IS 103

HISTORY OF INFORMATION

PROFESSORS DUGUID & NUNBERG

Why HOFI?

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School of Information, UC Berkeley

IS 103
History of Information
Jan. 22, 2013

Itinerary, 1/22

The history of "information": Why now?

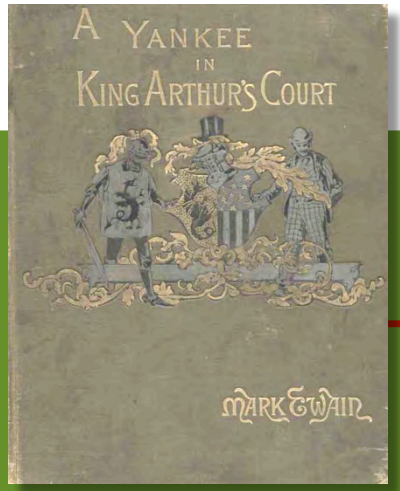
How we talk about the "information age"

- The role of "information technology"
  - Why HofI is not HofIT
- Novelty: "Never before…."

Why does it matter that we get HofI right?

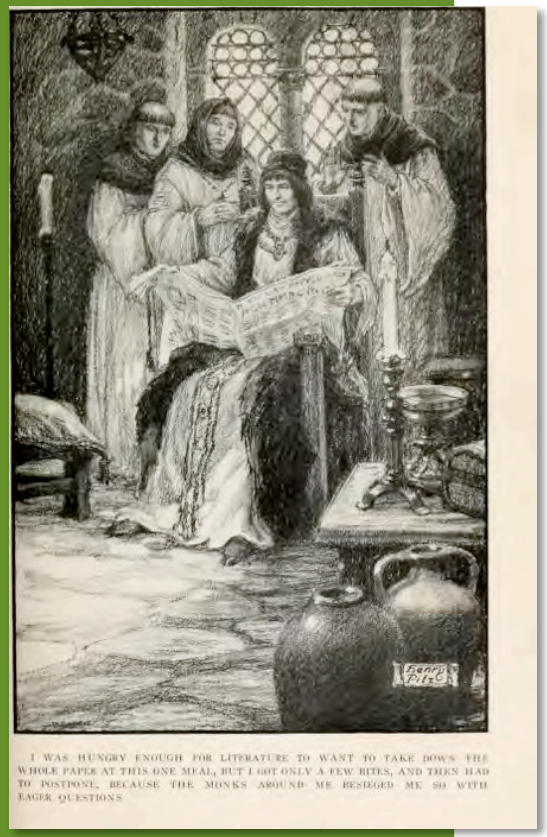
- How HofI helps understand the present
- How HofI helps imagine the future

Outline of course structure, requirements, grades (Paul)



The history of "information": Why now?

Every age gets the history it needs: Gutenberg in the machine age


I WAS HUNGRY ENOUGH FOR LITERATURE TO WANT TO TAKE DOWN THE WHOLE PAPER AT THIS ONE MEAL, BUT I GOT ONLY A FEW BITES, AND THEN HAD TO POSTPONE, BECAUSE THE MONKS AROUND ME BESIEGED ME SO WITH EAGER QUESTIONS

The monks around me besieged me so with eager questions: What is this curious thing? What is it for?...

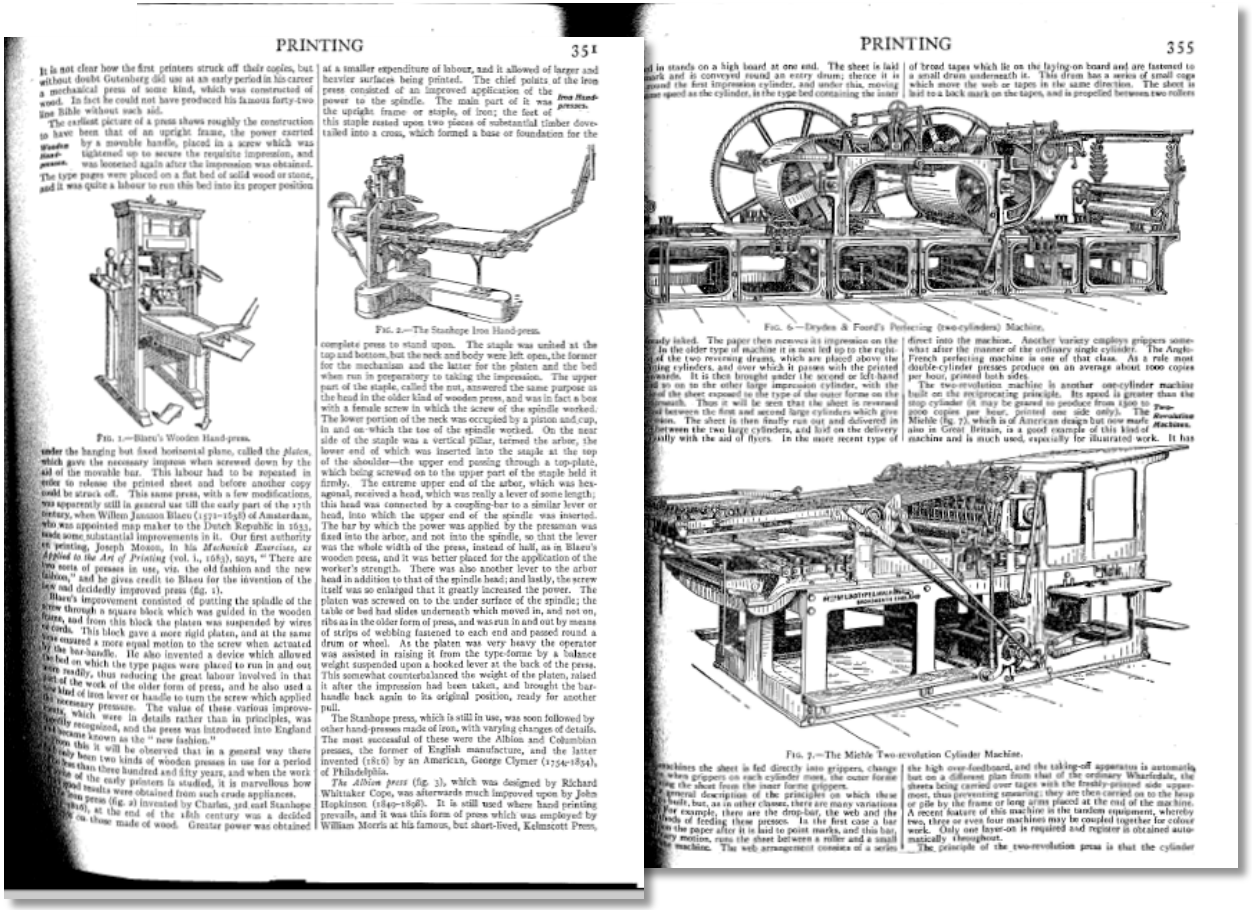
"It is a public journal...The lines on it are not written by hand, but printed; by and by I will explain what printing is. A thousand of these sheets have been made, all exactly like this, in every minute detail--they can't be told apart."

