# History of HCI

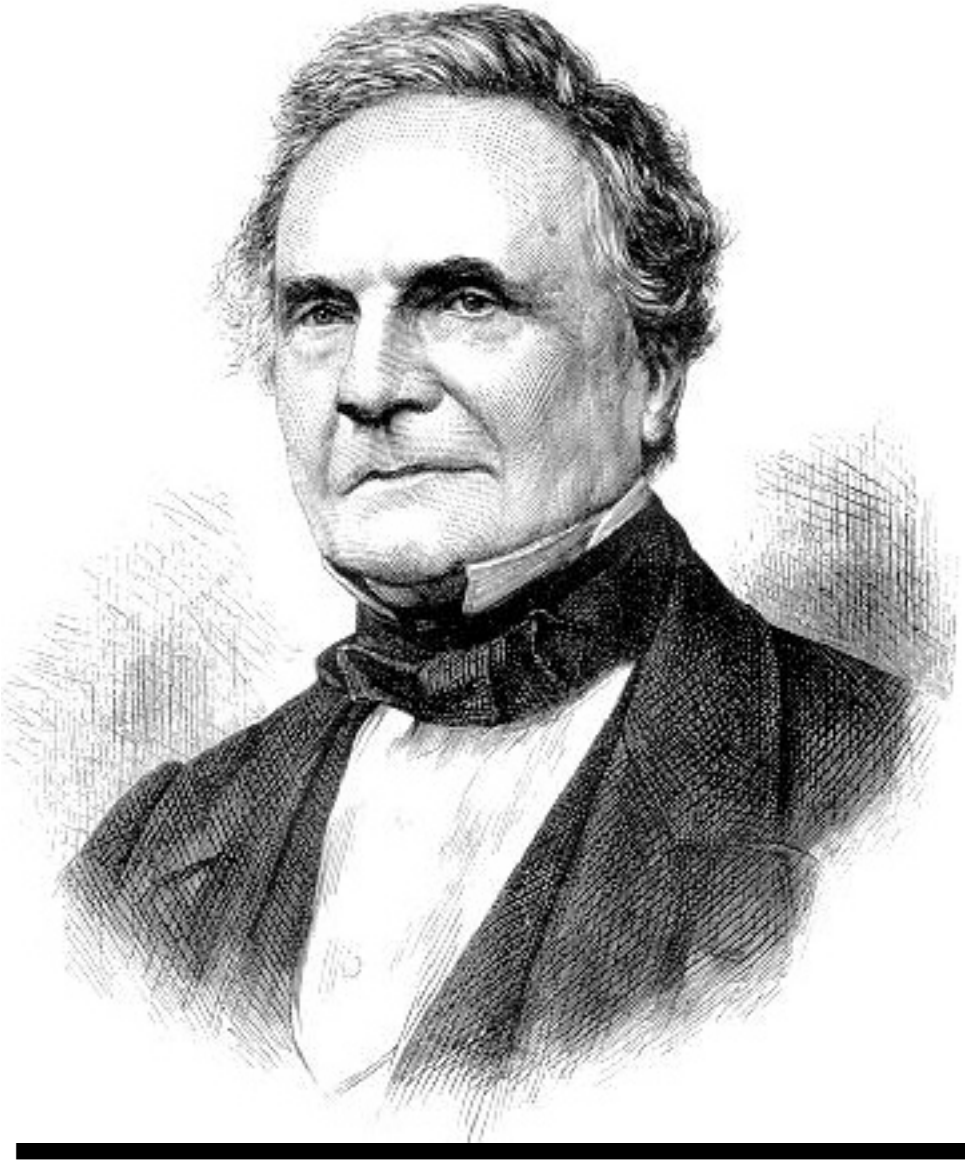
# Agenda

- Review HCI's history
  - Key people and events

# History of HCI

- Digital computer grounded in ideas from 1700's & 1800's
- Technology became available in the 1940's and 1950's

