

i213 User Interface Design and Development

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School of Information, UC Berkeley

Design implies balance between functional and aesthetic goals

Modern design implies rational, functional, information-oriented perspective

“A clear visual organization is essential for effective communication”

MODERN GRAPHIC DESIGN

SIMPLICITY

WHITE SPACE

ALIGNMENT

BALANCE

CONTRAST

SIMPLICITY

“Perfection is achieved not when there is nothing more to add, but when there is nothing left to take away.”

- Antoine de St-Exupery



SIMPLE DESIGNS

Approachable – don't intimidate the user

Recognizable - are more easily recognized and remembered

Immediate - provide immediate cues about what to do

Usable - reduce the likelihood of user confusion or error

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SIMPLE DESIGNS



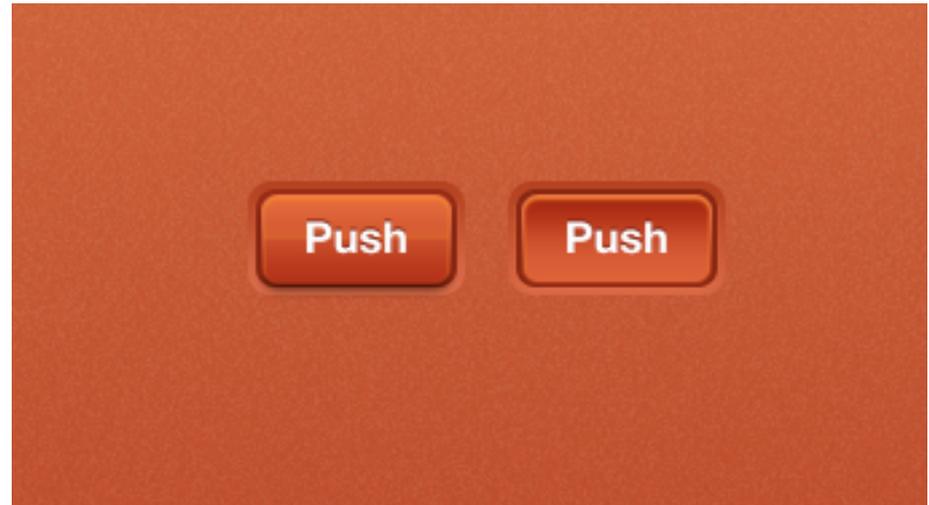
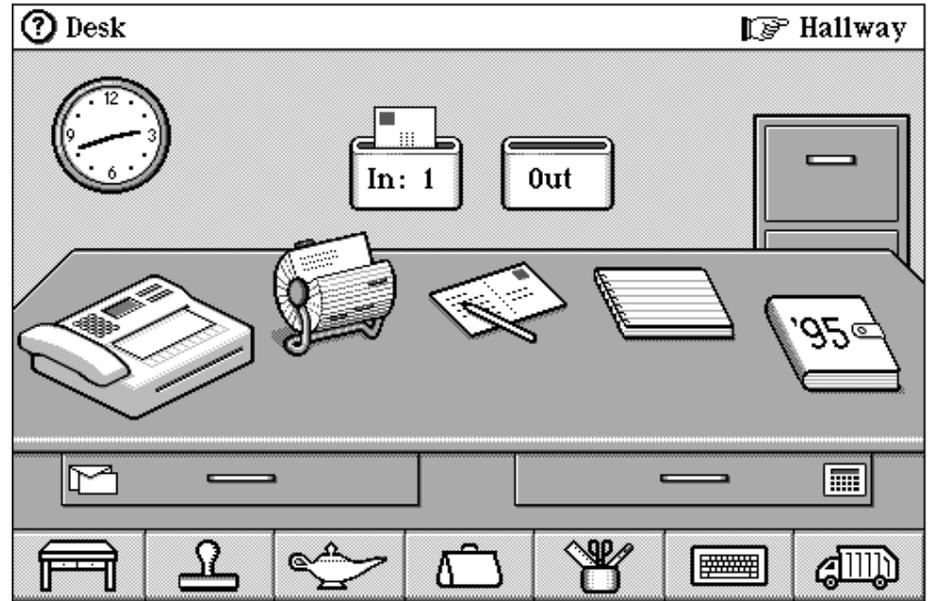
ENEMIES OF SIMPLICITY

