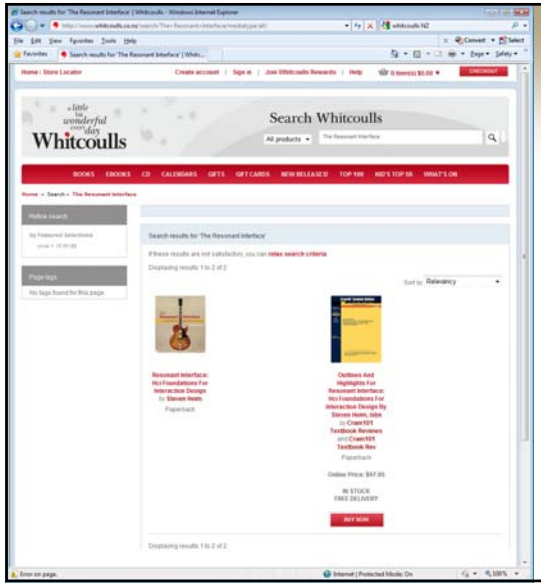
Lecture 7
Design Principles #1

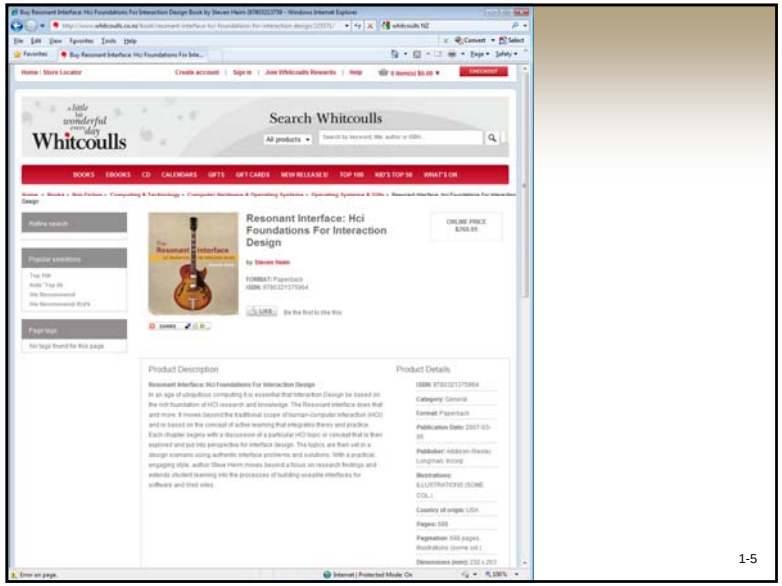
Design principles
- **Comprehensibility**
- **Learnability**
- **Effectiveness/usefulness**

Heim, Chapters 6.1-6.4

Nielsen's 10 Usability Heuristics

- *Visibility of system status*
- *Match between system and the realworld*
- *User control and freedom*
- *Consistency and standards*
- *Error prevention*
- *Recognition rather than recall*
- *Flexibility and efficiency of use*
- *Aesthetic and minimalist design*
- *Help users recognize, diagnose, and recover from errors*
- *Help and documentation*





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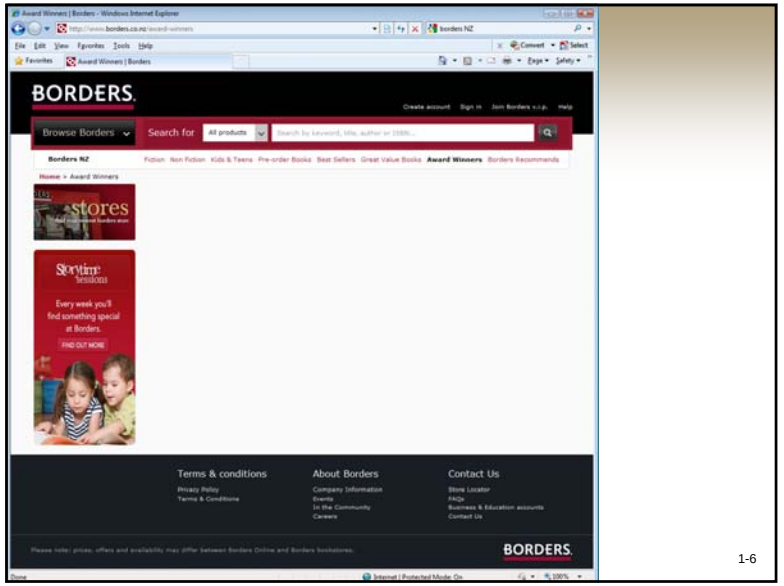

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Principles of Interaction Design

- *How do we create elegant solutions to complex interaction problems?*
- *How do interaction designers succeed at creating great designs that are powerful and aesthetically appealing?*

1-7

Principles of Interaction Design

1-8

Principles of Interaction Design

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Design principles can be used to guide design decisions

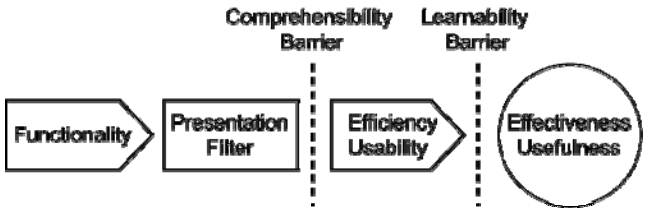
•Design principles do not prescribe specific outcomes; they function within the context of a particular design project.