# 19th Century: Babbage & Lovelace



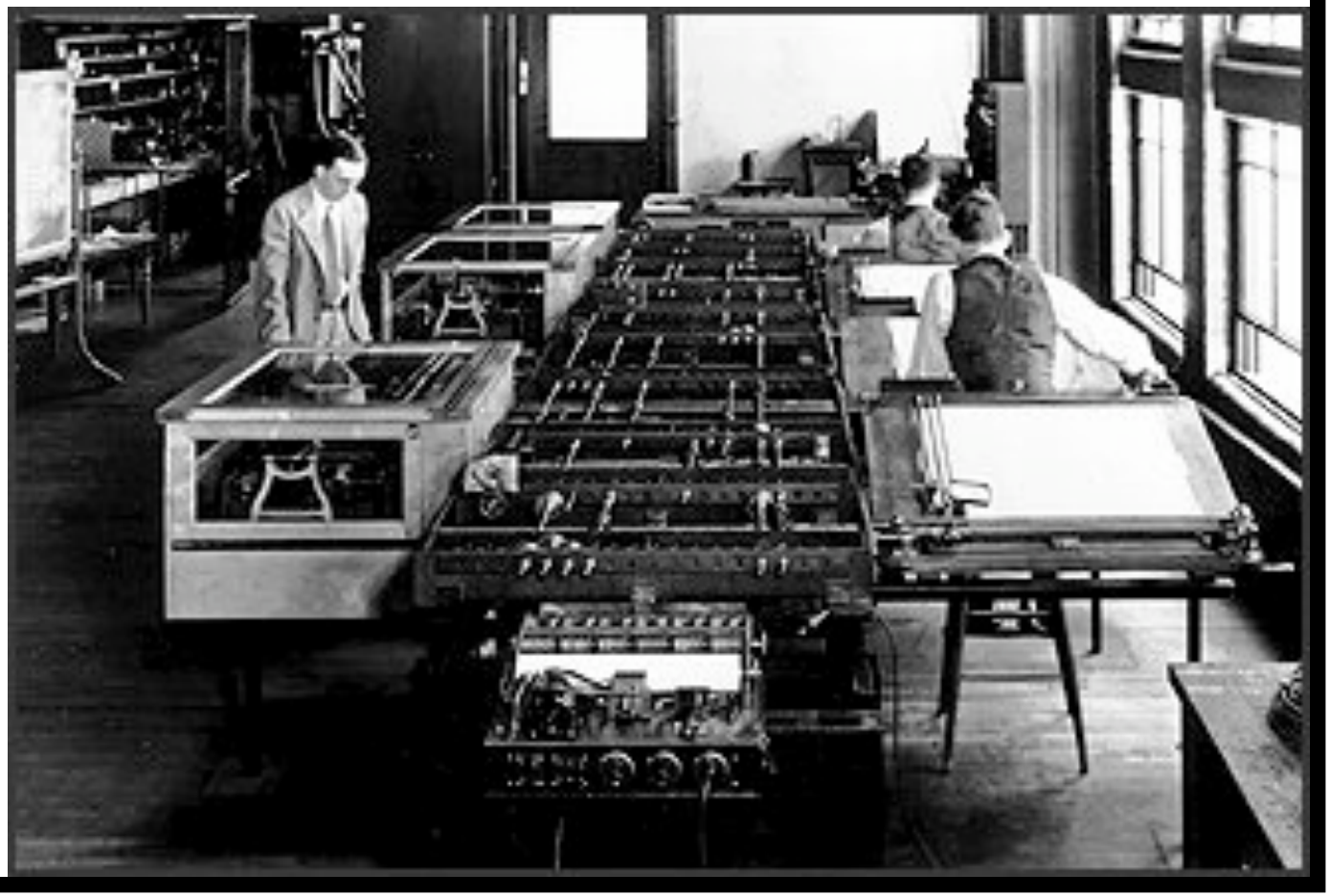
Library of Congress

# Analog Computing

- Use Resistors, Capacitors, Inductors and OP-Amps to compute differential equations
- "Programmed" by plugging wires into components:
  - Circuit configuration embodies program
- Watch the behavior of the system on an oscilloscope, plotter

