

Writing Systems

CREDIT:

Source for many of the following writing system slides:
a now-gone class website by Prof. Richard Sproat
(University of Illinois/Champaign-Urbana)

(Possibly) Independent Inventions of Writing

Sumerian: ca. 3,200 BC

Egypt: ca. 3,200 BC

Indus Valley: ca. 2,500 BC

China: ca. 1,500 BC

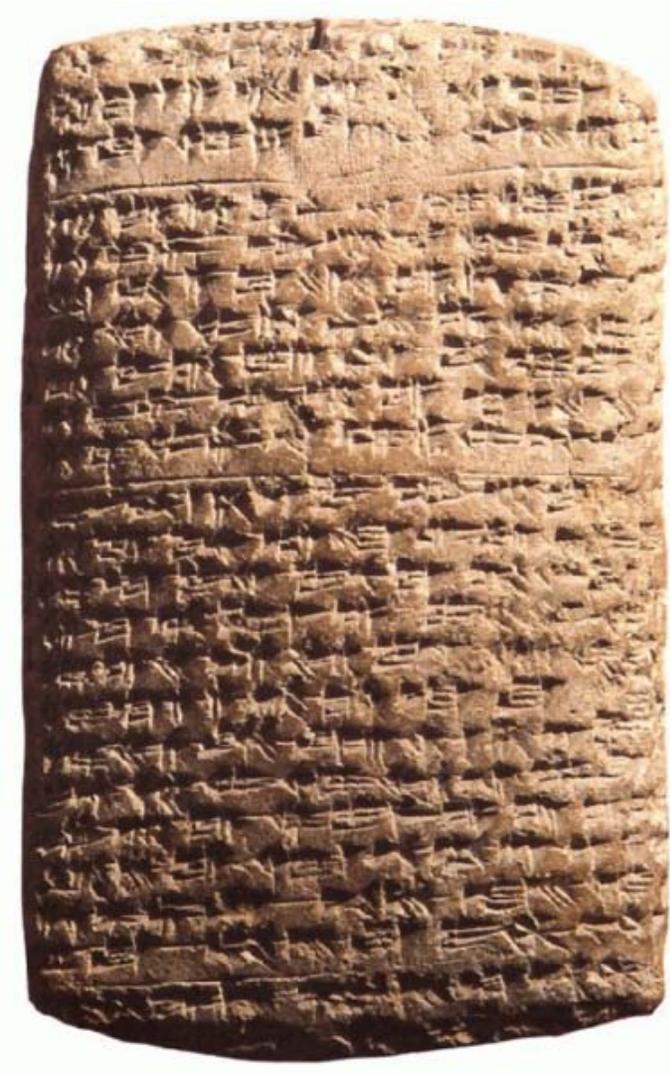
Central America: ca. 250 BC
(Olmecs, Mayans, Zapotecs)

PICTOGRAMS

Image removed due to copyright restrictions.

To view an example of a pictogram from Mesopotamia, circa 3000 BC,
go to: http://www.mesopotamia.co.uk/writing/home_set.html.

Non-alphabetic cuneiform: Akkadian (S. Mesopotamia) writing system



1. **phonogram**: representing a consonant-vowel combination like *ka, ak, kak*
2. **logogram**: representing an entire word or concept.
3. **phonetic complement**: narrows down logogram pronunciation, indicate grammatical form.
4. **determinative**: indicates that an adjacent word is the name of a deity, a man, a city, etc. Not pronounced.