Clutter

Overly literal translation

Gratuitous use of 3D

Excessive detail



ENEMIES OF SIMPLICITY



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Men's Swimming: [Cal Invitational](#) 1/21

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HOW TO ACHIEVE SIMPLICITY

Reduction
Regularization
Combination

REDUCE A DESIGN TO ITS ESSENCE



REDUCING A DESIGN

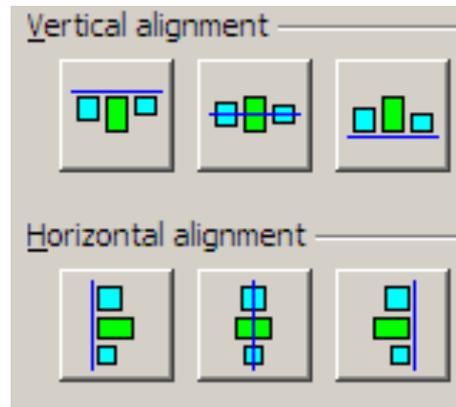
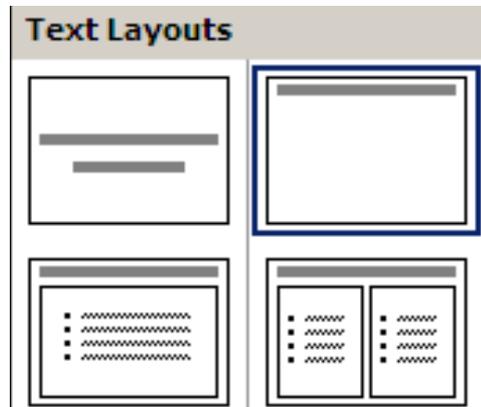
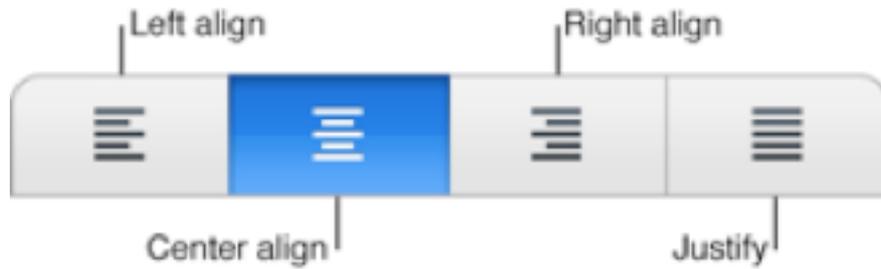
Determine the essential elements

Examine each element, and ask yourself whether its needed.
If it isn't, then remove it

Even if it is, try to remove it, and see if the design remains coherent

REGULARIZE THE COMPONENTS

“Repeat elements according to a discernible principle or rhythm”
Limit inessential variation



REGULARIZING DESIGNS

Use regular geometric forms and muted colors wherever possible

If similar forms are required, make them as close to identical as possible

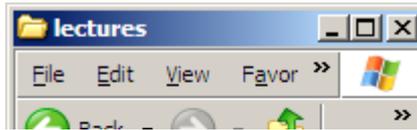
Limit variation in font size, type

Make sure elements *intended* to stand out are not regularized

COMBINE COMPONENTS

Find ways for screen components to play multiple roles clearly and succinctly

title bar



help prompt



scrollbar thumb



COMBINE COMPONENTS

Review the role played by each element in the design

Look for places where multiple components are doing the same thing

See whether an element's role could be performed by an adjacent component, possibly with some minor changes

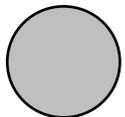
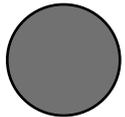
Combine redundant elements into a single, simpler unit

