Designing Help, Program Flow and the Web

CS 160: User Interfaces

Maneesh Agrawala and Jeffrey Nichols

Material drawn from Seth Horrigan, Tim Wright and Jakob Neilsen

Interactive Prototype Assignment

Returned at the end of class

- Report Average: 56.5 out of 60
- Presentation Average: 21.75 out of 25

Final Presentation and Report

Due May 4th

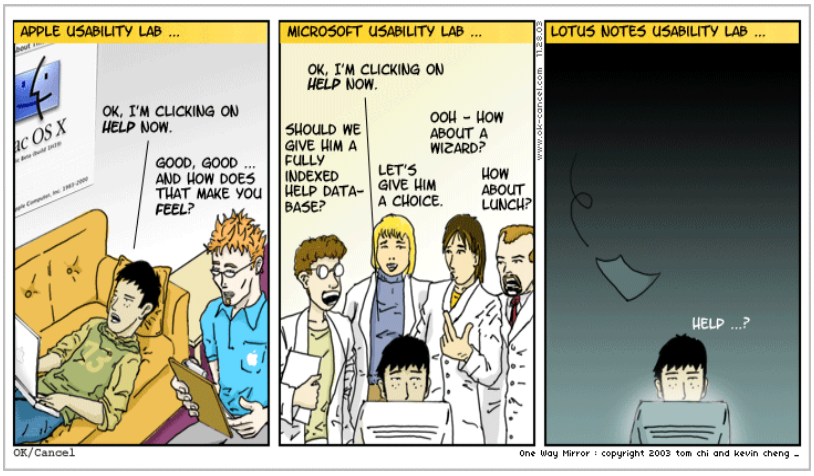
- Goals
  - Use the results of the Pilot Usability Study to improve your prototype
  - Implement any final functionality
- Presentation to instructors on May 4th
- Poster session sometime that week (May 6th?)

Today

- Errors and Help
- Aesthetics and Visual Flow
- Visual Design for the Web

Errors and Help

Errors and Help



Errors and Help

Exercise (2 minutes)

- List 4 different errors that can occur in your group project's user interface

- How many of these are *system* errors, as compared to *user* errors?

System Errors

- Write in the user's language
  - **Not** "winword.exe" caused a segmentation fault at #F34EA01.
  - You need to understand your user group to do this well
- Precisely indicate the problem
- Constructively suggest a solution

User Errors

- **Slips** are when a user formulates the correct goal, but carries it out incorrectly
- **Mistakes** are a failure to formulate the correct goal
- **Lapses** are a failure to carry out an action (often when part of a sequence is skipped)
- **Mode errors** occur when the action would have been correct if the interface had been in a different mode

Mistakes

There are two common types of mistakes:

- **Knowledge-based mistake**: Incorrect decision/action because of a failure to understand the situation.
- **Rule-based mistake**: Understand the situation, but making a wrong decision.

Why categorize?

- **Slips** are when a user formulates the correct goal, but carries it out incorrectly
- **Mistakes** are a failure to formulate the correct goal
- **Lapses** are a failure to carry out an action (often when part of a sequence is skipped)
- **Mode errors** occur when the action would have been correct if the interface had been in a different mode

- The difference matters because it indicates the method needed to fix the user interface

Possible Causes of Errors

- Incorrect mapping of cause to effect
- Inadequate background to understand the information
- Unclear understanding of system status
- Misjudging information importance

Helping Users Learn

- How do we help users learn our system so they make fewer errors?

Help (doesn't)

- Extra feature that can confuse users
- Spreading expensive jam onto stale toast isn't going to make it taste better

- In a 1987 study of 52,576 help sessions:
  - 23% of all requests found no help
  - 36% of people who found help reported the help was useful (28% of total requests)

Helping Help Help

- People want answers, and want them quickly

- Descriptive questions; "What is this?"
- Procedural questions; "How do I do this?"
- Guidance questions; “What should I do?”
- Interpretive questions; "Why did that happen?"
- Navigational questions; "Where am I?“, “Where is X?”

Types of Help

- F1 help
- Hover-over help
- Separate window help
- Keyword search
- Google
- Balloon help
- Apple Guide – step-by-step
- Clippy
- Wizard
- Tutorials – videos, embedded in the program, Video Professor
- Friends
- Manuals

Cost of Help

- What is the least expensive form of help?
  - A computer interface that doesn't need help
- What is the most expensive form of help?
  - Asking a friend

Experts and Beginners

- Who are they?
- How do we design for them?

