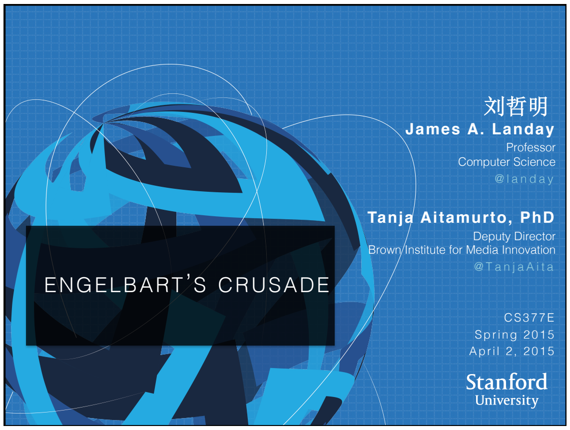
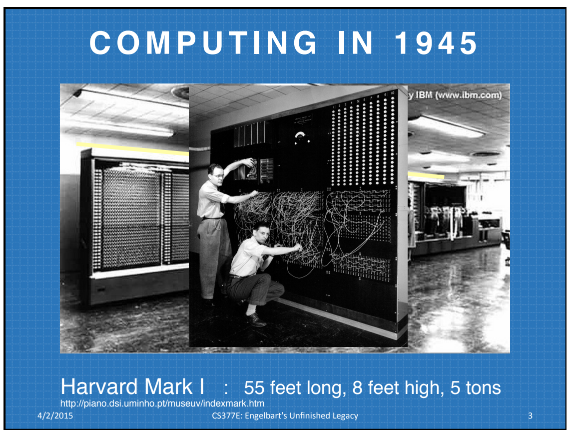
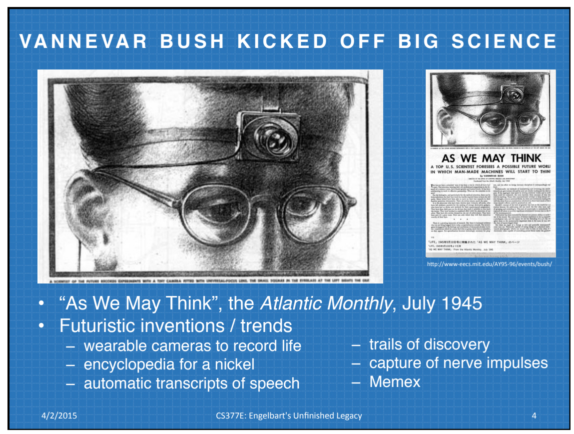
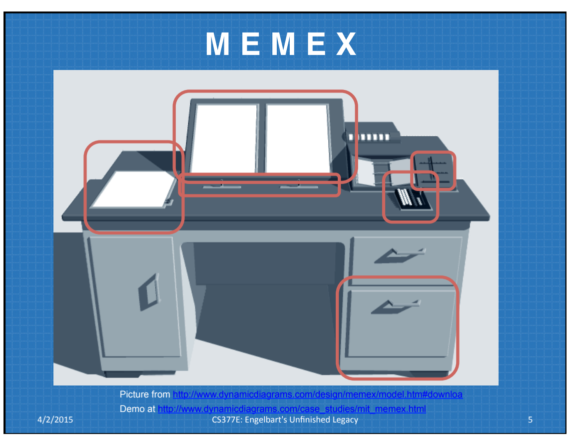

刘哲明
James A. Landay
Professor
Computer Science
@landay
Tanja Aitamurto, PhD
Deputy Director
Brown Institute for Media Innovation
@TanjaAita
ENGELBART'S CRUSADE
CS377E
Spring 2015
April 2, 2015
Stanford
University


PREDICTING → INVENTING THE FUTURE
Computers weren't always like this…
Computers don't *have* to be like this!
4/2/2015
CS377E: Engelbart's Unfinished Legacy
2


COMPUTING IN 1945
y IBM (www.ibm.com)
Harvard Mark I : 55 feet long, 8 feet high, 5 tons
http://piano.dsi.uminho.pt/museuv/indexmark.htm
4/2/2015
CS377E: Engelbart's Unfinished Legacy
3


VANNEVAR BUSH KICKED OFF BIG SCIENCE
AS WE MAY THINK
• "As We May Think", the *Atlantic Monthly*, July 1945
• Futuristic inventions / trends
– wearable cameras to record life
– encyclopedia for a nickel
– automatic transcripts of speech
– trails of discovery
– capture of nerve impulses
– Memex
4/2/2015
CS377E: Engelbart's Unfinished Legacy
4

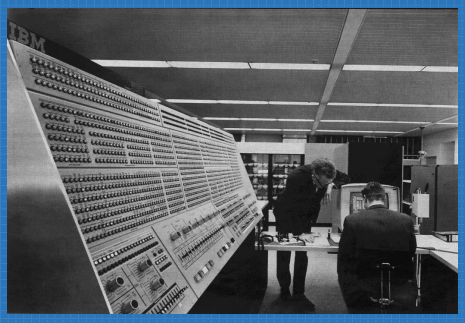

MEMEX
Picture from http://www.dynamicdiagrams.com/design/memex/model.htm#downloa
Demo at http://www.dynamicdiagrams.com/case_studies/mit_memex.html
4/2/2015
CS377E: Engelbart's Unfinished Legacy
5


MEMEX NEVER BUILT… OR WAS IT?
Memex #001 by Trevor Smith, 2013
http://trevor.smith.name/memex/
4/2/2015
CS377E: Engelbart's Unfinished Legacy
6

COMPUTING IN 1965

IBM System/360

COMPUTING IN 1965

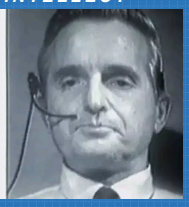


IBM System/360

SKETCHPAD – SUTHERLAND (1963)

DOUGLAS ENGELBART

AUGMENTING HUMAN INTELLECT



- Stanford Research Institute (SRI) in the 1960s
- 1962 Paper "Conceptual Model for Augmenting Human Intellect"
  - complexity of problems increasing → need new tools to solve

ENGELBART'S CRUSADE

"The complexity of a lot of the problems [in the world] and the means for solving them are just getting to be too much. The time available for solving a lot of the problems is getting shorter and shorter. So the urgency goes up… The complexity/urgency factor had transcended what humans can cope with. I suddenly flashed that if you could do something to improve human capability to cope with that, then you'd really contribute something basic."

