Graphic Design and Gestalt Principles

CS160: User Interfaces
John Canny
Due next week

• Interactive Prototype (due Nov 5th)
  – Redesign interface based on low-fidelity feedback
  – Create first working implementation
    • Can include Wizard of Oz parts where justified
    • Can include pre-built functionality where justified

• In class Presentations (Nov 5th & 7th)
  – 5 min presentation (short! be careful about timing)
  – Focus on showing prototype (live may not be best idea)
  – Feedback from class (you will need to provide feedback on each presentation on the wiki)
Presentation Schedule: 11/5/2012

Group 3
Group 5
Group 6
Group 7
Group 8
Group 11
Group 14
Group 16
Group 17
Group 19
Presentation Schedule: 11/7/2012

Group 1
Group 2
Group 4
Group 9
Group 10
Group 12
Group 13
Group 15
Group 18
Presentation tips

Time is extremely short

• Use your slides as cues, but don’t talk at them
• Make sure you know what you will say
• Share the work, don’t try to talk and demo at same time
• Stand up, talk to the people at the back of the room
• Don’t try to fit everything into your talk. Make sure the important points are there, and that you cover them thoroughly
Color
Seeing color

The eye has rod and cone cells – only the cones respond to color. There are three types of cone, as shown above, and because of this, perceived color can be *roughly* modeled with 3 components.
Since the responses curves for cones overlap, not all non-negative combinations of responses are possible (e.g. $R>0$, $B>0 \implies G>0$).

That means we can't synthesize most pure colors with 3 colored emitters – real displays lack vividness for these colors.
What 3-color displays can do
The absolute sensitivities of cones are quite different.

In fact we have a hard time seeing blue, and perceiving blue contrast.
What 4-color laser displays can do
Perceptual Organization

Parameters of color space driven by perception
Technology-Centered Colors

- RGB is the machine’s basis, but difficult for people to work with directly.
- Color pickers with Hue, Saturation, Intensity work better.
Context

Note:

• Hue and saturation depend primarily on the object we are looking at.
• Lightness depends on the object and the brightness of the source.
• To remove the effects of lighting, the eye compares lightness of all the objects it can see. Thus lightness is a relative measurement.
Moral:

If you really care about color, you should view your design in the site(s) where it will be used, and different times of day, and even different seasons.
Gamma correction

Light output is often not a linear function of an RGB value. It typically has a power law form: $V_{out} = A V_{in}^\gamma$

Raising the input value to an appropriate power will correct this error.

Very important for presentations with images!
Tips for Picking Colors

We perceive color holistically (remember the context dependence of intensity).

Colors are often designed together into a “theme” – they work together to create the mood you want.
Themes

bellagio  boot  brick  bright  brown  burnt  cinque terre  cream  exterior  florence  gold  grapes  green  hotel  house  italian  ivory  las vegas  light  mud  north  pastel  ritz  riviera  stucco  sun  sunshine  teal  turquoise  venezia  venice  vineyard  warm  wheat  wine  yellow

Firenze

by matthewpworth

kuler member
Karolen Deupree

Spotlight: handmade beads

New to kuler? Explore, create, and share color themes. Use online or download themes for Adobe Creative Suite 2 and 3.

Sign in with your Adobe ID, or sign up; it's free. You can then save, download, rate, and comment on themes.
Saturation

Microsoft Word
Microsoft Excel
Microsoft PowerPoint
Microsoft Access
Microsoft FrontPage
Microsoft Publisher
Microsoft Vizact
Microsoft Outlook
Tempered Saturation
Let Someone Else Pick For You

The DESIGNER'S GUIDE to
COLOR COMBINATIONS
500+ Historic and Modern
Color Formulas in CMYK
by LESLIE CABARGA
Let Someone Else Pick For You

Hans Holbein:
The Ambassadors

Irma Boom
Let Someone Else Pick For You

Hans Hoffman

Jackson Pollock

Frank Stella

Gene Davis
Contrast Sensitivity
Chiaroscuro
Gestalt Principles
Principles

• figure/ground
• proximity
• similarity
• symmetry
• connectedness
• continuity
• closure
• common fate
• transparency
Figure/Ground

