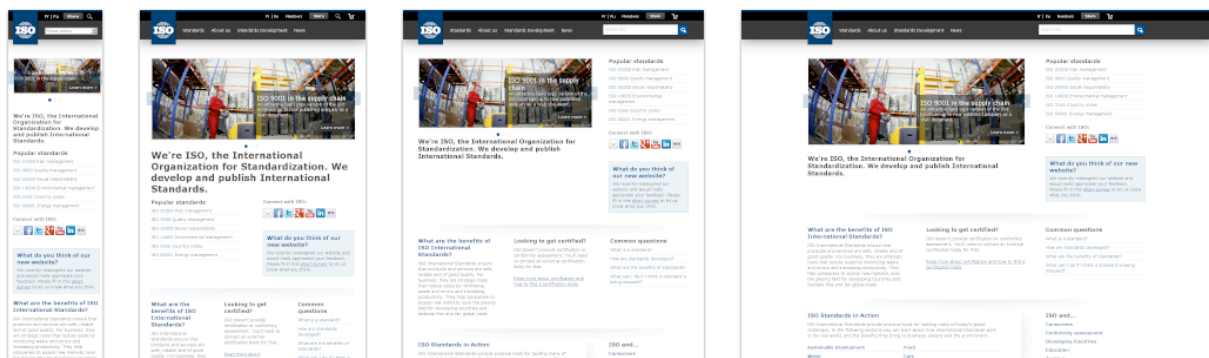# Web design (basics)

media queries

from mediaqueri.es

staggering numbers on mobiles

2002 - 1 million mobile phone users worldwide

2008 - 3.0 billion mobile phone users worldwide

2010 - 5.0 billion mobile phone users worldwide (68% of population of the world 6.8 billion)

.... In **2011** - 835 million smartphone users, 5.6 billion feature phone users

Almost every second 4 babies are born and 32 mobile phones are sold ...

mobile vs desktop

mobile vs desktop

- Limited display

- Users attention may be distracted

- Increase need for clarity
    - (Screen is smaller, but things have to look bigger)

- Power management
    - (e.g. Too many animations might draw battery)

- Text input is a pain
- Navigation model is different

methodology

- Do Nothing
    (SSR - Small screen rendering)

- Handheld stylesheets

- Mobile specific site/app

Remember: if it is online someone will see it with a mobile phone …

Miniaturization - do nothing

"... treats the mobile environment and technology as a subset of the desktop environment."
Barbara Ballard

- It's a repurpose of existing content

- Visual results are often unpredictable

- Navigation experience suffers

Mobilization

"... precisely targets mobile user needs, making (the) best possible use of technology."
Barbara Ballard

- Content and context specific

- Fits better mobile user needs

Context

- What is contextually relevant
- Mobilize content **not only the layout**

"If the mobile site design only replicates an existing high web site the result will range from suboptimal to completely unusable."
Morten Hjerde

(phone) Screens
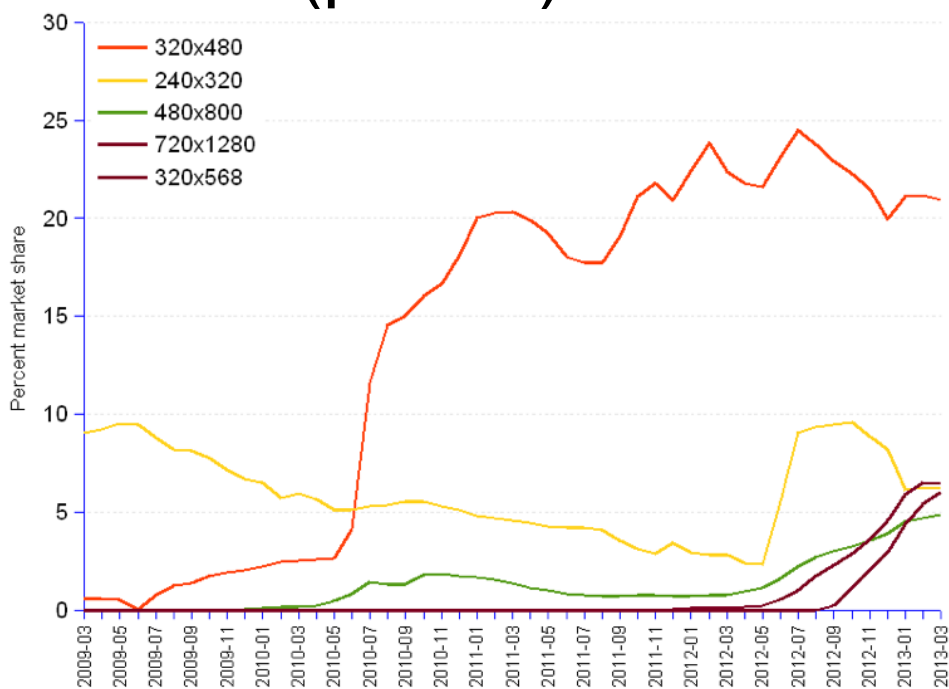
http://stats.areppim.com/stats/stats_mobiresxtime.htm

Screens

- Highest so far: 320x480 growing rapidly, your baseline
- Other common sizes to have in mind: 240x320
- Higher resolution market on the rise

Main concern: screen width (height is taken care of by scrolling)

Layout Adaptation

- media queries give you browser size, device size, resolution, orientation, etc
- so you can adapt your css ... but how?

- identify
  - your logo (and important navigation aspects, e.g. search),
  - important/central content,
  - secondary stuff (often, but not always, menus),
  - extra info/links, etc.
- Put important on top (content, logo+important navigation)

Layout Adaptation
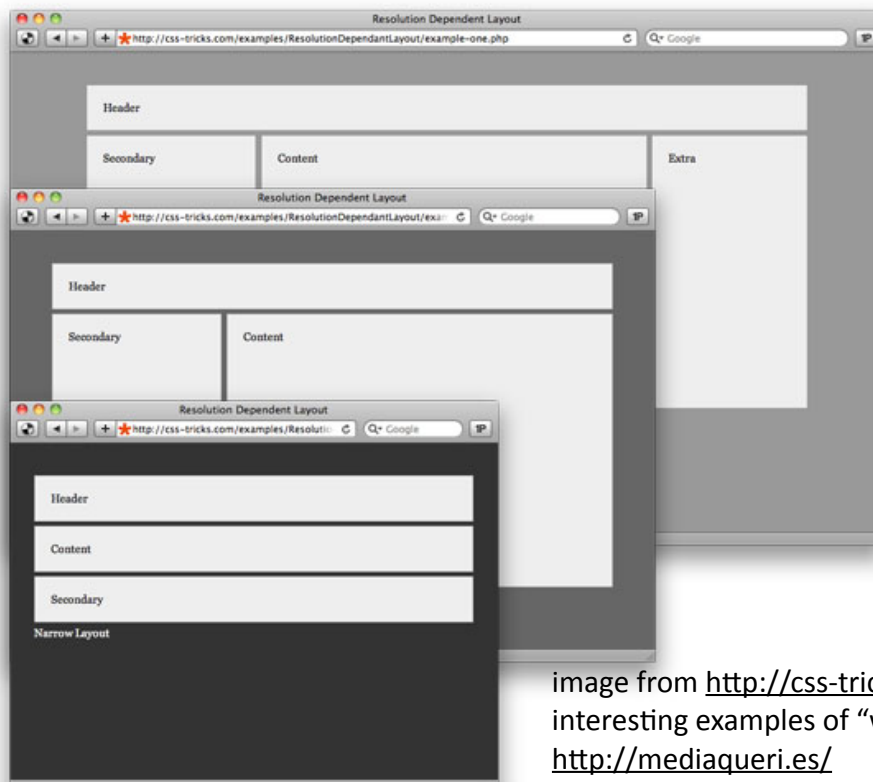
image from http://css-tricks.com/
interesting examples of "what is important" at
http://mediaqueri.es/

