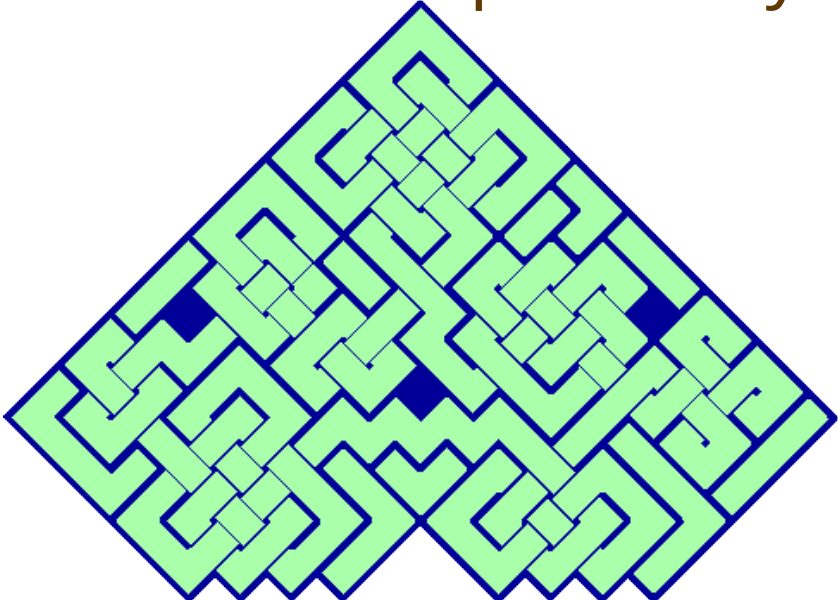















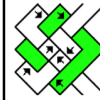



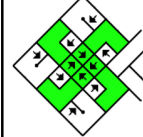
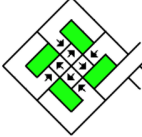
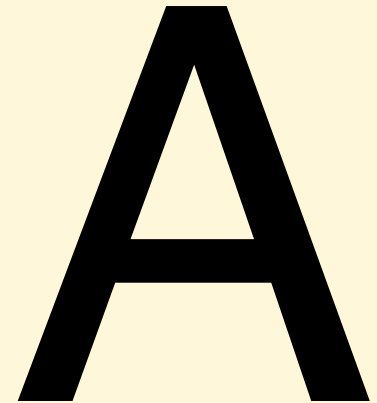
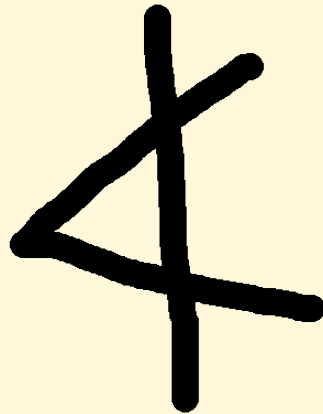
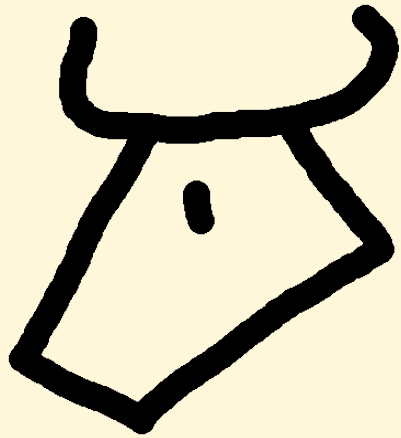


# Kēlen Ceremonial Interlace Alphabet by Sylvia Sotomayor



 A	 N	 E	 L	 O	 I	 IE
 K	 U	 N	 T	 TH	 M	 P
 W, PH	 S	 C	 J, CH	 SH	 H, KH	 R

# EVOLUTION OF WRITING



PHOENICIAN	EARLY HEBREW	EARLY ARAMAIC	EARLY GREEK	CLASSICAL GREEK	ETRUSCAN	EARLY LATIN	CLASSICAL LATIN
𐤀 𐤁 𐤂 𐤃 𐤄 𐤅 𐤆 𐤇 𐤈 𐤉 𐤊 𐤋 𐤌 𐤍 𐤎 𐤏 𐤐 𐤑 𐤒 𐤓 𐤔 𐤕 𐤖 𐤗 𐤘 𐤙 𐤚 𐤛 𐤜 𐤝 𐤞 𐤟 𐤠 𐤡 𐤢 𐤣 𐤤 𐤥 𐤦 𐤧 𐤨 𐤩 𐤪 𐤫 𐤬 𐤭 𐤮 𐤯 𐤰 𐤱 𐤲 𐤳 𐤴 𐤵 𐤶 𐤷 𐤸 𐤹 𐤺 𐤻 𐤼 𐤽 𐤾 𐤿	𐤀 𐤁 𐤂 𐤃 𐤄 𐤅 𐤆 𐤇 𐤈 𐤉 𐤊 𐤋 𐤌 𐤍 𐤎 𐤏 𐤐 𐤑 𐤒 𐤓 𐤔 𐤕 𐤖 𐤗 𐤘 𐤙 𐤚 𐤛 𐤜 𐤝 𐤞 𐤟 𐤠 𐤡 𐤢 𐤣 𐤤 𐤥 𐤦 𐤧 𐤨 𐤩 𐤪 𐤫 𐤬 𐤭 𐤮 𐤯 𐤰 𐤱 𐤲 𐤳 𐤴 𐤵 𐤶 𐤷 𐤸 𐤹 𐤺 𐤻 𐤼 𐤽 𐤾 𐤿	𐤀 𐤁 𐤂 𐤃 𐤄 𐤅 𐤆 𐤇 𐤈 𐤉 𐤊 𐤋 𐤌 𐤍 𐤎 𐤏 𐤐 𐤑 𐤒 𐤓 𐤔 𐤕 𐤖 𐤗 𐤘 𐤙 𐤚 𐤛 𐤜 𐤝 𐤞 𐤟 𐤠 𐤡 𐤢 𐤣 𐤤 𐤥 𐤦 𐤧 𐤨 𐤩 𐤪 𐤫 𐤬 𐤭 𐤮 𐤯 𐤰 𐤱 𐤲 𐤳 𐤴 𐤵 𐤶 𐤷 𐤸 𐤹 𐤺 𐤻 𐤼 𐤽 𐤾 𐤿	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω



