

# Graphic Design

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Spring 2007

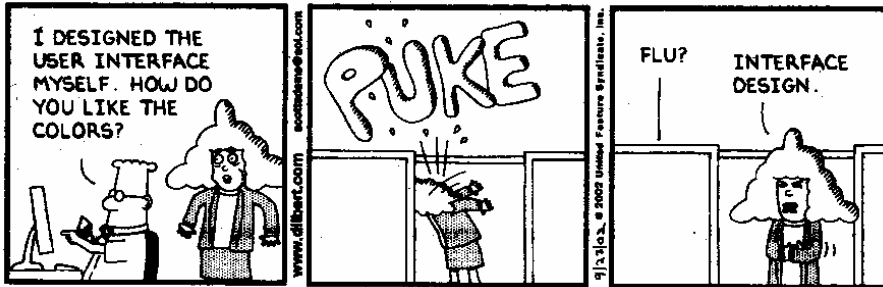
This material has been developed by Georgia Tech HCI faculty, and continues to evolve. Contributors include Gregory Abowd, Al Badre, Jim Foley, Elizabeth Mynatt, Jeff Pierce, Colin Potts, Chris Shaw, John Stasko, and Bruce Walker. Permission is granted to use with acknowledgement for non-profit purposes. Last revision: January 2007.

## Agenda

- Typography
- Color
- Icons



## Your Screen?



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## Typography

- Readability
  - How easy is it to read a lot of text
- Legibility
  - How easy is it to recognize a short burst of text
- Typeface = font  
(not really, but close enough)

6750-Spr '07



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## Wow

*Whenever your local SMS Administrator sends you an actual software Package, the SMS Package Command Manager will appear (usually at network login time) displaying the available Package(s). The following screenshots display screens similar to what you will see when you receive an actual SMS Package.*

*To start the demonstration, click the "OK" button in the bottom right corner of the screen.*

Yuk



## Typography

- Serif font - readability
- Sans serif font - legibility
  - (both are variable spaced)
- Monospace font



## Fonts

- Serif
  - Times, Bookman
- Sans serif
  - Tahoma, Arial
- Decorative
  - Comic Sans
- Script
  - *Script*
- Monospaced
  - Courier, Lucida



## Case

- Characters and symbols should be easily noticeable and distinguishable
  - Avoid heavy use of all upper case
  - Studies have found that mixed case promotes faster reading

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HOW MUCH FUN IS IT  
TO READ ALL THIS TEXT  
WHEN IT'S ALL IN  
CAPITALS AND YOU  
NEVER GET A REST

How much fun is it  
to read all this text  
when it's all in  
capitals and you  
never get a rest



## Typography

- Guidelines
  - Use serif for long, extended text; sans serif for “headlines”
  - Use 1-2 fonts/typefaces (3 max)
  - Use of normal, italics, bold is OK
  - Never use bold, italics, capitals for large sections of text
  - Use 1-3 point sizes max
  - Be careful of text to background color issues



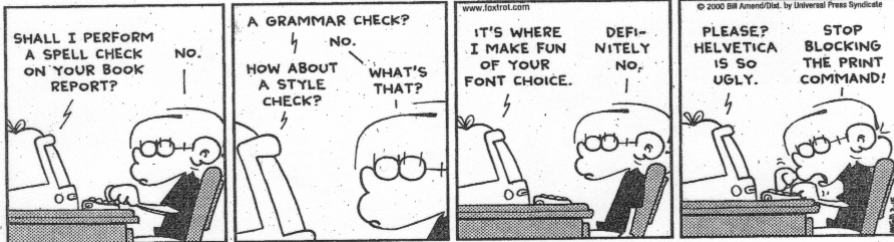
## More Wow



# Font Control

FOXTROT

By Bill Amend



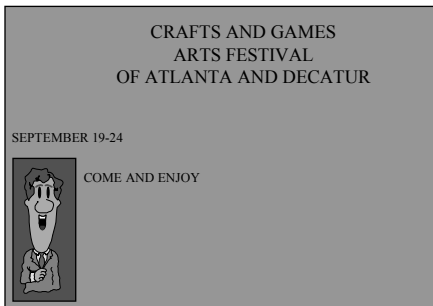
6750-Spr '07



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## Example

Which do you prefer?



