



# storage & search

### up in the clouds

## History of Information April 15, 2010







# aob - ip

### on behalf of the artist? informationisbeautiful.net



# aob - ip

### Court to hear suit over "Tea Party" name



(Reuters) - A U.S. judge has agreed to referee a dispute among Florida political activists over who can use the phrase "Tea Party" in their name.

#### ODDLY ENOUGH

A trial has been scheduled to begin on December 6 in U.S. District Court in West Palm Beach, Florida, in a lawsuit that questions whether anyone has a trademark or intellectual property right to the "Tea Party" name.

#### Jane Sutton

MIAMI Wed Apr 14, 2010 2:37pm EDT

#### **Related News**

Republican Steele addresses spending flap fiet, Apr 10 2010

Republican Steele addresses spending flap flap flat, Apr 15 2015

Republican firebrand Palin takes on Obama on energy Fit. Apr 9 2019

Lawmaker Stupak will not seek re-election htt, Apr 9 2010

UPDATE 2-U.S. lawmaker Stupak will not seek re-election F6, Apr 92010



# where we left off

1988, WAIS

1990, Archie

1992, Veronica (Gopher)

1994, Lycos

1995, Alta Vista, Yahoo

1996, Inktomi

1997, Ask Jeeves





year

2010

1980

1950

1900

1800

1700

# where we are going

### looking back to look forward

"men more frequently need to be reminded than informed" S. Johnson, Rambler 2

### search and storage across time

15

### assignments



Hofl 10 -- Storage & Search 2

week



### perennial issues?





### perennial issues?

too little or too much information?





### perennial issues?

too little or too much information?

information wants to be free?





### perennial issues?

too little or too much information?

information wants to be free?

information wants to be constrained?





#### immortality - Wikipedia, the free encyclopedia

#### Quantum suicide and immortality - Wkipedia, the free encyclopedia

Quantum immeriality is a metaphysical speculation derived from the quantum suicide thought experiment. It states that the many-worlds interpretation of ... an antipedia org/wiki/Quantum\_suicide\_and\_immeriality - <u>Cautest</u> - <u>Similar</u>

#### Imministiong - Immortality Institute | Advocacy & Research For ...

Dedicated to education regarding the prospect of indefinite life extension technologies. Offers forum, chat, frequently asked questions, and articles of ... www.imminist.org/ - Capted - Similar Sponsored Links

#### You can live forever

The Dead & Investality Bible of the Undead www.mkettinglonbooks.com

#### Physical Immortality

Physical Immortality possible! Life or Death? You Have a Choice! www.uncentrymind.com/undying.html

#### Designed here a

# old and new stories

See results for: immortality Avrice

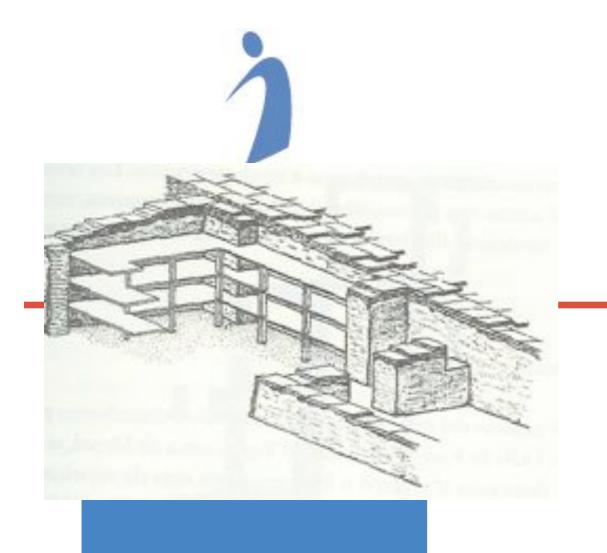
#### CELINE DION - IMMORTALITY LYRICS

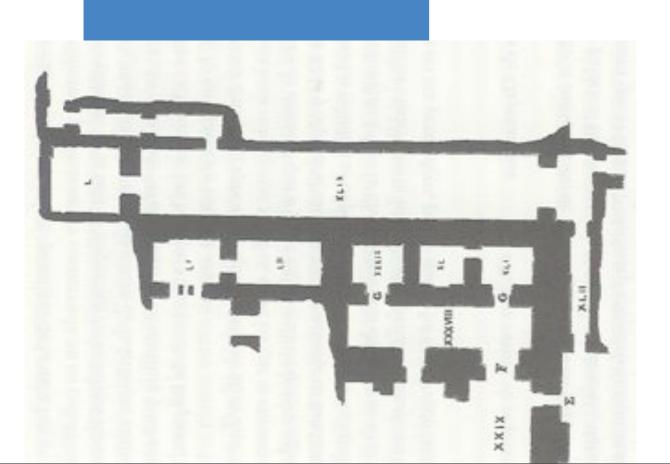
The IMMORTALITY LYRIOS are the property of the respective authors, artists and labels, the lyrios are previded for educational purposes only , if you like ... www.sing365.com/music/lyric.naf/ Immortality-lyrics-Celine-Don/COC678486038668648256864001F4DC9