ALPHABETS

A sample of Linear B script, 1450 BC

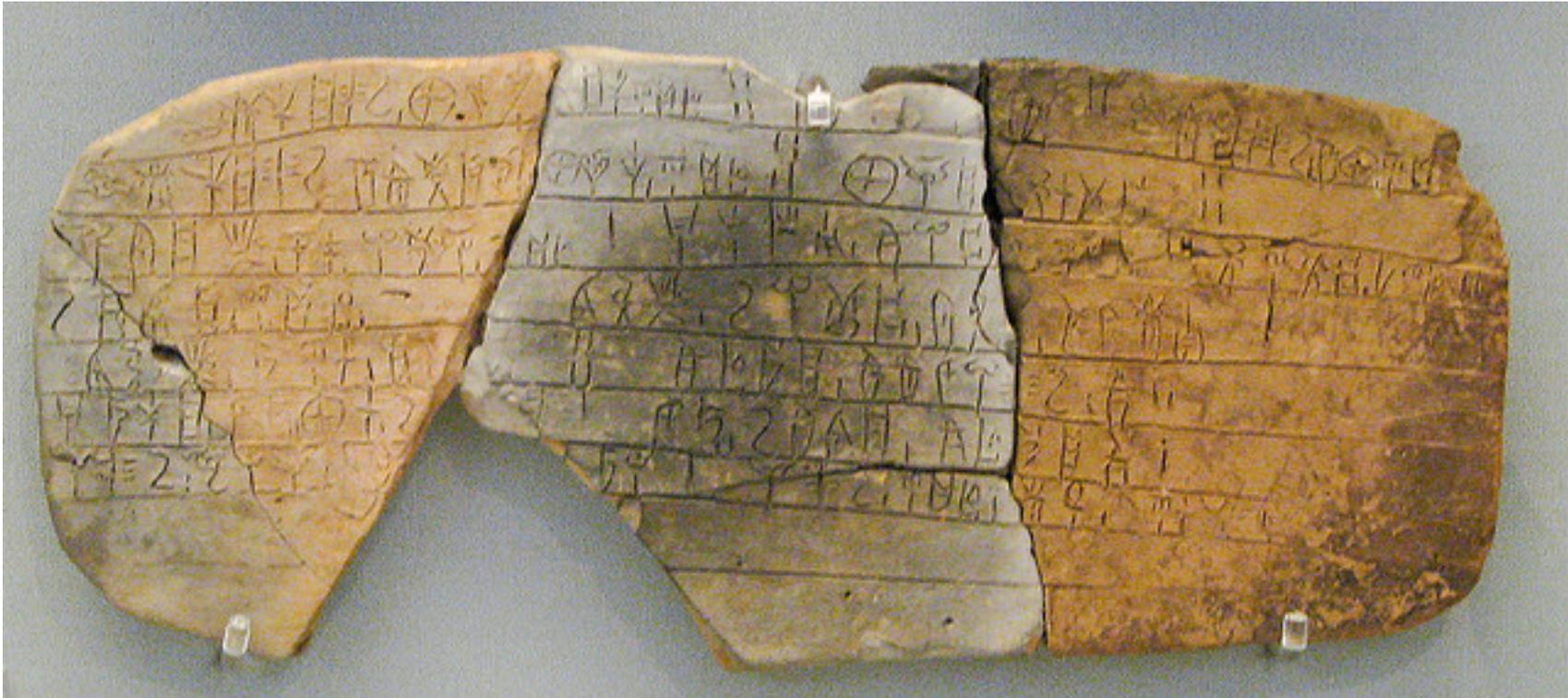


Image courtesy of [Sharon Mollerus](#) on Flickr.

Deciphered by **Michael Ventris** (1922-1956), an architect and amateur linguist (assisted by John Chadwick, a classicist), who discovered that the Linear A texts are ...

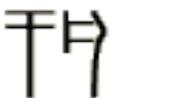
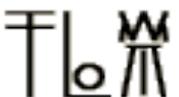
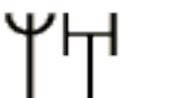
ALPHABETS

	𐤀	𐤁	𐤂	𐤃	𐤄
d	𐤅	𐤆	𐤇	𐤈	𐤉
j	𐤊	𐤋		𐤌	𐤍
k	𐤎	𐤏	𐤐	𐤑	𐤒
m	𐤓	𐤔	𐤕	𐤖	𐤗
n	𐤘	𐤙	𐤚	𐤛	𐤜
p	𐤝	𐤞	𐤟	𐤠	𐤡
q	𐤢	𐤣	𐤤	𐤥	
r	𐤦	𐤧	𐤨	𐤩	𐤪
s	𐤫	𐤬	𐤭	𐤮	𐤯
t	𐤰	𐤱	𐤲	𐤳	𐤴
w	𐤵	𐤶	𐤷	𐤸	
z	𐤹	𐤺		𐤻	

... Greek! —

written in a
(somewhat imperfect) syllabary.

