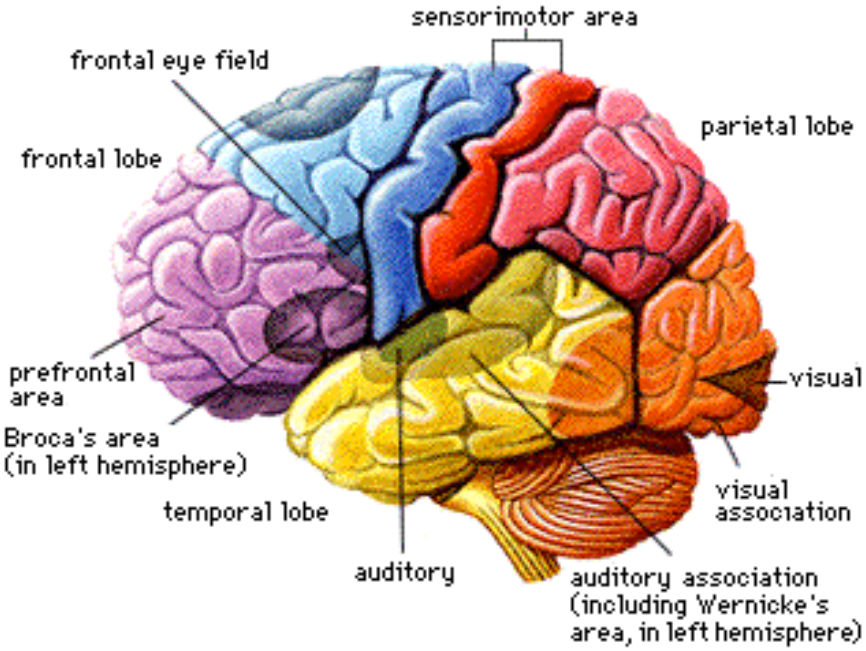
Quick history of computing

We have our own "personal computer" – a "neural network" computer
Still the most powerful computer - but we can use some tools to help us!



http://www.123rf.com/photo_9865212_thinking-man-with-bubble-for-thoughts-above-head-3d-illustration.html

http://www.willamette.edu/~gorr/classes/cs449/brain.html

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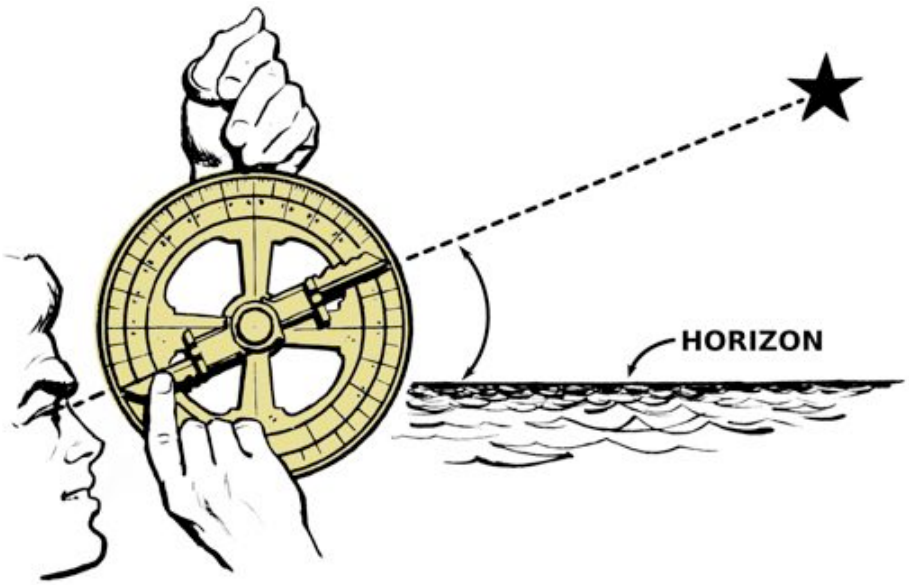
Early computing tools, writing and drawing

http://mesopotamia.mrdonn.org/cuneiform.html

http://www.britannica.com/EBchecked/media/123098/Pythagoras-demonstrating-his-Pythagorean-theorem-in-the-sand-using-a

An early mechanical "analog" computer – the astrolabe



from Greek *analogos*:
according to a proper ratio or proportion

http://en.wikipedia.org/wiki/File:Astrolabe_%28PSF%29.png

http://history-of-the-computers.blogspot.com/

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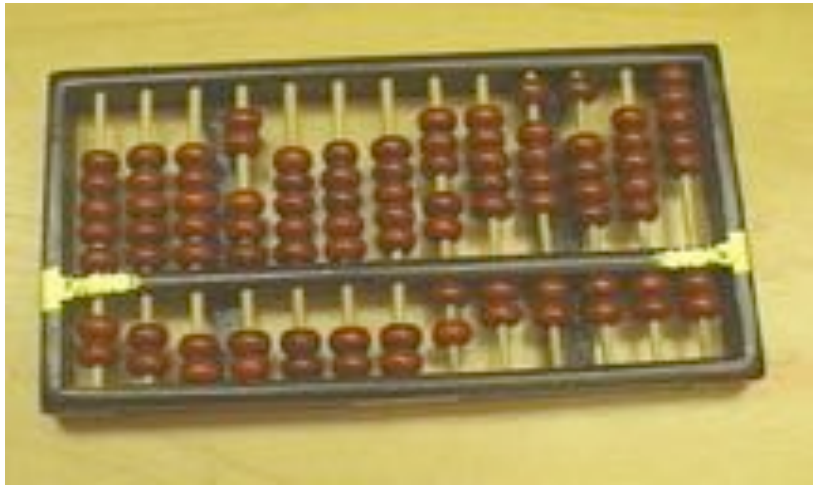
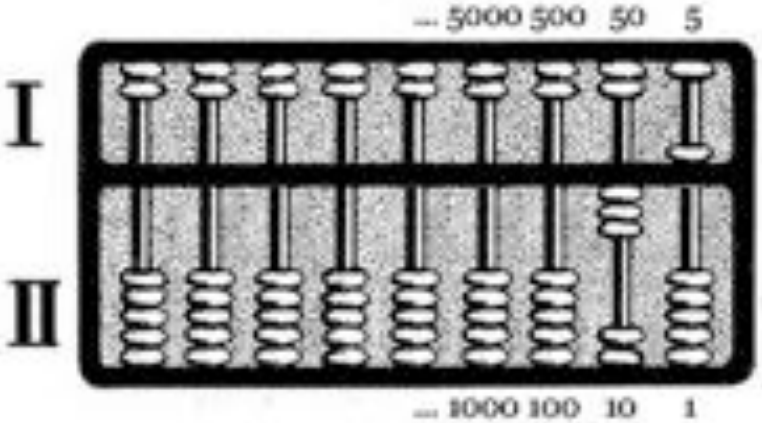
Abacus