"The second paid link pointed to the PEARL JAM - IMMORTALITY LYRICS Nov 24, 2009 ... The IMMORTALITY LYRICS are the property of the respectiv labels, the lyrics are provided for educational purposes only ... epic Gilgamesh ... [which], the site www.sing365.com/music/yric.nst/ bemortality-lyros-Pea4-Jan/E3DF131 Immortality Lyrics. Pearl Jam Immortality Lyrics - LyricsFreak.com instructed me, recounts mankind's But there's a inapdoor in the sun ... immortality ... immortality ... / I cannot alog the thought. I'm running in the dark, ... 'longing stretch toward the www.lyticsfreak.com/or/pearthjam/investality\_20108401 Have infinite.' In my search for The Quest For Immortality - 60 Minutes - CBS News 80 Minutes on CBS News, The Quest For Immediatity - Want To Live 500 Years? One immortality, I had found the oldest Scientist Says It May Be Possible One Day. www.obsnaws.com/stores/2005/12/28/ .../wwin1188852 sMini - Caphed - Simile known author in the history of Amazon.com: Immortality (Perennial Classics) (9780050932381 ... Western civilization.

> "to become immortal through words pressed in clay"

John Battelle, The Search, 2005





# 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?

He came a far road, was weary, information & found peace, and set all his labours on tablets supports of stone material institutional 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 [trans Andrew George] Hofl 10 -- Storage & Search 9



# new technologies

# **Lyceum** [Greece] (Aristotle)

### Pergamum

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

## Alexandria

430,000 volumes papyrus







# to print & paper

### overload?

972-83: *Tripitaka*, 5,048 volumes





### memory to written record

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

> 1248, paper accepted for us by the notaries of Languedoc (**France**)

"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."





# abundance & order

### **Alexandrian strategies**

### Zenodotus

alphabetical orderin**g** 

### Callimachus

subject categories

### **Aristophanes & Aristarchus**

scholarly versions editorial commentary

in print **Conrad Gessner** Bibliotheca Universalis [Latin, Greek, Hebrew]



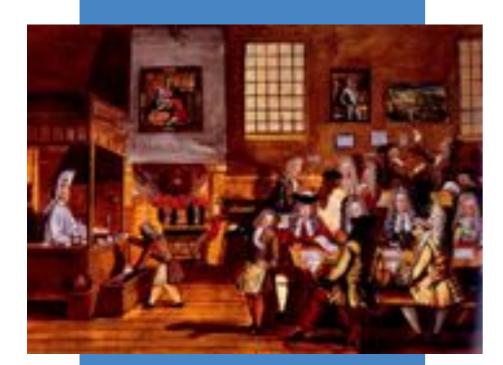
# free & constrained

### (1) Numb. 1. PHILOSOPHICAL TRANSACTIONS.

Munday, March 6. 166.

#### The Contents.

An Introduction to this Traft. An Accompt of the Improvement of Optick Glaffes 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 pradicted. The Heads of many New Observations and Experiments, in order to an Experimental Hiltory of Coldztogether with some Thermometrical Discourses and Experiments. A Relation of a very odd Monsfrons Calf. Of a peculiar Lead-Ore in Germany, very useful for Esays. Of an Hungarian Bolus, of the same effect with the Bolus Armenus. Of the New American Whale-fishing about the Bermudas. A Narative 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 Monsheur de Fermat, Counsellour at Tholouse, lately dead.





## The Daily Courant.

#### Waterfag, Martin, 1988

#### Real Brillion Conception Date & B 1

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THE REPARTS

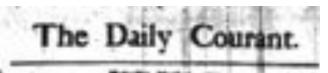
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Party for Dank Streets of the

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ABUTRTINGENT

the later is a first part of a state

Beginning the Thirty Lift Volume. PHILOSOPHICAL

#### TRANSACTIONS.

For the Months of January, Feb. March and April. 172-

#### The CONTENTS.

- L Same Remarks on a late Effer of Mr. Callini, wherein he proposes to find, by Observation. the Parallax and Magainak of Sirius. By Edmand Halley, L. L. D. Alloon. Rep. Geom. Prof. Savi's & R. S. S.
- II. An Account of the External Maniflur, and other Soliwary Glands 2 Alfa of the Infections of all the Lymphaticks (as well above as below the Subclassians) into the Febra 1 which Glands and Infections have not lip there been mentioned, or not truly deferibed by any Auchars. By Richard Hale, M. D. Reg. Soc. & Col. Med. Lond. Soc.
- III. De Pefe Conflancinopoli graffante. Auflier supera V. Cl. Emanuele Timorie. M. D. Her ferijtean ab Aufliere Clariffine, qui Conflantinopoli per mulese aunes Medicinam feores, Exectlintiffine Adégate Bricannico, Roberto Sutten, Eq. Aware, traditam, ejufdan Equitiv permiffa, cum Societate Fegia communicavit idem R. Hale, M. D.
- IV. An Account of a Luminous Appearance in the Air, from at Dublim on January the 12th, 17%. By Philip Percival, E/q: Ernther to the Right Honourable the Lord Percival, F.R. S. and communicated by his Lord/Eip to the Royal Society.