ALPHABETS

sign sequence	trans-literation	Mycenaean Greek	Classic Greek	word meaning
	ku-mi-no	*kuminon	kuminon	cumin
	ku-na-ja	*gunaia	gune	woman (<i>gynecology</i>)
	ku-ru-so	*khrusos	khrusos	gold (<i>chrysanthemum</i>)
	pa-te	*pater	pater	father
	pa-ma-ko	*pharmakon	pharmakon	medicine (<i>pharmacy</i>)
	to-so	*toso	tosos	so many
	to-ra-ke	*thorakes	thorax	thorax
	qo-u-	*gwou-	bou-	cow
	i-qo	*hikkwoi	hippos	horse
	re-u-ka	*leuka	leukos	white (<i>leukemia</i>)
	re-a	*rea	rhis, rhino-	nose (<i>rhinoplasty</i>)

ALPHABETS

JAPANESE SYLLABARIES

Hiragana

ひらがな				
あ - a	い - i	う - u	え - e	お - o
か - ka	き - ki	く - ku	け - ke	こ - ko
さ - sa	し - shi	す - su	せ - se	そ - so
た - ta	ち - chi	つ - tsu	て - te	と - to
な - na	に - ni	ぬ - nu	ね - ne	の - no
は - ha	ひ - hi	ふ - fu	へ - he	ほ - ho
ま - ma	み - mi	む - mu	め - me	も - mo
や - ya		ゆ - yu		よ - yo
ら - ra	り - ri	る - ru	れ - re	ろ - ro
わ - wa				を - wo
ん - n				

ALPHABETS

Katakana

カタカナ				
ア - a	イ - i	ウ - u	エ - e	オ - o
カ - ka	キ - ki	ク - ku	ケ - ke	コ - ko
サ - sa	シ - shi	ス - su	セ - se	ソ - so
タ - ta	チ - chi	ツ - tsu	テ - te	ト - to
ナ - na	ニ - ni	ヌ - nu	ネ - ne	ノ - no
ハ - ha	ヒ - hi	フ - fu	ヘ - he	ホ - ho
マ - ma	ミ - mi	ム - mu	メ - me	モ - mo
ヤ - ya		ユ - yu		ヨ - yo
ラ - ra	リ - ri	ル - ru	レ - re	ロ - ro
ワ - wa				ヲ - wo
ン - n				

ALPHABETS

D a	R e	T i	Ꭰ o	Ꭱ u	i v
Ꭶ ga Ꭰ ka	F ge	Ꭲ gi	Ꭲ go	Ꭳ gu	E gv
Ꭳ ha	P he	Ꭳ hi	F ho	Ꭴ hu	Ꭵ hv
Ꭶ la	Ꭶ le	F li	Ꭴ lo	M lu	Ꭶ lv
Ꭶ ma	O me	H mi	Ꭶ mo	Ꭲ mu	
Ꭰ na Ꭲ hna Ꭴ nah	A ne	h ni	Z no	Ꭳ nu	Ꭱ nv
T qua	Ꭰ que	P qui	Ꭳ quo	Ꭰ quu	E quv
Ꭲ sa Ꭰ s	A se	B si	F so	Ꭶ su	R sv
Ꭲ da Ꭶ ta	S de Ꭲ te	J di J ti	V do	S du	Ꭶ dv
Ꭰ dla Ꭲ tla	L tle	C tli	Ꭲ tlo	Ꭲ tlu	P tlv
G tsa	V tse	h tsi	K tso	J tsu	C tsv
G wa	Ꭰ we	O wi	Ꭱ wo	Ꭲ wu	Ꭴ wv
Ꭰ ya	B ye	Ꭲ yi	h yo	Ꭴ yu	B yv

