Web Interface

Web Usability

- Usability of Web sites and applications delivered over the WWW
- Dependent on several issues related to
  - Web technology
  - Web design
  - Project Management
  - Usability evaluation
- Web usability is not about “adding some fancy graphics, color, and cool styles at the end of the project”
- Web usability can be measured!

Covered topics

- Web Design
- Visual
- Consistent
- Layout
- Web Design Guideline

Characteristics of a Web Interface

	GUI	WI
Devices	User hardware variations limited. User hardware characteristics well defined. Screens appear exactly as specified.	
User Focus	Data and applications.	
Data/ information	Typically created and used by known and trusted sources. Properties generally known. Typically placed into system by users or known people and organizations. Typically organized in a meaningful fashion. A notion of private and shared data exists.	

Characteristics of a Web Interface

	GUI	WI
User Tasks	Install, configure, personalize, start, use, and upgrade programs. Open, use, and close data files. Fairly long times spent within an application. Familiarity with applications often achieved.	
Presentation Elements	Windows, menus, controls, data, toolbars, messages, and so on. Many transient, dynamically appearing and disappearing. Presented as specified by designer. Generally standardized by toolkits and style guides.	

Characteristics of a Web Interface

	GUI	WI
User's Conceptual Space	Controlled and constrained by program.	
Navigation	Through menus, lists, trees, dialogs, and wizards. Not a strong and visible concept. Constrained by design. Generally standardized by toolkits and style guides.	
Context	Enables maintenance of a better sense of context. Restricted navigation paths. Multiple viewable windows.	

Characteristics of a Web Interface

	GUI	WI
Interaction	Interactions such as clicking menu choices, pressing buttons, selecting list choices, and cut/copy/paste occur within context of active program.	
Visual Style	Typically prescribed and constrained by toolkit. Visual creativity allowed but difficult. Little significant personalization.	
Task Efficiency	Targeted to a specific audience with specific tasks. Only limited by the amount of programming undertaken to support it.	

Characteristics of a Web Interface

	GUI	WI
Consistency	Major objective exists within and across applications. Aided by platform toolkit and design guidelines. Universal consistency in GUI products generally created through toolkits and design guidelines.	
User Assistance	Integral part of most systems and applications. Accessed through standard mechanisms. Documentation, both online and offline, usually provided. Personal support desk also usually provided.	

Characteristics of a Web Interface

	GUI	WI
System Capability	Unlimited capability proportional to sophistication of hardware and software.	
Integration	Seamless integration of all applications into the platform environment a major objective. Toolkits and components are key elements in accomplishing this objective.	
Response Time	Nearly instantaneous.	

Characteristics of a Web Interface

	GUI	WI
Security	Tightly controlled, proportional to degree of willingness to invest resources and effort. Not an issue for most home PC users.	
Reliability	Tightly controlled in business systems, proportional to degree of willingness to invest resources and effort.	

Web design

- Web interface design is about content, not data
  - the design of navigation
  - the presentation of information
  - → structure and relationships of menus, content, and other linked documents or graphics
- Goals: build a hierarchy of menus and pages that
  - feels natural
  - is well structured
  - is easy to use
  - is truthful

→ The process of creating the web site in an attractive, logical manner.

→ When done successfully, it attracts attention, adds value to a message, enhances readership and readability, simplifies, organizes, provides selective emphasis, and creates unity.

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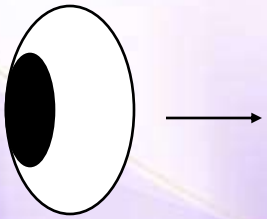
How the symbols convey meaning?

- Two stage process
  - Parallel extraction of low-level properties of scene
  - Sequential goal-directed processing



Stage 1

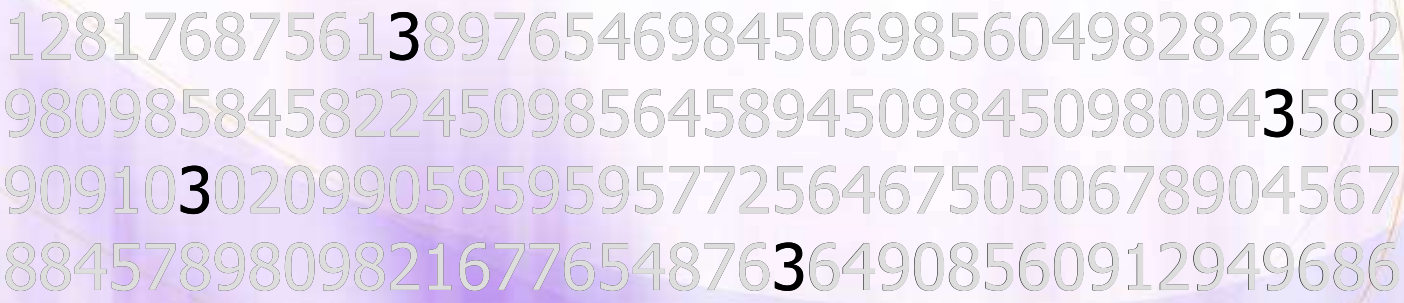
Early, parallel detection of color, texture, shape, spatial attributes

Stage 2

Serial processing of object identification (using memory) and spatial layout, action

Preattentive Processing

- How does human visual system analyze images?
  - Some things are done preattentively, without the need for focused attention
  - Generally less than 200-250 msecs (eye movements take 200 msecs)
- Example: how many 3's?

