Basics of visual interface design

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Goals

- Explore topics that pertain to communication design and visual interface design
- Become familiar with the language and terminology of design
- Understand how issues come together to form a larger design process
Agenda

What is design?
  • Process
Communication design
  • Form and function
  • Typography
  • Color
  • Design language
Visual interface design
  • Navigation
What is design?

Design is the act of creating a **communicative artifact**, whether it is a printed piece, a web site, a piece of software, or an environment.

Designers not only design the artifact, but are aware of the **social and cultural systems** that surround the artifact.

Design follows a process of changing the world from the current state to a more preferred state.
What is design?

Simon: Design involves creating a course of action aimed at changing **existing situations into preferred ones**.

Rittel: design inquiry as a means to address **wicked problems** (problems that cannot be broken down) through reframing.

Schön: design inquiry as reframing through reflection in and on action.
1. Child's Doctor / Emergency
   - However you come to Children's, know what kind of care you can expect, how to find us and who to talk to first.

2. Scheduling
   - Schedule your appointment in just one phone call, at a time that works for you.

3. Clinic visit
   - Expect that your visit goes smoothly and that you're in and out without waiting.

4. Before Surgery
   - Receive and understand all the information you need before your child's surgery.

5. Surgery
   - We'll start the surgery right on time.

6. After Surgery
   - Your child will move to a hospital room or go home as soon as they are ready.

7. Inpatient Care
   - Know when you can go home.

8. Going Home
   - Have all your questions answered and get clear instructions on how to care for your child.

9. Follow-up visit
   - Your appointment will begin on time.
What is the design process?

The design process is a series of events that begins when the designer receives an assignment. It continues until a solution is generated and implemented. The design process is not linear, but iterative.
Problem definition (framing)

Understand and define the problem, including audience, project goals and objectives, and constraint such as time, budget, production limitations.
Information gathering

Fact finding about
- end users
- clients / stakeholders
- landscape of competitive products
- conventions of form and style
- context in which the product will function
Idea finding

Each design problem has many solutions.

Designers ideate, generating many possible solutions, then iterate on a few promising ideas.

Generally work by sketching and then prototyping. They reflect *in* and *on* their actions.
Solution finding

The process of narrowing in and refining an idea to a finished form.

Designers use a critique, sharing ideas with other designers for feedback.

Users can be a source of feedback, although this is rare for most communication design problems due tight deadlines and strong conventions.
Implementation

Presenting the solution, gaining its acceptance, and executing the final product.
Models of the design process

- Problem definition
- Information gathering
- Idea finding
- Solution finding
- Implementation
Models of the design process
Communication design
What is communication design?

Designers work conceptually, combining words, pictures, and other graphic elements to form a communicative gestalt.
What is communication design?

Designers work with a specific audience in mind, and create an artifact that best suits the needs of that audience.

Designs connect client/company to the user through their experience with the product.
Information is knowledge about facts and events
Communication is the transfer of knowledge between people.

Shannon and Weaver
What is communication design?
What is communication design?
What is communication design?
Form and function
Typography
Typography

Typography as we know it is an art of communication, measurement and proportion.

With type, the focus of communication moved from the spoken word to the written word.
<table>
<thead>
<tr>
<th>handgloves</th>
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<tbody>
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</tbody>
</table>
Anatomy of a typeface

A *typeface* is a set of type families of a unifying and distinctive design, and

A *font* is one instance of that family

Taz hair 21 italic , 48 pt
face, weight, style, size
Anatomy of a typeface

There are two kinds of type, serif and sans serif.

The standard measuring unit for type is the point, measured from top of ascender to bottom of descender.

Relationships between type and the space around it is what makes paragraphs look different. Two key features of legibility are **line length** and **leading**.
Type “etiquette”

Type/leading is expressed as two numbers: 10/12

General guidelines: 9 to 11 point type needs 1 to 3 points of leading; 12 point type, 2-4 points of leading; 14 point type, 3-6 points of leading
Type “etiquette”

Line length is the distance between the left and right margin of the type

“normal” line length is roughly 10 words < 70 characters

Challenges comes from moving the eye from the end on one line to the beginning of the next

Tight leading makes bodies of text hard to read

More open leading allows for longer lines
Making decisions about type

Take inventory of text elements you need.