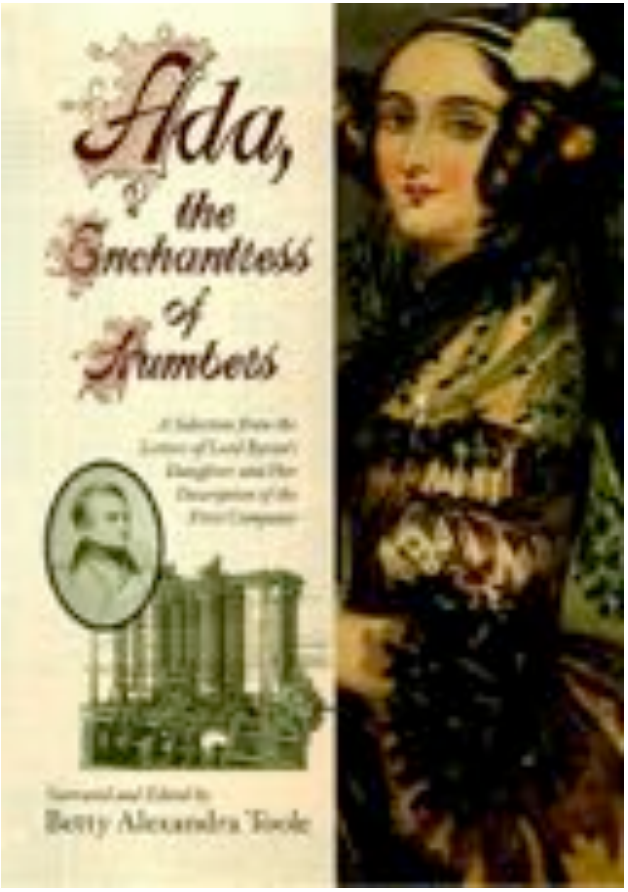




http://history-of-the-computers.blogspot.com/

http://stuffijustlearned.blogspot.com/2009/09/how-does-abacus-work.html

Mechanical Computer
Babbage's Difference Engine, and Ada Byron, the first programmer



http://www.thocp.net/biographies/lovelace_ada.html

http://en.wikipedia.org/wiki/File:Babbage_Difference_Engine_%28Being_utilised%29.jpg

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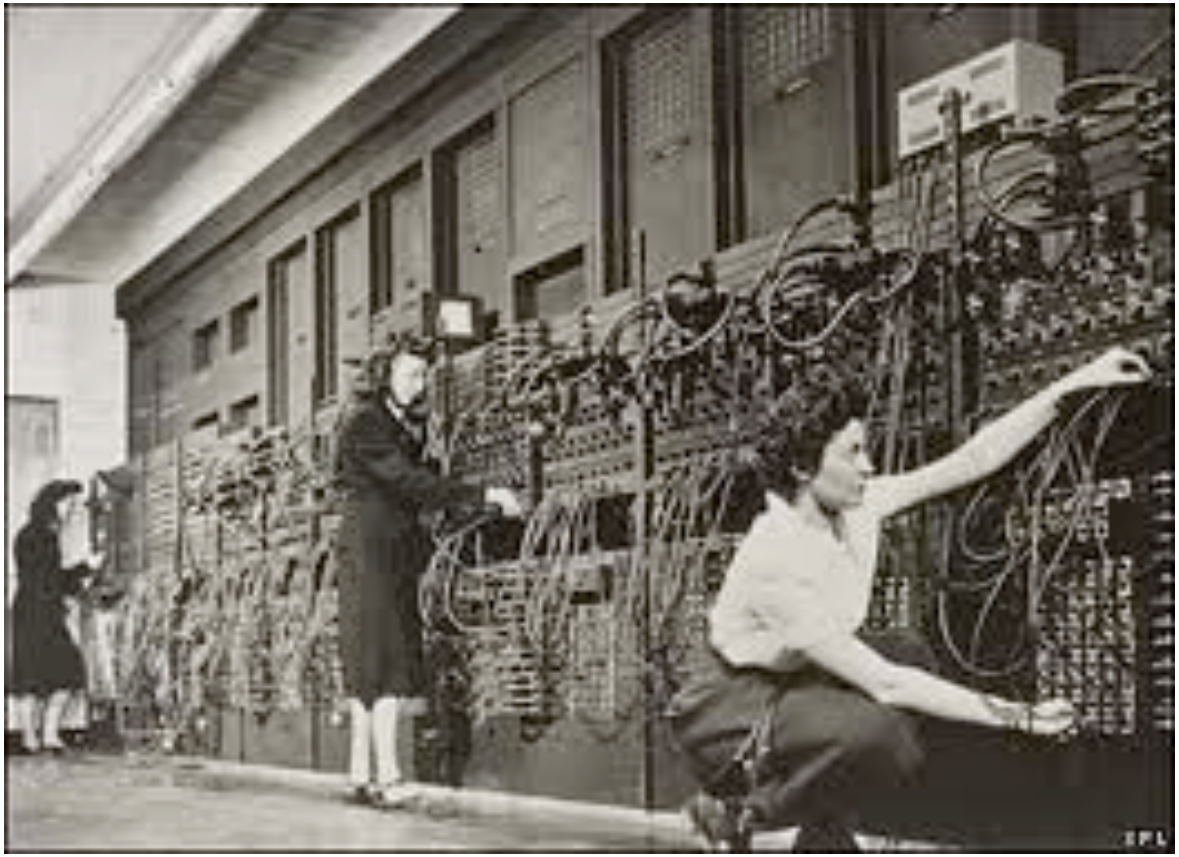
First “digital computer,” 1946