Then they all broke out with exclamations of surprise and admiration: "A thousand! Verily a mighty work--a year's work for many men."

"No--merely a day's work for a man and a boy." They crossed themselves...

Mark Twain, *A Connecticut Yankee In King Arthur's Court*, 1889

The history of "information": Why now?



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It is not clear how the first printers struck off their copies, but without doubt Gutenberg did use at an early period in his career a mechanical press of some kind, which was constructed of wood. In fact he could not have produced his famous forty-two line Bible without such aid.

The earliest picture of a press shows roughly the construction to have been that of an upright frame, the power exerted by a movable handle, placed in a screw which was tightened up to secure the requisite impression, and was loosened again after the impression was obtained. The type pages were placed on a flat bed of solid wood or stone, and it was quite a labour to run this bed into its proper position

Fig. 1.—Blaeu's Wooden Hand-press.

under the hanging but fixed horizontal plane, called the *platen*, which gave the necessary impress when screwed down by the aid of the movable bar. This labour had to be repeated in order to release the printed sheet and before another copy could be struck off. This same press, with a few modifications, was apparently still in general use till the early part of the 17th century, when Willem Janszon Blaeu (1571–1638) of Amsterdam, who was appointed map maker to the Dutch Republic in 1633, made some substantial improvements in it. Our first authority on printing, Joseph Moxon, in his *Mechanick Exercises, or the Doctrine of Handy-works Applied to the Art of Printing* (vol. i., 1683), says, "There are two sorts of presses in use, viz. the old fashion and the new fashion," and he gives credit to Blaeu for the invention of the new and decidedly improved press (fig. 1).

Blaeu's improvement consisted of putting the spindle of the screw through a square block which was guided in the wooden frame, and from this block the platen was suspended by wires or cords. This block gave a more rigid platen, and at the same time ensured a more equal motion to the screw when actuated by the bar-handle. He also invented a device which allowed the bed on which the type pages were placed to run in and out more readily, thus reducing the great labour involved in that part of the work of the older form of press, and he also used a new kind of iron lever or handle to turn the screw which applied the necessary pressure. The value of these various improvements, which were in details rather than in principles, was speedily recognized, and the press was introduced into England and became known as the "new fashion."

From this it will be observed that in a general way there have only been two kinds of wooden presses in use for a period of more than three hundred and fifty years, and when the work of the early printers is studied, it is marvellous how good results were obtained from such crude appliances.

The iron press (fig. 2) invented by Charles, 3rd earl Stanhope (1753–1816), at the end of the 18th century was a decided improvement on those made of wood. Greater power was obtained at a smaller expenditure of labour, and it allowed of larger and heavier surfaces being printed. The chief points of the iron press consisted of an improved application of the power to the spindle. The main part of it was the upright frame or staple, of iron; the feet of this staple rested upon two pieces of substantial timber dovetailed into a cross, which formed a base or foundation for the complete press to stand upon. The staple was united at the top and bottom, but the neck and body were left open, the former for the mechanism and the latter for the platen and the bed when run in preparatory to taking the impression. The upper part of the staple, called the nut, answered the same purpose as the head in the older kind of wooden press, and was in fact a box with a female screw in which the screw of the spindle worked. The lower portion of the neck was occupied by a piston and cup, in and on which the toe of the spindle worked. On the near side of the staple was a vertical pillar, termed the arbor, the lower end of which was inserted into the staple at the top of the shoulder—the upper end passing through a top-plate, which being screwed on to the upper part of the staple held it firmly. The extreme upper end of the arbor, which was hexagonal, received a head, which was really a lever of some length; this head was connected by a coupling-bar to a similar lever or head, into which the upper end of the spindle was inserted. The bar by which the power was applied by the pressman was fixed into the arbor, and not into the spindle, so that the lever was the whole width of the press, instead of half, as in Blaeu's wooden press, and it was better placed for the application of the worker's strength. There was also another lever to the arbor head in addition to that of the spindle head; and lastly, the screw itself was so enlarged that it greatly increased the power. The platen was screwed on to the under surface of the spindle; the table or bed had slides underneath which moved in, and not on, ribs as in the older form of press, and was run in and out by means of strips of webbing fastened to each end and passed round a drum or wheel. As the platen was very heavy the operator was assisted in raising it from the type-forme by a balance weight suspended upon a hooked lever at the back of the press. This somewhat counterbalanced the weight of the platen, raised it after the impression had been taken, and brought the bar-handle back again to its original position, ready for another pull.

Fig. 2.—The Stanhope Iron Hand-press.

The Stanhope press, which is still in use, was soon followed by other hand-presses made of iron, with varying changes of details. The most successful of these were the Albion and Columbian presses, the former of English manufacture, and the latter invented (1816) by an American, George Clymer (1754–1834), of Philadelphia.

