
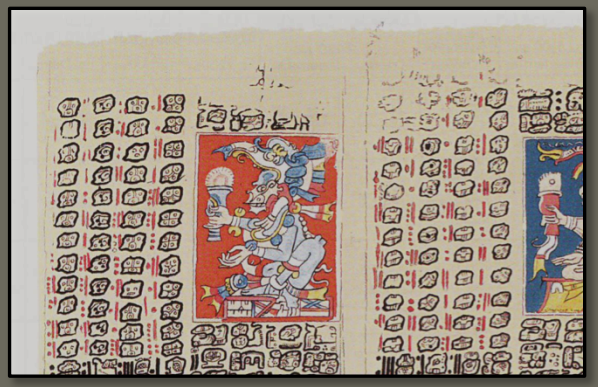
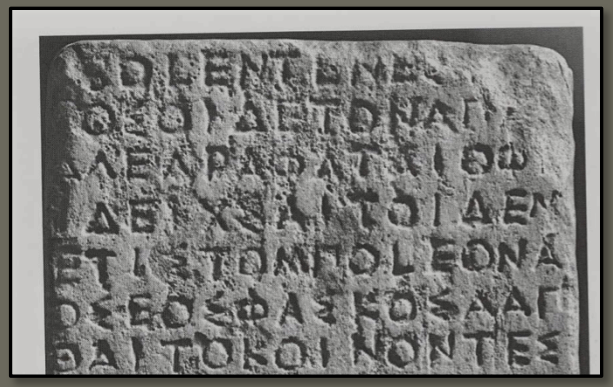

# EARLY TECHNOLOGIES OF INFORMATION – WRITING SYSTEMS AND THE CONSEQUENCES OF LITERACY

JULY 8, 2009

History of Information – Lecture 2 – Dan Perkel

# Today's Plan



- Summary and recap from Monday
- Talking about literacy
- The prescursors to writing
- Early writing systems and "true writing"
- The alphabet
- The Consequences of Literacy
- Assessing the Consequences

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# Summary and Recap

# Elements of the information age



- **Writing systems**
- Print
- **Literacy**
- "the public"
- Information property
- Authoritative reference
- Newspapers
- Imagery
- Advertising
- Point to point communication - phones
- Broadcast media – TV
- Engineers, designers, technicians, researchers
- Corporations
- The Internet
- "New media"
- The state
- Information and Crisis

# What is technological determinism?



- "new technologies are discovered, by an essentially internal process of research and development, which then sets the conditions for social change and progress. Progress, in particular, is the history of these inventions, which 'created the modern world' The effects of the technologies, whether direct or indirect, foreseen or unforeseen, are as it were the rest of history."
- Raymond Williams, Television, Technology, and Cultural Form

# What is technological determinism?



- Technology develops under the weight of some internal logic, autonomously from social forces
- Technological progression is linear and the new replaces the old
- Technology exerts and outside impact on society (usually using words like “impacts”, “effects,” etc)

# Assessing claims



- "Necessary" vs. "Necessary and Sufficient"
  - (or *a* factor vs. *the* factor)
- Conflating technology with institution
- Labeling "constraints" as "resources" and vice versa
- Just getting your history wrong
- Assuming technological change with everythinn else staying the same (remember the housewife hosing down the waterproof home of the future?)
- Dealing with unintended consequences
- Moral hazards

# Literacy

"The faculty of language stands at the center of our conception of mankind, *speech makes us human and literacy makes us civilized*."

- David Olson in From Utterance to Text: The Bias of Language in Speech and Writing.

# The proliferation of literacy



- **Print** literacy
- **Media** literacy
- **Information** literacy
- **Traditional** literacy
- **Basic** literacy
- **Functional** literacy
- **Visual** literacy
- **Financial** literacy
- **Cultural** literacy
- **Critical** literacy
- **Digital** literacy
- **Computer** literacy
- **Scientific** literacy

And there's more!

- …And of course all of the corresponding "illiteracies…"

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HigherEdMorning.com » The hidden problem with Twitter

## The hidden problem with Twitter

June 23, 2009 by Carin Ford

Posted in: Special Report, Tech News

Oxford University Press has been studying the language of Twitter these past six months – take a look at what they've found.

Seems the most commonly tweeted word is (hold the drum roll) "the."

And because Twitter thrives on users talking about themselves, the second most commonly tweeted word is "I." Interestingly, "I" ranks tenth in regular written communication.

Oxford University Press also found gerunds are heavily utilized by the Twitter crowd – among the most popular words are "going," "getting" and "watching." Tech terms such as


So here's the question: Is Twitter - along with instant messaging and texting - contributing to the destruction of language skills among college students?

# The end of writing as we know it?



"The 'telegraphic style' would be 'terse, condensed, expressive, sparing of expletives, and utterly ignorant of synonyms' and would propel the English language toward a new standard of perfection."

- Geoff Nunberg quoting Conrad Swackhammer's 1848 article "The Influence of the Telegraph on Literature" in *United States Democratic Review*.
- See Nunberg, Geoff. "All Thumbs." *Fresh Air* Commentary. May 16, 2008.

"And compared to formal writing, the casual lingo of Twitter includes a greater frequency of "OK" and "f * * *."

## The hidden problem with Twitter

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# And if it is the end of writing as we know it?



"**Literacy is a human right, a tool of personal empowerment** and **a means for social and human development.** Educational opportunities depend on literacy.

"Literacy is at the heart of basic education for all, and essential for eradicating poverty, reducing child mortality, curbing population growth, achieving gender equality and ensuring sustainable development, peace and democracy. There are good reasons why literacy is at the core of Education for All (EFA)."