# Vannevar Bush

- Bush's differential analyzer



# Vannevar Bush

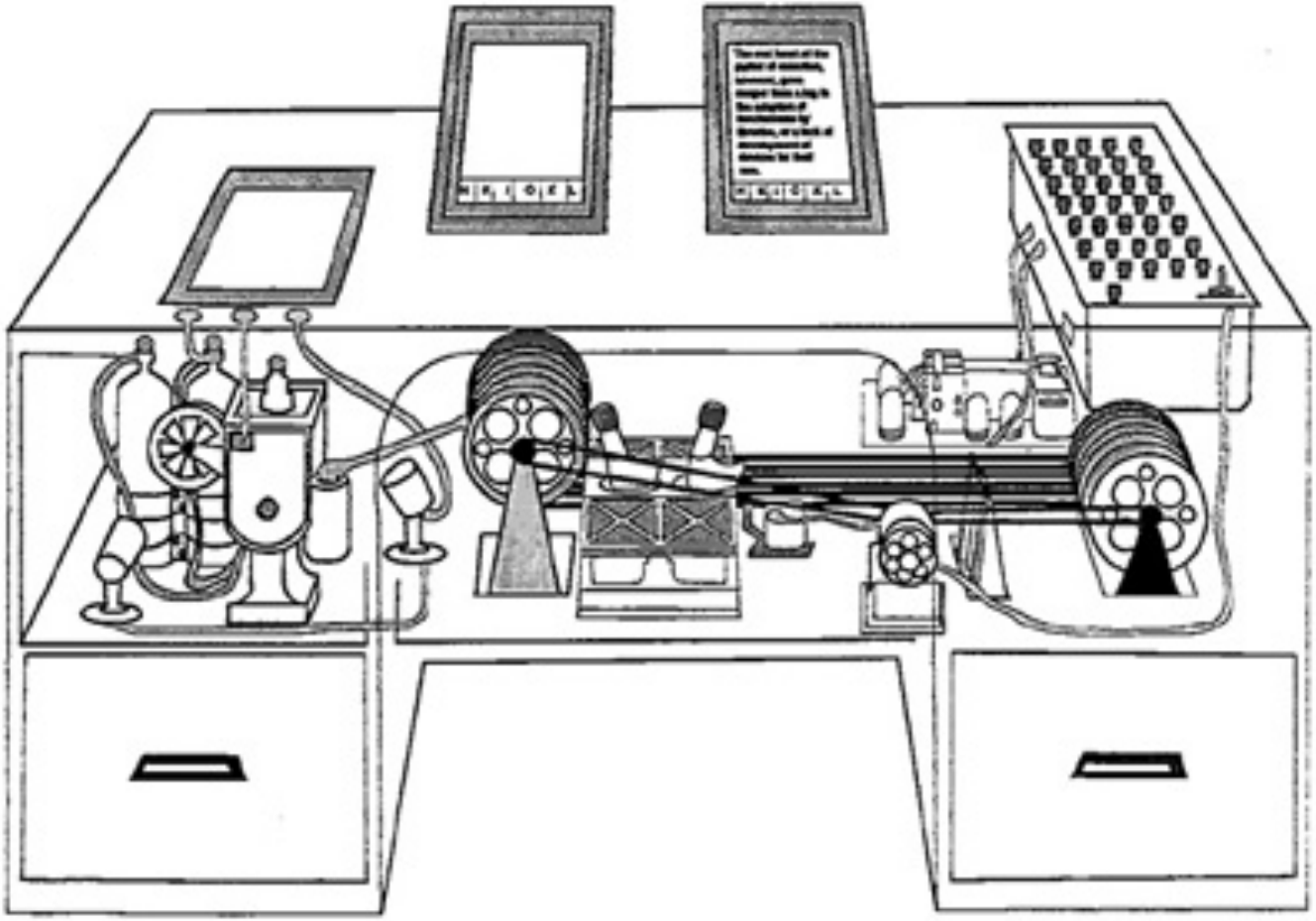
- "As We May Think" - 1945
  *Atlantic Monthly*

  "…publication has been extended far beyond our present ability to make real use of the record."