CONTRAST

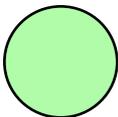
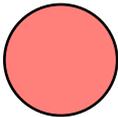
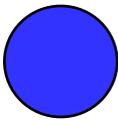
"Information consists of differences that make a difference"- Tufte

There are many ways to encode information along visual dimensions

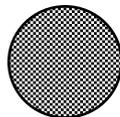
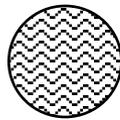
value



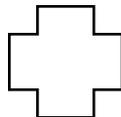
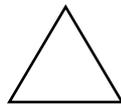
hue



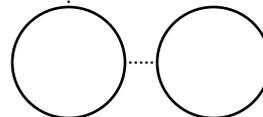
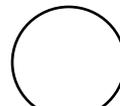
texture



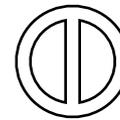
shape



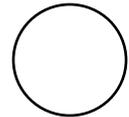
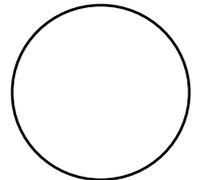
position



orientation



size



SCALE

Comparisons that a visual dimension affords

Nominal - Decide if two values are equal - All dimensions

Ordered - Decide relative ordering

- Position, size, value, texture granularity
- Not orientation, hue, shape

Quantitative - Decide relative difference

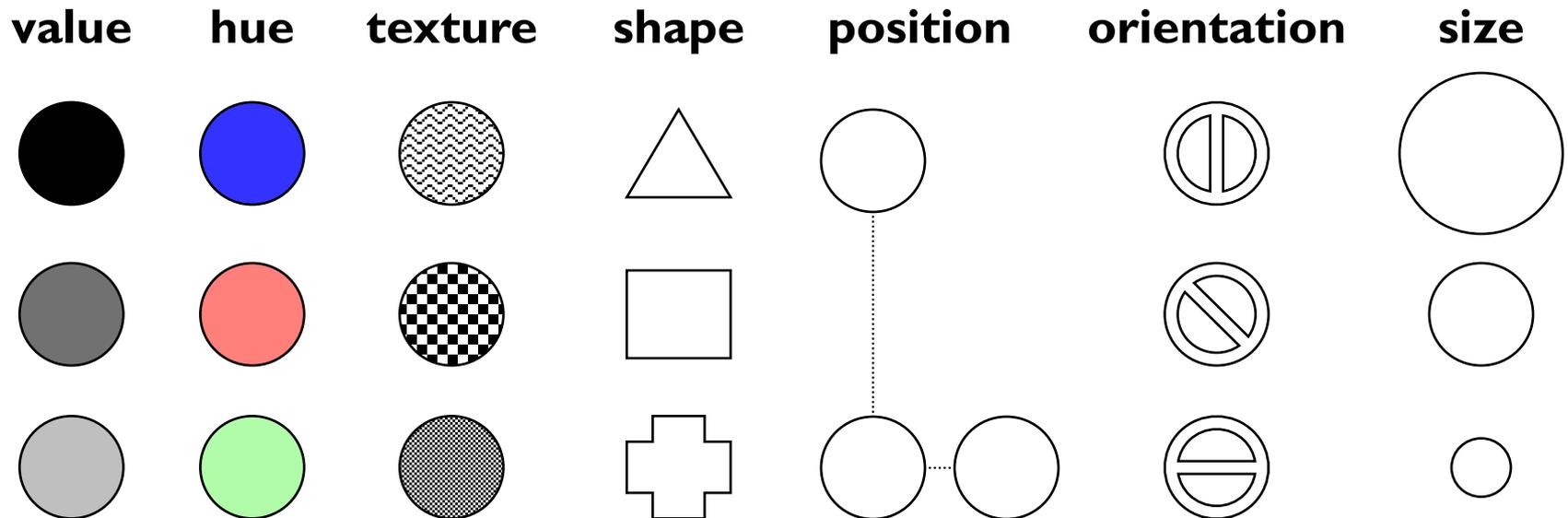
- Position, size
- Not value, texture, orientation, shape, hue