-src: UNESCO Education Literacy Portal
http://www.unesco.org/en/literacy/**literacy-important**/
retrieved on July 7, 2009

# And if it is the end of writing as we know it?



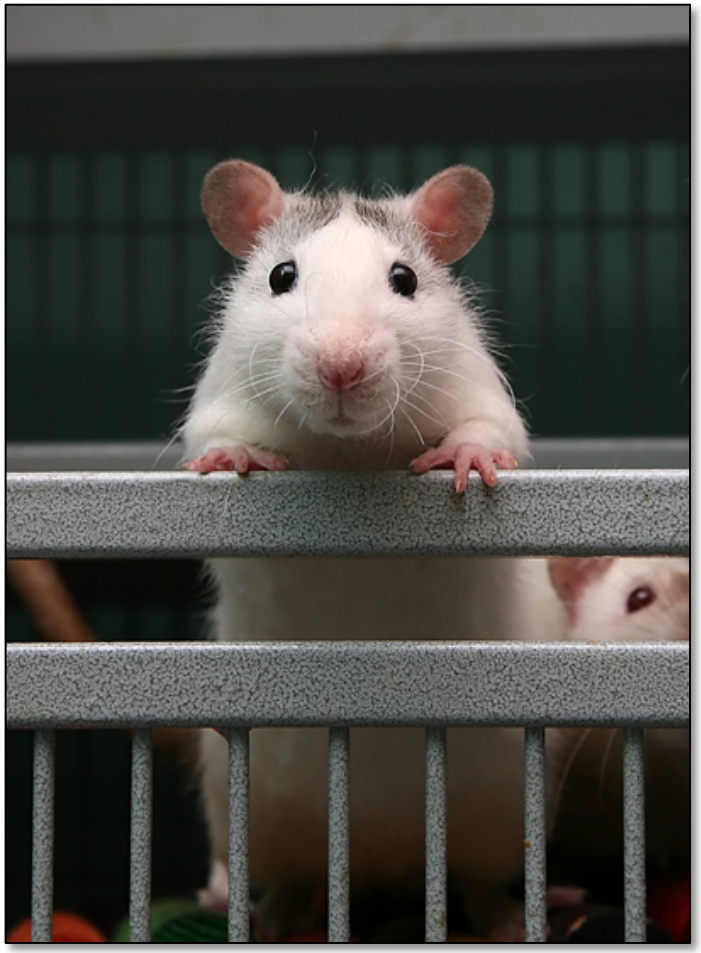
"Literacy is **not merely a cognitive skill of reading, writing and arithmetic,** for literacy helps in the acquisition of learning and life skills that, when strengthened by usage and application throughout people's lives, lead to forms of individual, community and societal development that are sustainable."

- Koihiro Matsuura, UNESCO Director-General in his message on the occasion of International Literacy Day 2006.

"Literacy as Freedom" – UNESCO Literacy decade slogan

# Quiz time!





"Happy Birthday to me" by xNickixstockx
http://xnickixstockx.deviantart.com/art/Happy-Birthday-to-me-69803067

# Quiz time!



1. In one short paragraph (six sentences or less), answer the following question: Are Goody and Watt are making a technologically deterministic argument?
2. Use evidence from the reading to support your answer.
3. Be concise!

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# Precursors to writing

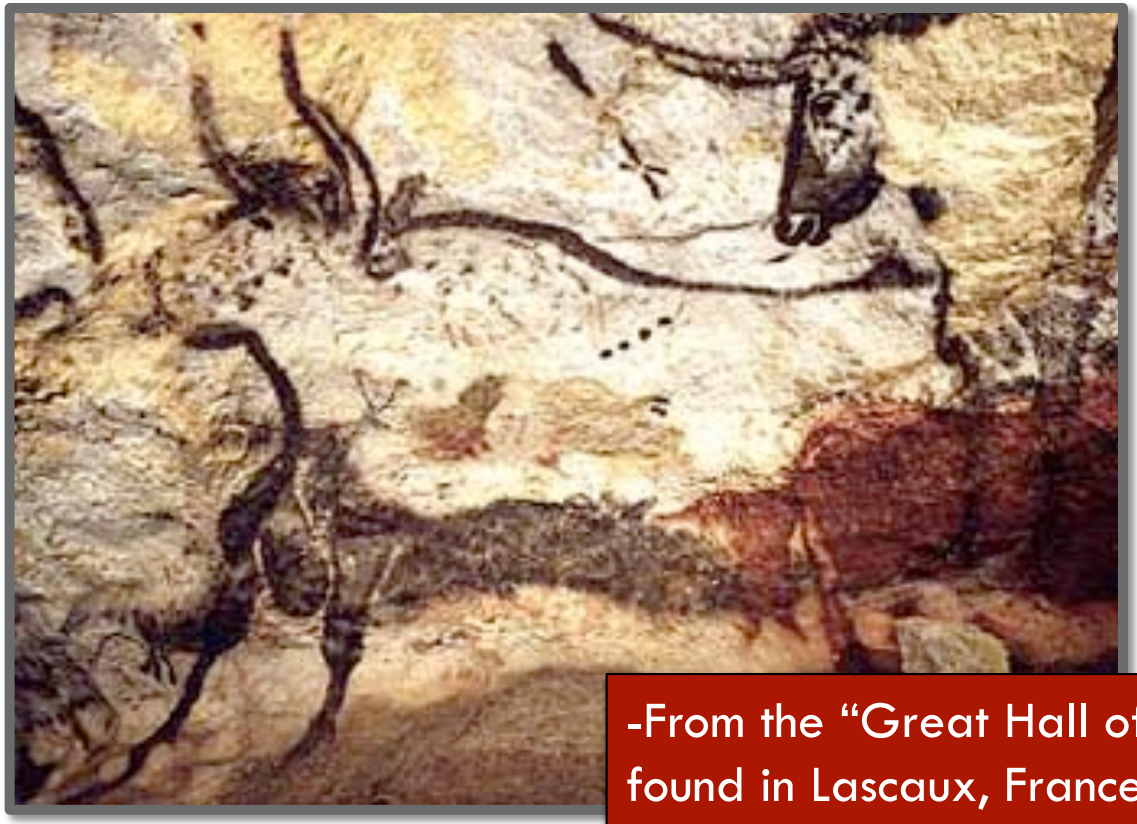
# The first “information system” language



