

Windows, Icons, Menus, Pointers: Icon Design

This material has been developed by Georgia Tech HCI faculty, and continues to evolve. Contributors include Gregory Abowd, Jim Foley, Diane Gromala, Elizabeth Mynatt, Jeff Pierce, Colin Potts, Chris Shaw, John Stasko, and Bruce Walker. Last updated by Valerie Summet, Emory University. Permission is granted to use with acknowledgement for non-profit purposes. Last revision: Feb. 2011.

Opportunity

- Talk by Ben Shneiderman
 - *Information Visualization for Knowledge Discovery: Electronic Health Records and Social Networks*
 - Goizueta Business School, Rm 334
 - March 4, 2011 - 11am-12:30pm

What is an Icon?

icon (*def*), *n.*, *pl.* **icons, icones**

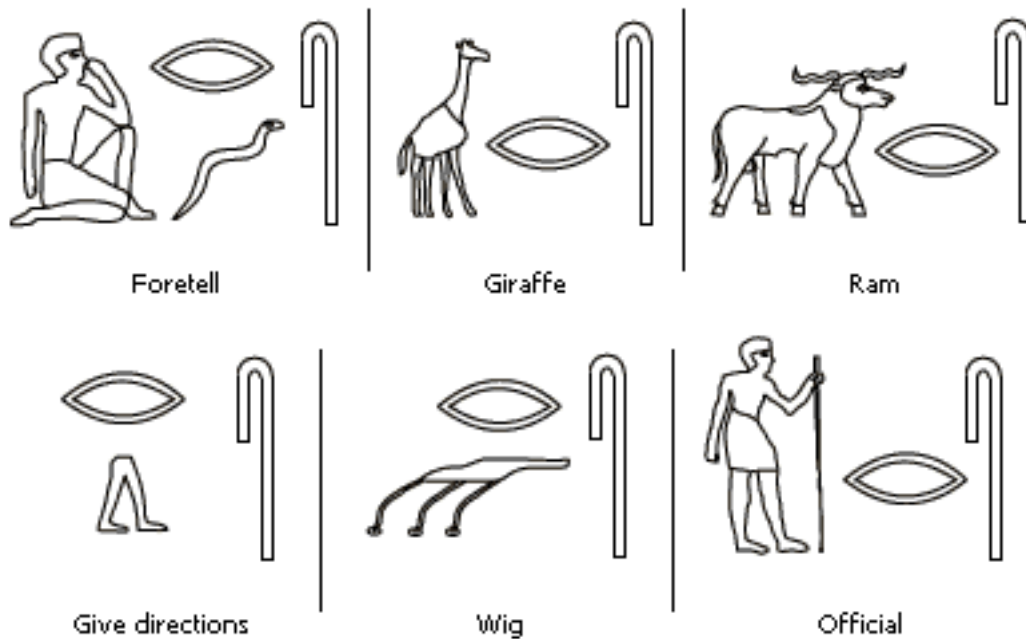
1. A picture, image, or other representation
2. (*Eastern Ch.*) a representation in painting, enamel, etc. of some sacred personage, as Christ or a saint or angel, itself venerated as sacred.
3. (*Logic*) a sign or representation which stands for its object by virtue of a resemblance or analogy to it

Also, **eikon, ikon**. [t. L, t. Gk.: m. eikon likeness, image]

-Syn. 2. See image.

On a Computer, Icons:

- Are usually small
- Play a key role in Direct Manipulation
- Might or might not “look like” that which they represent:



Icons provide

- Layout flexibility
- Potential for faster recognition
- Potential for faster selection
- Opportunity for double coding
- Language-independent representation
- Opportunity for confusion
 - How to interpret?
 - Too many
 - Not unique

Icons can be used to represent

- Objects
- Classes of objects
- Tools
- Actions
- Actions on class of objects
- Properties (attributes)
- Relations
-

