Chapter 13
Interaction Styles

- Interaction Styles
- Command Entry
- Menus and Navigation
- Form-fills and Spreadsheets
- Natural Language Dialogue
- Direct Manipulation
- Cognitive Issues in Direct Manipulation

Interaction Styles

- All the ways in which users communicate or interact with computer systems.
Command Entry

- Style which requires a user to enter **commands** at a given prompt.
  - **Command**- a way of expressing instructions to a computer directly.
- Example: MS-DOS

```
C:\>_
```

Menus and Navigation

- **Menu**- A set of options displayed on the screen where the selection and execution of one or more options results a change in the interface. Two types are:
  - **Pull-down**- Menu dragged down from a title.
  - **Pop-up**- Menu that appears when you click on an icon or designated area of the screen.
Form-fills and Spreadsheets

- **Form fills** allow users to enter information into preset areas.
  - Example-Online order forms

- **Spreadsheets** appear similar to their paper counterpart, but allow much more functionality.
  - Example-Microsoft Excel
Natural Language Dialogue

- Allows users to communicate more directly with computer systems.
- Although natural language systems are not yet possible, expert systems using a subset of natural language do exist.

Direct Manipulation

- Describes systems with the following four features:
  - Visibility of objects
  - Rapid, reversible, incremental actions
  - Replacement of command language syntax
    - Example: Window Explorer, other click-and-drag applications.
Direct Manipulation

• Benefits
  – Novices can learn quickly
  – Experienced users can work faster
  – Intermittent users can retain concepts
  – Users can see if their actions are achieving their goals
  – Users experience less anxiety and gain confidence

Cognitive Issues and Direct Manipulation

• Cognitive study of direct manipulation led to a discrepancy between the gulf of execution and the gulf of evaluation.
  – **Gulf of Execution** - The distance between the user’s goals and the means of achieving them through the system.
  – **Gulf of Evaluation** - The distance between the system’s behavior and the user’s goals.
Cognitive Issues in Direct Manipulation

• Bridging the Gulf of Execution
  – Users- Changing the way they currently think and carry out a task toward the way the system requires it to be done.
  – Designers- Designing the input characteristics to match the users psychological capabilities.
Cognitive Issues in Direct Manipulation

- Bridging the Gulf of Evaluation
  - Users- Changing their interpretation of the system image and evaluating it with respect to their goals.
  - Designers- Changing the output characteristics of the system.

Cognitive Issues in Direct Manipulation

- **Semantic Directness**- Relation between what the user wants to express and the meaning of the expressions available at the interface.
- **Articulatory Directness**- Relation between expression meanings and their physical form.
Cognitive Issues in Direct Manipulation

• Other design principles being studied in relation to direct manipulation:
  – Affordances
    • Perceptual, sequential, and sound.
  – Constraints
    • Physical, semantic, and logical.
  – Mappings
  – Feedback