•Design principles guide interaction designers and help them make decisions that are based on established criteria

Gulfs and Principles

- Design principle can be used to determine if there are gulfs of execution or evaluation
- Gulfs of execution relate to the effectiveness principles
- Gulfs of evaluation relate to the efficiency principles

Framework for Design Principles

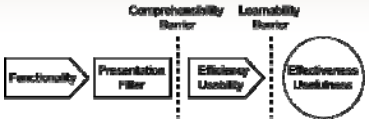


Framework for Design Principles

The framework has the following components:

- **Usability Goals**
  - There are two main usability goals in the framework; comprehensibility and learnability.
- **Design Principle Categories**
  - The framework also divides the design principles into two main groups; efficiency principles and effectiveness principles.
- **Format to Describe Design Principles**
  - The framework uses the format "serves the principle of … which promotes …" to describe the different principles.
  - *Familiarity* serves the principle of *memorability*, which promotes *usability*.

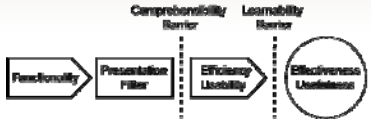
Framework for Design Principles



Functionality - The system must have adequate functionality for a particular task.

Presentation Filter - The functionality must be made accessible through the presentation filter (interface).

Framework for Design Principles



Comprehensibility Barrier - If the presentation is comprehensible, the comprehensibility barrier will be superseded. This depends on the degree of efficiency/usability in the interface design.

Learnability Barrier – If the interface is comprehensible it will be learnable, there is a direct relationship.

Effectiveness/Usefulness - If the user can learn the interface he can take advantage of the functionality and the interface will, therefore, be useful.

Comprehensibilty

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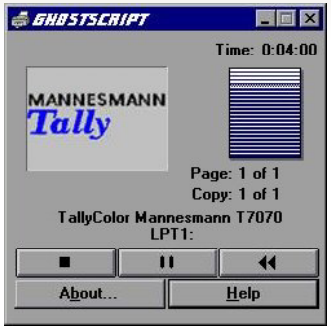
An interface design that is easy to comprehend will be efficient and effective

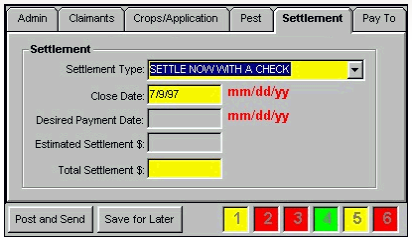
- If a user does not understand the interface it will be useless
- A design's comprehensibility is highly dependent on the way in which the interface communicates its functionality to the user

Interface Hall of Shame



Tally printer dialog

Interface Hall of Shame



Stoplight metaphor

Learnabilty

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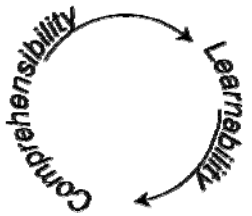
An interface with high usability will be easier to learn

- The learnability of a design is based on comprehensibility: if you can't understand it, you can't learn it

Comprehensibility Learnabilty

- Learnability and comprehensibility are recursive: we start with comprehensibility which affects learnability, which will in turn increase comprehensibility.



Comprehensibility/Learnability Feedback Loop

Principles of Interaction Design

- Effectiveness/Usefulness
  - Utility
  - Safety
  - Flexibility
  - Stability
- Efficiency/Usability
  - Simplicity
  - Memorability
  - Predictability
  - Visibility

Design Principle Categories

- **Effectiveness/Usefulness**

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Effectiveness describes the usefulness of a design

- The effectiveness goal stipulates that a design must fulfill the user's needs by affording the required functionality

Effectiveness/Usefulness

- **Utility** - The principle of utility relates to what the user can do with the system.
- **Safety** - If a design has a high degree of safety, it will prove more useful than a design that involves a high degree of risk.
  - **Recovery** - can be implemented in interaction designs by incorporating appropriate undo functionality and robust error recovery routines.

A computer shall not harm your work or, through inaction, allow your work to come to harm.

(Raskin, 2000)

Effectiveness/Usefulness

- **Flexibility** - A tool that is flexible can be used in multiple environments and may address diverse needs
  - **Customization** - A tool would have greater flexibility if people were able to customize the interface according to their personal preferences

- **Stability** - A stable system is a robust system.
  - A system that functions consistently well will be more useful than a system that crashes frequently