



# storage & search

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**up in the clouds**

**History of Information**

April 15, 2010





aob

## apple at 35

### A Little Cassette Board That Works!

Unlike many other cassette boards on the marketplace, ours works every time. It plugs directly into the upright connector on the main board and stands only 2" tall. And since it is very fast (1500 bits per second), you can read or write 4K bytes in about 20 seconds. All timing is done in software, which results in crystal-controlled accuracy and uniformity from unit to unit.

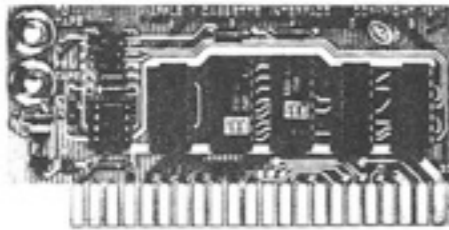
Unlike some other cassette interfaces which require an expensive tape recorder, the Apple Cassette Interface works reliably with almost any audio-grade cassette recorder.

### Software:

A tape of APPLE BASIC is included free with the Cassette Interface. Apple Basic features immediate error messages and fast execution, and lets you program in a higher level language immediately and without added cost. Also available now are a dis-assembler and many games, with many software packages, (including a macro assembler) in the works. And since our philosophy is to provide software for our machines free or at minimal cost, you won't be continually paying for access to this growing software library.

The Apple Computer is in stock at almost all major computer stores. If your local computer store doesn't carry our products, encourage them or write us direct. Dealer inquiries invited.

### The Apple Cassette Interface (shown actual size)



### Prices

Apple-1 includes 4K bytes RAM	\$666.66
Apple Cassette Interface BASIC tape included	\$ 75.00
Apple 4K Byte RAM expansion memory	\$120.00

All Apple products are assembled, tested, and guaranteed to work.



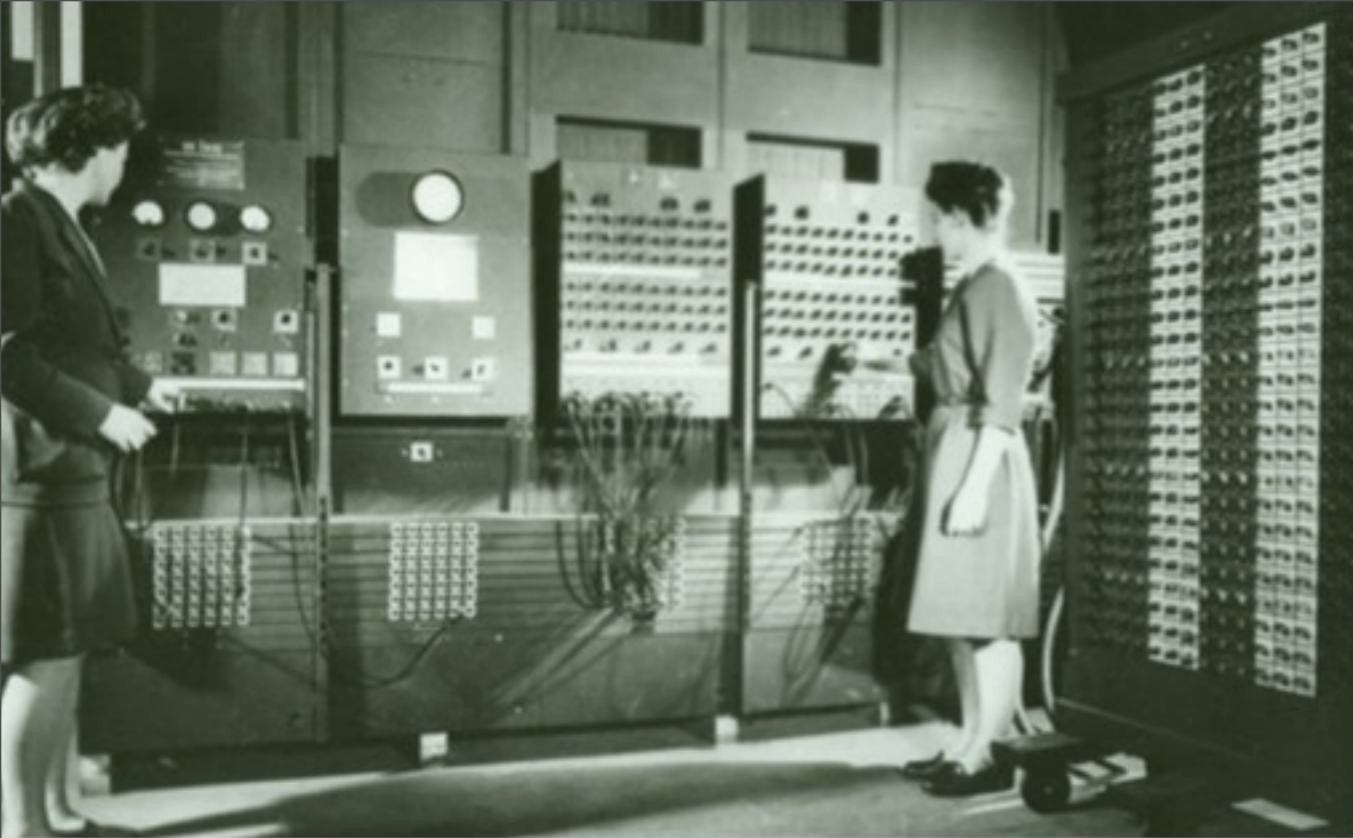
Byte into an Apple

Apple Computer Company • 770 Welch Rd., Palo Alto, CA 94304 • (415) 326-4248



Search & Storage 2

## Ada's heir(esse)s



### Jean Bartik, Software Pioneer, Dies at 86

By STEVE LOHR

Published: April 7, 2011

Jean Jennings Bartik, one of the first computer programmers and a pioneering forerunner in a technology that came to be known as software, died on March 23 at a nursing home in Poughkeepsie, N.Y. She was 86.

[Enlarge This Image](#)



Northwest Missouri State University and the Jean Jennings Bartik Computing Museum

The cause was congestive heart disease, her son, Timothy Bartik, said.

Ms. Bartik was the last surviving member of the group of women who programmed the Eniac, or Electronic Numerical Integrator and Computer, which is credited as the first all-electronic digital computer.

The Eniac, designed to calculate the firing trajectories for artillery shells, turned out to be a historic demonstration project. It was completed in

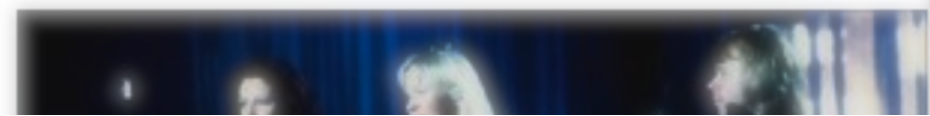


aob

# Ten songs stolen by politicians

By Cat Koo  
BBC News

Swedish band Abba is suing a Danish anti-immigration party for using their song, Mama Mia in a rally.



## Ex-Governor Apologizes for Using Song in Ad

The yo  
lyrics  
By DAVE ITZKOFF  
Published: April 12, 2011

Some days [Charlie Crist](#) is an ally of rock stars, and some days he is their adversary.

Enlarge This Image



Steve Cannon/Associated Press  
Florida Gov. Charlie Crist of Florida.

Enlarge This Image



Hiroyuki Ito for The New York Times  
David Byrne of the Talking Heads.

On Monday, Mr. Crist, the former governor of Florida who, before he left office, helped champion a [posthumous pardon](#) for Jim Morrison, the front man of [the Doors](#), confirmed that he had settled a lawsuit with the singer David Byrne after using a [Talking Heads](#) song in a campaign advertisement without permission.

Mr. Crist, a Republican-turned-independent, used the song "[Road to Nowhere](#)" in an online campaign video opposing [Marco Rubio](#), the Republican nominee who defeated Mr. Crist in November for the [United States Senate](#). Mr. Byrne sued Mr. Crist for \$1 million, saying he had not approved the use of the song. As part of the settlement, Mr. Crist has posted [a YouTube video apology](#) for the infringement.

"Mr. Byrne has never permitted his songs to be used for advertising of any kind," Mr. Crist says in the video, adding that the inclusion of the song "was wrong and should not have occurred."

In a statement [reported](#) by The Associated Press, Mr. Byrne said the unauthorized use of songs in political advertisements was "pretty rampant."

"Other artists may actually have the anger but not want to take the time and risk the legal bills," Mr. Byrne said in the statement. "I am lucky that I can do that."

YouTube Search Bro

### Charlie Crist Official Apology to David Byrne for Copyright Infringe

Law12345100 1 video Subscribe



Like Add to Share Embed 50,605

<http://www.youtube.com/watch?v=s4kI3LmlcUE>

The New York Times

# The Opinion Pages

OP-ED CONTRIBUTOR

## Cairo's Roundabout Revolution

By NEZAR ALSAYYAD

It seems an accident of history that Tahrir Square has become a locus of protest. Its history reflects Egypt's.

## twitter and revolution



THE SATURDAY PROFILE

## Editor Silenced, With the Help of Unreliable Sources

By CLIFFORD KRAUSS

Published: April 8, 2011

### twitter and revolution

MANAMA, Bahrain



Al Wasat

"When they touch and attack Al Wasat, it is a message to everybody that there is a new Bahrain," said Mansour-Al-Jamri. "They are re-engineering the country."

FOR years, Mansour al-Jamri led what was, by all accounts, a charmed life.

Having returned to Bahrain a decade ago at the personal invitation of King [Hamad bin Isa al-Khalifa](#), he enjoyed a certain degree of immunity from government pressures, even when the prosperous, independent newspaper he started, Al Wasat, made things uncomfortable for a minister or two.

