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.
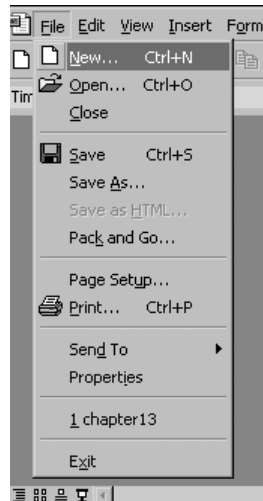
Command Entry

- 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.

Menus and Navigation

File	Edit	View	Insert	Form...

New...   Ctrl+N
Open...   Ctrl+O
Close
Save   Ctrl+S
Save As...
Save as HTML...
Pack and Go...
Page Setup...
Print...   Ctrl+P
Send To ►
Properties
1 chapter13
Exit

Pull-Down Menu

Picture ☒

Pop-up Menu

             Login

Move   Shrink

Open   Close

Shape   Hardcopy

             Logout

Pie Menu

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.
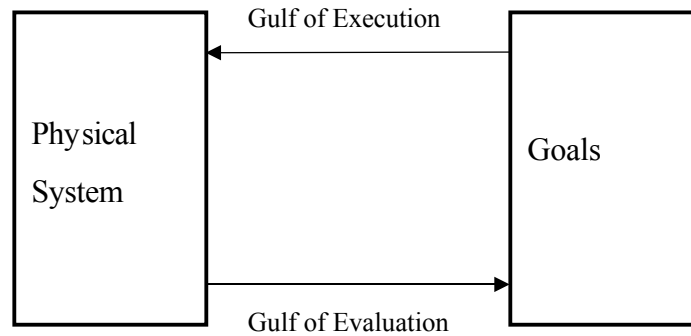
Direct Manipulation

- 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

Gulf of Execution

| Physical System | | Goals |

Gulf of Evaluation

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