Beginners

- User Description
  - System knowledge:
    - None
  - Domain Knowledge:
    - Unknown
  - Proficiency:
    - Low

How Beginners will Behave

- Few tasks
- Many errors
- Dependence on help (not just heavyweight help)
- Limited use of options or alternatives

Supporting Beginners

- Few options
- Visible help
- At most one task per screen
- Wizards
- Provide acquisition facilities
  - Highly visible
  - Aesthetically pleasing
  - Concentrate on ordinary, standard, typical tasks

Experts

- User Description
  - System knowledge:
    - High
  - Domain Knowledge:
    - High
  - Proficiency:
    - High

How Experts will Behave

- Many tasks
- Few errors
- Little use for Help
- Idiosyncratic style of interaction
- High use of options or alternatives
- Primary concern is efficiency and productivity

Supporting Experts

- Efficient Interaction
- Fast
- Many tasks per screen
- Provide production facilities
  - Conventional techniques to support expert use:
    - Ctrl+x, ctrl+c, ctrl+v
  - Uncluttered, customizable workspace
  - Simple icons on toolbars and dockable toolbars
  - Features that rely on user's memory rather than visibility

E.g. Unix-style Command Line

- How many people are beginners?
  - % cp ~/Desktop/myhouse.png ~/Desktop/pictures/myhouse.png
- How many people are experts?
  - % for file in $(find . -name *.png -print) ; do convert \
    -size 800x800 ${file} -resize 800x800 ${file//.png}-small.png \
    ; done
- Most users of software are “perpetual intermediates” or “improving intermediates”

How Intermediates will Behave

- Expanding number of tasks
- System limitations become frustrating
- Intermittent need for help
- More extensive experimentation
- Evolving and changing patterns of interaction

Interfaces for Intermediates

- Allow exploration through interaction
- Show alternate mechanisms to perform tasks
- Provide transitional facilities
  - Visible shortcuts
  - Customizable interface

Aesthetics and Visual Flow

Aesthetics and Visual Flow

- How do we design something that is aesthetically pleasing?
- How do we make our design easy to comprehend?

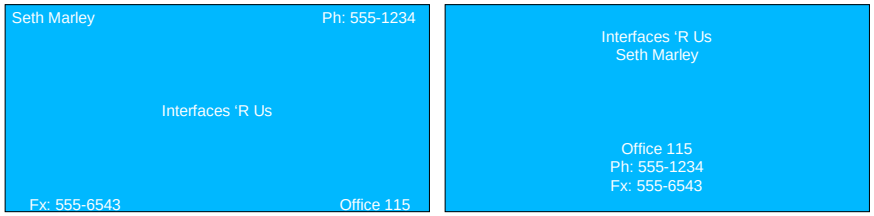
Designing for Visual Flow

- Proximity
  - Keep related items
    - together
- Alignment

  Nothing should be placed arbitrarily
- Repetition
  - Repeat visual elements throughout the design (widgets, etc)
- Contrast
  - Either the same, or ***Very Different***

Proximity

- Group related items together
- Keep unrelated items apart



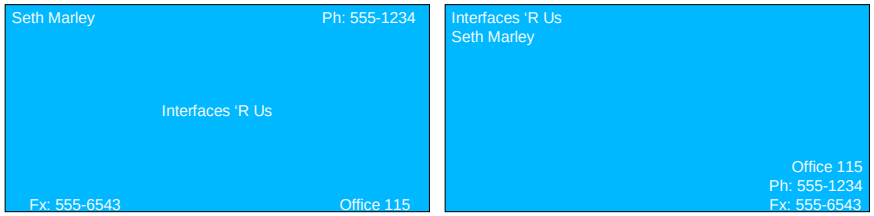
Proximity

Some principles of proximity

- Limit how much you put on one page
- Avoid filling all corners
- Make whitespace unequal, use it to emphasize elements
- Group related things, don't group unrelated things

Alignment

Visually connect elements to something else in the design



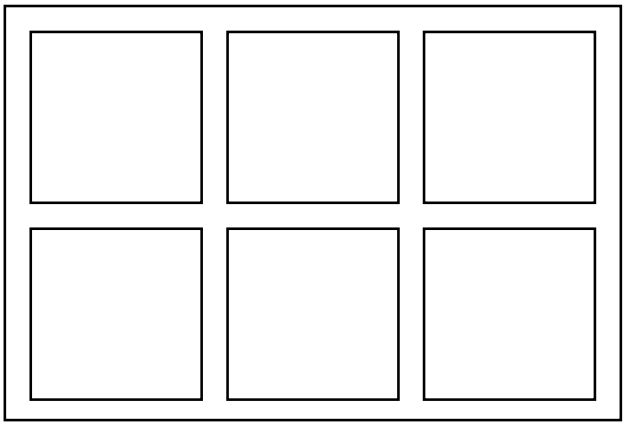
Alignment

- Some principles of Alignment
  - Find a **strong line and use it**
  - Align with something else
    - Even if it is far away
  - Avoid combining multiple alignments
    - Left, centered, right, justified
  - Use centered alignments sparingly

