

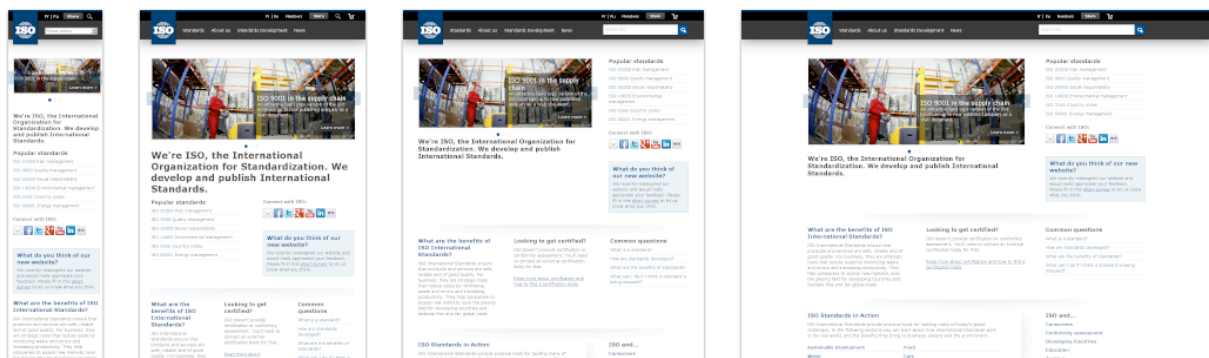
# Web design (basics)

1

## media queries

ISO

6



from [mediaqueri.es](https://mediaqueri.es)

2

# 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 ...



3

## mobile vs desktop



4

# 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

5

# 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

slides adapted from Jose Alves

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# Mobilization

“... precisely targets mobile user needs, making (the) best possible use of technology.”

Barbara Ballard

- Content and context specific
- Fits better mobile user needs

slides adapted from Jose Alves

8

# Context

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

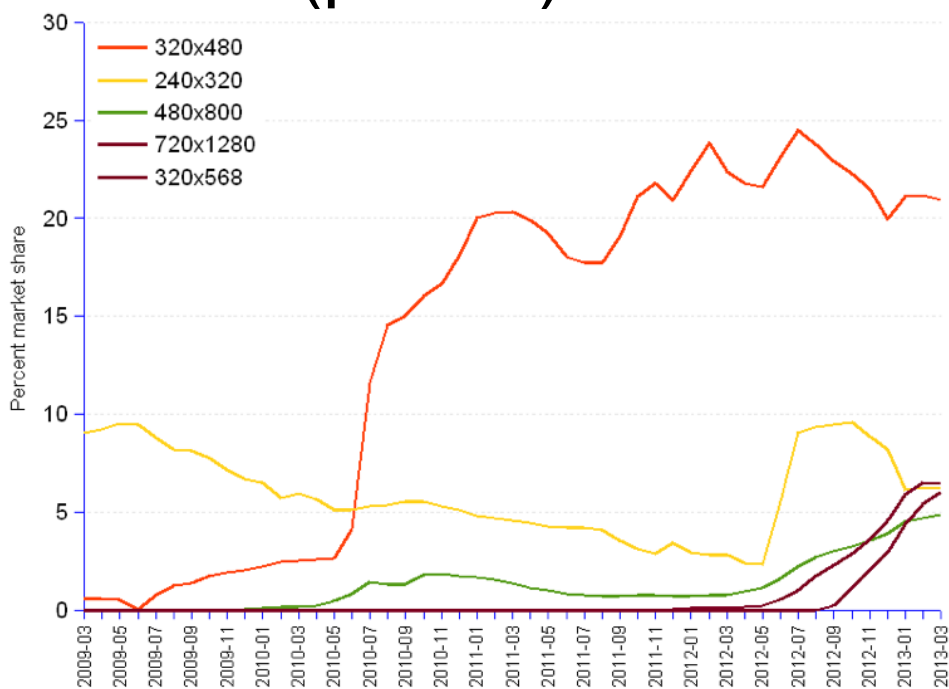
“If the mobile site design only replicates an existing high web site the result will range from suboptimal to completely unusable.”

Morten Hjerde

slides adapted from Jose Alves

9

## (phone) Screens



[http://stats.areppim.com/stats/stats\\_mobiresxtime.htm](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)