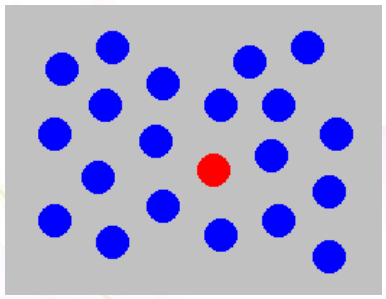


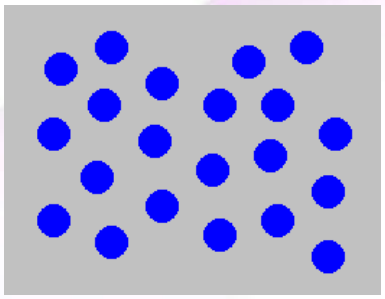
What Kinds of Tasks?

- Target detection
  - Is something there?
- Boundary detection
  - Can the elements be grouped?
- Counting
  - How many elements of a certain type are present?

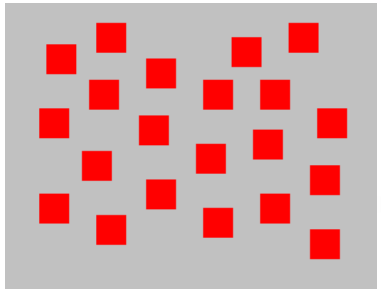
Hue and Shape

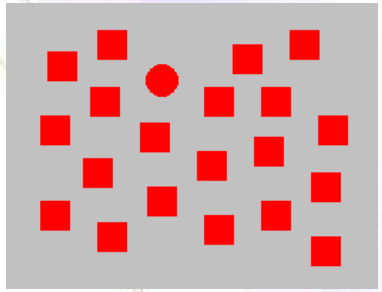
- Determine if a red circle is present





→ Can be done rapidly (preattentively) by people
→ Surrounding objects called "distractors"

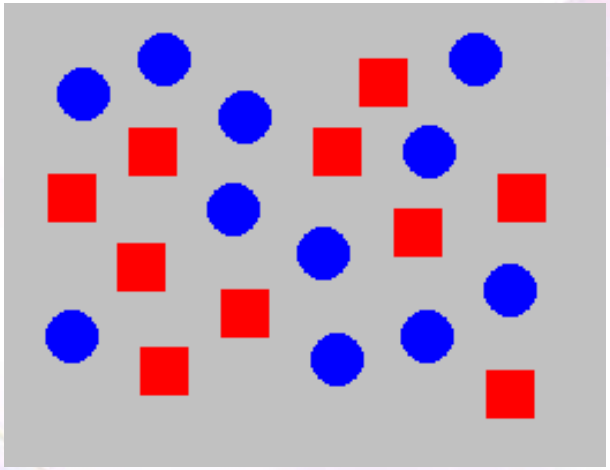


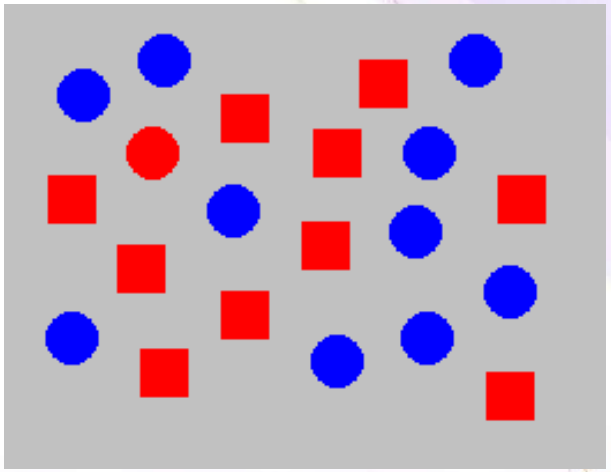


→ Can be done preattentively by people

Hue and Shape

- Determine if a red circle is present

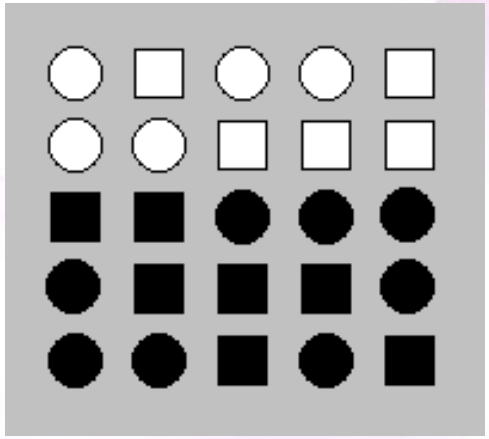




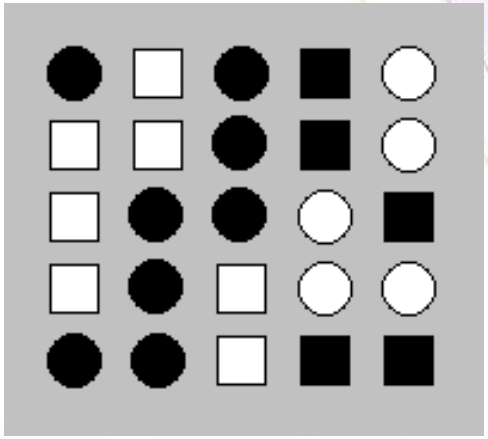
→ Cannot be done preattentively
→ Must perform a sequential search
→ Conjuction of features (shape and hue) causes it

Fill and Shape

- Is there a boundary?