Alignment

- Some principles of Alignment
  - Find a **strong line and use it**
  - Align with something else
    - Even if it is far away
  - Avoid combining multiple alignments
    - Left, centered, right, justified
  - Use centered alignments sparingly

Alignment: Grids



Repetition

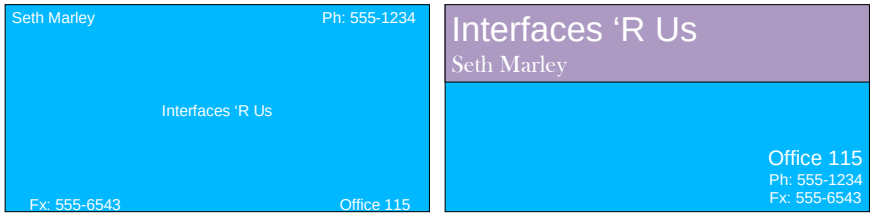
- Repeat aspects throughout your design
  - Layouts, fonts, grids

Look and Feel

- Consistent, repeated elements of software or web site design
  - Interaction design, and visual design
- Consistency gives a sense of “place”
  - You know where you are
  - You know which program you are using
  - You don’t have to learn new pages from scratch
- Increases learnability and thus usability

Contrast

- If two items are not the same, you can make them **Really Different**

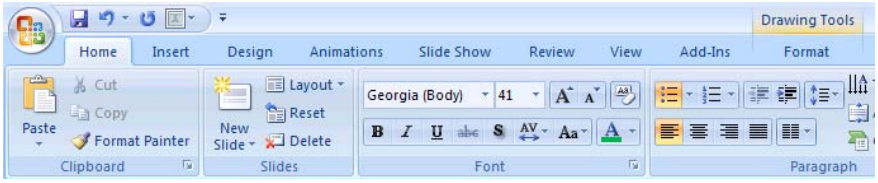


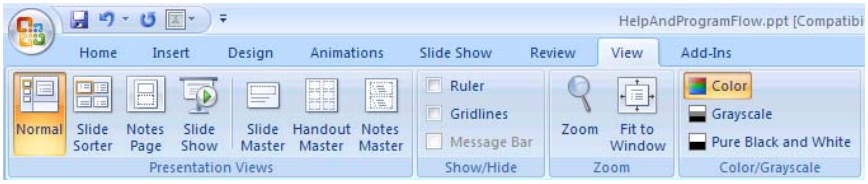
Contrast

- Concord – typefaces drawn from the **same** *type* ***family***
- Conflict – typefaces drawn from very similar type families
- Contrast – typefaces drawn from very different type families

- Avoid conflict: choose concord or contrast
- No more than two type families per screen (this slide has too many)

Designing for Visual Flow





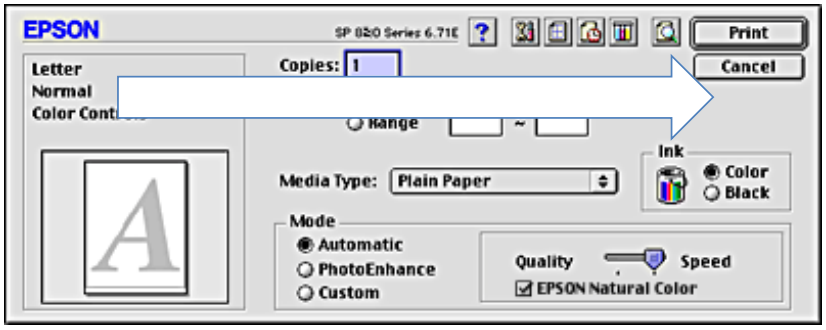
Color

- Use color to reinforce, not as primary code
- ~10% of males (<1% females) have some form of color-blindness
- Keep in mind that color contrast affects readability

black on cream works well	white on black can too
blue on cream is pretty safe	red text can be painful
colors opposite on the…	color wheel cause problems
or fatigue	avoid similar colors

