



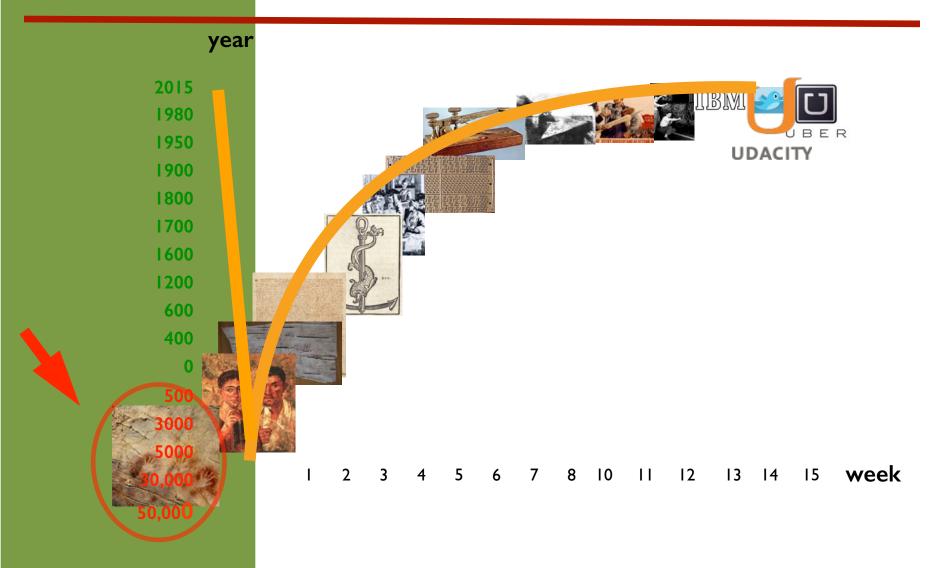
Writing Systems: The First "I" "T"

Geoff Nunberg

IS 103 History of Information Jan. 29, 2015



The journey begins...





Itinerary, 1/29

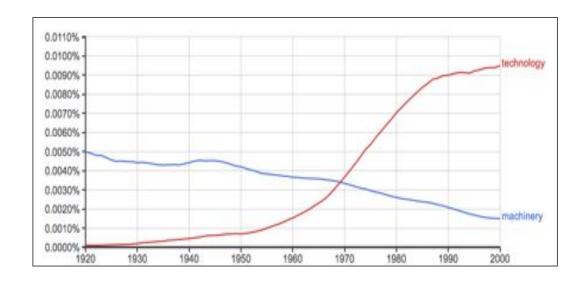
"Information" and "Technology"
The Dawn of Information
The Emergence of Representation
The Variety of Signs
Origins and Development of Writing Systems
Types of Writing Systems
Independent Invention of Writing Systems







technology (OED) a. The branch of knowledge dealing with the mechanical arts and applied sciences; the study of this.



Frequency of "machinery" and "technology" in Google Books, 1900-2000



The dawn of "technology"



"Science explores,

Technology executes,

Man conforms"

— Chicago World's Fair, 1933







The dawn of "technology"

Whereas the term *mechanic* (or *industrial*, or *practical*) arts calls to mind men with soiled hands tinkering at workbenches, *technology* conjures clean, well-educated, white male technicians in control booths watching dials, instrument panels, or computer monitors. Whereas the *mechanic arts* belong to the mundane world of work, physicality, and practicality, *technology* belongs on the higher social and intellectual plane of book learning, scientific research, and the university.

Leo Marx





What kind of "information" has a history?

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems

... it's always there when we look for it, available wherever we bother to direct our attention. We can glean it from the pages of a book or the morning newspaper and from the glowing phosphors of a video screen. Scientists find it stored in our genes and in the lush complexity of the rain forest. The Vatican Library has a bunch of it, and so does Madonna's latest CD. And it's always in the air where people come together, whether to work, play, or just gab.

What is it that can be so pervasive and yet so mysterious? Information, of course.

John Verity in Business Week, special number on the "Information Revolution," 1994



What kind of "information" has a history?

... it's always there when we look for it, available wherever we bother to direct our attention. We can glean it from the pages of a book or the morning newspaper and from the glowing phosphors of a video screen. Scientists find it stored in our genes and in the lush complexity of the rain forest. The Vatican Library has a bunch of it, and so does Madonna's latest CD. And it's always in the air where people come together, whether to work, play, or just gab.











The Scope of "Information"

... it's always there when we look for it, available wherever we bother to direct our attention. We can glean it from the pages of a book or the morning newspaper and from the glowing phosphors of a video screen. Scientists find it stored in our genes and in the lush complexity of the rain forest. The Vatican Library has a bunch of it, and so does Madonna's latest CD. And it's always in the air where people come together, whether to work, play, or just gab.

Information (that has a history) always involves the creation, storage, transmission, or manipulation of representations of states of affairs.



How much "information"?

Table 1.3: Worldwide production of printed original content, if stored digitally in terabytes circa 2002. Upper estimate is scanned: lower estimate is compressed.