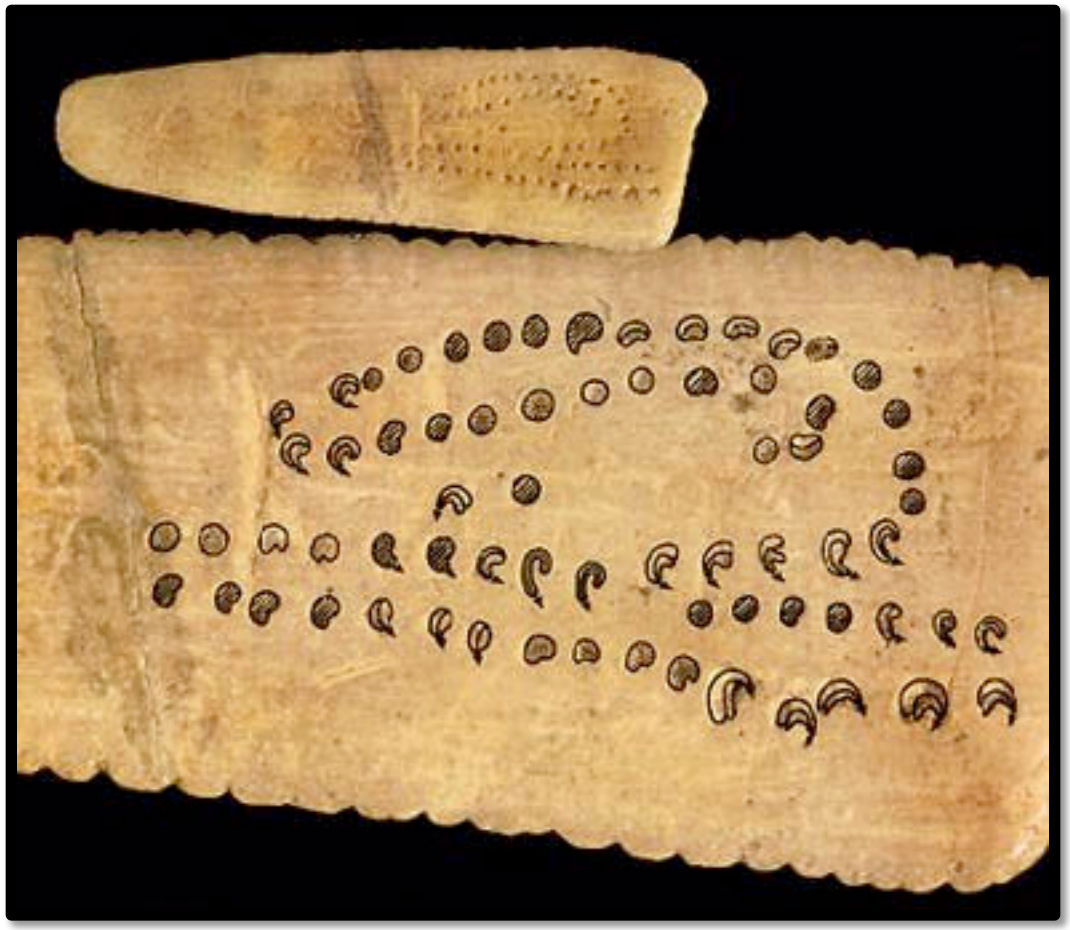
- No direct evidence about the origins of spoken language
  - 1886: Linguistic Society of Paris forbids "toute communication concernante l'origine du langage” ["Any paper dealing with the origin of language”]
  - Some evidence of language 150,000 - 200,000 years ago
- No existing “primitive” languages: all modern human populations speak languages of comparable complexity

# Early representational artifacts





-From the "Great Hall of Bulls", Cave Paintings found in Lascaux, France. 15-13,000 B.C.E. (though perhaps even older). Retreived from: http://www.culture.gouv.fr/culture/arcnat/lascaux/en/



Cro-magnon bone tool, perhaps the “earliest known form of notation” that may “mark phases of the moon.” (Marshack, Alexander)
Image retrieved from http://www.donsmaps.com/cavepaintings2.html. Src image unknown.

“Images and symbols… were markers of periodic and continuous cultural processes, of rites, and of repetitive myths and stories…"

-Marshack, Alexander. 1999. “The Art and Symbols of Ice Age Man”

# Four pre-conditions of “true writing”



- Deliberately identified **surface**
- Distinctions between **figured** and **ground**
- Differentiations of **marks** and **interval** (i.e. space and difference)
- Principles of **visual organization**, such as sequence, scale, orientation, and juxtaposition

- Drucker and McVarish. 2009. *Graphic Design History*. pp12

# “True writing”

# “True writing”

“The graphic expression of language.”