Layout Adaptation
"off screen" alternatives

- (←) less important info on the bottom
- or navigation on side (↓)

from http://www.lukew.com/ff/entry.asp?1569

Best Practices

Access

Welcome to Airtel
Live Wap Portal:
[ ]Travel & Ticketing
[ ] Banking
[ ] Jobs
[ ] Matrimony

[GIF- AirTel Live]
1.[ ] Banking
Bank with
HDFC | IDBI | UTI
Get a loan
Home | Personal | Auto
----
2. [ ] Travel & Ticketing
Railway enquiry
Air ticketing
City guide
----
3. [ ] Jobs
Search | More…
----
4. [ ] Matrimony
Find | Status| Chat

5.[ ] Search
6.[ ] Bill pay
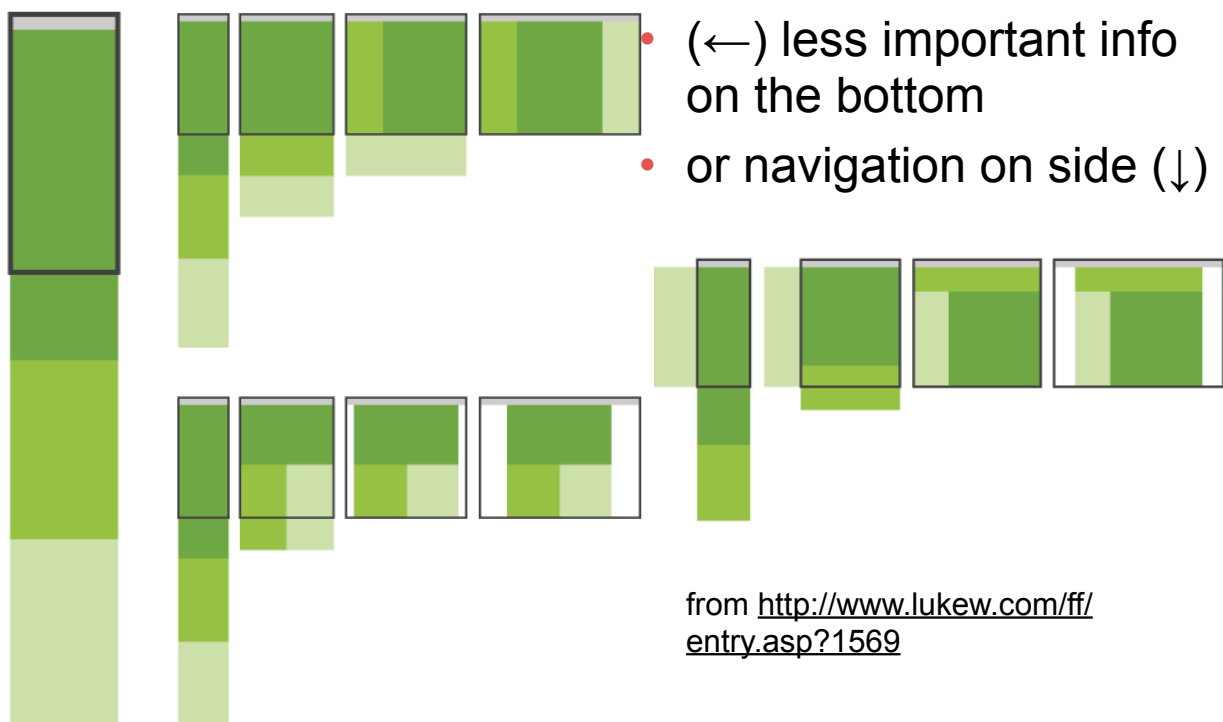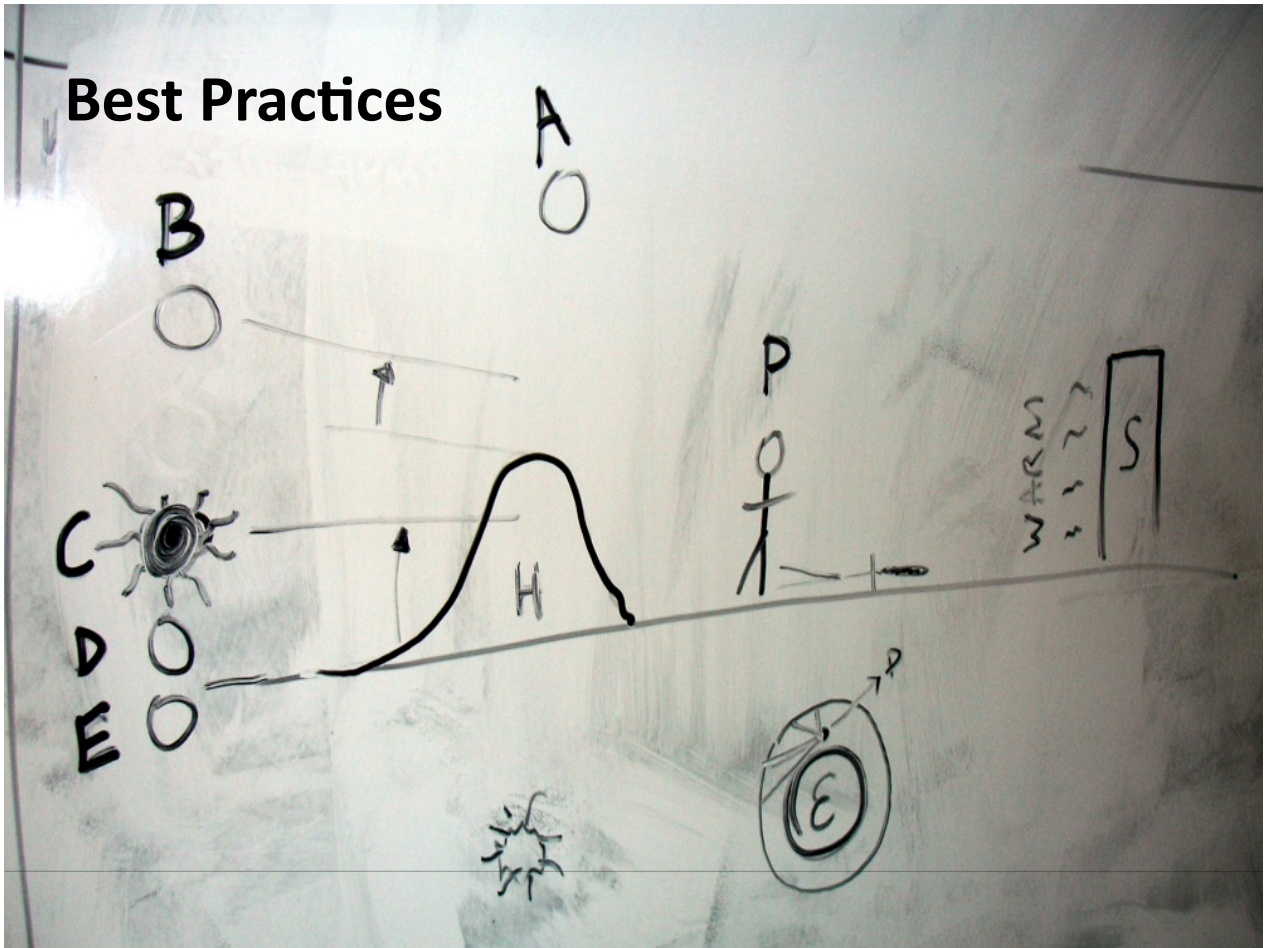
- Clarity in linking
- Don't link to something you can't get
- Make access easy
- Minimize nav. bars on top
- Main content – first!