11

## 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)

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# Layout Adaptation

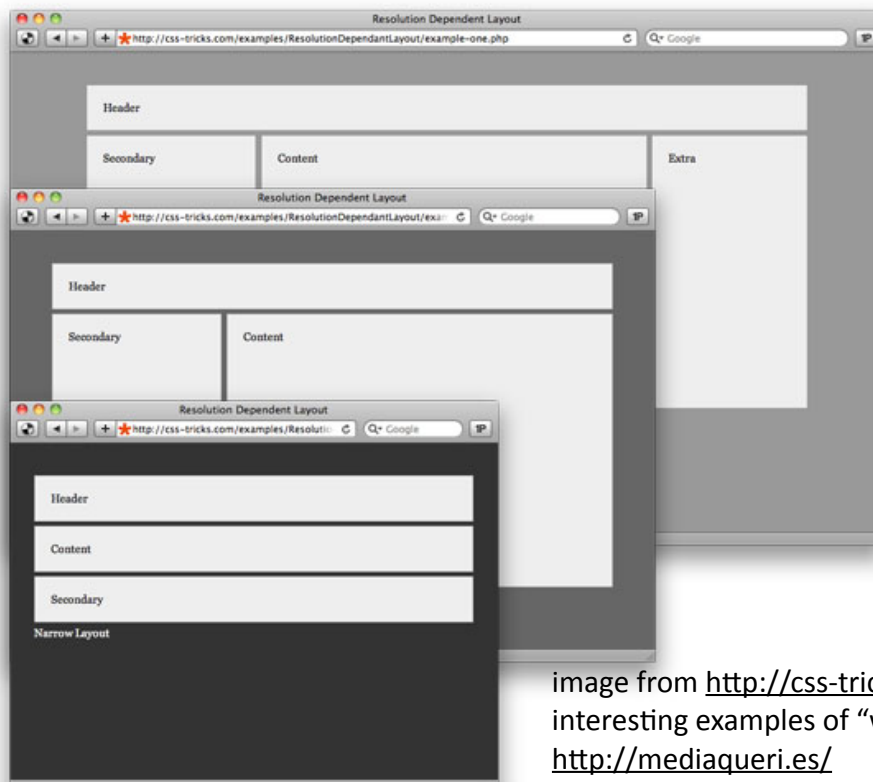
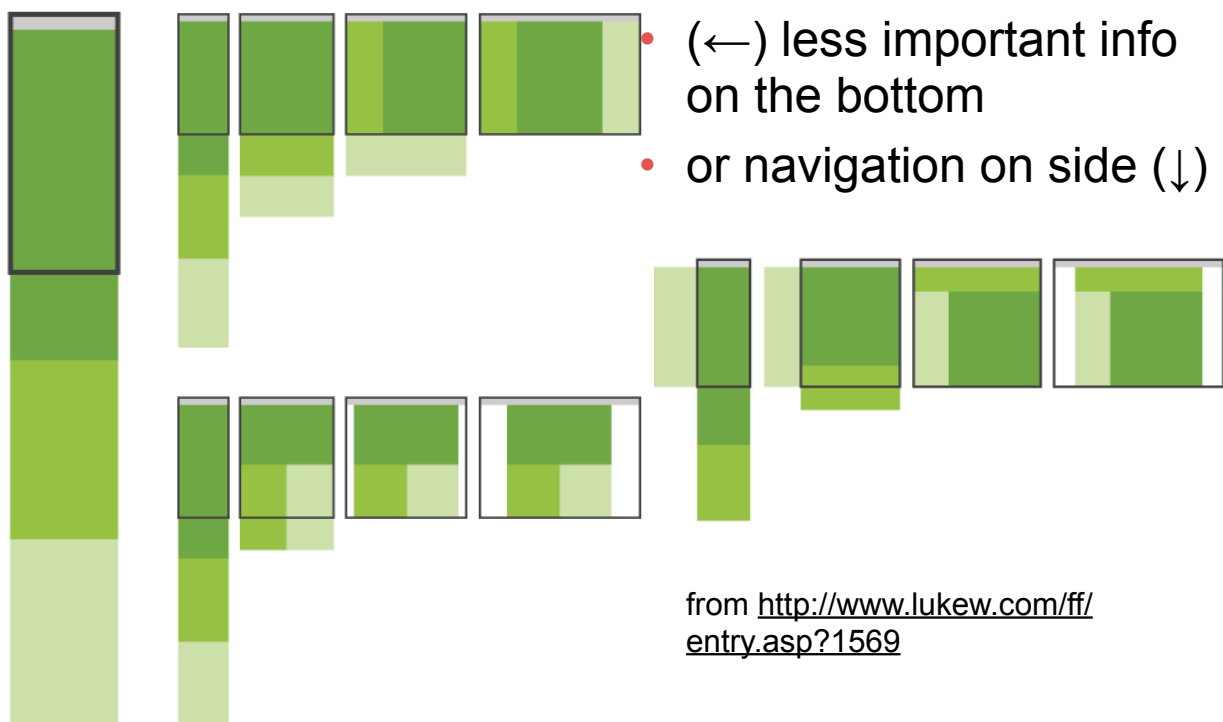


image from <http://css-tricks.com/>  
interesting examples of “what is important” at  
<http://mediaqueri.es/>