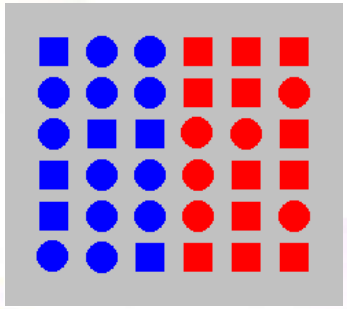
→ Can be done preattentively since each group contains one unique feature

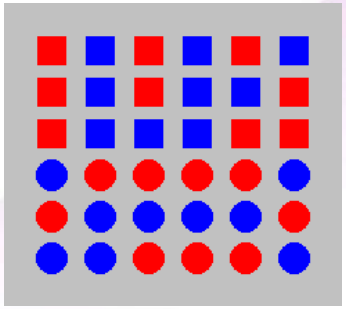


→ Can not be done preattentively (there is a boundary!) since the two features (fill and shape) are mixed

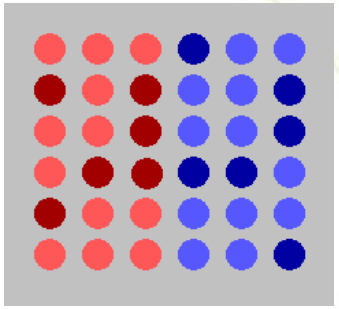
Hue versus Shape, Hue versus Brightness

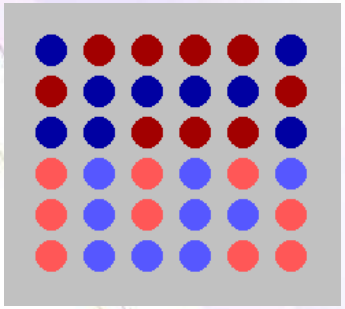
- Is there a boundary?





→ Left: Boundary detected preattentively based on hue regardless of shape
→ Right: Cannot do mixed color shapes preattentively





→ Left: Varying brightness seems to interfere
→ Right: Boundary based on brightness can be done preattentively

Potential Preattentive Features

length	hue
width	intensity
size	flicker
curvature	direction of motion
number	binocular lustre
terminators	stereoscopic depth
intersection	3-D depth cues
closure	lighting direction

Key Perceptual Properties

- Brightness
- Color
- Texture
- Shape

Luminance, Brightness, Contrast

- Luminance
  - Measured amount of light coming from some place
- Brightness
  - *Perceived* amount of light coming from source
- Contrast
  - Important for fg-bg colors to differ in brightness

Hello, here is some text. Can you read what it says?

Hello, here is some text. Can you read what it says?

Hello, here is some text. Can you read what it says?

Hello, here is some text. Can you read what it says?

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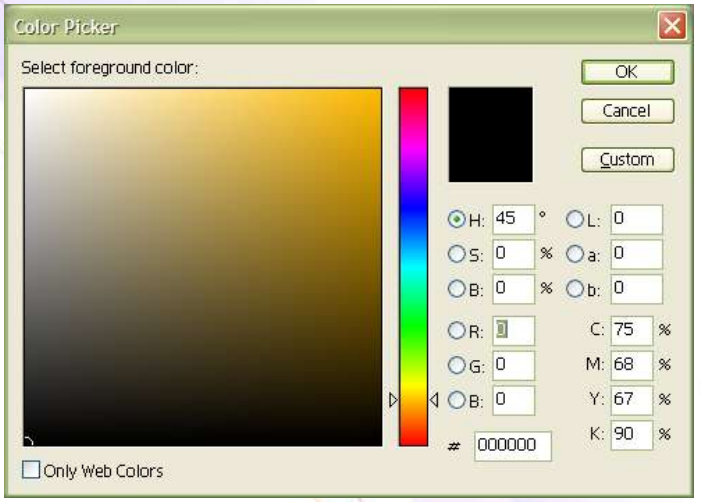
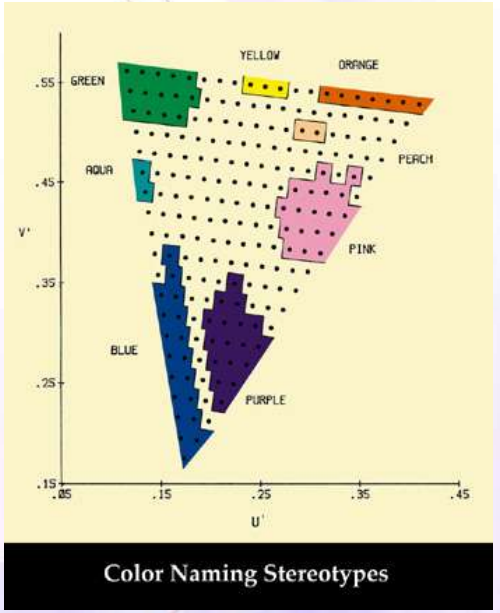
Color