In the last two months of rising tensions and violence, his was a voice of moderation, urging both the Sunni royal family and leaders of the

# where we are going

year

2010  
1980  
1950  
1900  
1800  
1700  
1600  
1200  
600  
400  
0  
500  
3000  
5000  
30,000  
50,000



**search and storage across time**

**looking back to look forward**

"men more frequently need to be reminded than informed"

S. Johnson, *Rambler* 2

week

1 2 3 4 5 6 7 8 10 11 12 13 14 15

week

Search & Storage

# outline

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**beyond Babbage's dreams**

**internet as library**

**storage, preservation, order**

**cyclical progression**

**liberating information from books**

**modern storage and search**





# beyond Babbage's dreams

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**1971**, FTP, email

**1972 bulletin boards**

Berkeley "community memory project"  
Leopold Records, Durant Ave

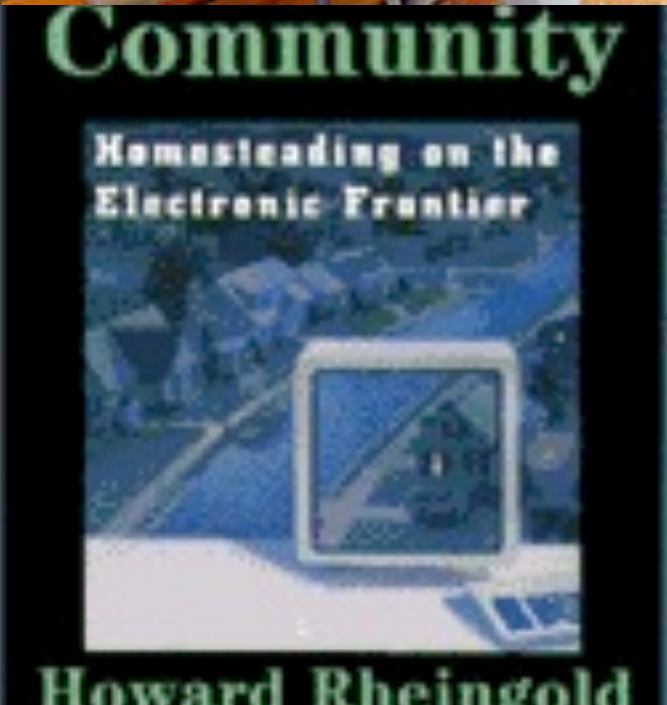
**1980 usenet**

towards peer-to-peer architecture

**1982 minitel**

a better phone book

**1985 the well**



# opening the net

---

**1990**, ARPANET shuts down

**1991**, NSF opens internet to commercial use

**1995**, NSF ends support of infrastructure

**1995**, Apache

**1998**, Internet Corporation for Assigned Names and Numbers (ICANN) established to oversee domain names and IP addresses

Search & Storage 9

From: Laurence Canter - [view profile](#) Not yet rated  
Date: Tues, Apr 12 1994 12:40 am [show options](#)

Green Card Lottery 1994 May Be The Last One!  
THE DEADLINE HAS BEEN ANNOUNCED.

The Green Card Lottery is a completely legal program giving away a certain annual allotment of Green Cards to persons born in certain countries. The lottery program was scheduled to continue on a permanent basis. However, recently, Senator Alan J Simpson introduced a bill into the U. S. Congress which could end any future lotteries. THE 1994 LOTTERY IS SCHEDULED TO TAKE PLACE SOON, BUT IT MAY BE THE VERY LAST ONE.

PERSONS BORN IN MOST COUNTRIES QUALIFY, MANY FOR FIRST TIME.

The only countries NOT qualifying are: Mexico; India; P.R. China; Taiwan, Philippines, North Korea, Canada, United Kingdom (except Northern Ireland), Jamaica, Dominican Republic, El Salvador and Vietnam.

Lottery registration will take place soon. 55,000 Green Cards will be given to those who register correctly. NO JOB IS REQUIRED.

THERE IS A STRICT JUNE DEADLINE. THE TIME TO START IS NOW!!

For FREE information via Email, send request to [c...@indirect.com](mailto:c...@indirect.com)

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Canter & Siegel, Immigration Attorneys  
3333 E Camelback Road, Ste 250, Phoenix AZ 85018 USA  
[c...@indirect.com](mailto:c...@indirect.com) telephone (602)661-3911 Fax (602) 451-7617

# towards the web

**1945**, Vannevar Bush  
"As We May Think"  
"memex"

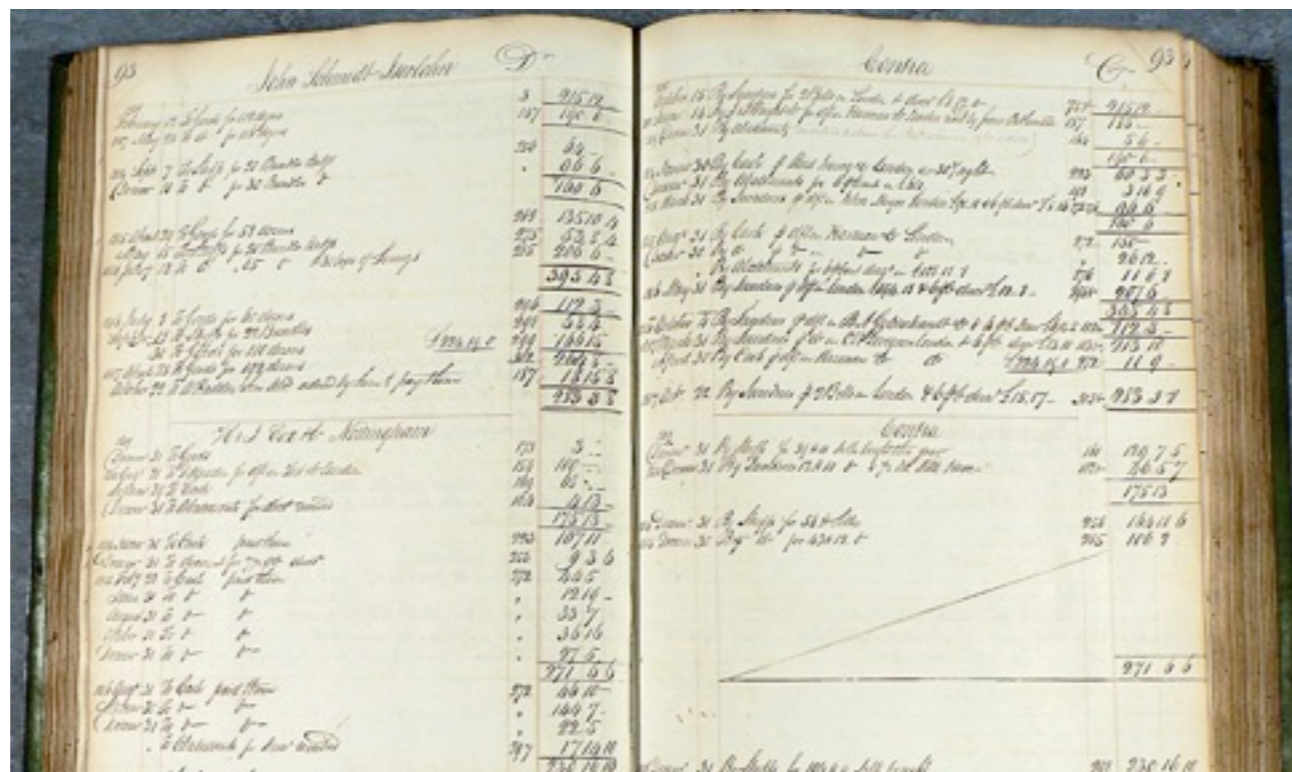
**1965**, Ted Nelson  
"Hypertext"



Vannevar Bush  
NSF



Ted Nelson



Search & Storage 10



Tim Berners-Lee  
CERN



WWW

**towards a better phone book?**

**1990, HTTP**



<http://info.cern.ch>

Welcome to info.cern.ch

The website of the world's first-ever web server

MARCH 2009: A CELEBRATION OF 20 YEARS OF THE WEB

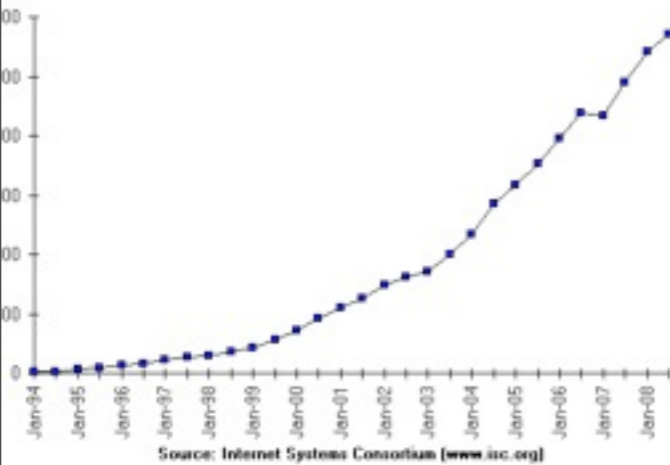
**World Wide Web@20**

» visit the [www@20](#) site

# browsing

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Internet Domain Survey Host Count



**1993**, NCSA Mosaic  
Mark Andressen

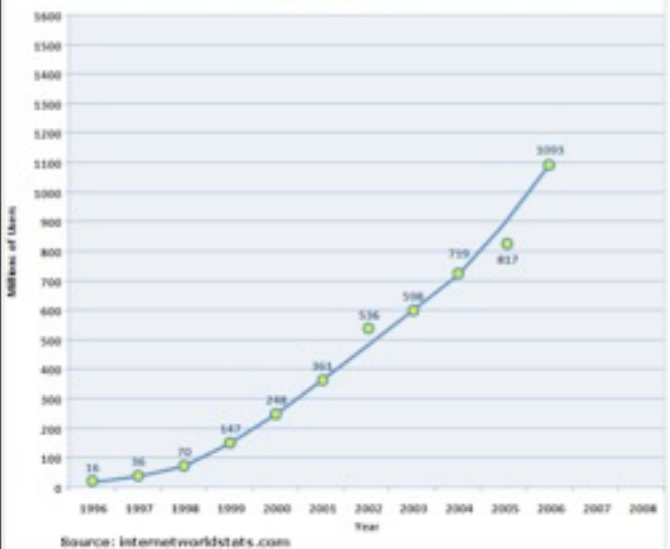
CERN releases W3 technology

**1994**, 200+ HTTP servers; traffic up x 1,000

**1994**, Netscape

**1995**, Internet Explorer

Internet Usage Growth  
1995 - 2006



# commercial service

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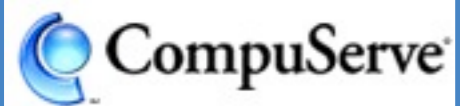
## **gated communities**

Mead Data Central/Lexis, 1967/1973

CompuServe, 1969/1977

Prodigy, 1984

AOL, 1983



# Aol.

# commercial service

---

## **gated communities**

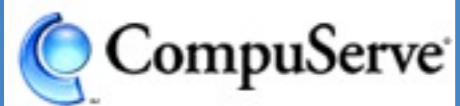
Mead Data Central/Lexis, 1967/1973

CompuServe, 1969/1977

Prodigy, 1984

AOL, 1983

facebook?



# Aol.

# outline

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**beyond Babbage's dreams**

**internet as library**

**storage, preservation, order**

**cyclical progression**

**liberating information from books**

**modern storage and search**



# a new library?

---

"the Internet ... is a library"

--Frances Cairncross,

*The Death of Distance*, 1997

"the web is a global library  
produced by millions of people"

--Yochai Benkler,

*The Wealth of Networks*, 2006



# changing ideas of library?

---

"The Internet is a library with  
all the books on the floor."

*Librarian's Guide  
to Cyber Space*



# problems of storage

---

"Additional tensions center on the problem of storage, preservation, and effective curation of data. In some sciences, the sheer volume of data created on an ongoing basis makes effective data retention and back-up a challenge of the highest order. This raises important questions of form and granularity. How much data, and in what form, must one reasonably preserve and document? The answer to this is tied in turn to questions of short- and long-term audience and purpose."