13

## Layout Adaptation “off screen” alternatives

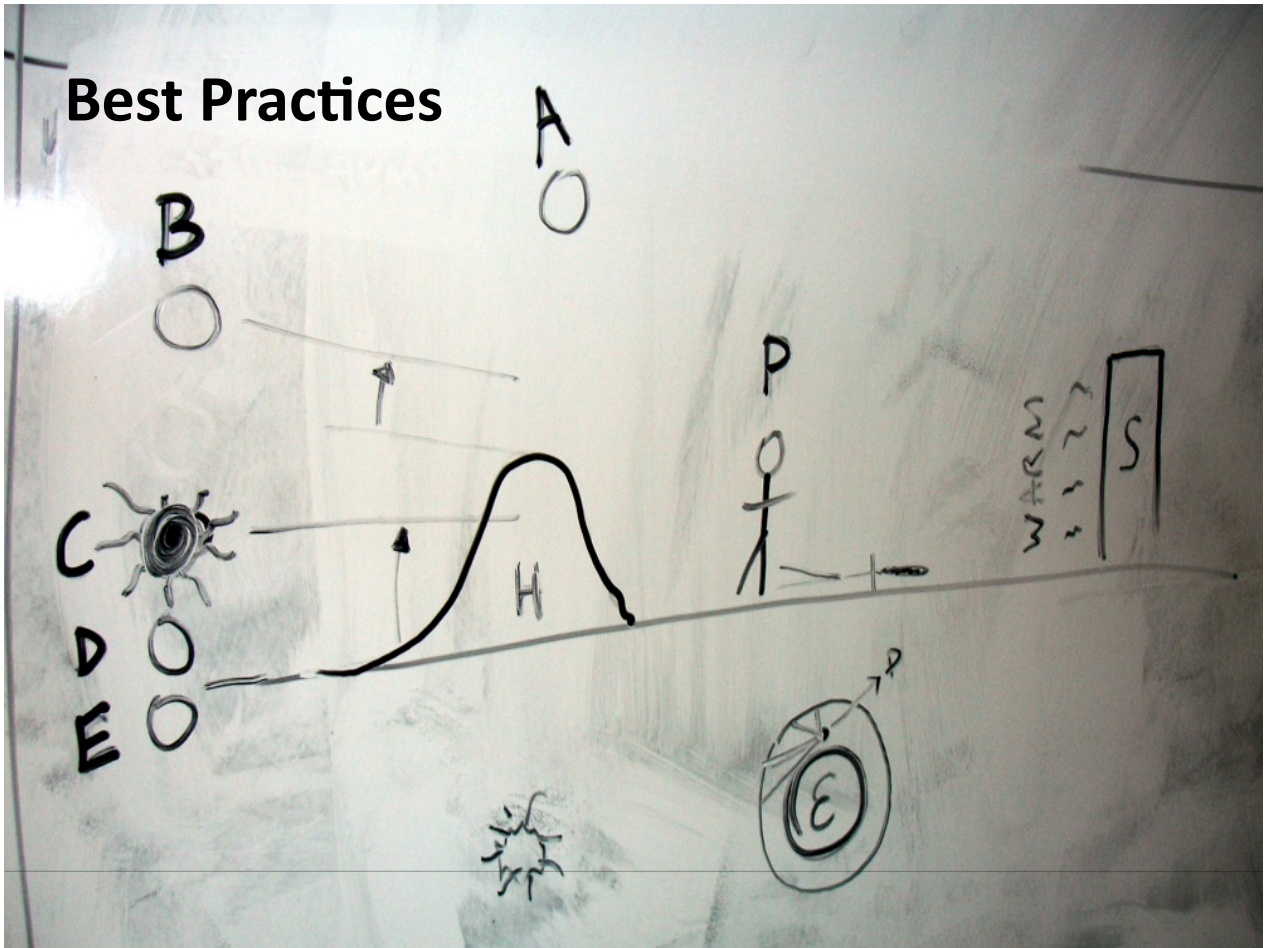


from <http://www.lukew.com/ff/entry.asp?1569>

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## Best Practices



15

## Access

- Clarity in linking
- Don't link to something you can't get
- Make access easy
- Minimize nav. bars on top
- Main content – first!

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](#)

slides adapted from Ekta Rohra Jafri

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# 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

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# Consistency

Welcome Ekta!

**My accounts**  
[XXXXXXXXXX2345](#)  
[Other accounts](#)

**Services**  
[FD enquiry](#)  
[Pay utility bills](#)

**Apply for Loan**  
[Home](#) | [Personal](#) | [Auto](#)

**Product Catalogue**  
[Accounts](#)  
[Loan schemes](#)  
[Cards](#)  
[Other services](#)

[Contact us](#)  
[AirTel Live](#)

XXXXXXXXXXXX2348

**~Balance~**  
Rs. 2,34,567/-

**~Recent transactions~**  
+ Rs. 345/-  
- Rs. 2346/-  
+ Rs. 2317/-

[View statement](#)  
[Request statement](#)  
[Get chequebook](#)  
[Cheque status](#)

**Other accounts**  
[FD enquiry](#)  
[Pay utility bills](#)

[Apply for loan](#)  
[Product catalogue](#)

[Contact us](#)  
[AirTel Live](#)

- Consistent terminology
- Consistent visual design
- Make it familiar

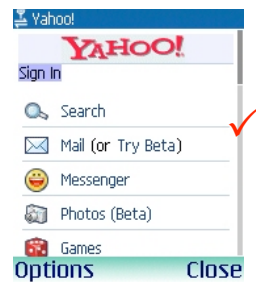
slides adapted from Ekta Rohra Jafri

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# Layout

Spacing but not clutter

- Subtle spacing
- No empty spaces, no spacer images
- Grow in one direction (vertical)



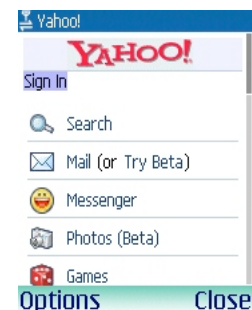
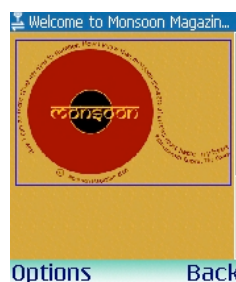
slides adapted from Ekta Rohra Jafri

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# Layout

Comprehension before aesthetics

- Size does matter
- Resizing (server level)
- Right-sizing (page level)
- Can't trust fonts!



