Visual Information Design

Prof. James A. Landay
Computer Science Department
Stanford University
Autumn 2015
October 27, 2015

* Based on slides by Luke Vink, Scott Klemmer, and James Landay

Non-conventional design is a waste of resources—iOS has better defaults

Know your users! 99% of users will want to enter today’s weight

‘Record’ button almost invisible

Virgin America Website
Courtesy Andrea S.
https://www.virginamerica.com/book
Hall of Fame or Shame?

Virgin America Website

Courtesy Andrea S.
https://www.virginamerica.com/book

Virgin America Website

Courtesy Andrea S.
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Hall of Fame!

Minimalist design w/ large & simple instructions
Automatic location setting
Large calendar for easy/fast date selection (Fitts' Law)

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Outline

- Review of Human Abilities
- Good Form
  - layout, proximity, small multiples, space, grids & icons
- Mid-quarter Feedback
- Team Break
- Color
- Interesting Design

Information is Beautiful

A collection of intriguing visualizations that strike a balance between art and data representation

David McCandless
The Art of Balance

Promotion & demotion of important objects

First Question for any design
➢ What are the most important things?

Information should be prioritized based on its importance to the user

Visual Design that has

Good Form

(Purpose)
Using Context to Determine Layouts

Know Thy Users! (Design Discovery)

Context is extremely important to how much “Stuff” should be visible

-- David Hothersall

Gestalt Psychology in information design

Information blocks should be grouped together if related, but unrelated elements should be located at some distance from each other.
Using Proximity to Indicate Relationships

Small Multiples

• Economy of line
• Similarities enable us to notice differences

International Women’s Day

Images from Edward Tufte’s Envisioning Information
Proximity and Small Multiples in Use

Today Weather

iOS App

Using Blank / White Space as an Object

• White space can be used to suggest importance or prestige

• The more space around a group, the more valuable it should be for the user

• Think of whitespace as an “element” so as to consider its positioning

What Are The Important Things Here?
Jan Tschichold’s Revolution

Champion of Modernist Typography

Die Neue Typographie
Berlin, 1928

Bauhaus school
Dessau, 1925-26

Type Classifications

Typeface (Arial) vs Font (Arial Bold)

Serifs: Structural details in letters that help the reader connect them

<table>
<thead>
<tr>
<th>Sans Serif</th>
<th>Serif</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options</td>
<td>Options</td>
</tr>
<tr>
<td>Roman</td>
<td>answ</td>
</tr>
<tr>
<td>Oblique</td>
<td>answ</td>
</tr>
<tr>
<td>True italic</td>
<td>answ</td>
</tr>
</tbody>
</table>

Asymmetric Typography

J A N   T S C H I C H O L D

How blocks used to be arranged in magazines. Schematic, thoughtless centering of blocks (= ugly).

The same blocks, correctly arranged in the same type-area. Constructive, meaningful, and economical (= beautiful).

Grid Systems

• A key pattern for implementing rationality, modernism, asymmetry
• Note that no elements are “centered”

Java Look and Feel Design Guidelines

Iconography:

Differences that Make a Difference

www.jensondesign.com/1+1=3.pdf

The Noun Project

A “Language” of icons
Mid-quarter Feedback: “I Like”
- Teams for projects, team meetings/breaks
- Like quarter-long project goes all the way
- “learning by doing”
- Engaging lectures w/ lots of examples
- TA feedback (but could have more)

Mid-quarter Feedback: “I Wish”
- “Grading appears arbitrary”
  - some of this is inherent to design
  - TAs spend time every Friday going over criteria
  - detailed grading rubric
  - but, we will take more effort to try for consistency
- Expectations for project, especially interviews unrealistic
  - need to do this to get through the entire process (5 credits)
  - good news: no more interviews/users needed this quarter
  - next year: identify domain pools in advance: teachers, etc.
- Steps to complete homework unclear
  - first few homeworks were new this year
  - we will continue to promptly answer questions on Piazza/class/OH

Mid-quarter Feedback: “I Will”
- Take advantage of office hours & Piazza
- Get feedback earlier from TAs/professor

TEAM BREAK
(WEB SITES)
Color

- Hue is gradation of color (i.e., name: “yellow”)
- Saturation is intensity/purity of the hue
  - how much gray
- Luminance is the brightness in an image

Color: Edward Tufte – by hue

Color: Edward Tufte – by luminance

The Basics of the Color Wheel
Warm Colors: Triggering / Sensual

Cool Colors: Conserved / Relaxing

Color Harmonies

“A pleasing arrangement of parts, whether it be music, poetry, color, or an ice cream sundae.”

Using Appropriate Color “Harmonies”

Complimentary

This color scheme must be managed well so it is not jarring. Bad with Text!!

Complimentary (e.g., Children’s Bedroom)
Analogous

Always easy on the eyes,
This type of color scheme
Always looks “natural”

Split Complimentary

Often a good choice for
beginners, because it is
difficult to mess up.

Start with Greyscale

... then accent or enhance with color
**Action + Passive Colors**

**Poor Use of Color**

Redesigned to Use 3 Actionable Colors

- **Action**
- **Immediate**
- **Analogous**
Tools that help with color selection

- http://colorschemedesigner.com/
- http://kuler.adobe.com/
- http://www.colourlovers.com

Visual Design that is Interesting
[the wow factor]

Why Make Information Interesting?

- Differentiation from similar work
- Creates “willful” interaction as opposed to “forced”
- With an interesting interface that is simple to learn, the user will teach themselves

Non Conventional Layouts

- Hard to get right & easy to overdo!
- Try new shapes:
  - Circular charts
  - Hexagonal Objects
- Like all techniques (color, etc) – restrict unconventional layouts to the most important information

Dynamic Movement

- Hard to get right & easy to overdo!
- Animation is best used to connect information & create “flow”
- Like size, color & unusual shapes, animation draws attention to the eye & suggests importance
Metaphors (using the real world to describe information)

- Hard to get right & easy to overdo!
- Very useful to provide meaning and connect information to logic
- As you have seen before, the more direct or specific a metaphor, the more contextually relevant it is to a generation or time.

The best designs balance the techniques you have seen

and

The less techniques used, the easier it is to balance them.

In other words, Keep it Focused.
Summary

- Start with Context, what is the nature of the information? What is the most important?
- Design first in gray scale to focus on hierarchy
- Small changes help us see key differences (e.g., small multiples)
- Avoid clutter, focus on the essence of your tasks
- Use color properly – not for ordering!
- Only use one or two colors at a time, unless absolutely necessary

Further Reading

- Kevin Mullet and Darrell Sano, *Designing Visual Interfaces*
- Edward Tufte’s books and course
- Anne Spalter, *The Computer in the Visual Arts*
- Robin Williams, *The Non-Designer’s Design Book*
- Typography
  - Jan Tschichold, *The New Typography*
  - Robert Bringhurst, *The Elements of Typographic Style*
  - http://www.adobe.com/type/

Further Reading

- Color: Charles Poynton, *A Technical Introduction to Digital Video*
  - also his SIGGRAPH course
  - web http://www.inforamp.net/~poynton/
- Typography on the web
  - http://www.microsoft.com/typography/

Next Time

- Heuristic Evaluation
- Reading
  - *How to Conduct a Heuristic Evaluation* by Jakob Nielsen
- Watch last year’s lecture
  - Heuristic Evaluation
- Next individual assignment
  - Simple Heuristic Evaluation (in class)