

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. Comments directed to foley@cc.gatech.edu are encouraged. Permission is granted to use with acknowledgement for non-profit purposes. Last revision: July 2005.

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

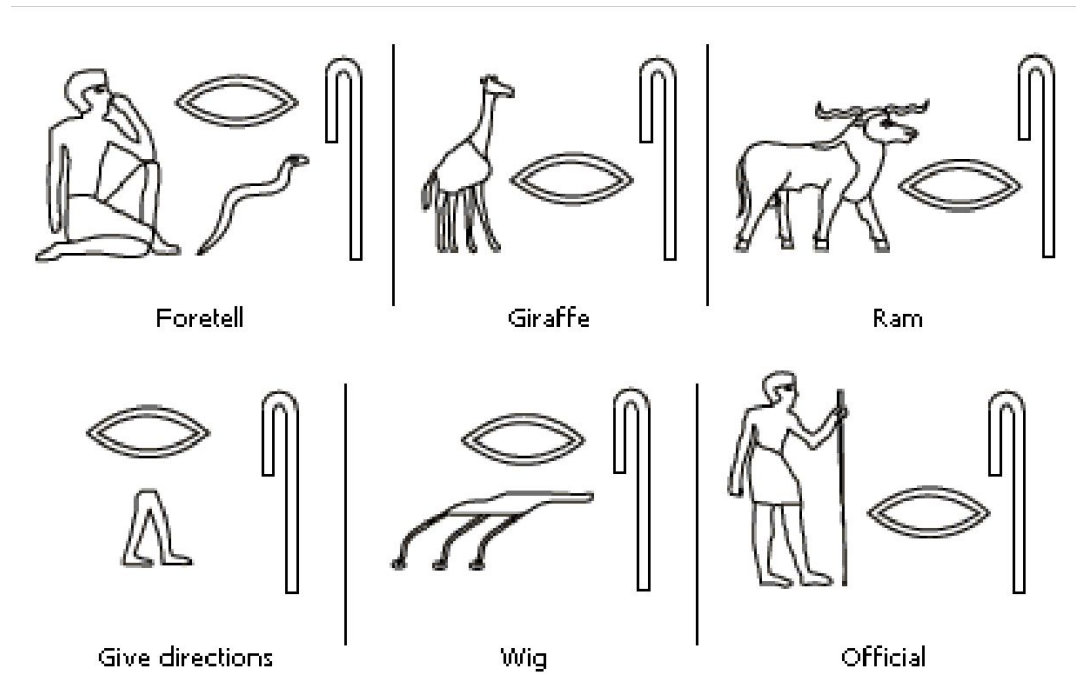
Also, **eikon, ikon**. [t. L, t. Gk.: m. eikon likeness, image]

–**Syn. 2.** See **image**.

Icons



- Icons might or might not “look like” that which they represent:



Icons can be used to represent



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






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 Depict Objects



Icon	Object Depicted	Description of the Command
	TV camera	Turns on the TV camera and snaps its picture onto the display screen (From <u>Superpaint</u>)
	Image area	Removes and inserts image areas (From <u>Markup</u>)
	Page with left margin	Changes the left margin (From <u>Smalltalk Galley Editor</u>)
	Grid	Changes the grid spacing and alignment (From <u>Markup</u>)
	Paragraph	Selects paragraphs (Cursor from <u>Bravo</u>)

Hemenway, "Psychological Issues in the Use of Icons in Command Menus," in Proc. Of the Human Factors in Computer Systems Conference, Washington, D.C., ACM, 1982, pp. 20-24.

Icons Depict Different Classes of Objects



- Useful for relatively few objects of any one class

Not as Useful when all Objects are of Same Class!



- The icons are still useful in that they make a big target for selection

Not as Useful when all Objects are of Same Class!



Icons Depict Actions



Actions represented by
abstract icons

Actions represented by
showing before and after





Icons Depict Operations on Objects



- Icons can be used to depict operations on objects

Abstract representation

Concrete representation
-look like tools used to
perform operation

Icon	Operation Implied	Description of the Command
	Translate	Translates lines, curves, and text (From <u>Draw</u>)
	Delete	Deletes lines, curves, and text (From <u>Draw</u>)
	Paint	Re-paints lines and curves and re-writes text (From <u>Draw</u>)
	Cut	Dashes and un-dashes lines and curves (From <u>Draw</u>)

Hemenway, "Psychological Issues in the Use of Icons in Command Menus," in Proc. Of the Human Factors in Computer Systems Conference, ACM, 1982, pp. 20-24.

