Tools and Interfaces

- **tools augment** our power to think (and act)
  - example: tools for visualization of phylogenetic trees

- **tools constrain** our power to think (and act)
  - example: Roman number system:
    
    | I | II | III | IV | V | VI | VII | VIII | IX | X | XI |
    |---|----|-----|----|---|----|-----|------|---|---|----|
    | 1 | 2  | 3   | 4  | 5 | 6  | 7   | 8    | 9 | 10| 11 |

  - M: 1000  D: 500  C: 100  L: 50  X: 10  V: 5  I: 1
  - (try multiplying MMMCMXCIX * MMCMLIV)

Connecting with Computer Science

- [cs.ubc.ca/~hoos/cpsc101](cs.ubc.ca/~hoos/cpsc101)

The Myth of Human Error

- **myth**: faulty use of technology is usually the result of human error

- **fact**: many so-called human errors are actually errors in design

Connecting with Computer Science

- [cs.ubc.ca/~hoos/cpsc101](cs.ubc.ca/~hoos/cpsc101)

The Myth of Human Error

- deeper understanding of human physiology and psychology is changing the ways that digital interfaces are designed
- example: Ron Rensink’s work on change blindness
  
  [www.psych.ubc.ca/~rensink](www.psych.ubc.ca/~rensink)

Connecting with Computer Science

- [cs.ubc.ca/~hoos/cpsc101](cs.ubc.ca/~hoos/cpsc101)

Clicker question

The clicking sound of a virtual keyboard is an example of …

- (A) familiarity and consistency
- (B) well chosen mappings and metaphors
- (C) providing useful feedback
- (D) managing complexity
Clicker question

Which burner does the blue knob control?

The left layout is superior because it follows the principle of
(A) familiarity and consistency
(B) well chosen mappings and metaphors
(C) providing useful feedback
(D) managing complexity

Clicker question

The hierarchical organization of menus and the ability to hide features that are not of interest are examples of …

(A) familiarity and consistency
(B) well chosen mappings and metaphors
(C) providing useful feedback
(D) managing complexity

Clicker question

• On which side does this door open?
• Which status light indicates ok to proceed?

These examples illustrate:
(A) familiarity and consistency
(B) well chosen mappings and metaphors
(C) providing useful feedback
(D) managing complexity

HCI research @ UBC

involves researchers from CS, Psychology, Commerce, Forest Resource Management and Engineering - see, e.g.:
- D’Groove (digital haptic turntable):
  - www.cs.ubc.ca/labs/spin/projects/dgroove/
- “Multi-Layered Interfaces to Improve Older Adults’ Initial Learnability of Mobile Applications”
  - http://dl.acm.org/citation.cfm?id=1838562.1838563
Food for Thought

“... enjoy yourself. Walk around the world examining the details of design. Take pride in the little details that help... Give mental prizes to those who practice good design: send flowers. Boos to those who don’t: send weeds.”

– Donald A. Norman

Exercise (homework, not collected)

• Explain strengths and weaknesses of human-computer interfaces, referring to concepts such as familiarity and consistency, mappings and metaphors, feedback, negative transfer, or additional concepts that you identify.

• Try this for Mapquest (www.mapquest.com) and CycleVancouver (www.cyclevancouver.ubc.ca)

• Use whole sentences! Provide concrete examples to illustrate your points.

Connecting with Computer Science

Module II: Interfaces

Text-based Interfaces

Human Computer Interaction (HCI)

history in one slide

• The early days
**Human Computer Interaction (HCI)**

*history in one slide*

- The early days
- Punched cards

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**Learning Goal**

*you should be able to*

- use basic features of text-based interfaces such as Unix or search engines, with knowledge of the ways that special symbols are interpreted (or misinterpreted) by such interfaces.

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**Human Computer Interaction (HCI)**

*history in one slide*

- The early days
- Punched cards
- Terminals and keyboards
  - text based interfaces
- The mouse
  - graphical user interfaces
  
  … but text is still important!
Unix

- operating system deployed in the early 1970s to enable real-time sharing of computing resources among multiple users and tasks
- supports *purely text-based commands* to act on data

Selected RQ4s

- In our labs, the UNIX OS was introduced to us. So far, this seems to be an anti-example of good interface. What are its advantages versus [GUIs as found, e.g., in Windows, MacOS, iOS, …]? (submitted by Daniel)

Clicker question

*navigating directories in Unix*

The special directory name ~ refers to

(A) the current directory
(B) the current directory’s parent directory
(C) the current user’s home directory
(D) the root directory of the file system

Clicker question

*navigating directories in Unix*

The special directory name . refers to

(A) the current directory
(B) the current directory’s parent directory
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