Monosyllabicity and the Origins of Syllabaries

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Writing Systems and Linguistic Structure

“written language is a product of linguistic awareness” (Aronoff 1985)

- Reflects the categories present in spoken language
  - segment, syllable, word, etc.
- Embodies a theory of language
  - though also affected by cultural history
Traditional Typology of Writing

• **Logographic**
  - more accurately “morphographic”

• **Syllabic**
  - especially core CV syllables

• **Alphabetic**
  - segments, or just consonants
Syllabic Writing

A brief survey
Ancient Syllabaries

Mayan

Sumerian

Chinese
Sumerian Syllabic Signs

Basic

V
CV
VC
CVC

Composed

CV-VC = CVC
CV-V = CV:
CV-V-VC = CV:C

(V: in Akkadian)
Sumerian Syllabic Writing

ú-ga

lu-lim

hu-rí-in

\textit{u.ga} “raven”

\textit{lu.lim} “stag”

\textit{hu.rin} “eagle”
Chinese (Morpho) Syllables

門 mén ("door")
白 bái ("white")
安 ān ("peace")
每 měi ("every")
支 zhī ("branch")
<table>
<thead>
<tr>
<th>Chinese Character</th>
<th>Pinyin (English Meaning)</th>
<th>Additional Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>門 (mén)</td>
<td>(“door”)</td>
<td></td>
</tr>
<tr>
<td>撾 (mén)</td>
<td>“touch”</td>
<td>+ HAND</td>
</tr>
<tr>
<td>們 (mén)</td>
<td>“plural”</td>
<td>+ PERSON</td>
</tr>
<tr>
<td>閎 (mèn)</td>
<td>“depressed”</td>
<td>+ HEART</td>
</tr>
<tr>
<td>閈 (xián)</td>
<td>“barrier”</td>
<td>+ TREE</td>
</tr>
</tbody>
</table>
Chinese Phonetic: bable

白  bái  (“white”)  ↓
柏  bó  “cypress”  + TREE
伯  bó  “uncle”  + PERSON
拍  pāi  “pat”  + HAND
怕  pà  “fear”  + HEART
Mayan Syllabic Signs

Basic

V (ʔV)
CV

Composed

CV₁–CV₁ = CVC
CV₁–CV₂ = CV:C, CVʔC
Mayan Syllabic Writing

pa ka

tzu lu

ku tzu

pa-ka-la

tzu-lu

ku-tzu

pa.kal “shield”

tzul “dog”
kutz “turkey”
Phonetization

Syllabic signs from logographic signs
Steps in Phonetization

• **Logographic value**
  - Typically a depictive sign

• **Rebus**
  - Use of sign for another word with similar pronunciation

• **Phonetic sign**
  - No longer tied to word units
Sumerian Rebus

$\begin{align*}
\text{gi} & \quad \text{“reed”} & > & \quad \text{gi} & \quad \text{“render”} \\
\text{ti} & \quad \text{“arrow”} & > & \quad \text{ti}(l) & \quad \text{“live”} \\
\text{a} & \quad \text{“water”} & > & \quad \text{a} & \quad \text{“in”}
\end{align*}$
Sumerian Phonetization

쯤  a  “water”  >  a

쁄  ni  “oil”  >  ni

suffix  –ani  “his/her”:

쨩  a–ni
Words and Syllables

Monosyllabic languages and syllabic signs
 Ease of Creation

“Syllabic signs clearly originated from word signs. This is a relatively easy matter in preponderantly monosyllabic languages, like Chinese or Sumerian, where the choice of monosyllabic signs from monosyllabic words is easy.”

Gelb (1963)
The odds of writing

“In the languages for which scripts were independently devised — Sumerian, Chinese, Mayan — words are generally one syllable long. [...] This is no coincidence.”

“This is unlikely to happen with a polysyllabic-structure language...”

Daniels (1992)
"... writing may have actually emerged only when [language–external] factors converged and interacted in the context of a language that was typologically amenable to the effective development of a script ... [i.e.] with a predominantly monosyllabic structure."

Boltz (2000)
Salient words

“A word is the shortest stretch of speech that can be uttered by someone without linguistic training (an Inuit–speaker who makes a mistake can’t break off in the middle of a word and correct part of it, but after breaking off must begin to say it at the beginning).”

Daniels (1996)
Salient syllables

“There is thus a naturalness to the syllable-sized stretch to the stream of speech.”