slides adapted from Ekta Rohra Jafri

Depth

- Browsing time factor

- Scroll easier than click

- Shallow and long
  Not narrow and deep

```
Select:
[ ] HDFC Bank
[ ] IDBI Bank
[ ] UTI Bank
[ ] More Banks

Back
```

```
[ ] HDFC
-Balance enquiry
-Mini statement
-Bill pay
More..
-----------
[ ] IDBI
-Balance enquiry
-Cheque status
-Deposit details
More..
-----------
[ ] UTI
-Balance enquiry
-Mini statement
-Open account
-----------
[ ] Get a loan
Home | Personal | Auto
-----------
Menu
```

slides adapted from Ekta Rohra Jafri

Consistency

- Consistent terminology

- Consistent visual design

- Make it familiar

slides adapted from Ekta Rohra Jafri

Layout
Spacing but not clutter

- Subtle spacing

- No empty spaces,
  no spacer images

- Grow in one direction
  (vertical)
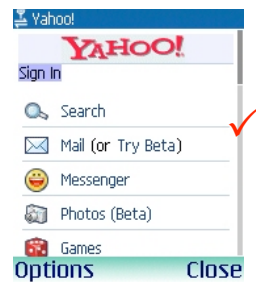
slides adapted from Ekta Rohra Jafri

Layout
Comprehension before aesthetics

- Size does matter

- Resizing (server level)
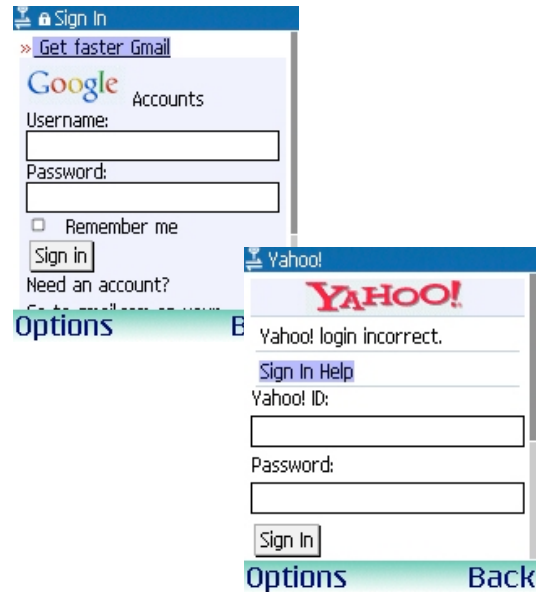
- Right-sizing (page level)

- Can't trust fonts!
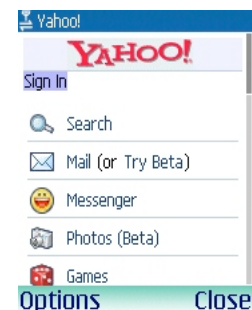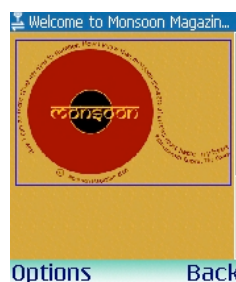
slides adapted from Ekta Rohra Jafri

Layout
Readability and Contrast

- Ensure readability
- Provide simplicity
- Contrast is essential

Avoid Text input

- Clickable is always better than text input
- Minimize input
- Give defaults
- Remember text is small (readability)

General Mobiles: What works…

- Prioritize tasks for mobile use
- Consider single button use as well
    – navigation key or left soft key
- Minimize input
- Make info contextual: location info
- Make info personal: usage behavior etc
- Test. Test. Test. Test. On users & on devices!

Usability Testing

Usability Testing

- Test on as many devices as you can.
- Don't trust emulators.

Usability Testing

- Context is important
  (as realistic the experience as possible)
- Are standard usability techniques still valid for mobile?
- Paper prototyping
  (really useful for early evaluations)
- Make users test on their actual device
- Capture screen, user's body, user's face

http://www.slideshare.net/barbaraballard/mobile-usability-testing/
http://www.littlespringsdesign.com/testing/

"Most usability testing regimes assume the context of a person facing a computer, the luxury of the person's full attention, and a comfortable environment with minimal distractions. Information appliances, on the other hand, need to work in low-attention situations, or where the user's attention needs to be fleetingly channeled through the appliance while walking, talking, or any of the multitude of other day-to-day activities that would be routinely classed as distractions."
David Pereira
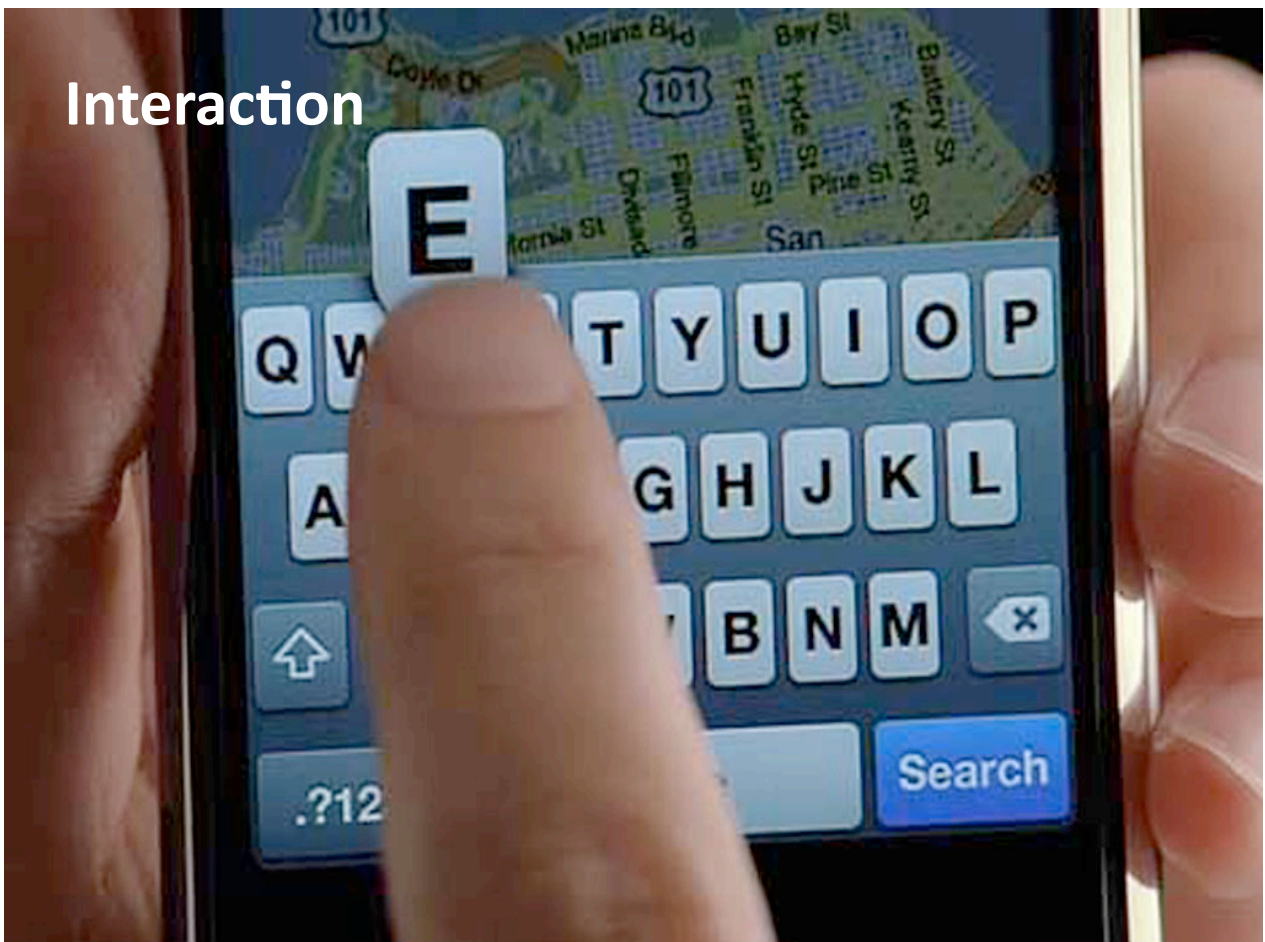
Interaction

Mobile interaction techniques & elements

- Clickable scroll wheel
- Mini joysticks
- Click Wheel
- Voice Input
- Soft Keys
- Key Pad

- Stylus
- Touch Pad
- Touch Screens
- Multi-Touch Screens
- Gestures

Interaction

- One handed interaction
    (most of the phones)
- Two handed interaction
    (most tablets)

- Indirect interaction
- Direct interaction

Indirect Manipulation

- One item on the screen has focus.
- You use keys or joystick as an intermediate device
to move the focus to the item you want and click it.

slides adapted from Jose Alves

Indirect Manipulation
Challenges

- Scrolling is tedious.
- Navigating through options slow.
- Navigate and select often different keys.
- Moving focus of interaction can be slow.