The Albion press (fig. 3), which was designed by Richard Whittaker Cope, was afterwards much improved upon by John Hopkinson (1849–1898). It is still used where hand printing prevails, and it was this form of press which was employed by William Morris at his famous, but short-lived, Kelmscott Press,

PRINTING 355

...in stands on a high board at one end. The sheet is laid ...mark and is conveyed round an entry drum; thence it is ...round the first impression cylinder, and under this, moving ...same speed as the cylinder, in the type bed containing the inner ...

Fig. 6.—Dryden & Foord's Perfecting (two-cylinders) Machine.

...ously inked. The paper then receives its impression on the ... In the older type of machine it is next led up to the right- ...of the two reversing drums, which are placed above the ...ding cylinders, and over which it passes with the printed ...wards. It is then brought under the second or left-hand ...ed so on to the other large impression cylinder, with the ...d the sheet exposed to the type of the outer forme on the ...ircumference. Thus it will be seen that the sheet is reversed ...d between the first and second large cylinders which give ...ersion. The sheet is then finally run out and delivered in ...between the two large cylinders, and laid on the delivery ...ally with the aid of flyers. In the more recent type of ... direct into the machine. Another variety employs grippers some- ...what after the manner of the ordinary single cylinder. The Anglo- ...French perfecting machine is one of that class. As a rule most ...double-cylinder presses produce on an average about 1000 copies ...per hour, printed both sides.

The two-revolution machine is another one-cylinder machine ...built on the reciprocating principle. Its speed is greater than the ...stop cylinder (it may be geared so as to produce from 1500 to ...2000 copies per hour, printed one side only. The Two-Revolution ...Miehle (fig. 7), which is of American design but now made ...also in Great Britain, is a good example of this kind of ...machine and is much used, especially for illustrated work. It has

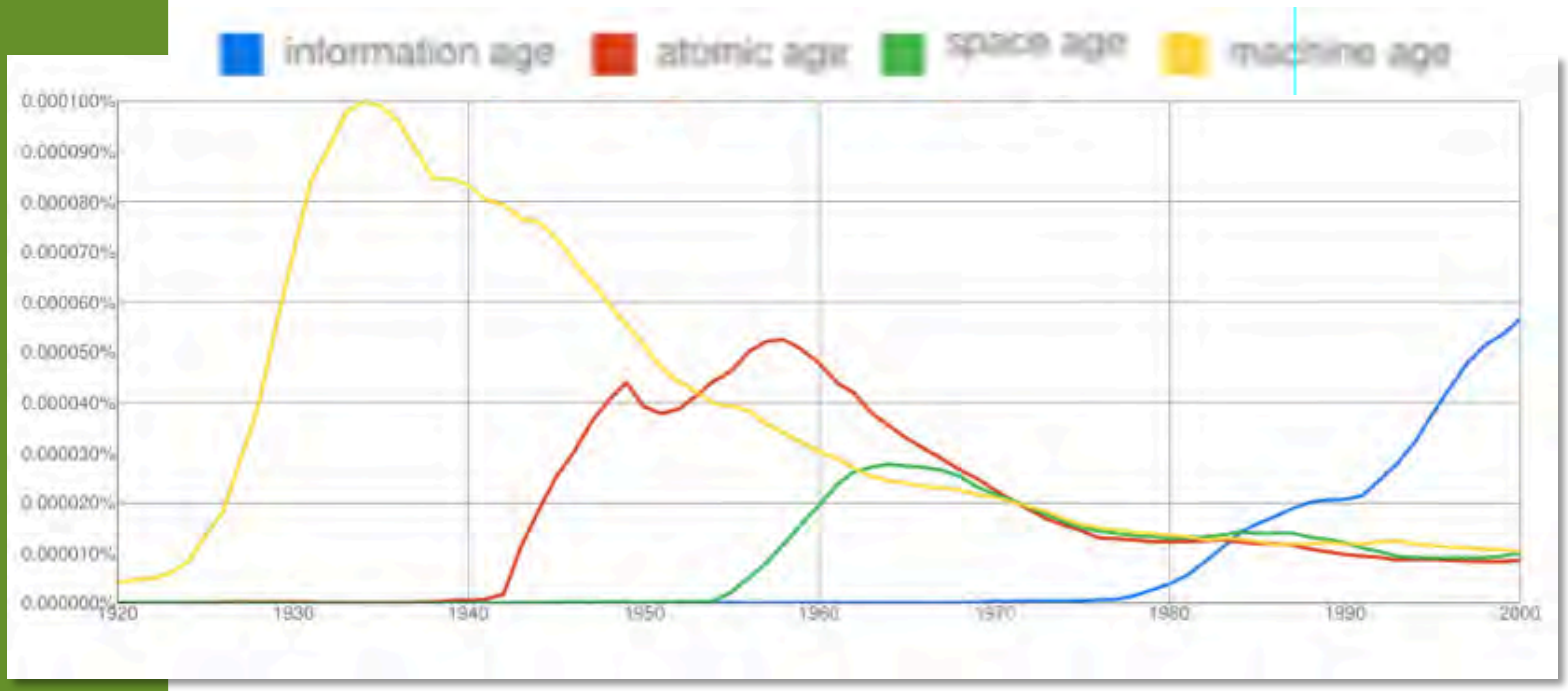
Fig. 7.—The Miehle Two-revolution Cylinder Machine.

...machines the sheet is fed directly into grippers, change ...when grippers on each cylinder meet, the outer forme ...ing the sheet from the inner forme grippers. ...general description of the principles on which these ...built, but, as in other classes, there are many variations ...For example, there are the drop-bar, the web and the ...kinds of feeding these presses. In the first case a bar ...on the paper after it is laid to point marks, and this bar, ...by motion, runs the sheet between a roller and a small ...machine. The web arrangement consists of a series ... the high over-feedboard, and the taking-off apparatus is automatic, ...but on a different plan from that of the ordinary Wharfedale, the ...sheets being carried over tapes with the freshly-printed side upper- ...most, thus preventing smearing; they are then carried on to the lower ...or pile by the frame or long arms placed at the end of the machine. ...A recent feature of this machine is the tandem equipment, whereby ...two, three or even four machines may be coupled together for colour ...work. Only one layer-on is required and register is obtained auto- ...matically throughout.