SCALE

Nominal - Decide if two values are equal

Ordered - Decide relative ordering

Quantitative - Decide relative difference



LENGTH

Length implies how much variation a dimension can support

Shape is very long – almost infinite variety

Position is long and fine-grained (but may be limited by screen size)

Orientation is very short (4 alternatives)

Others are in between (7-10 alternatives)

USING CONTRAST

Differentiation - Distinguish relevant forms from background

Emphasis - Emphasize important aspects of the presentation

Activity - Guide the user's eye in a predictable way

Interest - Add excitement by juxtaposing very different elements

SELECTIVE PERCEPTION

Can observer quickly focus on one value, excluding all the others?

Example: Find all the *blue* marbles

Selective: position, size, orientation, hue, value, texture

Not selective: shape

ASSOCIATIVE PERCEPTION

K

Can variable be ignored when observer is more concerned with other variables?

Associative: position, shape, orientation, hue, texture

Not associative: size, value

Small size and value interferes with our ability to perceive position, shape, orientation, hue, texture

Can you find the green K on this page?

THE SQUINT TEST

Close one eye, and squint with the other

What do you see? That is the structure that matters

Title: HCI Bibliography : Human-Computer Interaction / User Interface ...

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Keywords: HCI

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USING CONTRAST EFFECTIVELY

Can you distinguish the labels from editable fields?

Use of color, text position does not provide sufficient contrast

Form Title -- (appears above URL in most browsers and is used by WWW search)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk <input checked="" type="checkbox"/> Center		000080
E-Mail responses to (will not appear on)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
WebMania 1.5b with Image Map Wizard is here!		
<input type="button" value=" << Prev Tab"/>		<input type="button" value=" Next Tab >>"/>

white space

WHITE SPACE

Use white space to group elements, instead of explicit lines

Make sure to leave a margin

Scale composition to make sure neither positive or negative space dominate

Usually should be centered

Do not crowd controls together - creates tension and inhibits scanning

CROWDED DIALOGUE

Section

Start: **New Page** ▾ Include Endnotes

Page Number

Auto
 Restart at 1
1 2 3 ▾

From Top: 0.5in
From Right: 0.5in

Columns

Number: 1
Spacing: 0.5in

Line Numbers

By Page ▾

Count by: 1
From Text: Auto

Header/Footer

From Top: 0.5in
From Bottom: 0.5in
 First Page Special

OK
Cancel
Apply
Set Default

USE WHITESPACE TO GROUP ELEMENTS

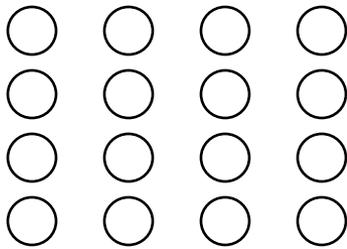
A screenshot of a 'Composite' dialog box. The dialog is titled 'Composite' and has 'OK' and 'Cancel' buttons on the right. It contains four distinct groups of controls, each enclosed in a rounded rectangular frame. The first group is labeled 'Source 1' and contains 'Document: concept.1' and 'Channel: RGB'. The second group is labeled 'Mask' and contains 'Document: concept.1' and 'Channel: RGB'. The third group is labeled 'Source 2' and contains 'Document: concept.1' and 'Channel: RGB'. The fourth group is labeled 'Destination' and contains 'Document: New' and 'Channel: New'.

A screenshot of a 'Composite' dialog box. The dialog is titled 'Composite' and has 'OK' and 'Cancel' buttons on the right. The controls are arranged in a single column without any grouping frames. The labels 'Document' and 'Channel' are centered above the first two columns of dropdowns. The controls are: 'Source 1: concept.1' and 'RGB', 'Mask: concept.1' and 'RGB', 'Source 2: concept.1' and 'RGB', and 'Destination: New' and 'RGB'.