Jackson &co, "Understanding Infrastructure," 2007

# old problem, new tools?

---



**1988**, WAIS

**1990**, Archie

**1992**, Veronica (Gopher)

**1994**, Lycos

**1995**, Alta Vista, Yahoo

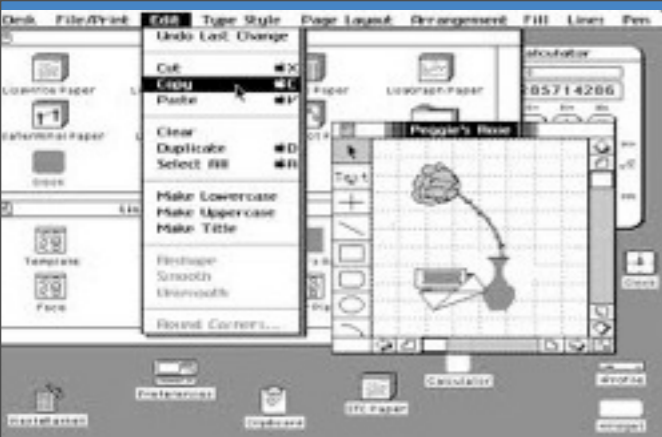
**1996**, Inktomi

**1997**, Ask Jeeves

# problems of metadata

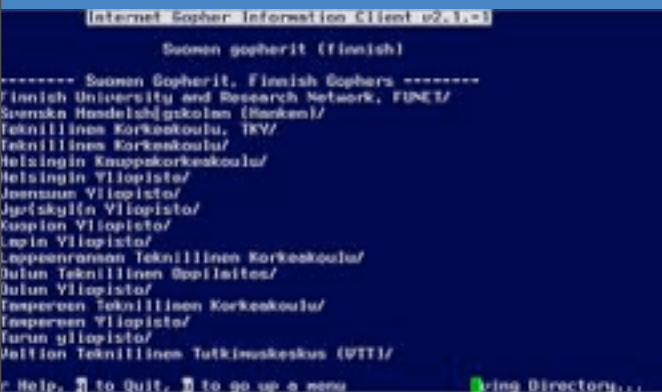
---

"Historical solutions to this problem have been distinctly human. ...For years now, the NSF... have exhorted their grantees to collect and preserve metadata – a prescription that has, for the same number of years, been routinely ignored or underperformed. ... while of clear value to the larger community, metadata may offer little to nothing to those tasked with producing it and may prove costly and time-intensive to boot."

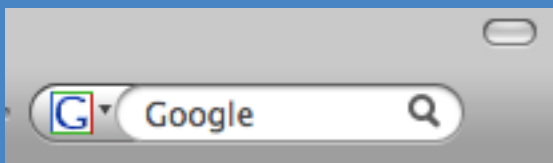


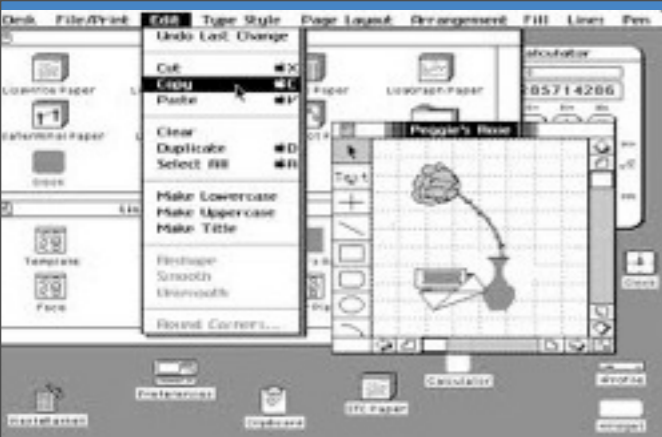
*real change?*

**YAHOO!**



**Google™**



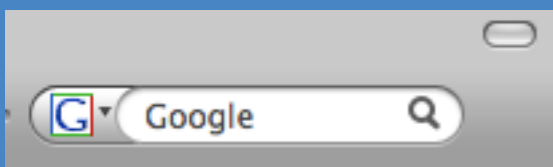
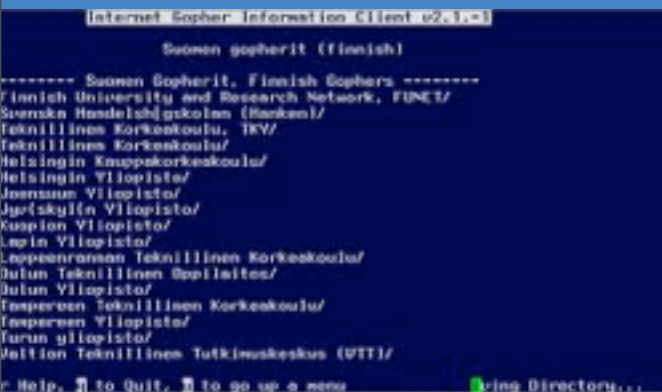


*real change?*

**YAHOO!**

yet another hierarchical officious oracle

**Google™**





# changing ideas of organization?

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"To organize the world's  
information."

*organize?*





# outline

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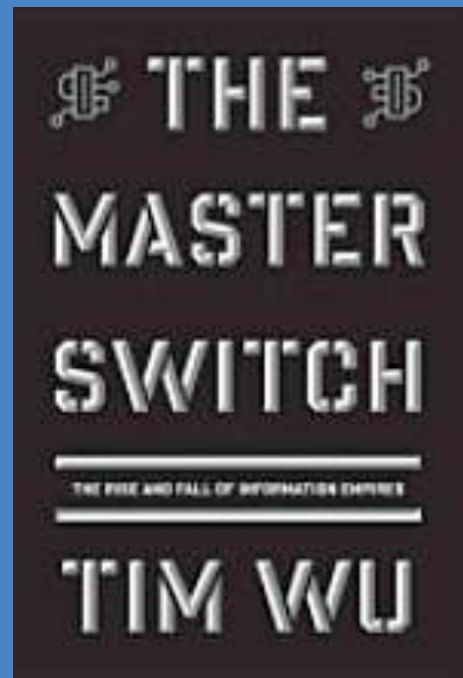
**beyond Babbage's dreams**

**internet as library**

**cyclical progression**

**liberating information from books**

**modern storage and search**



## cyclical theories

"The oscillation of information industries  
between open and closed"

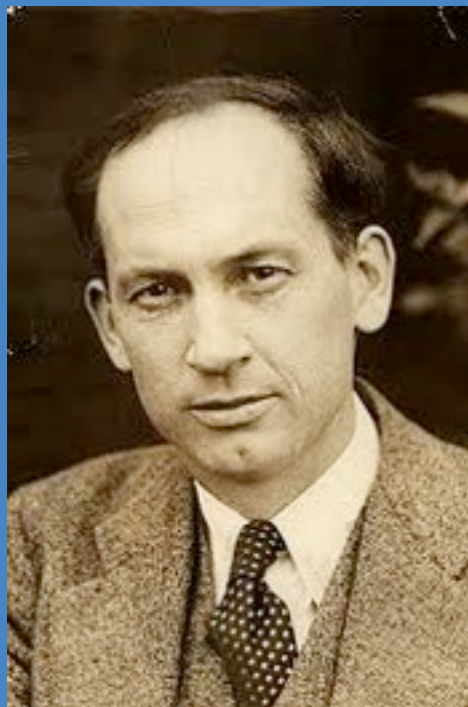
Tim Wu, *The Master Switch:  
The Rise and Fall of Information Empires*, 2010

"Institutions develop social impulses ...  
the drive to innovate and the  
opposite drive to resist innovation"

Peter Burke, *A Social History of Knowledge*, 2000

"time binding" and "space binding"

Harold Innis, *Empire and Communications*, 1950



Harold Innis  
1894-1952



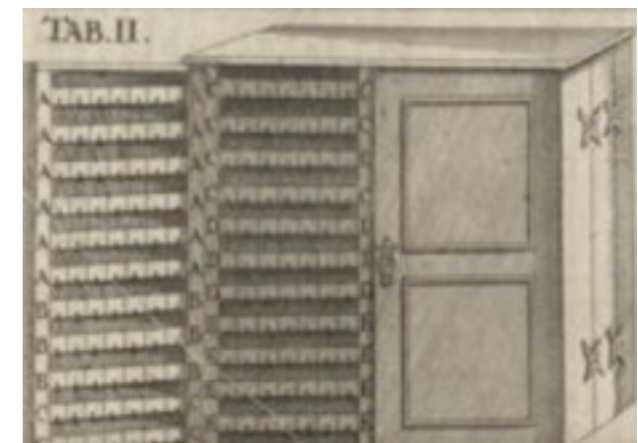
Seneca  
1 bce – 65 ce

# looking back or forward?

---

**perennial issues?**

too little *to* too much information?



**competing ideas?**

information wants to be free?

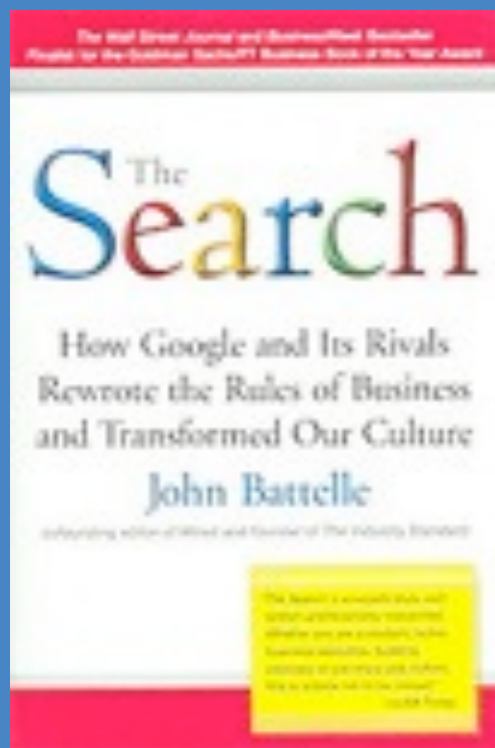
information needs to be constrained?



Stewart Brand

Q immortality

## old and new stories



"The second paid link pointed to the epic *Gilgamesh* ...[which], the site instructed me, recounts mankind's 'longing stretch toward the infinite.' In my search for immortality, **I had found the oldest known author in the history** of Western civilization. ...