Cherokee syllabary,
invented by Sequoyah (1770-1843)
a silversmith

ALPHABETS



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ALPHABETS

Phoenician (from ca. 1100 BCE)

<http://www.ancientscripts.com>

	'aleph	[ʾ]		lamedh	[l]
	beth	[b]		mem	[m]
	gimmel	[g]		nun	[n]
	daleth	[d]		samekh	[s]
	he	[h]		'ayin	[ʿ]
	waw	[w]		pe	[p]
	zayin	[z]		tsade	[ṣ]
	heth	[ḥ]		qoph	[q]
	teth	[ṭ]		reš	[r]
	yodh	[y]		šin	[š]
	kaph	[k]		taw	[t]

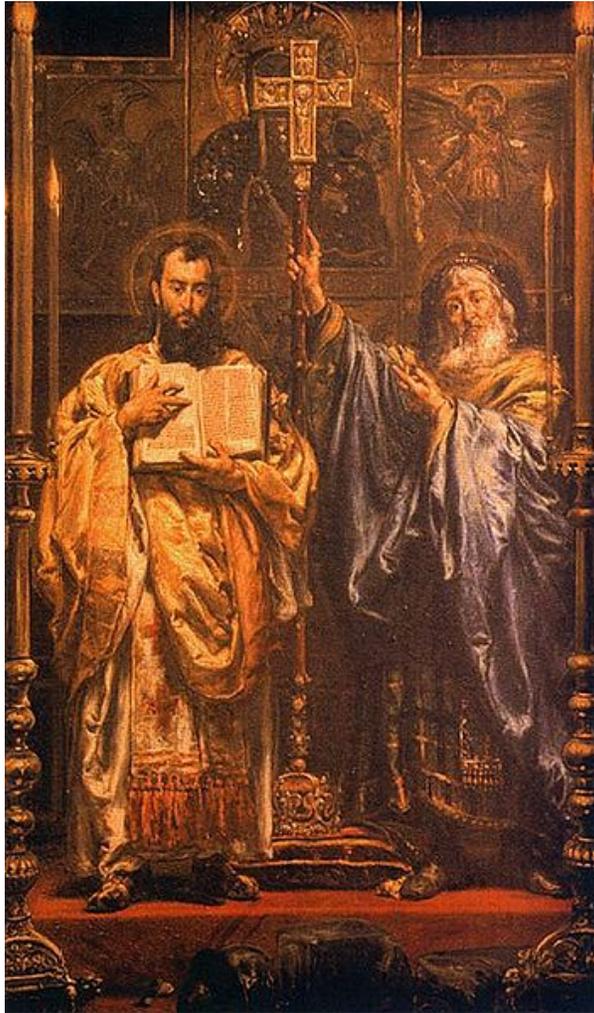
ALPHABETS

Ugaritic cuneiform *alphabet* (W. Syria, ca.1300-1200 BCE)

 'a	 b	 g	 ḥ	 d	 h
 w	 z	 ḥ	 ṭ	 y	 k
 š	 l	 m	 d	 n	 z
 s	 c	 p	 š	 q	 r
 ṭ	 ḡ	 t	 i	 u	 s ₂

ALPHABETS

In the 9th century AD, two Byzantine missionaries, the brothers Cyril (827-869) & Methodius (826-885), designed an alphabetic writing system for the Moravian Slavic dialect.



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ALPHABETS

**After Cyril's death, Methodius continued his work.
The alphabet that Cyril and Methodius created is to this day
called...**

ALPHABETS

... the **GLAGOLITIC** ALPHABET

The Old Church Slavonic Glagolitic Alphabet							
							
a	b	v	g	d	ε	ž	dz
							
z	i	i	g	k	l	m	n
							
o	p	r	s	t	u	f	x (kh)
							