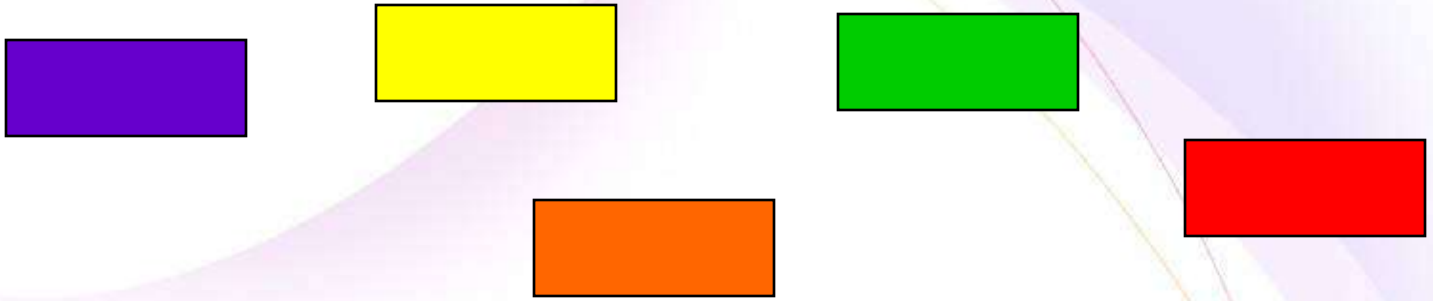
- Models
  - RGB
  - HSB (HVS) model
    - Hue - what people think of color
    - Saturation - intensity, whiteness
    - Brightness (Value) - light/dark
- Categories
  - Can different colors be used for categories of nominal variables?
    - Yes, Ware's suggestion: 12 colors (red, green, yellow, blue, black, white, pink, cyan, gray, orange, brown, purple)
  - Are there certain canonical colors?
    - Post & Greene '86 had people name different colors on a monitor
    - Pictured are ones with > 75% commonality



Color Naming Stereotypes

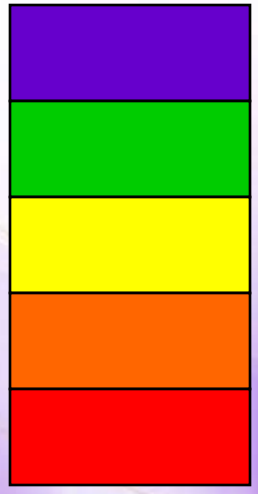
Possible Color Sequences

- Can you order these (low->hi) ?

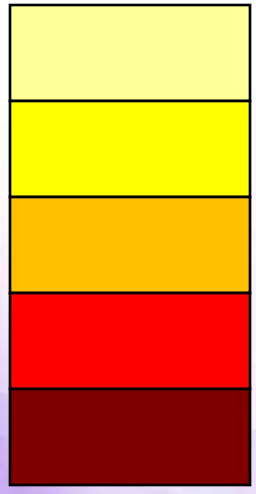


Gray scale

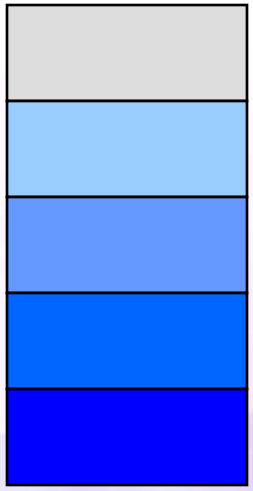
Full spectral scale



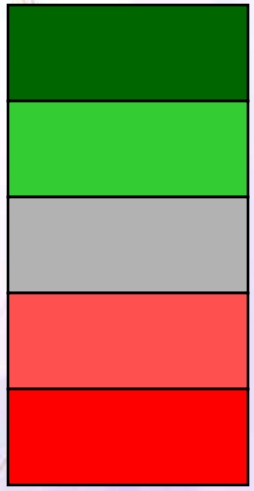
Single sequence part spectral scale



Single sequence single hue scale



Double-ended multiple hue scale

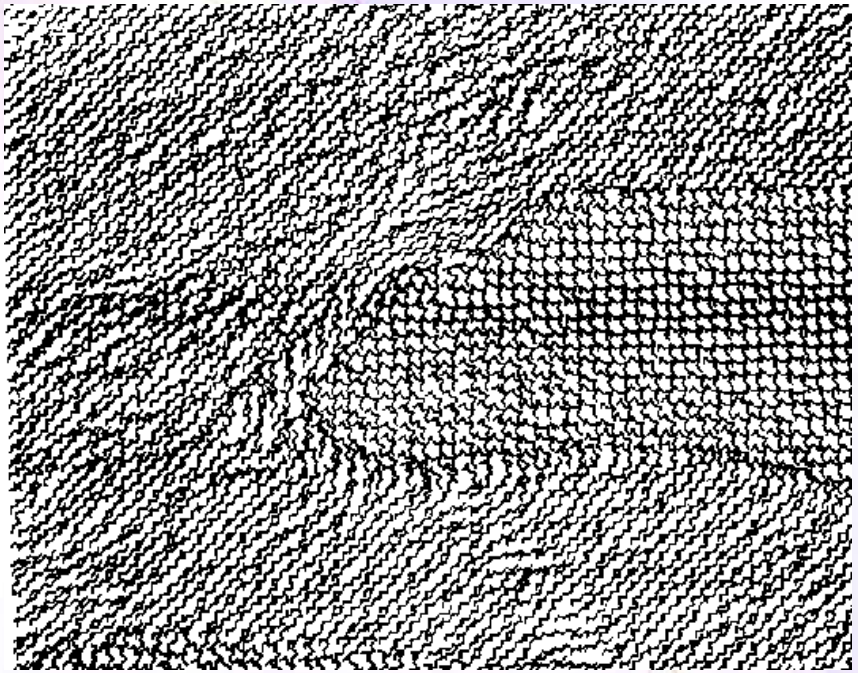


Color Purposes

- Call attention to specific data
- Increase appeal, memorability
- Increase number of dimensions for encoding data
  - Example, Ware and Beatty ‘88
    - x,y - variables 1 & 2
    - amount of r,g,b - variables 3, 4, & 5

Texture

- Appears to be combination of
  - orientation
  - scale
  - contrast
- Complex attribute to analyze