Direct Manipulation

- You just tap/click anything directly.

slides adapted from Jose Alves

Direct Manipulation
Challenges

- Buttons need to be big for fingers or pen.
- Fingers/pen can occlude content.
- Easy to accidentally click on the wrong item.
- Touch sensitivity.
- Wearing gloves (chubby fingers & capacitors).
- Not eyes-free interaction.

Phone vs Tablet

- Tasks: single vs. multiple
  (e.g. task switching)
- Size: small vs. average
  (e.g. summaries vs. magazine layout)
- Goals: personal vs. entertainment
  (efficiency)

- Ergonomics
  - thumb vs. fingers
    (e.g. object size, location of targets)
  - single vs. two hand
    (e.g. different gestures)

B|B|C UX&D

CRAP

contrast, repetition, alignment, proximity

**Good Design Is As Easy
as 1-2-3**

1. Learn the principles.
They're simpler than you might think.
2. Recognize when you're not using them.
Put it into words -- name the problem.
3. Apply the principles.
You'll be amazed.

Good design
is as easy as . . .

1 Learn the principles.
They're simpler than you might think.

2 Recognize when you're not using them.
Put it into words — name the problem.
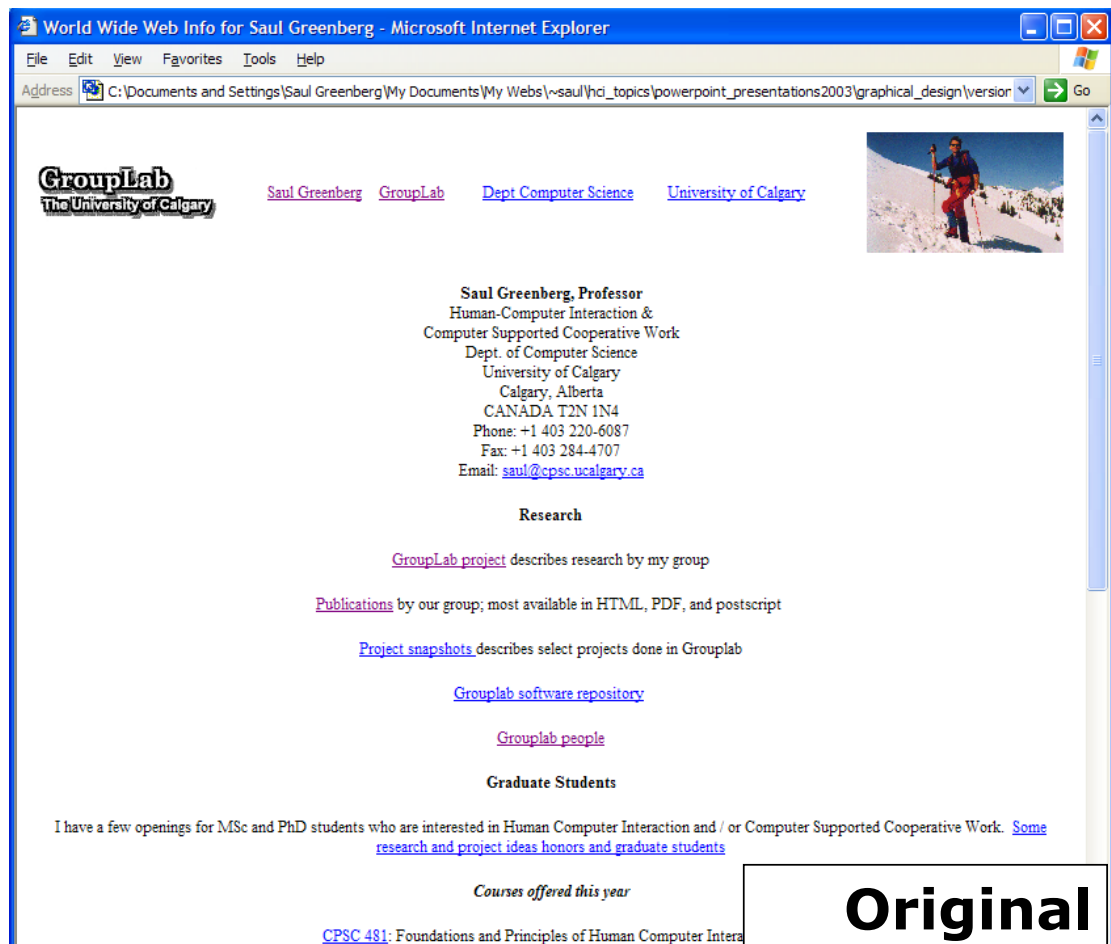
3 Apply the principles.
You'll be amazed.

World Wide Web Info for Saul Greenberg - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

Address C:\Documents and Settings\Saul Greenberg\My Documents\My Webs\~saul\hci_topics\powerpoint_presentations2003\graphical_design\index.h   Go

