# Mensch-Maschine-Interaktion 1

## Chapter 1:
## Introduction, Motivation, History

# Vorbemerkung: Deutsch and English

- Viele Materialien sind nur in englischer Sprache verfügbar
  - ...oder in besserer Qualität/Aktualität
- Wissenschaftliches Arbeiten ist international
  - Die Wissenschaftssprache ist englisch
  - Austausch von Materialien zwischen Lehre und Forschung in deutscher Sprache ist schwierig
  - Viele Begriffe sind in englischer Sprache geprägt und schwer zu übersetzen
- Konsequenz:
  - Lehrmaterialien in englischer Sprache
  - Vortrag in deutscher Sprache

# Organisatorisches

- Die Lehrveranstaltung (3V+2Ü) besteht aus:
  - Vorlesung (voraussichtlich 11 Termine)
  - Übungen (ca. 8 Aufgabenblätter)
  - Einem begleitenden UI-Design-Projekt in dem die Inhalte der Vorlesung praktisch angewendet werden
- Klausur über den Inhalt der Vorlesung
  - bis zu 10 Bonuspunkte aus Übungsbetrieb
  - 25.07. (14-16 Uhr) Ort: C123 (Theresienstr. 41)
  - closed book

- Vorlesung: ist 3x 3/4h mit 2 Pausen OK??
  - oder 2x 1.5h ??
- Heute: nur 1 Stunde, sorry...

# Website

- http://mimuc.de/mmi

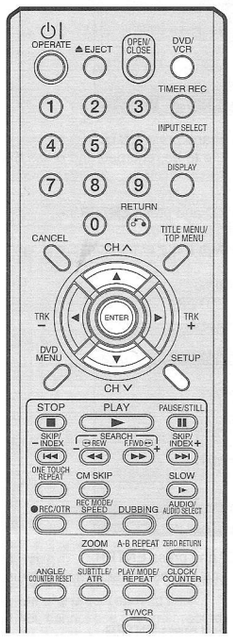
- Content
  - General Information / news
  - Lecture Slides (night before)
  - Podcast (night after, unless Quicktime produces havoc)
  - Exercises (when given)
  - Literature
  - Links

# The classic: the unusable VCR

## Timer recording

DVD-RW VR DVD-RW Video DVD-R EVCR

**The timer recording system allows you to select the date, time and channel and record the desired programs. Up to 8 timer programs within a month can be stored in this unit.**



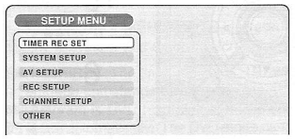

**NOTE:**
In the event of a power failure the data of the automatic recording will be maintained in the built-in memory for about 30 minutes. Also, the clock will continue to run for this period of time. Thereafter the data will be deleted. When the power resumes, the time display will change to "0:00" that the timer setting will have to be set.

### Setting timer recording

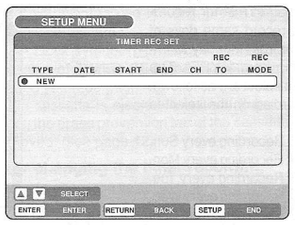
**Preparation:**
- Turn ON the TV and select its AV channel (this may be labelled EX / AUX etc.)
- Load a recordable DVD or video tape.
- Press **DVD/VCR** to select the appropriate mode.
- Confirm that the clock is indicating the correct time.

**Example:** Set the recording mode to LP and record on DVD; the T program is on channel 1 starting at 20:00 and stopping at 23:00 on date of 20th.

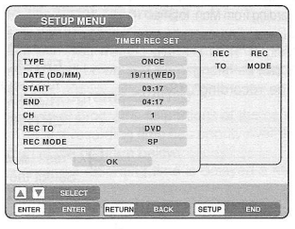
1 Press **SETUP**.
The SETUP MENU screen appears.



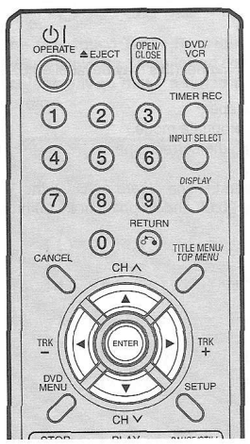

2 Press ▲ or ▼ to select "TIMER REC SET" and press **ENTER**.
The TIMER REC SET screen will appear.




3 Press ▲ or ▼ to select "NEW" and press **ENTER**.
The program screen will appear.

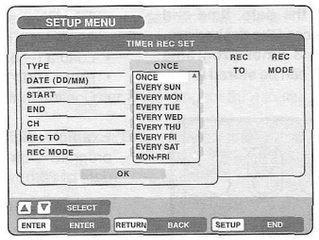



## Timer recording



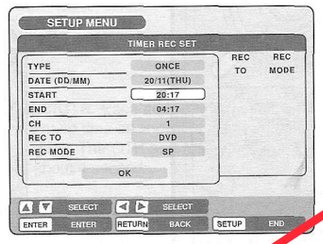

**NOTES:**
- If you select timer recording on a specified date only one time, select "ONCE" in the "TYPE" for recording. You can record same days of every week or from Monday to Friday using the item "TYPE". The items you can select are as follows:
  ONCE: Recording on the selected "DATE"
  EVERY SUN: Recording every Sun.
  EVERY MON: Recording every Mon.
  EVERY TUE: Recording every Tue.
  EVERY WED: Recording every Wed.
  EVERY THU: Recording every Thu.
  EVERY FRI: Recording every Fri.
  EVERY SAT: Recording every Sat.
  MON-FRI: Recording from Mon. to Fri.
  MON-SAT: Recording from Mon. to Sat.
  EVERY DAY: Recording everyday.
- The initial setting of "REC TO" and "REC MODE" can be changed using "Setting the recording". (See page 24.)

4 Press ▲ or ▼ to select "TYPE" and press **ENTER**.
Press ▲ or ▼ to select "ONCE" from the list and press **ENTER**.




5 Press ▲ or ▼ to select "DATE" and press **ENTER**.
Press ▲ or ▼ to select the date to be recorded and press **ENTER**.

6 Press ▲ or ▼ to select "START" and press **ENTER**.
Set the time when the recording is started.
- To switch over the selection item (hour or minute), press ◀ or ▶, then press **ENTER**.
- Press ▲ or ▼ to adjust the time.
- After setting the time, press **ENTER**.

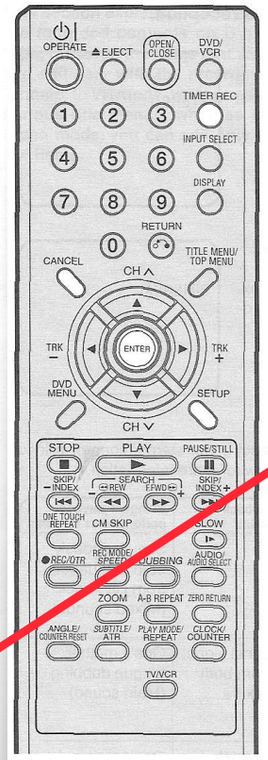



7 Press ▲ or ▼ to select "END" and press **ENTER**.
Set the stopping time in the same manner for setting the starting time of timer recording.

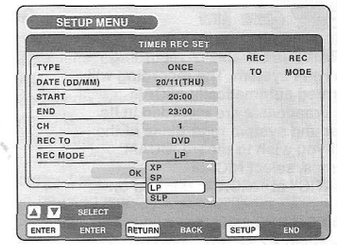
8 Press ▲ or ▼ to select "CH" and press **ENTER**.
- Press ▲ or ▼ to select the channel to be recorded and press **ENTER**.
- You can select the external input setting mode by pressing ▶. Then press ▲ or ▼ to select "AV1", "AV2" or "AV3" and press **ENTER**.

9 Press ▲ or ▼ to select "REC TO" and press **ENTER**.
Select the media (DVD or VCR) to be recorded from the list and press **ENTER**.

## Timer recording




**NOTES:**
- Recording starts a few seconds before the preset starting time.
- You cannot use the timer recording for the both DVD and VCR at the same time.
- You can playback the DVD during the VCR timer recording, and you can playback the VCR during the DVD timer recording.
- If the clock symbol (◳) blinks when the timer recording ended, the TV program has not been completely




11 Select "OK" and press **ENTER**. The timer program is determined and the TIMER REC SET screen appears again.

12 When you enter the other program for the timer recording, repeat the steps **3** to **11**.

13 Press **SETUP**. The TIMER REC SET screen disappears and the display will return to the normal screen.

14 Press **TIMER REC**. The timer indicator "◳" will appear on the display and the unit stands by for recording.
- If the program is DVD recording only, the unit will change to VCR mode automatically. (The DVD mode cannot be selected.)
- *If the program is VCR recording only, the unit will change to* DVD mode automatically. (The VCR mode cannot be selected.)
- If the programs are DVD and VCR recording, the unit will turn off. If you want to use the unit, press **TIMER REC** again to deactivate the timer.
- If the clock symbol (◳) blinks in the display in spite of the pressing of **TIMER REC**, the cassette may not have been *loaded yet. (see page 42)*
- If the cassette is ejected in spite of the pressing of **TIMER REC**, the erase prevention tab of the cassette may have been removed. (see page 42)

### Checking or changing the timer recording

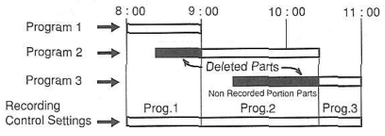
When you want to check the selected timer recording, follow the steps **1** and **2** of "Setting timer recording" and display the TIMER REC SET screen. To change the timer recording, select the program to be changed and press **ENTER**. The changing method is the same as that for the recording a program for the first time.