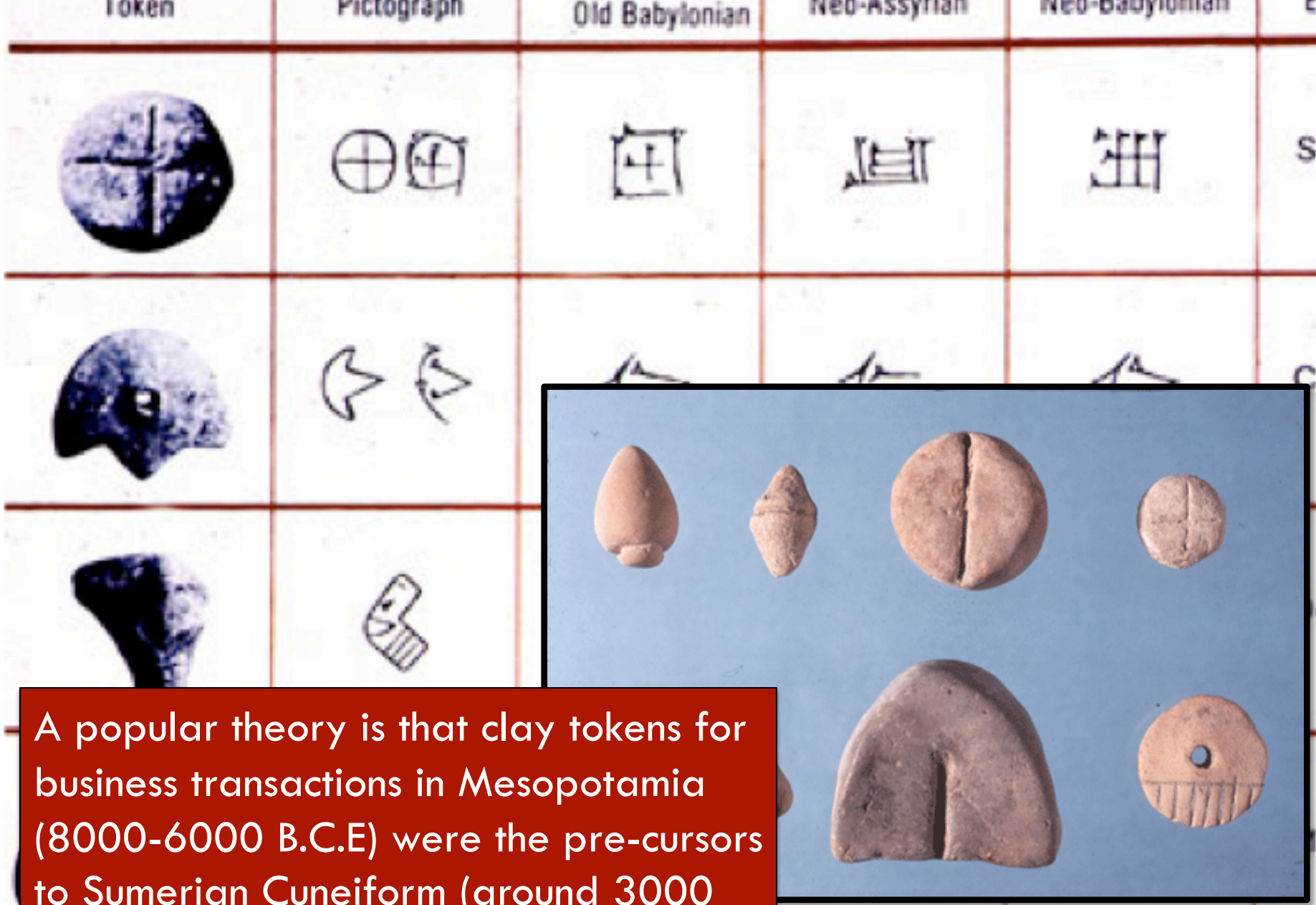
-(Drucker and McVarish. 1999. Graphic Design History)

# Origins of true writing



- Divine origin a dominant theory until the 1700s
- Most likely theory is economic roots and adminstration of expanding empires

- Robinson, Andrew. 1999. “The Origins of Writing.”




A popular theory is that clay tokens for business transactions in Mesopotamia (8000-6000 B.C.E) were the pre-cursors to Sumerian Cuneiform (around 3000 B.C.E)

Clay tokens, Mesopotamia, src: http://www.english.illinois.edu/-people-/faculty/debaron/essays/wordtech.htm

# Some functions of early writing



- Accounting (Sumeria, Greece)
- Memory aids (in Greece)
- Codification of laws (in Bablyon)
- Funerary inscriptions (Etruscan writing)
- Predicting the future (Mayan Civ. and China)
- Identity cards/signatures/seals (Egypt, Mesopotamia, China, Central America)
- Propaganda (Egypt)

-Robinson, Andrew. 1999. "The Origins of Writing."

# A theory of evolution



- Pictographic systems – graphic representation of **objects in the world** (pictograms)
- Logographic systems – graphic representation of **words** (logograms)

# The "phonetic principle"



"The notion of representing a sound by a graphic principle is itself so stupefying a leap of the imagination that what is remarkable is not so much that it happened relatively late in human history, but rather that it ever happened at all.

"For a long time, however, these phonetic inventions had a limited effect because they were only *partially exploited*: … logograms and pictograms retained…

"*Only one further step remained*…"