o	ts	č	š	št	w/ə	i	y
							
æ/e	yu	ě	yě	ǫ	yǫ	f	i/v

ALPHABETS

	Glagolitic	Greek	Cyrillic			Glagolitic	Greek	Cyrillic
[a]	Ɑ	Α	А		[r]	Ѡ	Ρ	Р
[b]	Ɱ		Б		[s]	Ϟ	С (Σ)	С
[v]	Ɐ	Β	В		[t]	Ɒ	Τ	Т
[g]	Ϡ	Γ	Г		[u]	Ϻ	Υ	У
[d]	Ⱳ	Δ	Д		[f]	Ϙ	Φ	Ф
[e]		Ε	Е		[x]	Ϡ	Χ	Х
[ʒ]	ⱳ		Ж		[ts]	ϣ		Ц
[z]	ⱴ	Ζ	З		[tʃ]	Ϟ		Ч
[i]	Ϡ	И (Η)	И		[ʃ]	ϣ		Ш
[j]	Ϡ		Й		[ʃtʃ]	Ϟ		Щ
[k]	Ϡ	Κ	К		[ʊ]	Ϟ		Ъ
[l]	Ɒ	Λ	Л		[ε]	Ϡ		Ь
[m]	Ϡ	Μ	М		[e]	Ϡ		Э
[n]	Ϡ	Ν	Н		[ju]	Ϡ		Ю
[o]	Ϡ	Ο	О		[ja]			Я
[p]	Ɒ	Π	П					

ALPHABETS

Hangul: the Korean Alphabet

"The sounds of our country's language are different from those of China and do not correspond to the sounds of Chinese characters.

Therefore, among the stupid people, there have been many who, having something to put into writing, have in the end been unable to express their feelings.

I have been distressed by this and have designed twenty-eight new letters, which I wish to have everyone practice at their ease and make convenient for their daily use."

King Sejong (1397-1450)

ALPHABETS

Hangul consonants

Nasal	Simple	Aspirated	Doubled	
	ㄸ	ㅌ	ㅌㅌ	
	ㄱ [k] <i>back of tongue raised to the velum</i>	ㅋ [k ^h]	ㄱㄱ	
ㄴ [n] <i>tip of the tongue touching alveolar ridge</i>	ㄷ [t]	ㅌ [t ^h]	ㄷㄷ	ㄹ [l]
ㅁ [m] <i>two lips</i>	ㅂ [p]	ㅃ [p ^h]	ㅃㅃ	
ㅇ [s] <i>side view of the teeth</i>	ㅈ [t͡ɕ]	ㅊ [t͡ɕ ^h]	ㅈㅈ	
ㅇ [ŋ]	ㅇ [ʔ] (obsolete)	ㅎ h [h]		

ALPHABETS

— [ɯ] "back"	[i] "front"		
⊔ [u]	⊢ [ʌ]		⊢ [e] (ʌ + i)
⊥ [o]	⊣ [a]		⊣ [ø] (o + i)

ALPHABETS

訓民正音

國之語音異乎中國與文字
不相流通。故愚民有所欲言
而終不得伸其情者多矣。予
為此憫然。新制二十八字。欲
使人人易習。便於日用耳。
ㄱ。牙音。如君字初發聲。

ALPHABETS

Hangul: the Korean Alphabet

The letters are arranged in blocks that mostly correspond to syllables:

기 /gi/

김 /gim/

미 /mi/

민 /min/

-- giving the (false) impression that Hangul is a syllabary.

Phonemic vs. phonetic

The rule of *akan'je* in Russian

- In the syllable before the stress, or word-initial in an unstressed syllable, /o/ becomes [a]:

/nogá/ becomes [nagá] 'foot'

/nógi/ stays [nógi] 'feet'

- In other unstressed syllables, /o/ becomes [a] (Belarusian and some Russian dialects) or [ə] (Standard Russian).