# Bush

- Postulated **Memex** device
  - Can store all records/articles/communications
  - Large memory
  - Items retrieved by indexing, keywords, cross references
  - Can make a trail of links through material
  - etc.
- Envisioned as microfilm, not computer

# Memex



# Vannevar Bush

- Roosevelt's science advisor
  - Supervised WW2 military research
  - Formulated the post-war expansion of science funding of Universities in the USA
- Fred Terman, the "Inventor" of Silicon Valley, was Bush's PhD student

# J.C.R. Licklider

- 1960 – Postulated "man-computer symbiosis"
- Couple human brains and computing machines tightly to revolutionize information handling
- 1963: ARPA director of Information Processing research

# Vision/Goals

## Immediate

- Time sharing
- Electronic I/O
- Interactive, real-time system
- Large scale information storage and retrieval

## Intermediate

- Combined speech recognition, character recognition, light-pen editing

## Long-term

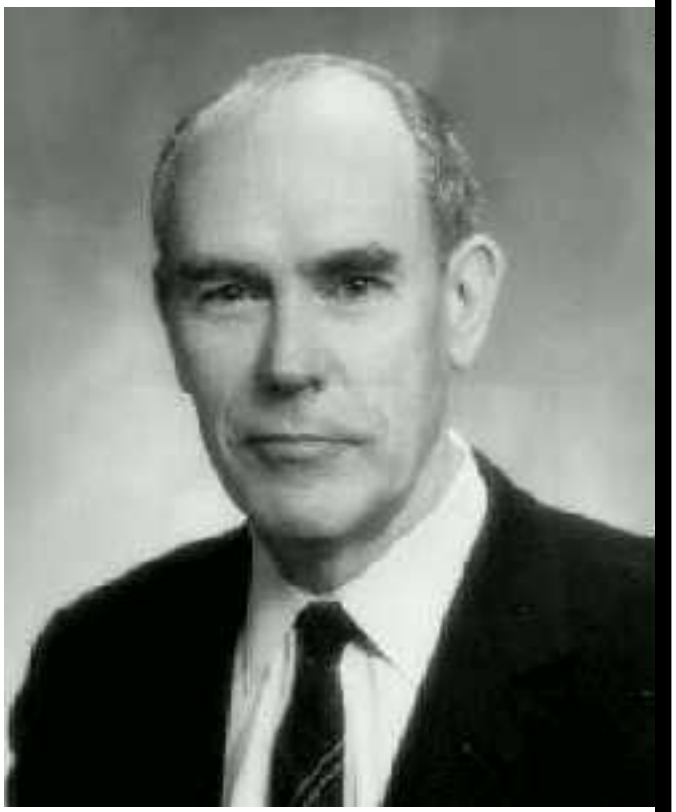
- Natural language understanding
- Speech recognition of arbitrary users
- Heuristic programming

# Mid 1960's

- Computers too expensive for individuals -> timesharing
  - increased accessibility
  - interactive systems, not jobs
  - text processing, editing
  - email, shared file system

# Ivan Sutherland

- **SketchPad** - '63 PhD thesis at MIT
  - Hierarchy - pictures & subpictures
  - Master picture with instances
  - Constraints
  - Icons
  - Copying
  - Light pen as input device
  - Recursive operations



# Sutherland Demo Videos

- http://www.youtube.com/watch?v=USyoT_Ha_bA
- http://www.youtube.com/watch?v=mOZqRJzE8xg