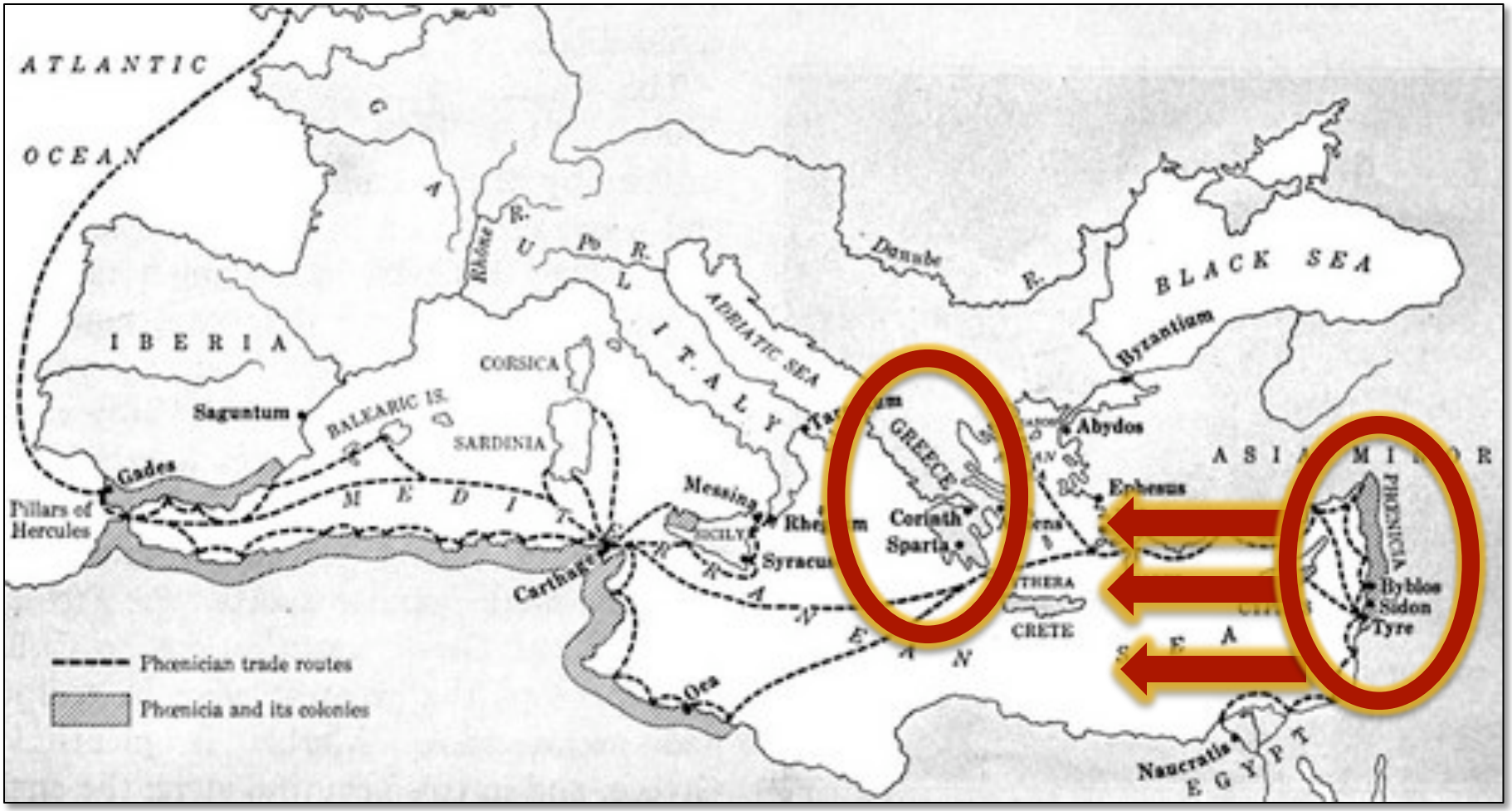
-Goody, Jack and Ian Watt. 1963. The Consequences of Literacy.

# A theory of evolution



- Pictographic systems – graphic representation of **objects in the world** (pictograms)
- Logographic systems – graphic representation of **words** (logograms)
- Introduction of "the phonetic principle"
- Syllabic systems – graphic representation of **consonant-vowel** combinations (phonemes)
- According to this theory, what comes next?

# The origins of the alphabet




Phoenician trade routes

Src: http://atheism.about.com/od/ancientmythologyreligion/ig/Lebanon-Phoenician-Photos/Phoenician-Sea-Trade-Commerce.htm (found in Jupiter Images)

# Who had the first alphabet?



- Variations of an alphabetic script
- Depite different appearances, there are similar numbers of letters and similar orders, evidence of common origin and as a system that spread

src: Drucker and McVarish. 2009. pp. 23

| Letter name | Phonetic value | Moab. IX.C., B.C. | Nineveh IX. C., B.C. | Siloam VIII. C., B.C. | Nineveh VII. C., B.C. | Sidon VI. C., B.C. | Samaritan | Jerusalem I. C., B.C. | Modern Hebrew | Modern Arabic |
|---|---|---|---|---|---|---|---|---|---|---|
| Aleph | 'a | | | | | | | | | |
| Beth | b | | | | | | | | | |
| Gimel | g | | | | | | | | | |
| Daleth | d | | | | | | | | | |
| He | h | | | | | | | | | |
| Vau | v | | | | | | | | | |
| Zayin | z | | | | | | | | | |
| Cheth | ch | | | | | | | | | |
| Teth | t | | | | | | | | | |
| Yod | y | | | | | | | | | |
| Kaph | k | | | | | | | | | |
| Lamed | l | | | | | | | | | |
| Mem | m | | | | | | | | | |
| Nun | n | | | | | | | | | |
| Samekh | s | | | | | | | | | |
| 'Ayin | 'a | | | | | | | | | |
| Pe | p | | | | | | | | | |
| Tsade | ts | | | | | | | | | |
| Q'oph | q | | | | | | | | | |
| Resh | r | | | | | | | | | |
| Shin | sh | | | | | | | | | |
| Tau | t | | | | | | | | | |

# Or was it the Greeks?



"Textbooks and histories…commonly use the word alphabet generically to cover a variety of early writing systems, the Greek one being only the latest in a series of such 'alphabets.' This failure of distinction is unfortunate, for it helps to obscure the fact **that the adapation when carried out amounted to a transformation of function and technological capability which was truly radical. The invention was revolutionary** even if like all inventions it arose through a fresh combination of previously experienced observations."

- Havelock, Erc. 1980. "The Coming of Literate Communication to Western Culture."

# What was the Greek's innovation?



- The adaptation and transformation of certain Phoenecian consonants into vowels, thereby splitting consonants and vowels into distinct graphic symbols

# "Alphabetolatry"*



"The premise that the technology of communication controls the content of what is communicated has been popularized in connection with modern radio, cinema, and television. I am applying it in a more radical fashion to a shift in the character of the human consciousness **which occurred in ancient Greece, and which we inherit**. Briefly I am arguing that **the history of the human mind, as of the human language, falls into roughly two epochs, the pre-alphabetic and the post-alphabetic.**"

- Havelock, Erc. 1980. "The Coming of Literate Communication to Western Culture."