/góroda/ becomes [górədə] 'of the city' (Standard Russian)

/gorodá/ becomes [gərədá] 'cities'

Phonemic vs. phonetic

	Russian		Belarusian	
	sg.	pl.	sg.	pl.
'foot'	но <u>г</u> а	но <u>г</u> и	на <u>г</u> а	но <u>г</u> і
'city'	го <u>р</u> о <u>д</u>	го <u>р</u> о <u>д</u> а	го <u>р</u> а <u>д</u>	га <u>р</u> а <u>д</u> ы
'table'	сто <u>л</u>	сто <u>л</u> ы	сто <u>л</u>	ста <u>л</u> ы
'windows'	о <u>к</u> но	о <u>к</u> на	а <u>к</u> но	во <u>к</u> ны

Phonemic vs. phonetic

Final devoicing in Russian

zero form *-a* form

1. grɔp	grɔba	‘coffin’	6. rɔk	rɔga	‘horn’
2. lip	lipa	‘linden tree’	7. rɔk	rɔka	‘fate’
3. ʃɔpət	ʃɔpətə	‘whisper’	8. kərɔndaf	kərɔndafə	‘pencil’
4. gɔrət	gɔrətə	‘city’	9. ekipaf	ekipafə	‘crew’
5. ruk	ruka	‘hand’	10. ras	rasa	‘race’
			11. ras	raza	‘time’

Phonemic vs. phonetic

Final devoicing in Russian *spelling*

zero form	-a form		
1. grɔp ГРОБ	grɔba ГРОБА	6. rɔk РОГ	rɔga РОГА
2. lip ЛИП	lipa ЛИПА	7. rɔk РОК	rɔka РОКА
3. ʃɔpət ШЁПОТ	ʃɔpətə ШЁПОТА	8. kərənda КАРАНДАШ	kərəndaʃə КАРАНДАША
4. gɔrət ГОРОД	gɔrədə ГОРОДА	9. ekɪpəʃ ЭКИПАЖ	ekɪpəzə ЭКИПАЖА
5. ruk РУК	ruka РУКА	10. ras РАС	rasa РАСА
		11. ras РАБ	raza РАЗА

Phonemic vs. phonetic

Final devoicing in Turkish

1.	'rope'	[ip]	[ipi]
2.	'louse'	[bit]	[biti]
3.	'reason'	[sebep]	[sebebi]
4.	'bunch'	[demet]	[demeti]
5.	'Ahmed'	[ahmet]	[ahmedi]
6.	'color'	[renk]	[rengi]
7.	'honor'	[ʃeref]	[ʃerefi]
8.	'pilot'	[pilot]	[pilotu]
9.	'wolf'	[kurt]	[kurdu]

Phonemic vs. phonetic

Final devoicing in Turkish *spelling*

1.	'rope'	[ip] ip	[ipi] ipi
2.	'louse'	[bit] bit	[biti] biti
3.	'reason'	[sebep] sebep	[sebebi] sebebi
4.	'bunch'	[demet] demet	[demeti] demeti
5.	'Ahmed'	[ahmet] ahmet	[ahmedi] ahmedi
6.	'color'	[renk] renk	[rengi] rengi
7.	'honor'	[şeref] şeref	[şerefi] şerefi
8.	'pilot'	[pilot] pilot	[pilotu] pilotu
9.	'wolf'	[kurt] kurt	[kurdu] kurdu

Phonemic vs. phonetic

English trisyllabic laxing

insane	insejn	insanity	insænəri:j
grave	græjv	gravity	grævəri:j
serene	səri:n	serenity	særi:nəri:j
divine	dəvajn	divinity	dəvɪnəri:j
facile	fæsajl (fæsəl)	facility	fæsɪləri:j
virtuoso	vɜ:tsuəwsow	virtuosity	vɜ:tsuəsəri:j

not just about -ity:

contrite ~ contrition

mendacious ~ mendacity

Dearest creature in creation,

Phonemic vs. phonetic

**Study English pronunciation.
I will teach you in my verse
Sounds like corpse, corps, horse, and worse.
I will keep you, Suzy, busy,
Make your head with heat grow dizzy.
Tear in eye, your dress will tear.
So shall I! Oh hear my prayer.**

Phonemic vs. phonetic

**Just compare heart, beard, and heard,
Dies and diet, lord and word,
Sword and sward, retain and Britain.
(Mind the latter, how it's written.)
Now I surely will not plague you
With such words as plaque and ague.
But be careful how you speak:
Say break and steak, but bleak and streak;
Cloven, oven, how and low,
Script, receipt, show, poem, and toe.**

Phonemic vs. phonetic

*...blah, blah, blah for umpteen more verses...
...we get the point! ...*

Finally, which rhymes with enough—
Though, through, plough, or dough, or cough?
Hiccough has the sound of cup.
My advice is to give it up!!!