	Proto-Canaanite	Early Phoenician	Greek		Proto-Canaanite	Early Phoenician	Greek
α			Α	ι			Ι
β			Β	μ			Μ
γ			Γ	ν			Ν
δ			Δ	ς			Ε
η			Ε	ο			Ο
ω			Υ	π			Π
ζ			Ζ	ς			Μ
η			Η	θ			Θ
θ			Θ	ρ			Ρ
υ			Ι	ς			Σ
κ			Κ	τ			Τ

# Digression

Why “lucky duck”? Because it rhymes. Languages where those words don’t rhyme (or aren’t similar) would never have that expression.

# Digression

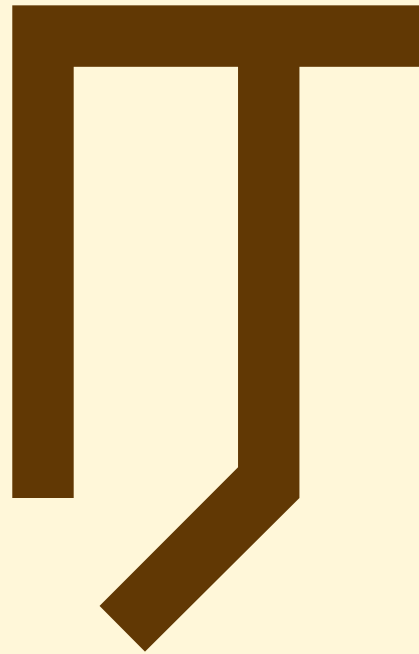
Same with glyphs. Why *this* particular animal that happens to have a word with *this* phonetic shape?  
Because it happens to.



