USER INTERFACE DESIGN + PROTOTYPING + EVALUATION
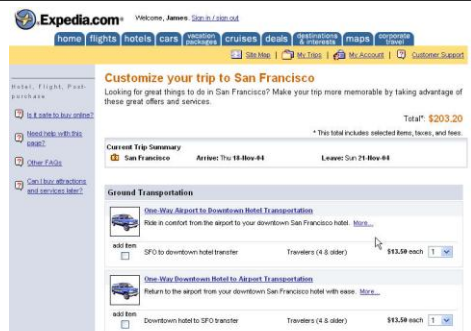
Visual Information Design

Prof. James A. Landay
University of Washington

Autumn 2012

* Includes material from Skip Shelly, Edward Tufte,
Kevin Mullet, & Scott Klemmer

Hall of Fame or Shame?

Hall of Shame!

20 pages of scrolling to get to the next action

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Outline

- Review Prototyping
- Simplification
- Small Multiples
- Typography & Grid systems
- Things to Avoid
- Color
- Proportion & Scale
- Design economy
- Visualization

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Prototyping Review

- Prototypes are a concrete representation of a design or final product

- Low-fi testing allows us to?
  - quickly iterate
  - get feedback from users & change right away

- Problems with lo-fi testing?
  - computer inherently "buggy"
  - timings not accurate
  - some widgets hard to recognize as sketches
  - dynamic behaviors hard to simulate

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Quotes: Mullet and Sano

"Design is not something that can be applied after the fact, when the fundamental organization of the product has already been determined–though this is indeed a common misconception. To be effective, design must be an integral part of the product development lifecycle."

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Quotes: Mihai Nadin

"Method helps intuition when it is not transformed into dictatorship. Intuition augments method if it does not instill anarchy. In every moment of our semiotic existence, method and intuition complement one another."

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How Might We Improve This?

You're invited to Zelda's 30th Birthday Party! Please come dressed as your favorite Gilbert and Sullivan character. Children are welcome. Dinner will be served; if you'd like to bring food, call Stacy at 555-1212. When: October 20th, at 7:00 PM Where: Zelda's house. If you need directions, feel free to call Zelda and ask. Please RSVP to Stacy by October 10th. See you there!

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Use whitespace to make groupings obvious

"Some space must be narrow so that other space may be wide, and some space must be emptied so that other space may be filled."

– Robert Bringhurst

Elements of Typographic Style

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Can We Do Better Still?

You're invited to

Zelda's 30th Birthday Party!

Please come dressed as your favorite Gilbert and Sullivan character. Children are welcome. Dinner will be served; if you'd like to bring food, call Stacy at 555-1212.

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Where: Zelda's house. If you need directions, feel free to call Zelda and ask.

Please RSVP to Stacy by October 10th. See you there!

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2

Use size contrasts to indicate hierarchy

"Information consists of
differences that
make a difference."

– Edward Tufte

Envisioning Information

You're invited to

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When: October 20th, at 7:00 PM
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Please RSVP to Stacy by **October 10th.** See you there!
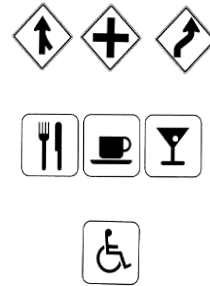

Quotes: Antoine de Saint Exupery

"In anything at all, perfection is attained not when there is no longer anything to add, but when there is no longer anything to take away."