Icons Depict Operations on Objects

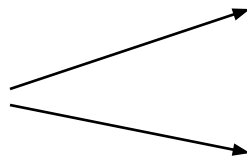


- Icons can be used to depict objects and operations combined:

More abstract



Before and after



Before and in process



Icon	Operation Implied	Object(s) Depicted	Description of the Command
	Delete	Image area	Deletes image areas (From <u>Superpaint</u>)
	Magnify	Image area	Enlarges image areas (From <u>Superpaint</u>)
	Magnify	Image area	Enlarges image areas (From <u>Smalltalk Galley Editor</u>)
	Fill in	Bounded areas, colors	Fills in bounded picture areas with color (From <u>Superpaint</u>)

Hemenway, same citation

Icon Depict Tools



- Action icons which represent the objects used to perform the actions

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 quickly become illegible

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
- 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 the Tech Square Parking Garage, third level)
- Why not?



Icon Design - Ambiguities



And also...

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

Icon Design - Abstractions



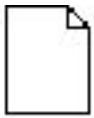
- Is the symbolic aspect of the icon meaningful?



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

Icon Design - Guess the Meaning



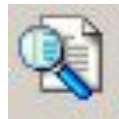
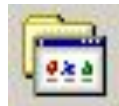
What do each of these signify?

Any sign of a graphics alphabet in use here?

Almost always want to accompany your icons by a text label

Observation: Icon design has partially moved from symbolic to artistic

What do These Icons Mean?



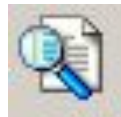
Icons should be recognizable, memorable, and discriminable

What do These Icons Mean?

Answers



From Window's Start menu:



Common document icons:



cut



copy



paste



spell
check



open



new



save



print

Any use of a graphics alphabet?

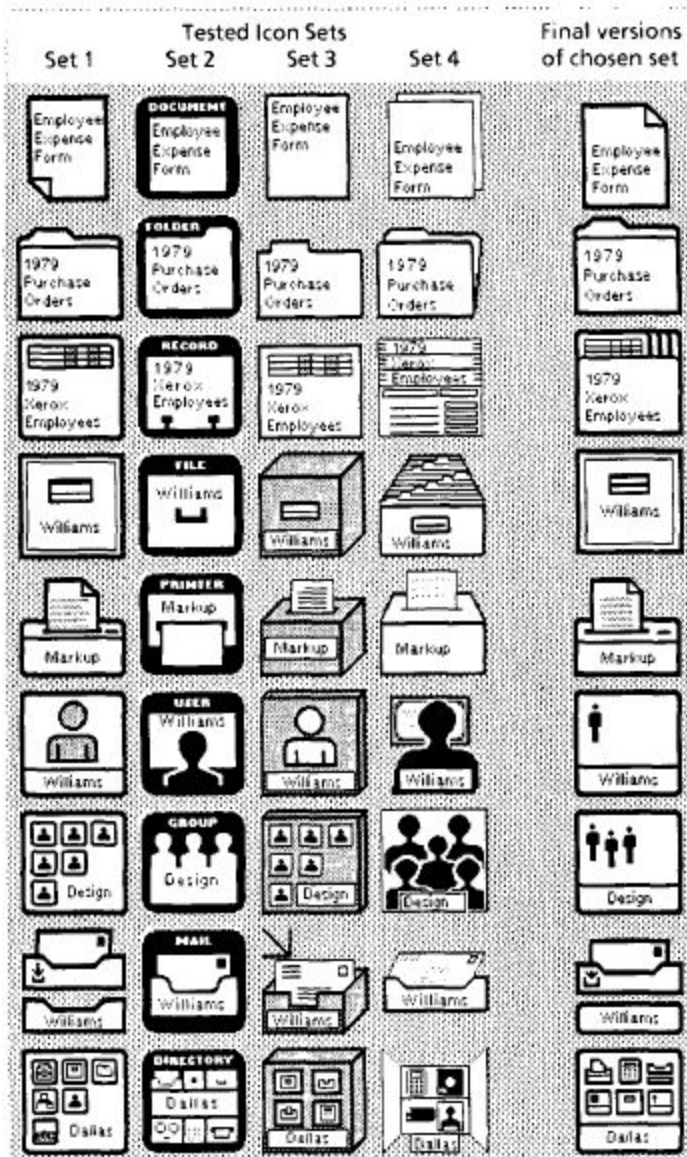
Icons should be recognizable, memorable, and discriminable

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.

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.