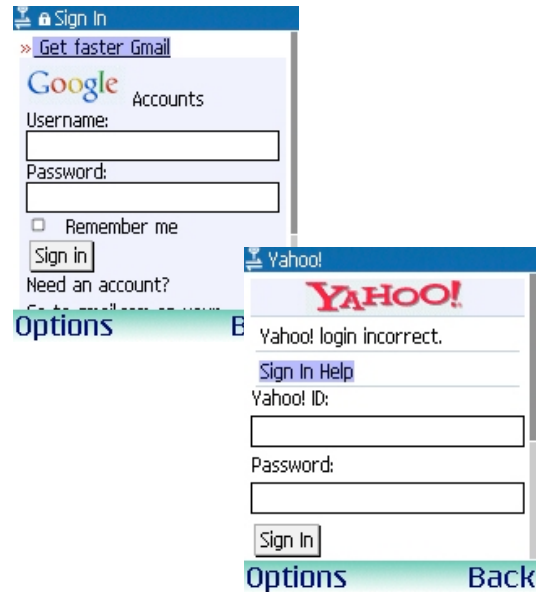
slides adapted from Ekta Rohra Jafri

20

# Layout

## Readability and Contrast

- Ensure readability
- Provide simplicity
- Contrast is essential



slides adapted from Ekta Rohra Jafri

21

## Avoid Text input

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

Search in...(optional)

[Search](#)



[Madurai](#)  
[Mangalore](#)  
[Mumbai](#)  
[Mysore](#)  
[Noida](#)  
[Pondicherry](#)  
[Salem](#)  
[Thiruvananthapuram](#)  
[Tirunelveli](#)  
[Tirupur](#)  
[Tirupathi](#)  
[Trichy](#)  
[Udupi](#)  
[Vellore](#)  
[Vijayawada](#)  
Other City  
Search in...(optional)

[Search](#)

slides adapted from Ekta Rohra Jafri

22

# 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!

slides adapted from Ekta Rohra Jafri

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## Usability Testing



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# Usability Testing

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

slides adapted from Jose Alves

25

# 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/>

slides adapted from Jose Alves

26

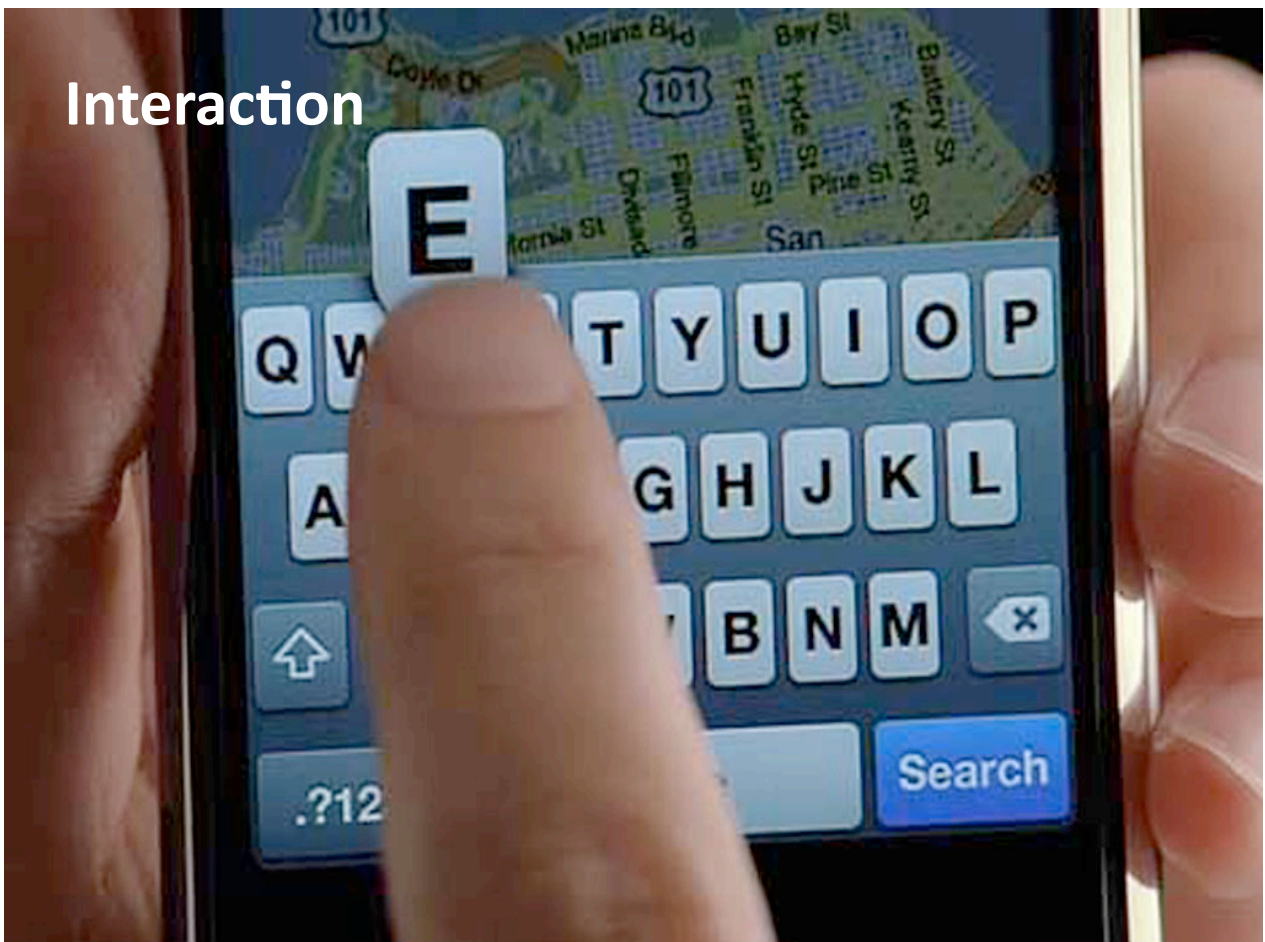
"Most usability testing regimes assume the context of a person facing a computer, the luxury of the person's full attention, and a comfortable environment with minimal distractions. Information appliances, on the other hand, need to work in **low-attention situations**, or where the **user's attention** 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

slides adapted from Jose Alves

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## Interaction



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# 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

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# Indirect Manipulation

## Challenges

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



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# Direct Manipulation

- You just tap/click anything directly.



