COMS W4170
Direct Manipulation

Steven Feiner
Department of Computer Science
Columbia University
New York, NY  10027

Direct Manipulation

- Term coined by Shneiderman (1983)
  - Objects represented visually
  - Actions are rapid, incremental, reversible
  - No conventional menu-based or textual commands—user interacts directly with objects’ representations
- Results in
  - Feelings of mastery/enjoyment/excitement/proselytizing
  - Competence
  - Ease in learning, retention
  - Desire to learn more
Direct Manipulation

- Difference between
  - “Telling the computer what to do”
  - Doing it
- But, compare
  - “Move cursor to left by 2 chars”
  - vs.
  - vs.
  - <Move mouse>

And, what about

- “Book me the cheapest reasonably direct flight to Vienna on Monday.”

Is direct manipulation always best?

JohnnyCab in Total Recall

http://www.youtube.com/watch?v=0H5k--n7iF1

WIMP Interfaces

- User interfaces based on a combination of
  - Windows
  - Icons
  - Menus (or Mice)
  - Pointing

History: 60s

- Ivan Sutherland, Sketchpad, 1963
  - First direct manipulation UI
  - First CAD system
  - First use of graphical “instances”
  - First use of graphical constraints

http://youtube.com/watch?v=USyoT_Ha_bA
http://youtube.com/watch?v=BKM3CmRqK2o
History: 60s

- SRI Augmentation Research Center (Doug Engelbart)—NLS
  - Text processing
  - Mouse
  - Windows
  - Hypertext links
  - 1968 Fall Joint Computer Conference Demo

http://sloan.stanford.edu/MouseSite/1968Demo.html

Doug Engelbart, 60s–70s