### Cancelling the timer recording

Display the TIMER REC SET screen.
Select the program you want to cancel and press **CANCEL**, then the selected program will be erased from the timer recording list.

### In case Timer programs-overlap

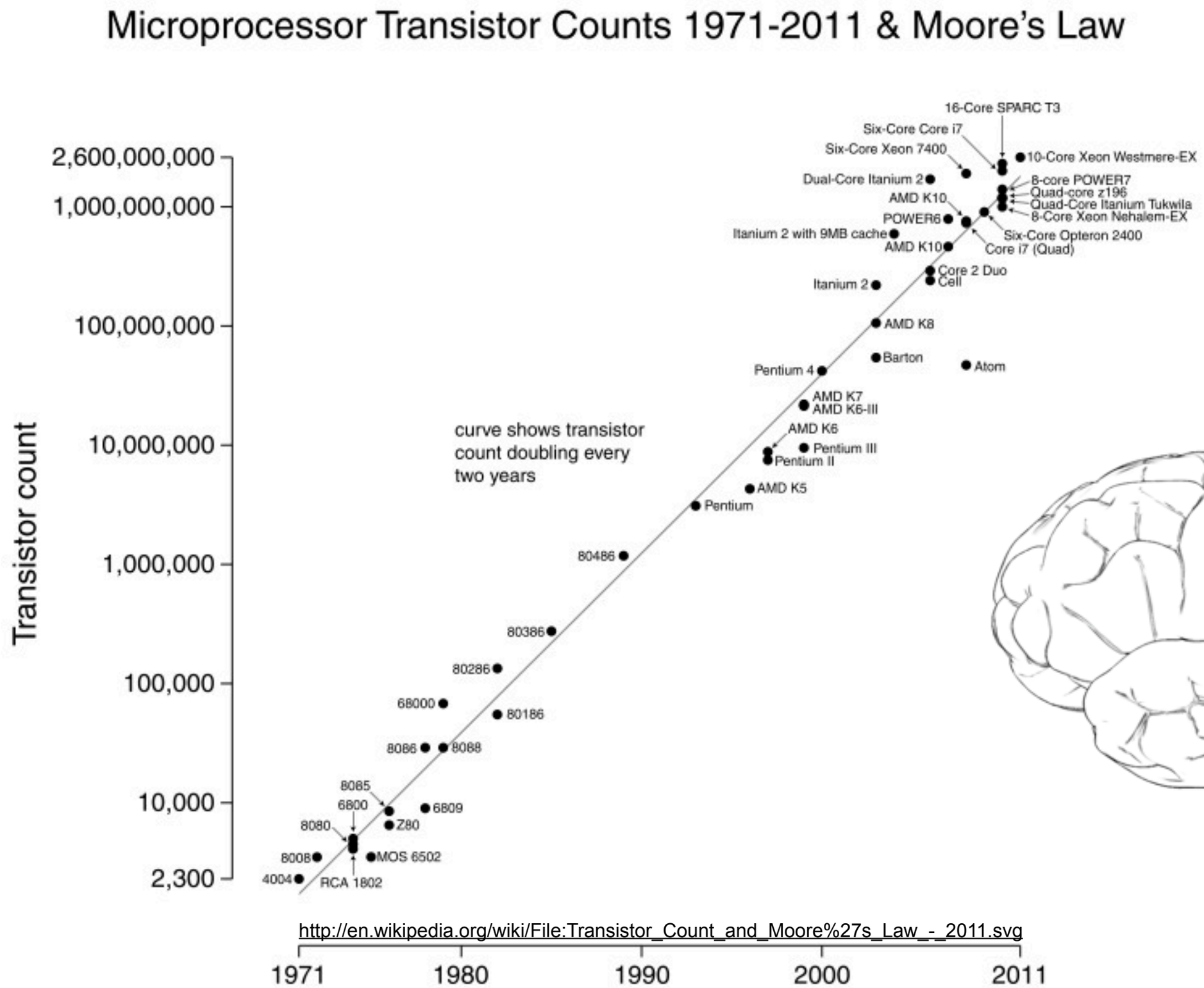
Do not overlap timer programs as portions of the conflicting programs will be lost. The first recording time has priority over the next recording time as shown in the diagram below.
In this case, the next recording time is delayed a maximum of about *1 minute.*





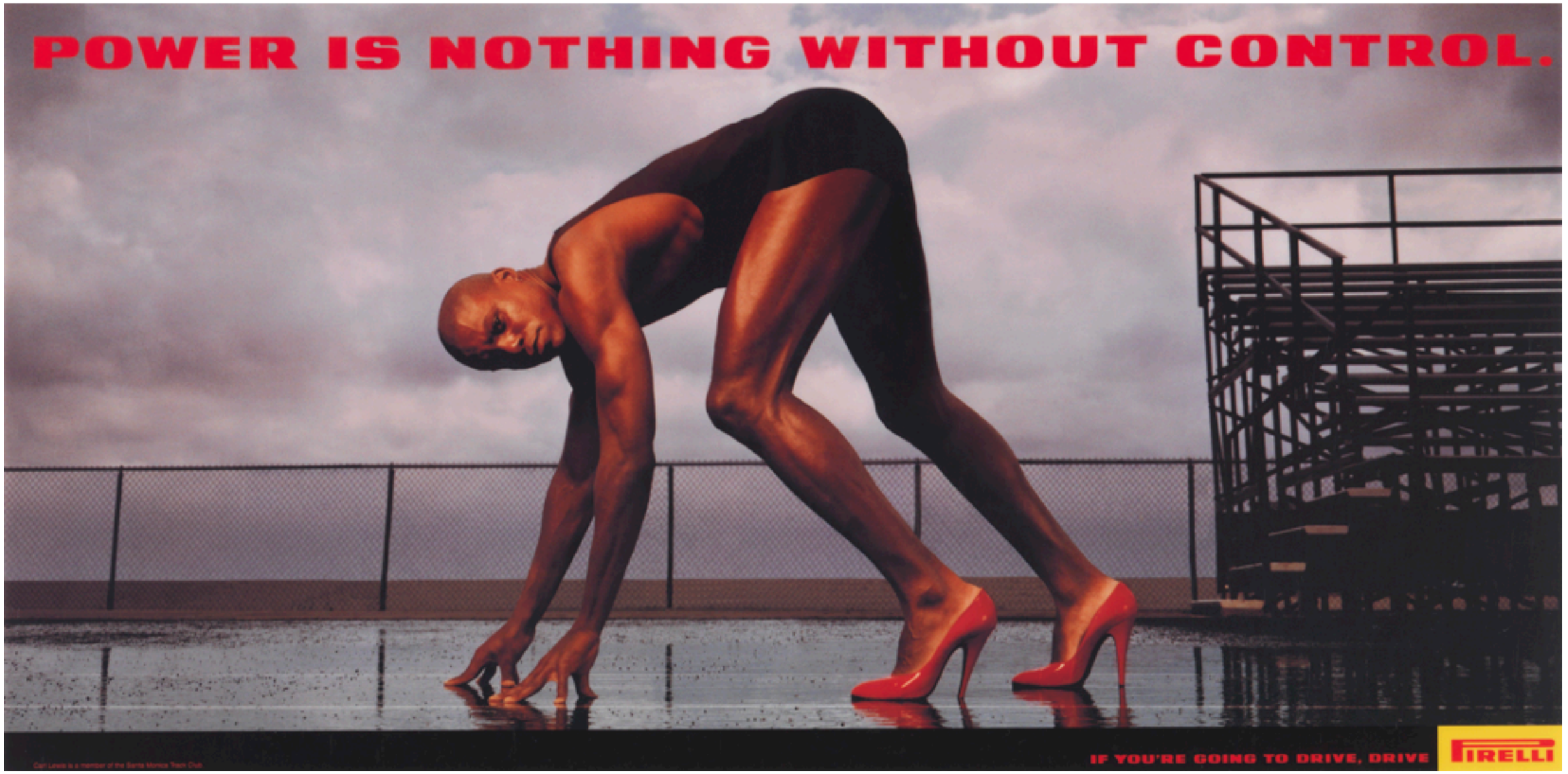

14 Press **TIMER REC**. The timer indicator "◳" will appear on the display and the unit stands by for recording.

# Moore‘s law vs. evolution



http://en.wikipedia.org/wiki/File:Transistor_Count_and_Moore%27s_Law_-_2011.svg

# Power vs. control



# This means...

- Computational power grows exponentially
- Memory grows exponentially
- Humans remain basically unchanged

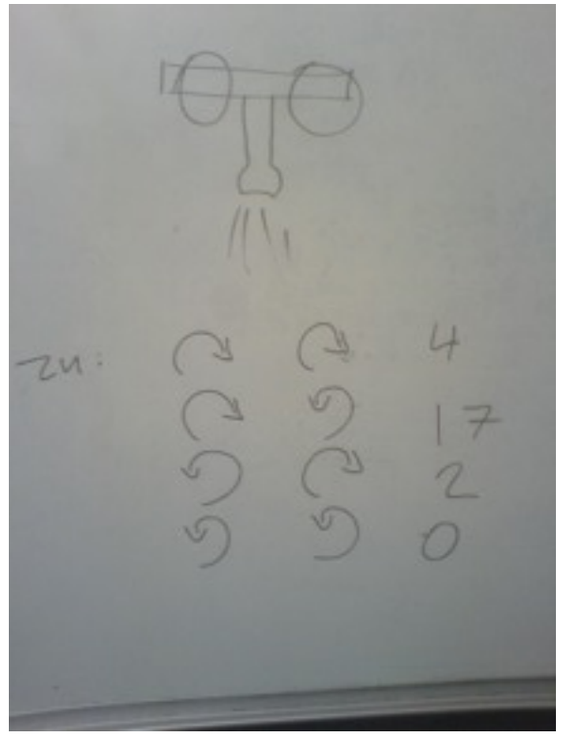
- **HCI is the hottest topic on earth!!!**