"to become immortal through words pressed in clay"

John Battelle, *The Search*, 2005

Search & Storage 25

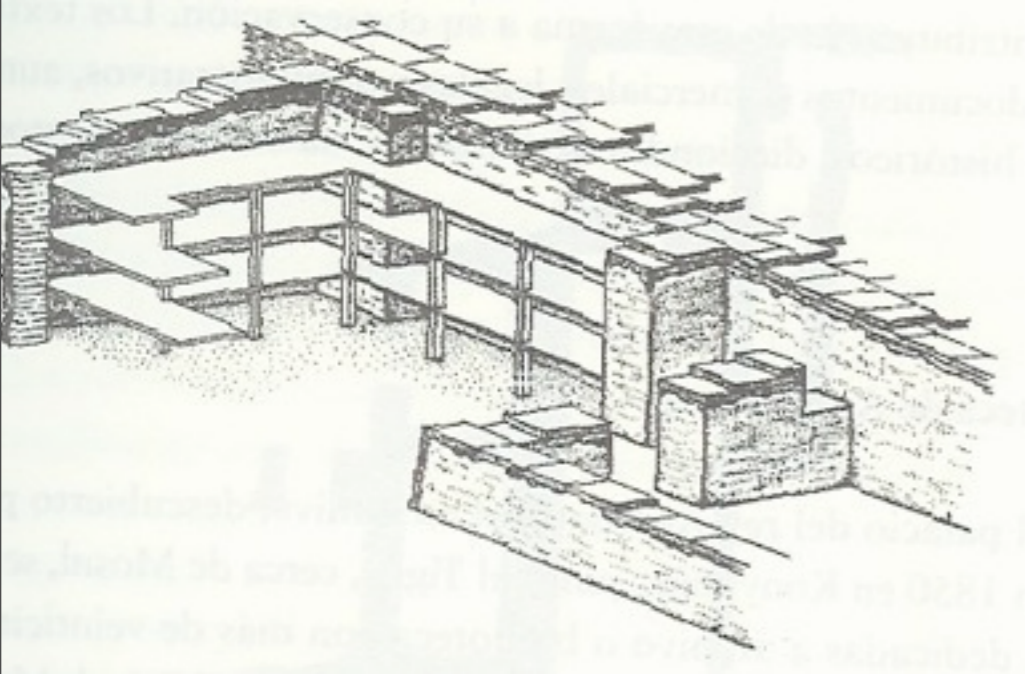


Oracle Bones  
Anyang, c1100 bce

"as early as the second millennium BCE the Chinese had ... means of organizing and storing their written records."

Helliwell, 1998

## stored writings



**Ebla** (Syria) c 2250 bce

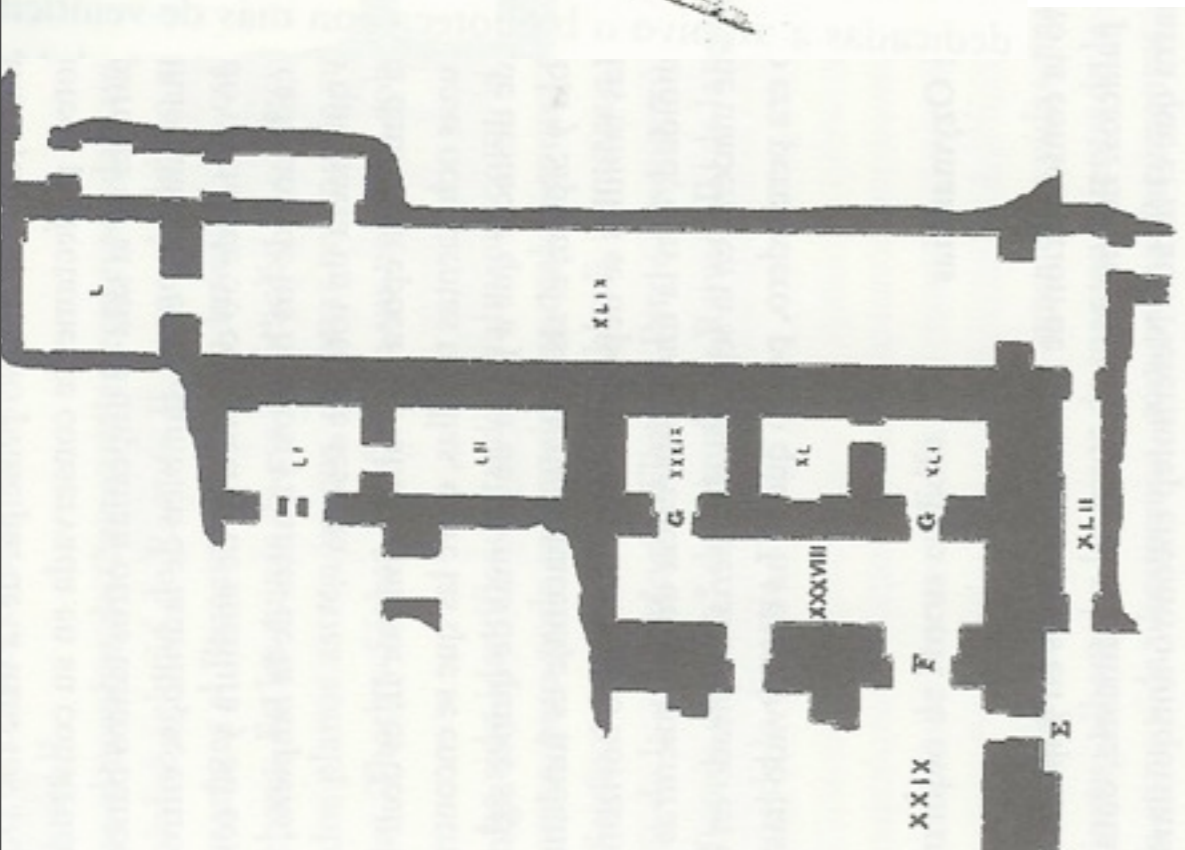
**Babylon** (Iraq) 15,000 tablets

**Nineveh** (Iraq) c. 650 bce

**what was stored?**

Ebla: accounts, lists, etc.

Nineveh: *Gilgamesh*



# pressed in clay?

---

## **time- to space-binding?**

He came a far road, was weary, found peace,  
and set all his labours on tablets of stone

...

See the tablet box of cedar,

Release its clasp of bronze

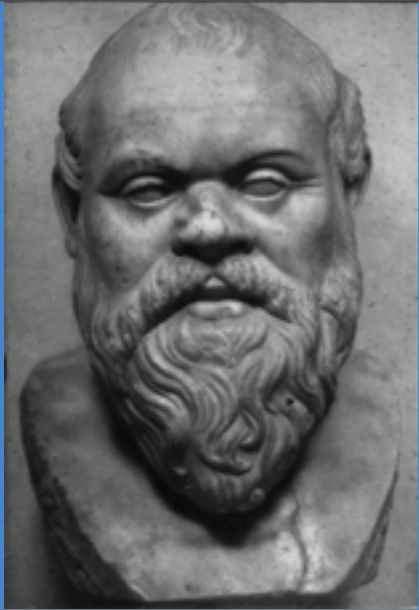
Lift the lid of its secret

Pick up the tablet of lapis lazuli and read out

the travails of Gilgamesh, all that he went through

--*Gilgamesh*, 3000 bce

Search & Storage 27



# new technologies

---

**Lyceum** [Greece]  
(Aristotle)

**Pergamum**  
[Turkey]  
(c 197 bce)  
200,000 scrolls

**Alexandria**  
430,000 volumes



# abundance & order

---

## **towards metadata**

**Zenodotus** c248 bce  
alphabetical ordering

**Callimachus** c240 bce  
subject categories

**Aristophanes** c195 bce  
& **Aristarchus** c153 bce  
scholarly versions  
editorial commentary



# fired clay to fired papyrus

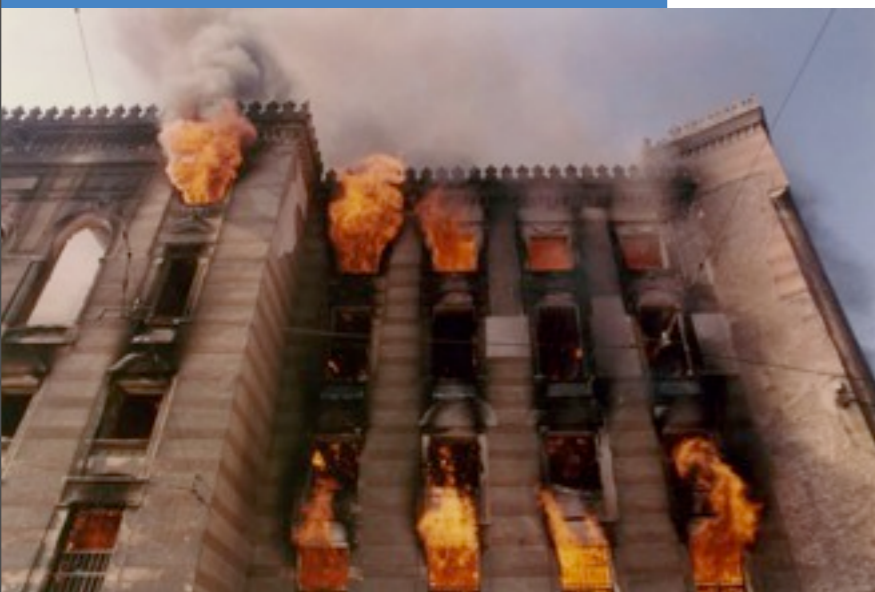
---

**Alexandria**  
who burned?

**Tripoli**

"At Tripoli ... three million books ...  
put to the flames by the Crusaders."

--Duncan Haldane, *Islamic Bookbindings*,  
1983



# another technological shift

---

## questions of durability

1145, Roger of Sicily ordered all charters on paper to be copied to parchment then destroyed

1248, paper accepted by the notaries of Languedoc

## enduring suspicion

"The written word on parchment will last a thousand years. The printed word is on paper.

How long will it last? The most you can expect of a book of paper to survive is two hundred years. Only time will tell."

# one solution

---

**time-binding to space-binding**



*lockss*

"lots of copies keeps stuff safe"

Search & Storage 32

# BIBLIOTHECA

## Vniuersalis, siue Catalogus omniū

um scriptorum loquaculim, in tribus linguis, Latina, Graeca, & Hebraica: et non exstantiū, ueterum & recentiorum in hunc usque aetate, & in Bibliotheca publica, & in Bibliotheca privata. Opus nouum, & ad Bibliothecas totum publicis, & in partibus studendi necessarium, sed studio in omnibus cuiuscumque artis aut scientiae ad studia melius formanda utilissimum: auctore CONRADO GESSNERO Tigurino doctore medico.



TIGURI APVD CHRISTOPHORVM  
Inchoatus Mense Epistole, Anno  
M. D. XLV.