A first lesson in Graphical Design

Contrast

Repetition

Alignment

Proximity

Example: this page,

home page

Original
Proximity 2
Alignment 3
Contrast 4
Repetition 5
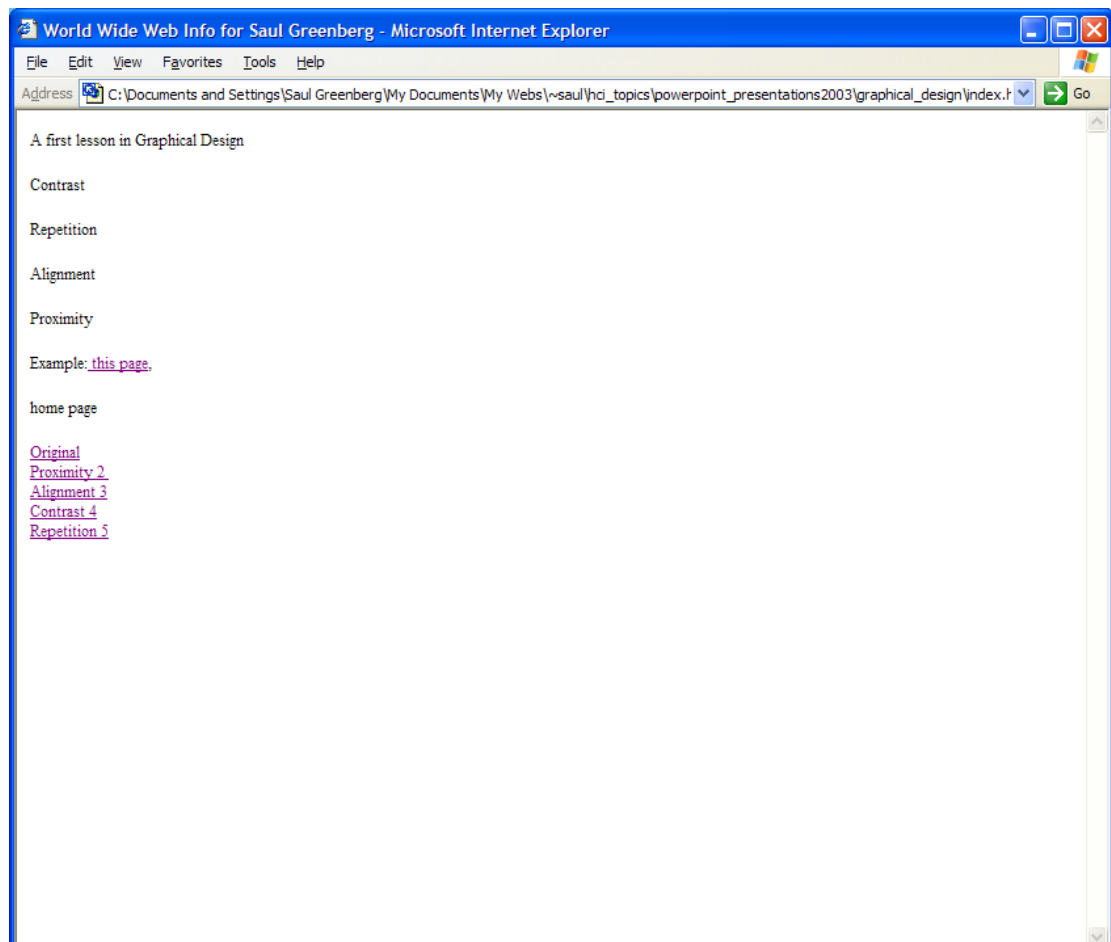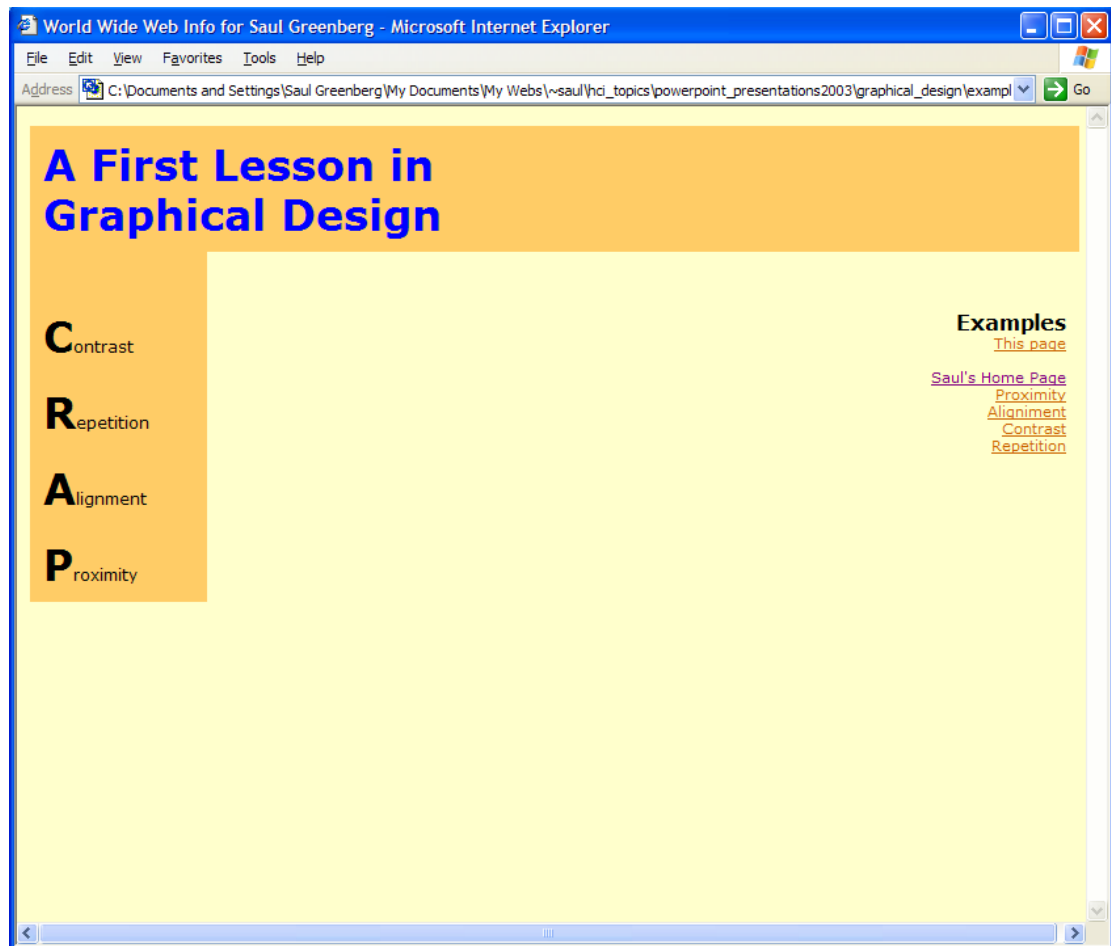
CRAP

- **C**ontrast
- **R**epetition
- **A**lignment
- **P**roximity

CRAP

- **C**ontrast
  - make different things different
  - brings out dominant elements
  - mutes lesser elements
  - creates dynamism
- **R**epetition
- **A**lignment
- **P**roximity

CRAP

- **C**ontrast
- **R**epetition
  - repeat design throughout the interface
  - consistency
  - creates unity
- **A**lignment
- **P**roximity

CRAP

- **C**ontrast

- **R**epetition

- **A**lignment
  - creates a visual flow
  - visually connects el
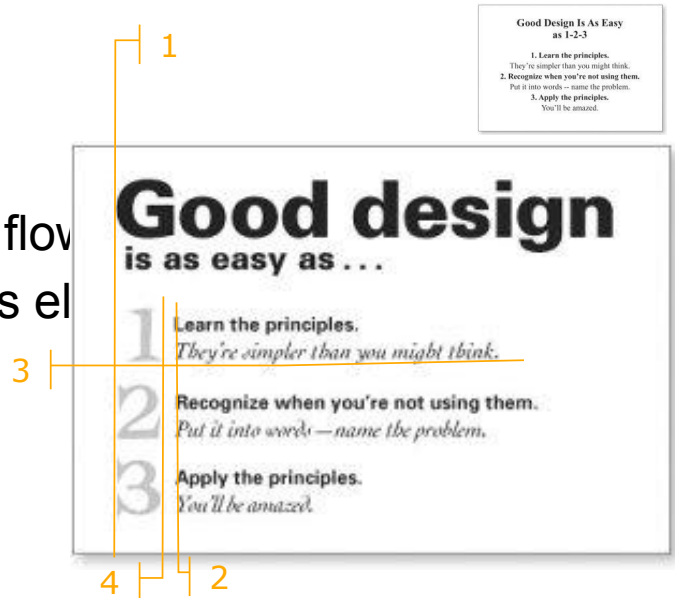
- **P**roximity

1

3

4   2

CRAP

- **C**ontrast

- **R**epetition

- **A**lignment

- **P**roximity
  - groups related elem
  - separates unrelated

1

2

Where does your eye go?

- CRAP combines to give you cues of how to read the graphic

title

subtext

three points

main point

sub point

Good design
is as easy as . . .

1 Learn the principles.
They're simpler than you might think.

2 Recognize when you're not using them.
Put it into words — name the problem.

3 Apply the principles.
You'll be amazed.

45

Where does your eye go?

Boxes/borders do not create a strong structure alone ...
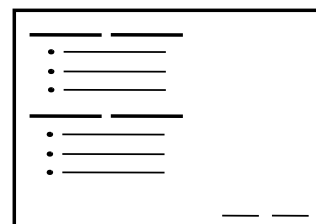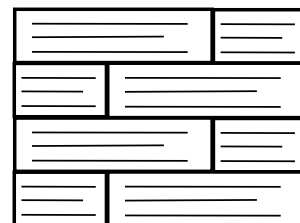
46

Where does your eye go?

Some contrast and weak proximity
interleaved items

Image Preferences

Image Type:
| Monochrome | Gray Scale | Color |

EPSF Quality:
| Use Preview Image | Use Postscript |

Greeking Text Limit:
7.0 pt.