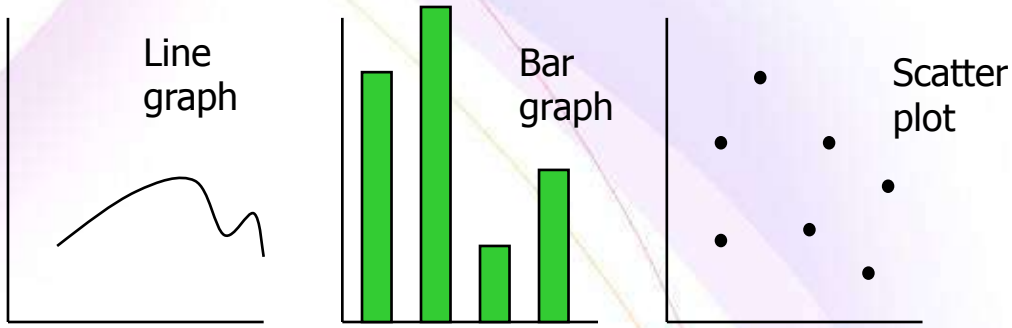


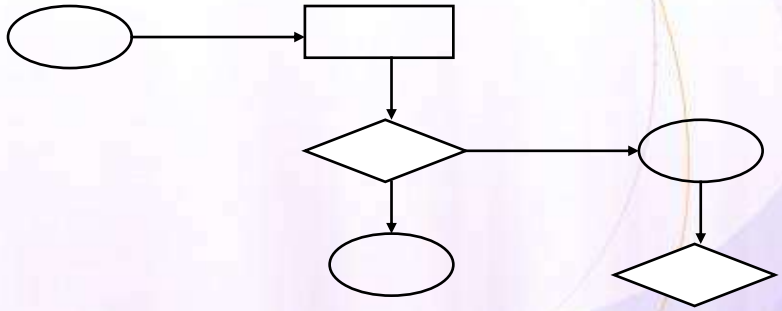
Shape, Symbol

- Symbols should be rapidly perceived and differentiated
- Application for maps, military, etc.

Basic Symbolic Displays

- Graphs: show the relationships between variables' values in a data table
  - Visual display that illustrates one or more relationships among entities
  - Shorthand way to present information
  - Allows a trend, pattern or comparison to be easily comprehended
- Charts:
  - Structure is important, relates entities to each other
  - Primarily uses lines, enclosure, position to link entities
  - Examples: flowchart, family tree, org chart, …

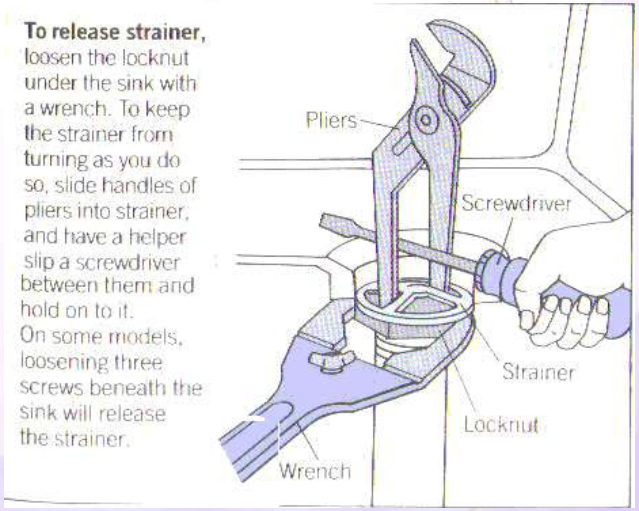




Basic Symbolic Displays

- Maps:
  - Representation of spatial relations
  - Locations identified by labels

- Diagrams
  - Schematic picture of object or entity
  - Parts are symbolic



Design Principles

- Content is king
  - Quality, relevance and integrity of the content is fundamental
  - What's the analysis task? Make the visual design reflect that
  - Integrate text, chart, graphic, map into a coherent narrative
- Conventions

- Color for labeling
  - Distinctness
  - Unique hues
  - Component process model
  - Contrast with background
  - Color blindness
  - Number
  - Only a small number of codes can be rapidly perceived
  - Field Size
  - Small changes in color are difficult to perceive

Guides for Enhancing Visual Quality

- Attractive displays of statistical info
  - have a properly chosen format and design
  - use words, numbers and drawing together
  - reflect a balance, a proportion, a sense of relevant scale
  - display an accessible complexity of detail
  - often have a narrative quality, a story to tell about the data
  - are drawn in a professional manner, with the technical details of production done with care
  - avoid content-free decoration, including chartjunk

Graphical Displays Should

- Show the data
- Induce the viewer to think about substance rather than about methodology, graphic design the technology of graphic production, or something else
- Avoid distorting what the data have to say
- Present many numbers in a small space
- Make large data sets coherent
- Encourage the eye to compare different pieces of data
- Reveal the data at several levels of detail, from a broad overview to the fine structure
- Serve a reasonably clear purpose: description, exploration, tabulation, or decoration
- Be closely integrated with statistical and verbal descriptions of a data set