*Stephanus Baluzius Lutetensis*

# universal hopes

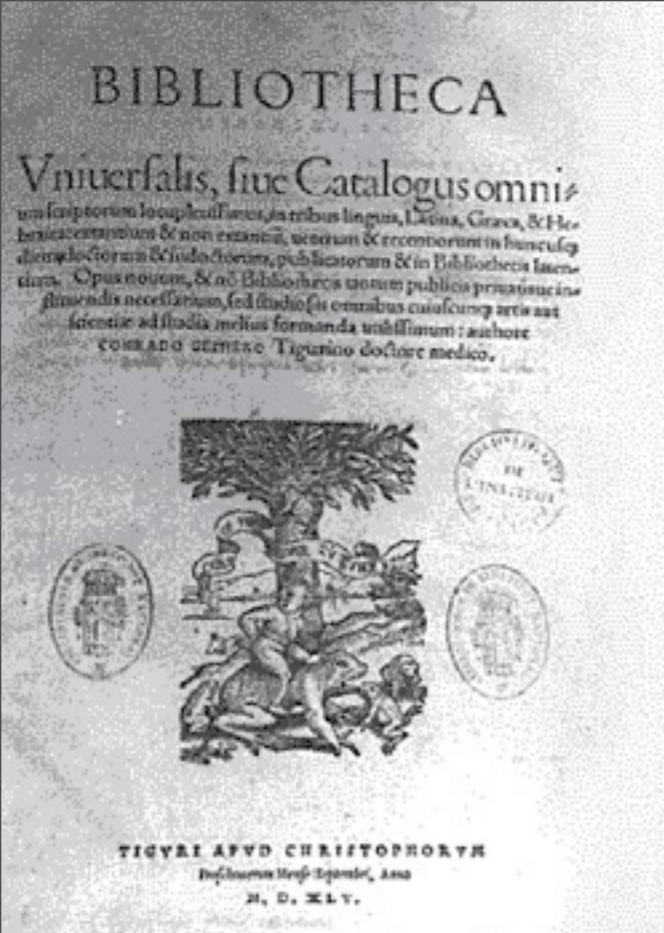
**Conrad Gessner**

*Bibliotheca Universalis, 1545*

[Latin, Greek, Hebrew]

"These Libraries in a few years, will be full and compleat, being furnished, not only with all the valuable and usefull Old Books in any Art of Science, but also with all the valuable New Books, so soon as every they are heard of or seen in the World"

James Kirkwood, 1699



# universal hopes

**Conrad Gessner**

*Bibliotheca Universalis*, 1545

Antonfrancesco Doni, 1550: there are “so many books that we [Latin, Greek, Hebrew] do not have time to read even the titles.”

“That horrible mass of books... keeps on growing, [until] the disorder will become nearly insurmountable.” Gottfried Leibniz, 1680

... years, will be full  
... lished, not only with  
... full Old Books in any  
Art of Science, but also with all the valuable  
New Books, so soon as every they are heard of  
or seen in the World”

James Kirkwood, 1699

Wife of Bath's Tale



"experience not authority"

"nullus in verba"

# coming round



(1) Numb. 1.  
**PHILOSOPHICAL  
TRANSACTIONS.**

Munday, March 6. 1664.

The Contents.

*An Introduction to this Tract. An Account of the Improvement of Optick Glasses at Rome. Of the Observation made in England, of a Spot in one of the Belts of the Planet Jupiter. Of the motion of the late Comet predicted. The Heads of many New Observations and Experiments, in order to an Experimental History of Cold; together with some Thermometrical Discourses and Experiments. A Relation of a very odd Monstrous Calf. Of a peculiar Lead-Ore in Germany, very useful for Essays. Of an Hungarian Bolus, of the same effect with the Bolus Armenus. Of the New American Whale-fishing about the Bermudas. A Narrative concerning the success of the Pendulum-watches at Sea for the Longitudes; and the Grant of a Patent thereupon. A Catalogue of the Philosophical Books published by Monsieur de Fermat, Counsellour at Tholouse, lately dead.*

Wife of Bath's Tale



"experience not authority"

"nullus in verba"

# coming round



Numb. 364.  
Beginning the Thirty first Volume.  
**PHILOSOPHICAL  
TRANSACTIONS.**

For the Months of *January, Feb. March* and *April. 1720.*

**The CONTENTS.**

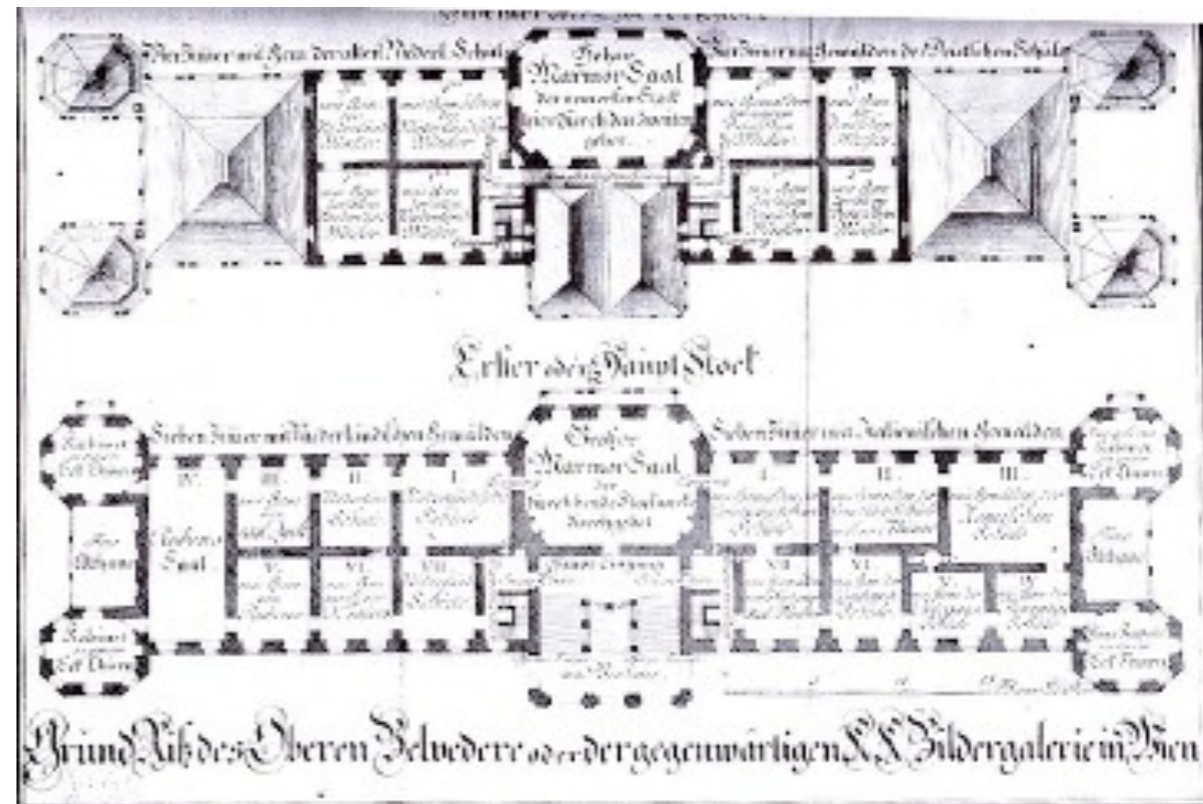
- I. *Some Remarks on a late Essay of Mr. Cassini, wherein he proposes to find, by Observation, the Parallax and Magnitude of Sirius.* By Edmund Halley, L. L. D. Astron. Reg. Geom. Prof. Savil. & R. S. S.
- II. *An Account of the External Maxillar, and other Salivary Glands: Also of the Insertions of all the Lymphatics (as well above as below the Subclavians) into the Veins; which Glands and Insertions have not hitherto been mentioned, or not truly described by any Authors.* By Richard Hale, M. D. Reg. Soc. & Col. Med. Lond. Soc.
- III. *De Peste Constantinopoli grassante. Auctore nupero V. Cl. Emanuele Timone, M. D. Hoc scriptum ab Auctore Clarissimo, qui Constantinopoli per multos annos Medicinam fecerat, Excellentissimo Ablegato Britannico, Roberto Sutton, Eq. Aurato, traditum, ejusdem Equitis permisso, cum Societate Regia communicavit idem R. Hale, M. D.*
- IV. *An Account of a Luminous Appearance in the Air, seen at Dublin on January the 12th, 1720.* By Philip Percival, Esq; Brother to the Right Honourable the Lord Percival, F. R. S. and communicated by his Lordship to the Royal Society.

V. of



# serendipity & abundance to selection & organization

**kunstkammer to museum  
encyclopaedias**





# curriculum, *n.*

View as: [Outline](#) | [Full entry](#)

---

**Pronunciation:** /kəˈrɪkjʊləm/

**Forms:** Pl. **curricula.**

**Etymology:** Latin, = course, career (*lit.* and *fig.*): see above.

---

# circling around

A course; *spec.* a regular course of study or training, as at a school or university. (The recognized term in the Scottish Universities.) **curriculum vitae** *n.* the course of one's life; a brief account of one's career.

# curriculum, *n.*

View as: [Outline](#) | [Full entry](#)

**Pronunciation:** /kəˈrɪkjʊləm/

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# search, *v.*

View as: [Outline](#) | [Full entry](#)

Text size: [A](#)

Quotations: [Show all](#) | [Hide](#)

**Pronunciation:** /sɜːtʃ/

**Forms:** *α.* ME-15 **serch(e, cerche, ME sorche, ME-15 sarche, searche, 15 sarych, scarche, ...** ([Show More](#))

**Etymology:** < Old French *cerchier* (modern French *chercher*), corresponding to Provençal *cercar*, Italian *cercare* to seek, Spanish *cercar*, Portuguese *cercar* to surround < late Latin *circāre* to go round, < Latin *circus* circle. ([Show Less](#))

**I.** To explore, examine thoroughly.

# curriculum, n.

View as: [Outline](#) | [Full entry](#)

**Pronunciation:** /kəˈrɪkjʊləm/

**Forms:** Pl. **curricula**.

**Etymology:** Latin, = course, career (*lit.* and *fig.*): see above.

# circling around

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Text size: [A](#)

Quotations: [Show all](#) | [Hide](#)

# search, v.

View as: [Outline](#) | [Full entry](#)

**Pronunciation:** /sɜːtʃ/

**Forms:** *α.* ME-15 **serch(e, cherche, ME sorche, ME-15 sarche, searche, 15 sarych, scarche, ...** ([Show More](#))

**Etymology:** < Old French *cerchier* (modern French *chercher*), corresponding to Provençal *cercar*, Italian *cercare* to seek, Spanish *cercar*, Portuguese *cercar* to surround < late Latin *circāre* to go round, < Latin *circus* circle. ([Show Less](#))

**I.** To explore, examine thoroughly.

# encyclopaedia | encyclopedia, n.

View as: [Outline](#) | [Full entry](#)

Text size: [A](#)

Quotations: [Show all](#) | [Hid](#)

**Pronunciation:** /ɛnˌsaɪkləʊˈpiːdiə/

**Forms:** Also 16 in adapted forms **encyclōpædie- -y, -pedie, -pedy, -ped(e.**

**Etymology:** < late Latin *encyclopaedia*, < pseudo-Greek *ἐγκυκλοπαιδεία*, an erroneous form (said to be a false reading) occurring in MSS. of Quintilian, Pliny, and Galen, for *ἐγκύκλιος παιδεία* 'encyclical education', the circle of arts and sciences considered by the Greeks as essential to a liberal education (compare **ENCYCLICAL** *adj.* 1).