	Vorldwide produ			nt, if stored di	gitally us	Storage Medium	Type of Content	Terabytes/Yr Upper Estimate	Terabytes/Yr Lower Estimate		1999 Lower Estimate	% Change Upper Estimates
ompressio	on methods, in te	irabytes circa 20	U.Z.			Paper	Books	39		8 39	8	
Storage	Type of Content	Terabytes/Yr Upper Estimate	Terabytes/Yr Lower Estimate	1999 Report Upper Estimate	1999 Re Lowe Estima		Newspapers	138.4	27.	7 124	25	12
Medium							Office Documents	1,397.5	279.	5 975	195	43
Magnetic	Videotape	1,340,000	1,340,000	1,420,000	1,420				10	-	10	
	Audiotape	128,800	128,800	182,000	182		Mass market periodicals	52	,	0 52	10	3
	Digital tape	250,000	250,000	250,000	250		Journals	6	1.	3 9	2	-339
	MiniDV	1,265,000	1,265,000	N/A			Newsletters	0.9	0.	2 0.8	0.2	
	Fig	0.0	pn	70								
	Floppy disc	80	Į. į	201								369
	Zip	350	31			wide produ	ction of origin	al information	on, if stored	digitally, in t	terabytes	369
		7.	,	Table 1.2: circa 2002	Worldv 2. Uppe	restimates	assume info	mation is di				369
	Zip	350	3!	Table 1.2: circa 2002	Worldv 2. Uppe	restimates		mation is di				369
	Zip Audio MD	350 17,000	38	Table 1.2: circa 2002 assume d	Worldv 2. Uppe	r estimates ontent has	assume infor been compre 2002	mation is di ssed. 2002	gitally scann	1999-2000	stimates % Change	369
	Zip Audio MD Flash	350 17,000 12,000 1,986,000	38 17,00 12,00 403,00	Table 1.2: circa 2002 assume d	Worldv 2. Upper ligital co	r estimates ontent has	2002 Terabytes	mation is di ssed. 2002 Terabytes	1999-2000 Upper	1999-2000 Lower	% Change Upper	369
iource: How n	Zip Audio MD Flash Hard Disk	350 17,000 12,000 1,986,000 4,999,230	38 17,00 12,00 403,00	Table 1.2: circa 2002 assume d	Worldv 2. Upper ligital co	r estimates ontent has	assume infor been compre 2002	mation is di ssed. 2002	gitally scann	1999-2000	% Change	369
iource: How n	Zip Audio MD Flash Hard Disk	350 17,000 12,000 1,986,000 4,999,230	38 17,00 12,00 403,00	Table 1.2: circa 2002 assume d	Worldv 2. Upper ligital co	r estimates ontent has	2002 Terabytes Upper	2002 Terabytes Lower	1999-2000 Upper	1999-2000 Lower	% Change Upper Estimates	369
iource: How n	Zip Audio MD Flash Hard Disk	350 17,000 12,000 1,986,000 4,999,230	38 17,00 12,00 403,00	Table 1.2: circa 200: assume d Sto	Worldv 2. Upper ligital co	r estimates ontent has	2002 Terabytes Upper Estimate	2002 Terabytes Lower Estimate	1999-2000 Upper Estimate	1999-2000 Lower Estimate	% Change Upper Estimates	369
ource: How n	Zip Audio MD Flash Hard Disk	350 17,000 12,000 1,986,000 4,999,230	38 17,00 12,00 403,00	Table 1.2: circa 200: assume d Sto	: Worldv 2. Upper ligital co rage Me	r estimates ontent has	2002 Terabytes Upper Estimate	2002 Terabytes Lower Estimate	1999-2000 Upper Estimate 1,200 431,690	1999-2000 Lower Estimate	% Change Upper Estimates 36%	369
ource: How n	Zip Audio MD Flash Hard Disk	350 17,000 12,000 1,986,000 4,999,230	38 17,00 12,00 403,00	Table 1.2: circa 200: assume d Sto Paper Film	: Worldv 2. Upper ligital co rage Me	r estimates ontent has	2002 Terabytes Upper Estimate 1,634 420,254	2002 Terabytes Lower Estimate 327 76,69	1999-2000 Upper Estimate 1,200 431,690	1999-2000 Lower Estimate 240 58,209	% Change Upper Estimates 36%	361

Peter Lyman and Hal Varian, How Much Information? 2003



Quantifying "information"

The Beginnings of Information

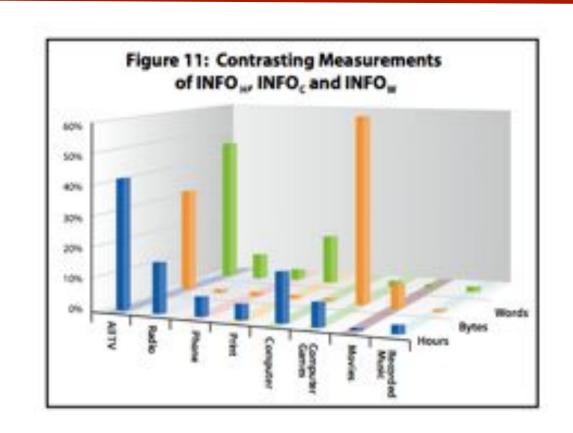
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems



How Much Information? 2009 Report on American Consumers



Quantifying "information"

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent Inventions of Writing Systems









The Emergence of Representation



The First "Information System": Language



Psamtik I, 654-610 BCE



James V of Scotland

The Egyptians...believed themselves to be the most ancient of mankind....This king...contrived the following method of discovery: He took two children of the common sort, and gave them over to a herdsman to bring up at his folds, strictly charging him to let no one utter a word in their presence, but to keep them in a sequestered cottage, and from time to time introduce goats to their apartment, see that they got their fill of milk.... His object herein was to know... what word they would first articulate. ... The herdsman obeyed his orders for two years, and on one day opening the door of their room, the children both ran up to him with outstretched arms, and distinctly said "Becos." ...He informed his lord, [who then] learnt that "becos" was the Phrygian name for bread. In consideration of this circumstance the Egyptians yielded their claims, and admitted the greater antiquity of the Phrygians.

Herodotus, Histories, 2.2



The First "Information System": Language



Psamtik I



James V of Scotland

Early theories: "bow-wow," "uh-oh," "pooh-pooh," etc.