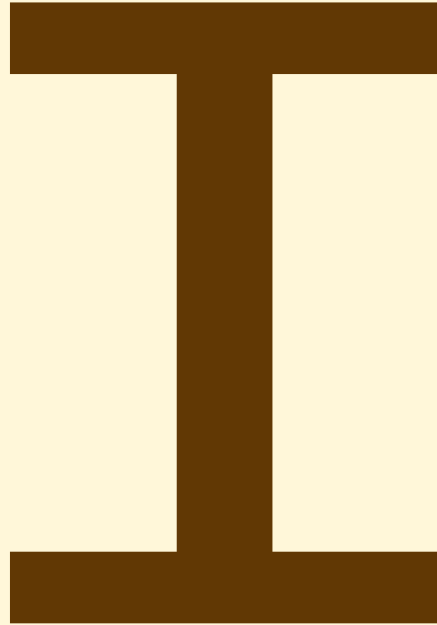
# AD 2nd C



# Modern



AD 2nd C

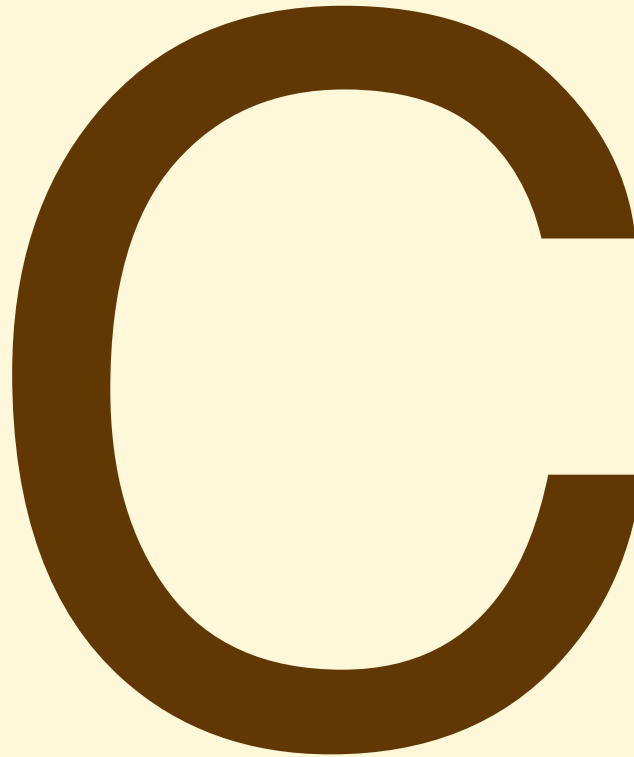


# Modern

600T



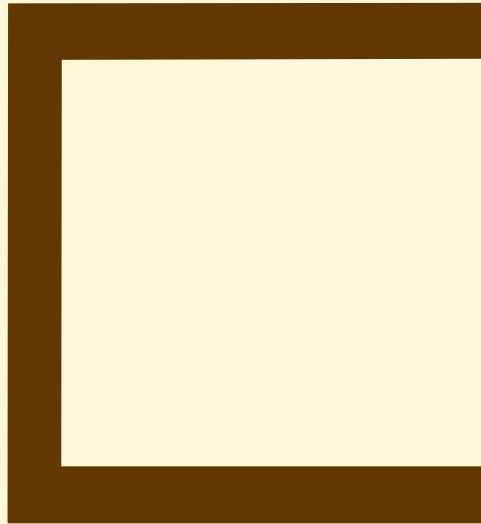
AD 2nd C



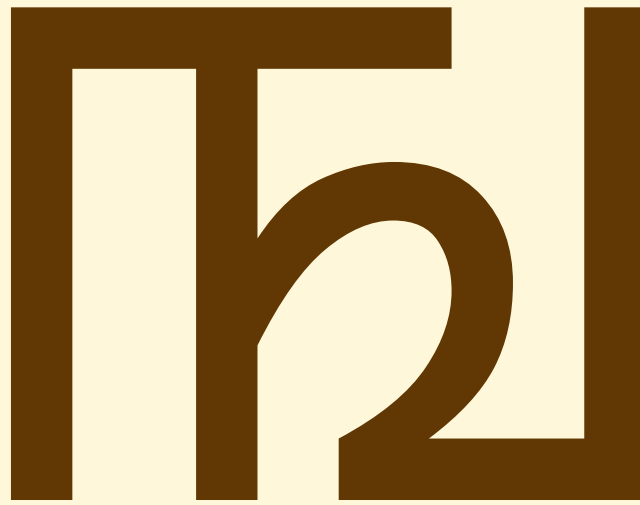
# Modern



# AD 2nd C



# Modern



C → L

□ → 卍

I → 卂

I → 600T

Handwritten Tamil script on a palm leaf manuscript. The text is densely packed and covers most of the leaf's surface. There are two circular holes visible, which were traditionally used for threading a cord to bind multiple leaves together. On the right side of the leaf, there is a large, handwritten number '3'.

Most glyphs evolve from  
pictographs *ultimately*.

1. Borrowing.
2. Change of writing tools.
3. Change of writers.
4. Systemic change.



# Borrowing

## Phoenician

𐤀 [ʔ] 𐤁 [h] 𐤂 [ħ] 𐤃 [ʕ]

# Borrowing

## Greek

A [a] E [e] H [eː] O [o]

# Borrowing

𠄎

A

𠄎

E

𠄎

H

○

O

# Borrowing Phoenician

𐤁 + 𐤅

<btj>

[beti:]

# Borrowing

Mater lectionis: Using consonants to mark long vowels in an abjad.

# Borrowing

Crucial: *ONLY* at the end of words (otherwise how would you know the difference between ...C# and ...CV#?).

# Borrowing

Note: All Phoenician words begin with a consonant (words we think of as V-initial begin with /?/).

# Borrowing

Phoenician

𐤆 [j] *or* [iː]



# Borrowing

## Greek

No [j], but they do have [i̯]  
and [ī̯]...

# Borrowing

Greek

ζ → I





# Borrowing

Cuneiform was developed for the Sumerian language.

# Borrowing

The Sumerians and  
Akkadians dug each other.  
Had lots of dealings.

# Borrowing

The Sumerians shared their purely pictographic writing with the Akkadians.

# Borrowing

But...they're different  
languages.

# Borrowing

Sumerian = Highly  
agglutinating; minimal  
inflection.



# Borrowing

Akkadian = Highly inflectional; not very agglutinating.