B|B|C| UX&D

slides adapted from Jose Alves

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# 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.



B|B|C| UX&D

34

# 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



35

# CRAP

contrast, repetition, alignment, proximity

Major sources: Designing Visual Interfaces, Mullet & Sano, Prentice Hall / Robin Williams Non-Designers Design Book, Peachpit Press

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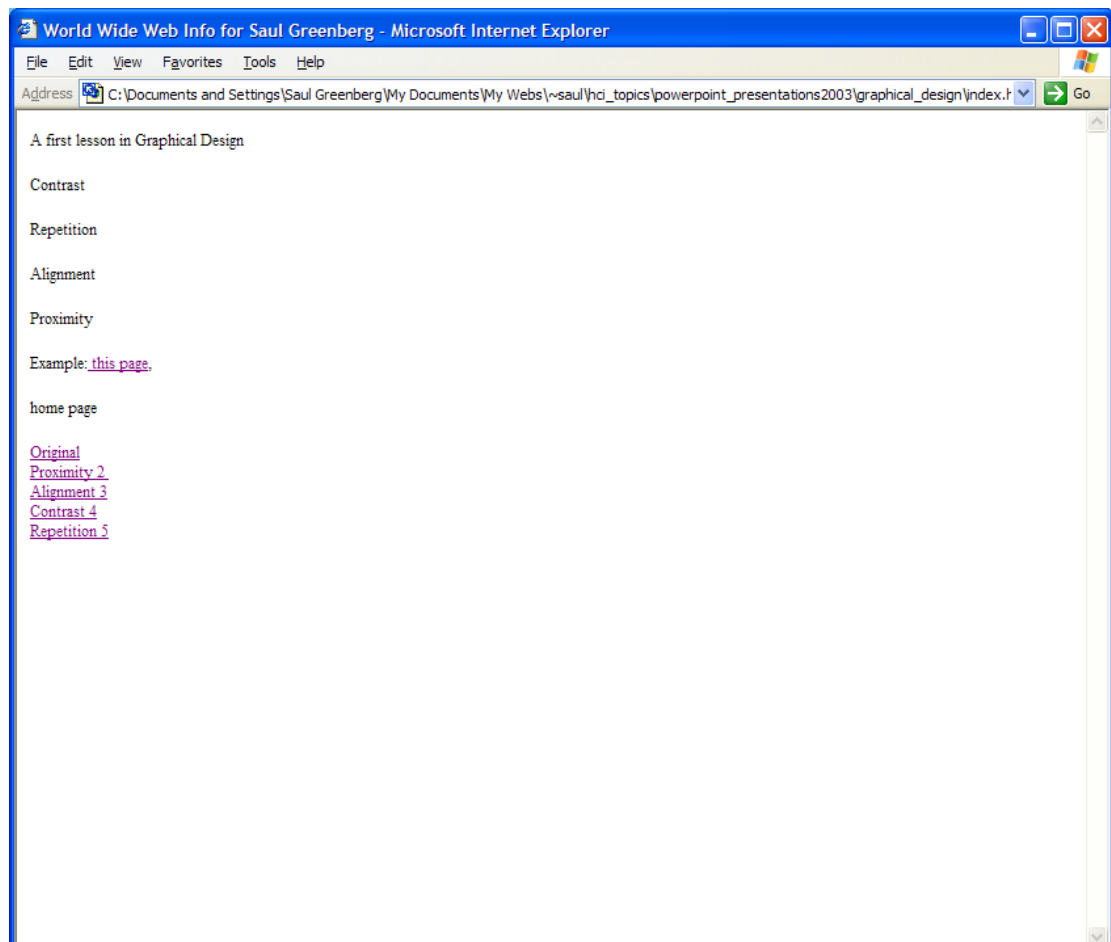
## Good Design Is As Easy as 1-2-3

- 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.