Options:
☐ Auto Backup on Save
☐ Auto Save Every ___ Minutes

(Apply) (Cancel) (Reset)
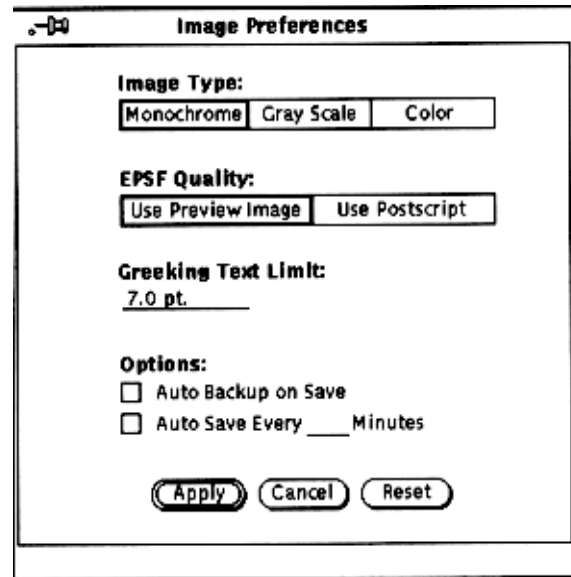
Where does your eye go?

Strong proximity (left/right split)
unambiguous

Image Preferences

Image Type: | Monochrome | Gray Scale | Color |

EPSF Quality: | Use Preview Image | Use Postscript |

Greeking: 7.0 pt.

Options: ☐ Auto Backup on Save
☐ Auto Save Every ___ Minutes

(Apply) (Cancel) (Reset)
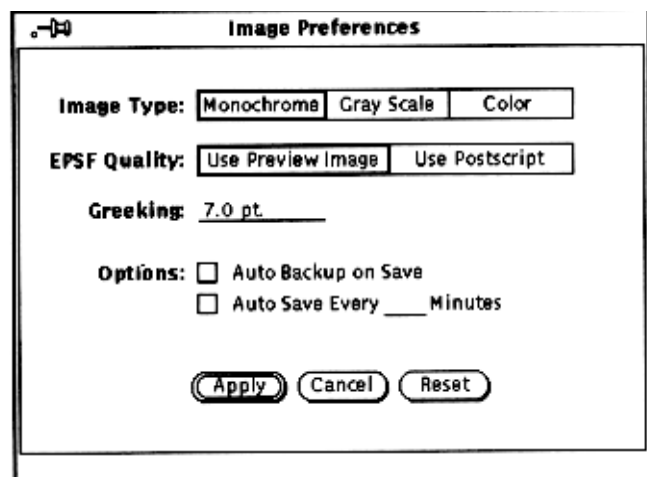
Where does your eye go?

the strength of proximity

     alignment

     white (negative) space

      ... explicit structure is a poor replacement

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

Mmmm: _____

World Wide Web Info for Saul Greenberg - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

Address C:\Documents and Settings\Saul Greenberg\My Documents\My Webs\~saul\hci_topics\powerpoint_presentations2003\graphical_design\index.h   Go

A first lesson in Graphical Design

Contrast

Repetition

Alignment

Proximity

Example: this page,

home page

Original
Proximity 2
Alignment 3
Contrast 4
Repetition 5

Original

Proximity

Alignment

Contrast

Repetition

- Terrible alignment
  - no flow
- Poor contrast
  - cannot distinguish colored labels from editable fields
- Poor repetition
  - buttons do not look like buttons
- Poor explicit structure replaces proximity

Webforms   – blocks compete with alignment

No regard for order and organization

IBM's Aptiva Communication Center

Haphazard layout

Repairing the layout

Redesigning a layout using alignment and factoring

CRAP examples

- Examples of CRAP in websites using
  - images
  - color
  - fonts

CRAP: Contrast

- Contrast
  - Without a focal point, the viewer is generally lost
  - Helps guide the user's experience
  - You can achieve contrast with
    - images,
    - colors,
    - and fonts

CRAP: Contrast

- Contrast with images
  - It's often very effective to showcase a large illustration next to smaller elements

CRAP: Contrast
with images

http://invoicemachine.com/home

CRAP: Contrast
with images

http://www.instabox.com/
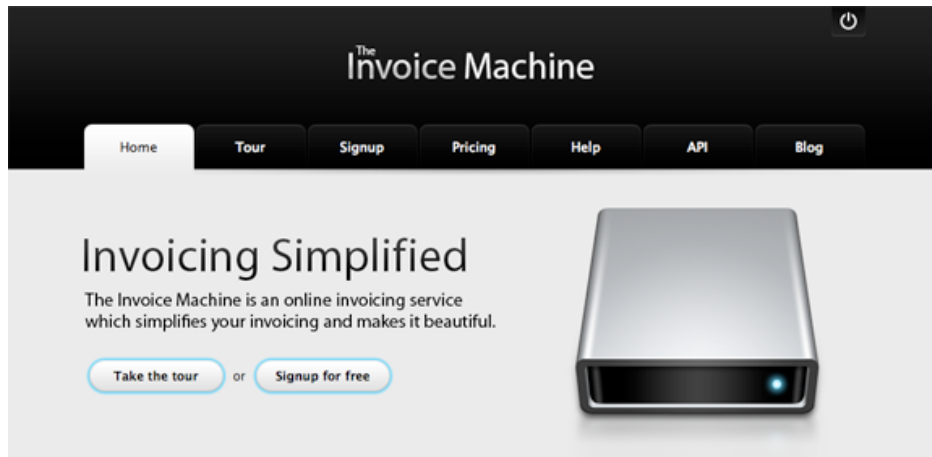
CRAP: Contrast

- Contrast with color
    - Color can create effective contrast within a website
    - Different color in
        - headers and text
        - within the colors of an image or illustration

CRAP: Contrast
with color

http://fatburgr.com/

CRAP: Contrast

with color

http://ilovetypography.com/

CRAP: Contrast

- Contrast with fonts
  - Avoid using very similar font faces and sizes. Similar fonts can create confusion and blur the design
  - You can make the font sizes very different, or mix the lightest version of the font in combination with the boldest
  - Or use two very different fonts, e.g. sans-serif and hand-written font

CRAP: Contrast
with fonts

http://fixieconsulting.com/
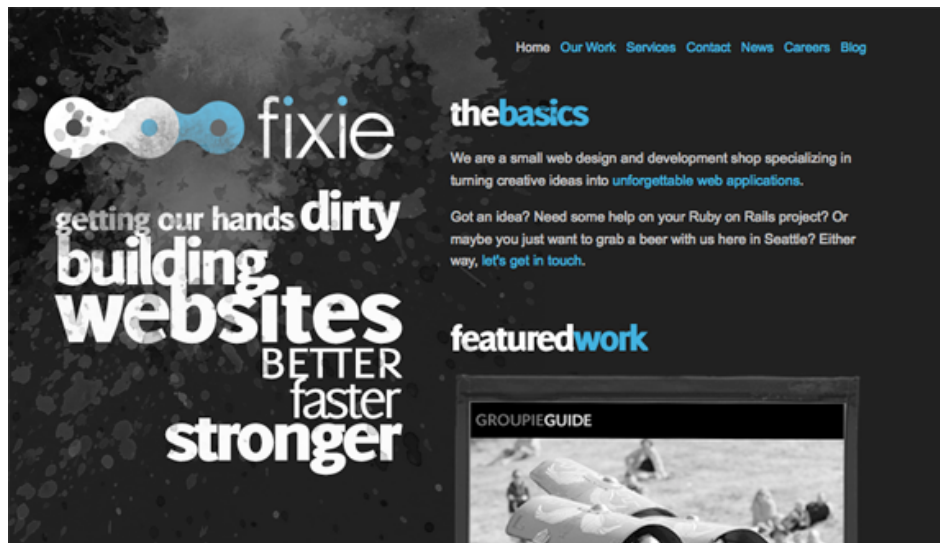
CRAP: Repetition

- Repetition
  - Repetition in print is more common than in web, however it can be equally effective
  - Repeating design elements create a consistent look (and improves branding ...)
  - Repetition across pages with css, but also inside pages
  - In web design can repeat elements in header and footer

CRAP: Repetition

http://www.1024media.com/

CRAP: Repetition

http://silverbackapp.com/

CRAP: Alignment

- Alignment
    - Can make designs looking amateur to professional
    - Easier for users to look for information
    - Try designing sites using a grid