Choose a type family or two to work with. Make sure that each typeface looks good together, and supports the intended tone of the content.

Find suitable sizes for each of the elements. Create guidelines and maintain them.

Test line length and leading if applicable. Look at short and long pieces of text.
Making decisions about type

Use of ALL CAPS or *all italic* slows reading.

Readers pay attention to contrast among typographic elements. Changes in weight (bold, etc.) may be noticed more than changes in typeface.

Reversed type is a strong visual element and should be used judiciously.

Blank space around paragraphs and between columns of type helps increase legibility.
A word about digital type

Reading text on computer screens is problematic. Many of the same rules of printed text apply, with new variables:

• Users have to scroll to read long texts

• Presenting text on the screen in a way that mimics reading structure (phrasing) may increase performance
Typographic goals

To remain invisible to the reader
To increase clarity and readability
To subtly indicate voice and tone of speaker
Integrating type and image

- Structuring type
- Type with image
- Type as image
- Type and image
Structuring type
Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm
Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz
jump  dog  brown
The brown dog jumps.
Words move, music moves, only in time.
But that which is only living can only die.
Typography, in the Newtonian view, is nothing very interesting or mysterious; it is simply mechanized writing. Now that the silicon chip has joined the wheel, the lever, and the inclined plane, typography is also computerized, digitized writing: more complex than it was, but no more profound, and perhaps increasingly subject to fashion.

Seen with fresher eyes, or from a wider perspective, typography still evokes the wonder and fear with which it startled the medieval world. It is a black art that borrows on artificial insemination, and it can pose equally difficult moral questions. Type is writing that is edited, shaped, doctored, and made to reproduce itself through artificial means: and writing itself is a kind of gene bank for ideas. Confining within the school, typography is a means of implanting the fruits of chosen minds and lives into the minds and lives of others. Set loose in the world, it is an uncontrollable vector, like the malaria-bearing mosquito, able to spread ideas as indiscriminately as viruses or germs, the possibilities for its use and abuse are potent and legion.

Like other arts, from medicine to music, typography also demands both close proximity and distance. This is not what it sounds like - a schizophrenic sense of scale, but a kind of taunt completeness. Typography is a process, after all, in which large object - epics, encyclopedias and bibles, for example - are built from minute components, such as the strokes and bowls of letters. It is work, therefore, in which macroscopic and microscopic perspectives constantly converge. As if that were not enough, it's also an enterprise in which history is continuously present, and must therefore be kept continuously alive. These are among the things that make it unmechanical and nourishing.
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Type with image
fear
strength
fear  strength
Type as image
Nouveau salon des cent exposition internationale d'affiches hommage à Toulouse Lautrec
Type and image
Touching is believing.
The revolutionary new iPhone is now available at Apple and AT&T retail stores.
Color
Color is communication
Color is communication
Color matters!
Color matters!

The colors we seen in nature are reflections of the visible light around us.

• Helps us to distinguish elements
• Creates an emotional response
• Can create semantic meaning and communicate information
Color is difficult

Cultural differences and associations – Kodak yellow, Coke red

Different disciplines deal with color in differently: physics, psychology, engineering, fine arts and design

Highly subjective and relative – affected by light, context, environment

Simultaneous contrast – color is affected by what color is next to it
Color is difficult

To make matters worse, print media and digital media use different color models.

The additive model used by screen displays mixes colors with light (white).

The subtractive model used by print media and pigment mixes colors with ink (black).
Color properties

- Hue
- Saturation
- Value
Hue

Hue refers to the name of the color. One hue can be varied to produce many colors: for example, pink, rose scarlet, maroon, and crimson are all colors, but the hue in each case is red.

ROYGBIV are the hue names.
Saturation is sometimes called chroma, or intensity. These terms refer to the brightness of a color. A color is at full intensity when there is no other pigment present in the color. Mixing black or white into a color affects its purity and intensity.

