

Basics of visual interface design

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November 2009

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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,
anyways?

Design matters!



Design matters!



What is design?

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

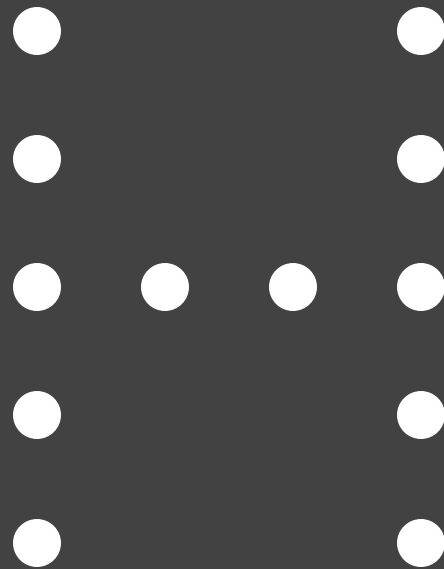
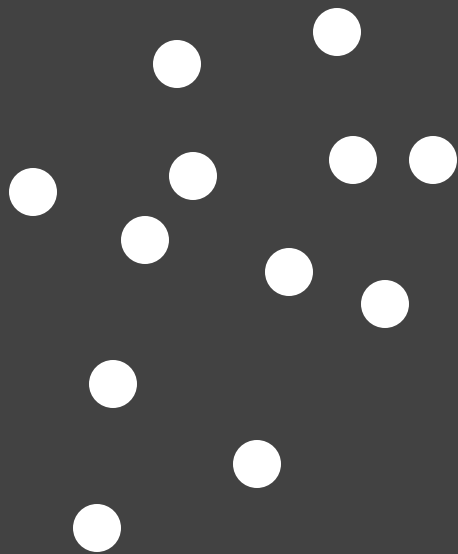
Design is a social and collaborative activity. Designers not only design the artifact, but are aware of the social and cultural systems within which the artifact is used.

All design is communication — messages transmitted from sender to receiver.

Communication design

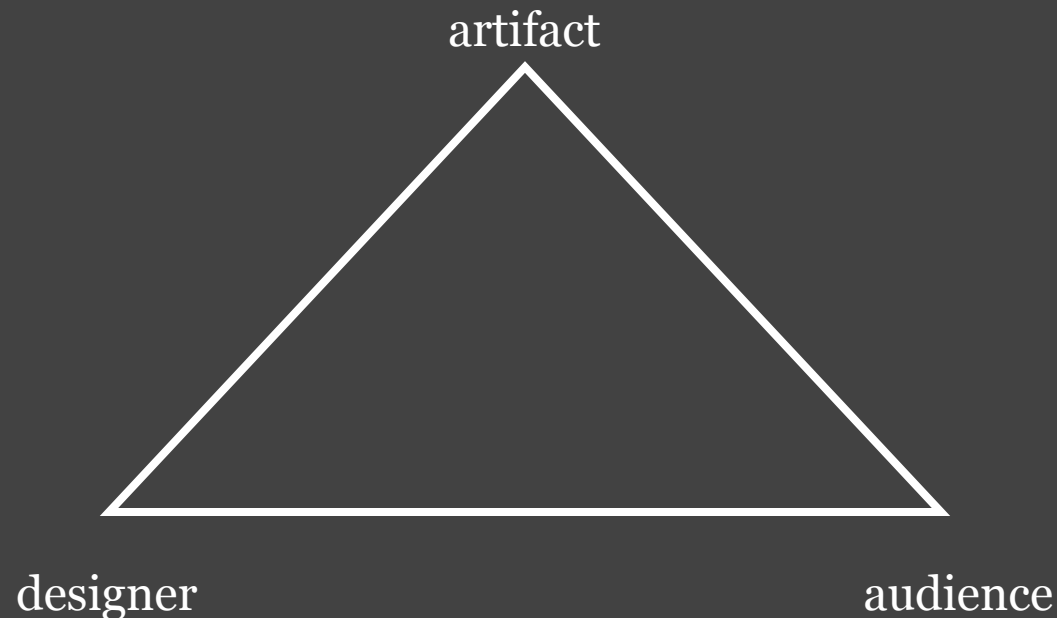
What is communication design?

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. When possible, we involve actual users in our design process.