*Alphabetolatry = Alphabet + Idolatory (courtesy of Geoff Nunberg)

# Alphabetolatry



"The invention of the Greek alphabet, as opposed to all previous systems, including the Phoenician, constituted an event in the history of human culture, the importance of which has not as yet been fully grasped. Its appearance **divides all pre-Greek civilizations from those that are post-Greek. …**"

- Eric Havelock, "The Preliteracy of the Greeks"

# Alphabetolatry



"Written statements bypass the limitations of memory, but the extent to which a writing system can explicitly represent meaning depends on the structure of the system. Systems such as syllaberies that represent several meanings with the same visual sign are somewhat ambiguous or nonexplicit. As a consequence they require interpretation by some authority. **Statements can become relatively free from judgment or interpretation only with a highly explicit writing system such as the alphabet.**"

- Olson, David. 1977. From Utterance to Text:
- The Bias of Language in Speech and Writing

# Alphabetolatry



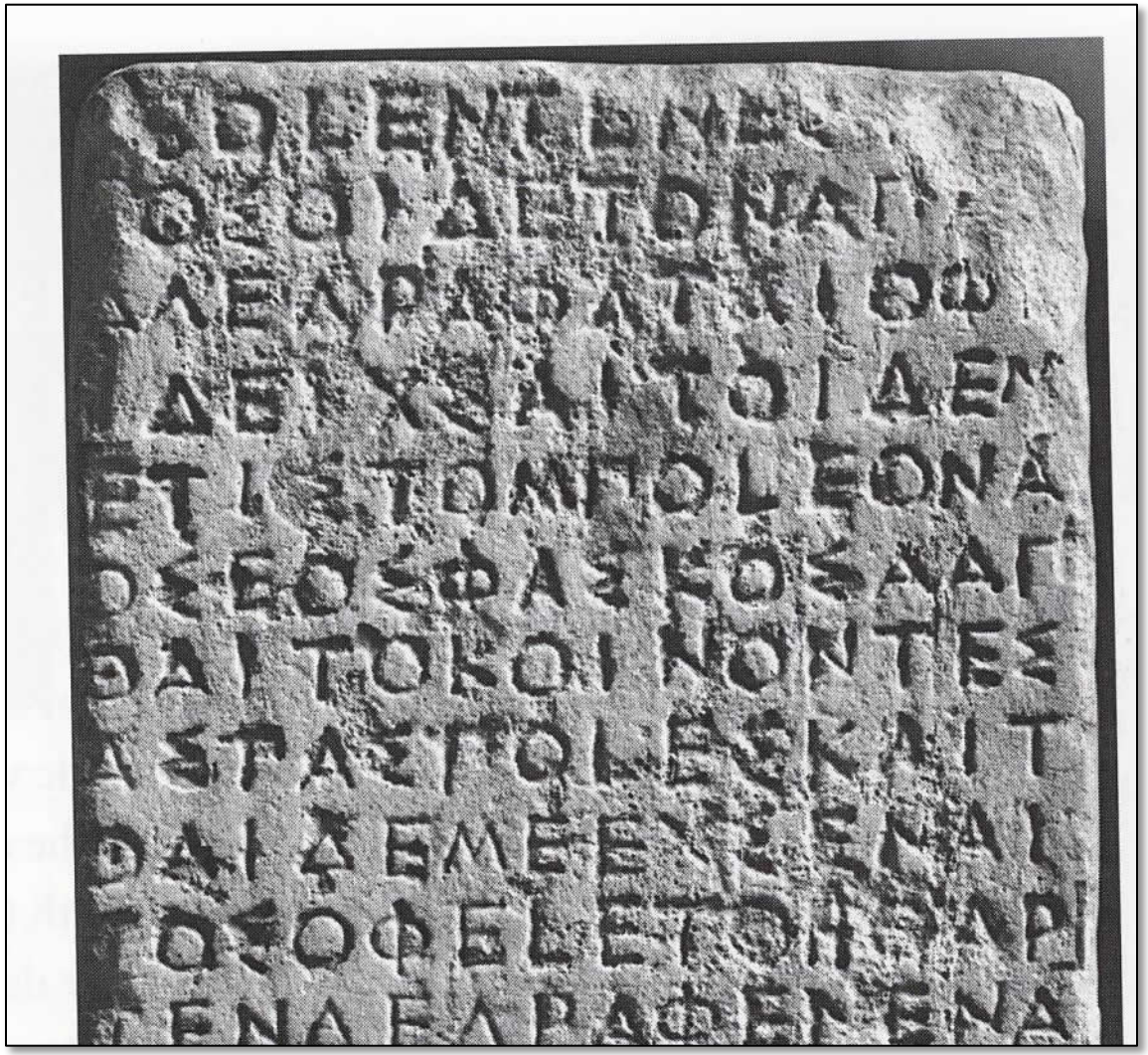
"The syllabic system in short provided techniques for recall of what was already familiar, not instruments for forumalting novel statements which could fruther the exploration of new experience."

- Eric Havelock, quoted in Olson, David. 1977. From Utterance to Text: The Bias of Language in Speech and Writing

# Is this the final "remaining step"?



- Political decree in Athens 426 BCE
- Note lack of spacing between words and alignment of both columns and rows, known as "stoichedon"



Src: Drucker and McVarish. 2009. pp. 31

# So what are the intrinsic properties of the alphabet that justify their claims?

# So what are the intrinsic properties of the alphabet that justify their claims?



- Expressiveness
- Explicit and unambiguous
- Flexibility
- Ease of use
- Ease of learning

# But what else do G/W say might have played a role?

# But what else do G/W say might have played a role?



- "Burst of economic activity"
- "the political system was not strongly centralized"
- New materials: "importation of papyrus…made writing itself easier and less expensive"

# The Consequences of Literacy

Writing as the "technology of the intellect"

– Jack Goody

# Social, cultural, and cognitive consequences



- Break up into groups of three. You have ten minutes to come up with a list of some of the consequences of literacy.