– Douglas Engelbart (1996)

AUGMENTING HUMAN INTELLECT

"I had the image of sitting at a big CRT screen with all kinds of symbols… The computer could be manipulating, and you could be operating all kinds of things to drive the computer…

I also really got a clear picture that one's colleagues could be sitting in other rooms with similar work stations, tied to the same computer complex, and could be sharing and working and collaborating very closely. And also the assumption that there'd be a lot of new skills, new ways of thinking that would evolve"

– Douglas Engelbart (1996)

THE MOTHER OF ALL DEMOS

monday afternoon
december 9
3:45 p.m. / arena
Chairman:
DR. D. C. ENGELBART
Stanford Research Institute
Menlo Park, California

a research center for augmenting human intellect

This session is entirely devoted to a presentation by Dr. Engelbart on a computer-based, interactive, multiconsole display system which is being developed at Stanford Research Institute under the sponsorship of ARPA, NASA and RADC. The system is being used as an experimental laboratory for investigating principles by which interactive computer aids can augment intellectual capability. The techniques which are being described will, themselves, be used to augment the presentation.
The session will use an on-line, closed circuit television hook-up to the SRI computing system in Menlo Park. Following the presentation remote terminals to the system, in operation, may be viewed during the remainder of the conference in a special room set aside for that purpose.

Demoed NLS (oNLine System)
1968 Fall Joint Computer Conference
San Francisco's Civic Center

AUGMENTING HUMAN INTELLECT

NLS FIRSTS

- First mouse, and ?
- First 2D editing & windows
- First hypertext
- First word processing
- First document version control
- First groupware (shared screen teleconferencing)
- First context-sensitive help
- First distributed client-server
- Many, many more!

TRICYCLES & BICYCLES: SPECIALIZED TOOLS

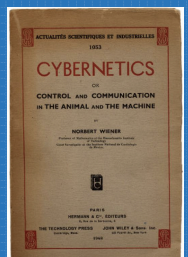
http://www.athensnews.com/ohio/article-42835-good-for-the-heart-tricycle-race-fundraiser-now-open-to-all.html

http://www.flickriver.com/photos/hotair2112/134303284/

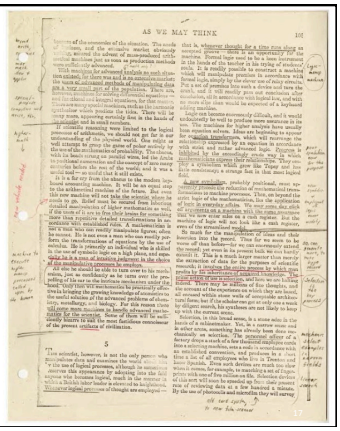
Tricycles vs. Bicycles

"If ease of use was the only valid criterion, people would stick to tricycles and never try bicycles." – Douglas Engelbart

ENGELBAR



Norbert Wiener defined cybernetic in 1948 as "the scientific study of control and communication in the animal and the machine."



http://web.stanford.edu/dept/SUL/library/extra4/sloan/mousesite/EngelbartPapers/LetterToVBush.html

Douglas C. Engelbart
Stanford Research Institute
Menlo Park, California

May 24, 1962

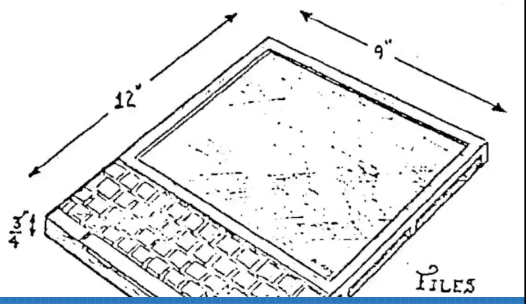
Dr. Vannevar Bush
Professor Emeritus
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Dr. Bush:

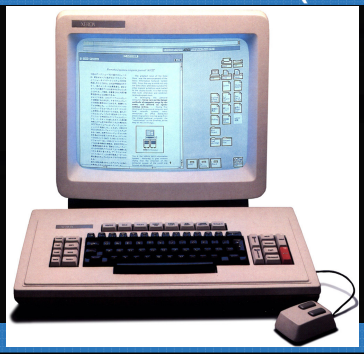
I wish permission from you to extract lengthy and definitely acknowledged quotes from your article, "As We May Think," that appeared in The Atlantic Monthly, July, 1945. These quotes would appear in a report that I am writing for the Air Force Office of Scientific Research, and I am sending a parallel request to The Atlantic Monthly.

For your information I am enclosing a relatively brief and quite general writeup

DYNABOOK – KAY (1974)



XEROX STAR – 1ST COMMERCIAL GUI (1981)



"The best way to predict the future is to invent it"

Alan Kay

NEXT TIME

- In Class
  - Unpack needfinding (empathy map)
  - POV Lecture
  - Develop POV
  - Brainstorm solutions
- Read
  - Engelbart's Call to Action (due Thur, April 9th)