Basics of visual interface design

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Goals of this session

• Explore issues 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?
- What is communication design?
- Typography and communication design
- Color and communication design
- Design composition, layout and systems
- What is interface design?
- Navigation
- Graphic systems
- Wrap-up
What is design?
What is design?

Everyone designs who devises courses of action aimed at changing existing situations into preferred ones.

--Herb Simon

Design is the human power to conceive, plan, and realize products that serve human beings in the accomplishment of any individual or collective purpose.

--Richard Buchanan
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
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.
What is communication design?
What is communication design?
What is communication design?

Starbucks logo and communication system Logo
What is communication design?

Napoleon's march
What is communication design?

BMW kidney grill
Information is knowledge about facts and events
Communication is the transfer of knowledge between people.

Shannon and Weaver
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 correct 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 user
• client / stakeholders
• landscape of competitive products
• convention of form
• context in which the product will function
Idea finding

Each design problem has many solutions.

Designers ideate, generating many possible solutions, then iterate a single idea to resolve issues.

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

The process of narrowing in on one of the many ideas to execute in a finished form.

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

It is possible to involve users again at this point, to gain reactions to what might be, but this is rare in most communication design given the tight deadlines and strong conventions.
Implementation

Presenting the solution, gaining its acceptance, and executing the final product.
Typography
and communication design
Typography

Our communication is based on the alphabet and numerals. These are learned systems, which have enabled advances in science and literature.

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.
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

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

The type designer must mix Roman letters and Arabic numerals.
Anatomy of a typeface

There are two kinds of type, serif and sans serif. A type family consists of a group of typefaces unified by a similar set of characteristics.

Relationships between type and the space around it is what makes paragraphs look different: size of x-height, type size, leading, and line length. Two key features of legibility are line length and leading.
<table>
<thead>
<tr>
<th>Type samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>handgloves</td>
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<td>handgloves</td>
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</tbody>
</table>
Type “etiquette”

leading is expressed as two numbers: 10/12

tight leading makes bodies of text hard to read

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
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

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.
Making decisions about type
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
- RSVP presentation is not detrimental to reading speed
- 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
How to Hack an iPod
Owners of Apple's MP3 player opened it up and added all sorts of bells and whistles. You can too  By Chris Taylor

HERE'S HOW DEMOCRACY works in the digital age. Just before Apple unveiled the iPod last October, the Internet rumor mill was ripe with speculation that the device would be some kind of personal organizer—Steve Jobs' answer to the Palm Pilot. The iPod turned out to be a palm-size music player with a five-gigabyte hard drive (a 10-GB version was released two weeks ago). But now, six months later, that original speculation doesn't seem too wrong. That's because Apple's hardcore users quickly figured out how to hack the device and write new software for it. It's as if they told Jobs, Very nice, Steve, but what we need is an organizer, and we've decided to turn the iPod into one.

The upshot is that last week I used my iPod for half a dozen more things than it was intended for. I read my horoscope,skimmed the latest news and sports headlines, sent little memos to myself, checked my appointment calendar and uploaded my entire address book. I also cranked up the tunes, although not in the way Apple planned. The iPod's original restrictions—that you can share music with only one Mac and that you can't use it with a Windows PC—have been totally blown away. Not that anyone should junk their Palm just yet. You can't enter text directly onto an iPod, for one thing; you have to do it via the computer. That said, the iPod's design beats Palm's hands down when it comes to reading text with the touchwheel you can scroll through any document with one hand. And the iPod's gargantuan disc space, which dwarfs the eight megabytes of most handhelds, can hold just about anything—as CompUSA found out when an iPod owner walked in, booked his device up to one of the store's Macs and downloaded the entire Microsoft Office suite.

Assuming you want your free iPod extras to be a little more legal, here's a handy shopping list. First, go to www.apple.com/ipod and make sure you have version 1.1 of the iPod software. This will let you export your address book from

POCKET TO ME: Wandering what to wear to your next office party? The Logitech Pocket Digital Camera ($130) looks like a posh cigarette case and easily slips into a slipper jacket. The camera is only half an inch thick, but it packs an impressive 1.3-megapixel resolution and can store 52 images. If the party gets wild, you can snap every embarrassing moment.

AIRING IT OUT: If you're starting to overheat from the back-and-forth grind of business travel, the Kensington FlyFan ($25) may be just what the flight attendant ordered. It's powered by a laptop's USB port and cuts the air with 1½-in.-wide blades made of fabric (so you won't cut yourself). You won't get there any faster, but at least you won't look cool.

PARTY MACHINE: Need a way to make some big noise? Stick an Olympia Soundbug ($50, at www.soundbug.com) onto any wood, metal or glass surface, plug it into the head- phone jack of your laptop or Walkman and listen to the surface start to resonate like a real speaker. Hook up a pair of the mouse-size devices, and enjoy stereo sound. Their suction-like push rings lock them firmly in place—even on windows.