V. 0/

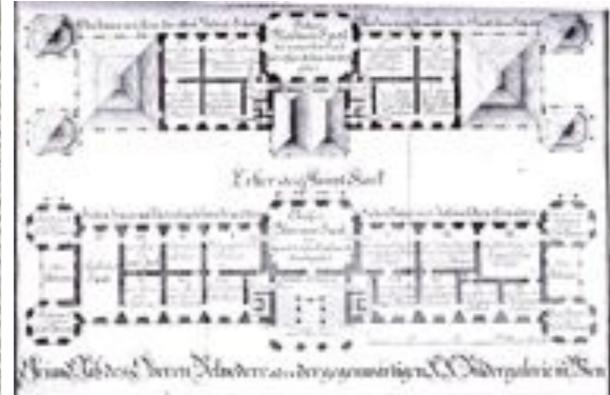






# serendipity & organization

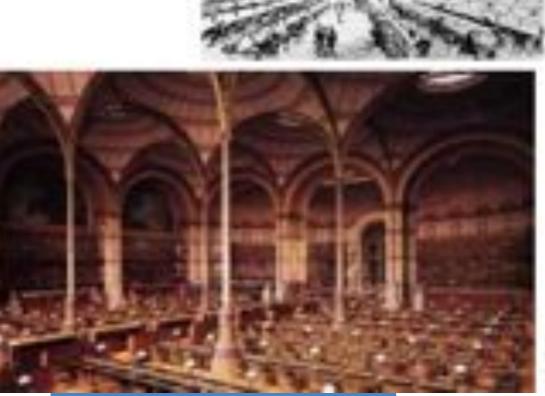


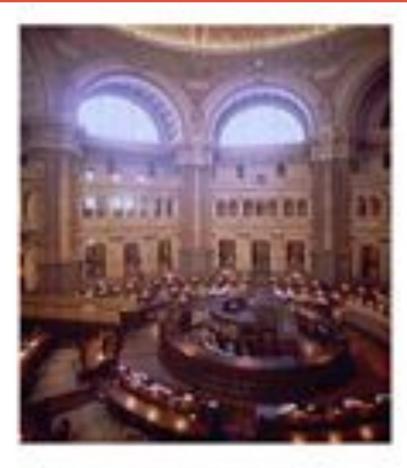






Smirke, British Musem Reading Room, 1851





Pelz/Casey Reading Room, LOC, ca 1898

Labrouste, Bibliothèque Nationale 1868



Asplund, Stockholm City Library, 1928

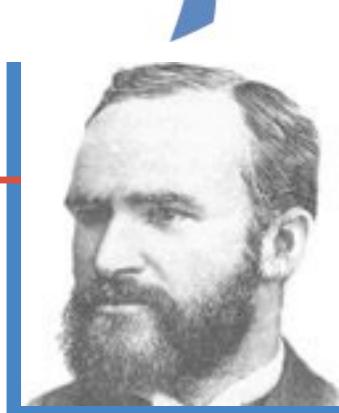


Edward Gibbon 1737-1794

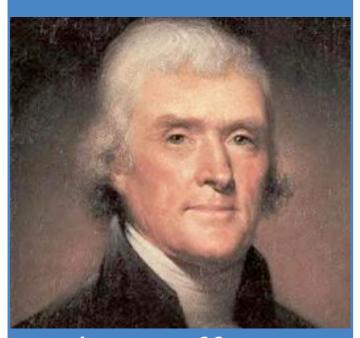


# more organization





Melvil Dewey 1851-1931



Thomas Jefferson 1743-1826

# ordering

### **Dewey Decimal**

### **Library of Congress**

Thomas Jefferson -- Denis Diderot -- Francis Bacon





# recording & secrecy

### [ 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 sicubic 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.

Fi/IA. 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.



"The camera hound"

Photography applied to Catalogues of Books .--May not photography be usefully applied to the making of catalogoes 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 BLOB, LL.D. Dublin.

# photography

### film of the book

Notes & Queries, 1854, 1855

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 1 broad, it is perfectly



# 19th century public sphere

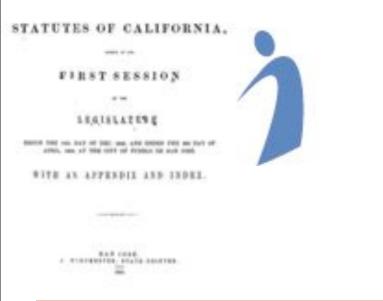
### the penny press

&

### the "paper of record"

"all the news that's fit to print"







# organizing

## An act concerning...

- 1. public archive
- 2. state printer
- 3. pilots for SF
- 4. comptroller
- 5. treasurer
- 6. sec. of state
- 8. translator
- 11. AG
- 14. Supreme Court
- 30. incorporation of cities
- 36. commissioner of deeds
- 41. notaries
- 49. lawful fences

- 48. incorporation of towns
- 53. weights & measures
- 55. limited partners
- 59. recorder's office
- 64. officers of health
- 67. surveyors
- 69. librarian
- 72. register of wills
- 89. marks & brands
- 90. reporter
- 93. conveyances
- 95. common law
- 117. incorp. of colleges
- 123. assayer