# Borrowing

Sumerian Cuneiform

Word = Glyph

Sentence = Word + Word +  
Word + Word

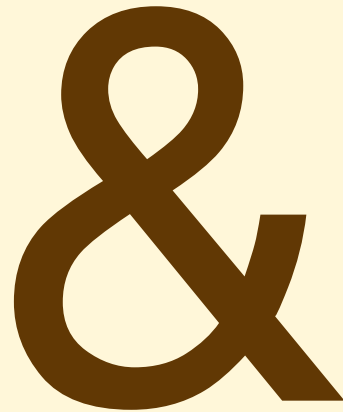
Borrowing

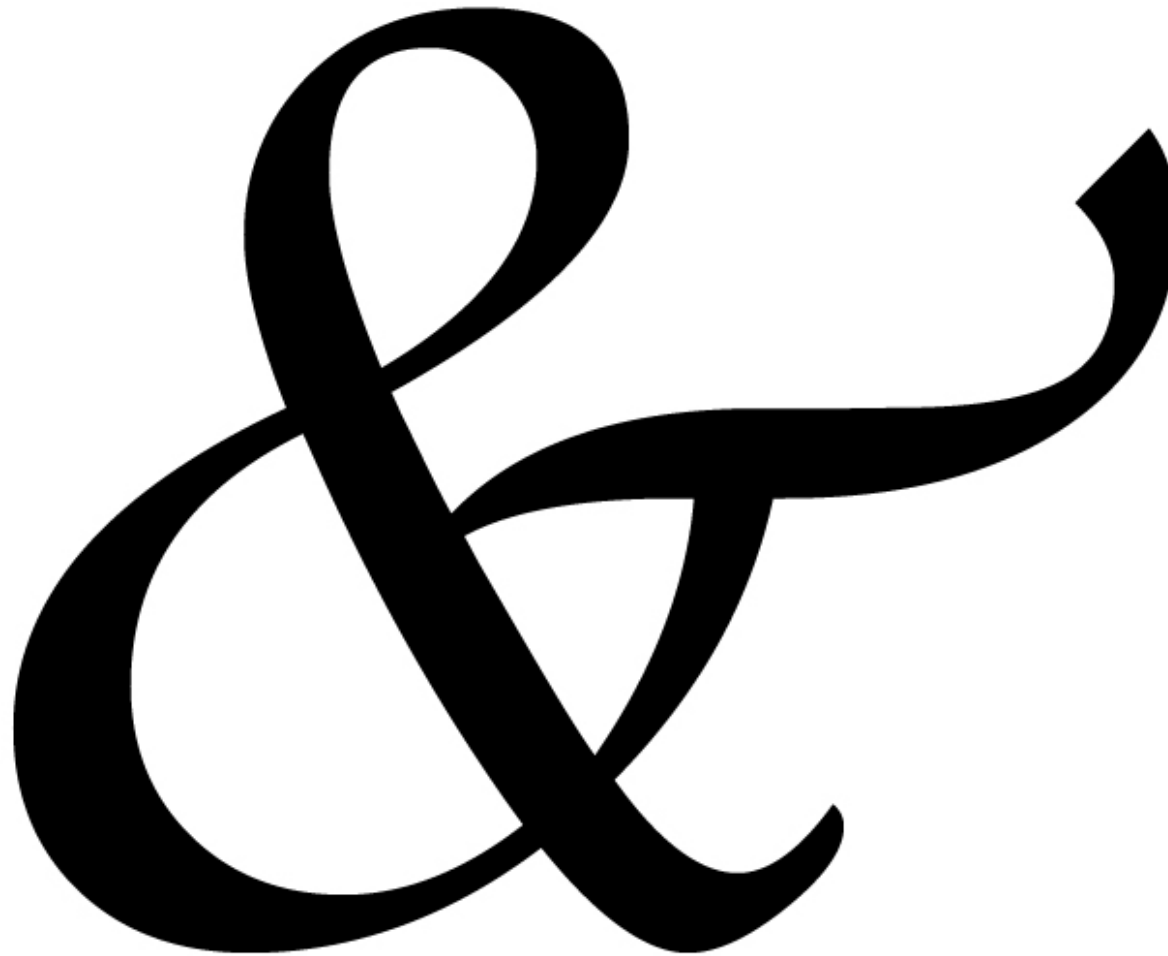
Akkadian Cuneiform

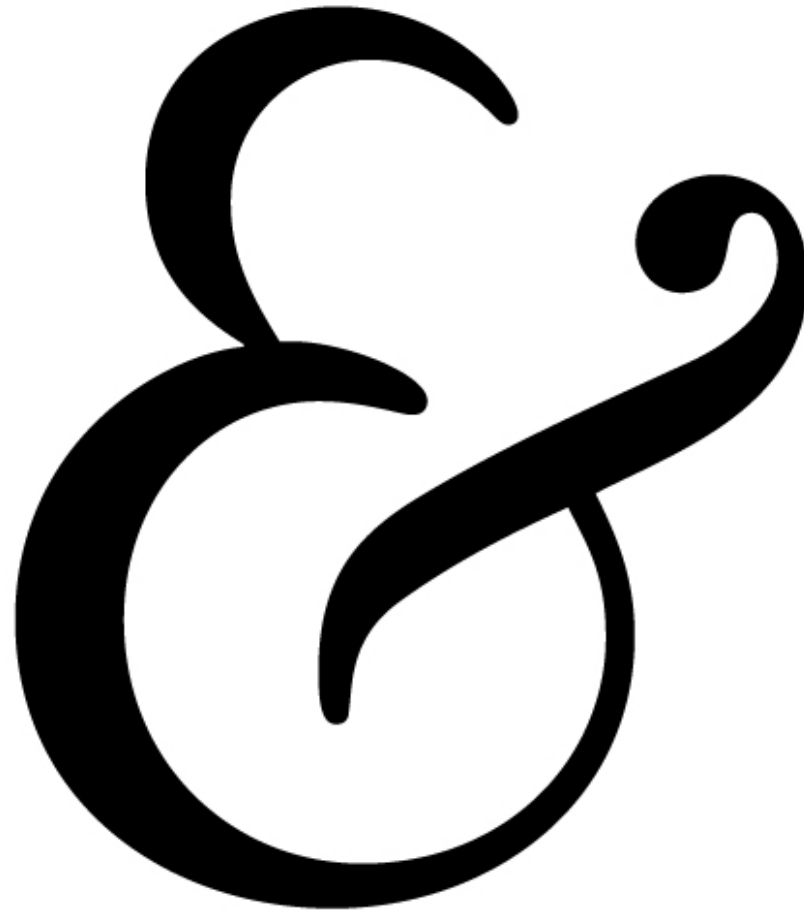
Glyph = The Sumerian word  
sounds a little like *x*.