Applies lots of these principles

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## Color

- We see the world via a *reflective* color model
  - Light strikes a surface and is reflected to our eyes--Properties of surface dictate color
  - *Subtractive* color model - Cyan Magenta Yellow primaries
- Colors on display follow the *emitted* model
  - *Additive* color model - Red Green Blue primaries



## Characterizing Color - HSV Model

- Hue
  - basic color, pigment
- Saturation
  - relative purity, brightness, or intensity of a color
- Value
  - lightness or darkness of a color
- Most commonly-used model

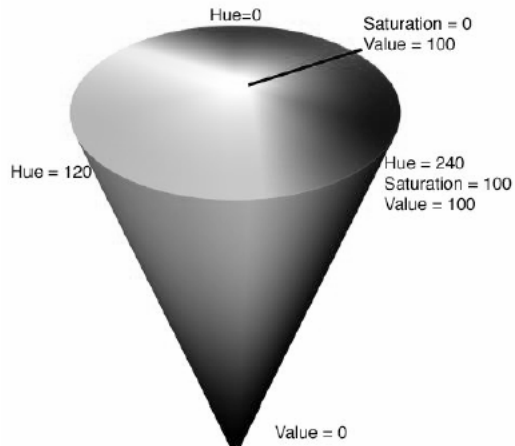





Figure 2: The HSV Cone

Image from: *Adventures in HSV Space*,  
Darrin Cardani, dcardani@buena.com



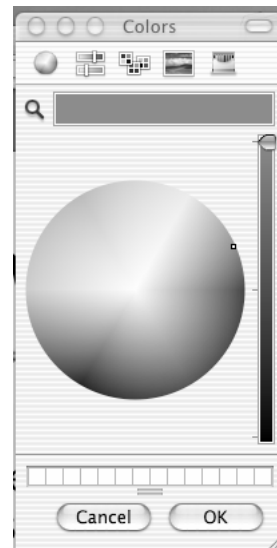
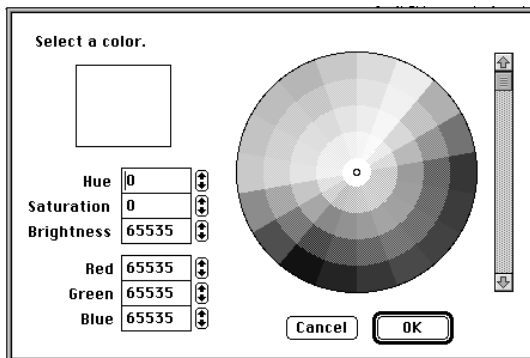
## HSV Color Model

- Hue 
  - Wavelength (red, green, yellow, blue)
  - Spectrum (VIBGYOR)
- Saturation 
  - Pastel versus strong (baby blue, sky blue, royal blue)
- Value 
  - amount of energy (white, light gray, dark gray, black)
  - Usually  $V = 0.299 * R + 0.587 * G + 0.114 * B$



## HSV Color Space

- Typical color selection tools





## Color

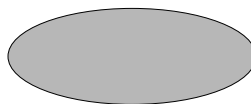
- On monitors, typically RGB scheme
  - 0-255 value each red, green, blue
  - Brightness is typically
$$0.299 * R + 0.587 * G + 0.114 * B$$

– R: 170 G:43 B: 211



## Color

- Use it for a purpose, not to just add some color in



## Color Guidelines

- Display color images on black background
- Choose bright foreground color (white, bold green,...)
- Avoid brown and green as background colors
- Be sure fg colors contrast in both brightness and hue with bg colors



## Color Guidelines

- Use color sparingly--Design in b/w then add color where appropriate
- Use color to draw attention, communicate organization, to indicate status, to establish relationships
- Avoid using color in non-task related ways
- (experiment coming next)