# The apparently simple solution...

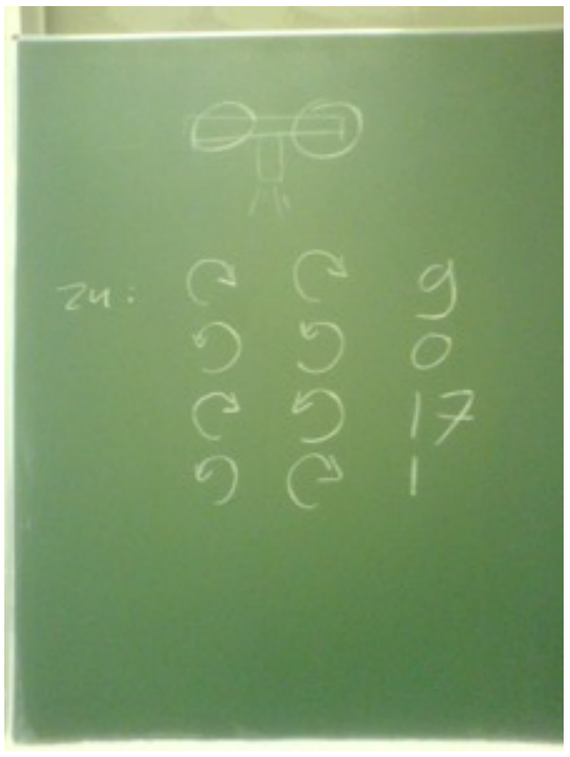
Let‘s just build **intuitive** User Interfaces!

# My personal rant about „Intuitive User Interfaces“

- Given: old style water faucet
  - 2 valves, 1 outlet
  - Cylindrical, next to each other
  - Left warm, right cold



- Question: In which direction does each valve close?



- Homework: find such faucets, determine which are „intuitive“ and why (not)

# Interaction Design vs. Product Design

- Product design determines the overall appearance of the product
- Interaction design determines the usability of the product
- Both are closely coupled

Bildquellen: Apple, BMW

# Sophisticated Design does not entail Usability

CS Building in Saarbrücken

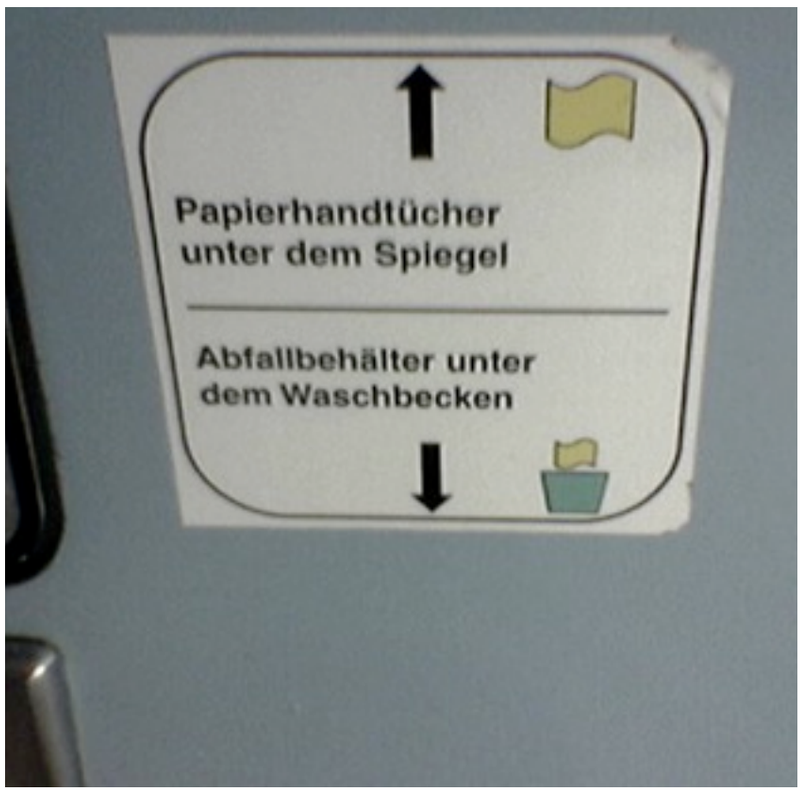
DFKI in Saarbrücken

(Photos A. Butz)

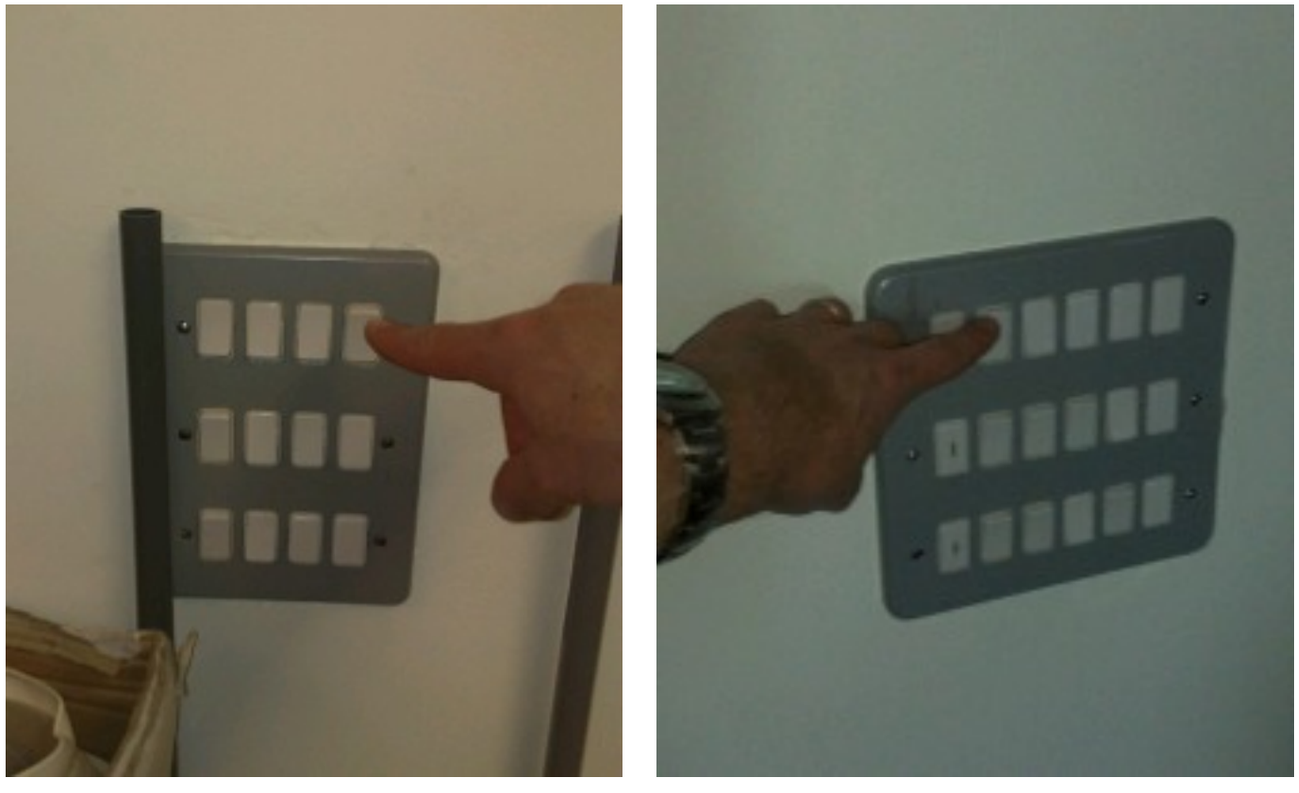
# No comment ;-)

# Usability applies to a wide range of systems

- Signs and explanations for things that are usually obvious are an indicator for a potential problem.
- Not having (necessary) explanations is also not a solution




(German Rail IC-Train)



(CS Building, Lancaster University)

# Lack of usability can communicate attitude

Das ist nicht der offizielle Webauftritt der Verwaltung. War es noch nie...

# Usability can make all the difference

Bildquelle: Neckermann.de, screenshot

http://www.fabrikshop.info/12/610831g.jpg

http://ecx.images-amazon.com/images/I/41typn4wgnL.jpg

# Exercisee: Currency Converter

- Design a user interface for the following scenario:

> Scenario 1: Mary needs a currency converter tool.