Pod-hacking Ideas for Chris?
E mail him at cdt@wiel.com
CHAPTER ONE

THE VETERAN


Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Sed ac quam at neque egestas lobortis. Morbi semper ac ipsum id fringilla.

Lynd’s Microbe Would Be An All-In-One Ethanol Factory.
Face value | The accidental innovator

Evan Williams, the founder of blogger and Twitter, epitomizes Silicon Valley's right brain

At some point in the decade after he moved from the farm in Nebraska where he grew up to the innovation hub that is the San Francisco Bay Area, Evan Williams accidentally stumbled upon three misfits. First, that genuinely new ideas are, well, accidentally stumbled upon rather than sought out consciously, that new ideas are by definition hard to explain to others, because words can express only what is already known and think, that good ideas seem obvious in retrospect. So, having already had two accidental successes—one called Blogger, the other Twitter—Mr Williams is now trying to make accidents a regular occurrence in his company, called Obvious.

Of his previous successes, Blogger is today the best-known. It came about in the late 1990s when Mr Williams and his team struggled to build a complex software tool to let people collate their online data to keep each other abreast of the project, they kept a simple internal diary. Since that seemed to be the only thing working well, they placed it on the internet, and the original concept should become their product. That was born Blogger, a web service that lets anybody create a blog with a few clicks. At the time, almost nobody understood what a blog was, or why anybody would want one. But in 2003 Google bought the company, and both blogs and Blogger are today part of the internet's mainstream.

By transforming to Google, however, Mr Williams, with his intuitive right brain approach, was moving to Silicon Valley's analytical left brain. Spy and uxarnum, he discovered lets on that he hated every minute of his time at orther was already an internet superpower in the mailing. Google trumpets its innovative nature, but its genius is for attacking known problems (web search, email, calendars, etc) with brute force—measuring mass computing and mathematical algorithms. Mr Williams' passion is solving new problems. In theory he could have done this at Google with its "right side" on the side, but in practice he found it refracted to pitch ideas to the Google bureaucracy. Left and right brain clashed in other ways. Google values official builders—the credentialed, academic sort—whereas Mr Williams dropped out of university in Nebraska because he found the concept somewhat silly. He left Google after less than a year.

His next idea, he now realizes, was flawed by being obvious not in retrospect, but from the start—is itself an important lesson.

When podoms emerged as the audio analogue of blogs, Mr Williams used his Google money to invest in a firm called Odeo that aimed to make listening to podcasts easier. Yet such a tool was so crucial that Apple did the job with iTunes, its popular multimedia software, thus eliminating the need for Odeo.

So Mr Williams started Obvious, determined to go back to good accidental stumbling. One of its side projects—Mr Williams loves side projects so much that his main projects seem to exist mainly as placeholders—was something called Twitter. If blogs were difficult to explain in 1999, Twitters are even harder to explain. you might call them microblogs or ninja-blogs, as Twitter lets users write only 140 characters at a time, albeit from any device, or using an instant message or text message. Twitter now points another social activity but must be an answer to the same question: What are you doing?

Thinking with the left brain, most sensible people seem to agree that the idea is too simple, too frivolous, banal and ridiculous. Indeed it is. And millions of people absolutely love it, twitting away throughout the day. Like all new and cool things, says Mr Williams, it's "experimental." So it turns out that means love to be notified on their mobile phones that their teenager is "eating an orange". Colleagues appreciate that you are "tuning in" as they wait in the meeting room. Friends seeing that you are "having an espresso at Starbucks" might stop by. And a lot of people simply feel more connected by scavenging for conventional "tweets" from their friends.

All of this has made Twitter the third "next big thing" in Silicon Valley in 2007—after the iPhone. Apple's innovative new mobile handset, and Facebook, a social networking site. The proof is that copycats have sprung up, that Google has bought one of them and that Facebook has made its "status" updates, in effect, internal Twitter. Facebook also works with Twitter itself, heavily to make money from Twitter remains an open question—one that Mr Williams is intellectually curious about, though it has not yet been his main concern in the past. He would like to make Twitter as mainstream as Blogger, but what he really wants is to make stumbling on accidents into a cultural habit, a part of the daily routine. That is why he has opened the 12 people working on Twitter at Obvious though all sit in the same tiny San Francisco loft, and is looking for new talent.

The pursuit of accidents

The story of trying to plan accidents, and orchestrate them for that occurrence, is not lost on Mr Williams. So he has mental tricks. One is to ask "What can we take away to create something new?" A decade ago, you could have started with Yahoo and taken away all the clutter around the search box to get Google. When he took Blogger and took away everything except one 40-character line, he had Twitter. Radical constraints, he believes, can lead to breakthroughs in simplicity and entirely new things.