A hue is at its full intensity when it is fully saturated. Adding black or white desaturates the hue.
Value refers to the lightness or darkness of a hue or color. In pigment, value can be affected by adding white or black paint to the color.
Color strategies

- Primary/secondary/tertiary
- Warm /cool
- Monochromatic
- Neutrals
- Complements/split complements
- Analogous/harmonious
## Color contrasts

<table>
<thead>
<tr>
<th>Foreground</th>
<th>Red</th>
<th>Orange</th>
<th>Yellow</th>
<th>Green</th>
<th>Blue</th>
<th>Violet</th>
<th>Black</th>
<th>White</th>
<th>Gray</th>
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<tbody>
<tr>
<td>Red</td>
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<td>White</td>
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<td>Poor</td>
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</tr>
</tbody>
</table>
Design language
Do you know what this is?
Do you know what this is?
Do you know what this is?
What is a design language?

Systems of elements or resources that designers use to communicate and that users read.

These elements are building blocks that include shapes, colors, sounds, words, metaphors, and behaviors.

Rules and principles for using these elements complete the design language.
What is a design language?

A design language works in the same way that the rules of grammar works to construct phrases, sentences, and paragraphs.

This language forms a medium of communication between designers, clients, and users.

Designers write the design language; users read the design language.
What is a design language?

When a design language is used, it is constantly evolving.

A design language can become a benchmark, a standard, or even a stereotype.
Case study: Starbucks
Case study: Starbucks
Case study: Starbucks
Case study: Starbucks
Interaction design
What is interaction design?

Interaction Design is the creation of a **dialogue between a person and a product, service or system.** This dialogue is usually found in the world of behavior, and deals with issues such as experience, time, complexity and emotion.

--Jon Kolko

Interaction design is the art of facilitating or instigating interactions between humans (or their agents), mediated by products.

--Dan Saffer
Navigation

Navigation is finding one’s position in a place (an electronic information space). Navigation through software occurs at multiple levels:

• among multiple windows, views, or pages
• among panes or frames within a window, view or page
• among tools, commands, or menus
• within information in one pane (scrolling, panning, zooming, following links)
Reduce the number of places

Keep the numbers of windows and views to a minimum.

Keep the number of adjacent panes to ~3 (ex: two navigation areas and one content area).

Keep the numbers of controls to as few as users need for achieve their goals.

Scrolling should be minimized when possible.
Provide signposts

Provide points of reference so people can find their way around.

Rely on persistent objects (main navigation and controls, menu bars, toolbars, palettes).

Don’t forget use of white space and good typography.
Provide overviews

Overviews help to orient the user in content, just like signposts orient people in using functions and controls.

• Breadcrumbs

• Annotated scrollbars
Map controls to functions

Mapping describes the relationship between a control, the thing it affects, and the intended result.

Physical mapping (stove burners and controls)

Logical mapping (numerical, alphabetical, hierarchical, etc.)
Designing an interface system

Use a grid, and establish modular units
Use repeat elements to reinforce structure
Look at the set of information to discern commonalities from screen to screen
Look for elements that should be visually related
Think about how the user would navigate through and use the interface
Sketch, iterate, get user feedback, iterate, and refine
Basics of visual interface design

Steven Dow
HCI Institute
Carnegie Mellon University

November 2013

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Resources

General Design and Typography

• Carter, Rob, Meggs, Philip B., and Day, Ben. Typographic Design: Form and Communication.

• Meggs, Philip B. Type and Image: The Language of Graphic Design.

• Tufte, Edward. Envisioning Information.

• Tufte, Edward. The Visual Display of Quantitative Information.

Typography and Layout

• Schriver, Karen A. Dynamic Document Design: Creating Text for Readers
Resources

Color
• Albers, Josef. Interaction of Color.
• Itten, Johannes and Birren, Faber. The Elements of Color.

Visual Interface Design
• Mullet, Kevin and Sano, Darryl. Designing Visual Interfaces.
• Cooper, Reimann, and Cronin. About Face 3.
Resources

Web sites
General Design
Mundi Design
http://www.mundidesign.com/

Typography
Studiomotiv
http://www.studiomotiv.com/counterspace/

Color
Color research at Brown University:
http://www.cs.brown.edu/exploratory/

Web color
http://www.lynda.com/