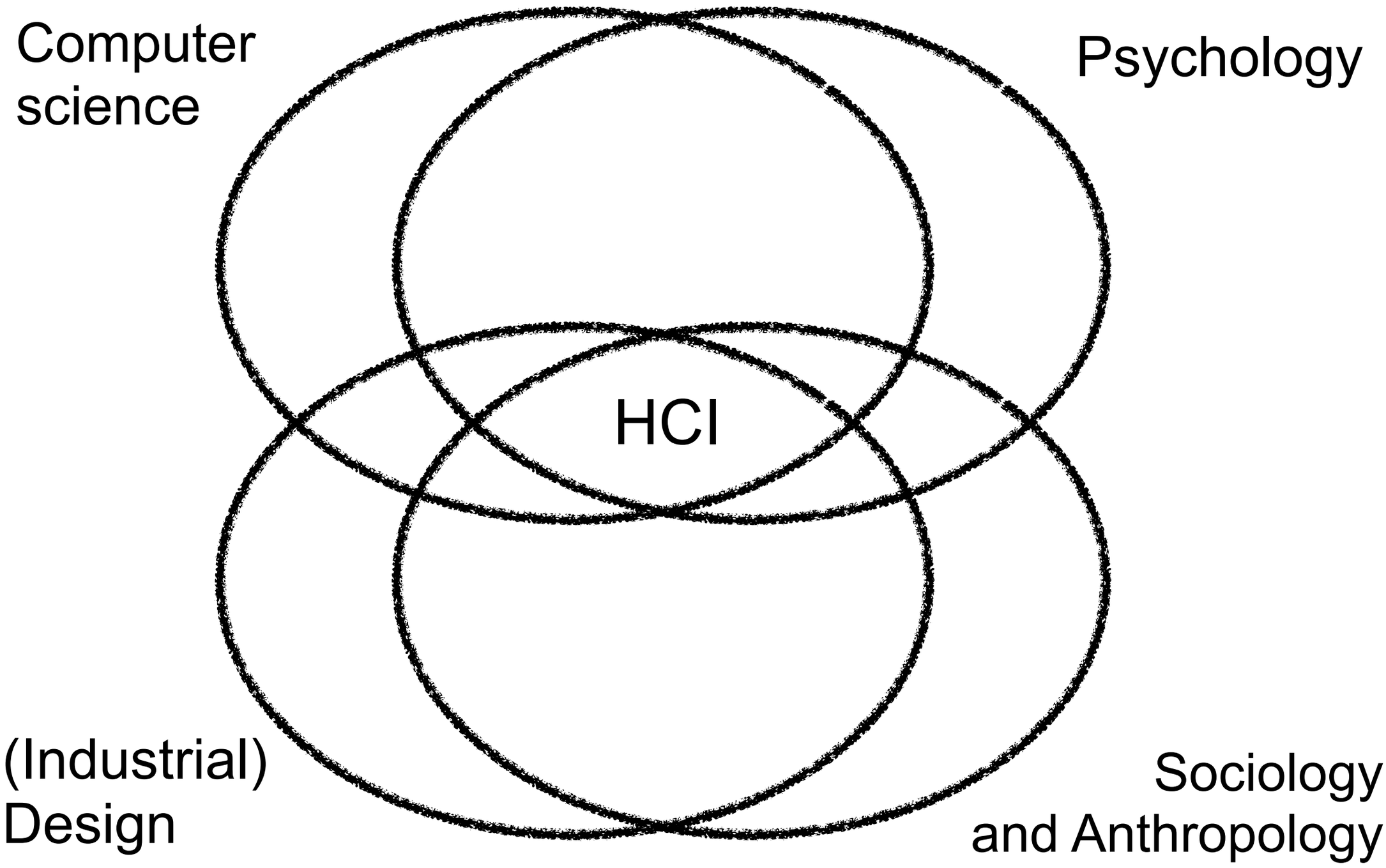
> Scenario 2: Mary works at XY-import-export GmbH in Munich. On her laptop, she frequently checks prices for goods in the USA and in Japan. For calculating her budget she needs to convert these into Euro. Sometimes when she writes offers, she converts her company's sales prices (which are in Euro) into US$ or Yen.

- Task: draw a sketch of a user interface for an application that supports Mary in her work.
- Think about how you would integrate such an application with her current computer system and software infrastructure

# What is the right title for the lecture?

- Mensch-Maschine-Interaktion (MMI) / Human-Machine Interaction (HMI)
  - “Man-Machine Interaction” politically incorrect
  - Study of the ways how humans use machines
- Mensch-Computer-Interaktion (MCI) / Human-Computer Interaction (HCI)
  - More special, main focus of this lecture
  - “Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them”
    (working definition in the ACM SIGCHI Curricula for HCI)
- Interaktionsdesign / Interaction Design
  - More general than HMI
  - “designing interactive products to support people in their everyday and working live” (Sharp, Rogers, and Preece, 2002)
  - “interaction design is related to software engineering in the same way as architecture is related to civil engineering” (Winograd, 1997)
- Benutzerfreundlichkeit / Usability
  - The overall goal of interaction design

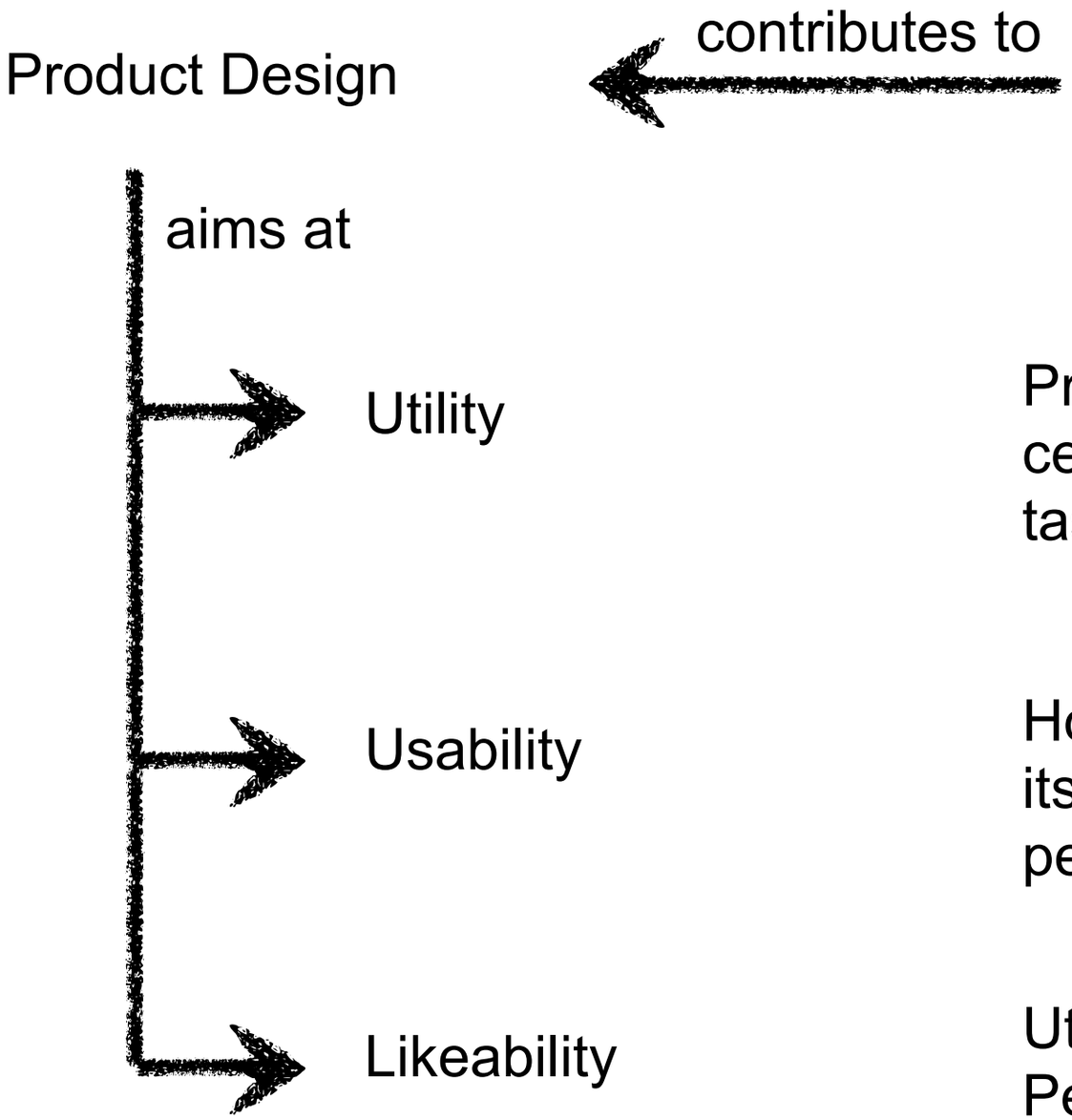
# HCI as an interdisciplinary field



# Elements of HCI

- Joint performance of tasks by humans and machines
- Structure of communication between human and machine
- Human capabilities to use machines (including the learnability of interfaces)
- Algorithms and programming of the interface itself
- Engineering concerns that arise in designing and building interfaces
- Process of specification, design, and implementation of interfaces
- Design trade-offs