Principle of surroundedness

Principle of relative size

Ambiguous

http://www.aber.ac.uk/media/Modules/MCl0220/visper06.html
Figure/Ground

Ambiguous
http://www.aber.ac.uk/media/Modules/MCI0220/visper06.html

Unambiguous
Proximity

Dots that are near one another are grouped
Dots that are concentrated are grouped

[from Ware 00]
Proximity

• Elements that are near each other will seem to be related…

• Dinner
  – Bison
  – Chicken
  – Salmon
  – Crab
  – Pork

• Farm
  – Calf
  – Elk
  – Goat
  – Rabbit
  – Deer
Proximity

Tuesday, November 4
Election Day
An American Menu $75
Caesar salad with anchovies, egg, and Parmesan cheese
Clam chowder with Maine lobster and pancetta
Grilled chicken with house-made barbeque sauce with potato purée and greens
Apple and raspberry pecan crisp with vanilla ice cream
Proximity

Tuesday, November 4 — Election Day

An American Menu

$75

Caesar salad with anchovies, egg, and Parmesan cheese

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Similarity

TUESDAY, NOVEMBER 4 — ELECTION DAY

AN AMERICAN MENU $75

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with anchovies, egg, and Parmesan cheese

Clam chowder
with Maine lobster and pancetta

Grilled chicken
with house-made barbeque sauce with potato purée and greens

Apple and raspberry pecan crisp
with vanilla ice cream
Typography
Principles (from R. Bringhurst)

1. Typography exists to honor content.

2. Read the text before designing it.

3. Choose a typeface that matches the character of the text.
Type Categories: Oldstyle (Humanist)

Serif (pronounced “sair iff,” not “suh reef”)

Serifs on lowercase letters are slanted

Moderate thick/thin transition in the strokes

Diagonal stress

Goudy

Oldstyle

Baskerville  Garamond

Goudy  Palatino  Times

Source: R. Williams
The Non-Designers Design Book
Type Categories: Modern

- Vertical stress
- Serifs on lowercase letters are thin and horizontal

Modern

- Radical thick/thin transition in the strokes

Bodoni Poster Compressed

Bodoni

Times Bold

Fenice, Ultra Walbaum

Source: R. Williams
The Non-Designers Design Book
Type Categories: Slab Serif

Serifs on lowercase letters are horizontal and thick (slabs) Vertical stress

Very little or no thick/thin transition, or contrast, in the strokes

Clarendon  Memphis  Memphis Extra Bold
New Century Schoolbook

Source: R. Williams
The Non-Designers Design Book
Type Categories: Sans Serif

- No serifs anywhere
- No thick/thin transition in the strokes
- No stress because there’s no thick/thin

**Sans serif**

- **Antique Olive**
- **Gill Sans**
- **Folio**

- **Formata**
- **Franklin Gothic**
- **Syntax**

Source: R. Williams
The Non-Designers Design Book
Combining Type: Concordant

Typography

FROM WIKIPEDIA, THE FREE ENCYCLOPEDIA

Typography is the art and technique of arranging type, type design, and modifying type glyphs. Type glyphs are created and modified using a variety of illustration techniques. The arrangement of type involves the selection of typefaces, point size, line length, leading (line spacing), adjusting the spaces between groups of letters (tracking) and adjusting the space between pairs of letters (kerning).
Combining Type: Concordant

• A design is considered to be concordant when you use only one typeface.
• The other elements of your page should not have much variety in weight, size and style.
• This type of design tends to sedate and evoke a fairly calm feeling.
• A concordant relationship in typography can be a good one depending on the aim of your design.
• If you want something high impact and in your face, this is not it.
• However, if you want a clean design with little fuss or clutter, you can achieve that by sticking with the one typeface and keeping other design elements simple.