## Statutes of California, 1849-50

# 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" --As we may think, 1945





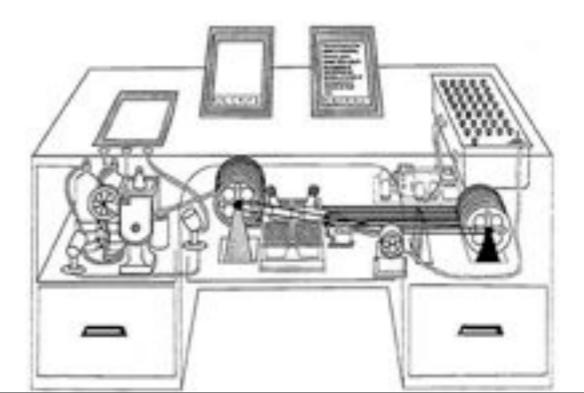


# 2

# memex

### looking ahead

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





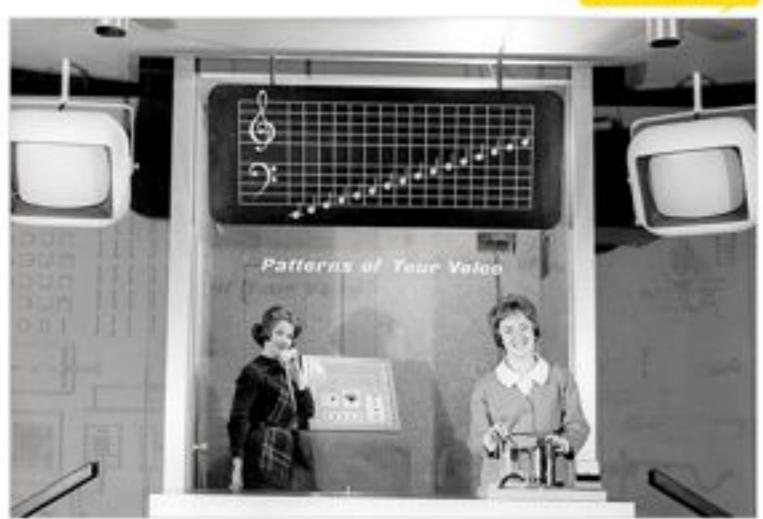
# & the vocoder

# Hi, Robot

The history of the vocoder, cryptography's top-secret funk machine.

By Sem Anderson Published Apr 4, 2010

1 Comment | Add Yours



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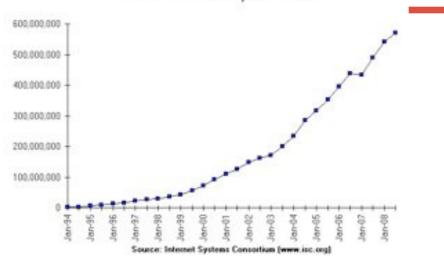
# ordering "the record"

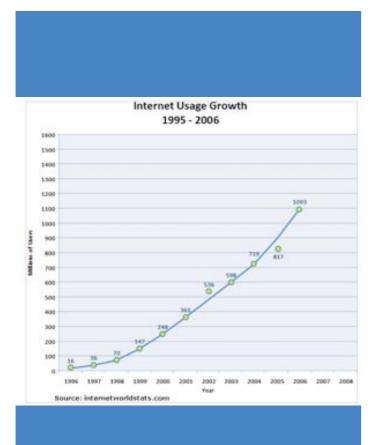
"Our ineptitude in getting at the record is largely caused by the artificiality of systems of indexing

"The applications of science have built man a wellsupplied house, and are teaching him to live healthily therein. ... They may yet allow him truly to encompass the great record."



#### Internet Domain Survey Host Count





# solving or creating problems?

**1993,** NCSA Mosaic Mark Andressen

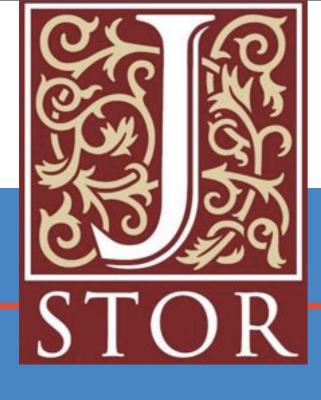
CERN releases W3 technology

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

1994, Netscape

1995, Internet Explorer

2009, Google Chrome



# old problem, new tools?

1988, WAIS

**1990,** Archie

**1992,** Veronica (Gopher)

1994, Lycos

1995, Alta Vista, Yahoo

**1996**, Inktomi

1997, Ask Jeeves

Hofl 10 -- Storage & Search 28

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

"the Internet ... is a library" --Frances Cairncross







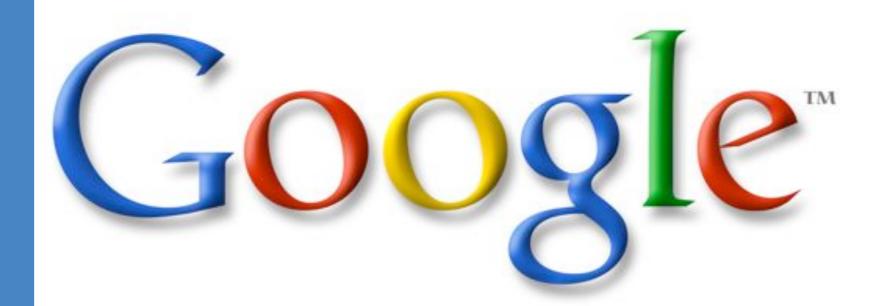
TM



# real change?



## yet another hierarchical officious oracle





# changing ideas of organization?

"to organize the world's information"





# whose organization?

"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 (see Appendix A). .. we have a strong goal to push more development and understanding into the academic realm."