Word = Built out of glyphs so  
they sound like our word.




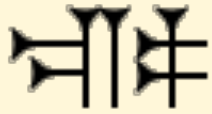


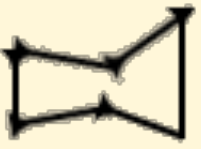
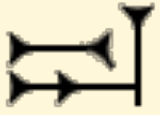





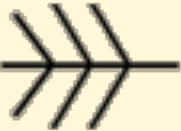
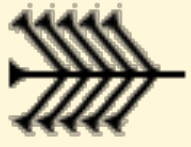








# Change of Writing Tools







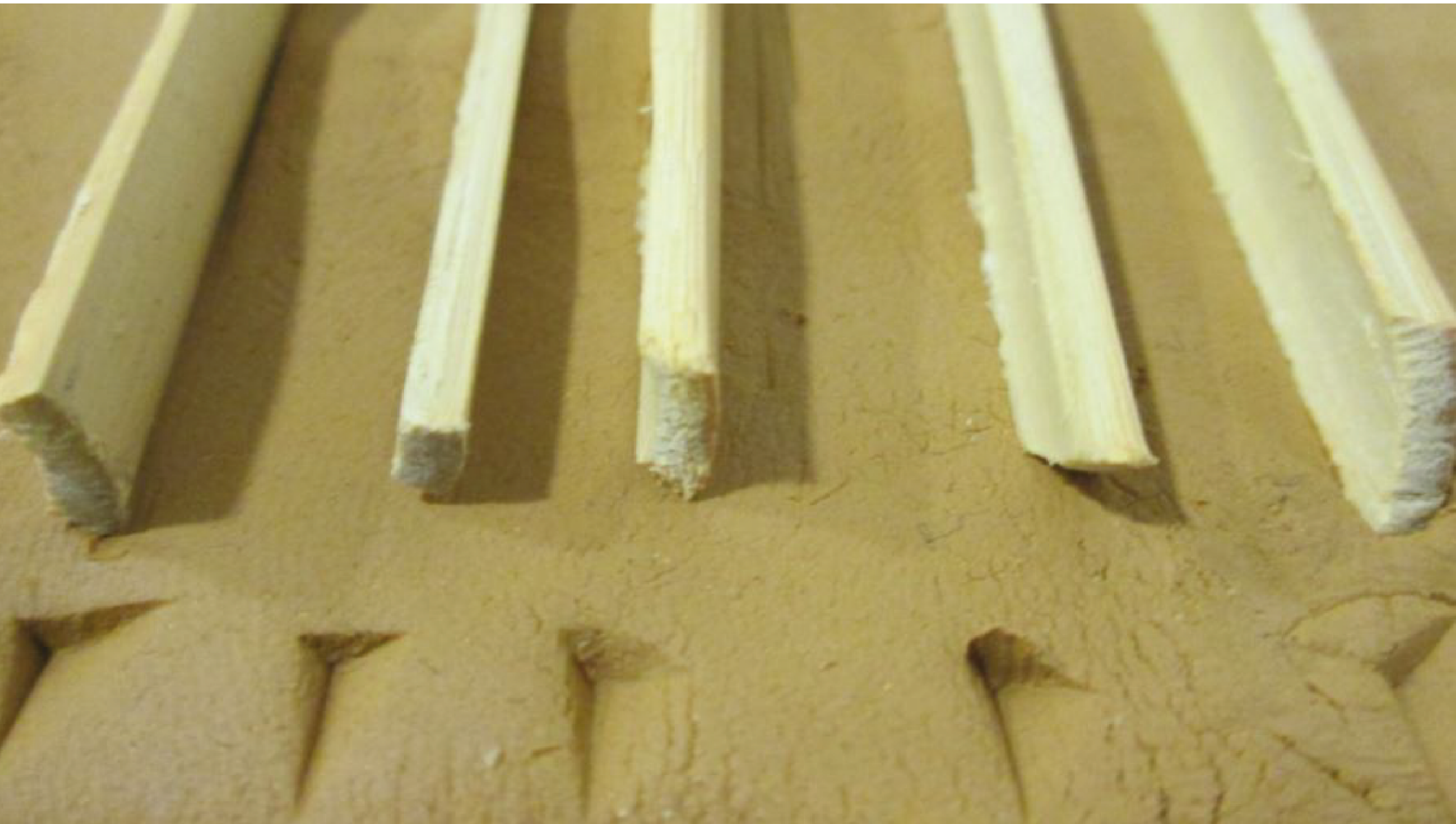





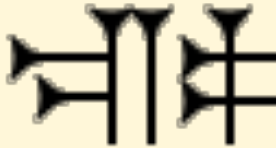



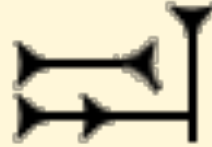






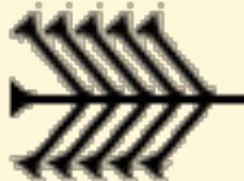

	3200 BCE	3000 BCE	2400 BCE	1000 BCE
sag 'head'				
gin 'to walk'				
šu 'hand'				
še 'barley'				
ninda 'bread'				
a 'water'				









	3200 BCE	3000 BCE	2400 BCE	1000 BCE
sag 'head'				
gin 'to walk'				
šu 'hand'				
še 'barley'				

# Change of Writers

Who's writing in your language? What are they writing?