Digital: of or relating to information that is stored
in the form of the numbers 0 and 1
from Latin *digitus*, finger



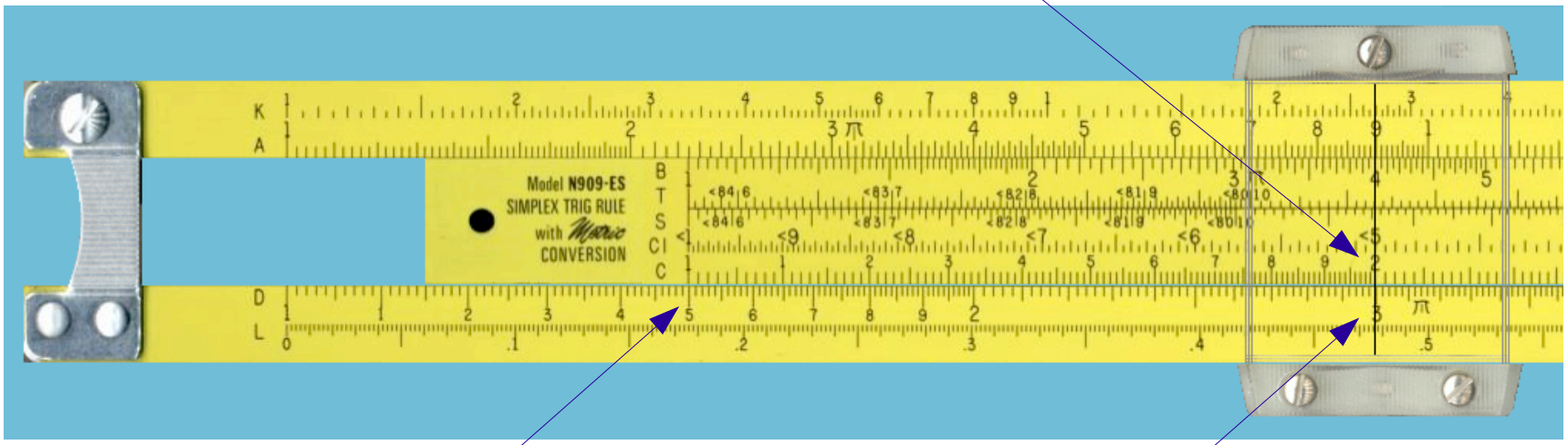
http://www.upenn.edu/almanac/volumes/v55/n17/discoverpenn.html

http://whyy.org/cms/radiotimes/2011/02/14/the-eniac-anniversary/

Since most engineers until the 1970's didn't have quick access to computers, they relied on slide rules...

1.5 x 2 = 3
by adding lengths proportional to logs
ln(1.5) + ln(2) = ln(3)

2



1.5

3

Links to working slide rules

http://www.antiquark.com/sliderule/sim/n909es/virtual-n909-es.html
https://museum.syssrc.com/static/sliderule.html

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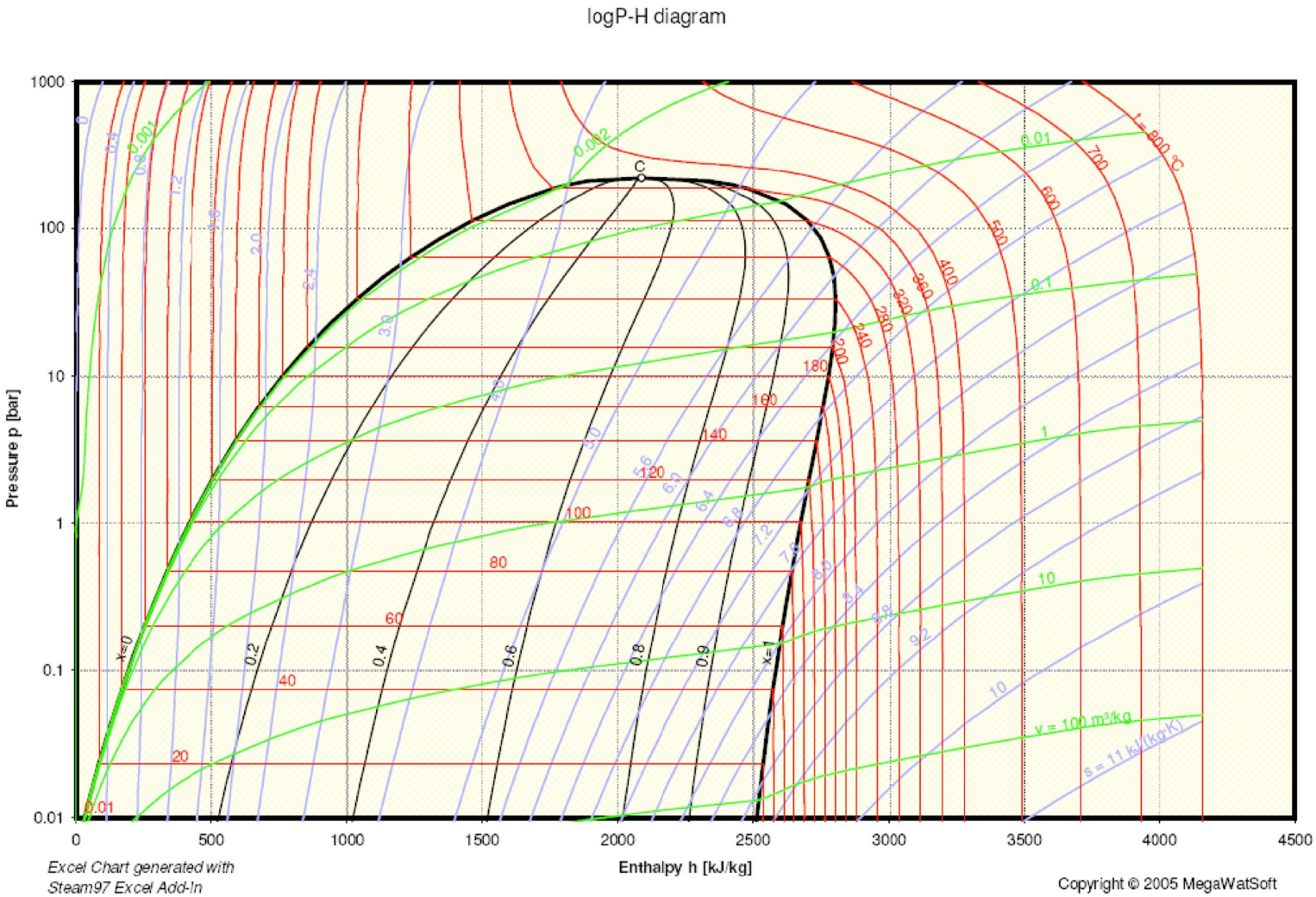
tables and plots...