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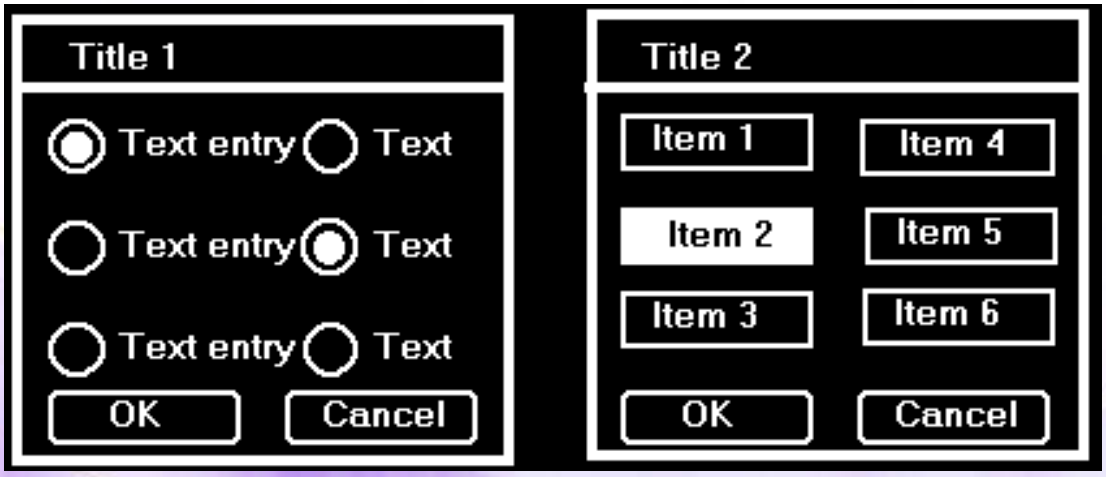
Consistency

- A system should look, act, and operate the same throughout. Similar components should:
  - Have a similar look
  - Have similar uses
  - Operate similarly
- The same action should always yield the same result.
- The function of elements should not change.
- The position of standard elements should not change.

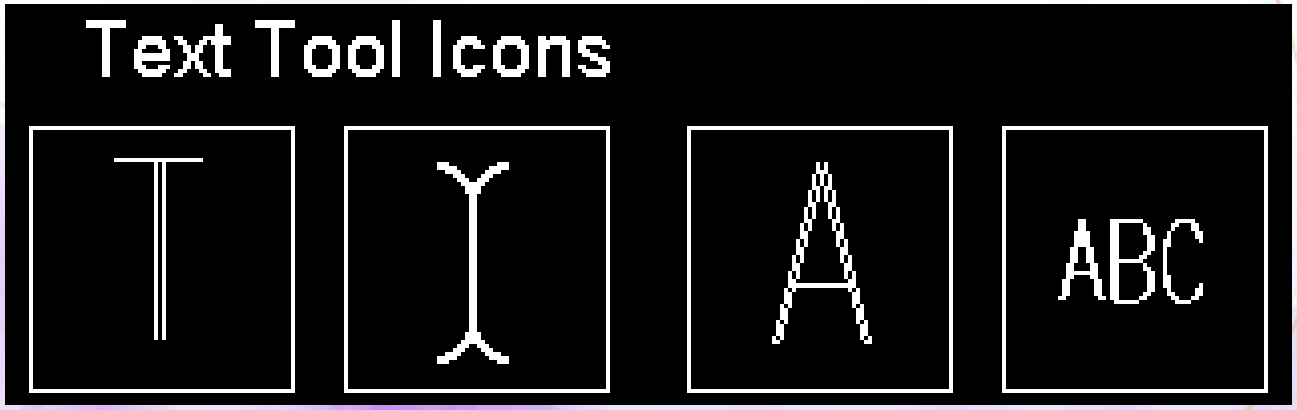
Views of consistency

- Internal consistency: states the same conventions and rules that should be applied to all elements of the web interface
- Example: dialog boxes
  - Same kinds of elements are shown in the same places.
  - Those with different kinds of behavior have their own special appearance.



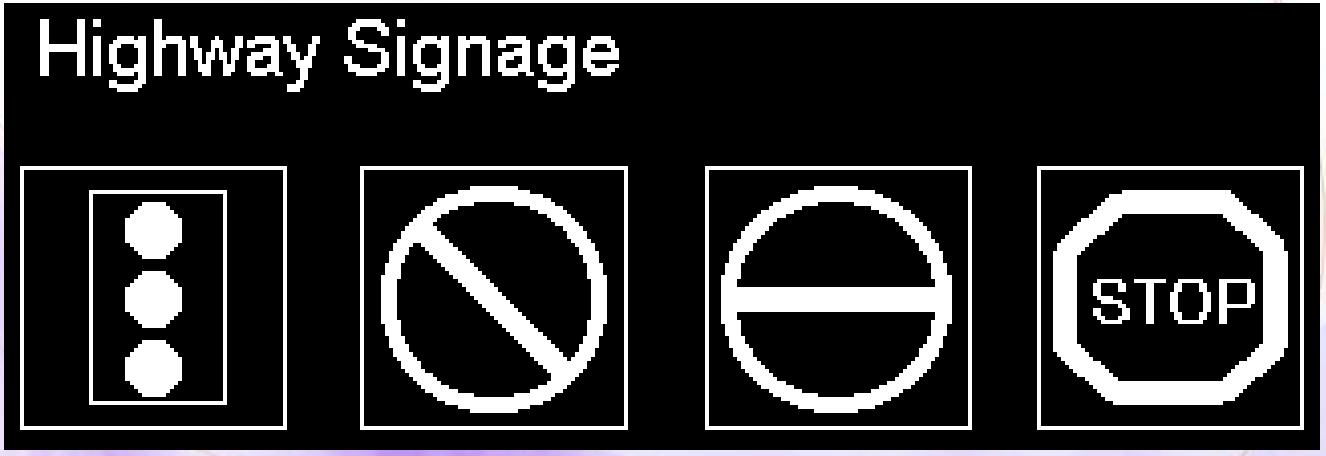
Views of consistency

- External consistency: says the existing platforms and cultural conventions should be followed across the web interface
- Example:
  - These icons come from different desktop publishing applications
  - But generally have the same meaning.