# appendix a

For example, in our prototype search engine one of the top results for cellular phone is "The Effect of Cellular Phone Use Upon Driver Attention", a study which explains in great detail the distractions and risk associated with conversing on a cell phone while driving. This search result came up first because of its high importance as judged by the PageRank algorithm, an approximation of citation importance on the web [Page, 98]. It is clear that a search engine which was taking money for showing cellular phone ads would have difficulty justifying the page that our system returned to its paying advertisers. For this type of reason and historical experience with other media [Bagdikian 83], we expect that advertising funded search engines will be inherently biased towards the advertisers and away from the needs of the consumers.

### Google

ceullular phone



#### Web A Show colons ...

#### AT&T\*\* Official Site

att.com Free AT&T Cell Phones Online Now, Share Minutes with Family & Savel Bhow may of all com locations near Beneley, CA

#### Cellular Phone Company

Verbon/Wreiess.com Smartphones On Sale Now. Free shipping with online orderal

Free Cell Phones & Plans Free Phones with a 2 Year Plan. Authorized Dealer of Al Carrient LetsTalk.com/CellPhones

Showing results for cellular phone. Search instead for ceullular phone.

#### Mobile phone - Wikipedia, the free encyclopedia.

Cell phone 118

\$365 new

72 stonia

Jump to Analog delisiter telephony (10) In a selfular system, a signal between a base station (cell site) and a terminal (phone) only need be strong ... Haton - Uses - Hendaets - Privator en wikpedia.org/wiki/Mobile\_phone - Cached - Similar

#### Cell Phones for free with Cell Phone Plans from AT&T, Sprint, T ....

Save \$100's over buying in stores or direct from carriers. Same cell phones, same service plans, much lower prices. Full carrier slore support after .... wine latatals carry - Cathed - Smilar

#### Shopping results for cellular phone



LC KS380 Cell phone 15 MD shared - Not \*\*\*\*\* (583) \$120 new 208 alores





Noka 5300 KoreesMusic Cell phone 5 MB + \*\*\*\*\*\* (104) \*\*\*\*\*\* (D00) \$85 naw 77 stores.



Cell phone 48 MD shared - Not \$80 new 250 alores



Motorola RA2R V2 Cell phone 5 Mil -Not specified. 由市会会会(43322) \$83 new . 129 altorea

#### Results 1 - 19 of about 151,999,000 for cellular phone. (9.39 seconds)

Spirmaned Links

Eponested Links

#### Sprint<sup>TM</sup> Official Site

Unimited Calls in San Francisco & Nationwide, Simply Everything, wave Sprint sprint 5739 Christe Avenue Powel St. Plaza

#### NET108 Official Site

Buy a Cell Phone w/ No Contracts, No Monthly Bills or Oredit Checks. NETTO parts

#### A Phone for Ins. Agents

File Claims Instantly & Securely. Close Cases Faster For Only \$148. www.Touch-Pho2.com

#### Buy Cell Phones

The Leading Site for Phones & Plans AT&T, Vergon, Sprint, T-Mobile www.Wirefly.com

#### TracFone® Official Site

No Contracts, 2X Minutes for Life! Sameung T301 Slider - Free Shipping TracFone.com

#### AT&T Cell Phone Deal

Get Up To 2 Free Phones From AT&T With Plan, Buy Online + Free S&HT www.ATTOnineOffers.com

#### Cheap Cell Phones

100.000 Stores, Deals, Revews-Cheep Cel Phones & Nore! shopping yahoo som

#### We Buy Used Cell Phones

Cash for Used/Broken Electronics **Gel a Quole Now! Easy & EcoFriendly** www.BuyMyTronics.com



# mind your own business?

### search?

### advertising?

### precedents

"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 1811 - 1872



# new solutions, new problems?

### Kicking Cash to Nefarious Clickers

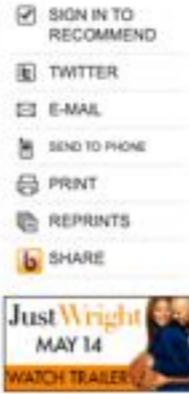
### goodhart again?

By ALEX MINELIN Published: April 11, 2012

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% Click fraud rate in Q4 2009 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 sites.



Each computer is used only a few times and each ad is clicked infrequently, so the scheme is hard to detect. "The clicks are coming from many millions of L.P. addresses," Mr. Pellman said. "It's low frequency from that standpoint, and also low frequency on each site, so it can look like valid traffic."



# favoritism?

### Using site speed in web search ranking

### whose interest

Friday, April 09, 2510 at 11:00 AM Webmaster Level: All

You may have heard that here at Google we're obsessed with speed, in <u>our products</u> and <u>on the web</u>. As part of that effort, today we're including a new signal in our search ranking algorithms: site speed. Site speed reflects how quickly a website responds to web requests.