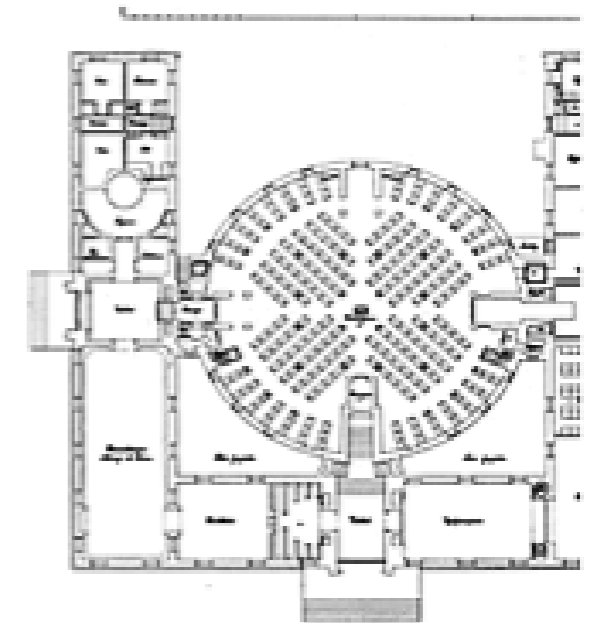
The spelling with *æ* has been preserved from becoming obsolete by the fact that many of the works so called have Latin titles, as *Encyclopædia Britannica*,

# encircling

Smirke, British  
Museum Reading  
Room, 1851



Pelz/Casey Reading Room,  
LOC, ca 1898



Asplund, Stockholm City  
Library, 1928



Labrouste, Bibliothèque  
Nationale 1868

# encircling & exclusion

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**British library**

law

business

science



Edward Gibbon  
1737-1794



Melvil Dewey  
1851-1931

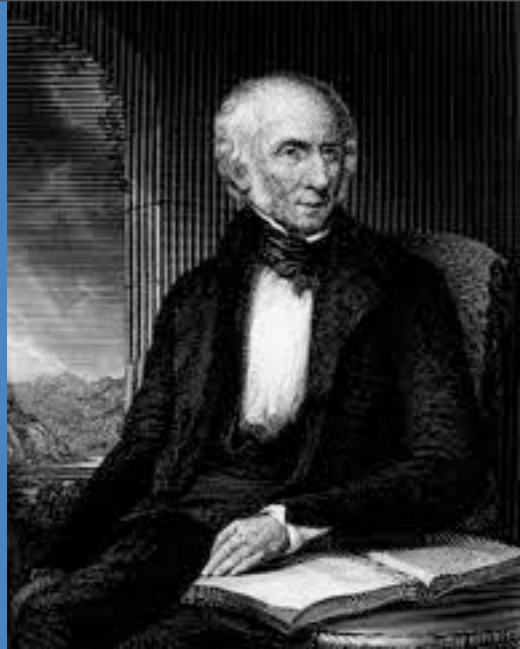
# cataloguing



## Dewey Decimal

## Library of Congress

Thomas Jefferson -- Denis Diderot -- Francis Bacon



William Wordsworth  
1770-1850

Books ...  
 illust of Classics  
 illust of Modern  
 Languages  
 of Amusement  
 not referable to as  
 Classics  
 Classics  
 History &co  
 Law & Politics  
 Modern Language  
 Natural History &c  
 Novels & Romances  
 Philosophy  
 Poetry  
 Translations  
 Voyages, Travels, &c

# 10,000 ordered at a glance

W-orth  
1829.5

Index:

Class:	Page:
Books illust. of Classics	11
do of Modern Languages	10
Books of Amusement	79
Books not referable to Classics	8
Classics	1
History &c	77

Law & Politics:	38
Mod. Language:	05
Natural History &c:	75
Novels & Romances:	87
Philosophy:	30
Poetry:	113
Theology:	20
Translations:	91
Voyages, Travels &c:	69

<http://ocp.hul.harvard.edu/reading/highlights/highlight7.html>

# outline

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**beyond Babbage's dreams**

**internet as library**

**cyclical progression**

**liberating information from books**

**modern storage and search**





"The camera hound"

## breaking out

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*Photography applied to Catalogues of Books.*— May not photography be usefully applied to the making of catalogues of large libraries? It would seem no difficult matter to obtain any number of photographs, of any required size, of the title-page of any book. Suppose the plan adopted, that five photographs of each were taken; they may be arranged in five catalogues, as follows:—Era, subject, country, author, title. These being arranged alphabetically, would form five catalogues of a library probably sufficient to meet the wants of all. Any number of additional divisions may be added. By adopting a fixed breadth—say three inches—for the photographs, to be pasted in double columns in folio, interchanges may take place of those unerring slips, and thus librarians aid each other. I throw out this crude idea, in the hope that photographers and librarians may combine to carry it out. ALBERT BLOR, LL.D.  
Dublin.

*Photographic Copies of Ancient Manuscripts.*— Might not photography be well employed in making facsimiles of valuable, rare, and especially of unique ancient manuscripts? If copies of such manuscripts could be multiplied at a moderate price, there are many proprietors of libraries would be glad to enrich them by what, for all purposes of reference, would answer equally well with the originals. A.

[This subject, which has already been touched upon in our columns, has not yet received the attention it deserves. We have now before us a photographic copy of a folio page of a MS. of the fourteenth or fifteenth century, on which are inscribed a number of charters; and, although the copy is reduced so as to be but about 2 inches high and 1½ broad, it is perfectly

*Notes & Queries, 1854, 1855*

Search & Storage 42

# crowd-sourcing

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## **project gutenber**

Michael Hart

University of Illinois, 1971

store, search, circulate

# crowd-sourcing

---

## **project gutenber**

Michael Hart

University of Illinois, 1971

store, search, circulate

## *Pan* –Knut Hamsun

And the huntsman is myself, and she will give me a glance of her eyes that I may understand. And when she comes, my heart knows all, and no longer beats like a heart, but rings as a bell. I lay my hand on her.

“Tie my shoe-string,” she says, with flushed cheeks. ...

The sun dips down into the sea and rises again, red and refreshed, as if it had been to drink. And the air is full of whisperings.

# crowd-sourcing

---

**project gutenber**

Michael Hart

University of Illinois, 1971

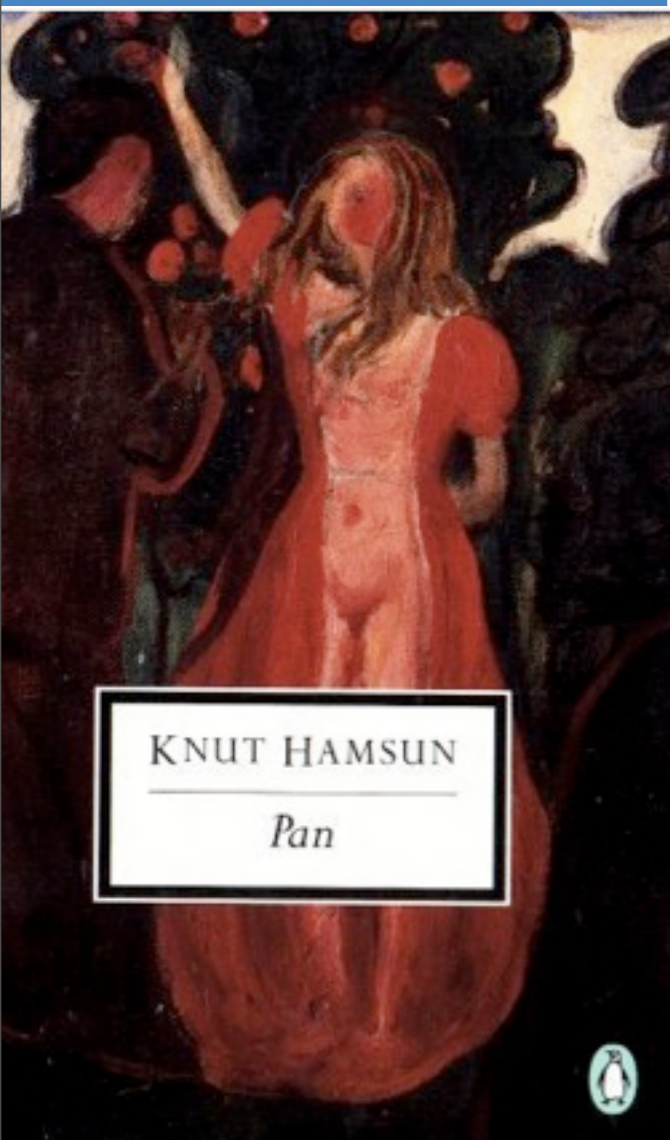
store, search, circulate

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# crowd-sourcing

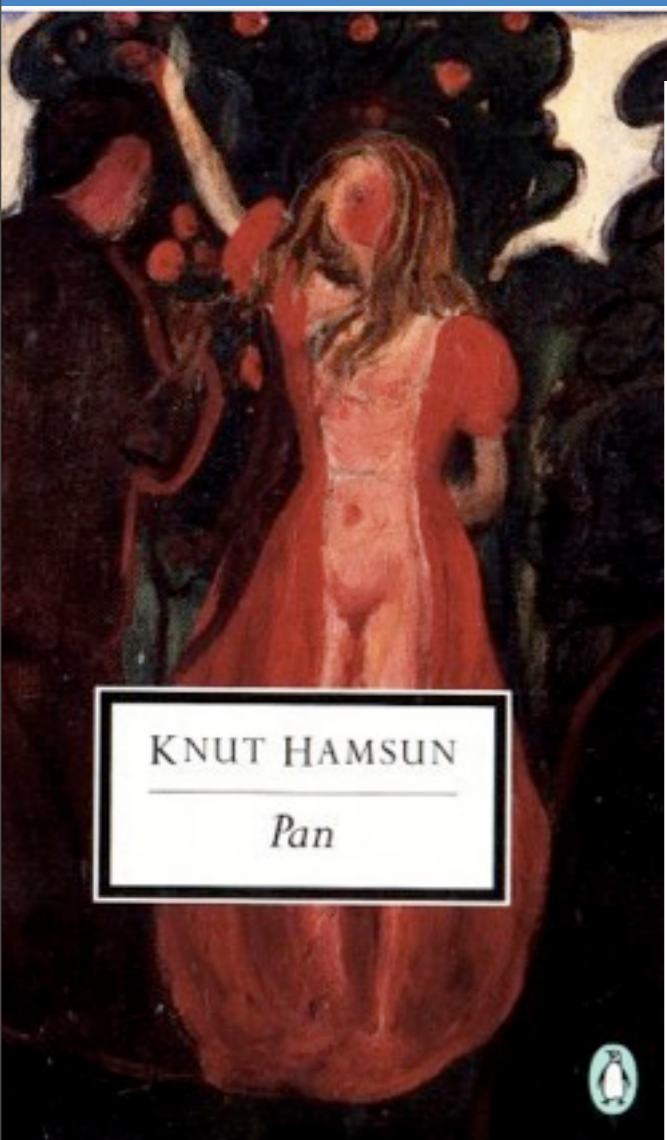
## project gutenber

The hunter, that's me, and she will give me a sign with her eyes to make me understand. And when she comes my heart understands all, and it no longer beats, it peals. And she is naked under her dress<sup>7</sup> from head to foot, and I lay my hand upon her.

Tie my shoelace! she says with flaming cheeks. And a little later she whispers directly against my mouth, against my lips, Oh, you're not tying my shoelace, sweetheart, you're not tying . . . not tying my . . .