...The principle of the two-revolution press is that the cylinder

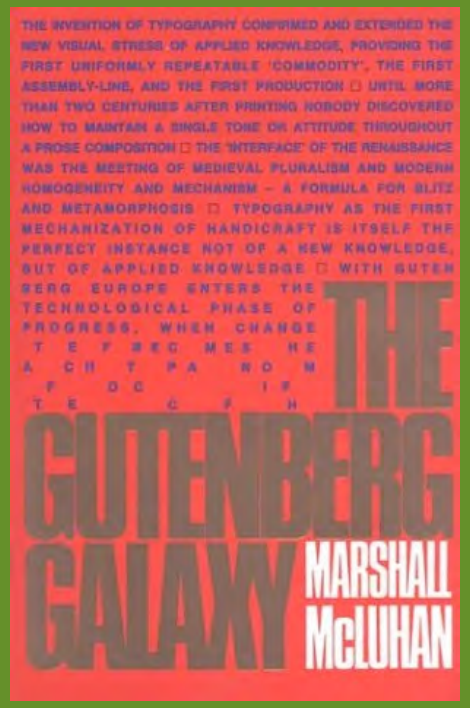
Article on "printing" in the Encyclopedia Britannica 11th ed., 1911

The coming of the information age



Relative frequency of *machine age*, *atomic age*, *space age* and *information age* in Google Books, 1920-2000

Carving up the past

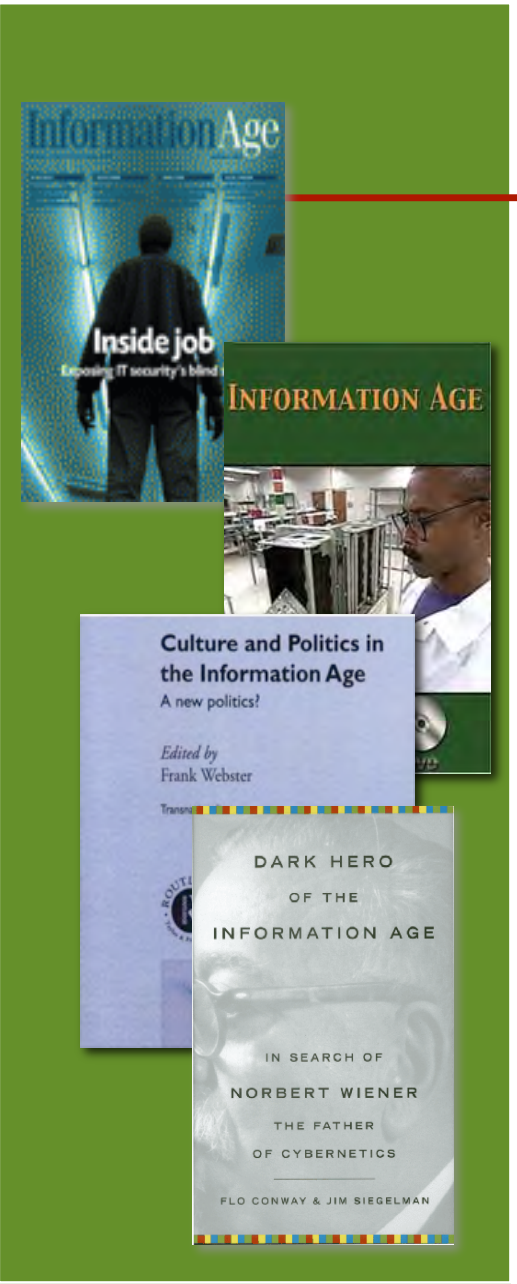


The Four Ages of Man (Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man*):

Oral tribe culture
Manuscript culture
Gutenberg galaxy
Electronic age ("the Galaxy reconfigured")

"societies have been shaped more by the nature of the media by which men communicate than by the content of the communication."

Defining the "Information Age"



1960 R. S. Leghorn: Present and anticipated spectacular informational achievements will usher in public recognition of the 'information age', probably under a more symbolic title.

information age The period beginning around 1970 and noted for the abundant publication, consumption, and manipulation of information, especially by computers and computer networks. *American Heritage* Dict., 4th ed.

Information Age is a term that has been used to refer to the present era, generally beginning within ten years of 1990. The term alludes to the global economy's shift in focus away from the production of physical goods and towards the manipulation of information. Wikipedia

The First Information-Age President?

It's the result of Clinton being the first information age president. *Washington Post*, 1/22/99

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George W. Bush is the first Information Age president. *Seattle Times*, 8/27/06

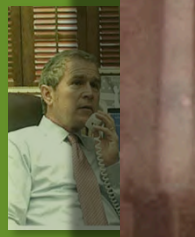
The First Information-Age President?

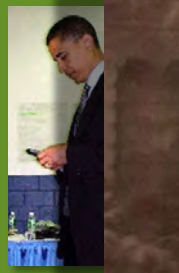
It's the result of Clinton being the first information age president. *Washington Post*, 1/22/99

George W. Bush is the first Information Age president. *Seattle Times*, 8/27/06

"I like the fact that we have a president who uses information technology to his benefit. It means we actually have the first information-age president," Bruce Schneier, Fox Bus News, Feb. 6, 2009

The First Information-Age President?





Historical assumptions implicit in the "Information Age"

The determinative role of technology

The unprecedented present: “Never before…”

Asumption:
The determinative role of technology

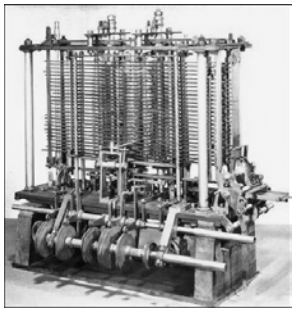
The historical role of Technology

However you date the "dawn" of the IA, always tied to new technologies (Jacquard loom, Babbage's "difference engine," punch cards, Eniac, Internet, etc.)