http://www.steamtablesonline.com/

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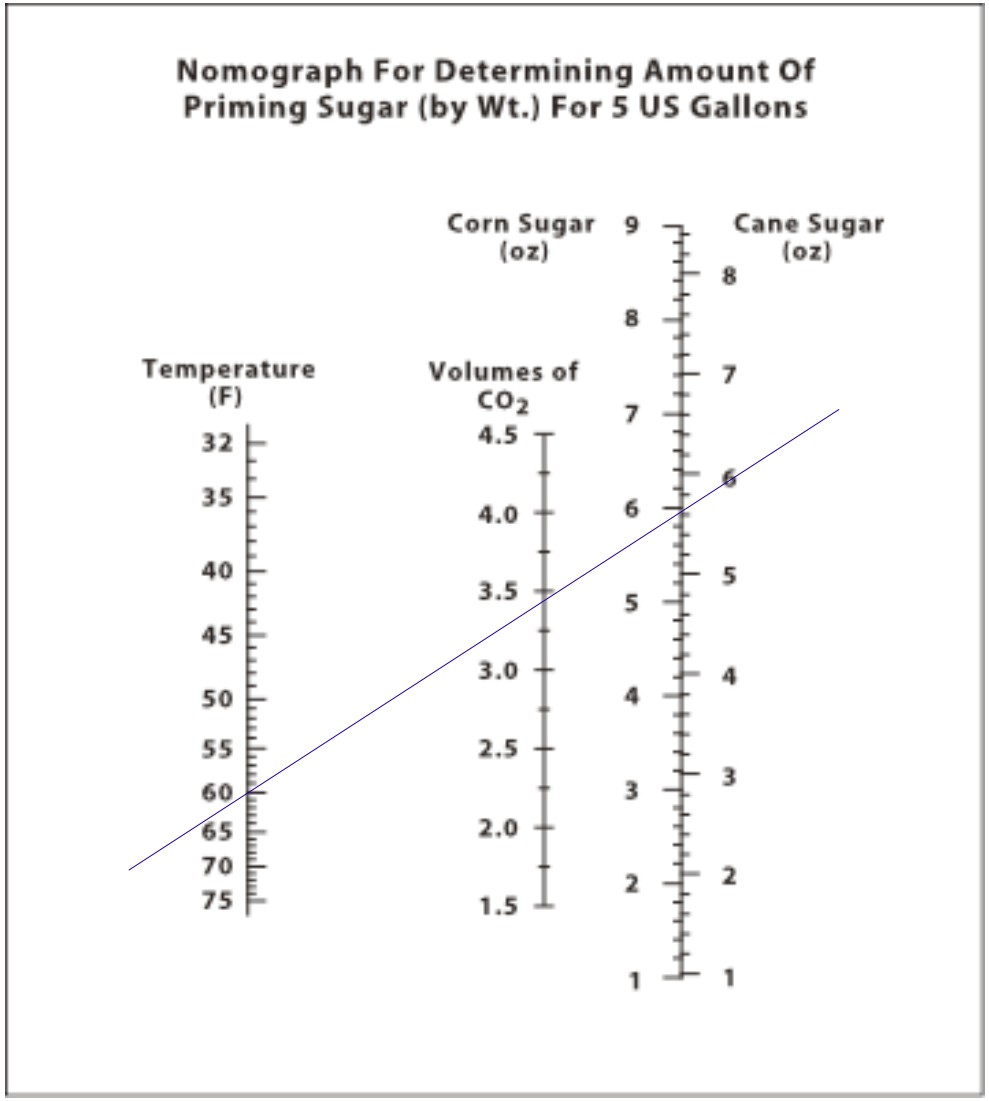
… and nomographs