“... the syllable, and not the segment, is what the lay person produces when asked for a small bit of speech ...”

Daniels (1992)
Knowledge of Syllables

Conscious and Unconscious
Syllables vs. Segments

- Syllables much more salient and accessible
  - See especially Morais and collaborators
- Segmental (phonemic) awareness harder to achieve
  - Reading difficulties in alphabets
- Typically cited against claim that alphabet are superior or more natural
  - But also shows that syllabaries should not require monosyllabic words
Syllabic Segmentation

“the development of a syllabification procedure in speech processing depends primarily on informal experience with the language rather than on formal instruction”

Morais et al. (1989)
Syllable Matching

• Match CV or CVC syllables
  – /gʌr/ in gar.gan.ta “throat”
  – /gʌ/ in ga.rou.pa “grouper”

• Better accuracy if same syllable structure
  – True of illiterate and newly literate subjects
  – But literates better overall

Morais et al. (1989)
Summary: Syllables

- Good level of awareness
  - Even in polysyllabic languages
- Basic unit of phonological structure
  - Accessible in all languages
- Linguistic manipulation
  - Prosodic morphology
  - And phonetization...
Truncation in Phonetization

Syllabic signs derived by rebus from longer words
Truncation

- Reduction to shorter template
  - Syllable
  - Core syllable
  - Foot

- With reduplication
  - Truncation plus full base

- Without reduplication
  - Truncated form alone
Manam Reduplication

salaga

“to be long”

sa–salaga

“long (plur.)”

tumura

“to be cold”

tu–tumura

“cold (plur.)”
English Truncation

Edward  >  Ed
Michael  >  Mike
Patricia  >  Trish
cabriolet  >  cab
public house  >  pub
disrespect  >  dis
# Old Japanese Truncation

<table>
<thead>
<tr>
<th>Japanese</th>
<th>English</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>君 kun</td>
<td>“lord”</td>
<td>&gt; ku</td>
</tr>
<tr>
<td>欲 yoku</td>
<td>“desire”</td>
<td>&gt; yo</td>
</tr>
<tr>
<td>下 shimo</td>
<td>“lower”</td>
<td>&gt; shi</td>
</tr>
<tr>
<td>鳥 tori</td>
<td>“bird”</td>
<td>&gt; to</td>
</tr>
<tr>
<td>沼 numa</td>
<td>“pond”</td>
<td>&gt; nu</td>
</tr>
</tbody>
</table>

Lange (1973), Habein (1984)
More Truncation

- Luwian hieroglyphs
  - *targasna* “donkey” > ta
- Linear B
  - *kuminon* “cumin” <> ku
- Egyptian
  - *dww.t* “a snake” > d
Non-Truncation

- **Old Chinese**
  - Strictly monosyllabic
  - No need for truncation
  - Includes complex syllables

- **Sumerian**
  - Heavily monosyllabic
  - No use of truncation
  - Includes VC and CVC
Sumerian Avoidance

Eligible for phonetization:

- a “water”, ni “oil”, gi “reed”, ga “milk”,
- en “lord”, sar “garden”

Not eligible for phonetization:

- dumu “child”, nita “man”, udu “sheep”,
- mušen “bird”, igi “eye”
Akkadian Matches

- $māt$– “country” > mat
- .bt– “house” > bit
- ʾūm– “day” > ʾūm
- ʾid– “arm” > id
- šamm– “plant” > šam

Labat (1952)
Old Japanese CV Matches

<table>
<thead>
<tr>
<th>Japanese</th>
<th>Romaji</th>
<th>Meaning</th>
<th>Transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>多</td>
<td>ta</td>
<td>“many”</td>
<td>ta</td>
</tr>
<tr>
<td>母</td>
<td>mo</td>
<td>“mother”</td>
<td>mo</td>
</tr>
<tr>
<td>田</td>
<td>ta</td>
<td>“field”</td>
<td>ta</td>
</tr>
<tr>
<td>十</td>
<td>so</td>
<td>“ten”</td>
<td>so</td>
</tr>
<tr>
<td>津</td>
<td>tu</td>
<td>“harbor”</td>
<td>tu</td>
</tr>
</tbody>
</table>

Habein (1984)
Mesoamerican Truncation

• Mayan
  – CV signs
  – Roots are basically CVC and CVCVC
  – But probably not the original source

• Epi–Olmec
  – CV signs
  – Roots are longer
  – Truncation required to create CV
Mayan Truncation

*neh  “tail” > ne
*b’aaah  “pocket gopher” > b’a
*q’uuʔ  “nest” > k’u
*tyooq  “mist, cloud” > to
*kar  “fish” > ka

Houston, Robertson & Stuart (2000)
The map reflects the thinking of some scholars that the Olmecs were a “mother” culture to other Mesoamerican civilizations. However, some academics think the Olmecs were a “sister” culture, developing through interaction with other peoples.

