Lect2: Computers and Paradigms

The computer

A computer system is made up of various elements. Each of these elements affects the interaction

- input devices – text entry and pointing
- output devices – screen (small&large), digital paper
- virtual reality – special interaction and display devices
- physical interaction – e.g. sound, haptic, bio-sensing
- paper – as output (print) and input (scan)
- memory – RAM & permanent media, capacity & access
- processing – speed of processing, networks

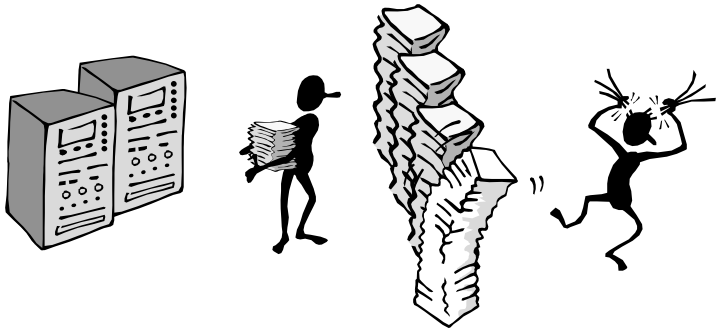
Paradigms of interaction

New computing technologies arrive, creating a new perception of the human—computer relationship.

We can trace some of these shifts in the history of interactive technologies.