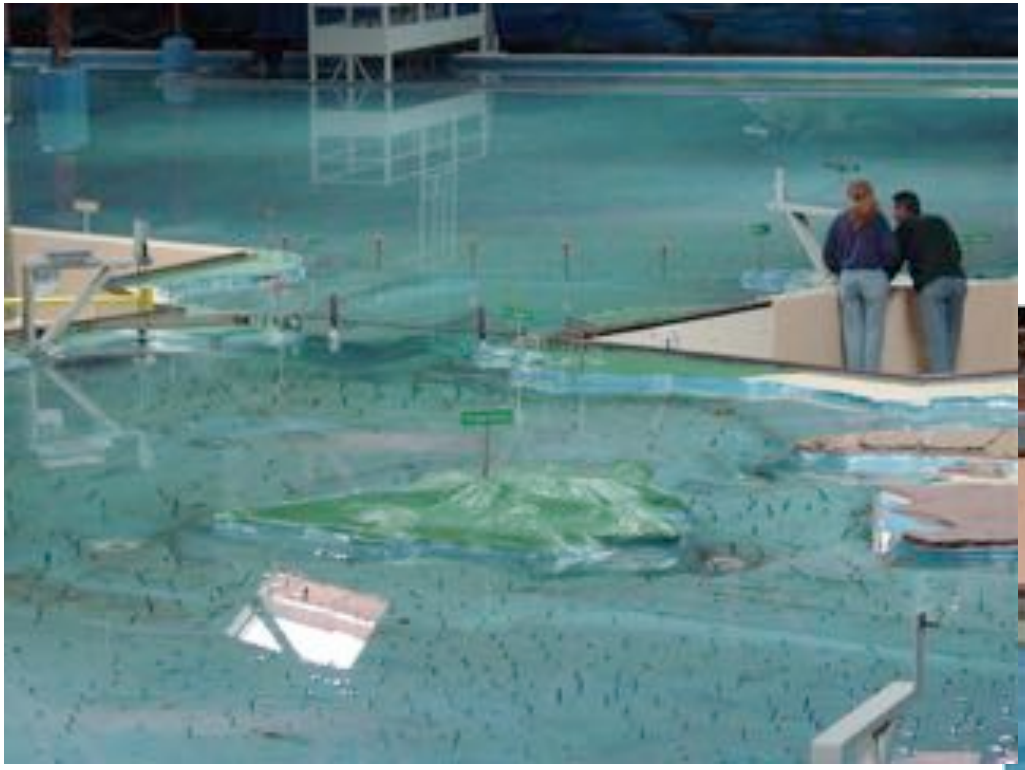
e.g., at 60 °F, in order to get 3.5 volumes of CO_2 in our beer, we lay down our straight edge and find we need to prime with 6 oz corn sugar



http://www.howtobrew.com/section1/chapter11-4.html

"Analog" hydraulic model of San Francisco Bay

Analog: referring to a process in which data is represented by physical quantities that change continuously



http://www.ncgeolsoc.org/Field%20Trips/2002%20-%202003/BayModelPhotos/SF%20Bay-Delta%20Model%20FT.htm

http://www.flickr.com/photos/sarahkim/116656654/in/set-1736428/

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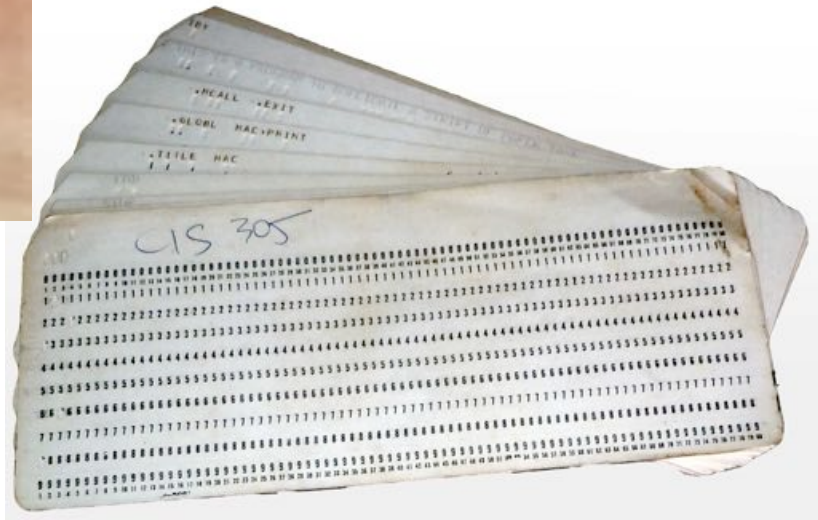
Electronic "analog computer”

http://www.science.uva.nl/museum/eai.p

IBM 360 and programs on punch cards, circa 1970's



http://www.computerhistory.org/collections/accession/102618836

http://www.ricomputermuseum.org/Home/collections-gallery/the-history-of-computer-data-storage

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First "personal computer," Altair 8800, 1974
Paul Allen and Bill Gates start Microsoft, 1975

http://www.winrumors.com/microsoft-co-founder-paul-allen-criticizes-bill-gates-in-new-book/

http://oldcomputers.net/indexwp.html

Steve Wozniak and Steve Jobs start Apple Computer, 1976

Apple I

Apple II

http://www.dealmoon.com/articles/2011/10/steve-jobs/

http://heresthethingblog.com/2011/10/06/write-program-integer-basic-apple/

Len Kleinrock and Vint Cerf network computers 100's of miles apart, 1969

Internet pioneer Leonard Kleinrock stands with an Interface Message Processor, which was used to develop the Internet.

