Sanskrit /n/, /ɳ/, /ɲ/, /ŋ/)

Gujarati
(/n/, /ɳ/)
+ rare Sanskrit /ɲ/, /ŋ/)

Malay
/n/, /ɲ/, /ŋ/

Batak
/n/, /ɲ/, /ŋ/

South Sumatra
/n/, /ɲ/, /ŋ/

Bugis
/n/, /ɲ/, /ŋ/

Tagalog
/n/, /ŋ/
Christopher Ray Miller
Čhř́štőpedia Ṛăẏ Mïŀłẹř
Three old recital orders (= “baybayin”, cf. “the abcs”?)

**Doctrina Christiana, 1593**

```
a u i   h p k   s l t   n b m g   d y ng w
```

**Tagbanuwa, 19th century (in Marcilla y Martín 1895)**

```
u a i   t l s   m k n b g   ng p y d w
```

**Tagbanuwa, 19th century (in Marcilla y Martín 1895)**

```
u a i   l m d g   t n k b s   p y ng w
```
El abecedario en lengua gallega. El paternoster.
Comparison of «butban» in various Kawi and Kawi-based scripts with Latin and Baybayin equivalents for comparison

Christopher Miller 2010-04-06

Butuan Ivory Seal

Latin

Ciburuy
(Tjiboeroej) 16C
(Holle 82)

Sundanese
Ceribon 16C
(Holle 86)

Balinese

Copperplate
762 Saka
(Holle 40)

Copperplate
847 Saka
(Holle 41)

Copperplate
Nº X
(Holle 42)

Copperplate
925 Saka
(Holle 44)

Copperplate
Nº VIII
(Holle 45)

Copperplate
1316-1318
Saka (Holle 47)

(virama/patèn/
zero vowel mark)
Marcilla y Martín says, “The expression or manner with which the Tagbanuas, when they read their alphabet, is to name with every sign or letter its three terminations in a, e-i, o-u, pointing with the finger on naming the termination in e-i the mark to the left; pointing with the finger to the left when naming the termination in e-i. When it is in o-u, he points to the right. If the reader will take any of the Tagbanua alphabets and hold it so that the vowel points are on the right and left sides, he will see that the writing is vertical.” The same writer continues with the words of the chant or reading aloud of the alphabet—

“Gangairi Gangairo
Dandairi Dandairo
Kankairi Kankairo
Banbairi Banbairo.”
Juan Catangcos

Don Pablo Casinggir

Bartolomé Dimarasigan

Don Francisco Tapa

Don Benito Manibasing
Correct equivalences
Apparent equivalences

a p y m s w b k d h n g g t l n i u ?
Calatagan Pot Inscription drawing from Guillermo and Paluga 2011, reproduced with permission