Speeding up websites is important — not just to site owners, but to all internet users. Faster sites create happy users and we've seen in our internal studies that when a site responds slowly, visitors spend less time there. But faster sites don't just improve user experience; recent data shows that improving site speed also reduces operating costs. Like us, our users place a lot of value in speed — that's why we've decided to take site speed into account in our search rankings. We use a variety of sources to determine the speed of a site relative to other sites.

If you are a site owner, webmaster or a web author, here are some free tools that you can use to evaluate the speed of your site:

- Page Speed, an open source Firefox/Firebug add-on that evaluates the performance of web pages and gives suggestions for improvement.
- YSlow, a free tool from Yahoo! that suggests ways to improve website speed.
- WebPagetest shows a waterfall view of your pages' load performance plus an optimization checklist.
- In Webmaster Tools. Labs > Site Performance shows the speed of your website as experienced by users
  around the world as in the chart below. We've also blogged about site performance.



# rank or ranking?

### Bringing a Smarter Search to Twitter, With Fees

By TODD WODDY Published: April 11, 2010

SAN FRANCISCO — Bill Gross, the serial entrepreneur who pioneered search advertising, is unveiling a venture on Monday that aims to make money by allowing people using <u>Twitter</u> to bid on key words to give their posts top ranking.



J. Emily Flores for The New York Times "Finding the thoughtful tweets amid all the noise is unbelievably hard," Bill Gross says.

#### Related

Tensions Rise for Twitter and Ann Developers.

Called TweetUp, the service will also organize the posts according to their popularity as measured by how often readers repost them and click on links they contain.

Mr. Gross said he had signed deals with other outside Twitter services like Seesmic, TwitterFeed and Twidroid to display TweetUp's rankings. A TweetUp search bar will appear on Web sites like <u>Answers.com</u> and <u>BusinessInsider.com</u>. TweetUp will split revenue evenly with each partner, he said.

The goal is to cut through the clutter of thousands

of irrelevant posts on topics of interest and keep the useful ones from disappearing into a torrent of messages.







# 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







### paranoia or trustanoia

"shock"

"scary"

"benefits outweigh"

"I will pay attention"

"less worrying than facebook"

"google is throwing away its money"

"how difficult it was to escape the

grasp of Google"



# some thoughts

Robert Ang

Jody Leung

Kasey Chiu, Anne Sokolich

Holly Fine

Apin Sicoravit

Marco Santo Danesi

Daniel Wang

Justin Riddle



# Robert Ang

Google ber

benediction

### Google D

benediction

Searc

#### Web Show options

#### Benediction - Wikipedia, the free encyclopedia

A benediction (Latin: bene, well + dicere, to speak) is a short invocation for divine help blessing and guidance, usually at the end of worship service. ... Judaism - Christianity - References in popular culture - See also en wikipedia.org/wiki/Benediction - Cached - Similar

#### Benediction - term - World of Warcraft

Benediction - Item - World of Warcraft. Sign in[Feedback]Language ▼ ... Balance of L and Shadow Call Benediction Anathema Drape of Benediction Gilded .... www.wowhead.com/?item=18608 - Cached - Similar

#### Benediction - Item - World of Warcraft

Benediction - Item - World of Warcraft ... Balance of Light and Shadow Call Be Anathema Drape of Benediction Gilded Trousers of Benediction .... www.wowhead.com/?item=18608), - Cached

Show more results from www.wowhead.com

#### BENEDICTION on MySpace Music - Free Streaming MP3s, Pictures ...

MySpace Music profile for BENEDICTION. Download BENEDICTION Death Metal / The Punk music singles, watch music videos, listen to free streaming mp3s, .... www.myspace.com/benedictiesuk - 5 hours ago - <u>Cached</u> - <u>Similar</u>

#### Benedictions and Blessings

Artful ways to say goodbye: Blessings and Benedictions. Repedictions - Aaropic Banadiction - high Blessings

#### Web Ethow options\_

Benediction - Wikipedia, the free encyclopedia Abenediction (Latin bene, well - dicere, to speak) to a short invocation for dvine help, blessing and guidance, usually at the end of worship service..... Judaism - Christianity - References in popular culture - See also an wikipedia org/wiki/Benediction - Cachod - Similar

#### Benediction (band) - Wikipedia, the free encyclopedia

Benediction is a British death metal band from Birmingham, England, They were formed in February 1999. Contents. 1 Biography, 2 Members ... en wikipedia org/wikiBenediction\_(band) - Cached - Similar

#### Show more requite from en wikipedia.org

#### Benedictions and Blessings

Artful ways to say goodbye: Blessings and Benedictions. Benedictions - Aaronic Benediction - Irish Blessings www.witsonmar.com/benedic.htm - Cached - Similar

#### Benediction - Definition and More from the Free Merriam-Webster ....

#### CATHOLIC ENCYCLOPEDIA: Benediction of the Blessed Sacrament

Description of the basics of this popular devotion. Benediction is unusual in that it is a devotional practice partly governed by Murgical law, www.newadvent.org - Catholic Encyclopedia - B - Catholi - Similar