Problem 1: Tracing Technological "Antecedents"

Jaquard loom 1801

Babbage's difference engine 1820's



Hollerith tabulating machine 1890

Schickard's calculator 1623

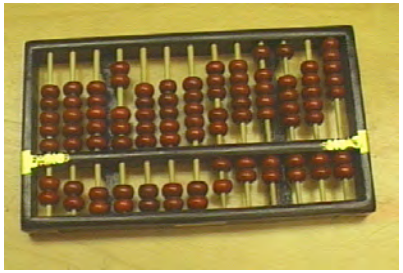
Apple II 1977

DEC PDP11 1965

Eniac I 1946

"What was the first computer"?

Napier's bones 1617



Abacus 2400, B.C.

Stonehenge, 3100 B.C.

Antikythera mechanism, ca. 150 B.C.

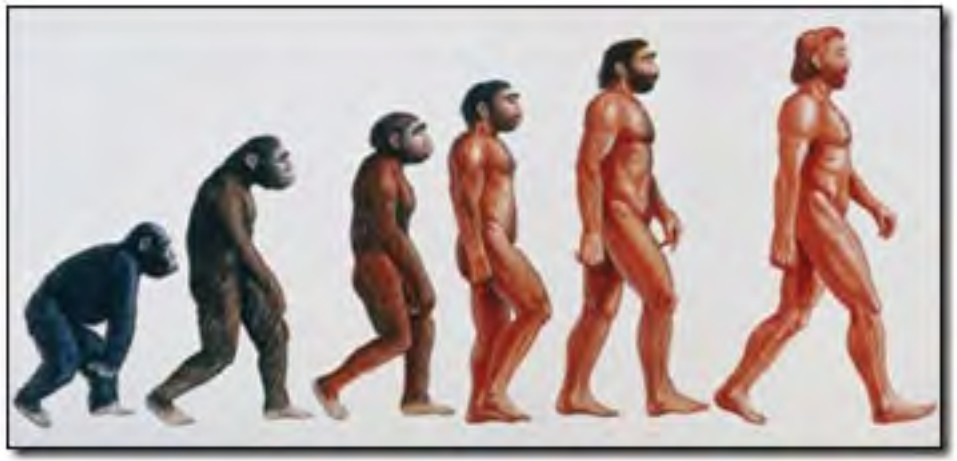
Ishango bone, 20,000 B.C.

History as a Whiggish Progression leading to…. us

Whig theory of history = history is a triumphant (and, usually, inevitable) progress toward the present state…

> … the history of our country during the last hundred and sixty years is eminently the history of physical, of moral, and of intellectual improvement. Thos. Babington Macaulay, 1848

> That great, growling engine of change -- technology.
> Alvin Toffler, 1970.



Problem 2: What are "Information Technologies"

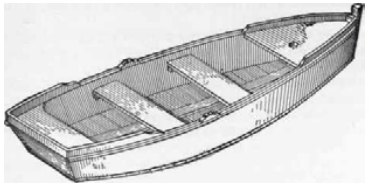
What makes for "Information technology"?

Prototypical instances of modern "IT"

More marginal instances of "information technologies"

Non-IT?

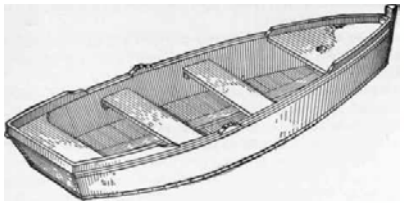
What isn't IT?



Rethinking "Information Technologies"

Non-IT?

What isn't IT?



Rethinking "Information Technologies"

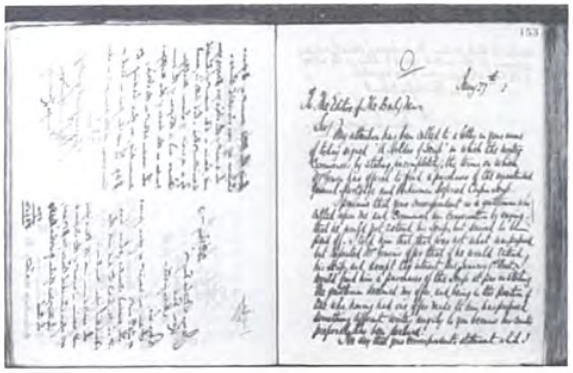
The Interconnection of Technologies: Managing correspondence

James Watt 1780

2.1 A letter press in action. *(Catalogue for Yawman and Erbe, 1905. Hagley Museum and Library.)*

Analine dyes (1856)