1886: Linguistic Society of Paris forbids "toute communication concernante l'origine du langage" [All papers dealing with the origin of language]

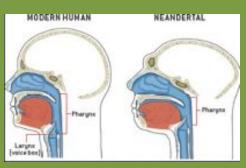
No direct evidence about origins of language
No existing "primitive" languages



The First "Information System": Language



FOXP2 gene





Was development of language gradual or sudden? Does language presuppose neural modification?

"language" might have emerged w. Homo erectus (1.5 m years) or with mod. Homo sapiens (ca 100-150k years) But surely by 60k BP

"The momentum we see in cultural revolution after [the dispersion] was no longer genetically based... Darwinian evolution in the genetic sense continued, and underlies the rather superficial differences that are observed between different racial groups today... but the newly emerging behavioral differences between the groups were not genetically determined. They were learned, and they depended on the transmission of culture." Colin Renfrew

Evidence from mod. genetics, archaeology, comparative anatomy, etc.



The Beginnings of Representational Artifacts

"... whereas notations of whatever sort were apparently means of recording the passage of time in terms of culturally significant events."





The Beginnings of Representational Artifacts



Henri Breuil





Robot & Jacques Marsal





Cave paintings, Lascaux, France: ca 15-13,000 BC (others perhaps to 30,000 BC)

"Man's first affirmation of himself"

Maurice Blanchot

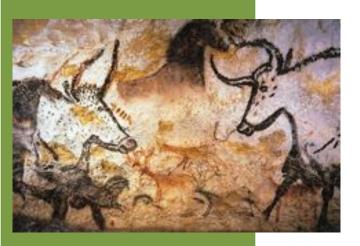




The Beginnings of Representational Artifacts



"Images and symbols... were markers of periodic and continuous cultural processes, of rites, and of repetitive myths and stories..." Alexander Marshack





Spotted Horses, Peche Merle





The Varieties of Signs

The Beginnings of Information

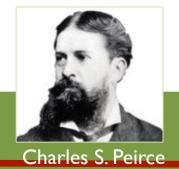
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems



The Varieties of Signs







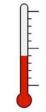


3 Types of signs (after Charles Peirce): icon, index, symbol



Icon: relation of resemblance (more-or-less) to signified. E.g.

Index: stands in causal/spatial relation to the signified (blaze on tree to act of marking, thermometer to temperature)



Symbol: arbitrary relation between sign and signified. E.g., written word cat, spoken word /kæt/.











The Varieties of Signs: Indexical

Index: stands in causal/spatial relation to the signified (pawprint to bear, blaze on tree to act of marking, thermometer to temperature)











The Varieties of Signs

Icon: sign stands in relation of resemblance or similarity to signified (though often only roughly).





The Varieties of Signs: Symbols

Arbitrary (or effectively arbitrary) relation between sign and thing signified







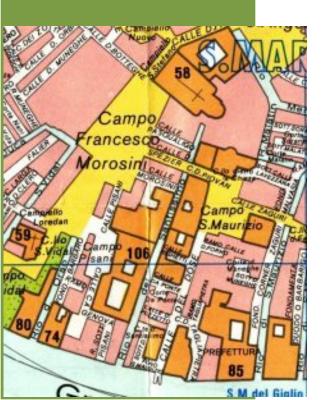


tree



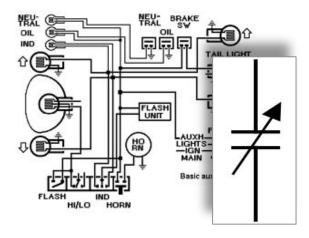


Many signs combine features of several types











Early Indexical Signs

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent Inventions of Writing Systems Earliest signs are mnemonics for record-keeping, geneology, etc. (Tallying systems)

Knotted rope, notched stick or bone, etc. Become frequent in upper paleolithic



Notched Bone, England, upper paleolithic, 12,000 years old



Notched Bone, Turkey, ca 3000 BC

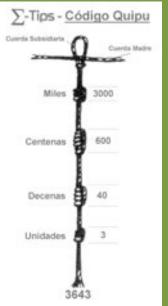


Notched bone, Congo, ca. 25,000 BC -- may represent lunar calendar



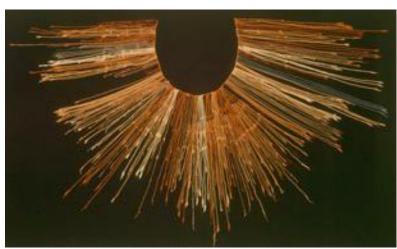
Elaborated Indexical System: The Inca *qipu*







Knots of varying colors in Ilama or alpaca hair
Limits: can record only quantity and category; requires extensive convention for intepretation





Early Iconicity

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems



Petroglyphs, Bhimbetka, India, ca 9000 BC



Rock carving, Hong Kong (Kau Sai), 3000 BC



Petroglyphs, Scandinavia, Bronze Age



Pictographic (Iconic) Communication Systems

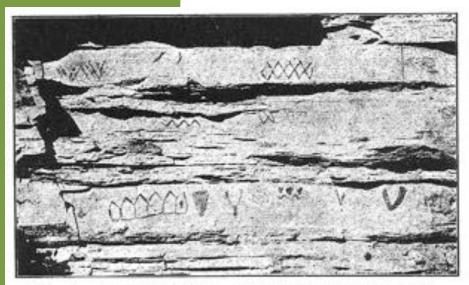
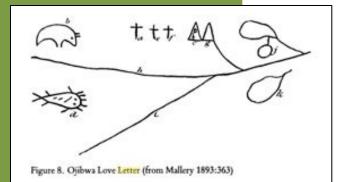


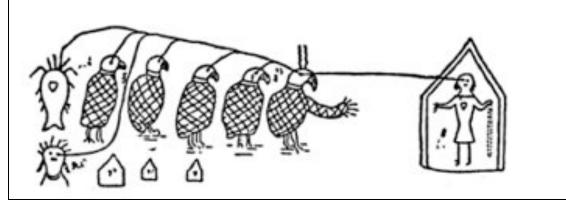
Fig. 4 .- Geometrical forms. (From a photograph of rocks).