What is communication design?

Phone Book

Pierce Frank E 313 ScottLn Venta --- 724 941-1611
Pierce Frank E 326 StonebrookeDr

McMury-- 724 941-7452

Pierce G J 2046 RedroseAv ----- 884-3950
Pierce G T 1370 WashngtnRd MtLebnn --- 531-8654
Pierce Gary R 112 FredrckDr LwrBurl 724 335-8154
Pierce Geo A 621 ShadysideDr WMfln ---- 466-7634
Pierce Geo V 443 Library Brdk ----- 351-8390
Pierce Gloria J HighlndAvExt

Burgstwn-- 724 947-4627

Pierce Greg 3312 Ward ----- 682-2338
Pierce Gregory M 205 4Av Brdk ----- 271-3579
Pierce H M 1357 FoxwdDr Mnrovl ----- 372-8864
Pierce H N 241 OakLakeRd

NwKnsngtn-- 724 339-1665

Pierce Harold E 1927 NoblstwnRd ----- 922-4731
Pierce Harold J 259 EvergladeDr PenHls - 795-4820
Pierce Harry 2604 High NtrnaHts --- 724 226-1420
Pierce Harry ins 206 E 6Av Trtm ---- 724 226-0659
Pierce Harry J III 1838 ParklineDr ----- 886-9749
Pierce Heather J 606 DellaDr NVersls --- 823-7156
Pierce Henry 362 OhiopyleDr PlumBoro -- 795-9898
Pierce Henry W 316 AkronAv MtLebnn --- 343-0529
Pierce Herbert Jr OakLakeRd

NwKnsngtn-- 724 339-2561

Pierce Homer Sr 16 ShinHill Smith -- 724 947-5898
Pierce J 2818 B LibrtyBoro ----- 678-8250
Pierce J 509 Jonthn Ct Okdl ----- 809-0705
Pierce J Fred 494 NewTexasRd PlumBoro 795-6427
Pierce J G 1370 WashngtnRd MtLebnn --- 531-8654

