Screen Design 1

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Overview

1st lecture
• Design theory
• Design factors & examples

2nd lecture
• Deductive vs. inductive interfaces
• Typography & colour
• Menus, forms, touch-based UIs
Theory
Levels of Human – Computer Interaction

User’s/organisation’s goals

Output in the Real World

GOAL LEVEL

TASK LEVEL

DIALOGUE LEVEL

INPUT / OUTPUT LEVEL

User’s knowledge of task domain

User’s knowledge of language

User’s hands, eyes

Computer’s representation of task domain

Computer command language

Computer keyboard, display

Human Structures

System Structures
Theory

Levels of HCI

User’s/organisation’s goals

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Human Structures

System Structures

Gmail Example:

“understanding of how Email applications work”

“understanding the meaning and usage of the various interaction alternatives”

“ability to perceive and interact with the various functions”
Theory
User Experience Design [Jesse James Garrett]

The process of user experience design is about “ensuring that no aspect of the user’s experience with your [system] happens without your conscious, explicit intent. This means taking into account every possibility of every action the user is likely to take and understanding the user’s expectations at every step of the way through that process.”

Theory
User experience
Design
[Jesse James Garrett]

See:
Theory
A framework for design thinking
[John Cato]

Based on gathered knowledge and understanding move on to the actual crafting of the design:

**Areas.** Decide on how to group together areas of information and activity, understand the basic building blocks of your system. Understand mood and feel, decide what kind of user experience you want.

**What are the pages for?** Create a design storyboard to represent when and how users want to obtain information and carry out processes and actions.

Theory
A framework for design thinking
[John Cato]

What is on a page? Detailing what are the contents of each page in an area.

Interaction design. Decide on what can be done and design the way the user will interact on each page and carry out useful activity.

Visual Design. Design the details of what it all looks like and how the presentation should be to reach out to the user and satisfy the business.

Theory

The iterative process of design

„The process of design is one of creativity in problem solving. It is a process which explores facts and feelings, identifies design objectives and goals, generates possible solutions, chooses a solution, creates a design, evaluates the design and repeats. And so, to ‘repeat’.“ [Cato]

→ The design cycle often repeats 6-10 times.
Theory
Visual Attention

- Designing Pages/Screens needs to consider limited visual bandwidth
  - not everything is “seen”
  - Selecting things to look at is a serial process
  - Bandwidth / attention is devoted sequentially to different locations on a screen
Theory
Vision as a serial process: “Visual Search”

→ Gaze paths visualize visual search processes
Theory

Heat maps give a “summary” of visual attention distribution
Rectangular arch?

Or…

Three columns?

Find more examples of perceptual illusions on: http://psychology.sampson.cc.nc.us/Perceptill.htm
Theory
Visual perception influences visual search processes

• What we visually perceive is only partly caused by the stimulus (on the interface, or out in the environment)

• Prior knowledge has a lot of influence on our perception, shaping our expectations about how something is perceived

  ➔ In a first visual glance at something, the brain analyses low level characteristics of a stimulus (colour, contrast, shape, context, …) and “guesses” what we are most likely looking at…
## Theory
Visual perception influences visual search through bottom-up and top-down processes.

<table>
<thead>
<tr>
<th>Influence</th>
<th>Processing</th>
<th>Origin</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>Bottom Up</td>
<td>Current Interface</td>
<td>Contrast, Color, Motion, Grouping, Layout, Labeling</td>
</tr>
<tr>
<td>Expectation</td>
<td>Top Down</td>
<td>Memories of past interfaces and target representation</td>
<td>Contrast, Color, Motion, Grouping, Layout, Labeling</td>
</tr>
</tbody>
</table>
Theory
Bottom-up processes

- Low level visual features can attract attention
- Colour / Contrast
- Orientation / Alignment
- Motion

Visual design is a process of guiding the user’s perception - uses bottom-up processes to guide and influence a user’s vision/focus, but has to take into account top-down expectations as well (e.g. flashy adverts on the Web do not work, because people know they are there and ignore them)
Design Factors

Contrast ... *guides visual attention*

• Contrast is what pulls you in, in other words, it draws your eyes to the page. It allows you to move around the page and find things.

• Contrast must be strong. “If two elements, such as type, rules, graphics, colour, texture, etc. are not the same, make them very different- don’t make them almost the same”

• Contrast creates a focal point, a dominating force, the place your eyes go to when first looking the page (web or print)
Design Factors

Colour Contrasts

Bad Examples

People with cognitive or sight problems may have difficulty reading and distinguishing text from a background colour.