Pictographic (Iconic) Communication Systems





"Letter of credence" presented by Chippewa delegation to Washington, 1849

"The chief salutes the president, and his warriors belonging to the eagle and catfish totems are in harmony with him and are willing to accept the white man's ways."



Abstraction in pictographic systems

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems

Extending pictographic systems to deal with abstract or relational notions. E.g., "brother," "go," etc.

A step toward the development of "true" writing:

Form signs for abstract entities by extending or combining signs for concrete things (ca. 3300 BC)

```
foot = "go, come, walk, etc."
person + mountain = "foreigner"
eye + water = "weep," "sad," etc.
```

Cf modern use of "metonymic" icons









Pictographic Systems

The Beginnings of Information

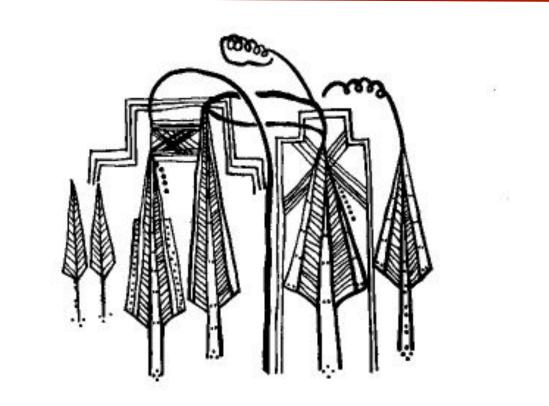
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent Inventions of Writing Systems



Yukaghir (Siberia) "love letter," late 19th c.



"Pictographic" Systems

The Beginnings of Information

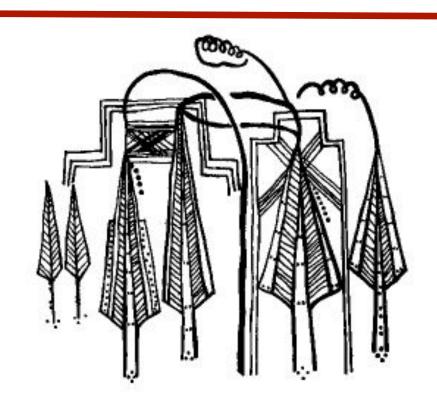
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

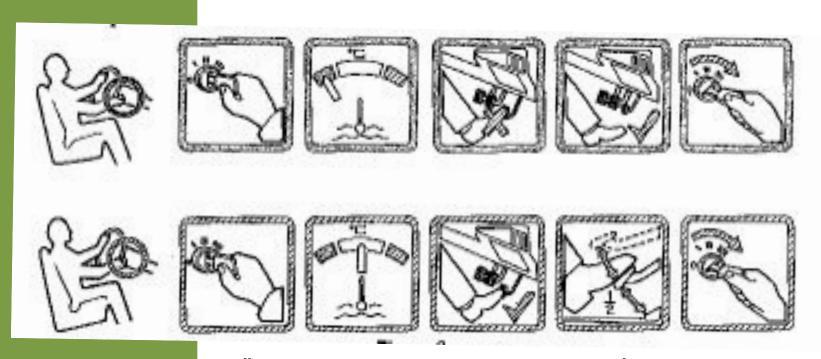
Independent Inventions of Writing Systems



"I know you're fighting with that Russian girl you broke up with me over. I'm unhappy in my house as I think of you, but you should know there's another guy hitting on me, so get your act together before I get married and have children."



Ideographic (Semasiographic) Systems: the importance of context



"Turn the key. If the car is cold, don't step on the gas pedal; if it's warm, depress the gas pedal halfway as you turn the key."



The limits of ideographic/ semasiographic systems

Semasiographic/ideographic system: symbols stand directly for ideas, not for words of a language.

Cf mathematical notation:

$$10^9 = 1,000,000,000$$

"Ten to the ninth equals a billion."/ "Zehn hoch neun gleicht eine Milliarde," "Dieci alla nona potenza equivale ad un miliardo," etc.

$$\forall x (Fx \rightarrow Gx)$$

"For all x, if F of x then G of x" ("pout tout x si x est F alors x est G") "Everything that is F is G," "If something is an X it's a G,"/ being F always entails being G," etc.

But language-independent systems appear inadequate to express the full range of thoughts & information



The origins of true writing



The Beginnings of Information

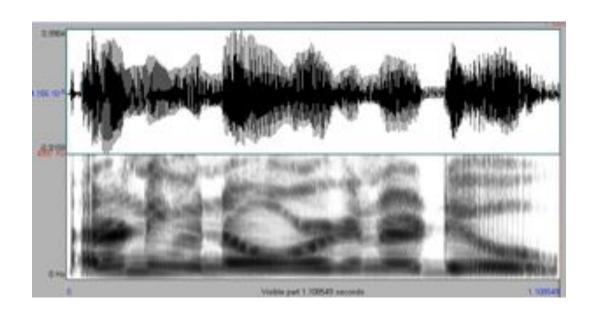
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent Inventions of Writing Systems Writing – what a concept!



wwbenceniewenen:a



The Beginnings of Information

The Emergence of Representation

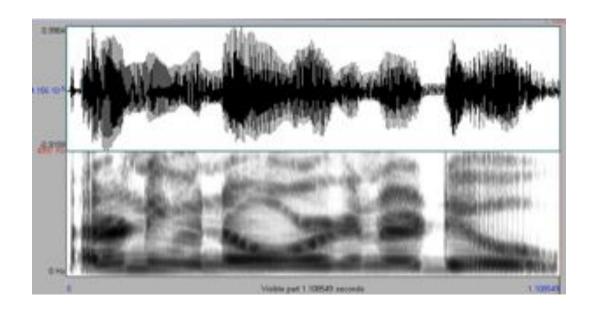
The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems

Writing – what a concept!



a:renowe?wirgonedww I don't know what we're going to do



The Beginnings of Information

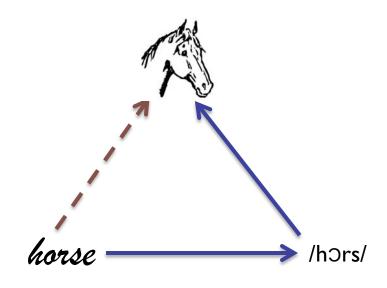
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent Inventions of Writing Systems



<u>True Writing:</u> symbols represent elements of language rather than directly representing things in the world.