#### BENEDICTION on MySpace Music - Free Streaming MP3s, Pictures ....

#### Ambiguous Terms

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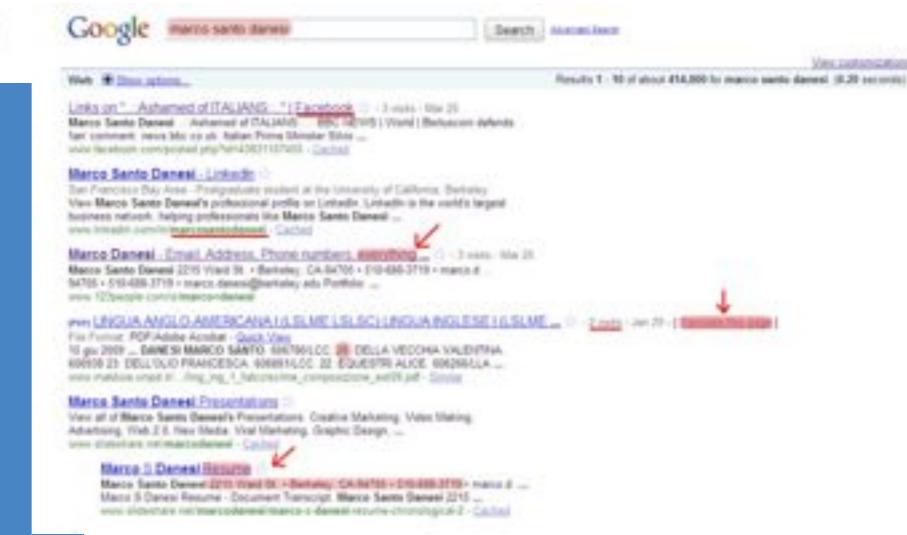
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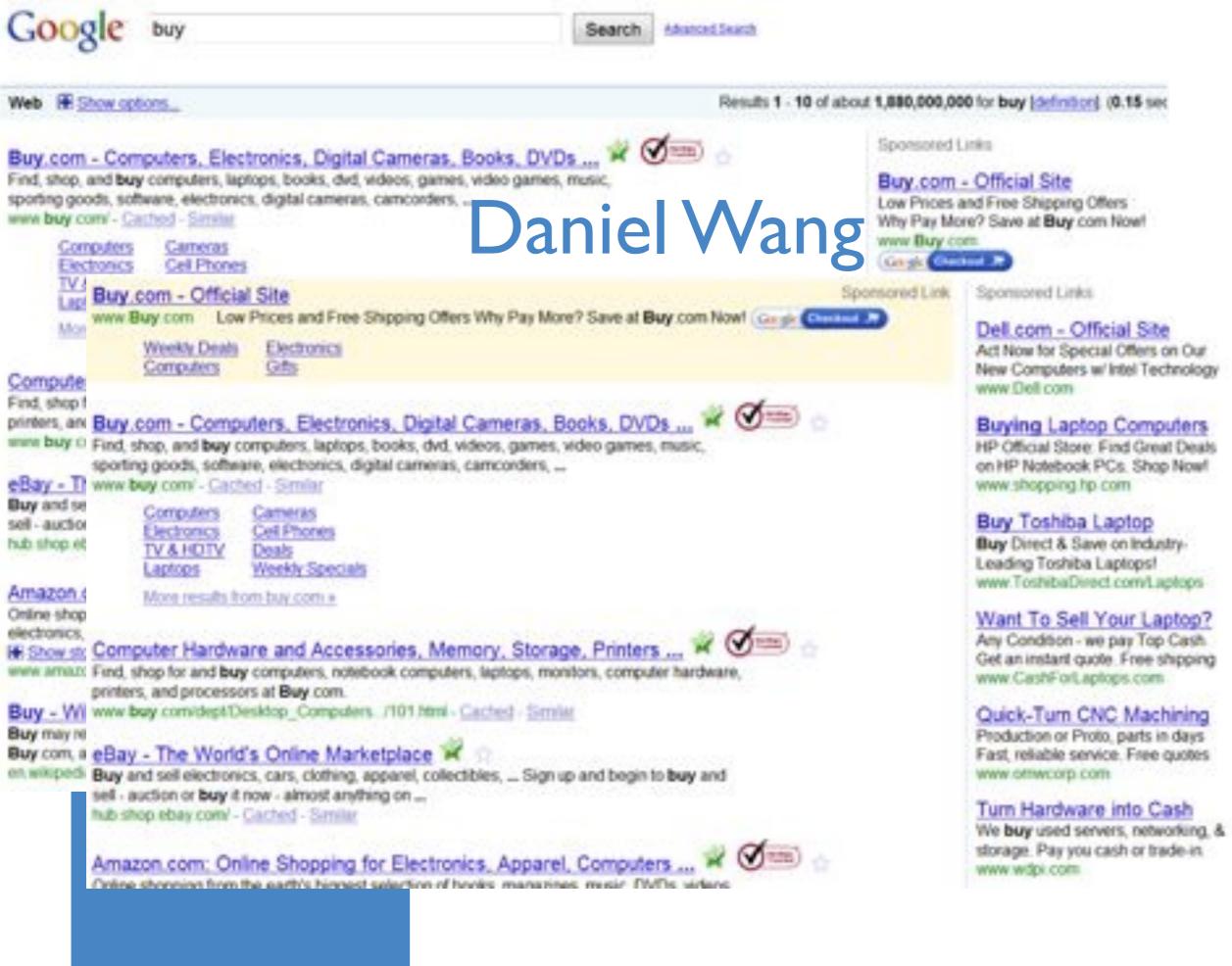
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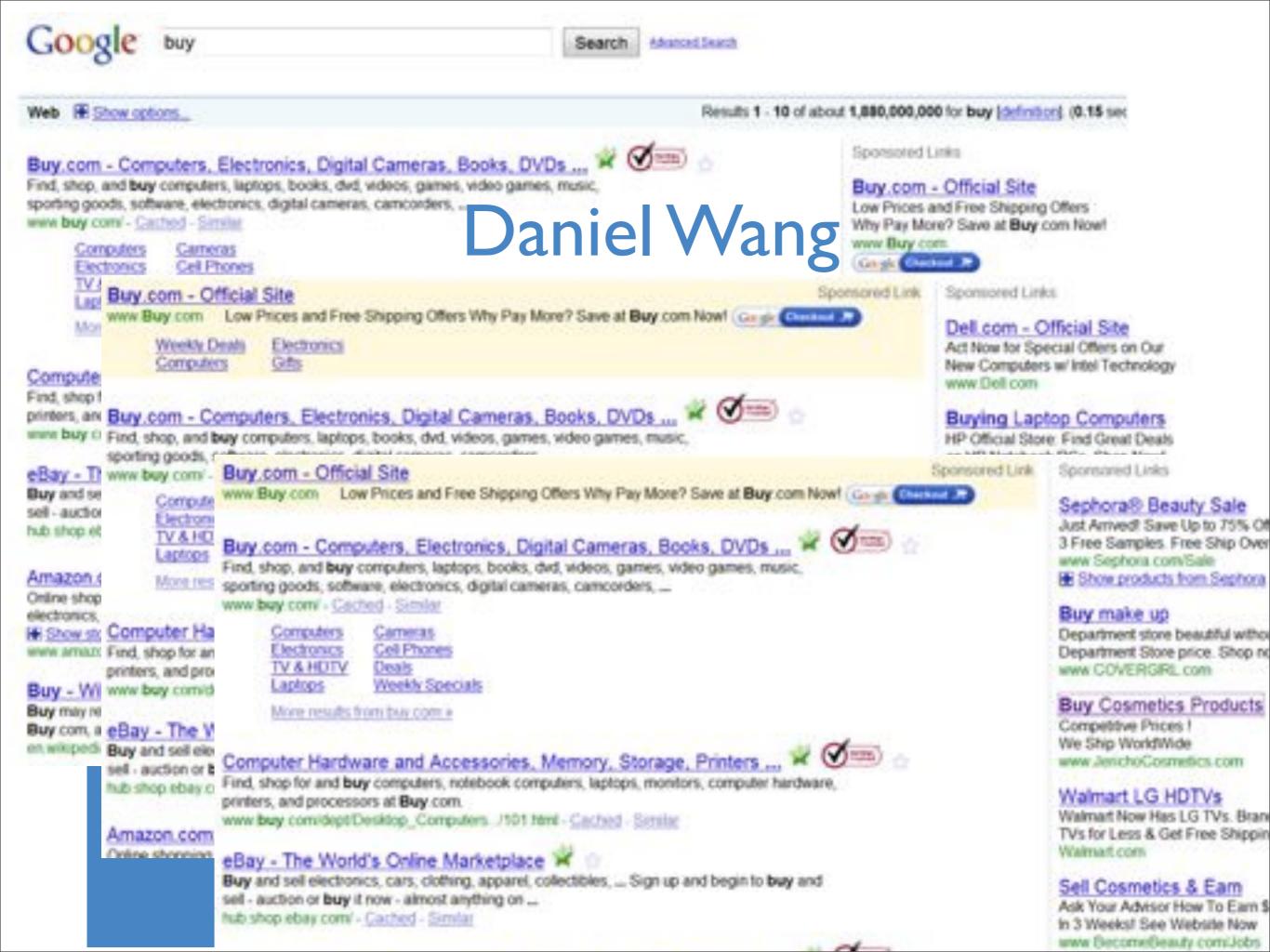
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### **April 20 readings to follow**

#### Week 14

20 Apr: Books, newspapers & the future of publications

#### 22 Apr: Social implications of the internet I

Required reading:

- Marshall, Alfred. 1920. "Industrial Organization, Continued. The Concentration of Industries in Particular Localities," book IV chapter X (section iv.x.1-15), in Principles of Economics. London, Macmillan & Co.
- Cairncross, Frances . 2001. Preface and "Trendspotter's Guide to New Communications" pp ix – xvii in The Death of Distance: How the Communications Revolution is Changing our Lives. Boston: Harvard Business School Press. Available from Google Books

# April 22

### assignment

In the readings, Marshall gives several reasons why industries tended to 'localize' while Cairncross seems to suggest that, with the 'death of distance,' 'fate of location,' and 'increased mobility,' localization will be no more. Are there any arguments in Marshall that Cairncross has overlooked and that might yet prolong localization? If you think there are, discuss why you think Marshall is right. If you think there are not, suggest how Cairncross might account, for example, for Marshall's arguments about invention and skill (Marshall, §3 and beyond).