Handwritten text in a cursive script, likely a form of Arabic or Persian calligraphy. The text is dense and fills most of the page, arranged in approximately 12 horizontal lines. The characters are black on a light background, showing significant fluidity and connection between letters. The overall appearance is that of a personal or official document written in a highly stylized, traditional hand.

# Change of Writers

Hieroglyphs = Formal,  
official, stone.

Hieratic = Economic/  
administrative documents,  
letters, legal briefs.



# Change of Writers

A vs. a

B vs. b

C vs. c

D vs. d

# Change of Writers

Monks invented Carolingian miniscule to write more quickly, and to allow the script to be read more easily.

# Change of Writers

Lower case kind of jump  
started the spread of the  
Roman script.

# Systemic Change

	3200 BCE	3000 BCE	2400 BCE	1000 BCE
sag 'head'				
gin 'to walk'				
šu 'hand'				
še 'barley'				
ninda 'bread'				
a 'water'				
ud 'day'				
mušen 'bird'				

PHOENICIAN	EARLY HEBREW	EARLY ARAMAIC	EARLY GREEK	CLASSICAL GREEK	ETRUSCAN	EARLY LATIN	CLASSICAL LATIN
𐤀 𐤁 𐤂 𐤃 𐤄 𐤅 𐤆 𐤇 𐤈 𐤉 𐤊 𐤋 𐤌 𐤍 𐤎 𐤏 𐤐 𐤑 𐤒 𐤓 𐤔 𐤕 𐤖 𐤗 𐤘 𐤙 𐤚 𐤛 𐤜 𐤝 𐤞 𐤟 𐤠 𐤡 𐤢 𐤣 𐤤 𐤥 𐤦 𐤧 𐤨 𐤩 𐤪 𐤫 𐤬 𐤭 𐤮 𐤯 𐤰 𐤱 𐤲 𐤳 𐤴 𐤵 𐤶 𐤷 𐤸 𐤹 𐤺 𐤻 𐤼 𐤽 𐤾 𐤿	𐤀 𐤁 𐤂 𐤃 𐤄 𐤅 𐤆 𐤇 𐤈 𐤉 𐤊 𐤋 𐤌 𐤍 𐤎 𐤏 𐤐 𐤑 𐤒 𐤓 𐤔 𐤕 𐤖 𐤗 𐤘 𐤙 𐤚 𐤛 𐤜 𐤝 𐤞 𐤟 𐤠 𐤡 𐤢 𐤣 𐤤 𐤥 𐤦 𐤧 𐤨 𐤩 𐤪 𐤫 𐤬 𐤭 𐤮 𐤯 𐤰 𐤱 𐤲 𐤳 𐤴 𐤵 𐤶 𐤷 𐤸 𐤹 𐤺 𐤻 𐤼 𐤽 𐤾 𐤿	𐤀 𐤁 𐤂 𐤃 𐤄 𐤅 𐤆 𐤇 𐤈 𐤉 𐤊 𐤋 𐤌 𐤍 𐤎 𐤏 𐤐 𐤑 𐤒 𐤓 𐤔 𐤕 𐤖 𐤗 𐤘 𐤙 𐤚 𐤛 𐤜 𐤝 𐤞 𐤟 𐤠 𐤡 𐤢 𐤣 𐤤 𐤥 𐤦 𐤧 𐤨 𐤩 𐤪 𐤫 𐤬 𐤭 𐤮 𐤯 𐤰 𐤱 𐤲 𐤳 𐤴 𐤵 𐤶 𐤷 𐤸 𐤹 𐤺 𐤻 𐤼 𐤽 𐤾 𐤿	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω	Α Β C D E F G H I K L M N O P Q R S T V W X Y Z Α Β C D E F G H I K L M N O P Q R S T V W X Y Z