The Beginnings of Information

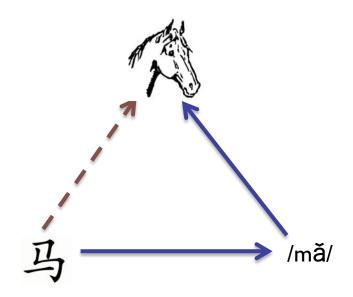
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems



<u>True Writing:</u> symbols represent elements of language rather than directly representing things in the world.



The Beginnings of Information

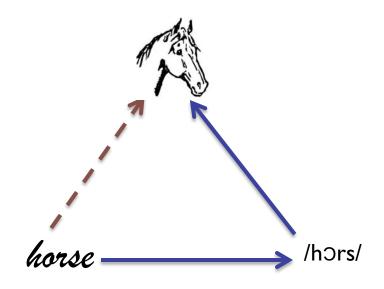
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems



Glottographic writing: rather than referring directly to reference/ideas, signs are associated with elements of the language (words, morphemes, syllables, phonemes).

Cf "5" vs five, cinque, fünf, wǔ, etc.
"\$" vs "dollars," etc.



Origins of Writing in Sumer

The Beginnings of Information

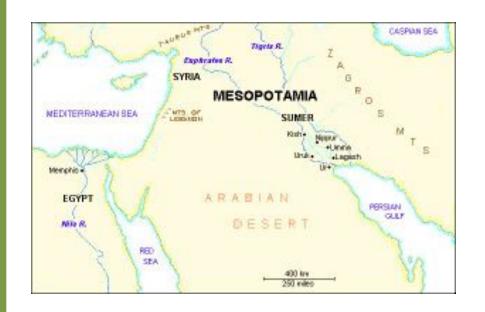
The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems





Origins of Writing in Sumer

8-5000 BC -- earliest use of clay tokens.

4,000 BC -- earliest clay bullae 3500-3300 BC -- earliest clay tablets from Uruk.











Early cunieform



Tokens as origins of Sumerian writing?



Figure 7 Picrographic tables from Uruk, Iraq, late fourth millennium B.C. The account in the upper control case, for example, shows the sign for sheep and five wedges standing for the abstract numeral 2. Countray Vordensitatisches Museum, Staatliche Museen zu Berlin, East Germany.

Evolution from Token to Cuneiform Writing									
Token	Pictograph	Neo-Sumeroon' Die Bebylonien	Nec-Assyrian	Non-Rabylonian	English Sheep				
1	⊕£	囲	M	Ж					
4	\$ \$	♦	#	<>	Catrio				
4	8	MISI	D-Qt⇒iii	以市	Dog				
1	0	4	ď₩	4	Metal				
9	0	À	ÁT.	A	Oil				
	0	Jant.	Infle	<u>"Ne</u>	Garment				
6	•	1	型柱	穏	Bracelet				
9	>	各值	;iii	单	Perlune				



The Origins of "complete" writing

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems

Glottographic system: signs denote words/signs of the language

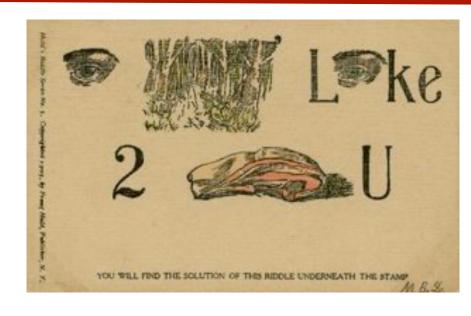
But how to signify "abstract" words? Creation, after, but, believe, faithful, if, etc.

Metaphoric extension (cf extended meanings of head, hand, foot, etc.)



The Rebus Principle





Rebus: Icons of things that stand in for their (phonetic) names

I would like to meet you



Rebus principle leads to logography

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems

Rebus principle allows signs to be reutilized to signal abstract words, functional elements, etc.

"water" $/a/ \rightarrow$ "in" /a/

T "oracle" /me/ → plural suffix /-me/



Logography to Syllabic System

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent Inventions of Writing Systems Logographs ultimately perceived as having purely phonetic value.

Cf English logographs – @, &, £, ¢

imagine the word h@b&

Where does this happen in everyday life?

•



Logography to Syllabic System

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems

Logographs ultimately perceived as having purely phonetic value.

Cf English logographs -- imagine the word h@b&

Where does this happen in modern life?

Texting: CU@*\$, 2G2B4GO10, ne14Xs?