Source http://www.sitepoint.com/typography-concordant-contrasting-conflicting/
Combining Type: Contrasting

Typography
From Wikipedia, the free encyclopedia

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Combining Type: Contrasting

• We can achieve much more appealing and attractive designs using contrasting typefaces.
• By using typefaces and design elements that are clearly very different from each other, simple designs become much more eye-catching.
• One of the easiest ways to get contrast on a web site for example, is to use a very large serif font as a heading, with small body text set in a sans serif font.
• A good rule of thumb here is to use no more than two typefaces.

Source http://www.sitepoint.com/typography-concordant-contrasting-conflicting/
Combining Type: Conflicting

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Combining Type: Conflicting

• Conflict occurs when you use two typefaces that are too similar.
• It might sound like that’s not a problem, but it actually disturbs the reader when a change of font occurs and the second font is very similar to the first one.
• The font has changed, but the reader might wonder why. Is it a mistake?
• You should generally avoid doing this.

Source http://www.sitepoint.com/typography-concordant-contrasting-conflicting/
Composition
Principles

1. Contrast
2. Repetition
3. Alignment
Back to the Bauhaus...

Tschichold’s diagram of good and bad magazine design advocates staggering images in relation to content instead of forcing text to wrap around blocks moored at the center of the page. Explaining this experiment, Tschichold wrote that his redesigned pages would be even more effective if the photographic halftones (called “blocks”) were produced in fixed rather than arbitrary sizes.

THE NEW TYPOGRAPHY
Diagram, 1928
(redrawn)
Designer and author:
Jan Tschichold
Margins are the negative spaces between the format edge and the content, which surround and define the live area where type and images will be arranged. The proportions of the margins bear a great deal of consideration, as they help establish the overall tension within the composition. Margins can be used to focus attention, serve as a resting place for the eye, or act as an area for subordinate information.

Flowlines are alignments that break the space into horizontal bands. Flowlines help guide the eye across the format and can be used to impose additional stopping and starting points for text or images. There may be one flowline, or there may be several. If there are numerous flowlines at regular intervals, breaking the page top to bottom in a repeated proportion, a system of rows is created that intersects the vertical columns.

Spatial zones are groups of modules that form distinct fields. Each field can be assigned a specific role for displaying information; for example, one horizontal field might be reserved for images, and the field below it might be reserved for a series of text columns.

Columns are vertical alignments of type that create horizontal divisions between the margins. There can be any number of columns; sometimes they are all the same width, and sometimes they are different widths, corresponding to specific information. The page diagrammed here shows four columns of even width.

Markers are placement indicators for subordinate or consistently appearing text, such as running heads, section titles, folios, or any other element that occupies only one location in any layout.

Modules are individual units of space separated by regular intervals that, when repeated across the page format, create columns and rows.
Grid Systems

142: These typographic grids for book design subdivide the page uniformly into one to six columns. Grids for GUI design have important differences, but the goal of providing systematic structure is the same. From Basic Typography: Design with Letters, by Ruedi Rüegg, ABC-Verlag, Zurich, 1987.

143: Each of the grids in Figure 142 leaves a distinct imprint on the resulting layout. When the same grid is used throughout a book—or GUI application—this imprint becomes a unifying element for the entire work. From Basic Typography: Design with Letters, by Ruedi Rüegg, ABC-Verlag, Zurich, 1987.
Web Page Layout

Grids can shape layout without over constraining it
- Grid is not always obvious from page layout
- Produces good repetition of size and shape
Alignment

• Every item on a screen has a relationship to the other items. Elements that are almost collinear should be aligned.

• Left, right and both-justified alignments create strong boundaries around a piece of text.

• Its best to stick with one kind of justification within a page.
Alignment
Alignment
Techniques

Reinforce structure through repetition

– Repeat design elements across the layout
– Use stylesheets for color, alignment, size
Summary

• Design is about communication, form and function
  – Simplicity and elegance are keys to good design
  – Minimalism constrains you and reduces chances of bad design

• Use a small palette of colors
  – Let others pick them for you (colorbrewer.org)

• Human vision is organized by Gestalt Principles
  – Be aware of these principles as you design the visual look

• Avoid layout chaos by using grid-based design