For the same reason, Mr Williams loves frustration. Blogger revealed itself when he was frustrated with something bigger—collaboration software. He doesn't want to be frustrated by it, saying that he would like to create some sort of "better to do list", a cross between a calendar, a will and other things. Ultimately, that is not the point, of course. The point is to try to do something, in the hope of losing discipline and form at the first opportunity. "We have an itch that we scratch," he says, "and that becomes the thing." Silicon Valley is what it is because it has a few firms like Google—and lots of people like Evan Williams.
Color
and communication design
Color matters!

WHAT'S NEW
Make this holiday season the most memorable yet with a warm, festive home that welcomes friends and family—and perfect gifts to spread the joy of the season to everyone on your list.

THE HOLIDAY HOME
Color matters!

The colors we see 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

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

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
Design composition, layout, and systems
Simplicity in composition

People seek order and clarity in communication and spaces.

They appreciate solutions that solve problems in a clear, economical fashion.

Good communication design is simple.
Simplicity in composition

The functional and aesthetic benefits of a simple design are

Approachable – use immediately

Recognizable – easy to assimilate and remember

Immediate – have a greater impact on the viewer

Usable – prominent, easy to engage with
Creating a simple and usable design is about assessing component parts of a design and the relationship between those parts. Train your eye to look for these relationships:

- Reduction
- Regularization
- Scale, contrast and proportion
- Harmony
- Alignment
- Proximity and correspondence
- Symmetry and asymmetry
Reduction

Reinforce the message by removing non-essential elements from the design. Ask yourself, is this (rule line, bolding, etc.) needed? Then try to remove it anyways.

Does the design stand up?
Regularization

Establishing regular relationships (i.e., a pattern) allows the viewer to become comfortable with the design and move to a higher level of abstraction.
The scale of elements determines where the viewer looks first, and what is most important. Large, powerful visual elements must be used judiciously, particularly in interface design.
Harmony describes the effect, seen at the level of the whole, of the pleasing interaction of the parts.
When forms, their edges, or their central axes align with one another, relationships and connections between them are established.
Proximity and correspondence

When forms are near to each other, the eye makes visual groupings of the information. Similar size, shape, color or texture can also cause groupings.

13  1  3  21  37  21  37
Symmetry and asymmetry

Symmetry is similarity of form or arrangement on either side of a dividing line or plane. A symmetric organization symbolizes a restive state, while asymmetry suggests energy. Content drives designers’ choices about symmetry.
A design program is a comprehensive system of organization, utilizing repeated sizes, proportions, and design elements to maintain consistent functional and aesthetic qualities over a series of pages, screens, or artifacts.

Elements such as type sizes, styles, placement of elements, and colors are used consistently to unify a series of designs.
Design programs are based on grid systems.
Grid systems allow the layout to be codified across a series of pages, displays, etc.

Grid systems are based on columns and rows.

The more columns and rows, the more flexible the design.
Design programs

When a grid system is put to good use, it will create a regular and rhythmic design.

Consistent use of a grid, paired with visual elements, will create a consistent “look and feel” in a manual, web site, or GUI.
Design programs

Why is it good to have a design program?

- Structured: the foundation on which the design is built
- Predictable: simplifies the task of communicating information to the user
- Efficient: the basic design work is complete, and the design can be repeated easily
Creating a design program

Assess your communication goals. Where will the information be displayed? Who is the audience? What is the purpose of the communication?

Group each item of information into a small number (5-7) of categories according to origin or intended use.

Determine the rank or importance of each group. Organize into a smaller number (3-5) of echelons based on this ranking.
Creating a design program

Use appropriate variables to establish hierarchy. Large, bold type might be used for the most important information. A systemic location on the grid might be reserved for pictures.

Use a grid to base your designs on.

Use the squint test to make sure echelons are hanging together as a unit, but with enough difference to be visually separated from each other.
What is interface design?
What is interface design?

An interface is the link between a product and its user. It communicates how a product is used, and creates an experience for the people who use it.

An interface is an aggregate of characteristics that a user initially engages with in order to make use of a product.
What is interface design?

- Emotions
- Values
- Prior experience

User

Product

Context of use

Interaction designer

Features

Aesthetic qualities

Usefulness

Form language

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Communication
<table>
<thead>
<tr>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Perceptive) Affordance: how does it tell me how to interact with it</td>
</tr>
<tr>
<td>Feedforward: what does it tell me it will do before I interact with it</td>
</tr>
<tr>
<td>Feedback: how does it acknowledge my expression of intent or an environmental trigger</td>
</tr>
</tbody>
</table>
What is interface design?

An interface offers the user a story of use. If it matches how the user thinks, it is easy to use.

If the product is complex, inaccessible, unlearnable, or unfamiliar, the user will not be able to use it.
What is interface design?

Interface design is the act of conceiving of, planning, and executing a set of product characteristics. For example:

- A car’s interface
- The Starbucks’s interface
- A software interface
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
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.)
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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/