Signs come to stand in for syllables





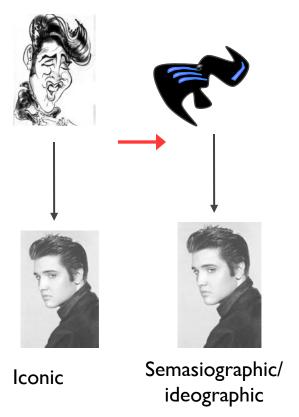




Iconic



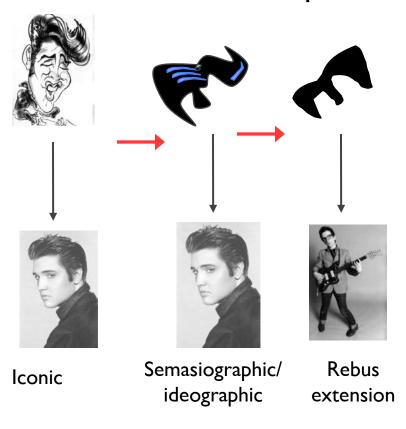
Simplification of sign —



Proto-writing

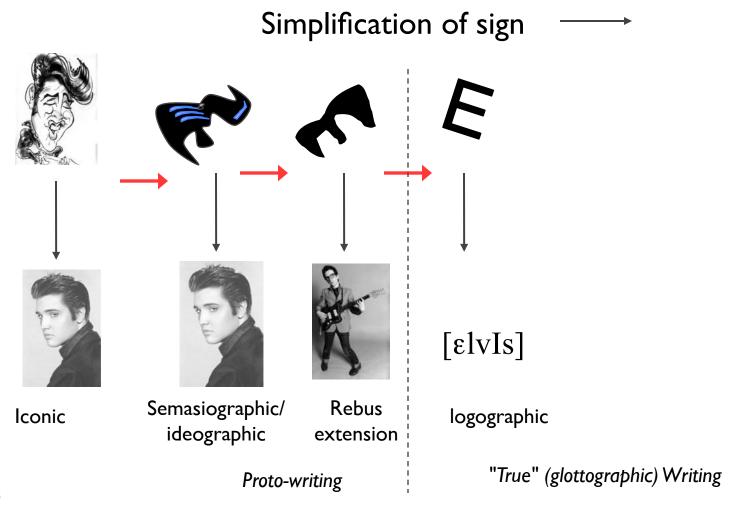


Simplification of sign —



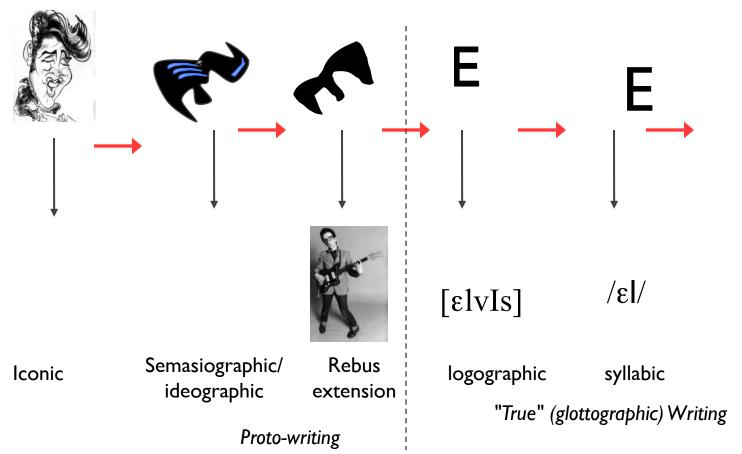
Proto-writing



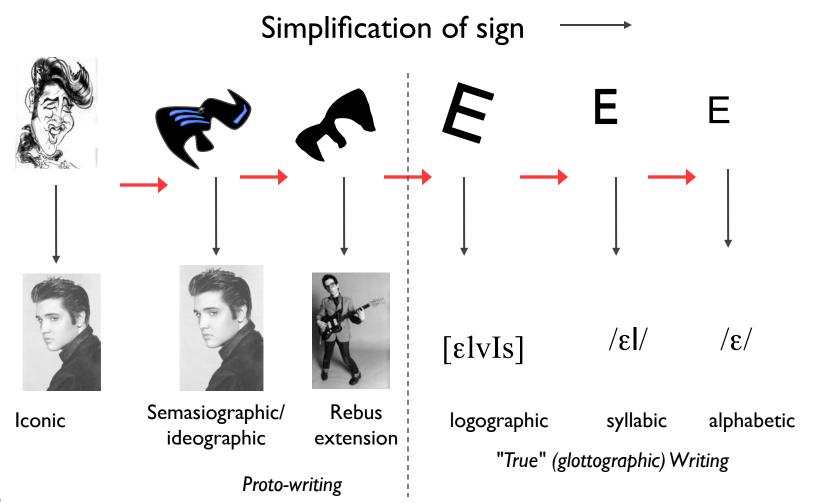




Simplification of sign

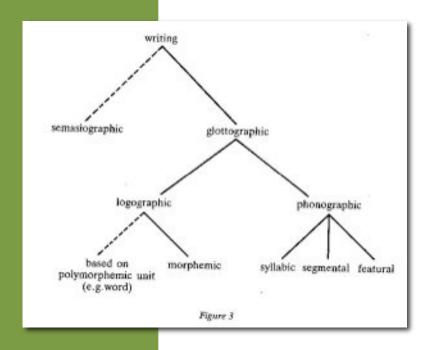








Types of Writing Systems



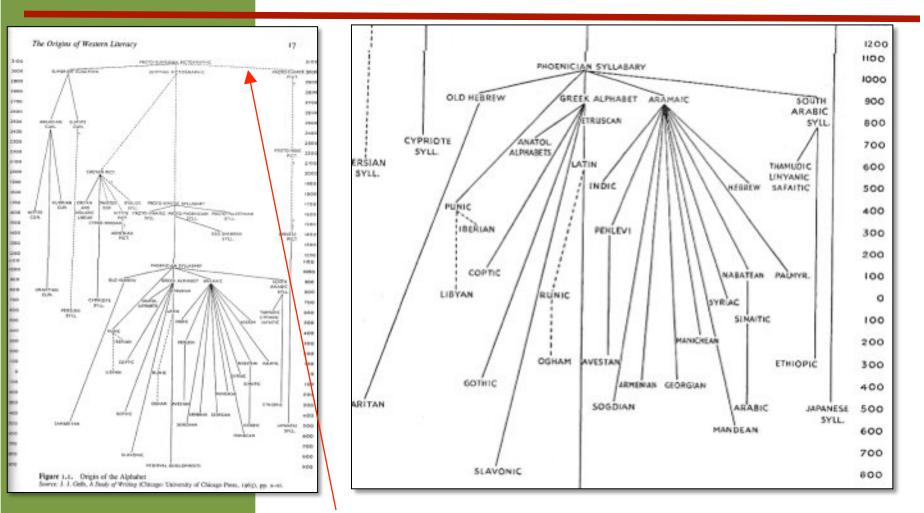
Logographic: mod. Chinese (logosyllabic), Japanese kanji

Syllabic: Phonecian, Linear B, Cherokee, Korean Hangul (featural), Japanese (hiragana & katakana), Bengali, Gujurati...

Alphabetic: Roman, Cyrillic, Gk, Hebrew, etc,



Genealogy of Writing Systems



But evidence is slight for derivation of Chinese from proto-Sumerian

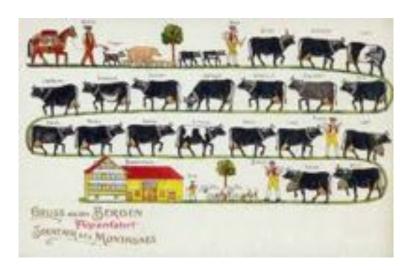


Later Developments

ОХІДОИАФ ЕМІТОРМОК ОТЗОЭТАЎ ПРОКОИИН ЧНТНЧХОІЎ АДЕ:КАІҮПОК АЗНОМОИ:ЕΣП ЙІНӨМОИ:ЕΣП ИОІНИАТУЎ ЁДОКЕИ:ΣҮКЕ ИІЗҮЭ́

boustrophedon

The licenses for most software are designed to take teartnos yB .ti agnads bna arake of mobaerd ruoy yawa the GNU General Public License is intended to guarantee also of a mobaerd ruoy and of the software is free for all its users. This General arawtho? and the software and to any other program whose Foundation's software and to any other program whose



Does direction of writing influence cognition?



Later Developments



Subsequent development of further orthographic elements: word-spacing, punctuation, paragraphing, etc.





Independent Invention of Writing Systems

The Beginnings of Information

The Emergence of Representation

The Variety of Signs

The Origins and Development of Writing Systems

Types of Writing Systems

Independent
Inventions of Writing
Systems



Independent writing systems: The Cherokee Syllabary



Sequoyah [George Gist] and the "talking leaves": 1819

				1		0		u		A[9]				
D	a			R	0	T	1		Ó	0	O	U	i	٧
8	ga	Đ	ka	ŀ	ge	y	gi		A	go	J	gu	E	gv
4	ha			5	he	.0	hi		ŀ	ho	Г	hu	Q-	hv
w	(a		l,	c	le:	P	1		G	10	M	lu	4	h
5~	ma		-	CI	me	Н	mi		5	mo	y	mu		
θ	na	t.	hna G nah	Λ	ne	h	ni		Z	no	q	nu	C	my