# Aspects of Product Design

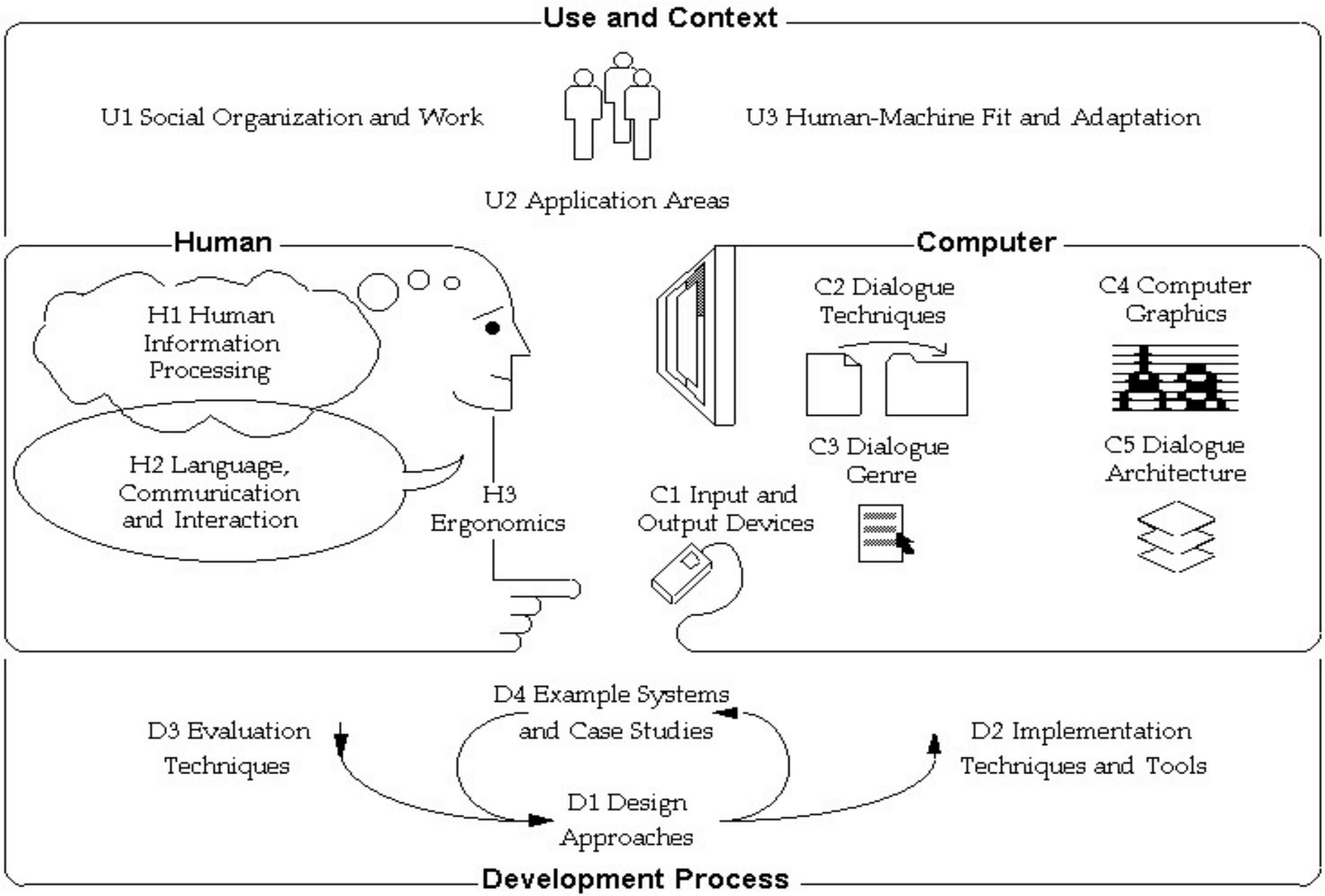



Product can be used to reach a certain goal or perform a certain task

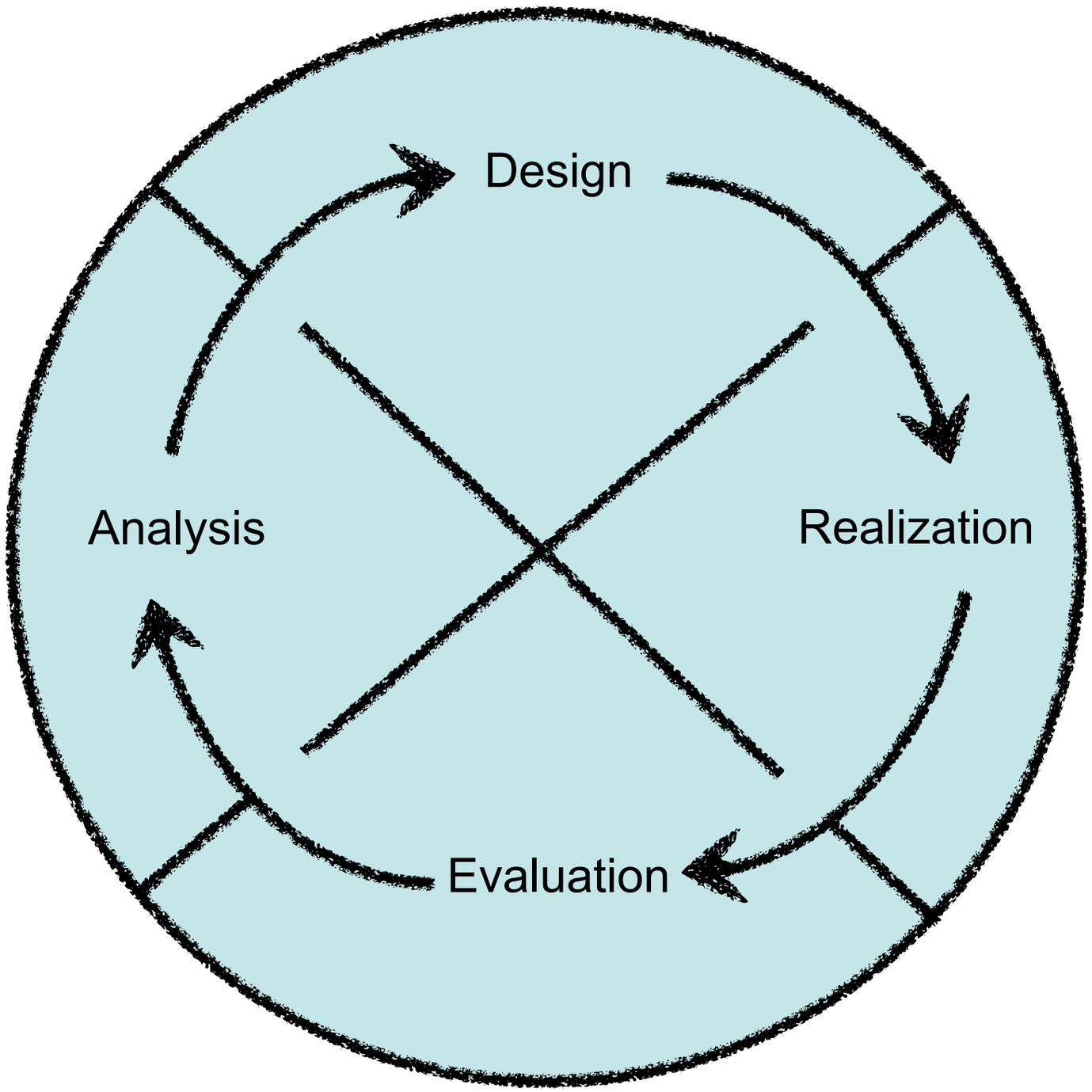
How well does the product support its user to reach a certain goal or perform a certain task

Utility + usability?
People sometimes like a product for other reasons...

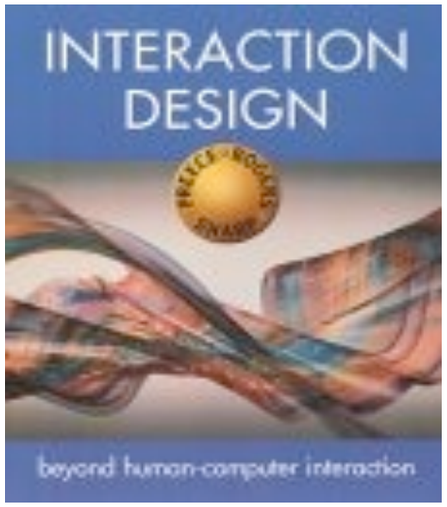
# from the ACM SIGCHI Curriculum for HCI