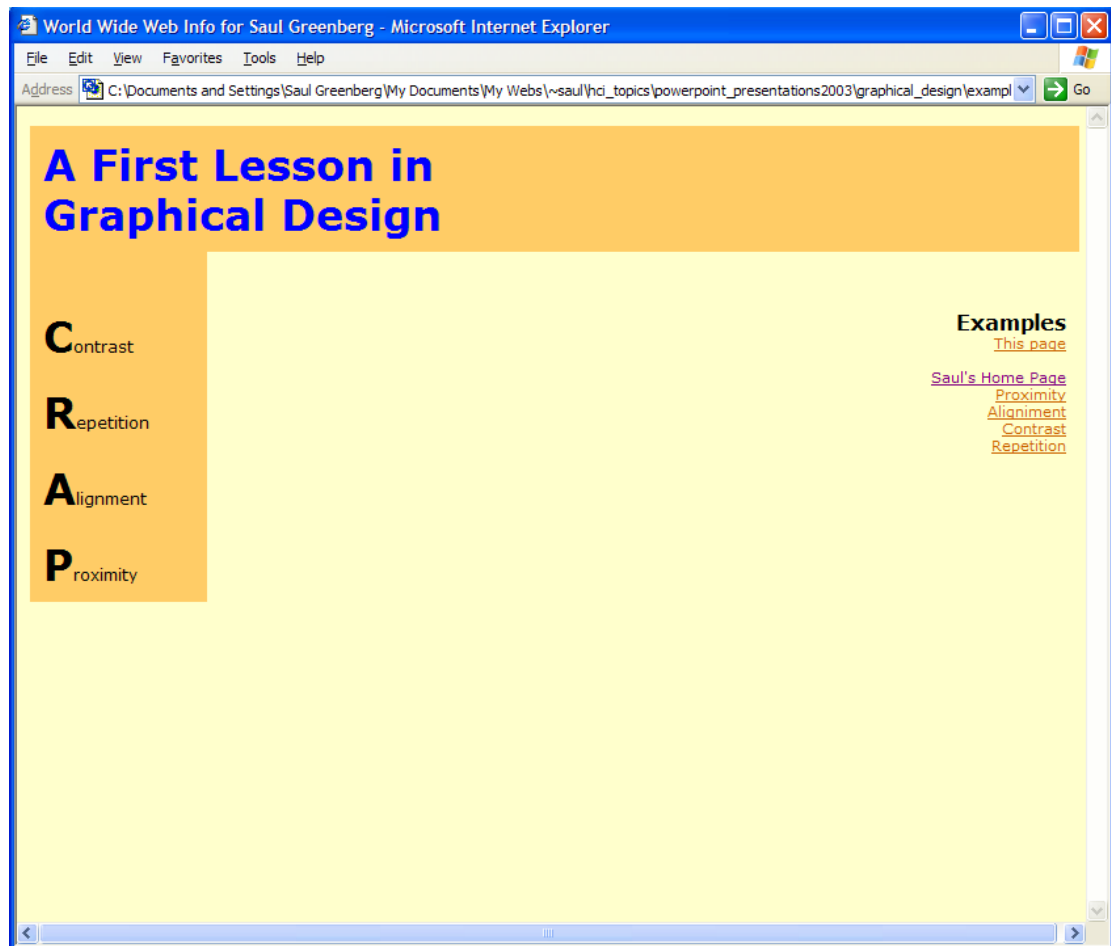
## Good design is as easy as ...

- 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.*

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# CRAP

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

# CRAP

- **Contrast**

- make different things different
- brings out dominant elements
- mutes lesser elements
- creates dynamism

- **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.



Robin Williams Non-Designers Design Book, Peachpit Press

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# CRAP

- **Contrast**

- **Repetition**

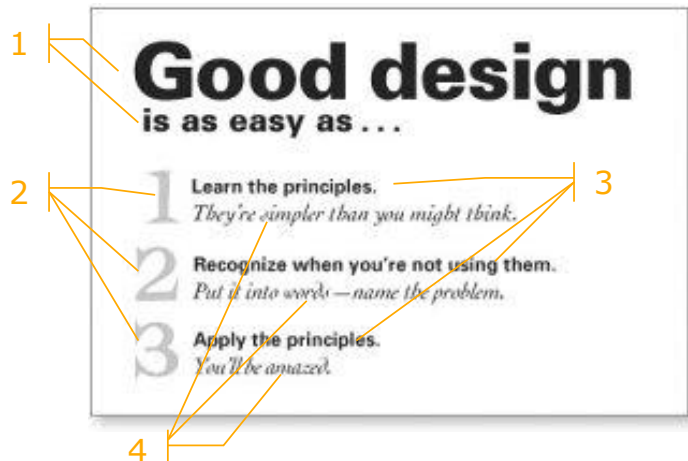
- repeat design throughout the interface
- consistency
- creates unity

- **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.

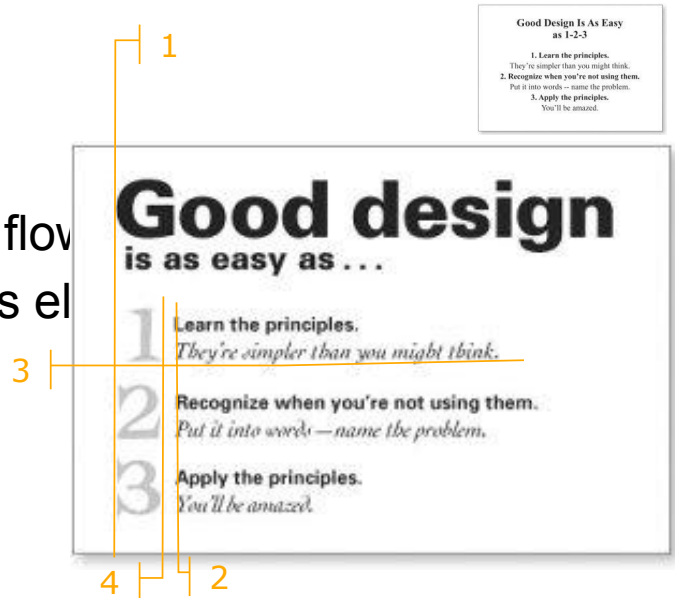


Robin Williams Non-Designers Design Book, Peachpit Press

42

# CRAP

- **C**ontrast
- **R**epetition
- **A**lignment
  - creates a visual flow
  - visually connects elements
- **P**roximity



Robin Williams Non-Designers Design Book, Peachpit Press

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# CRAP

- **C**ontrast
- **R**epetition
- **A**lignment
- **P**roximity
  - groups related elements
  - separates unrelated elements



Robin Williams Non-Designers Design Book, Peachpit Press

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# Where does your eye go?