# Douglas Engelbart

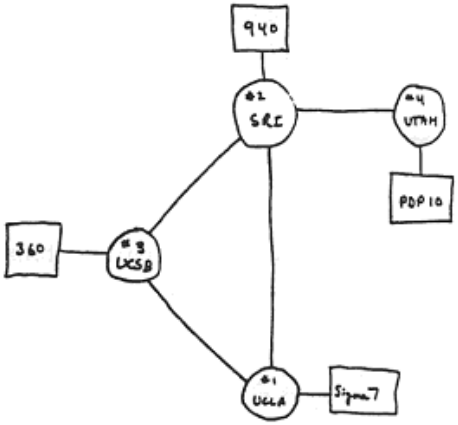
- Invented the mouse
- Landmark system/demo:
  - hierarchical hypertext, multimedia, mouse, high-res display, windows, shared files, electronic messaging, CSCW, teleconferencing, …
- http://www.youtube.com/watch?v=JfIgzSoTMOs

# The Mouse

Doug Engelbart's mouse - 1963-64

source: resonancepub.com & brittanica.com

# ARPA Net 1969-1980

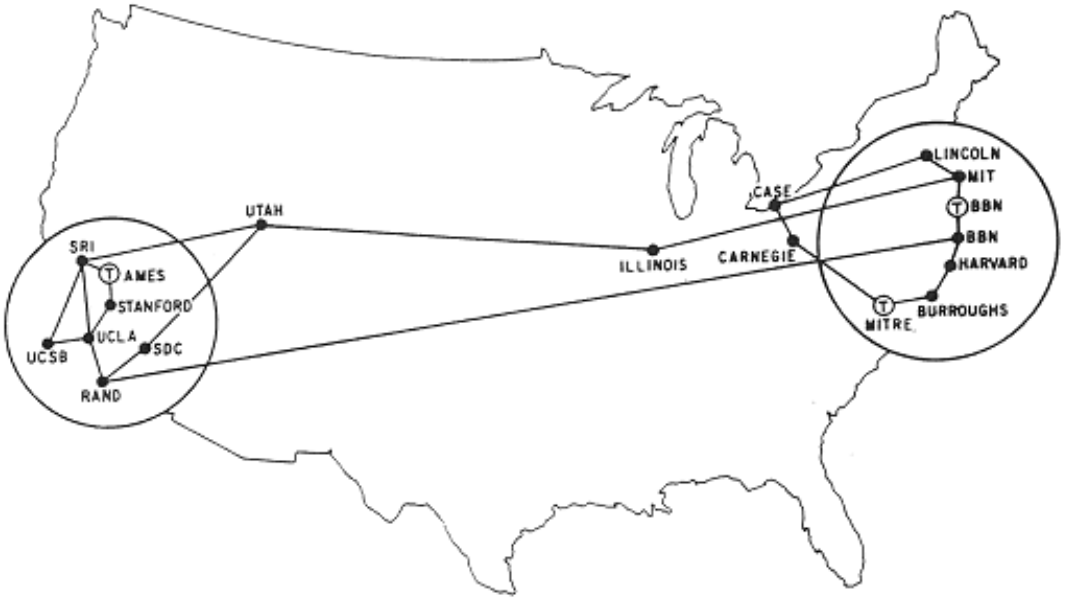



THE ARPA NETWORK

DEC 1969

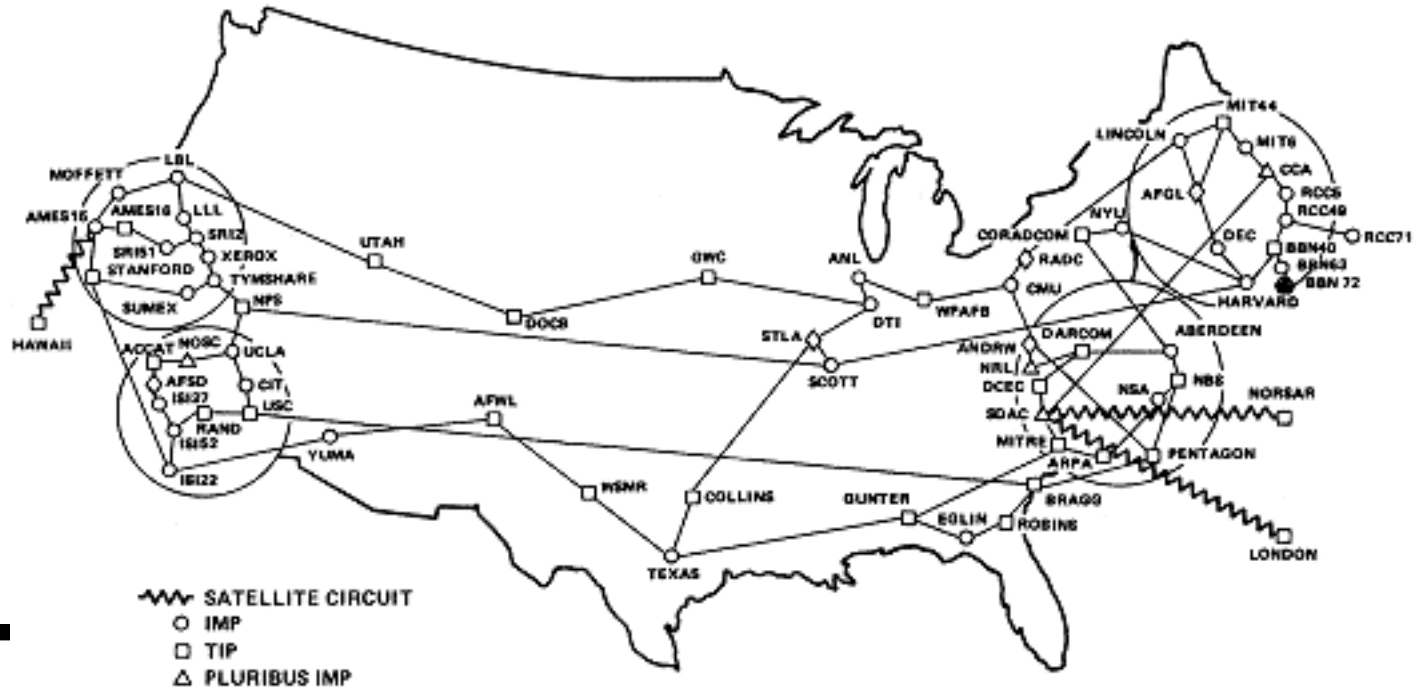
4 NODES

FIGURE 6.2 Drawing of 4 Node Network
(Courtesy of Alex McKenzie)




MAP 4 September 1971

ARPANET GEOGRAPHIC MAP, OCTOBER 1980




Sept 14, 2010

# Alan Kay

- Dynabook - Notebook sized computer loaded with multimedia and can store everything
- Personal Computing
- Desktop Interface

# Ted Nelson

- Computers can help people, not just business
- Coined term "hypertext"

# Nicholas Negroponte

- MIT architecture machine & AI group ‘69-’80s

- Ideas:
  - wall-sized displays, video disks, AI in interfaces (agents), speech recognition, multimedia with hypertext