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PIECKA—PIERNO

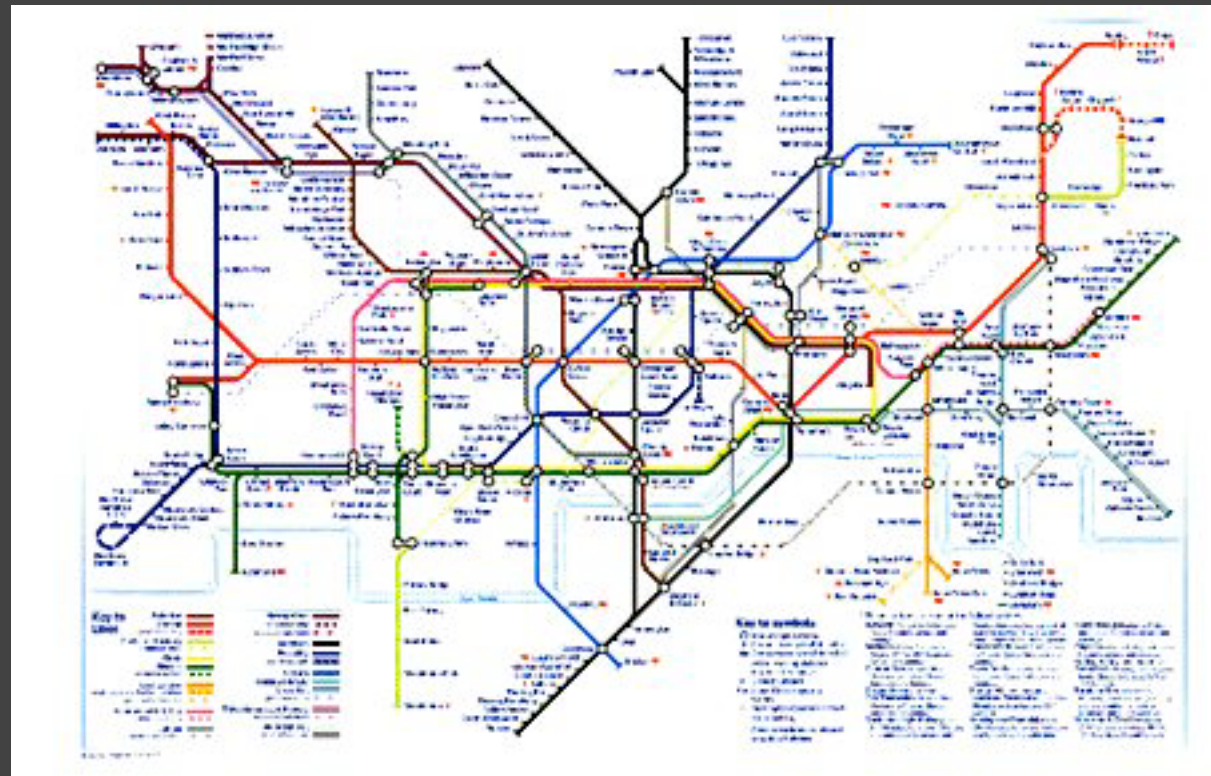
63966 © BELL ATLANTIC

Pierce R M 1714 PennAv ----- 242-9022
Pierce Randy 3908 BarbaraAnnDr Mnrovl - 373-4068
Pierce Randy 955 RoupAv Brcknrdg - 724 224-1637
Pierce Randy W 526 MtVernonDr ----- 822-8121
Pierce Raymond L 397 VillageRd ----- 928-0883
Pierce Rex 555 RidgeAv EPgh ----- 825-0197
Pierce Richd 23 Haldane Crftn ----- 937-0173
Pierce Richd SunysdeHollow Monnghla -- 384-3273
Pierce Richd C 2305 MorrowRd ----- 854-1090
Pierce Robt 106 Berry ----- 928-0232
Pierce Robt 611 VermontAv Glasprt ---- 664-9197
Pierce Robt J 295 YosmteDr PenHls ---- 793-0705
Pierce Robt W 180 BrodlwnDr Elizbth ---- 751-6570
Pierce Ryan M 195 TemonaDr PlsntHls --- 650-9904
Pierce S 3404 BrownsvleRdExt Fnylvtl --- 854-4106
Pierce S 118 CambriaHillDr EDeer --- 724 224-6116
Pierce S 105 CambridgeCt Hrwck --- 724 274-4901
Pierce S 121 EngerAv Pgh ----- 761-8691
Pierce S 6514 SwanDr PenHls ----- 798-0540
Pierce S L 1201 James Mnrovl ----- 823-7578
Pierce Sally 302 OlivrDr WhiteOak ----- 678-0940
Pierce Sean P 468 FranklandAv Plum ---- 828-9477
Pierce Seon M 642 Mercer TurtlCrk ---- 829-9480
Pierce Service Co 216 Crst Clrtn ----- 233-8033
Pierce Shaun J 3132 Sorento ----- 734-0522
Pierce Shirley M 610 FallsChurchRd

Imp-- 724 695-0409

What is communication design?

London Underground



What is communication design?

UPS Logo



What is communication design?

Coca-Cola



What is communication design?

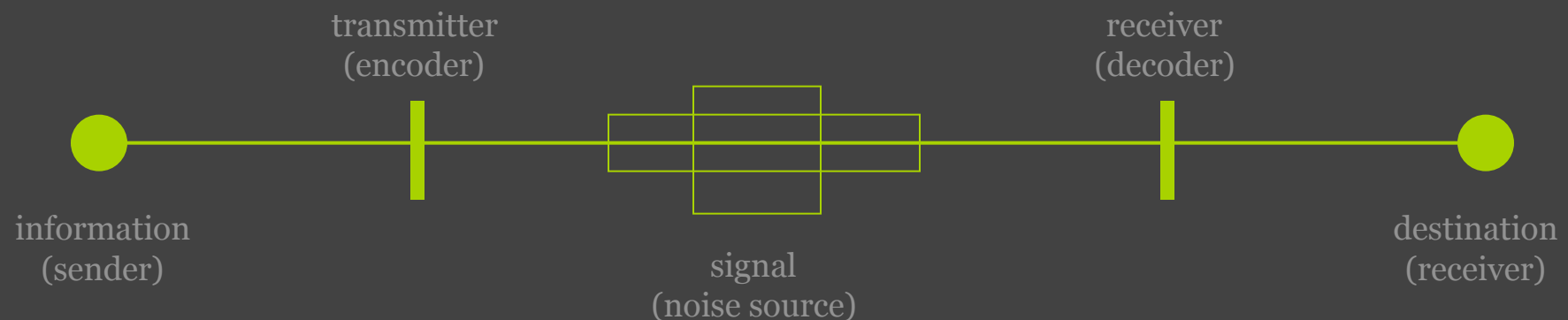
OXO Goodgrips



Information/communication

Information is knowledge about facts and events, and communication is the transfer of knowledge between people.

