Questions?

Today

• The Psychology of Everyday Things (POET)
• Fundamental design principles
Psychopathology of everyday things

• Everyday frustrations
  – Blame it on the users?
    • Need to read the manual?
    • They should learn?
  – Blame it on poor design?
    • Does not take into account basic human capabilities
      – How humans perceive the world
      – How humans learn
      – How humans deal with error
Psychopathology of everyday things

- How many of you can program or use all aspects of your
  - digital watch?
  - VCR?
  - sewing machine?
  - washer and dryer?
  - stereo system (especially car ones)
  - unfamiliar water faucets

We’re Not Designing For Ourselves

Darn these hooves! I hit the wrong switch again!
Who designs these instrument panels, raccoons?
Fundamental Design Goals

“... the *affordances* of objects ... convey messages about their possible uses, actions, and functions” (Norman, p82)

“is for” - objects, not environments

Different population, different affordances

- **Kids**
  - How to deal with small shoes?

- **Elderly**
  - Age Explorer suit (Meyer-Hentschel)

- **Disabled users...**
  - Limited vision, movements,...
Fundamental Design Goals

• Provide the right affordances
• Provide the right **mental model**
  – complexity

Also called conceptual model

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Fundamental Design Goals

• Provide the right affordances
• Provide the right **mental model**
  – Fridge control
Fundamental Design Goals

• Provide the right affordances
• Provide the right mental model
• Provide a good **mapping**

Fundamental Design Goals

• Provide the right affordances
• Provide the right mental model
• Provide a good **mapping**
• Make things **visible**
Fundamental Design Goals

- Provide the right affordances
- Provide the right mental model
- Provide a good mapping
- Make things visible
- Provide feedback
  - Visual, auditory, and haptic
- Recognize causality
  - Be responsive
Constraints

- Cost
  - But it costs more to manufacturer a good input device
- Space
  - But there isn’t room to put one controller per function
- Discoverability
  - Given that we’ve hidden some controls, how do people find them?

Shneiderman’s
Eight Golden Rules of Interface Design

1. Strive for consistency.
   Consistent sequences of actions should be required in similar situations; identical terminology should be used in prompts, menus, and help screens; and consistent commands should be employed throughout.
Shneiderman’s
Eight Golden Rules of Interface Design

2. Enable frequent users to use shortcuts.
As the frequency of use increases, so do the user's desires to reduce the number of interactions and to increase the pace of interaction. Abbreviations, function keys, hidden commands, and macro facilities are very helpful to an expert user.

3. Offer informative feedback.
For every operator action, there should be some system feedback. For frequent and minor actions, the response can be modest, while for infrequent and major actions, the response should be more substantial.
Shneiderman’s
Eight Golden Rules of Interface Design

4. Design dialog to yield closure.
   Sequences of actions should be organized into groups with a beginning, middle, and end. The informative feedback at the completion of a group of actions gives the operators the satisfaction of accomplishment, a sense of relief, the signal to drop contingency plans and options from their minds, and an indication that the way is clear to prepare for the next group of actions.

Shneiderman’s
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5. Offer simple error handling.
   As much as possible, design the system so the user cannot make a serious error. If an error is made, the system should be able to detect the error and offer simple, comprehensible mechanisms for handling the error.
Shneiderman’s
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6. Permit easy reversal of actions.
This feature relieves anxiety, since the user knows that errors can be undone; it thus encourages exploration of unfamiliar options. The units of reversibility may be a single action, a data entry, or a complete group of actions.

Shneiderman’s
Eight Golden Rules of Interface Design

7. Support internal locus of control.
Experienced operators strongly desire the sense that they are in charge of the system and that the system responds to their actions. Design the system to make users the initiators of actions rather than the responders.
The limitation of human information processing in short-term memory requires that displays be kept simple, multiple page displays be consolidated, window-motion frequency be reduced, and sufficient training time be allotted for codes, mnemonics, and sequences of actions.