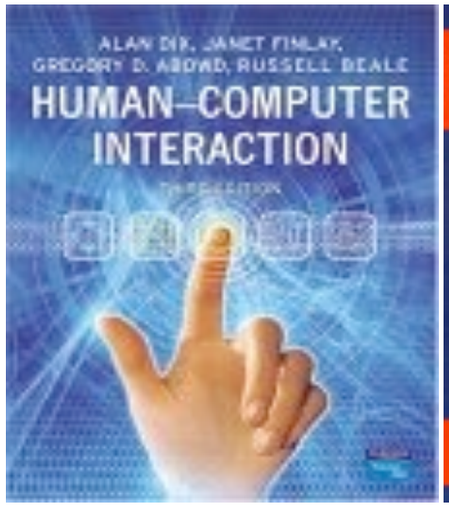


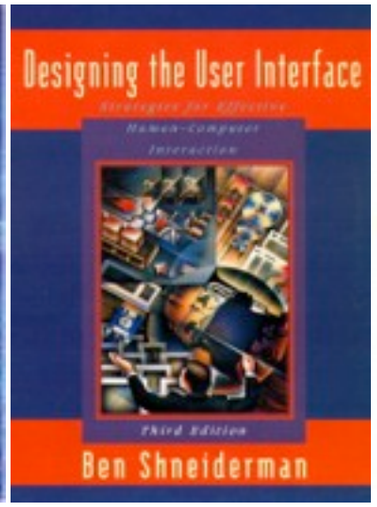
# The Development Process

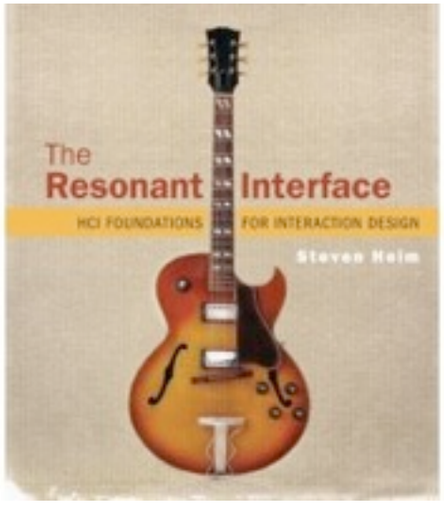


# Books

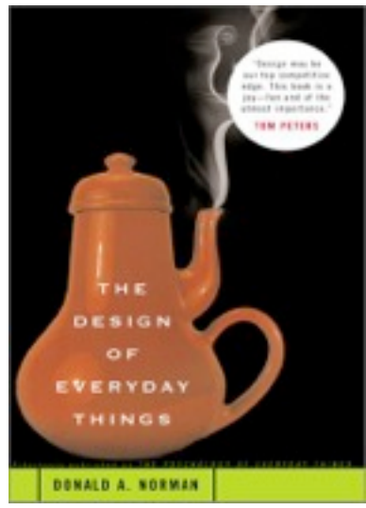


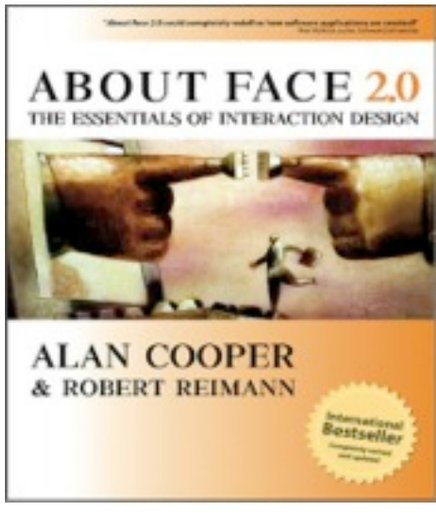




- Jennifer Preece, Yvonne Rogers, Helen Sharp (2002). Interaction Design. ISBN 0471492787
- Alan Dix, Janet Finlay, Gregory Abowd and Russell Beale. (2003) Human Computer, Interaction, Prentice Hall, ISBN 0130461091
- Steven Heim (2007). The Resonant Interface: HCI Foundations for Interaction Design. Addison-Wesley; ISBN 978-0321375964
- Ben Shneiderman. (2009) Designing the User Interface, 5th Ed., Addison Wesley; ISBN 978-0321197863
- Donald A. Norman. (1990) The Design of Everyday Things; ISBN 0465067107 (neu im Spätsommer, Gastvortrag in IxD)
- Alan Cooper, Robert M. Reimann. (2007) About Face 3.0: The Essentials of Interaction Design; ISBN 978-0470084113



# Evolution of HCI ‘interfaces’

- 50s: Interface at the hardware level for engineers (switch panels)
- 60-70s: interface at the programming level (COBOL, FORTRAN)
- 70-90s: Interface at the terminal level (command languages)
- 80s: Interface at the interaction dialogue level (GUIs, multimedia)
- 90s: Interface at the work setting (networked systems, groupware)
- 2000s: Interface becomes pervasive (‘allgegenwärtig’)
  - RF tags, Bluetooth technology, mobile devices, blogging, user generated content, consumer electronics, interactive screens, embedded technology, sensor networks
- 2010s: Touch Interfaces in various sizes, handheld AR, ...

Student Project
http://www.hcilab.org/projects/historybook

editorial ::
home ::
links ::

# HUMAN COMPUTER INTERACTION

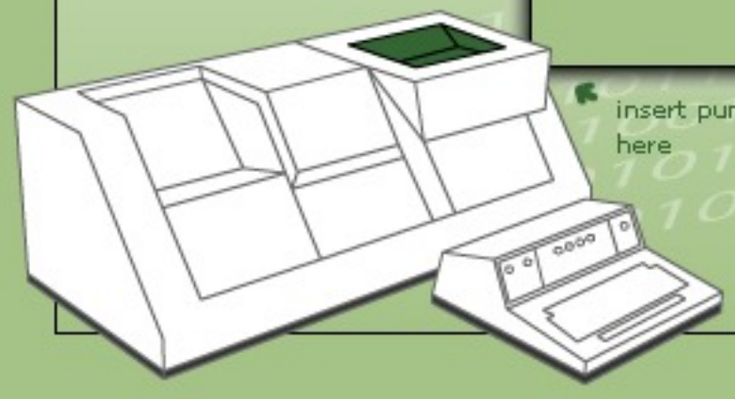
*a brief history*

Intro
the first mouse::1963
Xerox Altos 3-button-mouse::197
the first commercial mouse::1981
**Lisas mouse::1983**
Macintosh with mouse::1984
rubberball::1985
trackball::1989
radio mouse::1991
3D mouse::1992
scrollwheel::1996
USB mouse::1997
optical mouse::1999
ID mouse::2001
optical radiomouse::2001

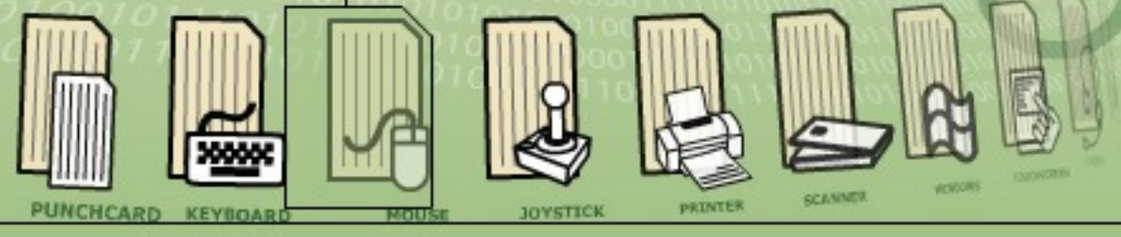
## 1983 Apples Lisa erscheint mit Maus

In january 1983 Apple releases "Lisa" the first mouseoperated personal computer. This highly praised computer indeed was no sucess as well. Again because of its high price with 10.000,-$ no "normal people" could afford it.

By the way apples mouse was produced by Logitech with only one key, and it still macs get along with only one key on their latest mice.