Sandy Lerner and Len Bosack start Cisco Systems, 1984

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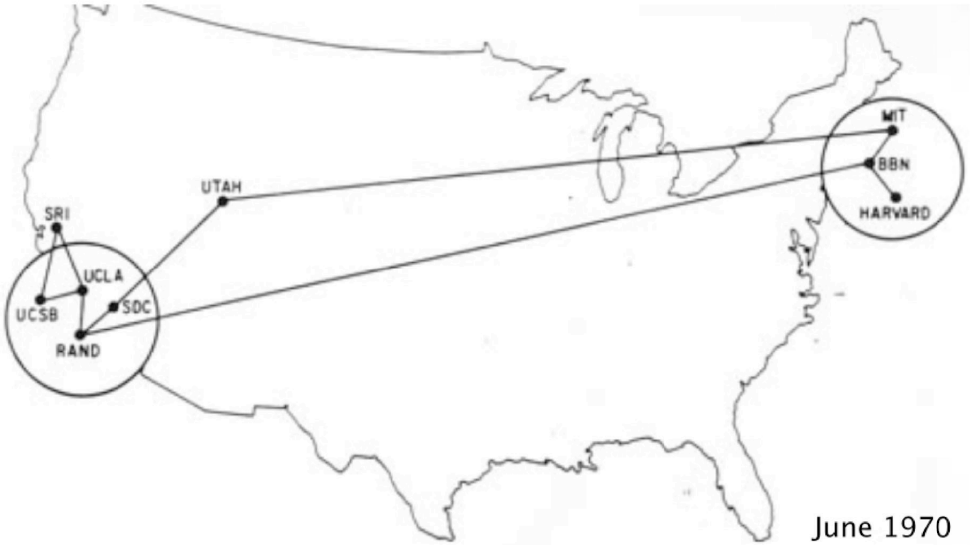
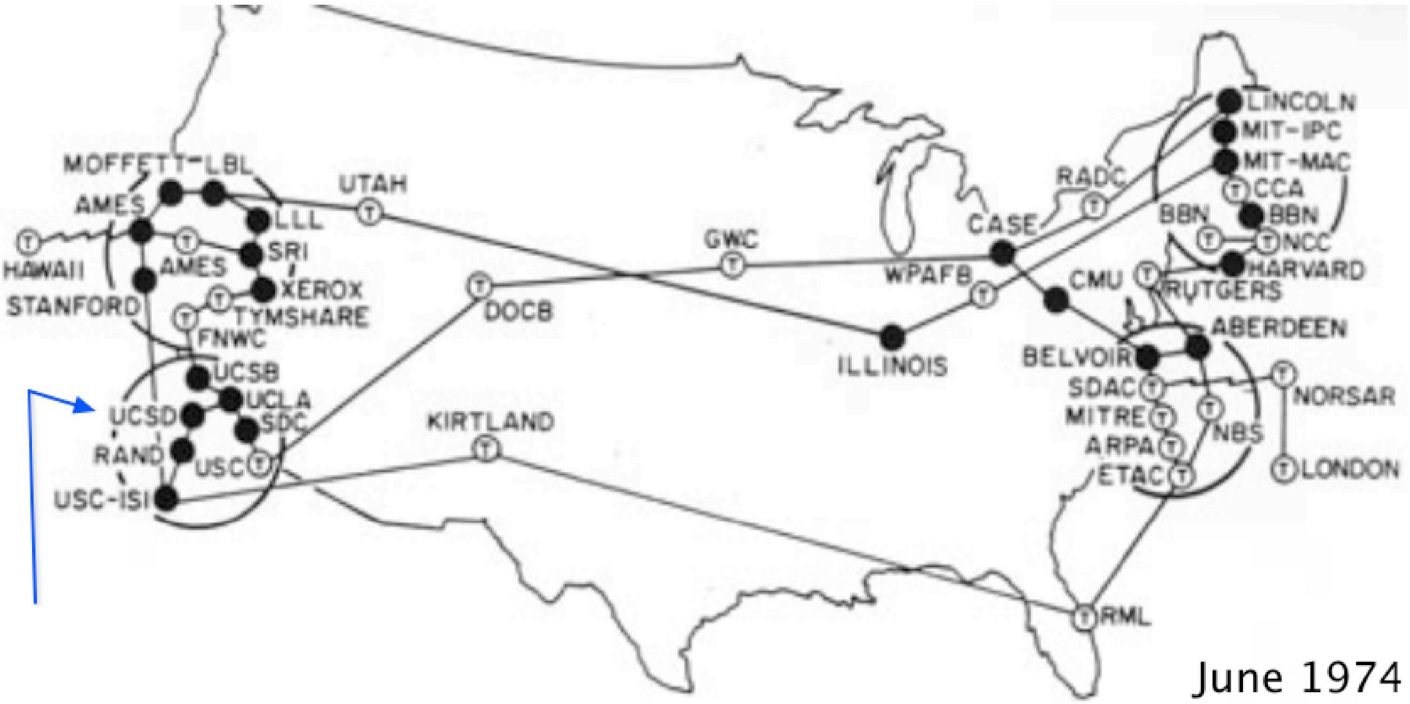
Arpanet and beginning of the Internet
1970's

Dec 1969



June 1970



June 1974

http://archive.computerhistory.org/resources/still-image/Arpanet/ARPAnetGeographical1976-84.102646702/

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Personal computer, circa 1980's
Apple Macintosh, IBM PC

http://money.cnn.com/galleries/2009/fortune/0911/gallery.steve_jobs_rare_photos.fortune/5.html

http://news.bbc.co.uk/2/shared/spl/hi/pop_ups/06/technology_ibm_pc_anniversary/html/4.stm

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Tim Berners-Lee and his 1989 proposal to invent the Web

Vague but exciting ...