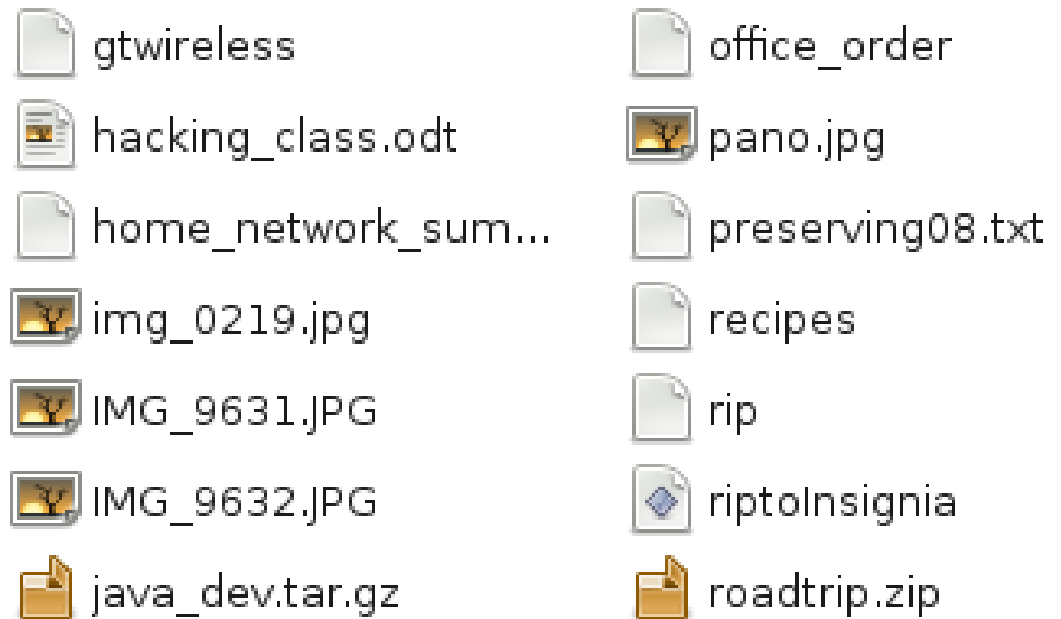
Icons Depict Objects



- Squares
- Lines
- Connectors
- Text
- Charts
-

Icons Depict Different Classes of Objects

- Useful for relatively few objects of any one class
- Ex: Based on icons only, which are pictures?



Not as Useful when all Objects are of Same Class!



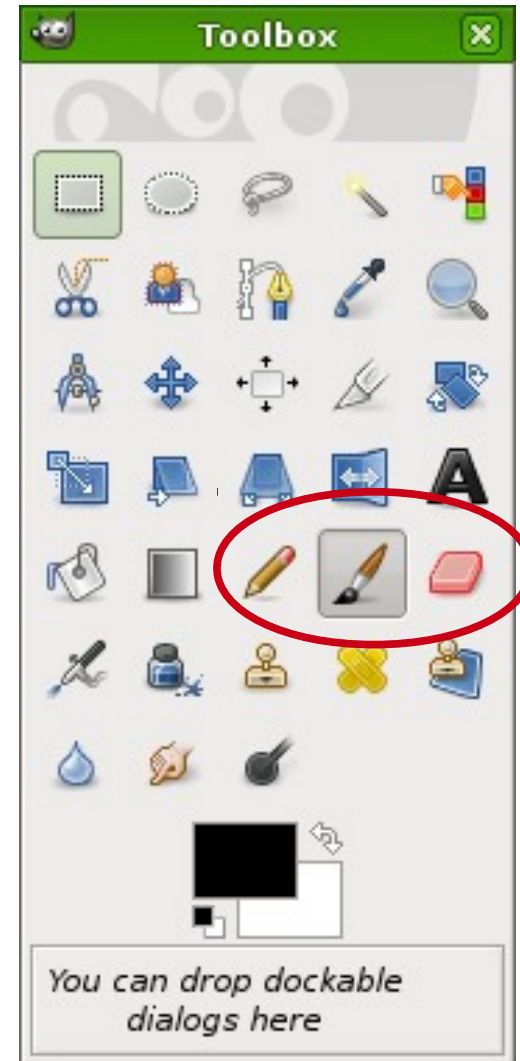
- Doesn't tell me anything except that I have a lot of folders.
- Have to use the text instead.
- The icons are still useful in that they make a big target for selection

Another Example (plus History!)



Icon Depict Tools

- Icons which represent the objects used to perform the actions



Icons Depict Actions

Actions represented by abstract icons

Actions represented by showing before and after



Icon Design

- Relies on drawing ability – hire someone to do it (there are standards and ways to critique icon design)
- Avoid meaningless, gratuitous use of icons
- Too many icons hinder usability and understandability

Icon Design Guidelines

- Represent object or action in a familiar and recognizable manner



Icon Design Guidelines

- Make the selected icon clearly distinguishable from surrounding unselected icons
 - Design twice for two states
- Make each icon distinctive
- Make each icon stand out from background
- Make icons harmonious members of icon family
- Avoid excessive detail
- Limit number of icons
- “Double code” with text name/meaning

Double Coding Example

- Here's how NOT to do it!
(Found in a Georgia Tech parking garage)
- Why not?
- What's the right way?