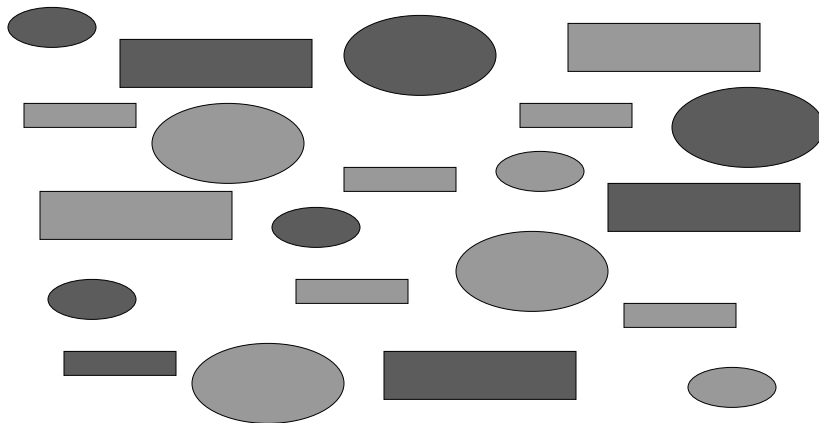


## Visual Exercise

- How many small objects?
- How many rectangles?
- How many orange objects?



## How many...

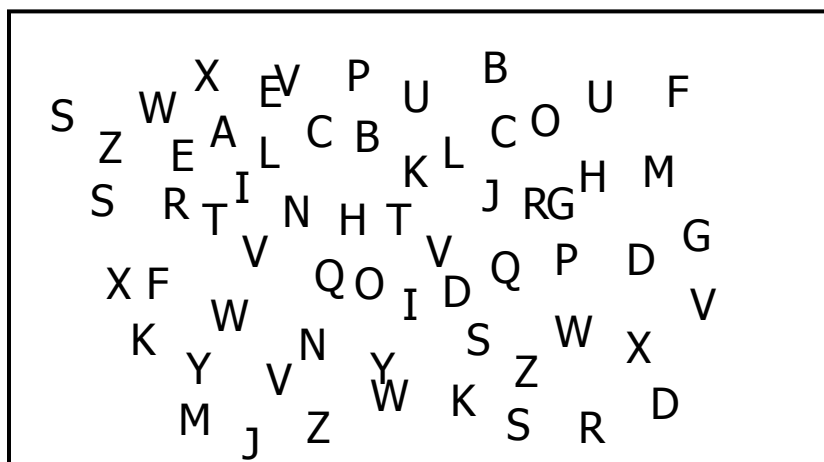


## Visual Exercise

- Left: Find the red letter
- Right: Find the 'A'



Find the...



## Color Associations

- Red
  - hot, warning, aggression, love
- Pink
  - female, cute, cotton candy
- Orange
  - autumn, warm, Halloween
- Yellow
  - happy, caution, joy
- Brown
  - warm, fall, dirt, earth
- Green
  - lush, pastoral, envy
- Purple
  - royal, sophisticated, Barney



## Culturally Specific Color Meanings

Color	Western European	Japanese	Chinese	Arabic
Red	Danger, Aristocracy (France)	Anger, Danger	Joy, Festive Occasions	
Yellow	Caution, Cowardice	Nobility, Childish, Gaiety	Honor, Royalty	Happiness, Prosperity
Green	Safe, Sour, Criminality (France)	Future, Youth, Energy		Fertility, Strength
Blue	Masculinity, Sweet, Calm, Authority	Villainy		Virtue, Faith, Truth
White	Purity, Virtue	Death, Mourning	Death, Mourning	
Black	Death, Evil			



## Color Palettes

- Color palette – set of colors used on one screen
- Choose color palette from HSV space by varying and two of H, S, and V.
- Don't vary hue, saturation and brightness at the same time.
- Unless want continuous tone or 'artsy' effect, best to use only 4-6 colors per screen



## Color Suites/Palettes

- Designers often pick a palette of 4 or 5 colors



Professional



Monochromatic



Southwestern





## Color Guidelines

- Color is good for supporting search
- Color generally faster
  - Shapes (60%)
  - Size (40%)
  - Brightness (40%)
  - Alpha characters (40%)
  - Letters (10%)



## Color Guidelines

- Do not use color without some other redundant cue
  - Color-blindness
  - Monochrome monitors
  - Redundant coding enhances performance
- Redundant coding increases discrimination
  - Red triangle 
  - Green square 



## Color Guidelines

- Limit coding to 8 distinct colors (4 better)
- Avoid using saturated blues for text or small, thin lines
- Use color on b/w or gray, or b/w on color



## Effect of Colored Text on Colored Background

Black text on white	_____
Gray text on white	_____
Yellow text on white	_____
Light yellow text on white	_____
Green text on white	_____
Light green text on white	_____
Blue text on white	_____
Pale blue text on white	_____
Dark red text on white	_____
Red text on white	_____
Rose text on white	_____