CRAP: Alignment

http://www.blackestate.co.nz/

CRAP: Alignment

http://www.alistapart.com/
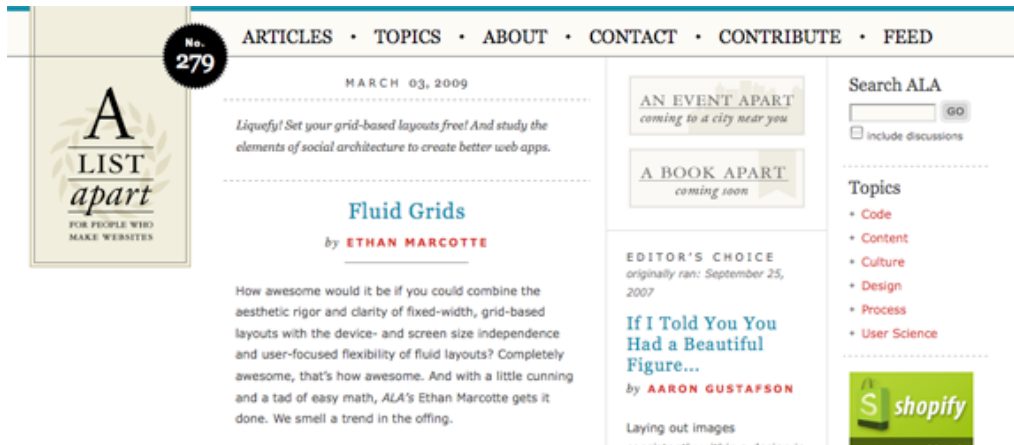
CRAP: Proximity

- Proximity
    - Like elements together, separating ones that aren't
    - Important to use header tags and proper spacing

CRAP: Proximity

http://envato.com/

CRAP: Proximity

http://www.createarevolution.com/
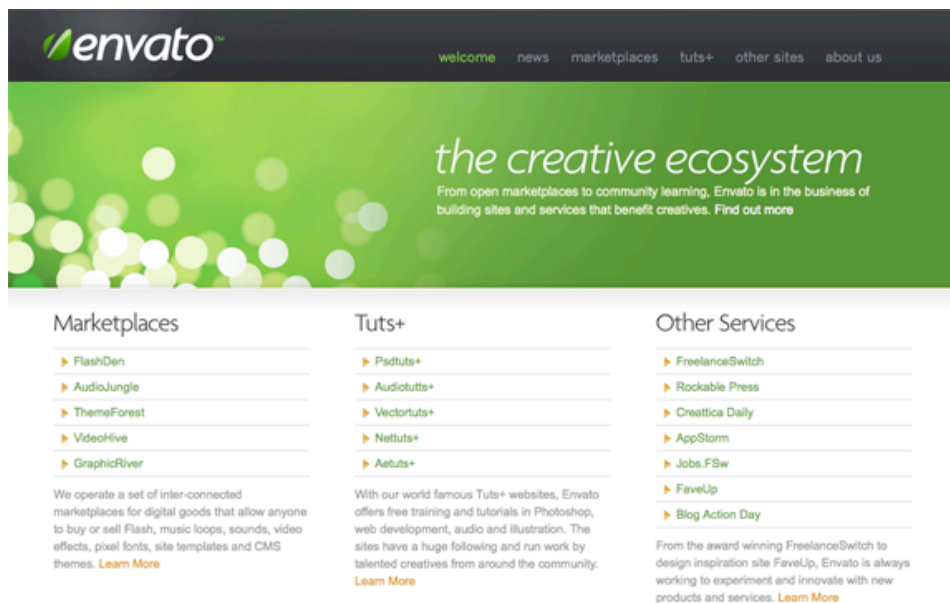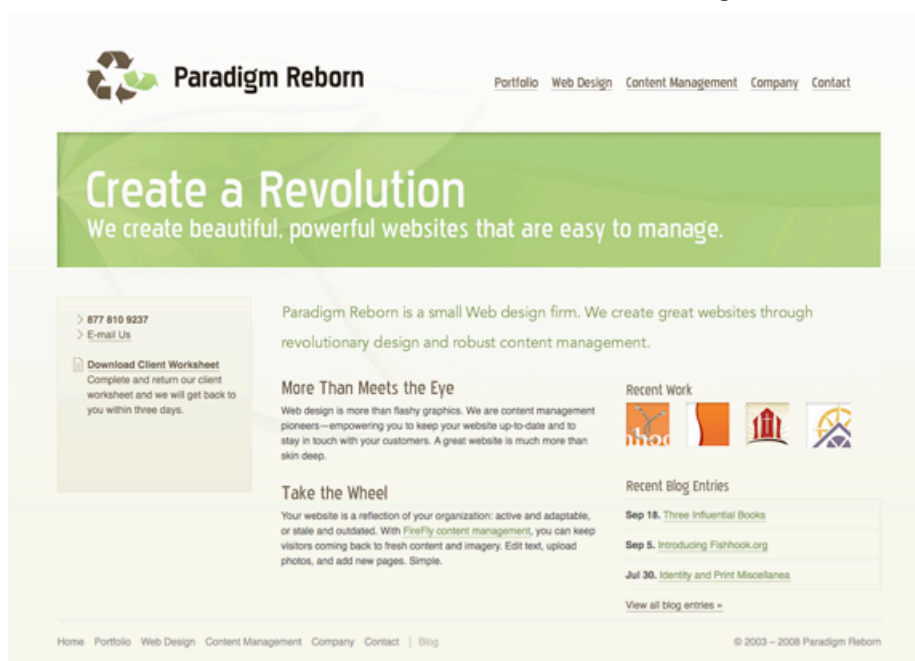
some color theory

Color Selections

- How to choose color combinations
  - decide your goal for the color selection
  - look at the color wheel
  - look at your content

HTML Colors

Most browsers define colors by "#rrggbb"

Color numbers are given as percentages of red, green, and blue in hexadecimal format (0 . . . FF) => (0 . . . 255)

Most browsers also support some standard color names

White	#FFFFFF	
Red	#FF0000	
Green	#00FF00	
Blue	#0000FF	
Magenta	#FF00FF	
Cyan	#00FFFF	
Yellow	#FFFF00	
Black	#000000	

decimal	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
hex	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

hex	convert	decimal
15	1*16 + 5	21
A4	10*16 + 4	164

Color (in software)

Hue: actual color

Saturation: The degree of purity of a hue (relation to gray)

Brightness / Value: White (or black) mixed with color

Color Systems

- ## We have 2 color systems

  subtractive (print,paint), combined black, e.g. CMYK

  additive (computer), combined white, e.g. RGB

Subtractive   Additive

Color Theory: Color Wheel

- ## visual representation of colors according to their chromatic relationship

Color Wheel

FF,00,00

FF,00,80   FF,80,00

FF,00,FF   FF,FF,00

80,00,FF   80,FF,00

00,00,FF   00,FF,00

00,80,FF   00,FF,80

00,FF,FF

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnhess/html/hess08142000.asp
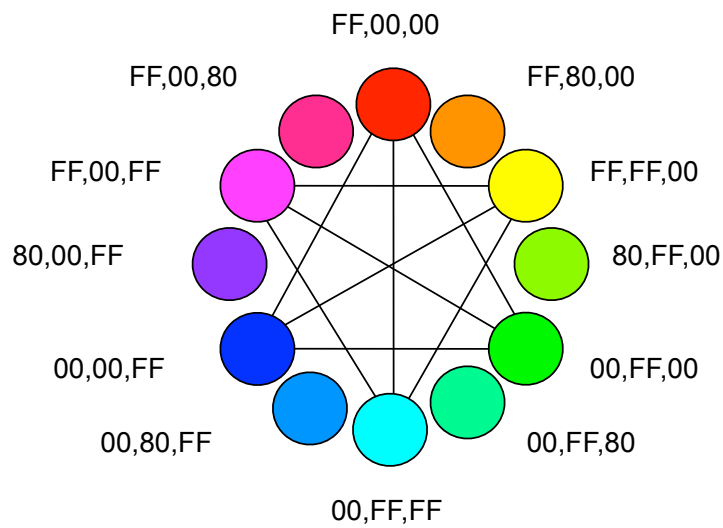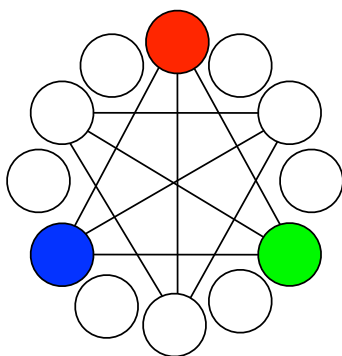
Color Groups