Icon Design - Ambiguities



- Icons from America On Line (circa 1995)
- Inconsistencies?
 - Two different icons represent the same object, i.e., Software Library
 - Same icon represents two different objects, ie, Software Library and Geographic Store
- Which is the (bigger) problem?

Icon Design - Abstractions

- Is the symbolic aspect of the icon meaningful?
- Icons or logos?



Use a Graphics Alphabet

- Use a basic graphics alphabet from which to form icons



File



Program



Painting



Text



Chart



Drawing
(on a Grid)

Use a Graphics Alphabet

- Icons created from the graphics alphabet



Paint
File



Text
File



Chart
File



Drawing
File



Paint
Program



Word
Processing
Program

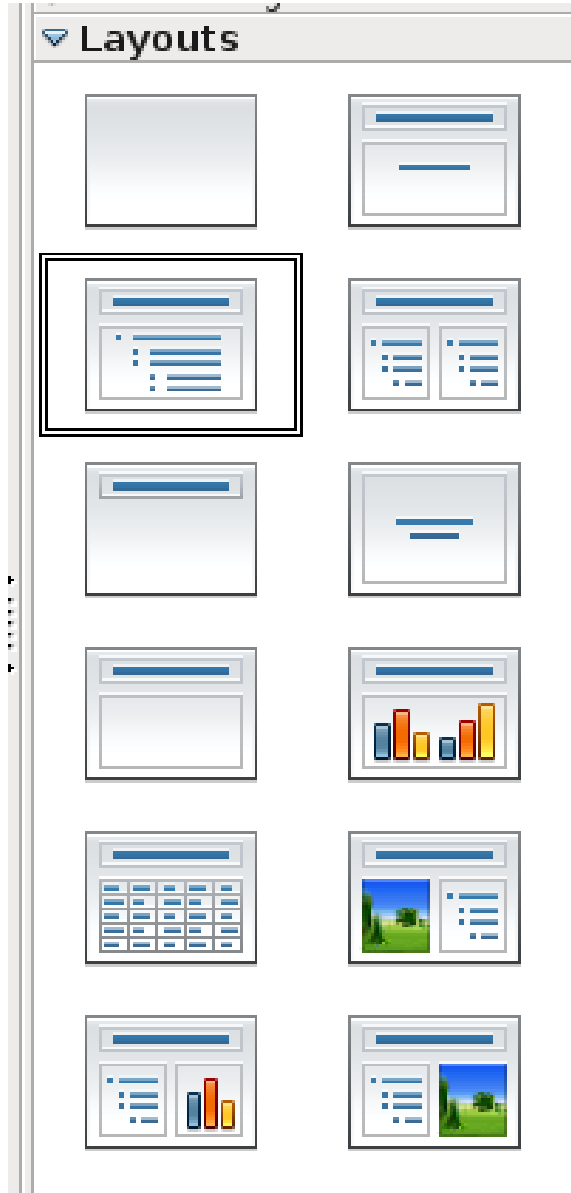


Charting
Program



Drawing
Program

Modern Example



What do These Icons Mean?



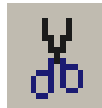
Icons should be recognizable, memorable, and discriminable

Answers

Window's Start menu:



Common document icons:



cut



open



copy



new



paste



save



spell check



print

Apple Mac :



address book



Spotlight



Dashboard



Mail



Hard drive

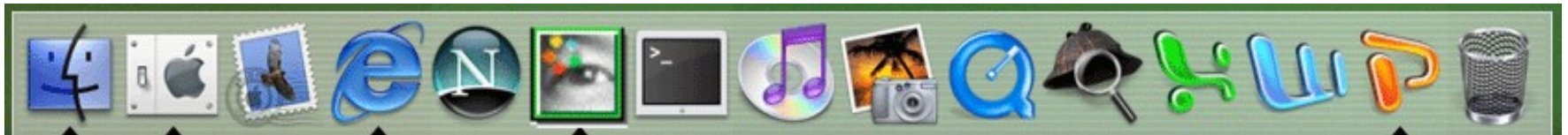
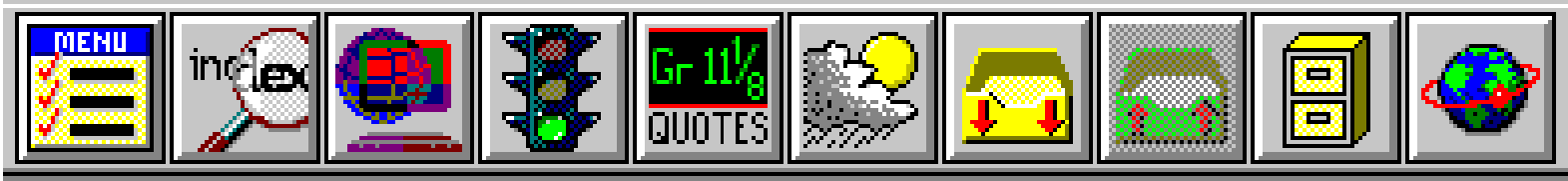


iChat

Any use of a graphics alphabet?