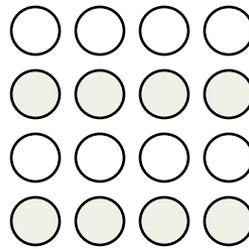
GESTALT PRINCIPLES

How visual perception constructs a *gestalt* (whole) out of individual elements

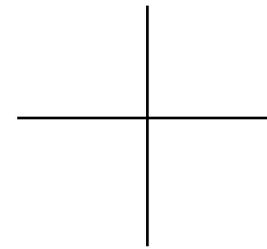
proximity



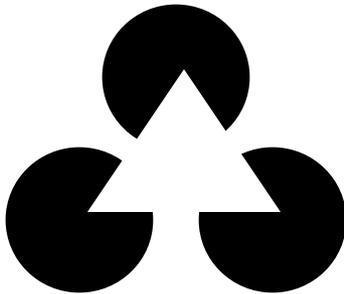
similarity



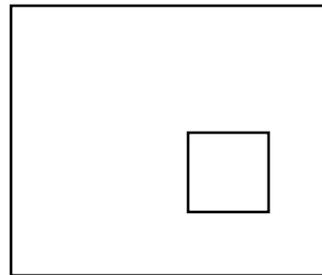
continuity



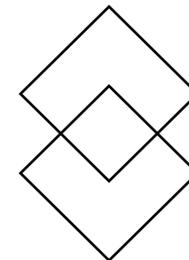
closure



area



symmetry



BALANCE

Choose an axis (usually vertical)

Make sure the visual weight of elements on each side are approximately equal

Symmetric layouts are implicitly balanced and aesthetically pleasing

Asymmetric layouts are harder to balance, but can increase tension and activity

BALANCE

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ALIGNMENT

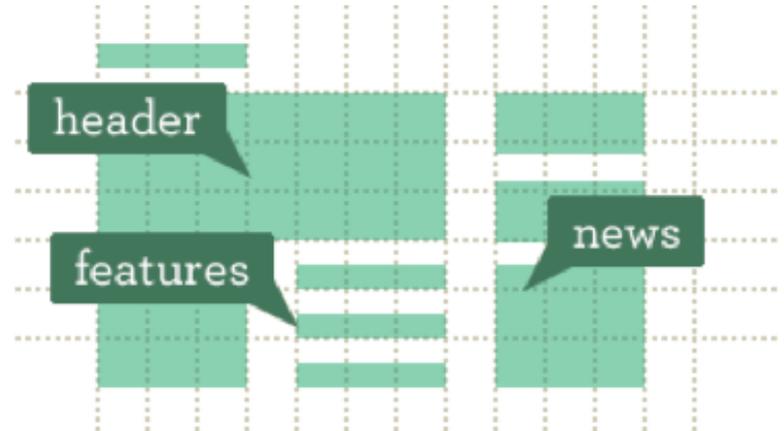
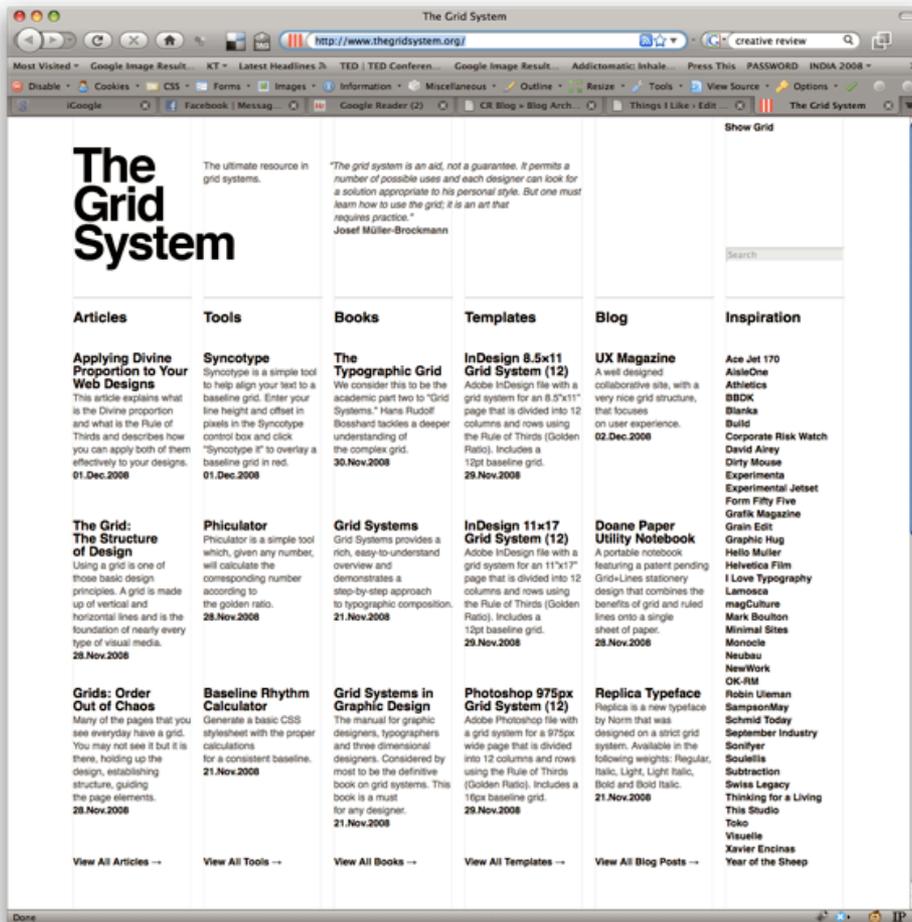
Either left- or right-justify your labels