# Social and cultural consequences



- The invention of history ("liberates from the tyranny of the present")
- The separation of truth from myth
- The elimination of "structural amensia" and "homeostasis"
- Democracy and new forms of civic and political participation
- Ability to challenge tradition favoring inconsistency (intellectual skeptecism)
- Ability to govern and organize at a greater range
- Spread of religion
- Development of modern science

# Other social and cultural consequences



- Inability to participate "fully in cultural tradition"
- Increase in social stratification through differentiation
- Separation of public and private?
- The whole idea of individuality?
- [So how do these reconcile with arguments about democracy?]

# Cognitive and psychological consequences



- Logical thought and deduction
- Abstract thought and categorization
- Individual thought (as opposed to collective thought)
- Loss of memory (?)
- Objectivity and rationality
- "Writing restructures consciousness" (Ong, Walter. 1982. Orality and Literacy)

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# Are Goody and Watt making a technologically deterministic argument?

# Things that sound like technological determinism…



- "The intrinsic nature of oral communication…" (306)
- "Kinds of writing and their social effects" (311)
- "…the extent of these changes varies…that is, according to the system's intrinsic efficacy as a means of communication…" (311)
- "Pictographs have obvious disadvantages as a means of communication…only a limited number of things can be said." (312)
- "…these incompletely phonetic systems were too clumsy and complicated to foster widespread literacy" (312)
- "China…stands as an extreme example of how, when a virtually non-phonetic system of writing becomes sufficiently developed to express a large number of meanings explicitly, only a small and specially trained professional group in the total society can master it, and partke of the literate culture" (313)
- The very separation of "oral society" and "literate society"?

## Things that **don't** quite sound like technological determinism



- "…the extent of these changes varies…that is, according to the system's intrinsic efficacy as a means of communication, and according to the social constraints placed upon it…" (311)
- "Other features of the social system are no doubt responsible for the way that the writing systems developed the way they did…" (314. Of course, the next part of that sentence is important too…)
- "…the evidence suggests that – in part perhaps because of the intrinsic difficulties of the system, but mainly because of the established cultural features of the societies which adopted it [the Semitic system]." (194)

# Things that sound like technological determinism…



- "The existence of an elite group, which followed from the difficulty of the writing system…" (314)
- "Phonetic systems are therefore adapted to expressing every nuance of invidual thought... . Non-phonetic writing…tends rather to record and reify only those items…which the literate specialists have selected for written expression and it tends to express the collective attitude towards them." (314)
- "For a long time…these phonetic inventions had a limited effect because they were only partially exploited…"

## Things that **don't** quite sound like technological determinism



- "The extensive diffusion of the alphabet in Greece was also materially assisted by various social, economic, and technological factors." (196)
- "alphabetic culture…" (335)
- "…the urban revolution of the Ancient Near east produced one invention, the invention of writing…" (344)

# Things that sound like technological determinism…



- "Eventually there arose the enormous simplifcation of the Semitic writing system, with its mere twenty-two letters; and then only one further step remained…" (316)
- "…yet considerable importance must surely be attributed to the intrinsic advantages of the Greek adapation…"
- "…they were impelled to a much more conscious, comparative and critical, attitude to the accepted world picture…" (325)
- "…the overwhelming debt of the whole of contemporary civilization to classical Greece must be regarded as in some measure, not so much to Greek genius, as of the intrinsic differences between non-literate and literate societies." (210)

# Things that sound like technological determinism…



- "All these things have been accomplished since the days of Mills, but nevertheless 'all' has not been 'gained'; and some of the causes of this may be found in the intrinsic effects of literacy on the transmission of the cultural heritage.." (333)
- "The writing down of some of the main elements in the cultural tradition in Greece, brought about an awareness of two things: of the past as different from the present; and of the inherent inconsistencies in the picture of life as it was inherited by the individual from the cultural tradition in recorded form" (333)
- "…is to see literate society as inevitably committed to an ever-increasing series of culture lags. The content of the cultural tradition grows continually…" (334)

## Things that sound like technological determinism…



- "…the literate mode of communication is such that it does not impose itself as forcefully or as uniformly as in the case with the oral transmission of the cultural tradition." (336)
- "…the invention of writing, which changed the whole structure of the cultural tradition." (344).

# Assessing the Consequences

Why is this so difficult?

# Why is it so difficult to assess some these claims?



- What kind of a culture do we live in? Is it oral or literate? And where can we go to find an oral culture?

# Why is it so difficult to assess some these claims?



- What do they mean by “writing”? What do they mean by “literacy”? What are the range of things that are being conflated?

# Historical comparison with China and India



- What are Gough's (1968) claims in "Literacy in Traditional China and India"?

# Historical comparison with China and India (Gough 1968)



- Widespread literacy does not "require" the alphabet, but it still is likely that it easier to learn
- China and India are different from each other in how a notion of "history" developed; the alphabet, even a writing system, is not necessarily the major explanatory variable.
- India and China had both a sense of linear time (like Greece), but also cyclical and magical time.