Basic theory of communication:



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

Understand and define the problem, including audience, project goals and objectives, and constraints (time, budget, production limitations).

Information gathering

Fact finding about the end user, the client, the landscape of competitive products, how other designers have solved similar problems, and surveying the context in which the product will function.

Idea finding

Each design problem has many solutions. Designers brainstorm a wide search, then iterate by vertical and lateral thinking, representing and communicating this process by making sketches and notes.

Solution finding

The process of narrowing in on one of the many ideas to execute in a finished form. It is possible to involve users again at this point, to gain reactions to what might be.

Implementation

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

Typography and communication design

Typography

Our civilization 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.

The designer structures typographic information by giving the units assigned roles, and creating spatial relationships which communicate the message and enhance legibility and readability.

Anatomy of a typeface

A typeface is a set of type families of a unifying and distinctive design (for instance, Times Roman), and a font is one instance of that family (Times Roman light italic).

All typefaces share a basic anatomy.

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

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.



Anatomy of a typeface

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



Text has different alignments: flush left, flush right, centered, and justified.

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
- long lines of type (>70 characters) are hard to read
- very short lines break up text into non-syntactic groups of 2-3 words

Type “etiquette”

experiences.

The quality of experiences has been explained through the consumer lifestyles that help to make sense of what people do, and what doing it means to them and others. These responses and choices are concerned with ethical and aesthetic significance - ways of living that are fundamental to a sense of identity. On a deeper level consumers' life worlds and life goals explain their “emotional experiences, practical knowledge, and their intuitive understanding of cultural and aesthetic way of life” (Thompson 1998).

Type “etiquette”

- Sense breaks
- Widows and orphans
- Multiple hyphens
- Curly quotes
- Tracking and word spacing

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
- “Times square scrolling” slows reading rates
- RSVP presentation is not detrimental to reading speed
- Presenting text on the screen in a way that mimics reading structure (phrasing) may increase performance

Color and communication design

Color matters!



Color matters!

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

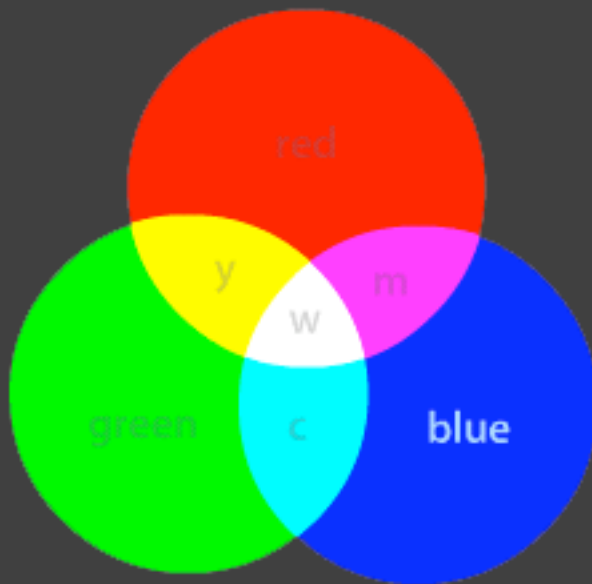
- Helps us to distinguish elements
- Creates an emotional response
- Can create semantic meaning and communicate information