PHOENICIAN	EARLY HEBREW	EARLY ARAMAIC	EARLY GREEK	CLASSICAL GREEK	ETRUSCAN	EARLY LATIN	CLASSICAL LATIN
𐤀	א	𐤀	Α	Α	Α	Α	Α
𐤁	ב	𐤁	Β	Β	Β	Β	Β
𐤂	ג	𐤂	Γ	Γ	Γ	Γ	Γ
𐤃	ד	𐤃	Δ	Δ	Δ	Δ	Δ
𐤄	ה	𐤄	Ε	Ε	Ε	Ε	Ε
𐤅	ו	𐤅	Ϝ	Ϝ	Ϝ	Ϝ	Ϝ
𐤆	ז	𐤆	Ζ	Ζ	Ζ	Ζ	Ζ
𐤇	ח	𐤇	Η	Η	Η	Η	Η
𐤈	ט	𐤈	Θ	Θ	Θ	Θ	Θ
𐤉	י	𐤉	Ι	Ι	Ι	Ι	Ι
𐤊	כ	𐤊	Κ	Κ	Κ	Κ	Κ
𐤋	ל	𐤋	Λ	Λ	Λ	Λ	Λ
𐤌	מ	𐤌	Μ	Μ	Μ	Μ	Μ
𐤍	נ	𐤍	Ν	Ν	Ν	Ν	Ν
𐤎	ס	𐤎	Ξ	Ξ	Ξ	Ξ	Ξ
𐤏	ע	𐤏	Ο	Ο	Ο	Ο	Ο
𐤐	פ	𐤐	Π	Π	Π	Π	Π
𐤑	צ	𐤑	Ϙ	Ϙ	Ϙ	Ϙ	Ϙ
𐤒	ק	𐤒	ϙ	ϙ	ϙ	ϙ	ϙ
𐤓	ר	𐤓	Ρ	Ρ	Ρ	Ρ	Ρ
𐤔	ש	𐤔	Σ	Σ	Σ	Σ	Σ
𐤕	ת	𐤕	Τ	Τ	Τ	Τ	Τ
𐤖	י	𐤖	Υ	Υ	Υ	Υ	Υ
𐤗	י	𐤗	Υ	Υ	Υ	Υ	Υ
𐤘	י	𐤘	Υ	Υ	Υ	Υ	Υ
𐤙	י	𐤙	Υ	Υ	Υ	Υ	Υ
𐤚	י	𐤚	Υ	Υ	Υ	Υ	Υ
𐤛	י	𐤛	Υ	Υ	Υ	Υ	Υ
𐤜	י	𐤜	Υ	Υ	Υ	Υ	Υ
𐤝	י	𐤝	Υ	Υ	Υ	Υ	Υ
𐤞	י	𐤞	Υ	Υ	Υ	Υ	Υ
𐤟	י	𐤟	Υ	Υ	Υ	Υ	Υ
𐤠	י	𐤠	Υ	Υ	Υ	Υ	Υ
𐤡	י	𐤡	Υ	Υ	Υ	Υ	Υ
𐤢	י	𐤢	Υ	Υ	Υ	Υ	Υ
𐤣	י	𐤣	Υ	Υ	Υ	Υ	Υ
𐤤	י	𐤤	Υ	Υ	Υ	Υ	Υ
𐤥	י	𐤥	Υ	Υ	Υ	Υ	Υ
𐤦	י	𐤦	Υ	Υ	Υ	Υ	Υ
𐤧	י	𐤧	Υ	Υ	Υ	Υ	Υ
𐤨	י	𐤨	Υ	Υ	Υ	Υ	Υ
𐤩	י	𐤩	Υ	Υ	Υ	Υ	Υ
𐤪	י	𐤪	Υ	Υ	Υ	Υ	Υ
𐤫	י	𐤫	Υ	Υ	Υ	Υ	Υ
𐤬	י	𐤬	Υ	Υ	Υ	Υ	Υ
𐤭	י	𐤭	Υ	Υ	Υ	Υ	Υ
𐤮	י	𐤮	Υ	Υ	Υ	Υ	Υ
𐤯	י	𐤯	Υ	Υ	Υ	Υ	Υ
𐤰	י	𐤰	Υ	Υ	Υ	Υ	Υ
𐤱	י	𐤱	Υ	Υ	Υ	Υ	Υ
𐤲	י	𐤲	Υ	Υ	Υ	Υ	Υ
𐤳	י	𐤳	Υ	Υ	Υ	Υ	Υ
𐤴	י	𐤴	Υ	Υ	Υ	Υ	Υ
𐤵	י	𐤵	Υ	Υ	Υ	Υ	Υ
𐤶	י	𐤶	Υ	Υ	Υ	Υ	Υ
𐤷	י	𐤷	Υ	Υ	Υ	Υ	Υ
𐤸	י	𐤸	Υ	Υ	Υ	Υ	Υ
𐤹	י	𐤹	Υ	Υ	Υ	Υ	Υ
𐤺	י	𐤺	Υ	Υ	Υ	Υ	Υ
𐤻	י	𐤻	Υ	Υ	Υ	Υ	Υ
𐤼	י	𐤼	Υ	Υ	Υ	Υ	Υ
𐤽	י	𐤽	Υ	Υ	Υ	Υ	Υ
𐤾	י	𐤾	Υ	Υ	Υ	Υ	Υ
𐤿	י	𐤿	Υ	Υ	Υ	Υ	Υ

# Systemic Change

As with reduplication and vowel lengthening, there are iconic/affective changes in scripts.

# Systemic Change

## Latin

ǂ ǃ Ǆ ǅ ǆ



# Systemic Change

## Modern Latin

ū ō ē

# Systemic Change

## Other Romance

á é í ó ú

# Systemic Change

Common affective strategies:  
Ascending/descending line,  
dot, writing a character larger  
or smaller, inversion, etc.

# Systemic Change







Basically: *Something* to indicate “this is the same, but different kind of”.

# Systemic Change

Most often applied to stress,  
vowel length, tone,  
intonation—secondary  
features (not voicing, etc.).