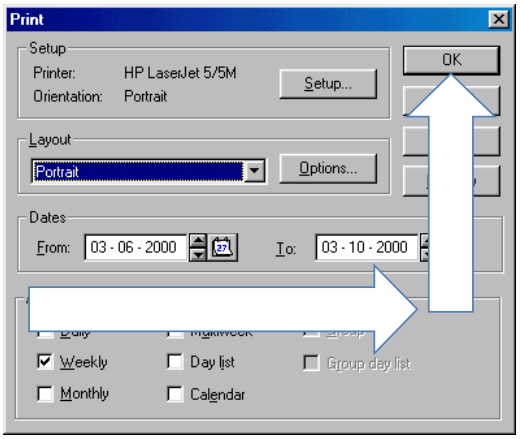
Visual Flow

Programs have a visual flow



Visual Flow

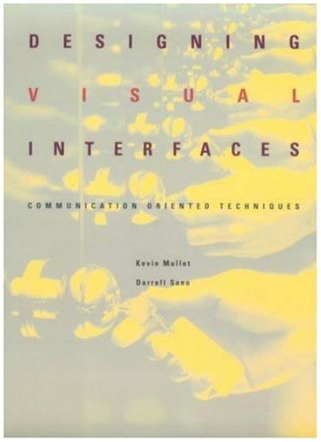
Programs have a visual flow



Visual Flow

- This is especially important when designing for the web
- How do you determine the flow people draw from your design?
  - Observe!

If you want to learn more…



Designing Visual Interfaces:
Communication Oriented Techniques

Kevin Mullet, Darrell Sano

Visual Design for the Web

Visual Design for the Web

People read web pages in an “F-Shaped” pattern

useit.com

Implications of the F Pattern

- People won't read your text thoroughly
  - Word-by-word and exhaustive reading is rare.
- The first two paragraphs must state the most important information
- Start subheadings, paragraphs, and bullet points with information-carrying words

"Banner Blindness"

- Scanning is more common than reading
- People ignore things that look like ads

Implications of Banner Blindness

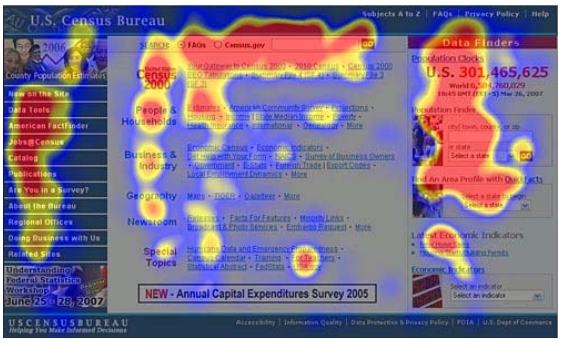
- Avoid putting important information in the header or side bars
- Assume that users will not see most of the fancy details you put at the top and sides
- Corollary: people consider pages that appear to have ads less reliable and authoritative

Representing Numbers

- Show numbers as numerals
  - Numerals catch the wandering eye
    - Numbers represent facts
    - Numbers look different than the surrounding text
      - 2415 looks different than two thousand fifteen in a block of text
- Numbers larger than a million are special
  - Represent one million as 1,000,000
  - Represent two trillion as 2 trillion, not 2,000,000,000,000
  - Generally, explain numbers over a billion
    - “1 trillion (or 1 million millions)”

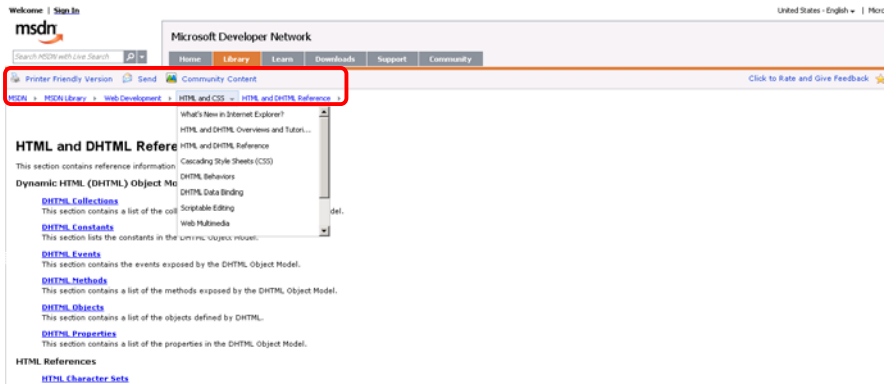
Formatting

- Fancy and non-standard formatting is often counter-productive
  - Over-emphasis causes data to be perceived as decoration



Breadcrumbs

"Breadcrumbs" are a way to show system status



Breadcrumbs

- Term comes from Hansel and Gretel
  - More than just being able to backtrack, shows where the user is in the hierarchy
- Allow people to get to something else they saw
- Gives people an idea of how they got there

Next Time: ??