Views of consistency

- Real-world consistency: means conventions should be made consistent with real-world experiences, observations and perceptions of the user.
- Example:



Views of consistency

- When not to be consistent: deviating from existing conventions should only be done if it provides a clear benefit to the user.
- Example: ???

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Tips

- Layout:
  - Formats
  - Proportions
  - Grids
  - 2-D and 3-D organization
- Three ways to design display spatial layout:
  - use a grid structure
    - help locate menus, dialogue boxes or control panels
    - 7 +/-2 is the maximum number of major horizontal or vertical divisions → make the screen less cluttered and easier to understand
  - standardize the screen layout
  - group related elements

Printed Pages Versus Web Pages

- Page Size
- Page Rendering
- Page Layout
- Page Resolution
- User Focus
- Page Navigation
- Sense of Place
- Page Independence

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Good design vs. Bad design

- Good design furthers the message, the goal
- Poor design buries the message and hinders the goal.
- Good craftsmanship can carry a weak design
- Poor craftsmanship can wreck a good design

Ways design makes a difference

- The position and color of the primary call to action
- Position on the page of testimonials, if used
- Whether linked elements are in text or as images
- The amount of “white space” on a page, giving the content space to “breathe”
- The position and prominence of the main heading
- The number of columns used on the page
- The number of visual elements competing for attention
- The age, sex and appearance of someone in a photo sign makes a difference

Principles → Process

- Organize:
  - provide the user with a clear and consistent conceptual structure
- Economize:
  - do the most with the least amount of cues and visual elements
- Communicate:
  - match the presentation to the capabilities of the user

- Organization : Purpose, Goals, Content
- Visual techniques: Layout, Typography, Color
- Add and manipulate graphics
- Refine and fine-tune
- Audience

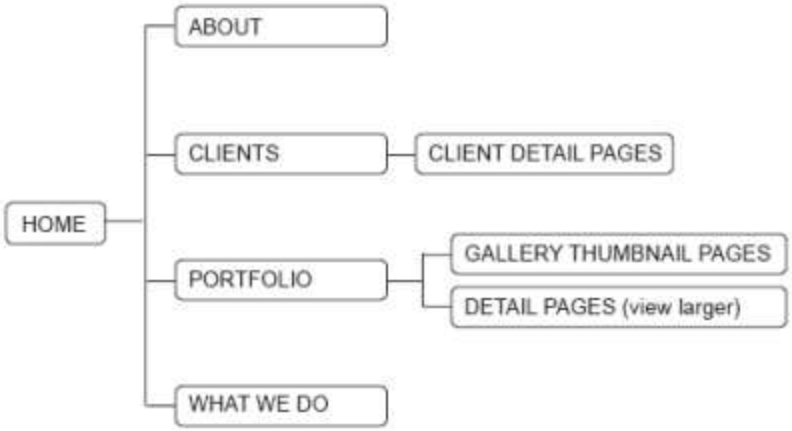
1. Audience

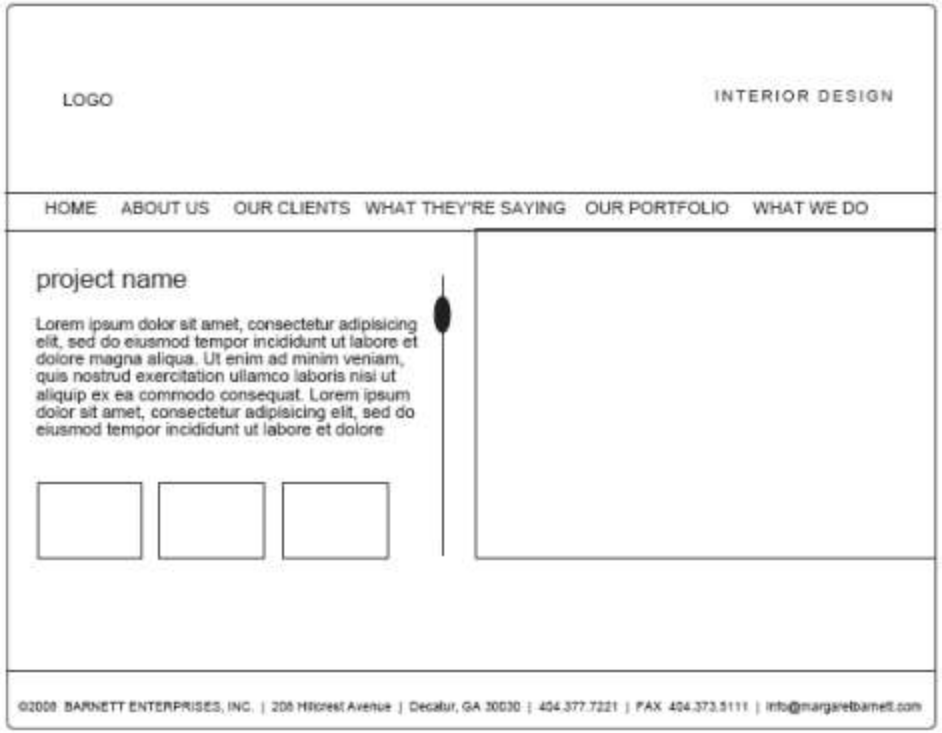
- Different demographics of users use the web in different ways. Design with your target market in mind.