Color is difficult

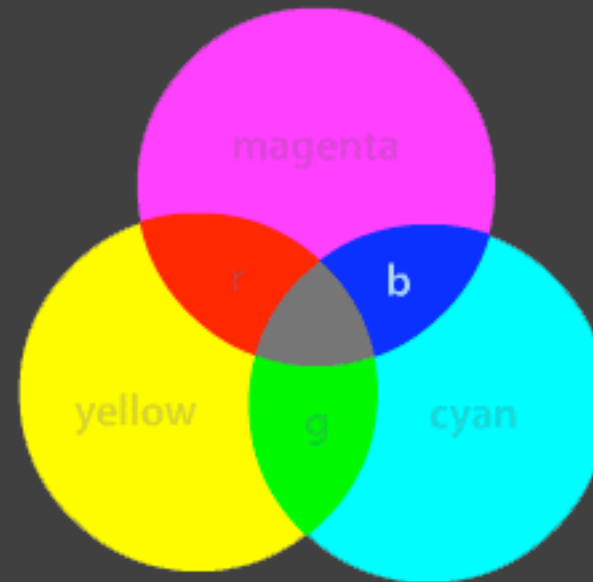
- Cultural differences and associations – Kodak yellow, Coke red
- Different disciplines deal with color in differently: physics, psychology, engineering, fine arts and design
- Highly subjective and relative – affected by light, context, environment
- Simultaneous contrast – color is affected by what 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



- Intensity



- 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.

Intensity

Intensity is sometimes called chroma, or saturation. 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
- High key/low key
- Warm /cool
- Triads
- Monochromatic
- Neutrals
- Complements/split complements
- Analogous

A word about digital color

Digital color and physical color are not the same.

- Print color uses CMYK or Pantone representations of color, and occasionally RGB.
- Digital color is usually represented as RGB values. A color image may be stored as three separate images, one for each of red, green, and blue, or each pixel may encode the color using separate fields for each color component.

A word about digital color

A color look-up table (CLUT) is a tool which converts the color numbers stored in each pixel to physical RGB colors for display on the screen. The output is split into red, blue and green light generated by the computer display (CRT).

Web safe color

The web safe palette is the default browser palette.

The palette contains 216 out of 256 colors. That is because The remaining 40 colors vary on Macs and PCs. The palette is optimized for cross-platform use.

The palette is useful for flat-color illustrations. It should not be used to remap color photographs. Use an adaptive palette (with no dithering, if possible).

Web safe color

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

How to do it?

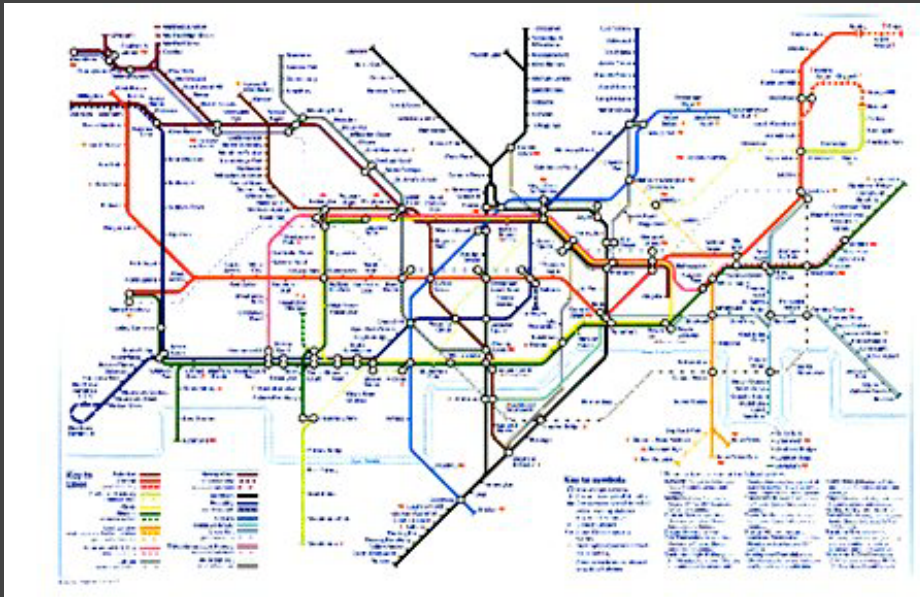
Creating a simple and usable design is about assessing component parts of a design and the relationship between those parts. Train your eye to look for these relationships:

- 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.

Scale, contrast, and proportion



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



Harmony describes the effect, seen at the level of the whole, of the pleasing interaction of the parts.

Alignment

When forms, their edges, or their central axes align with one another, relationships and connections between them are established.

Elements
are Center
Aligned



Elements
are Left
Aligned



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.