## Effect of Colored Text on Colored Background

Black text on red	_____
Gray text on red	_____
Yellow text on red	_____
Light yellow text on red	_____
Green text on red	_____
Light green text on red	_____
Blue text on red	_____
Pale blue text on red	_____
Dark red text on red	_____
Red text on red	_____
Rose text on red	_____



## Effect of Colored Text on Colored Background

Black text on dark blue	_____
Gray text on dark blue	_____
Yellow text on dark blue	_____
Light yellow text on dark blue	_____
Green text on dark blue	_____
Light green text on dark blue	_____
Blue text on dark blue	_____
Pale blue text on dark blue	_____
Dark red text on dark blue	_____
Red text on dark blue	_____
Rose text on dark blue	_____



# What is an Icon?

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

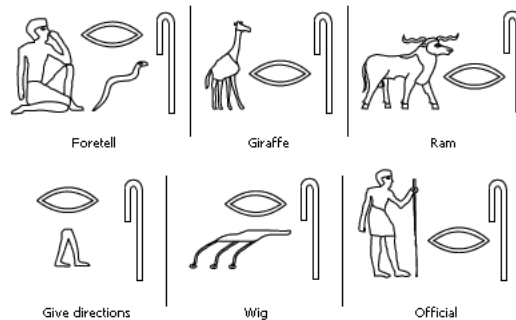
1. A picture, image, or other representation
2. (*Eastern Ch.*) a representation in painting, enamel, etc. of some sacred personage, as Christ or a saint or angel, itself venerated as sacred.
3. (*Logic*) a sign or representation which stands for its object by virtue of a resemblance or analogy to it

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



## 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

- Design task

Curvy road ahead

1-way street



## 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



What do each of these signify?

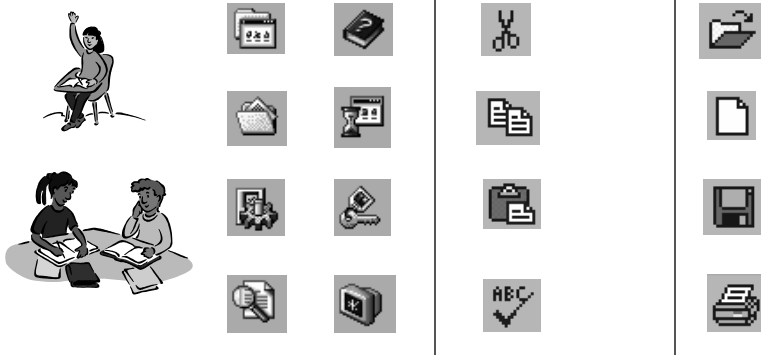
Almost always want to accompany your icons by a text label

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

Any use of a graphics alphabet?

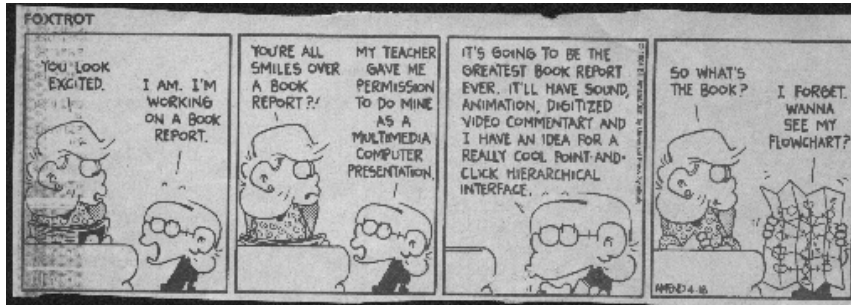
From Window's Start menu:



Common document icons:



## It's All About Design...



## HW 2

- Observing everyday interactions (ATM)
- Watch usage and report on context, task analysis, problems, ...
- Brief report (3 pages or less)
- Due Tuesday 20th





## Project Part 1

- Discuss
- Any interesting findings and/or analysis?
- What were the most challenging parts?



## Project Part 2

- Design alternatives (many!)
- No working system
- Drawings, sketches, mock-ups, etc.
- What not to do
- Critique each design (strengths, weaknesses)
  - What in part 1 leads to this design?



## Upcoming

- Handling errors & help
- Prototyping & UI Software