Simplification & Reduction

Abstraction
London Underground

Small Multiples

- Economy of line
- Similarities enable us to notice differences

Images from Edward Tufte's *Envisioning Information (removed for copyright)*

3

International Women's Day
SMALL MULTIPLES

Echeverria, Heriberto 1971
March 8 - International Women's Day

Diaz, Estela 1974
March 8 - International Women's Day

Cuban Poster Art Gallery, http:///www.sims.berkeley.edu/~lcush/GenCat.html/

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Reid Miles, Blue Note Cover
SMALL MULTIPLES

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Jan Tschichold's Revolution

- Champion of Modernist Typography

Die Neue Typographie
Berlin, 1928

Bauhaus school
Dessau, 1925-26

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Type Classifications

- **Typeface (Arial) vs Font (Arial Bold)**
- **Serifs: Structural details in letters that help the reader connect them**

	Sans Serif	Serif
	Optima	Fenice Bold
Roman	answ	answ
Obliqued	answ	answ
True italic	answ	answ

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Asymmetric Typography
JAN TSCHICHOLD

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).**

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Grid Systems

- A key pattern for implementing rationality, modernism, asymmetry
- Note that no elements are "centered"

Java Look and Feel Design Guidelines

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Use alignment to guide the eye & reduce clutter

- Avoid slight misalignments; undermine your ability to beacon organization
- And they draw the eye – our perceptual system notices deviations from patterns
- When you deviate from a pattern, do so strategically

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Icon Design: Differences that Make a Difference

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

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Administrivia

- Medium-fidelity Interactive prototype due Tue 12/4
    - as much of the final UI as possible
    - much of backend processing or data faked
    - run on phone in web browser (most)
    - use a prototyping tool (we highly recommend JustInMind)
- Presentations 12/4 & 12/6
- Presentations & poster session during final exam slot (Mon 12/10)

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Color

- Hue is gradation of colour
- Saturation/purity is intensity of the hue
- Luminance is the brightness in an image
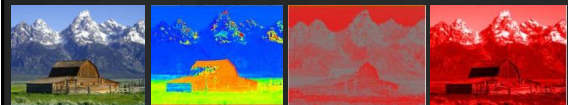
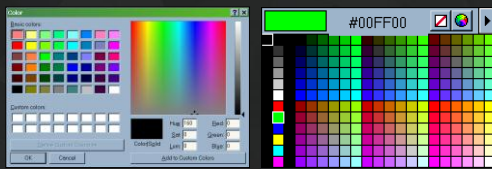**Photo**   **Hue**   **Saturation**   **Luminance**

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Technology-Centered Colors

- Nice Hex codes, "evenly" distributed
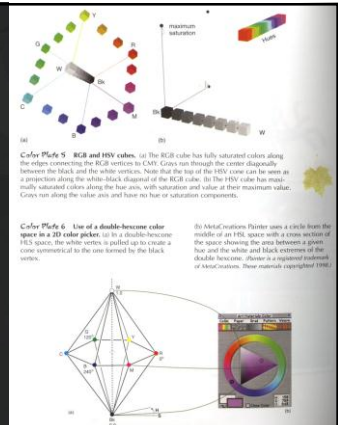- But yowch! Lime green and hot pink?

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Color Spaces

11/20/2012

5

Human-Centered Colors

- **Munsell** *(left)*: **Perceptually based**
- **Pantone (right): Functionally based**

Anne Spalter, *The Computer in the Visual Arts*

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Color: Edward Tufte

IMAGE REMOVED

•CSE440 - User Interface Design, Prototyping, & Evaluation

Color: Edward Tufte

IMAGE REMOVED

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How to get color right

- Design in grayscale first
- Keep luminance values from grayscale when moving to color

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Scale

Proportion and Scale

52: Bertin's "retinal variables" form the basis for all forms of visual coding. A visual code can be based on (from left to right) contrasts in *size, value, orientation, texture, shape,* or *position* in 2D or 3D space. *Hue* (chromatic color) provides an additional dimension not pictured here.
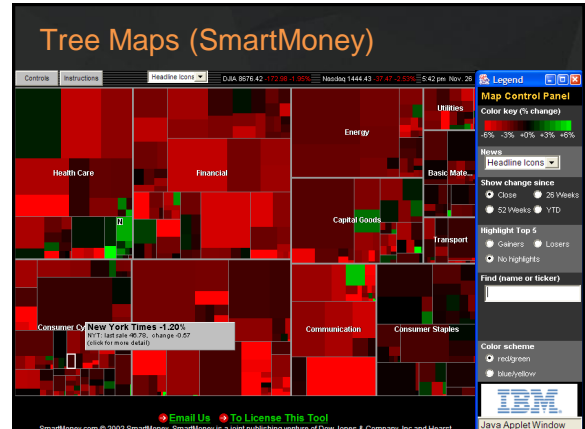
Kevin Mullet and Darrell Sano, *Designing Visual Interfaces*