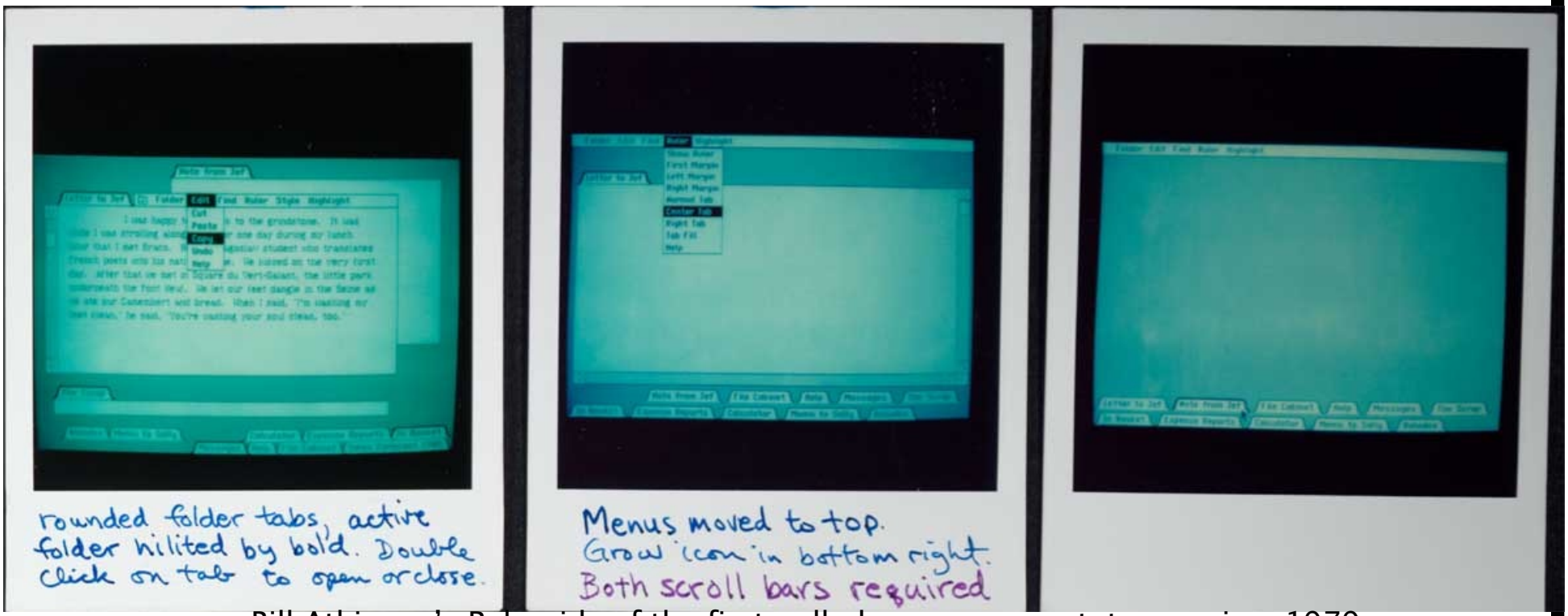
# Personal Computers

- Late '70's
  - Apple II
  - Z-80 CP/M
  - IBM PC
- Text and command based
- Word processing
- **Spreadsheets!**

# PCs with GUIs

- Xerox PARC - mid 1970's
  - **Alto**
  - Local processor, Bitmap display, Mouse
  - Precursor to modern GUI
  - LAN - Ethernet

# Menus




Bill Atkinson's Polaroids of the first pull-down menu prototype - circa 1979

source: folklore.org

# Xerox Star - ‘81

- First commercial PC designed for “business professionals”
  - Desktop metaphor, pointing, WYSIWYG
- First system based on usability engineering

# Star

- Commercial flop
  - $15k cost
  - closed architecture
  - lacking key functionality (spreadsheet)