Wooten desk



2.2 An open letter press book. *(Pennsylvania Railroad Collection, Hagley Museum and Library.)*

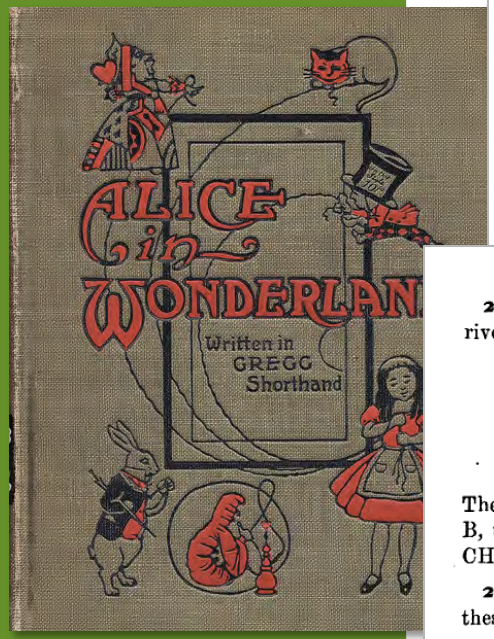
Mercantile Office, 1876

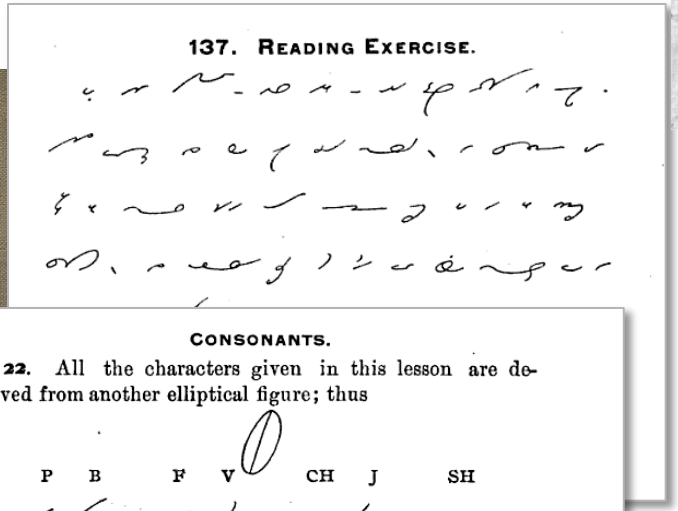
The Interconnection of Technologies: Managing correspondence

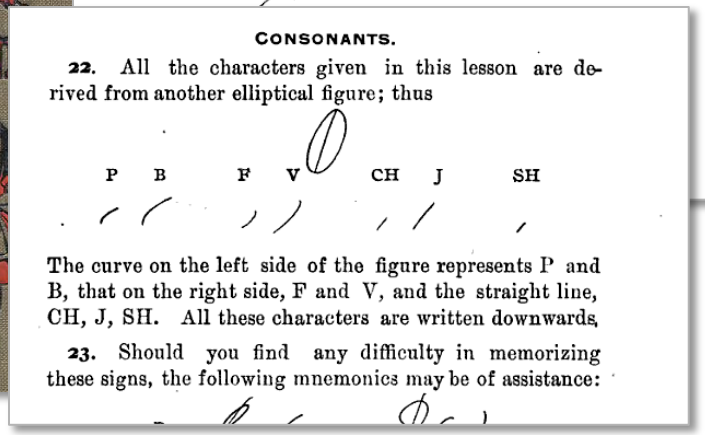
The Pacific Monthly, advertising section, March 1904 scanned by Lincoln Cushing

For more items on Library Culture, see www.docspopuli.org

The Interconnection of Technologies: Managing correspondence




137. READING EXERCISE.


CONSONANTS.

22. All the characters given in this lesson are derived from another elliptical figure; thus

P B F V CH J SH

The curve on the left side of the figure represents P and B, that on the right side, F and V, and the straight line, CH, J, SH. All these characters are written downwards.

23. Should you find any difficulty in memorizing these signs, the following mnemonics may be of assistance:

Fig. 2.—Graphophone, 1887, as Used in Receiving a Dictation and for Transcribing.

Graphophone 1887

The Social Setting of Technologies: Managing correspondence

OFFICE OF R. G. DUN & CO. MERCANTILE AGENCY.
MANHATTAN BUILDING, FIRST FLOOR.

The Feminization of the Office Work Force

Fig. 1.1. Work in one of many filing areas at Metropolitan Life Insurance Company.