People with cognitive or sight problems may have difficulty reading and distinguishing text from a background colour.

Good Examples

People with cognitive or sight problems may have difficulty reading and distinguishing text from a background colour.

People with cognitive or sight problems may have difficulty reading and distinguishing text from a background colour.
Design Factors

Contrast ... creates a hierarchy of information

• Allows you to skim more easily to pick out needed information
• Adds interest to the page
• Provides a means of emphasizing what is important
• Directs the reader’s eye
• On a page without contrast, the reader does not know where to look first or what is important
Design Factors
Similarity / Dissimilarity

• **Similarity** occurs when objects look similar to one another. People often perceive them as a group or pattern.

• **Dissimilarity** occurring in a group of similar elements is called anomaly.
Design Factors
Continuation / Closure

- **Continuation** occurs when the eye is compelled to move through one object and continue to another object.

- **Closure** occurs when an object is incomplete or a space is not completely enclosed.
  - If enough of the shape is indicated, people perceive the whole by filling in the missing information.
Design Factors
Alignment

• It is always best to pick one alignment and to stay with it. It is not a wise idea to mix alignments.

• Hints for better alignment (for text documents):
  – Move text away from left edge
  – Keep text out of the right edge
  – Use the same alignment throughout the entire document (right justify, left justify or centre align)
  – Do not place anything on the page arbitrarily
  – Do not centre align everything. Centre aligning should be done consciously, not because you cannot think of anything else to do
Design Factors

Repetition

• The idea of continuing and repeating certain visual elements of a page. The goal is to add to the organizational strength and sense of unity.
Design Factors
Proximity

- Proximity refers to the relationship that items develop when they are close together
- Two items that are close, appear to have a belonging to each other
- Related/similar items, get grouped together
- When items are physically far from each other, they do not appear to have a relationship with each other
- Elements become visually disconnected from each other
- Do not orphan items / objects
Design Factors

Proximity

• groups related items together
• makes page look smaller

• increases organisation
• organizes information
• defines a beginning and ending
Design Factors
Proximity / Grouping

- **Proximity** occurs when elements are placed close together. They tend to be perceived as a group.

When the squares are given close proximity, unity occurs. While they continue to be separate shapes, they are now perceived as **one group**.
Design Factors

Balance

• Visual balance comes from arranging elements on the page so that no one section is "heavier" than the other.

• A designer may intentionally throw elements out of balance to create tension or a certain mood.
Design Factors

Asymmetrical Balance

This page uses a 3 column format to create a neatly organized asymmetrical layout.

The two columns of text are balanced by the blocks of colour in the lower left topped by a large block of with space.
Design Factors
Practical example of how human vision is guided by colour, contrast, grouping, alignment, ...

http://www.webstyleguide.com/page/hierarchy.html
Examples
Apple OSX dialog boxes
Right-align labels and label colons
Left-align stacked items

General Editing:
- Select existing image
- Add a margin around image
- Size: ______ points
- Reposition windows after change
- Remember recent items

Clipboard Settings:
- Copy selection from image only
- Erase selection from image
- Dither content of clipboard

Color Optimization:
- Calculate best color table
- Verify color table integrity
- Notify on loss of color information
- Notify before CMYK to RGB conversion
Grouping With Separators
Grouping With White Space
Grouping With Group Boxes
Apple’s Changeable Panes
Screen Design 1

Appointment Preferences

Daily
- Show: 12 hours at a time
- Start at: 9:00 AM
- End at: 6:30 PM
- Font: Lucida Grande
- Size: 13
- Split overlapped items

Weekly
- Start on: Monday
- Days per week: 04
- Font: Lucida Grande
- Size: 13
- Show: Holidays
- Event times
Examples
Relevance of Design: Attractiveness Bias

“The first presidential debate between Richard Nixon and Robert Kennedy (1960) is a classic demonstration of the attractiveness bias.

Nixon was ill and running a fever. He wore light colors and no makeup, further whitening his already pale complexion and contrasting his five-o’clock shadow.

Kennedy wore dark colors, makeup, and practiced his delivery in a studio prior to the debate. People who listened to the debate by radio believed Nixon to be the winner. However, people who watched the debate on TV came to a very different conclusion.”
References

• **Gestalt principles**
  – [http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm](http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm)


• **Apple Human Interface Guidelines**