But the sun dips its disk into the sea and then rises again, red, renewed, as if it has been down to drink. And the air is full of whisperings.

An hour later she says against my mouth, Now I must leave you.



KNUT HAMSUN

*Pan*

# opening up again



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# opening up again

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# round once more

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# round once more

**Catalog Search**

Search information **about** the items.

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OP-ED CONTRIBUTOR

## A Digital Library Better Than Google's

By ROBERT DARNTON

Published: March 23, 2011

Cambridge, Mass.

ON Tuesday, Denny Chin, a federal judge in Manhattan, rejected the settlement between Google, which aims to digitize every book ever published, and a group of authors and publishers who had sued the company for copyright infringement. This decision is a victory for the public good, preventing one company from monopolizing access to our common cultural heritage.

Nonetheless, we should not abandon Google's dream of making all the books in the world available to everyone. Instead, we should build a digital public library, which would provide these digital copies free of charge to readers. Yes, many problems — legal, financial, technological, political — stand in the way. All can be solved.

Let's consider the legal questions raised by the rejected settlement. Beginning in 2005, Google's book project made the contents of millions of titles searchable online, leading the Authors Guild and the Association of American Publishers to claim that the snippets made available to



# institutional reliability

---

Let us consider the matter in this way: If the wise man or any other man wants to distinguish the true physician from the false, how will he proceed?

.... He will consider whether what [the physician] says is true, and whether what he does is right, in relation to health and disease?

... But can any one attain the knowledge of either unless he have a knowledge of medicine?

... No one at all, it would seem, except the physician can have this knowledge; and therefore not the wise man; he would have to be a physician as well as a wise man.

--Plato, *Charmides*

# outline

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**beyond Babbage's dreams**

**internet as library**

**cyclical progression**

**liberating information from books**

**modern storage and search**



# old problem new technology



Vannevar Bush  
1890-1974

"There is a growing mountain of research.  
But there is increased evidence that we  
are being bogged down today as  
specialization extends. ... A **record** if  
it is to be useful to science, must be  
continuously extended, it must be **stored**,  
and above all it must be **consulted**"

--Bush, "As we may think," 1945



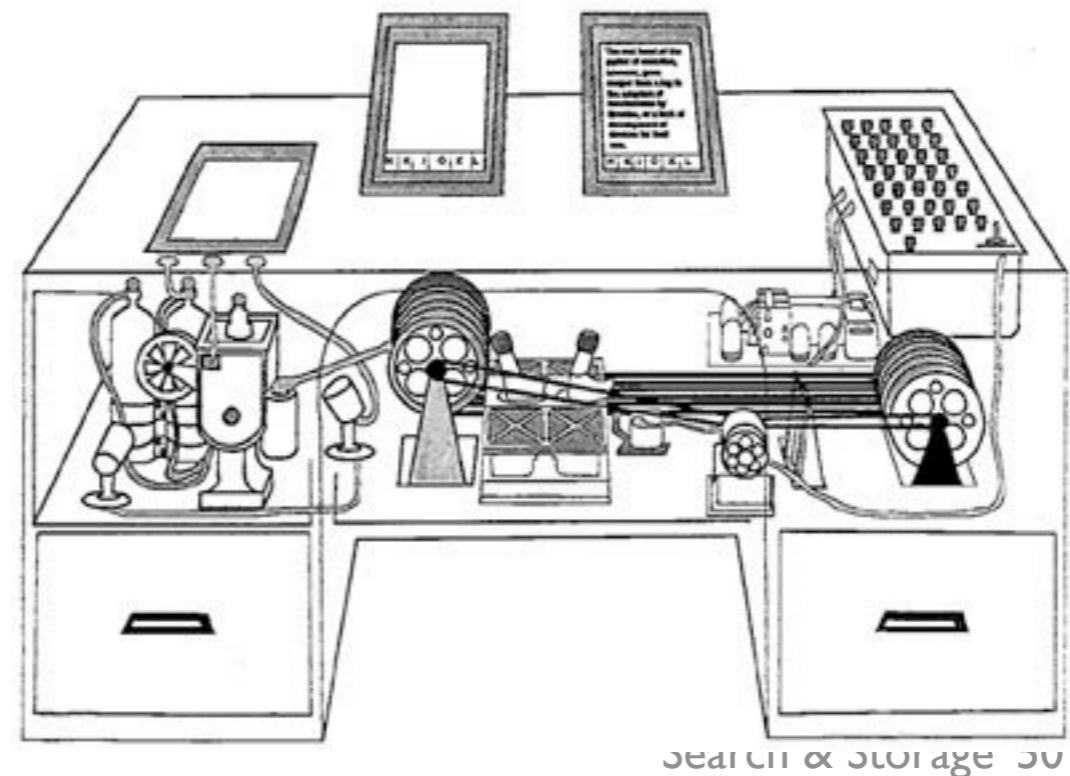
## something similar?

---

I will here, in the first place, contract into few Words, the whole summe of their Resolutions; which I shall often have occasion, to touch upon in parcels. Their purpose is, in short, **to make faithful Records**, of all the Works of Nature, or Art, which can come within their reach: that so the present Age, and posterity, may be able to put a mark on the Errors, which have been strengthened by long prescription: to restore the Truths, that have lain neglected: to push on those, which are already known, to more various uses: and to make the way more passable, to what remains unreveal'd. This is the compass of their Design.

# memex

"A memex is a device in which an individual stores all his books, records and communications ... mechanized ... associative indexing ... **his trails do not fade**"

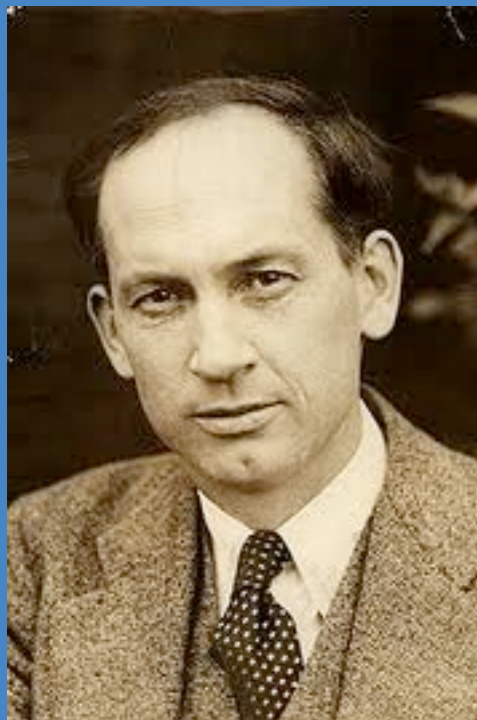


# loss of permanence

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"The overwhelming pressure of mechanization evident in the newspaper and the magazine, has led to the creation of vast monopolies of communication. Their entrenched positions involve a continuous, systematic, ruthless **destruction of elements of permanence** essential to cultural activity."

--Harold Innis, *Changing Concepts of Time*,  
1952



# know when to hold 'em

---

"Up until now most search engine development has gone on at companies with little publication of technical details. This causes search engine technology to remain largely a black art and to be advertising oriented. .. we have a strong goal to push more development and understanding into the academic realm."



# capturing eyeballs

---



Horace Greeley  
1811 - 1872

"We lose money on our circulation by itself considered but with 20,000 subscribers we can command such Advertising and such prices for it as will render our enterprise a remunerating one."

--Horace Greeley, *New York Tribune*, 1841

# discerning eyeballs

---



Condé Nast  
1873-1942

"Nast reasoned: 'If you had a tray with two million needles on it, and only one hundred and fifty thousand of these had gold tips, which you wanted, it would be an endless and costly process to weed them out. Moreover the one million, eight hundred and fifty thousand which were not gold-tipped would be of no use to you, they couldn't help you. But if you could get a magnet that would draw out only the gold ones, what a saving!'. Vogue was to be the magnet that attracted the gold."

Cox & Mowatt, "*Vogue* in Britain," 2011

# magnet's for gold-tipped needles

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**gmail accounts**

**igoogle**

**google docs**

**search histories**

**cookies ...**

**facebook accounts**

# storage *and* search

---

Google™



# and who is searching for what?

---

## **and should we worry?**

"You have zero privacy.... Get over it!"

Scott McNealy, Sun Microsystems

"If you have something you don't want anyone  
to know, maybe you shouldn't be doing it in  
the first place."

Eric Schmidt, Google



and who is  
searching for what?

**and should we worry?**



"Don't Be Evil?" video - beta version  
by consumerwatchdog



# Olivia

---

Google definitely is NOT throwing away millions of dollars of its spending in keeping track of me. Google definitely knows that I am female, in the late teens/early adulthood. I first searched McDonalds to see if Google knew that I am located in Berkeley. Obviously Google did because out popped a map of all the closest McDonalds to where I live. I decided to turn off the location-aware browsing, log out of gmail, and delete all my cookies. I typed in McDonalds into Google again and the same thing popped up. Either I did not do it correctly or Google is just really smart. Another way they use our info is by looking at our IP address, so I think that's how they know where I am. I decided to type in "clothes" next into the Google Search bar. Delias, Forever21, and Bluefly were the first three on the search list. How did Google know that one of my favorite places to shop is Forever21? Then Google listed places with clothes near Berkeley, CA. I did the exact same search with my gmail turned off again, and history and cookies deleted but the same results came up. I guess that my IP address had something to do with that again. I decided to try Bing and Yahoo with the same search of "clothes." Instead of clothes that was relevant to me, Bing's search results came up with "How to Wash Clothes" and "Listings for Clothes near Pinole, California." First of all, I don't even know where Pinole is. I decided that I like Google a lot more because Google knew me better. Bing's results were things that I was not interested in at all. I did the same search at Yahoo, and there were some clothes ads as well as clothe near Ukiah, CA. Once again, I don't know where Ukiah was. Google was right on target when it showed me clothes stores in Berkeley. Even though I deleted all my history and cookies on these searches, Google still seemed to know where I was, my gender, and also showed me results on clothes that is relevant to my age. Bing and Yahoo definitely did not have results that

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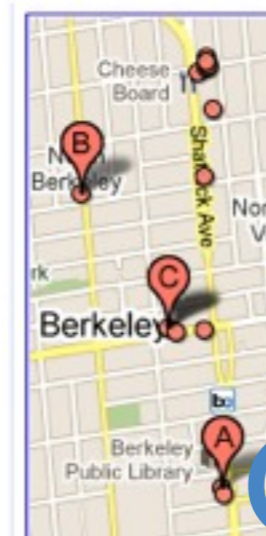
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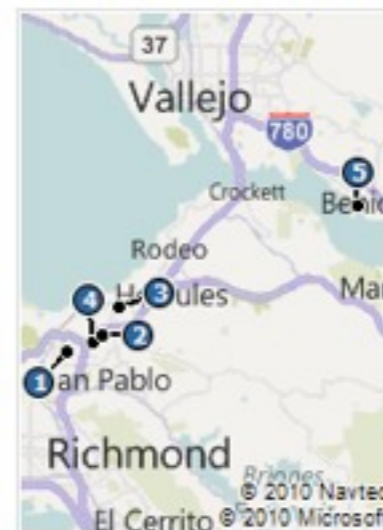
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1736 San Pablo Ave · Pinole · [Directions](#)
4. [Men's Wearhouse](#) · Website · (510) 243-...  
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# Austen & Monica