# Systemic Change

## Sumerian

	1	10	60	600	3,600	36,000
3000 BCE						
2500 BCE						

# Systemic Change

Latin

annus

/annus/

Spanish

año

/año/

# Systemic Change

Latin

\*nn

Spanish

ɲ



# Systemic Change

Old Spanish

n<sup>n</sup>

Spanish

ñ

# Systemic Change

Old German

Mutter

Muetter

German

Mutter

Mütter

# Systemic Change

Old German

Mutter

M<sup>e</sup>tter

German

Mutter

Mütter

# Systemic Change

German  
Goethe

# Systemic Change

j > i

i > l

w > vv

u > v

# Systemic Change

æ > ae

œ > oe

ÿ > ij

IO > IOU

# Systemic Change

ou [u]  
iou [ju]

# Systemic Change

## Tamil

பி [pi] ~ ஃபி [fi]

ஐ [dʒi] ~ ஃஐ [zi]



# SPELLING

Spelling: How users match symbols to their language.

Spellings are standardized first by scribes (may differ by scribe).

Spellings are further  
standardized when writing  
spreads amongst all  
classes.

Important: It *REALLY*  
matters what the language  
sounds like at the time that  
spellings are standardized!

knight [knixt]

Why didn't it change?  
Because no one was in  
charge.

Now, though, no one  
accepts variants spellings—  
even if they're understood.



# The Nites of the Round Table

Spanish has mostly kept up with pronunciation changes, because they literally change them.

Real Academia Española ruled, among other things, that LL and CH wouldn't be separate letters in 1994.

More progressive than the  
Academie Française.

Generally, when a word's spelling is standardized, it's hard to change.

Also, when writing develops, sounds that are in the language at that time tend to be encoded (so proto-systems, not modern).

**General Maxim**  
**Words are spelled how**  
**they're pronounced.**

# Spanish

tu ~ tú

si ~ sí

que ~ qué

mi ~ mí



# French

cent [sã] “one hundred”

sang [sã] “blood”

sens [sã] “(I) feel”

sans [sã] “without”

# Syllabic Spelling

/kotan/

# Syllabic Spelling

こたん

<ko-ta-n>

/kotan/

# Syllabic Spelling

कोतन

<ko-ta-na>

/kotan/

# Syllabic Spelling

कोतन्

<ko-ta-n>

/kotan/

# Syllabic Spelling

कोतँ

<ko-tã>

/kotan/

# Syllabic Spelling

/kotan/

	-a	-e	-i	-o	-u
k-	𐌀	𐌁	𐌂	𐌃	𐌄
t-	𐌅	𐌆	𐌇	𐌈	𐌉
n-	𐌊	𐌋	𐌌	𐌍	𐌎

# Syllabic Spelling

ᑕᑦᑲᑦᑲᑦ

<ko-ta-na>

/kotana/



# Syllabic Spelling

𐌀𐌆𐌔𐌚

<ko-ta-ne>

/kotan/

# Syllabic Spelling

ᑕᑕᑕᑕ

<ko-ta-na>

/kotan/

# Syllabic Spelling

𐎓𐎠𐎡𐎢

<ko-ta-nä>

/kotana/

# Syllabic Spelling

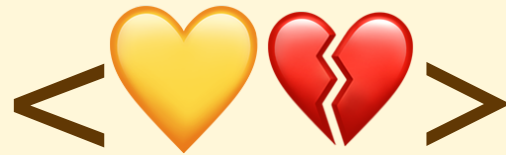
## Synharmonic Deletion



$CV_xCV_x\# \rightarrow CV_xC\#$

# Syllabic Spelling

## Synharmonic Cancellation



$CV_xCV_x\# \rightarrow CV_xCV_x\#$

# Syllabic Spelling

elika

# Syllabic Spelling

ऐलिक

<e-li-ka>

# Syllabic Spelling

Vowel Carrier: Empty  
consonant that houses  
vowels.



# Syllabic Spelling

Usual culprits: ? and h.

# Syllabic Spelling

	-a	-e	-i	-o	-u
∅	अ	ए	इ	ओ	उ
k	क	के	कि	को	कु
p	प	पे	पि	पो	पु
t	त	ते	ति	तो	तु

# Syllabic Spelling Tamil

க = ka கா = kā

கி = ki கீ = kī

கு = ku கூ = kū

# Syllabic Spelling Tamil

கெ = ke      கே = kē

கொ = ko      கோ = kō

கை = kai      கௌ = kau

# Practice

	LAB	COR	PAL	VEL	GLOT
STOP	b	t		k	
FRIC	f	s			h
NASAL	m	n			
APPR		l	j	w	

# Intervocalic Voicing

	LAB	COR	PAL	VEL	GLOT
STOP	b	t/d		k/g	
FRIC	f/v	s/z			h
NASAL	m	n			
APPR		l	j	w	

# Intervocalic Voicing

\*bata → bada

\*akena → agena

\*safi → savi

\*meso → mezo

# Loss of Initial Unstressed V

\*akena → \*agenā → gena

\*itina → \*idina → dina



# Loss of Geminates

\*tosa → \*toza → toza

\*tossa → \*tossa → tosa

# Order

- (1) Proto-Stage
- (2) Intervocalic Voicing
- (3) #V Ø (Unstressed)
- (4) Degemination

# Tonight

(1) MA9 = Orthography. May  
require physical paper!  
(Those who have tablets,  
that can work well!)