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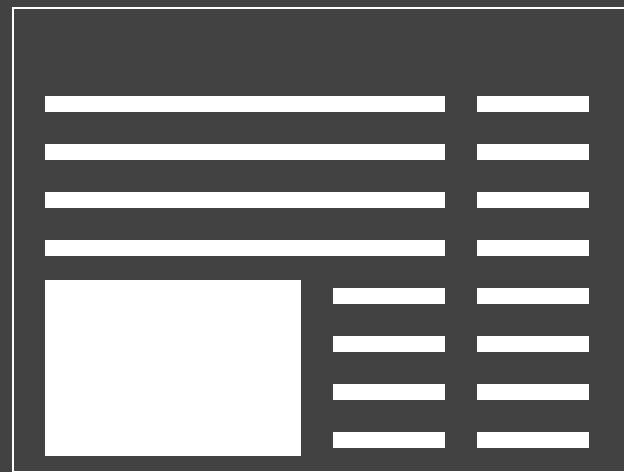
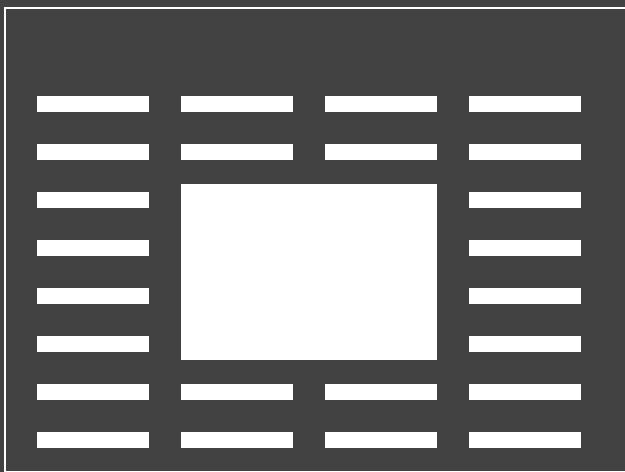
1 3

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.



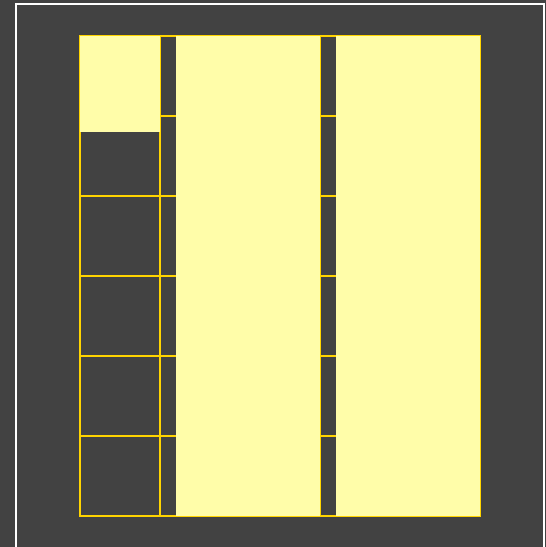
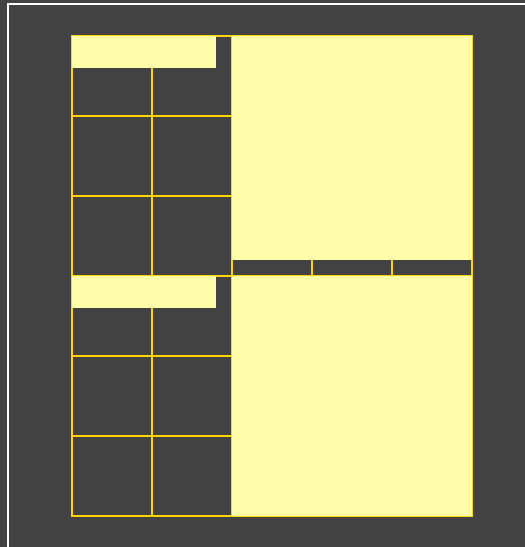
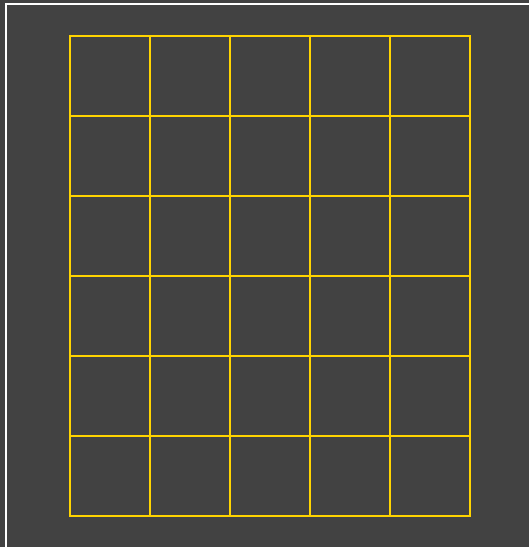
Design programs