T	qua			ω	que	P	qui		v	quo	6	quu	3	quv
60	8	U	sa	4	50	Ь	şi		4	50	60	84	R	sv
L	da	W	ta	8	se To te	.I	di	A a	V	do	S	Ø)	0,0	đν
ð	dta	C	tia	L	tie	C	tii		£	tio	P	tiu	P	tiv
G	tsa			T	tse	h	tsi		K	tso	ď	tsu	C	tsv
G	wa			60	we	0	wi		6	wo	8	wu	\mathbf{e}	wv
۵	ya			В	уе	.5	yi		fi	yo	G	yu	В	yv

Independently invented writing systems: The Cherokee Syllabary



VOL. L.

NEW ECHOTA, THURSDAY MARCH 6, 1828.

NO. 3.

EDITIOD BY ELIAS BOUDINGTY. PRINTED WHEELY BY

ISAACH, HARRIS, PAR THE OCCUPANT PARTY.

At 19538 if paid in advance, 89 is Marries, or \$2 to it paid at the real of the

Cherokee languare the poles will be \$1.00 in advance, or \$5.00 to be paid within the

Every subscription will be providered in speciment unless soluctions give meter to the contrary below the permenentary of a

The Placeis will be printed on a Superi-Baral short, with type entirely are practed of for the purpose. Any proved principal six asherologic, and becoming community for the payment, shall receive a arreach

Advertisements will be insected at severades proteger square for the first increine, and thirty-pries and a last semp for multi-environment, longer more in propur-

prints became although by the Editor. post paid, will receive due attention.

WHY STREET AS STREET, PRINTED THAT BY THE LAKE PARK BRAY THE ATT WILDRED SANS BARL THE TOPP DESCRIPT

DISCOULABLE PRADERT TO YOU PRODURAL OF AT BOT OWEL PAGE. SCHOOL SALE AMERICAN, WINES, SHIP SHIPS SHALL PRAISE, THE TRIBLES OF ASSESS. STAR BUT I'VE AS PRAIL!

Ma. Earne-Suppost SPIRITS.

fanacurage, I CONSTITUTION OF THE CHERO.

KEE NATION, Furnal by a Controller of Delegates from the several Districts, at New Edists, Ja-

ly 1815.

Sec. I. Whereas the ministers of the Grapel are, by their profession, dediented to the service of God-and the rare of tools, and ought not to be directed from the on, now young manuscreases were great duty of their function, therefore, as initiate of the Gospel, or public prescher, "PRESE'S TRANSPALE ASSAUL, DE of any religious personales, whilet be contiones in the exercises of his purceral fourtime, shall be eligible to the office of Principal Chief, or a Sent in either boxes of the General Council.