Try to align your controls on the left and the right

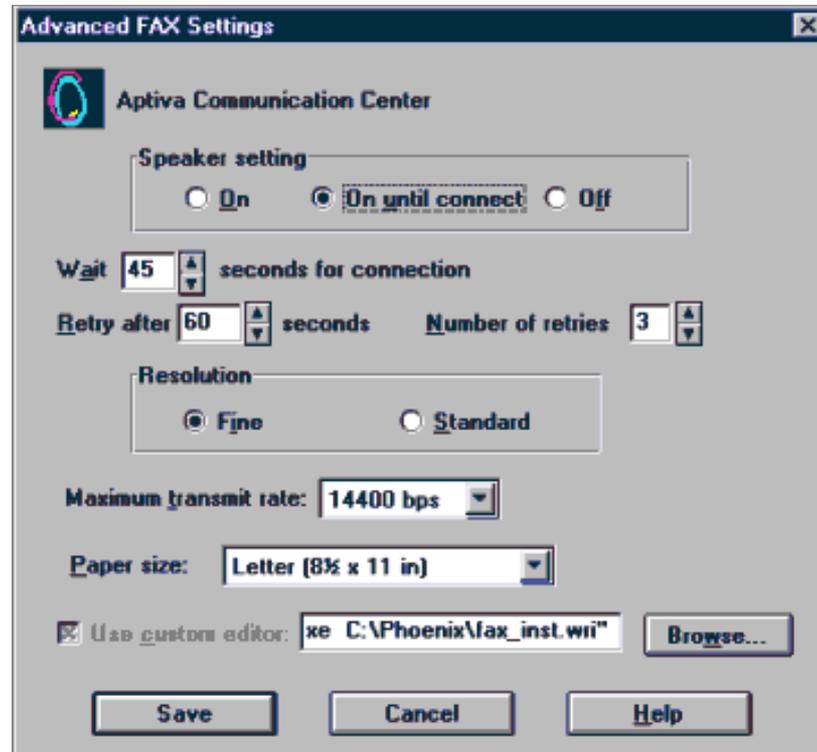
Align controls and labels on the same baseline