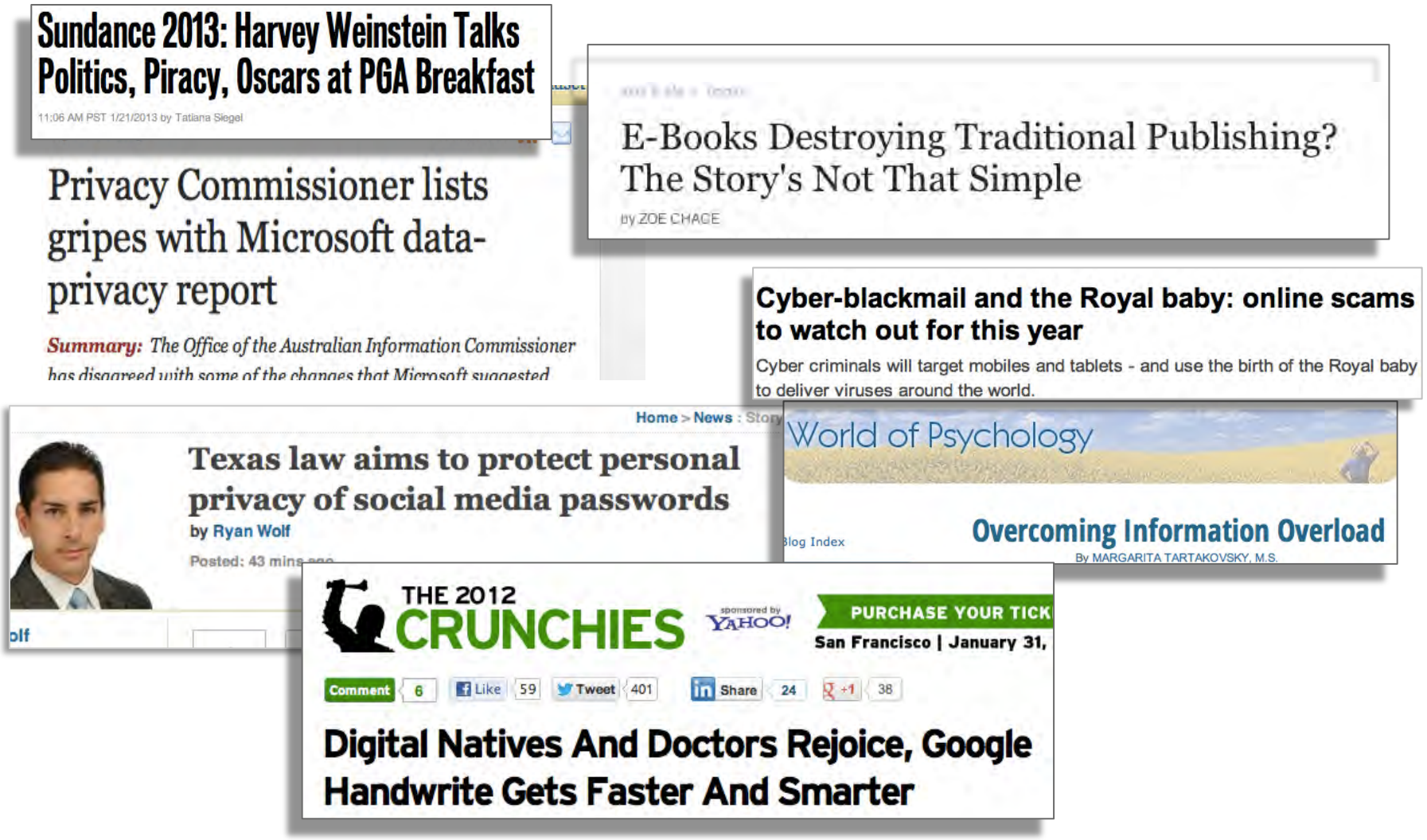
The Unprecedented Present

The Shock of the New: "Never Before"

Assumption:

The advent of the Information Age entails fundamental changes in the nature of commerce, organizational structure, education, politics & public discourse, national identity, news and entertainment, community and personal relations – and in the nature of change itself.

Never Before?



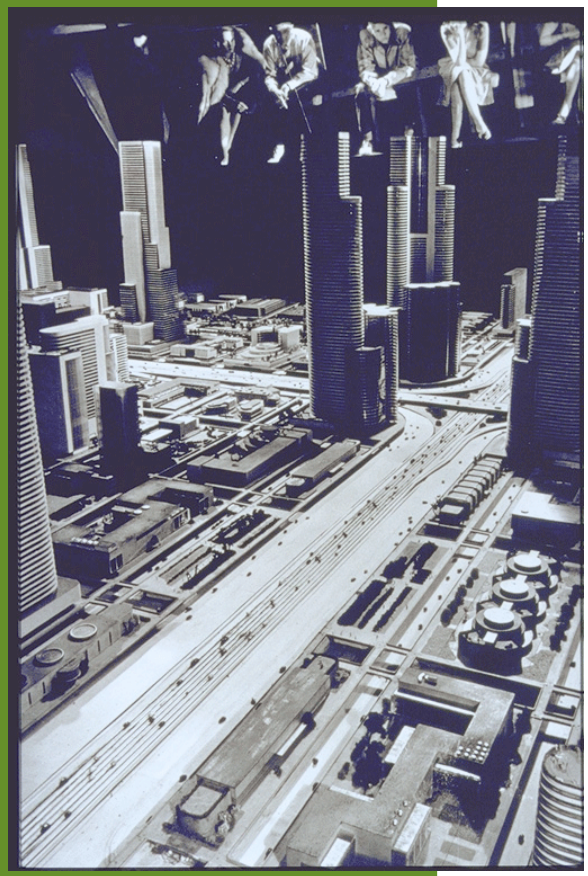
Been there, done that?

History provides antecedents for:

- The digital generation gap – immigrants and "digital natives"
- "The death of distance" the "annhilation of space and time"
- "The end of the book"; "The death of the newspaper"; economic models for the new media
- "information overload" Organizing an unprecedented mass of information?
- Piracy and IP in the information age
- Problems of reliability; who can you trust online?
- Threats to individual privacy
- What role for the government in building infrastructure, monitoring use?

But does that mean there's nothing new under the sun?

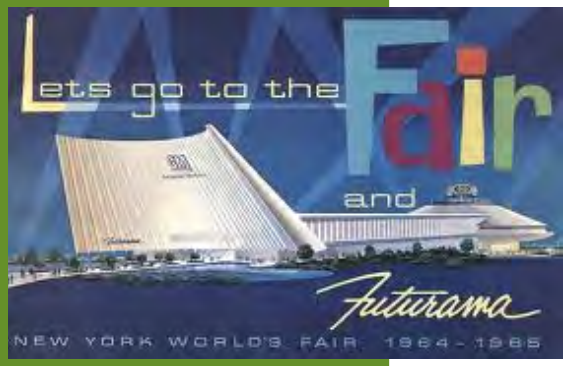
Why HofI?: Looking back to look ahead



Norman Bel Geddes, General Motors Futurama, 1939 World's Fair

Every age writes the future in its own image

Why Hofl?: Looking back to look ahead



2007 GM Corp. Used with permission, GM Media Archive

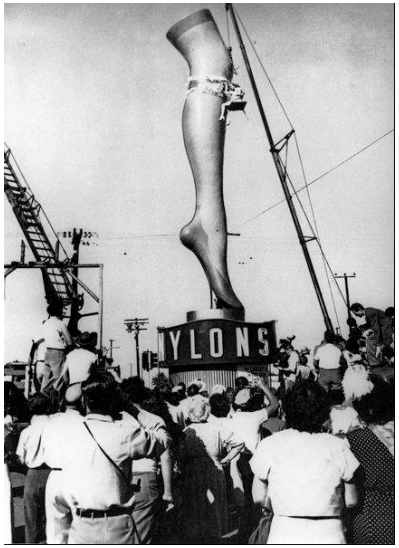
General Motors Futurama, 1964 World's Fair

Plastics!

Figure 3
Industrial designer Carl W. Sundberg tantalized Americans with this vision of an all-plastic auto trailer/camper/motorboat shell. *Modern Plastics* 22 (May 1945), p. 106.

"The American of tomorrow, clothed in plastics from head to foot, will live in a plastics house, drive a plastics auto, and fly in a plastics airplane." *Popular Mechanics*, 1940

Monsanto, House of the Future, Disneyland, 1957 -- "Everything is ultra-modern and almost entirely synthetic."



Plastics!