Recognizable? Memorable? Discriminable?

Icon Design - Guess the Meaning

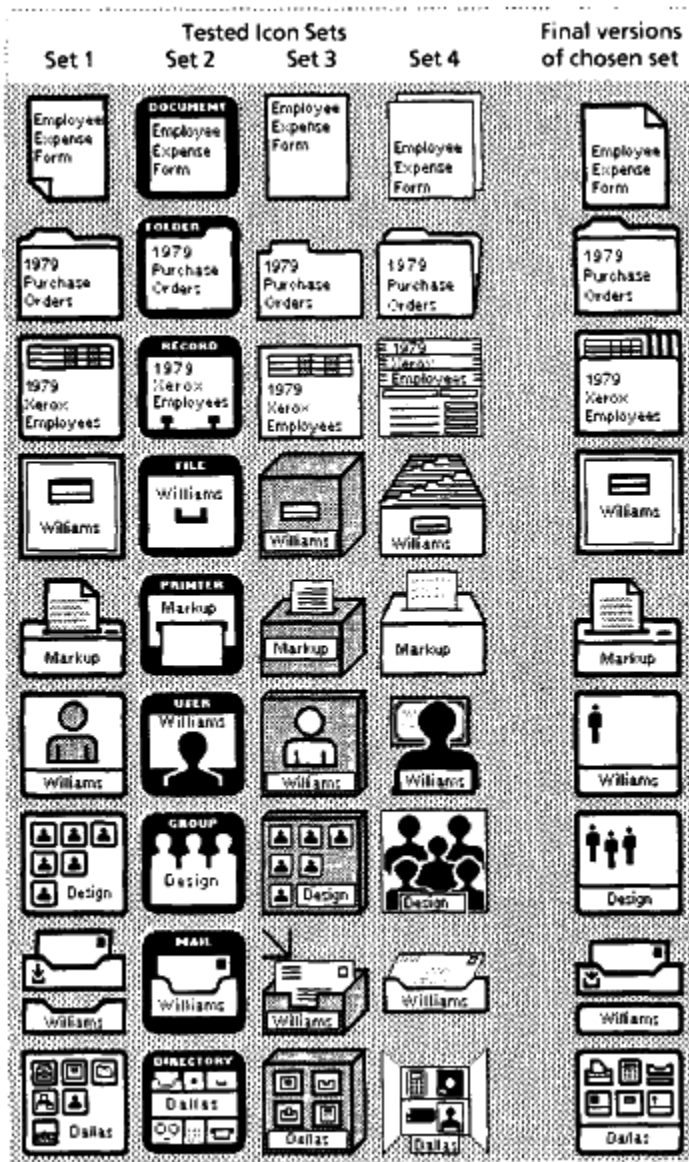


- What do each of these signify?
- Can we make any intelligent guesses?
- Almost always want to accompany your icons by a text label
- Observation: Icon design has partially moved from symbolic to artistic

Icon Shape Test - XEROX PARC

- Four different designs of icon shapes were tested
 - Naming test (description, familiarity)
 - Timed test (recognizability, distinguishability)
 - Rating test (opinions, preference)
- Results - High recognition accuracy of icons with
 - Realistic depiction
 - Labels
 - Visual variety
- Suggestions for refinements of specific designs

Four sets of icon designs



Set 1 was chosen and modified as shown at the right

Xerox Office Systems Division, Human Factors Testing in the Design of Xerox's 8010 "Star" Office Workstation. In Proc. CHI'83 Human Factors in Computing Systems, ACM, New York, pp. 72-77.

When choosing/including icons:

- Icons should be:
 - recognizable
 - memorable
 - discriminable
- Decide if you need text (or not) for understandability.
- Avoid overuse

Exercises for the Mind

- Find an example of each use of icons
- Find an example of inconsistency in icon use
- Find an example of use of a graphics alphabet from which to form icons
- Discuss emoticons in the context of iconography
- Find examples of symbolic icons, and examples of purely artistic icons (as in definitions 1 and 3 of Icon)
- Are there times when icons should not be used? When? Find an example of mis-use.