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

Design programs are based on grid systems.



Design programs

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

Grid exercise

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.

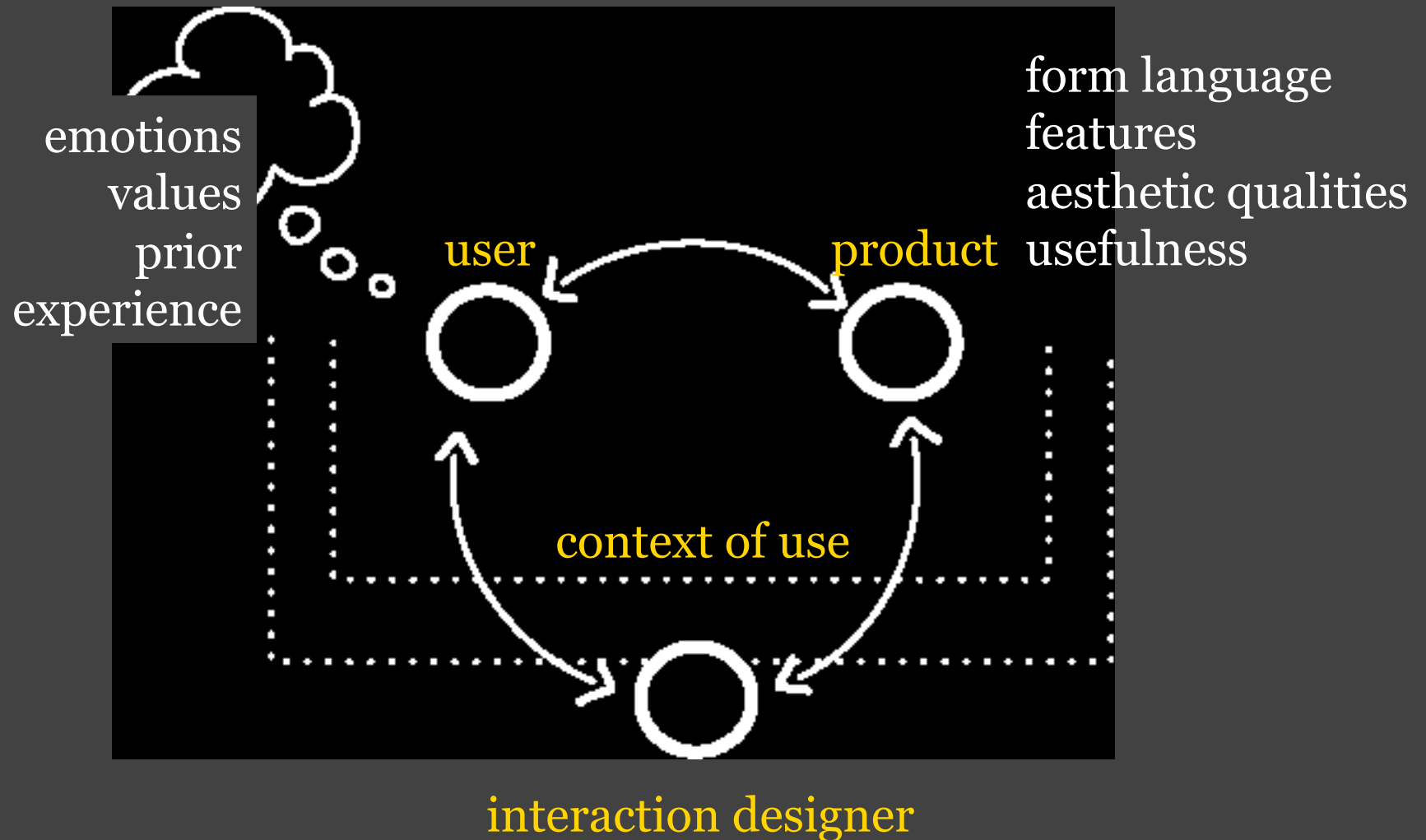
What is
interface design?

