Questions?

- Homework: database & design
- Happy people on piano stairs
  [http://www.youtube.com/watch?v=51_kt57WihM](http://www.youtube.com/watch?v=51_kt57WihM)
- UIST last week – example: Microsoft Mouse 2.0

Graphic design

- Help users find their ways
  - Correct interaction sequencing
  - Correct mental model: organization of data, functions, and tasks
  - Consistency
  - Efficient and accurate search and understanding
- Provide a distinctive look (and feel)
Components of the visual language

- Layout
  - How the content is structured on the display
- Typography
  - Typefaces & typesetting
- Imagery
  - Visual identity, icons…
- Sequencing
  - How interactions unfold

Layout & Typography: US National Park Service
Imagery: Parsing visual input

Sequencing: Document parsing

- Anoto design handbook
  - Design of paper based electronic forms
Visual Perception

How many 3’s?

1281736875613897654698450698560498286762
9809858453822450985645894509845098096585
9091030209905959595772564675050678904567
8845789809821677654872664908560912949686

The Eye’s Fovea
The Eye’s Fovea

Perception

- You don’t perceive what your eye sees:
  - Foveal vision
  - Saccades (fast eye movement)
  - Low-level feature detection
  - High level based attention (i.e., why magic tricks work)
Perception Process

Visual thinking consists of a series of acts of attention, driving eye movements and tuning our pattern-finding circuits.

- Colin Ware

What tasks do these representations support?
How does your brain perform those tasks?
Gestalt Principles

• Grouping
  – proximity, similarity, continuity

• Form perception
  – closure, area, symmetry

Gestalt Principles

• Pop out

Grey value  Elongation  Curvature  Added surround box
Shape  Added surround color  Filled  Sharpness
Cast shadow  Convex and concave  Sharp vertex  Arrows
Mixing  Blurring  Extraction of motion  Phase of motion
Gestalt Principles

• Motion, especially when coming into view

Gestalt Principles

• More difference gets recognized faster
• But simultaneous features can overload system

• Gestalt recognition proportional to resolution – i.e., works better in the center (except for motion)

Remember:
• Periphery faster
• More light sensitive
Relating structure: Grouping

• Help users parse the display into sub-units
  – Rely on Gestalt principles
  – Avoid explicit grouping

Grouping Perception
Relating structure: Hierarchy

- Provide a context for each piece of information
  - Example: distinctive style for labels

![Diagram of Pizza Pie Properties]

Size Perception
Size Perception

- Straight edges appear larger than curved edges
- Curved edges appear larger than sharp edges
Size Perception

• Straight edges appear larger than curved edges
• Curved edges appear larger than sharp edges

Symmetry

• Regions bounded by symmetrical borders tend to be perceived as coherent figures
Symmetry

• But be careful about text

You are cordially invited, and strongly encouraged, to not use centered alignment for long passages of text. Save centering for invitations and cards, certificates, some headlines, and layouts with minimal text.

Alignment

• Enhance boundaries and grouping
• Pay attention to false alignment
  – Almost but not quite aligned
  – Free standing objects
  – Be aware of optical adjustment
Negative space

- The ground on which the design appears
- Enhance the structure of the display
  - Reduce the use of borders

Grids

Do you really want to delete the file “myfile.doc” from the folder “junk”?

Yes  No

Cannot move the file “myfile.doc” to the folder “junk” because the disc is full.

Ok
Another grid

- Two-level Hierarchy
  - indentation
  - contrast

Logic of organizational flow

- Alignment connects visual elements in a sequence

Grouping by white space

---

Color

- Much bigger topic than we can cover here
- Technology: RGBA
- Components specified in [0-1], [0-255], [0-0xff]
- Requirements:
  - Contrast (luminance difference)
  - Avoid color-blindness problems
  - Attractive (avoid fully saturated colors)
- Advice: Use existing color palettes
  - www.colorschemedesigner.com
  - www.colorcombos.com
  - www.colourlovers.com
  - www.degraeve.com/color-palette/
**Color Blindness**

Some classes of color blindness:

- Red-green – inability to distinguish between red & green
- Trichromacy – one of the cone types has altered spectral sensitivity
- Dichromacy – one of the three color sensing cell types (cones) doesn’t function
- Monochromacy – complete cone deficit (sees world in B&W)

**Implications for UI Design**

- Need to think about human capabilities
- Need to design for tasks
Exercise

Redesign this dialog