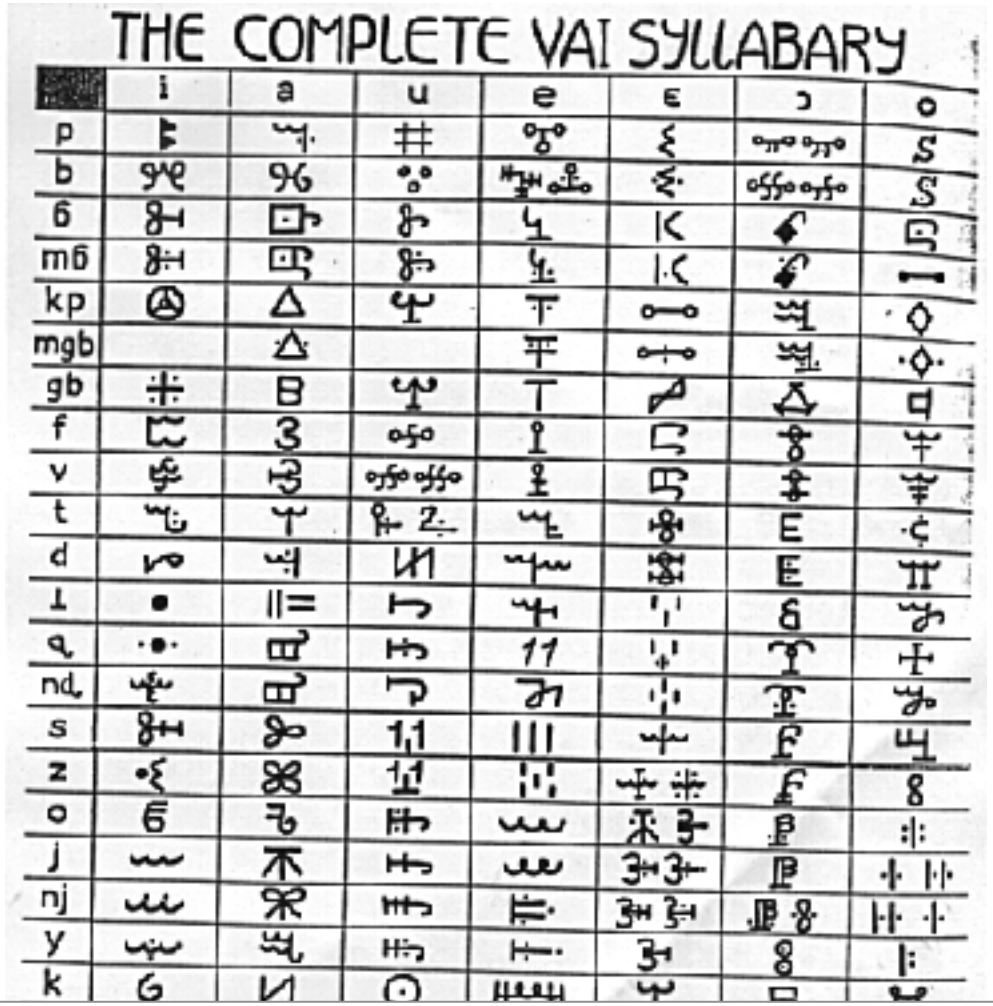
# Comparison with China and India (Gough 1968)



- China had a particular emphasis on skepticism and a tradition of science, a tradition that eventually informed modern Europe. Again, alphabetic literacy does not seem to explain key differences as to why a particular notion of science did not emerge in China in later periods.
- Social classes and stratification determines the spread of literacy rather than the other way around

# Debunking many of the cognitive consequences






Psychologists Scribner and Cole attempted to isolate "literacy" from "schooling", particularly "Western schooling" amongst the Vai in Liberia by comparing those who had different levels of knowledge of the Vai script, Arabic, and English. (Scribner and Cole 1981)

While there were some differences, they concluded that there were no "general consequences of literacy."

Src: http://www.library.cornell.edu/africana/Writing_Systems/VAI.html

# One historical critique: the Literacy Myth

- In short, "literacy" causes none or few of the societal consequences attributed to it, if "literacy" is defined as reading and writing
- "Oral vs. Literate" dichotomy unhelpful, misleading, and obscuring
- Need to look at institutions: economic, political, and religious who have always exercised greatest influence on the actual uses of reading and writing

Graff. (1982) The Legacies of Literacy: Continuities and Contradictions in Western Society and Culture

# Rounding out the rhetoric



"The accelerated automation of word-processing makes possible a new immediacy in the creation of public, typified text. … no instrumental impediment to thinking in external symbols, only … a purely transparent element. As I write, I can put things directly into writing, My stream of consciousness can be paralled by the running flow of the electric element. Words dance on the screen. Sentences flow smoothly into place, make way for one another, while paragraphs ripple down the screen. Words become highlighted, vanish at the push of a button, then reappear instantly at will. Verbal life is fast-paced, easier, with something of the exhilaration of video games....!

Because this playful way of putting things is immediate, enjoyable, and less constrained by materials, it encourages on-screen thinking, that is, thinking in a typified, public element.... Digital writing is nearly frictionless. It invites the formulation of thought directly in the electric element...!"

- Heim, Michael. 1987. Electric Language. (A philosophical study of the cognitive effects of word-processing systems)

# And if it is the end of writing as we know it?



"That's because **literacy is the most basic currency of the knowledge economy we're living in today**. Only a few generations ago, it was okay to enter the workforce as a high school dropout who could only read at a third-grade level. Whether it was on a farm or in a factory, you could still hope to find a job that would allow you to pay the bills and raise your family. But that economy is long gone…

"In this new economy, teaching our kids just enough so that they can get through Dick and Jane isn't going to cut it. **Over the last ten years, the average literacy required for all American occupations is projected to rise by 14%. It's not enough just to recognize the words on the page anymore - the kind of literacy necessary for 21st century employment requires detailed understanding and complex comprehension.**

"At the dawn of the 21st century, in a world where knowledge truly is power and **literacy is the skill that unlocks the gates of opportunity and success…**"

- Barack Obama. 2005. Literacy and Education in a 21st Century Economy.
- http://obamaspeeches.com/024-Literacy-and-Education-in-a-21st-Century-Economy-Obama-Speech.htm

# Final questions?