GRIDS

Regular grids are helpful for achieving both balance and alignment



BREAKING ALL THE RULES



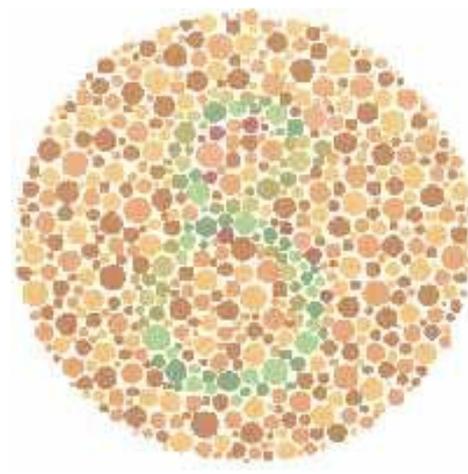
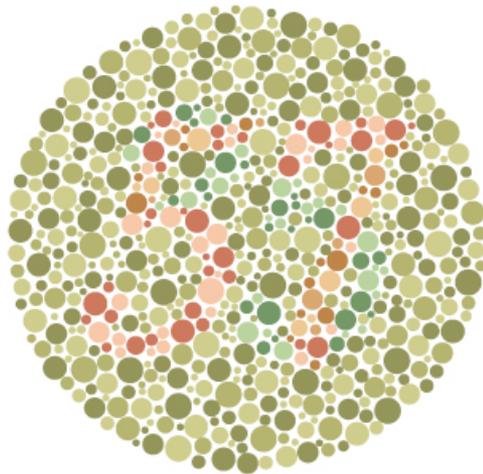
USING COLOR

Use a consistent palette

Avoid loud, saturated colors

Be aware of human limitations:

Color-blindness, visual perception



USING COLOR

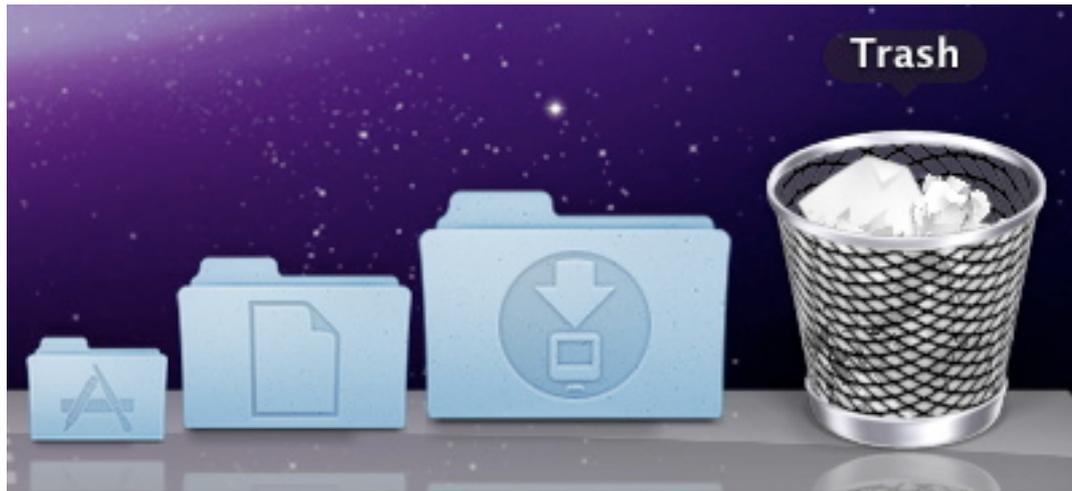


VS



CHOOSING ICONS

If what you are trying to represent can be related to a concrete, tangible thing, use an icon. If used repeatedly, establish a convention, especially if one can be borrowed from the real world



Otherwise, especially if its an action or abstract process, use text
Don't mix text, icons, symbols

CLOSING THOUGHTS

Problem-solving and communication, not personal expression, is the key to effective visual design for graphical user interfaces.

For next time

Keep working on prototypes

Heuristic evaluation next Thursday