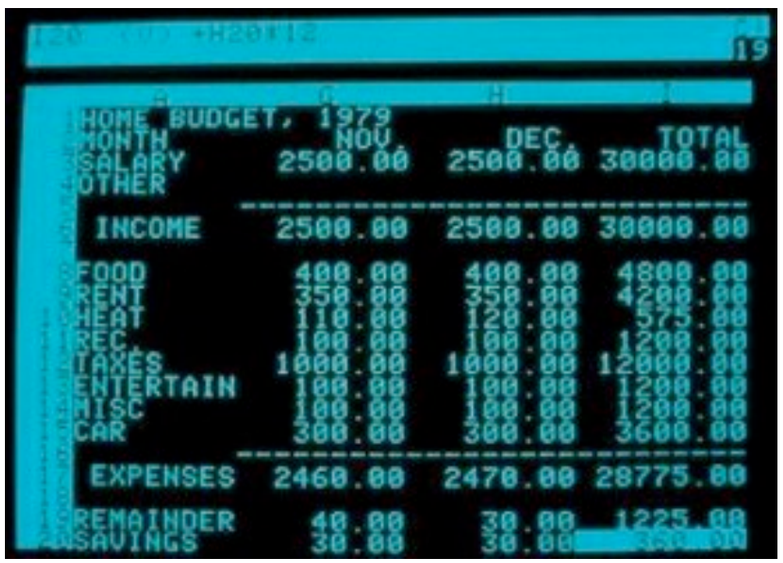


insert punchcard here



# VisiCalc - Widespread use of an Interactive Application

VisiCalc Screen, early Alpha 1/4/79

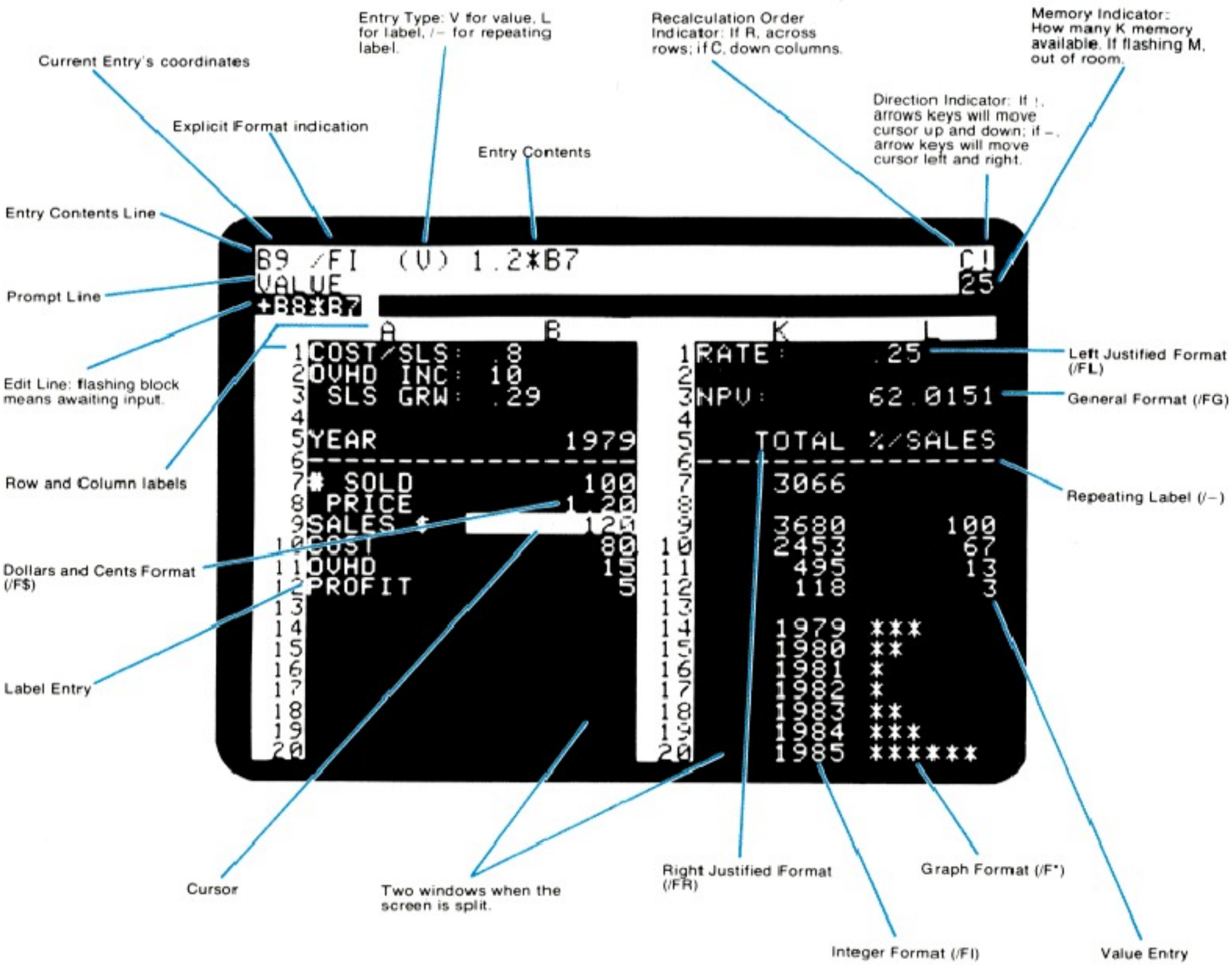



First version of VisiCalc screenshot

- Instantly calculating electronic spreadsheet
  - D. Bricklin/J. Frankston 1979
  - For Apple II computers
- Significant value to non-technical users
  - Usability was key...
- Early killer app for PCs
  - Motivated IBM to enter the PC market

http://www.danbricklin.com/visicalc.htm

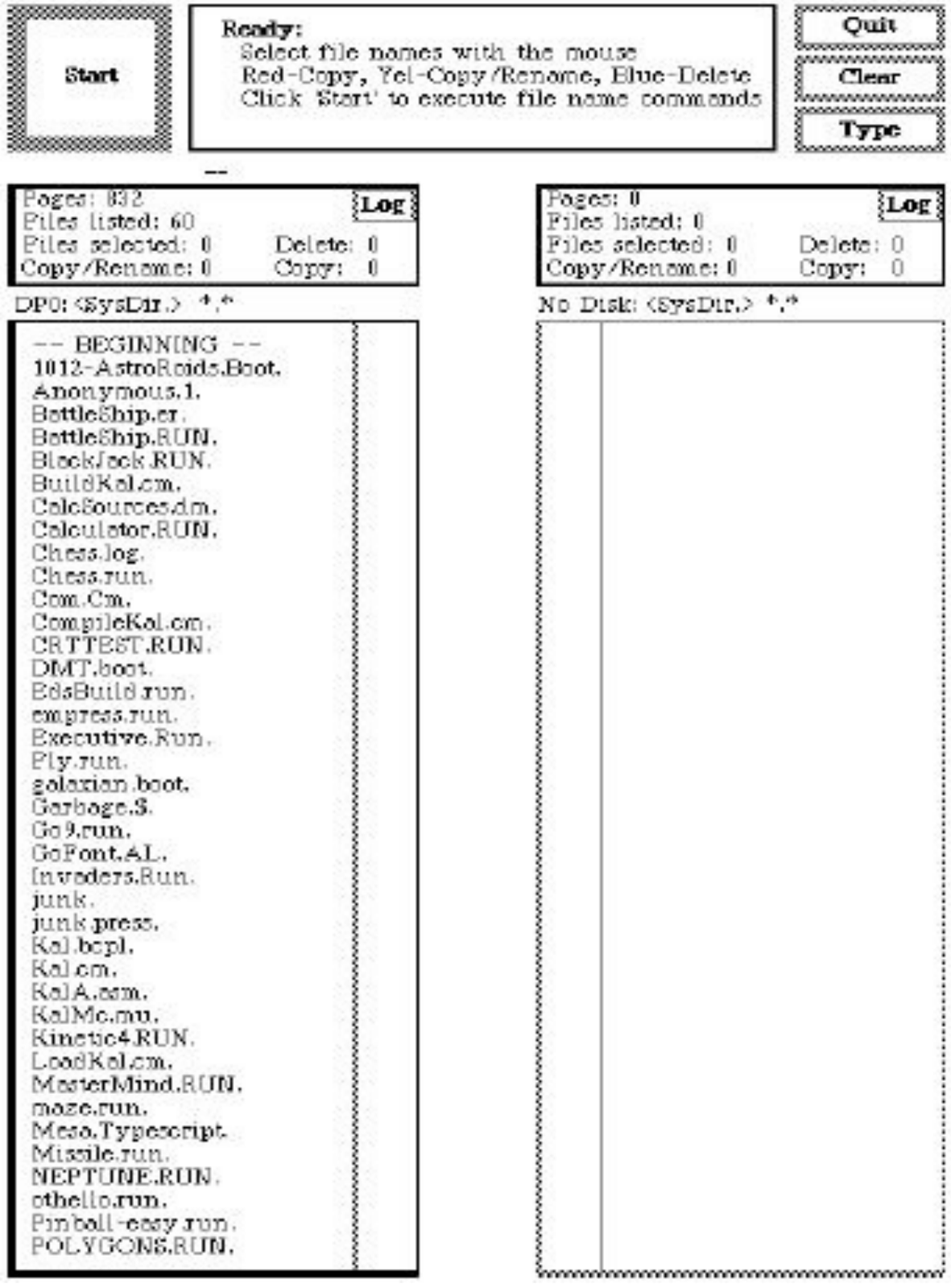
# A VISICALC™ Screen:



# Changing Interaction Paradigms

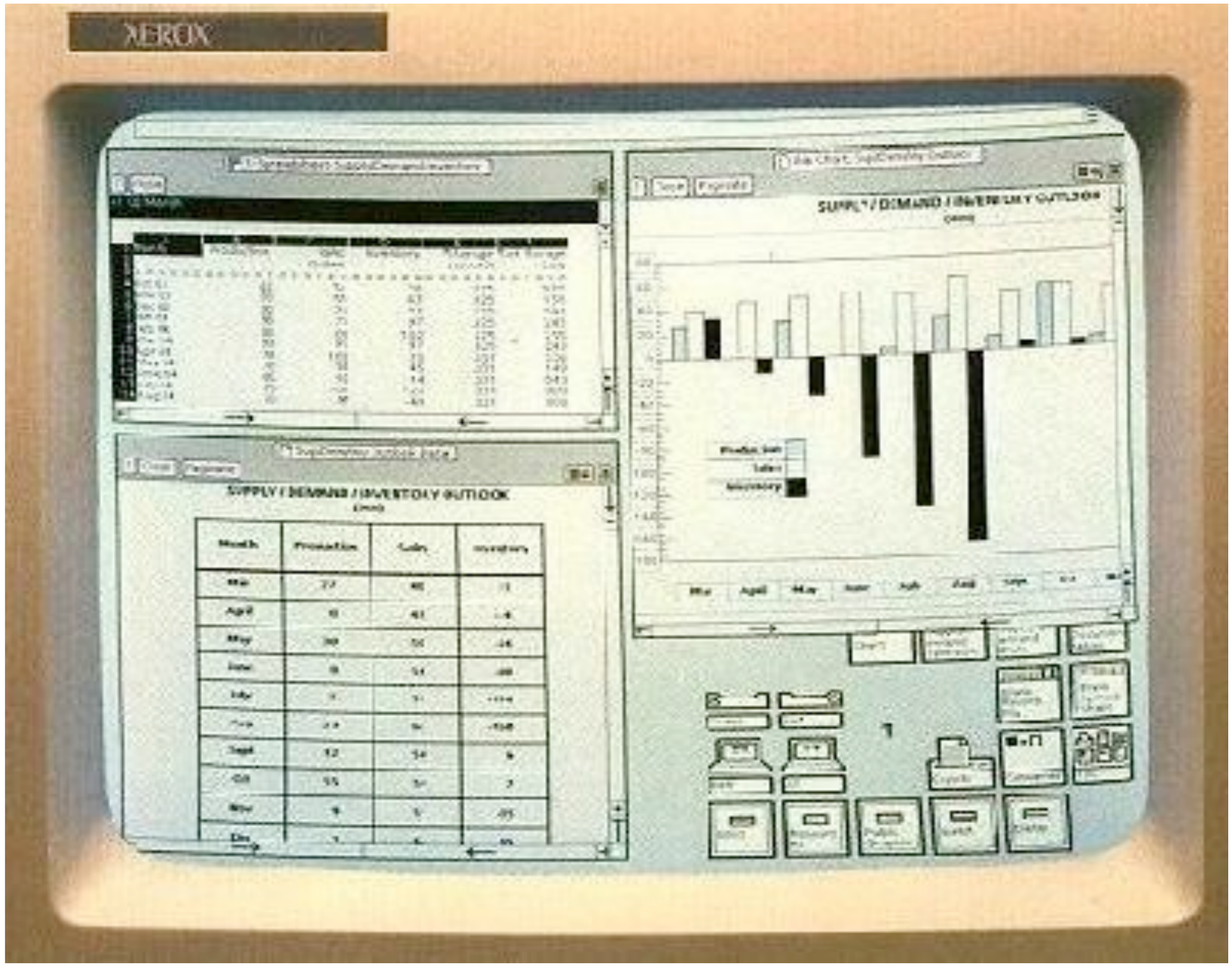
- Replacement of command-language
- Direct manipulation of the objects of interest
- Continuous visibility of objects and actions of interest
- Graphical metaphors (desktop, trash can)
- Windows, icons, menus and pointers
- Rapid, reversible, incremental actions
- Origins of direct manipulation and graphical user interfaces
  - Ivan Sutherland's Sketchpad, 1963, object manipulation with a light pen (grabbing, moving, resizing)
  - Douglas C. Engelbart, 1968, Mouse
  - XEROX ALTO (50 units at Universities in 1978)
  - XEROX Star (1981)
  - Apple Macintosh (1984)