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For this assignment, I worked with my classmate, Monica Miyasato to compare how our Google search results would differ based on information google has gathered on our search habits, biographical information and physical location. Monica and I are similar in that we are both UC Berkeley students, we both have Google Mail and Facebook accounts, and we both use the Google Chrome web browser. However, we differ in sex, location (I live in Berkeley, while she lives in Stanford), and nationality (Monica spent most of her life in Peru, while I have lived in the United States for my entire life). We hypothesized that Google would know about our information, and therefore give us different results. To test this, we searched for the general term, “music,” on our home computers. Both of us were logged in to our Google Mail accounts at this time. We chose the term “music,” because it is a general term that has so many genres and niches for every demographic. Based on our differences, we wanted to see if Google would try to guess which type of music genre or scene would be most pertinent to us. The majority of my search results pertained to free music, even in the advertisements. This may be due to the fact that people in my demographic are becoming less likely to pay for music. One ad promoted Silicon Valley music events, suggesting that Google would know that I would live at least within driving distance. Monica’s search results were drastically different. The majority of her search results pertained to music of Peru, despite the fact the “Peru” was not a search term she entered, and that the search was conducted from an American computer in an American city. The attached screenshot verifies this. In addition, while my search results gave me six advertisements, her search results only yielded two. Logged out of my Gmail account, my search results came up more or less the same, albeit with only one advertisement. When Monica logged out of her Gmail account, her search results drastically changed. None of her search results pertained to Peru, and now she had seven advertisements. Our search results were now identical, except for the advertisements. When we turned our cookies off, we both had the same results and the same advertisements, although Google still knew our locations. We conducted the search again using the Mozilla Firefox web browser with the same results. From these tests, it is clear

music



Search

Instant is on ▾

About 4,510,000,000 results (0.13 seconds)

[Advanced search](#)

▶ [Free Music Video](#)

Ads

Recordings of Mongolian **music**.  
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Find **music** videos, internet radio, **music** downloads and all the latest **music** news and information on Yahoo! **Music**.

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Portal for new bands and artists, with links to audio downloads and shopping.  
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[www.pandora.com/mgp.shtml](http://www.pandora.com/mgp.shtml) - Cached - Similar

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The source for **music** information. Read artist biographies and album reviews. Find the best of new and upcoming releases. Stay in the loop with our ...  
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Watch free **music** videos, tune in to AOL Radio, get free **music** downloads, read **music** news, and search for your favorite **music** artists.  
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[YouTube - Music](#) 🔍

Watch **music** videos from all of your favorite artists. YouTube is your source for thousands of **music** videos including popular and just released titles.  
[www.youtube.com/music](http://www.youtube.com/music) - Cached - Similar

Ads

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Get News and Cultural Entertainment  
Find Your Favorite Program Now  
[www.pri.org](http://www.pri.org)

[Music](#)

Great Silicon Valley **music** events waiting for you on our calendar!  
[www.artsopolis.com](http://www.artsopolis.com)

[Free Music Radio](#)

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Great Variety, Convenient & Free!  
[www.radiorage.com](http://www.radiorage.com)

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music

Busca

Aproximadamente 4,520,000,000 resultados (Buscar segundos)

Búsqueda avanzada

Sugerencia: [Buscar sólo resultados en español](#). Puede especificar el idioma de búsqueda en [Preferencias](#).

¿Desea obtener resultados locales de **music**?

Ciudad o código postal

Buscar

Recordar esta dirección

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Portal for new bands and artists, with links to audio downloads and shopping.

[Whip My Hair - Video - Bottoms Up \(Feat. Nicki Minaj\) - We R Who We R](#)

[www.music.com/](#) - En caché - Similares

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► [Más de 100 artistas llenarán 130 horas de música en Klubbers' Day ...](#)

hace 1 hora

Más de 100 artistas llenarán un total de 130 horas de **música** en el festival electrónico Klubber's Day 2011, que se celebrará de hoy al sábado en el pabellón ...

[La Vanguardia - 13 artículos relacionados](#)

Todo Musica y

Más

[Premiarán a Estefan y Emmanuel en los Billboard](#)

Watch **music** videos from all of your favorite artists. YouTube is your source for thousands of **music** videos including popular and just released titles.

[www.youtube.com/music](#) - Cached - Similar

# extracts

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## **Si Wang**

"weekend": I got two hits for a horror convention which she did not get. I'm not sure why I have these results. I like horror books but how did Google get that?

"underwear": Interestingly, both of our top hits involved male underwear.

## **Annie Tung:**

Most of these pictures were from an event 3 years ago....things on the internet really DO last forever, especially on Google.

## **Jonathan Ko:**

Slightly different ads showed up for a male user vs. female user for the search "gifts." The male user was offered 'Gifts for her', while the female user was asked 'Not sure what to get mom?'

# extracts--waste of money

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## **Erin Donaldson:**

when I searched "concert tickets," I came up with simple ticketing sites (Ticketmaster et al), many of which were advertising a Taylor Swift concert in Texas. (I am by no means a Taylor Swift fan, and I have never been to Texas in my life.) Perhaps "concert tickets" was too vague and Google was left only with my gender and the knowledge that tickets to this particular concert are selling well among women. I would conclude, then, that Google understands my location and most likely my gender, but it struggles to go beyond that.

## **Kimberly Cheng:**

However, if other's results were similar to what I saw with the Google search engine, then I would say that Google was wasting its money.

# extracts--money well spent

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## **Alexander Huang:**

It seems that Google IS VERY GOOD at finding out what I constantly search for. After doing this exercise, Google was very good at deducing I am a college student that is looking for cheap books and also cheap computer parts, 2 things I am constantly searching for. I actually asked my mom who is in new york right now and it was interesting to see with cookies turned off, she had fairly random ads. But when cookies turned on, we both were amazed at after a few searches, all of the ads were very related to what we were searching for.

## **Ha Jun**

it is pretty fascinating that Google can keep track of my location, age, and gender in order to gauge my potential interests as its search results, it is also pretty scary how much information is kept about me.





# recording *and* secrecy?

**6**

[ **Rep. No. 753.** ]

*ment, irrespective of the time of day or night, or state of the weather.* This single point establishes its superiority to all other modes of telegraphic communication now known.

*Third.* The whole apparatus will occupy but *little space*, (scarcely six cubic feet, probably not more than four;) and it may therefore be placed, without inconvenience, in any house.

*Fourth.* The *record of intelligence is made in a permanent manner, and in such a form* that it can be at once bound up in *volumes* convenient for reference, if desired.

*Fifth.* *Communications are secret* to all but the persons for whom they are intended.

These are the chief advantages of the electro-magnetic telegraph over other kinds of telegraphs, and which must give it the preference, provided the expense and other circumstances are reasonably favorable.

The newness of the whole plan makes it not so easy to estimate the expense, but an *approach* to a correct estimate can be made.

# unfading

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In March 2007, Google confirmed that since its inception it had stored every search query every user ever made and every search result she ever clicked on. Google remembers forever. ... This is the temporal version of a panoptic society, in which everything is being watched; it is a society in which most of what is being recorded and collected is being preserved. Regardless of other concerns we may have, it is hard to see how such an unforgetting world could offer us the open society that we are used to today.

--Mayer-Schönberger

# get lost

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"For almost all of human history, most of what humans experienced was quickly forgotten. Today, however, retention of digital data is (relatively) easy and cheap.

As a consequence, and absent other considerations, we keep rather than delete it. ... I propose that we shift the default when storing personal information back to where it has been for millennia, from remembering forever to forgetting over time."

--Mayer-Schönberger

Search & Storage 65

# public-private partnerships

## Whistle-Blower Outs NSA Spy Room

Ryan Singel  04.07.06



AT&T provided National Security Agency eavesdroppers with full access to its customers' phone calls, and shunted its customers' internet traffic to data-mining equipment installed in a secret room in its San Francisco switching center, according to a former AT&T worker cooperating in the Electronic Frontier Foundation's lawsuit against the company.

Mark Klein, a retired AT&T communications technician, submitted an affidavit in support of the EFF's lawsuit this week. That [class action](#) lawsuit, filed in federal court in San Francisco last January, alleges that AT&T violated federal and state laws by surreptitiously allowing the government to monitor phone and internet communications of AT&T customers without warrants.

On Wednesday, the EFF asked the court to issue an injunction prohibiting AT&T from continuing the alleged wiretapping, and filed a number of documents under seal, including three AT&T documents that purportedly explain how the wiretapping system works.

According to a statement released by Klein's attorney, an NSA agent showed up at the San Francisco switching center in 2002 to interview a management-level technician for a special job. In January 2003, Klein observed a new room being built adjacent to the room housing AT&T's #4ESS switching equipment, which is responsible for routing long distance and international calls.

"I learned that the person whom the NSA interviewed for the secret job was the person working to install equipment in this room," Klein wrote. "The regular technician work force was not allowed in the room."

Klein's job eventually included connecting internet circuits to a splitting cabinet that led to the secret room. During the course of that work, he

learned from a co-worker that similar cabinets were being installed in other cities, including Seattle, San Jose, Los Angeles and San Diego.

# technology & goodhart's law

## footprints in the snow

Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes.

DRILLING DOWN

### Kicking Cash to Nefarious Clickers

By ALEX MINDLIN

Published: April 11, 2010

The click fraud rate in the first quarter of 2010 was one of the highest on record, [according to Click Forensics](#), a firm that analyzes traffic on behalf of advertisers and ad networks.

The rate was even higher than the previous quarter's, which was unusual since the holiday shopping period, with its high ad rates, is usually the peak season for click fraud.


**17.4%**  
Click fraud rate  
in Q1 2010

**15.3%**

Web sites practice click fraud by showing ads, soliciting fraudulent clicks on those ads, receiving payments from advertisers for the clicks, and then kicking some money back to the clickers. Paul Pellman, the chief executive of Click Forensics, attributed the rising fraud rate to the emergence of sophisticated, widely distributed schemes wherein millions of hijacked personal computers, harnessed together into "botnets," are used to fraudulently click on ads across thousands of Web

SIGN IN TO RECOMMEND

 TWITTER

 E-MAIL

 SEND TO PHONE

 PRINT

 REPRINTS

 SHARE



# technology and the sorcerer's apprentice



## Google faces its next big challenge: ridding itself of the spammers it created

The search engine is the 900-pound gorilla of its field - but optimisation experts have learnt to tickle the gorilla too well for its results to be useful in notable fields. Can it fight back? (Updated)



*Wall of Spam. Photo by freezelight on Flickr. Some rights reserved*

There is, in the words of Jeff Atwood, "trouble in the house of Google". It's not unrest within the company that he's talking about, though; it's externally among users who are beginning to find that when they try to do searches to evaluate or buy consumer items - such as dishwashers, or

# coming up

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August 22:

## **Week 14**

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