2. Organization

- Users don't read, they scan.
  - Users search for some fixed points or anchors which would guide them through the content of the page.
- Information & design hierarchy determines much of design including the layout itself.
  - Familiarize yourself with the content as much as you can and organize it hierarchically.
  - Design hierarchy is all about the importance of visual information and giving it assigning levels of importance to make the message of the design get across.
- Site maps, site-flow diagrams, and wireframes convey how the site will work from a practical perspective before you get too far ahead.

Example sitemap and wireframe





Keep the web interface simple

- Users are rarely on a site to enjoy the design
  - in most cases they are looking for the information despite the design.
- Economize: Four major points to be considered:
  - Simplicity — only the elements that are most important for communication.
  - Clarity — all components should be designed so their meaning is not ambiguous.
  - Distinctiveness — the important properties of the necessary elements should be distinguishable.
  - Emphasis — the most important elements should be easily perceived.

Building a better boat

- Form follows function
  - Design theory is the missing link for many un-trained but otherwise talented designers.
  - You need to step away from design tools (e.g. Photoshop) for a while and learn about design theory, not just spend all your time learning what filters and blending modes do.
- Usability and the utility, not the visual design, determine the success or failure of a web-site.
  - Since the visitor is the only person who clicks the mouse and therefore decides everything, user-centric design has become a standard approach for successful and profit-oriented web design.
  - If users can't use a feature, it might as well not exist.

Effective writing

- The web page should be obvious and self-explanatory

  → don't make me think
- The Web is different from print, adjust the writing style to users' preferences and browsing habits.
  - Promotional writing won't be read.
  - Long text blocks without images and keywords marked in bold or italics will be skipped.
  - Exaggerated language will be ignored.
- Talk business.
  - Avoid cute or clever names, marketing-induced names, company-specific names, and unfamiliar technical names.

3. Visual techniques: Layout

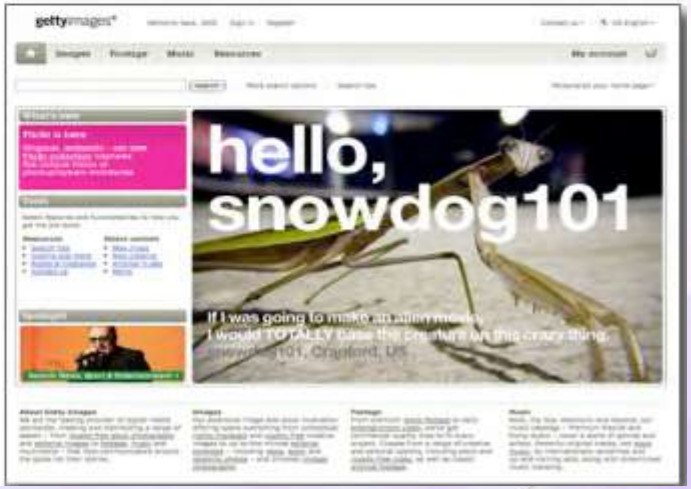
- Provides solid visual and structural balance for website
- Enables user to scan, read and understand a page quickly
- You can have more than one grid.
  - Your front page could be based on a five column grid while inside pages with ads on a six column. There is no one right way.
- Think about the grid not only vertically but horizontally, too.
- Build in white space.
  - Adding just a little more space in alleys/gutters and between stories will add add emphasis to the story, and improve readability.
- A page without a grid is a usability nightmare

Grids in use


The New York Times
Poll Finds New Optimism on Economy Since Inauguration
Obama in Istanbul on Last Stage of Tour
Italians Comb Through Rubble After Quake
Small Business


USA TODAY
Pinched companies snip staff benefits
Military researchers blamed pigs to test armor
4.0 aftershock hits Italian quake region
Cruise Log


amazon.com
Kindle 2 Has Arrived
Digital SLR Store


gettyimages
hello, snowdog101

White space

- White space (the absence of text and graphics) is vital to graphic design.
- The key is to add just enough white space so the eye knows where to go and can rest a bit when it gets there.
- You can control white space in the following locations:
  - margins
  - paragraph spacing
  - spacing between lines of text
  - gutters (the space between columns)
  - and surrounding text and graphics
- White space is not the enemy.
- Let your type breathe.
  - Don’t be afraid to leave blank spaces in your pages. This negative or white space will help focus attention on the text and it’s the text that speaks loudest, so let it be heard.

Visual techniques: Typography

- Limit the number of fonts you use.
- Add extra space between lines. More space between your lines will make your body copy less overwhelming and more digestible.
- Tweak letter, word, and line spacing in your headlines
- Serif font for headlines and sans serif for body copy
- Use proper characters:
  - Stop using straight quotation marks, straight apostrophes
  - Use a dash instead of two hyphens
  - Use a proper ellipsis instead of three periods

Visual techniques: Color

- With colors you can set a mood, attract attention, or make a statement. You can use color to energize, or to cool down.
  - Market researchers have also determined that color affects shopping habits.
- By selecting the right color scheme, you can create an ambiance of elegance, warmth or tranquility, or you can convey an image of playful youthfulness.
- Color psychology:
  - Colors not only enhance the appearance of the item — they also influence our behavior.
  - The effects of color differ among different cultures, so the attitudes and preferences of your target audience should be a consideration.

Add and manipulate graphics

- Look at well designed sites often
- Emulate
- Keep it simple, less is more
- Be consistent
- Design is not about decoration, it's about communication and functionality
  - If something is not furthering the message or the function, it should not exist

Refine and retune

- Conventions
  - Innovate only when you know you really have a better idea, and take advantage of conventions when you don't.
- When you think you are finished designing, step away.
- Come back to it fresh and refine it, step away.
- Proof for typos, alignment, spacing, sizing, color, consistency, etc.
- Proof it again