# XEROX ALTO



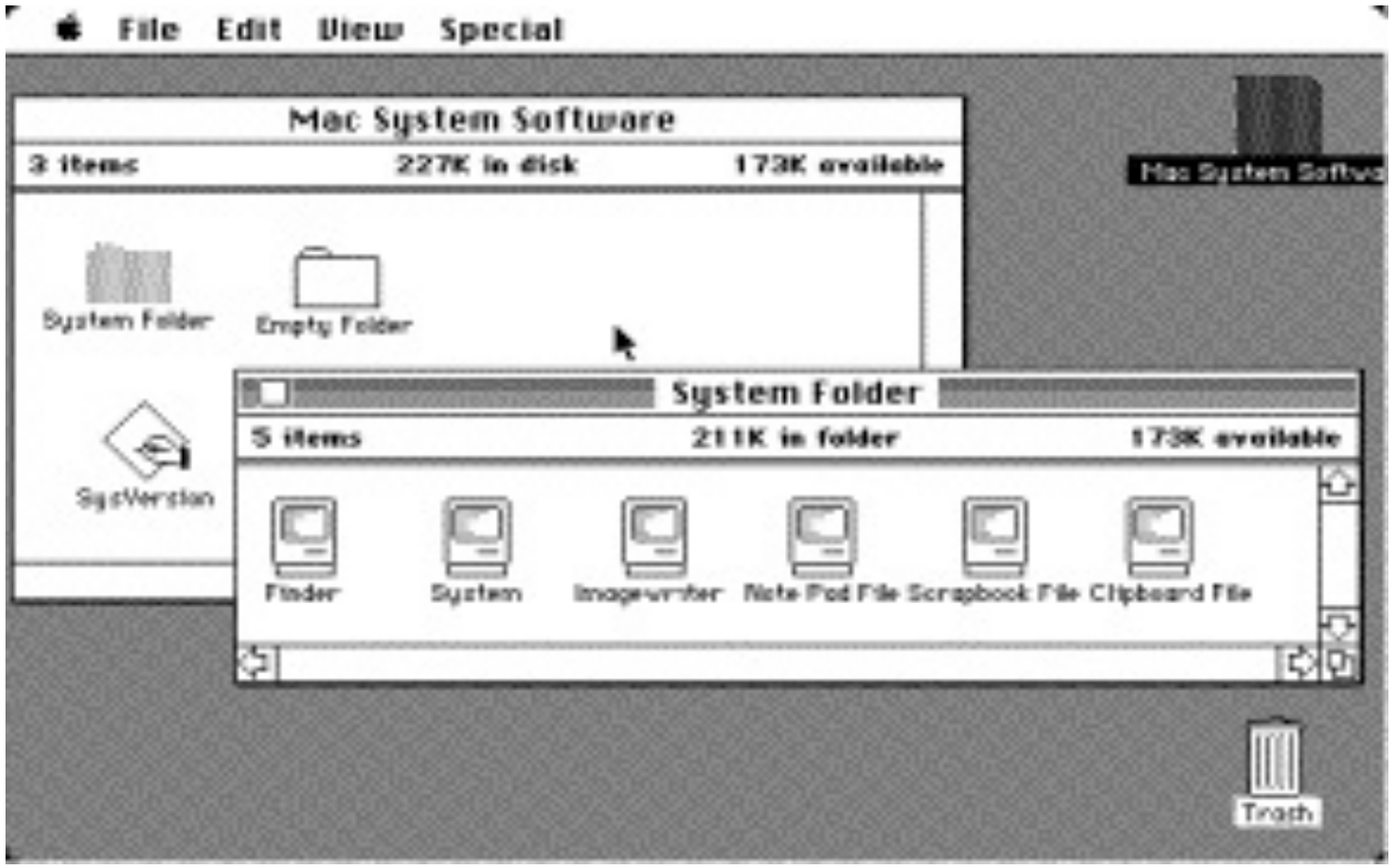

- Photos from
- http://members.fortunecity.com/pcmuseum/alto.html

# XEROX Star




- Photos from http://members.fortunecity.com/pcmuseum/alto.html

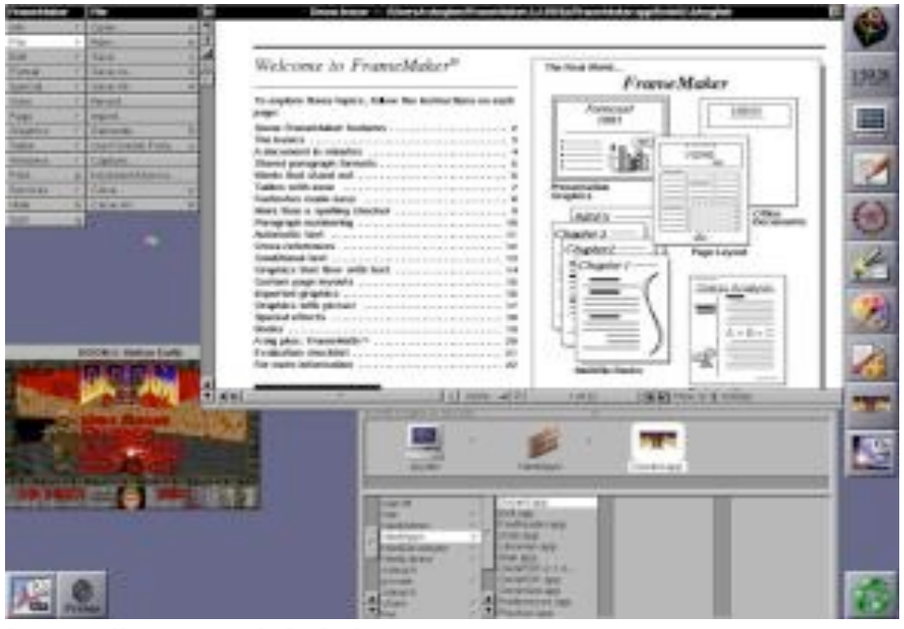
# Apple Macintosh



- 1984 – commercially successful GUI

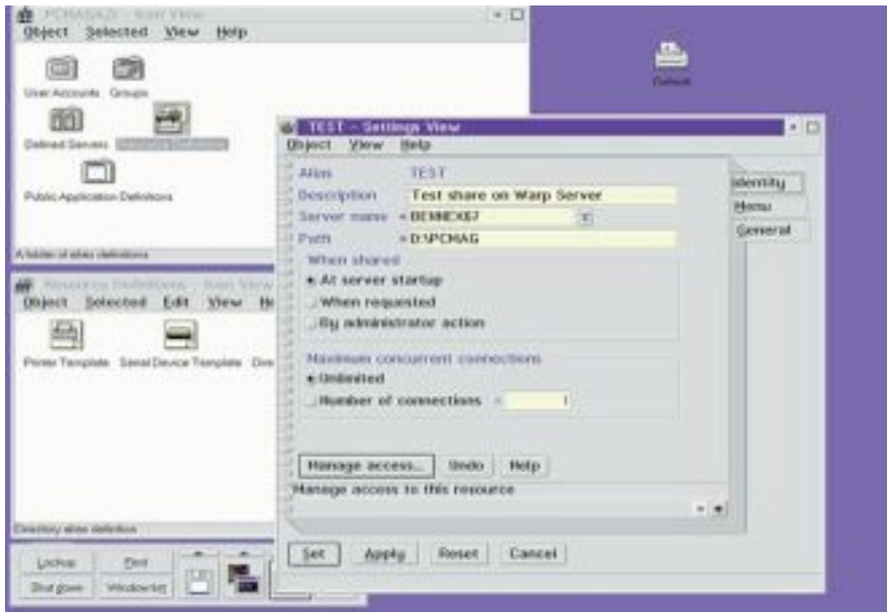
# More GUIs

Amiga 1985




NextStep 1989

Win 3.11 1992




OS/2 1992