11/20/2012   CSE440 - User Interface Design, Prototyping, & Evaluation   36
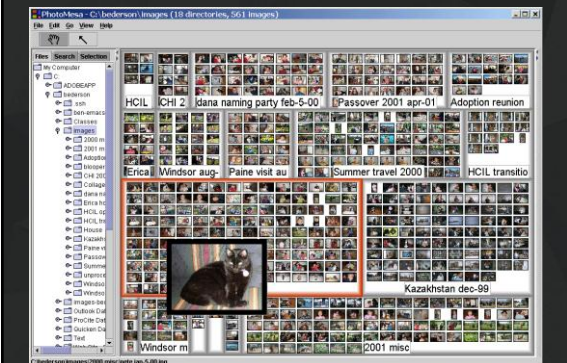
6

Visualization

- Tree maps
- Design Galleries

Tree Maps (SmartMoney)

Tree Maps (PhotoMesa)

Design Galleries

Figure 15: A DG for a particle system.

Design Galleries
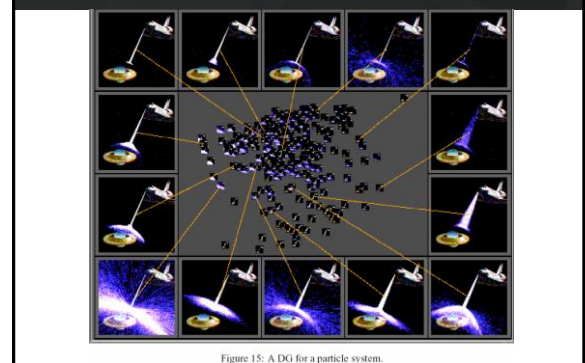
Figure 13: A DG with different opacity transfer functions.
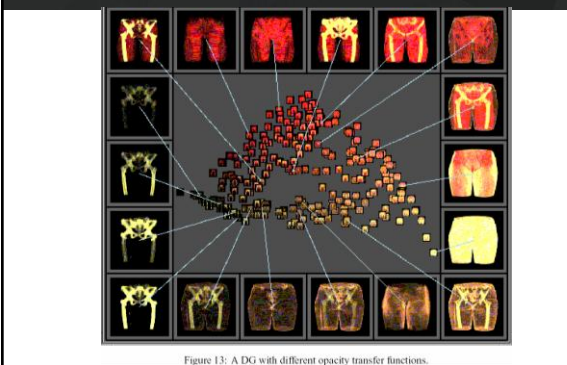
Some Starting Points

- Gather materials you find…
  - successful
  - contextually relevant

- Could be from a very different domain
  - "Good artists borrow, great artists steal"
    – Picasso

- Include visual design professionals in the iterative design cycle

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/

11/20/2012   CSE440 - User Interface Design, Prototyping, & Evaluation   43

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.pemberley.com/janeinfo/latin1.html
  - http://www.microsoft.com/typography/

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Summary

- Grid systems help us put information on the page in a logical manner
  - similar things close together
- Small changes help us see key differences (e.g., small multiples)
- Abstraction is a key to design
- RGB color space leads to bad colors
- Use color properly – not for ordering!
- Avoid clutter

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Next Time

- Have a Happy Thanksgiving!

- Tue, 11/27: User Testing
- Read
  - Appendix A from *The Design of Sites*
  - Discussion of guidelines for user observation By Kathleen Gomoll & Anne Nichol
  - optional: Statistica Ch1, & parts of Ch3
  - optional: Lewis & Rieman Ch. 5

11/20/2012   CSE440 - User Interface Design, Prototyping, & Evaluation   46