CERN DD/OC — Tim Berners-Lee, CERN/DD

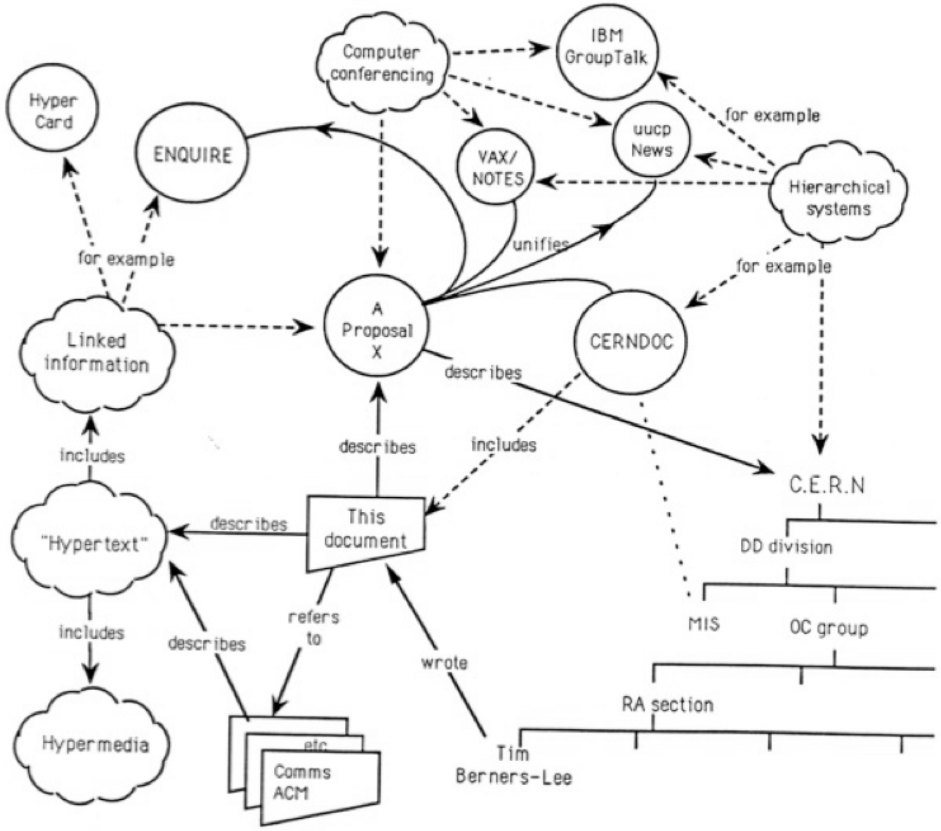
Information Management: A Proposal — March 1989

Information Management: A Proposal

Abstract

This proposal concerns the management of general information about accelerators and experiments at CERN. It discusses the problems of loss of information about complex evolving systems and derives a solution based on a distributed hypertext sytstem.

Keywords: Hypertext, Computer conferencing, Document retrieval, Information management, Project control



Information Management A Proposal
Tim Berners-Lee, CERN, March 1989
This proposal concerns the management of general information about accelerators and experiments at CERN. It discusses the problems of loss of information about complex evolving systems and derives a solution based on a distributed hypertext system.
Note his manager's comment: "Vague but exciting..."
https://www.w3.org/History/1989/proposal.html

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Sergey Brin and Larry Page start Google, 1997

Mark Zuckerberg and college buddies start Facebook, 2004

COO Sheryl Sandberg with CEO Mark Zuckerberg

Caterina Fake and Stewart Butterfield start Flickr, 2004

Evan Spiegel and Bobby Murphy start Snapchat, 2011

Personal computers, circa 2010's

http://www.inc.com/hardware/articles/201004/ipad.html

From Arpanet to the Internet

Facebook traffic + undersea data cables, 2010

http://robotmonkeys.net/2010/12/18/the-facebook-map/

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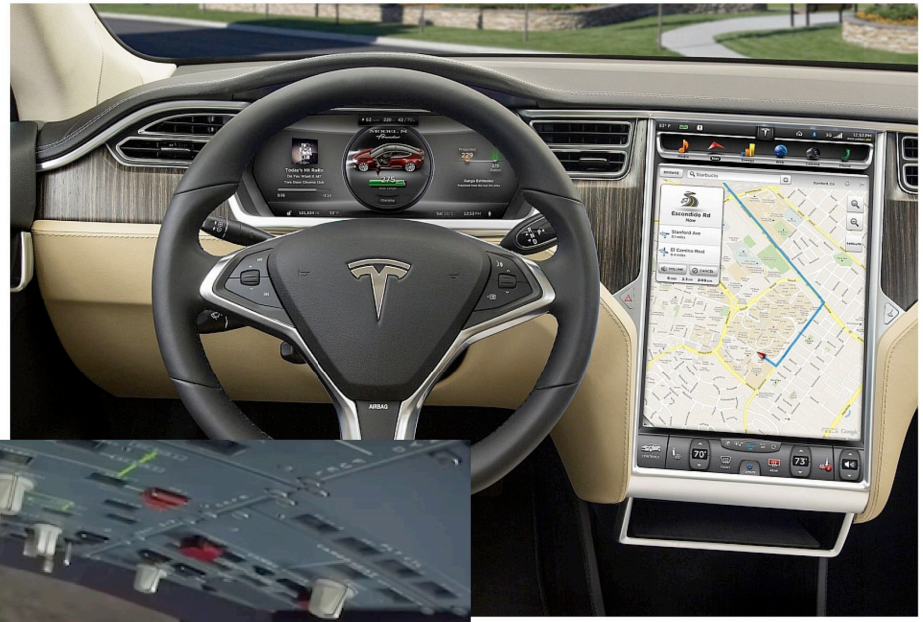
http://archive.computerhistory.org/resources/still-image/Arpanet/ARPAnetGeographical1976-84.102646702/

more computers, circa 2010's



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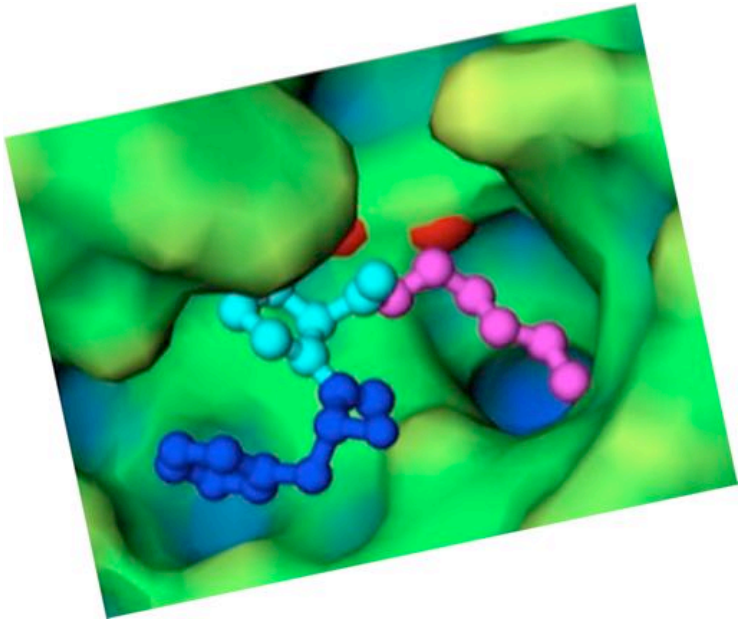
The future - virtual reality gets more real ... and more useful



The future - VR & autonomous automobiles end traffic jams?