Sec. 3: No person who desire the being of a God, or a future state of reveneda & validments, shall beld pay effice in the elvil department of this Nation.

Sec. 2. The free energies of religious worship, and serving God without distinction, shall forever be allowed within this Notice: Provided, That this liberty of conaclesce shall not be an exectaced as to excost acts of licentiquesess or justify proctions increasistant with the pence or sode-THE THE TARK TO DECOMME. IT

Sec. 6. Whenever the General Counall shall determine the expediency of appetiting delegates, or other public Agencs, the the purpose of transacting business with the Government of the United States; the Principal Chief shall here pearer to recemnatual, and by the advice and essent of the Committee, shall appoint and commission with delegates or Public Agents presedingregarder proportion the proof by, and, on all metters of interest touching was maked organic programme. the rights of the chipms of this Nation, | *****

WITH ALL WITH BUILD. (prometer)

I. the nathangeness A DOUBLANK, NAME OFF BR. AF SHARLIN, I BYE SELF PROMISE base send tophasy so, if DOWN STREET EXPONENT AND ADMINISTRA

II. THE PERSON AS ASSESSED. # Three Co. DV AdaME DG TELLERY BE NOT HARPSHIRE, IS NOT SELD! TARREST, MARRY MARK

S. 40 GHY ROLL BLAR AN TOURS, DOGS DOGGA, SAME Deponds from a baddets. BEINGHARD WYNES OF SIX AT SULLING BY STIT AND BE SE! SHARP SUPPLEMENT SPACE

4. TOT MANY NOW SHIPE ANY WAR ARES DANABAS SALESSA. BY DOCUMENT OLDER BOOK JOSEP. MANY, WEYERS DESIGN ATTACK PARL MIT IS SUPERALISE DESCRIPT, AND DOT SHALL ACKN THESE SHOPE OUR RAISE SCHOOL TELEPHONE PROGRAMMA PROC EAST VE. NAV SUCCESS OF THE

by the legislature, except when they are all pean is everyone. temporary, is which case they shall expire at the times respectively limited for their dentities; if not continued by set of the legis-

Nor. 13. The General Council may at oy time propose such assendances to this Countration as two thirds of each home sholl doom expedient; and the Principal Chief shall beau a preclamation, directory all the civil efficers of the several Districts to premulgate the unite on extensively us possible within their respective Districts, at least size mostle province to the next Central election; and if at the first sension of the General Council after such General election, two thinks of such house shull, by present ups, ratify such proposed as a water, amazan panarantpol more during they shall be valid to all intests and perpend reports of this Court | mount maps present necessary totion; Printed, That such proposed or mendments shell be read on three several dops, in such haven, to well when the name are proposed, so when they are faully rot-

Done in Convention at New Er bate, this | execut analysis and receive renty with day of July, in the year of our | 1.0 beaut, every market of, ou Lord two thousand of

ty service; he tencio each of us, hereu-Enlayates of C JNO. poss. I JOHN BALDS

Delegrous of GROBUE LO JNO. EROWY EDWARD GO

JOHN S ARTIN

Delegator of 6

fear paragraph resortant branch (Industry to bornelle films against on Both

14. Yes not unassented and blotte, dead at single, it out wie downers, the party server and NY BARBERGA, TRANSPORT OFFICE THAT WANTED AND AND ALC PARK, IN SPECIATED JOINT P SANGER DATES AND ADDRESS.

15. ore notes aswer, to SELECT AT THE WO ASSAULT, AS JOSEPH A STREET BUTTONESS OF LATER THERE THE DESCRIPT, DAY DESIGN STREET BALLS TANK WIF ARREST STORY PERSONAL IN BE ARREST MERCH, NAME WAS THE SHALL BUT WALLE, MA SOUTH ST TISS BY ASSESS SWIFFAR MARKACAPAL TORS (DAVE OF SHIT HAT HAY ADMILTON'S SHOULT

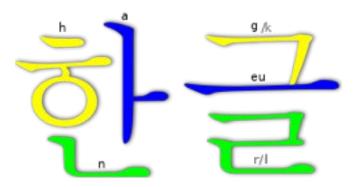
Cherokee Phoenix: First American Indian newspaper (1828)



Hunmin Jeong-eum Exemplar (1446): Earliest Hangul text

Independently invented writing systems: Korean Hangul

Writing system invented in mid-15th c. to replace hanja (Chinese-based writing system). Invention credited to King Sejong ("the Great"), who introduced it to increase mass literacy



The word 'hangeul' in hangul

Assignment for 2/3

Havelock writes:

The introduction of the Greek letters into inscription somewhere around 700 B.C. was to alter the character of human culture, placing a gulf between all alphabetic societies and their precursors. The Greeks did not just invent an alphabet, they invented literacy and the literate basis of modern thought [55]It is no accident that the pre-alphabetic cultures of the world were also in a large sense the pre-scientific

Consider just one aspect or element of this broad claim. Taking into consideration both Havelock and Gough's articles, evaluate the claim from the point of view of either McLuhan or Williams. cultures, pre-philosophical and pre-literary.



Assignment for 2/3

Havelock, Eric, "The Greek Legacy," in David Crowley, ed. Communication in History: Technology, Culture, Society. Allyn & Bacon. Pp. 55-62.

Gough, Kathleen. 1968. Implications of literacy in traditional China and India. In Goody, Jack (ed.). Literacy in Traditional Societies. Cambridge: Cambridge University Press, 44-56.

Additional Materials

Scribner, Silvia and Michael Cole. 1988. "Unpackaging Literacy." Social Science Information, 17, 1