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

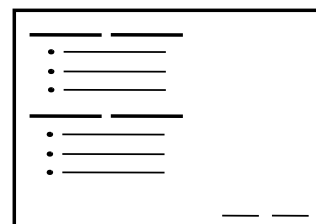
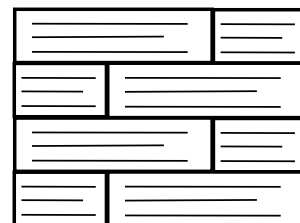


Robin Williams Non-Designers Design Book, Peachpit Press

45

# Where does your eye go?

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

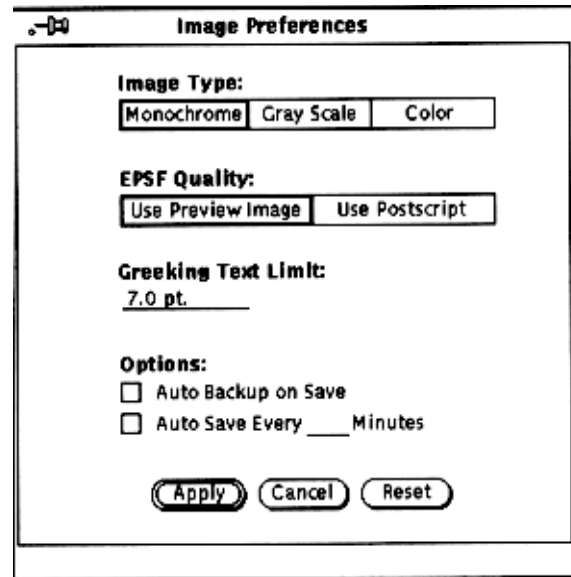


Robin Williams Non-Designers Design Book, Peachpit Press

46

# Where does your eye go?

Some contrast and weak proximity  
interleaved items

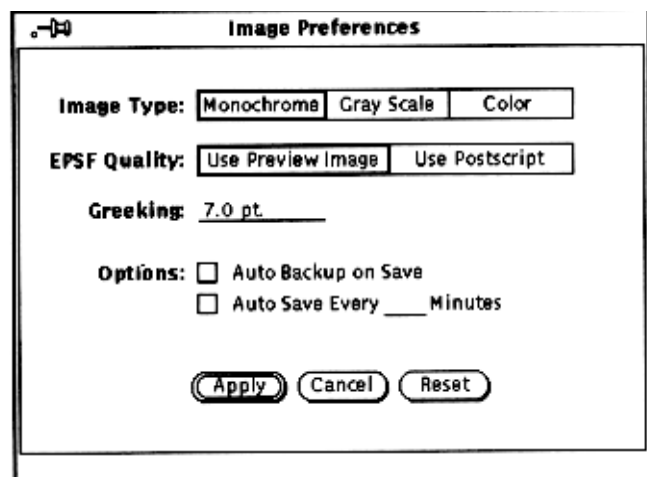


Robin Williams Non-Designers Design Book, Peachpit Press

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# Where does your eye go?