The initial paradigm

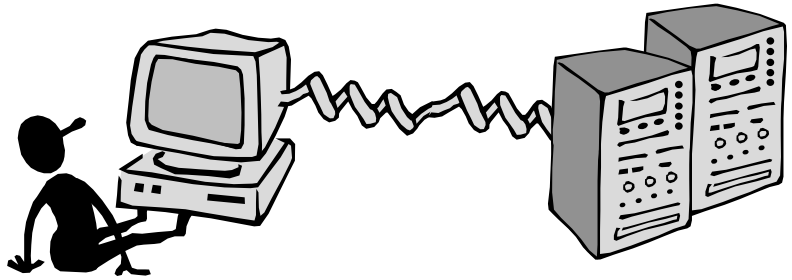
- Batch processing



Impersonal computing

Example Paradigm Shifts

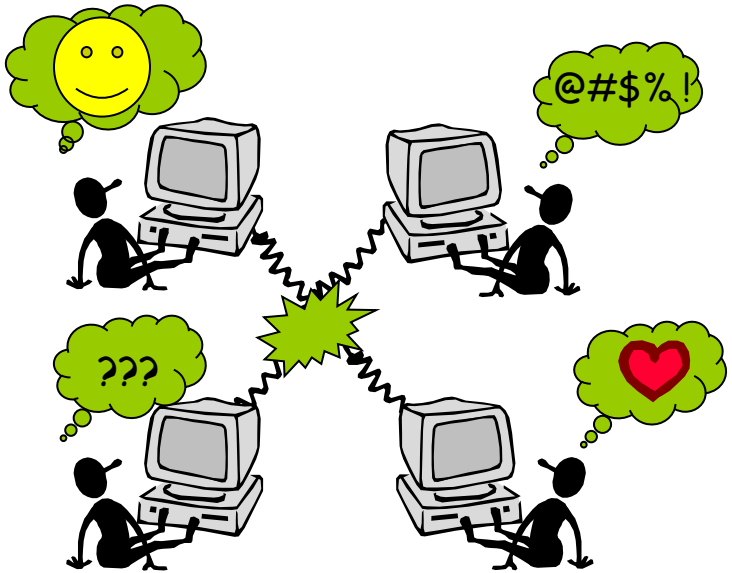
- Batch processing
- Time-sharing



Interactive computing

Example Paradigm Shifts

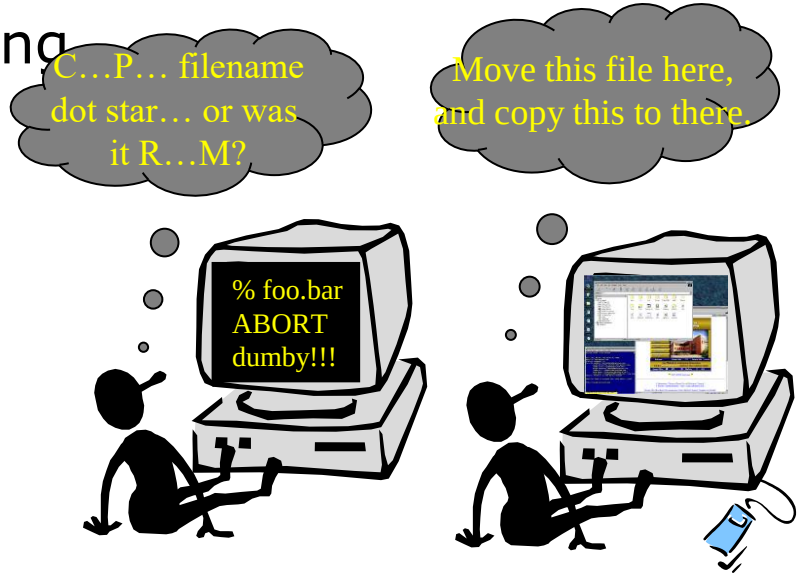
- Batch processing
- Timesharing
- Networking



Community computing

Example Paradigm Shifts

- Batch processing
- Timesharing
- Networking
- Graphical displays



Direct manipulation

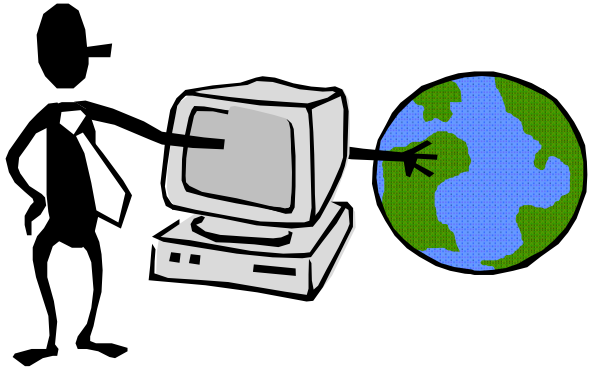
Example Paradigm Shifts

- Batch processing
- Timesharing
- Networking
- Graphical display
- Microprocessor

Personal computing

Example Paradigm Shifts

- Batch processing
- Timesharing
- Networking
- Graphical display
- Microprocessor
- WWW

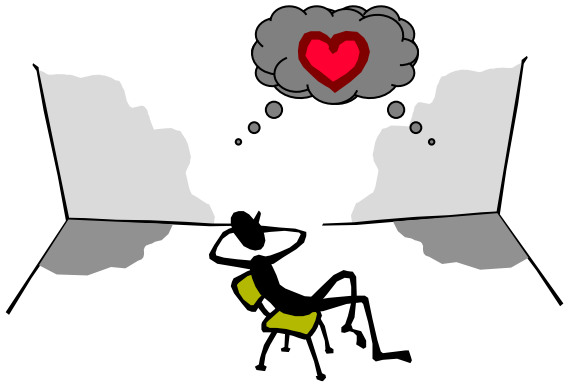


Global information

Example Paradigm Shifts

- Batch processing
- Timesharing
- Networking
- Graphical display
- Microprocessor
- WWW
- Ubiquitous Computing

- A symbiosis of physical and electronic worlds in service of everyday activities.



Agent-based Interfaces

- Original interfaces
  - Commands given to computer
  - Language-based
- Direct Manipulation/WIMP
  - Commands performed on “world” representation
  - Action based
- Agents - return to language by instilling proactivity and “intelligence” in command processor
  - Avatars, natural language processing

Paradigms

Examples of effective strategies for building interactive systems provide paradigms for designing usable

interactive systems.

- The evolution of these usability paradigms also provides a good perspective on the history of interactive computing.
- These paradigms range from the introduction of timesharing computers, through the WIMP and web, to **ubiquitous and context-aware computing**

Conclusion

Computers and related devices have to be designed with an understanding that people with specific tasks in mind will want to use them in a way that is seamless with respect to their everyday work.

Interaction design is concerned with designing interactive products to support the way people communicate and interact in their everyday and working lives

References:

- Human Computer Interaction, 3rd edition, by Alan Dix, Janet Finlay, Gregory D. Abowd, Russell Beale, (2004)
- Ch2 , Ch4