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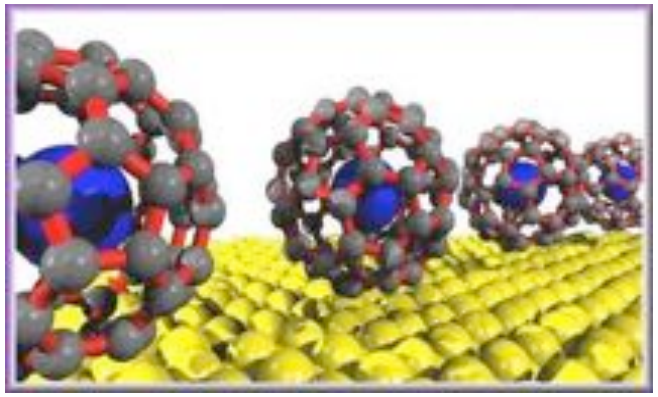
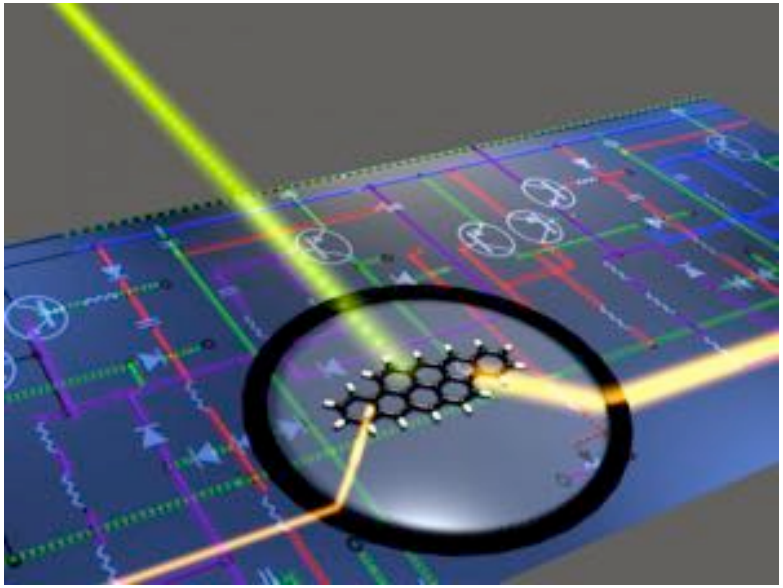
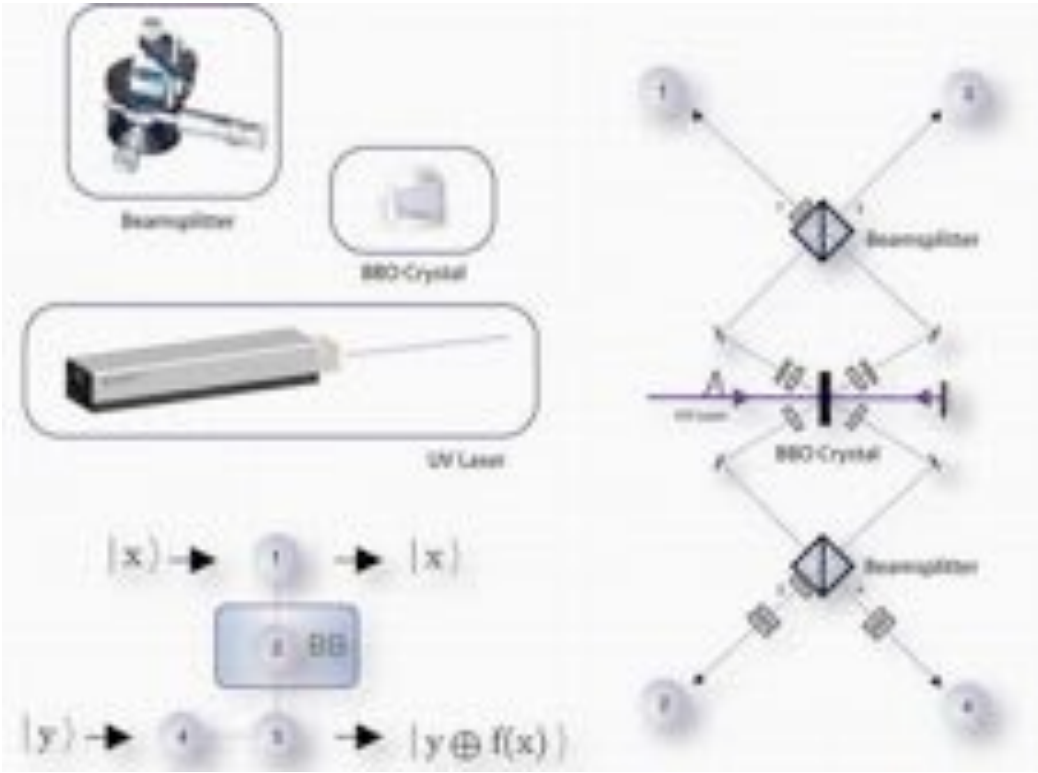
The future
Quantum and optical computing and ….?







http://www.dailygalaxy.com/my_weblog/2007/09/ibm-researchers.html

http://phys.org/news96107220.html

http://www.sciencedaily.com/releases/2009/07/090702080119.htm

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