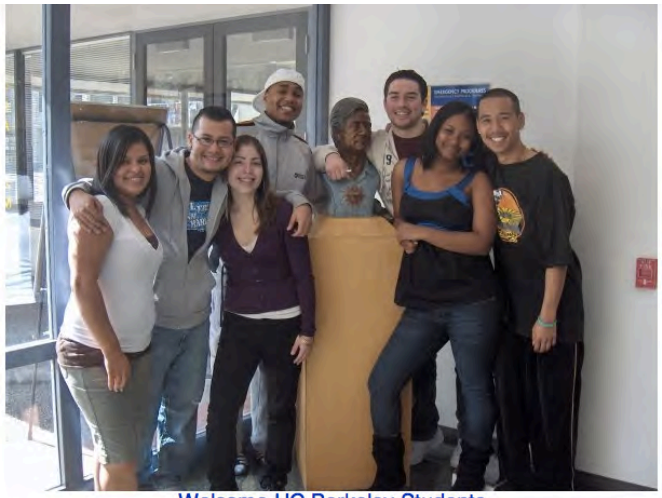
Getting the Future Wrong

Anticipating Change

What would be most surprising to the characters of "Father Knows Best" if they could see the world of 2013?

Anticipating Technological Change

Anticipating Social Change: What would grampa have said?



Welcome UC Berkeley Students

Anticipating Social Change: What would grandad have said?

Anticipating Social Change

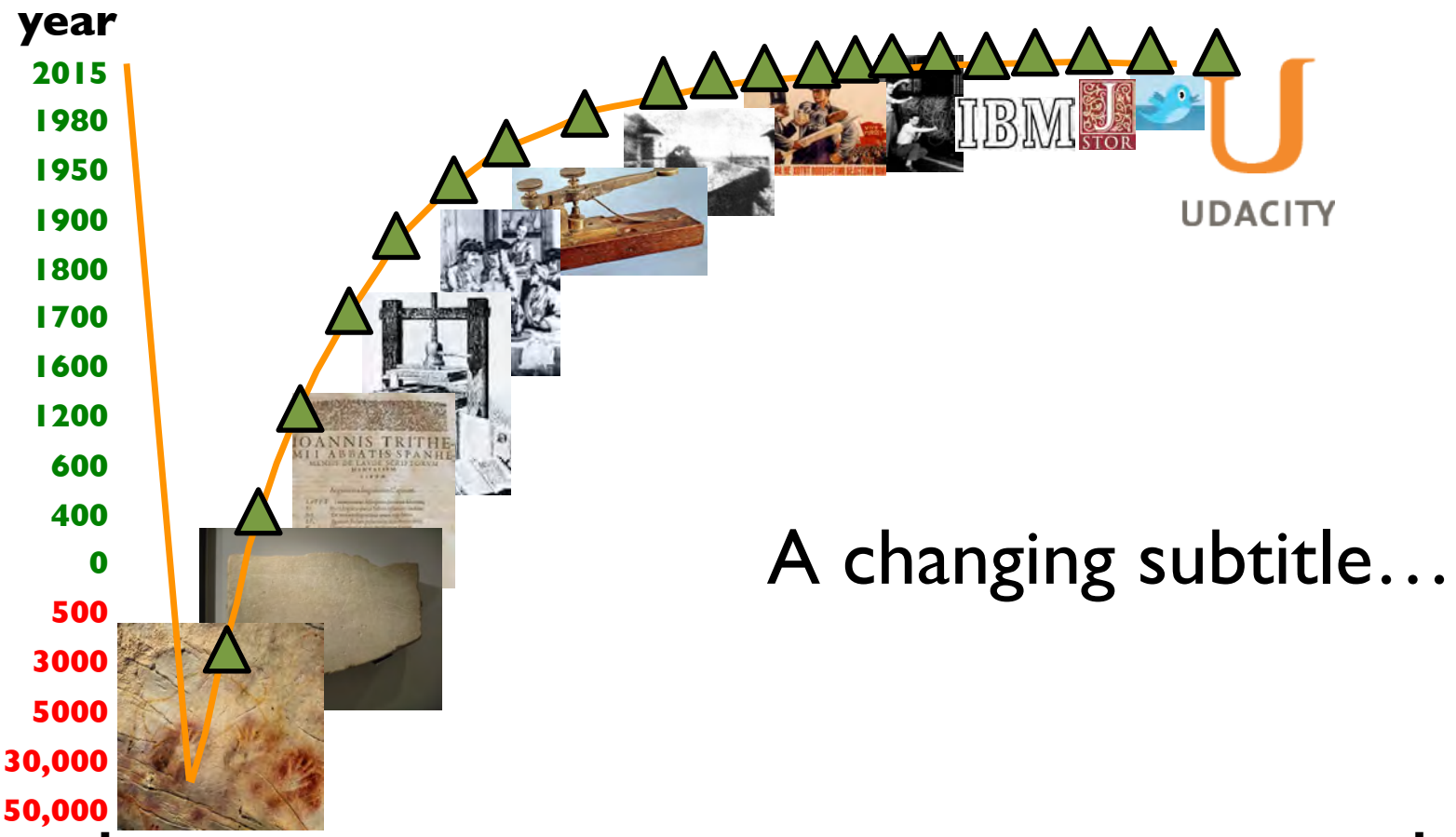
What will make our predictions most quaint or ridiculous to our descendants?

Not just getting the technology wrong…

> Recognizing the historical roots of categores we take for granted—
> news, information, intellectual property, objectivity, privacy, etc.

(PD, next time)

Route Map


year
2015
1980
1950
1900
1800
1700
1600
1200
600
400
0
500
3000
5000
30,000
50,000
week
1
2
3
4
5
6
7
8
10
11
12
13
14
15
week
IBM
JSTOR
UDACITY
A changing subtitle…

Exercise for 1/24

Pick one of the following and write a (very) brief story or anecdote in which it serves as an "information technology," perhaps in conjunction with other things. Try to make your stories ingenious without being completely implausible. Bring your answer to class for discussion (but no need to hand them in).

- a necktie
- a blanket
- a rubber duckie
- a can of beans
- a lemon

"Extra credit" if you manage to use two of these in your story.