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?



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 Starbuck'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

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, palletes).
- 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.)

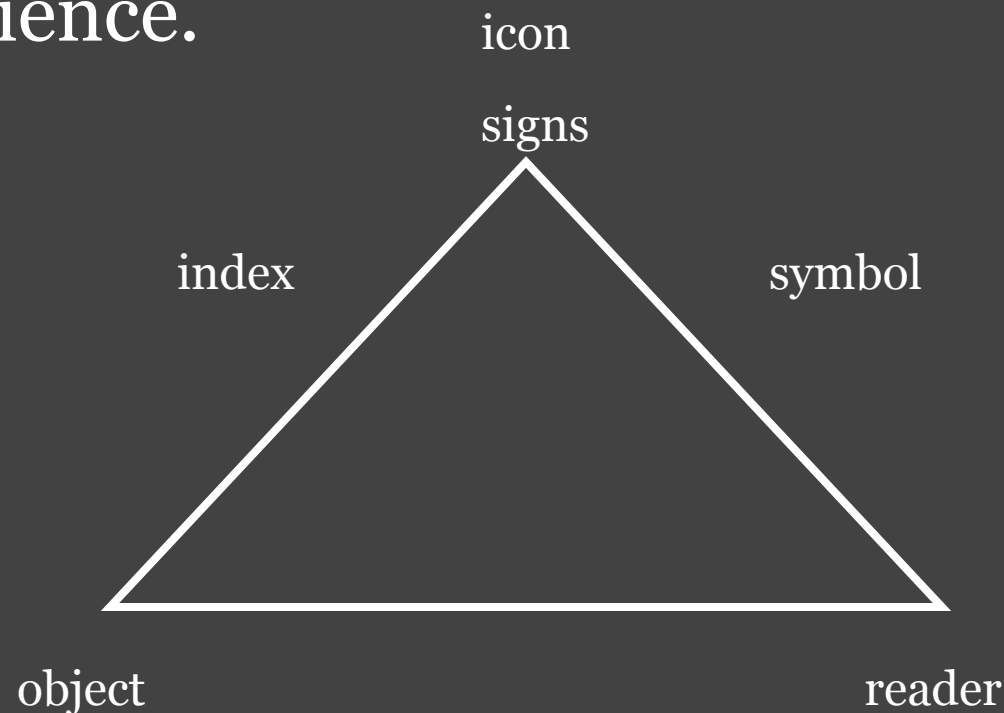
Avoid hierarchies

- Abstract hierarchies are hard to navigate
- People feel most comfortable with a series of groups that are one level deep (for example, a file cabinet).

Graphic signals

Graphic symbols

Semiotics is the general theory of signs and sign-using behavior. It helps designers to understand how graphic symbols communicate to an audience.



Graphic symbols



There are four basic types of graphic signals:

- Signs
- Indexes
- Symbols
- Icons

Signs

A

+

A sign is a mark or language unit that stands for or denotes another thing.

It forms a direct, one-to-one relationship between the mark and the actual thing.

Index

An index has a factual or causal connection that points toward the object.

Wet streets are a sign that it has rained recently; smoke is an index pointing towards fire.

Symbol



A symbol has an arbitrary relationship between the signifier and the thing signified.

An olive branch is used as a symbol for peace.

So is the peace sign.

Icon

An icon resembles the thing it represents. A picture, a photograph, or a diagram are all icons, because they imitate or copy aspects of the thing they represent.



Icons have been used in graphical user interfaces since the Xerox Star system.

Icons

On the computer, icons were originally designed to represent physical objects — files, printers, file folders. In current OSs, they also represent tools and functions.

Nouns are easier to represent with icons than verbs.

Research shows that the most effective interpretations of icons happen when image is combined with text.

Icons

A good icon must do two things: effect quick initial recognition of the image and fast recall of the image.

The best icon is simple and uncluttered: a common representation of the object.

Test those icons!

Icon exercise

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.
- Coper, 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/>