—*Gerald Nolst Trenite (1870-1946)*

Phonemic vs. phonetic

Can you pronounce these words?

The *balistanicacious* pressure device

It was simply *clantific*, as she liked to say.

Dr. *Harriglton* will see you to your room.

Would you some more *gartiletti*! I made them myself from free-range *Wookies*.

"And now, the *tranya*."

- from the (original series) Star Trek episode

The Corbomite Maneuver

Phonemic vs. phonetic



Phonemic vs. phonetic



Phonemic vs. phonetic



Reading

How fluent reading works.

Eyes fixate briefly on each word or pair of adjacent words (fixations are called *saccades*).

Reading is routed through phonology: a "voice in the head".

Some evidence:

- **Tongue twisters take longer to read than non-tongue twisters... even in Chinese!**
- **The ability of deaf speakers to read oral languages such as English correlates with their degree of phonological knowledge.**
- **In normal reading in an alphabetic system, every letter is scanned and processed, though we do "error correct"...**

Reading

How fluent reading works.

Exceptions are flagged and processed in a special way. Some consequences:

- "Acquired dyslexia" after brain damage may impair "decoding" (reading of regular spellings) but spare exceptions — or vice versa.

have vs. *cave*

→ **deep dyslexia**

/hæv/ vs. "I don't know" or guessing

(also: can't read non-words: stumped by *bave*)

→ **surface dyslexia**

/hejv/, /kejv/

(can read non-words, but reads irregulars phonetically)

Reading

How should we teach children (or adults) to read?

The "Whole Language" movement of the 1990s:

"English spelling is so full of irregularities, it is very hard to teach, especially to young children."

"Fortunately... we don't have to teach it explicitly!"

Reading

"We now know that *learning to read and learning to write are a lot like learning to talk*. We would think it funny if parents hovered over their newborn's crib, chanting the sounds of language one at a time. Parents are not trying to teach language, but rather trying to communicate with their child. They do not teach children individual sounds, but instead, use and share language naturally as a part of everyday experiences. They respect and accept their baby's babblings as talk. Although different from that of grown-ups, the child's language is celebrated and accepted without criticism. It is through constant interaction with family and friends--through using language and hearing others use it in everyday situations--that children learn to talk. Our research has indicated that the same is true of learning to read and write. It is through constant interaction with family and friends, teachers and classmates-- through using reading and writing and observing others reading and writing in everyday situations--that children can learn to read and write."

(National Council of Teachers of English, *Elementary School Practices*. 1994 brochure)

Reading

The "Whole Language" movement - part 2:

- **English spelling is so full of irregularities, people couldn't possibly be attending to all the letters.**
- **Reading is a "psycho-linguistic guessing game".**
- **So teaching symbol-sound correspondences (in English at least) is a waste of time.**

Reading

Success of "Whole Language" in the 1980s

"We've begun seriously to affect legislative policy in states like Michigan and Kentucky as well as all of the provinces of Canada."

[From a list of achievements of the Whole Language Movement:

Jerome Harste (1993) "New Questions, Different Inquiries", in Carl B. Smith, ed., *Whole Language: The Debate*, Edinfo Press, p. 147]

Reading

"As the information in this table reveals, in seven provinces (British Columbia, Manitoba, New Brunswick, Newfoundland/Labrador, Ontario, Prince Edward Island, Quebec) the only textbooks on the approved lists are those that subscribe to a whole-language philosophy... Unfortunately, in many provinces unless special permission is granted to do otherwise, schools are only permitted to purchase in quantity for classroom use textbooks that appear on the approved lists."

[Marvin L. Simner, "Beginning Reading Instruction: A Position Paper on Beginning Reading Instruction in Canadian Schools", Canadian Psychological Association 1993]

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24.900 Introduction to Linguistics
Fall 2012

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