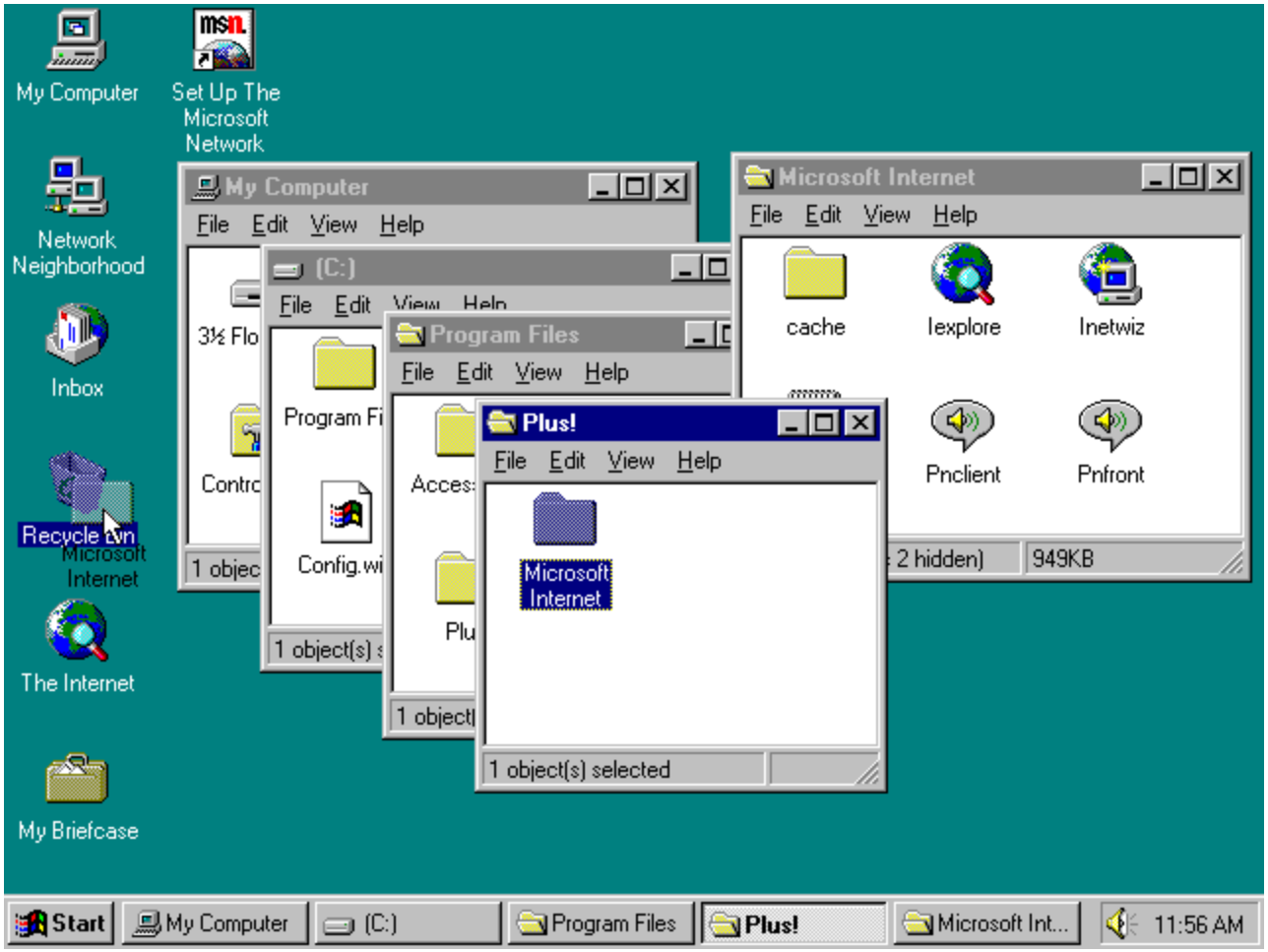
# Apple Lisa - ‘82

- Based on ideas of Star
- More personal rather than office tool
  - Still expensive!
- Failure

# Apple Macintosh - ‘84

- Aggressive pricing - $2500
- Not trailblazer, smart copier
- Good interface guidelines
- 3rd party applications
- High quality graphics and **laser printer**

# Windows 95


My Computer
Set Up The Microsoft Network
Network Neighborhood
Inbox
Recycle Bin
Microsoft Internet
The Internet
My Briefcase
My Computer
File Edit View Help
(C:)
Program Files
Plus!
Microsoft Internet
cache
Iexplore
Inetwiz
Pnclient
Pnfront
1 object(s) selected
949KB
Start
My Computer
(C:)
Program Files
Plus!
Microsoft Int...
11:56 AM

# Handhelds

- Portable computing + phone
- Newton, Palm, Blackberry, iPhone