Primary additive colors:
Basic colors, cannot be created
red, green, blue

Tertiary additive colors:
middle of primary and secondary

Secondary additive colors:
By mixing primary ones
cyan, magenta, yellow

Color Groups

Analogous colors
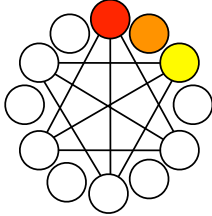
Adjacent colors
are harmonious

Complementary colors
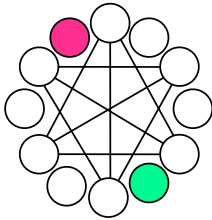
Opposite colors
are used for
contrast—text and
background.

Triad colors

Equidistant colors
create tension.

Color Groups

Warm (active) colors
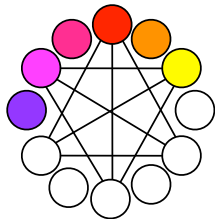
Add warmth and appear to move
toward the viewer

Cool (passive) colors
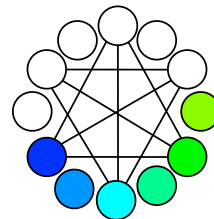
More reserved, and appear to
recede into the screen

Color Groups

Monochromatic

Analogous

Complementary

http://www.allwebdesignresources.com/
http://www.worqx.com/color/

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Color Groups

Split-Complementary

Triad

Double-Complementary

http://www.worqx.com/color/

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Color and Contrast

- Remember Figure and Ground?

- More contrast, more visible

Yellow text on a white background

blue text on a black background

- "Simultaneous contrast", eye-strain

such as red text on a blue background

- Full saturation high contrast

http://www.worqx.com/color/
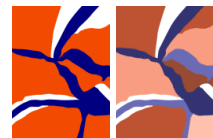
93

Proportion and Intensity

- Our eyes perceive a visual mix, depending on proportions
- Color of largest proportional area: dominant color (ground)
- Smaller areas are subdominant colors
- Accent colors have small relative area, but offer a contrast

Placing small areas of light on a dark, or vice versa

http://www.worqx.com/color/
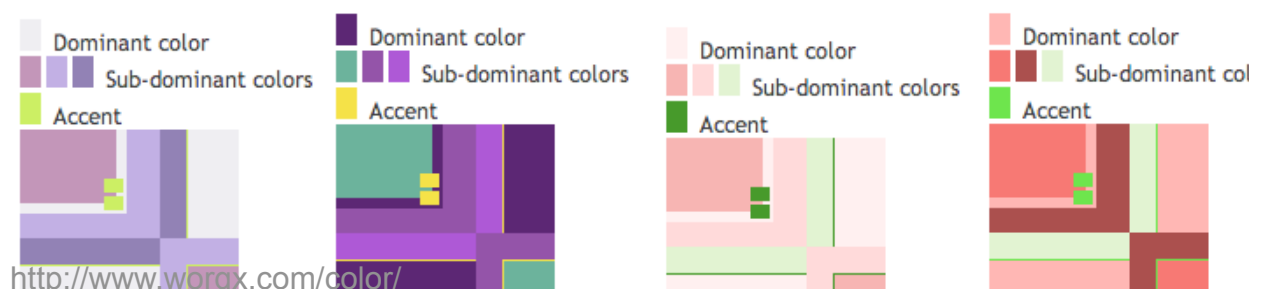
94

Color pallets

- many many many color pallet generators online ...
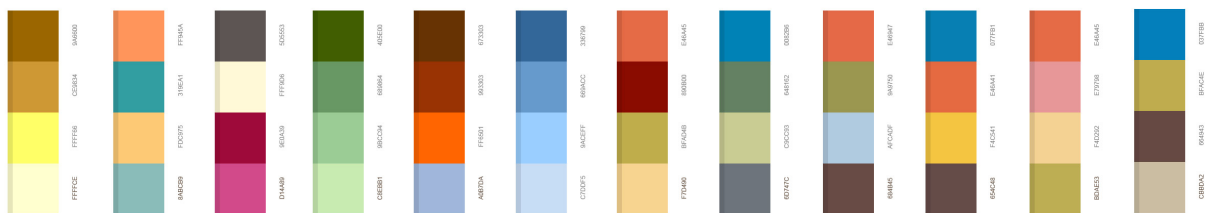
Color and perception

- bright colors will dominate attention
- if two colors appear similar, will be perceived as a group
- similar perceived brightness (poor contrast) or simultaneous contrast (pure colors) also interfere with each other

http://mkweb.bcgsc.ca/brewer/

Color and perception

- Brewer palettes

  selected for perceptual properties

  (created by Cynthia Brewer for cartography)

- Types of Brewer palettes :

  qualitative, sequential, diverging

http://mkweb.bcgsc.ca/brewer/

COLOR BREWER PALETTES

QUALITATIVE	SEQUENTIAL	DIVERGING
set1	blues	spectral
set2	greens	rdylbu
pastel2	reds	rdylgn
dark2	ylorbr	piyg

Color Groups

- Theory + examples

  (note some tutorials not on additive, but on subtractive)

  http://www.worqx.com/color/

  http://designfestival.com/color-theory-101-2/

  http://www.writedesignonline.com/resources/design/rules/color.html

  http://mkweb.bcgsc.ca/brewer/

a bit on fonts

font families

- font types
  - serif (tails at top and bottom)
  - sans-serif (no tails)
  - script & decorative

AaBbCc Sans-serif font

AaBbCc Serif font

AaBbCc Serif font (serifs in red)

font families

• font psychology: font type and size plays a big role in readability and message
- • serif faster to read
- • disfluent fonts affect understanding
- • bigger easier to read
- • script and decorative convey emotion

font families

- • Arial clean and easy to read, safe
- • Times New Roman traditional, professional
- • Helvetica clean
- • Verdana close to human writing
- • Palatino old feel
- • Comic Sans informal and playful

http://www.onextrapixel.com/2011/12/13/the-psychology-of-fonts/
http://blog.templatemonster.com/2012/05/16/font-psychology/

font families

• Some (older) work on psychology of fonts
http://psychology.wichita.edu/surl/usabilitynews/81/PersonalityofFonts.asp

• Known font families overviews
http://typedia.com/learn/only/typeface-classifications/

• And guides for combining fonts
http://www.smashingmagazine.com/2010/11/04/best-practices-of-combining-typefaces/

font combinations

• Avoid a mix of fonts of the same type, variant or style
  at the same level of your hierarchy

• Use contrast.
   When fonts look similar, even at different levels, they confuse

•Bold fonts are hard to make look good

http://blog.templatemonster.com/2012/05/16/font-psychology/
http://blog.templatemonster.com/2012/04/24/40-free-fonts-big-bold-headlines/

typography

- **Line Spacing:** convenient reading 30-60% size of font
- **Line Length:** too long may not read to the end. Too short eyes jump back/forth. Try 45 to 65 char pet line (7-10 words)
- **White Spaces:** space between distinct groups of information
- **Vertical Rhythm:** show readers how to scan the page
- **Vertical Hierarchy:** make important things in the rhythm pop-out (e.g. titles) to help scanning

BBC UX&D   http://blog.templatemonster.com/2012/05/16/font-psychology/