Scientists have analyzed pottery made by the Olmecs to determine that their pottery and possibly their culture was disseminated to other societies.
Epi–Olmec Syllabic Signs

Basic

- CV (including ?V)
- CVC (infrequent)

Composed

- $\text{CV}_1\text{–}\text{CV}_1 = \text{CVC}$

Justeson & Kaufman (1993)
Epi–Olmec Syllabic Writing

na

sa

w appBar

ma

sa

na–sa–w appBar

nas.w appBar

“they passed”

ma–sa

ma.s appBar

“holy”
# Epi–Olmec Truncation

<table>
<thead>
<tr>
<th>Proto-Olmec</th>
<th>Meaning</th>
<th>Modern Olmec</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>nʉʔ</em></td>
<td>“water”</td>
<td>nʉ</td>
</tr>
<tr>
<td><em>puw</em></td>
<td>“scatter”</td>
<td>pu</td>
</tr>
<tr>
<td><em>neʔw–</em></td>
<td>“set in order”</td>
<td>ne</td>
</tr>
<tr>
<td><em>koʔkej</em></td>
<td>“fish”</td>
<td>ko</td>
</tr>
<tr>
<td><em>wʉṣtuk</em></td>
<td>“two”</td>
<td>wʉ</td>
</tr>
</tbody>
</table>

Kaufman & Justeson (2001)
Summary: Truncation

- Preference for match in size
  - Simple input–output relationship
- Minimal modification
  - Faithfulness to source word
- But truncation is still an option
  - Dominance of output constraint
Intuited Syllabaries

For Polysyllabic Languages
The Alaska Script

Created for Yupik by Uyakoq, c. 1900

“... unusual in being devised for an agglutinative language rather than a monosyllabic one ...”

Daniels (1996)

Just unusual, or a counterexample?
<table>
<thead>
<tr>
<th>Yupik</th>
<th>English</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>ī</td>
<td>“eye”</td>
<td>&gt; i</td>
</tr>
<tr>
<td>tla</td>
<td>“air, world”</td>
<td>&gt; tla</td>
</tr>
<tr>
<td>nim</td>
<td>“house”</td>
<td>&gt; ni</td>
</tr>
<tr>
<td>mulik</td>
<td>“breast”</td>
<td>&gt; mu</td>
</tr>
<tr>
<td>ting-oq</td>
<td>“flies”</td>
<td>&gt; ting</td>
</tr>
</tbody>
</table>

Cherokee

- **Polysynthetic language**
  - No monosyllabic content words
- **Script invented by Sequoyah**
  - In the years before 1820
  - No knowledge of English or its alphabet
- **Signs are nearly all CV**
  - Syllable-sized units
  - But not based on syllable-sized words
Cherokee Syllabic Signs

Basic
- V
- CV
- s (+CV)
- (hna, nah)

Composed
- s–CV = sCV
- CV–CV = CVC or CCV
Cherokee Syllabic Writing

hi.sgi “five”

tsgi.li “ghost”

dìì.neéɬ.di “dolls”
Summary: Inventions

- **Syllabaries for polysyllabic languages**
  - Alaska Script, Cherokee, and others
- **Initial logographic attempts were abandoned**
  - Words as salient constituents
- **Syllabaries were the next salient constituent**
  - Independent of word size
Conclusions – 1

- Syllables provide an efficient means of dividing up an utterance
  - CV especially is a versatile and economical basis for writing
- Monosyllabic words make rebus derivations more straightforward
  - Match is preferred when available
  - But intuitive knowledge of syllables is available even without such words
Conclusions – 2

• Two of three early syllabaries have signs that match typical word size
  – But not in Mesoamerica
  – And not in other inventions (Alaska Script, Cherokee, etc.)

• No necessary correlation between monosyllables and syllabaries
  – Linguistic knowledge is sufficient to generate syllabic signs
Thank you!

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