Strong proximity (left/right split)  
unambiguous



Robin Williams Non-Designers Design Book, Peachpit Press

48

# Where does your eye go?

the strength of proximity

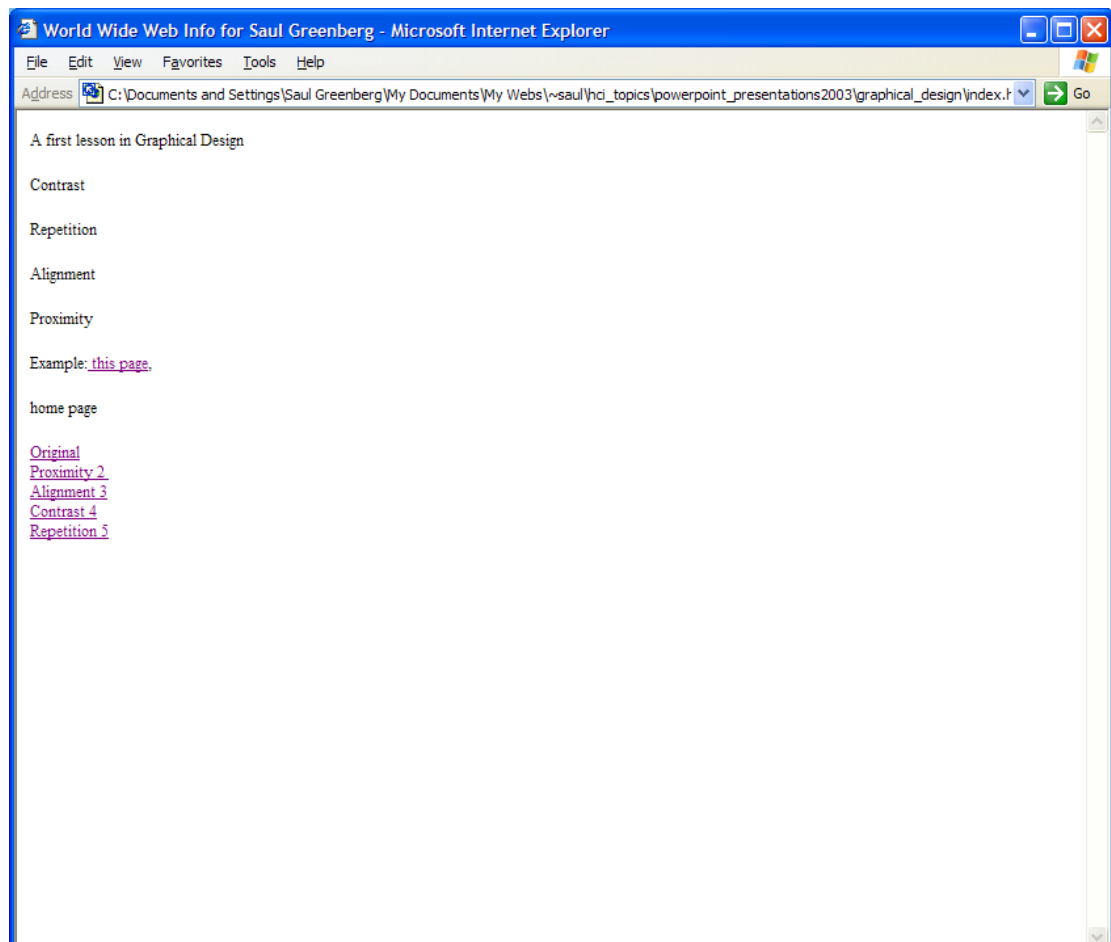
alignment

white (negative) space

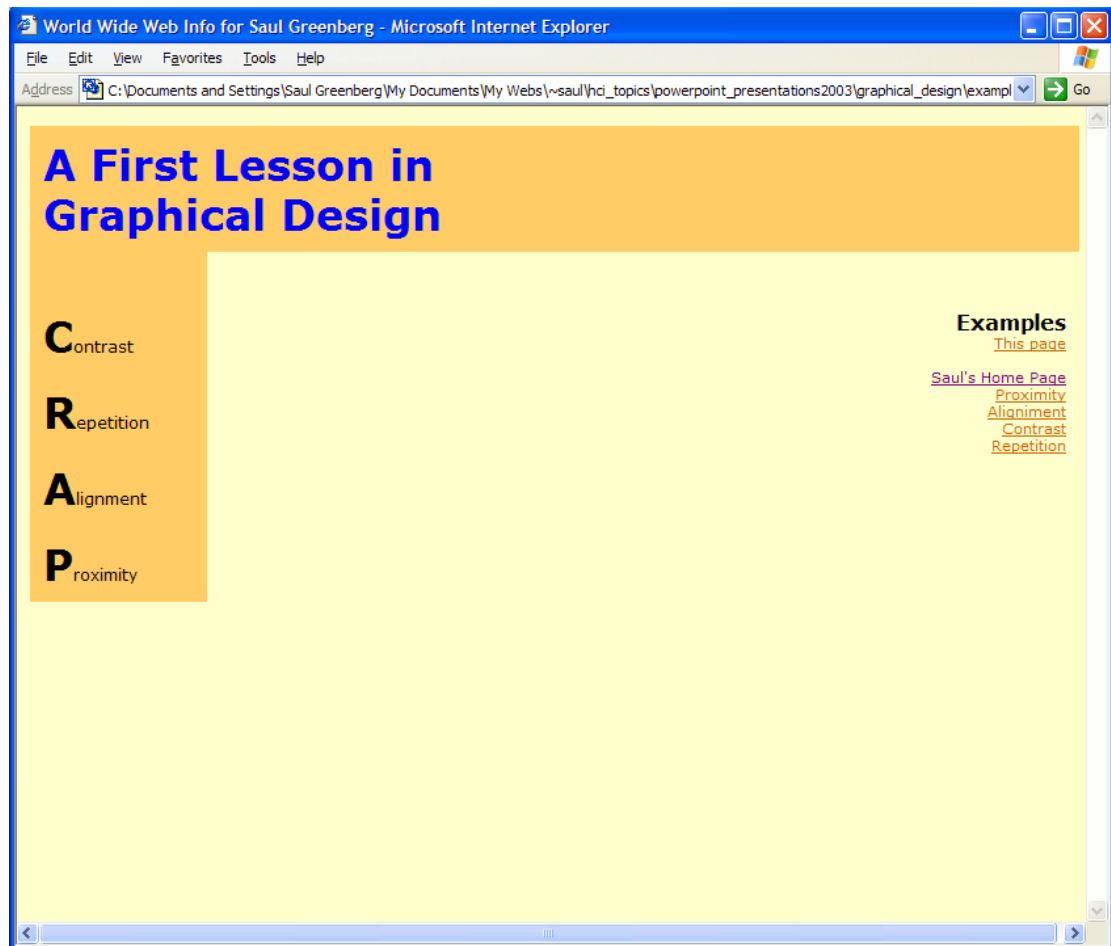
... explicit structure is a poor replacement

Mmmm: <input type="text"/>	Mmmm: <input type="text"/>	Mmmm: <input type="text"/>
Mmmm: <input type="text"/>	Mmmm: <input type="text"/>	Mmmm: <input type="text"/>
Mmmm: <input type="text"/>	Mmmm: <input type="text"/>	Mmmm: <input type="text"/>
Mmmm: <input type="text"/>	Mmmm: <input type="text"/>	Mmmm: <input type="text"/>
Mmmm: <input type="text"/>	Mmmm: <input type="text"/>	Mmmm: <input type="text"/>

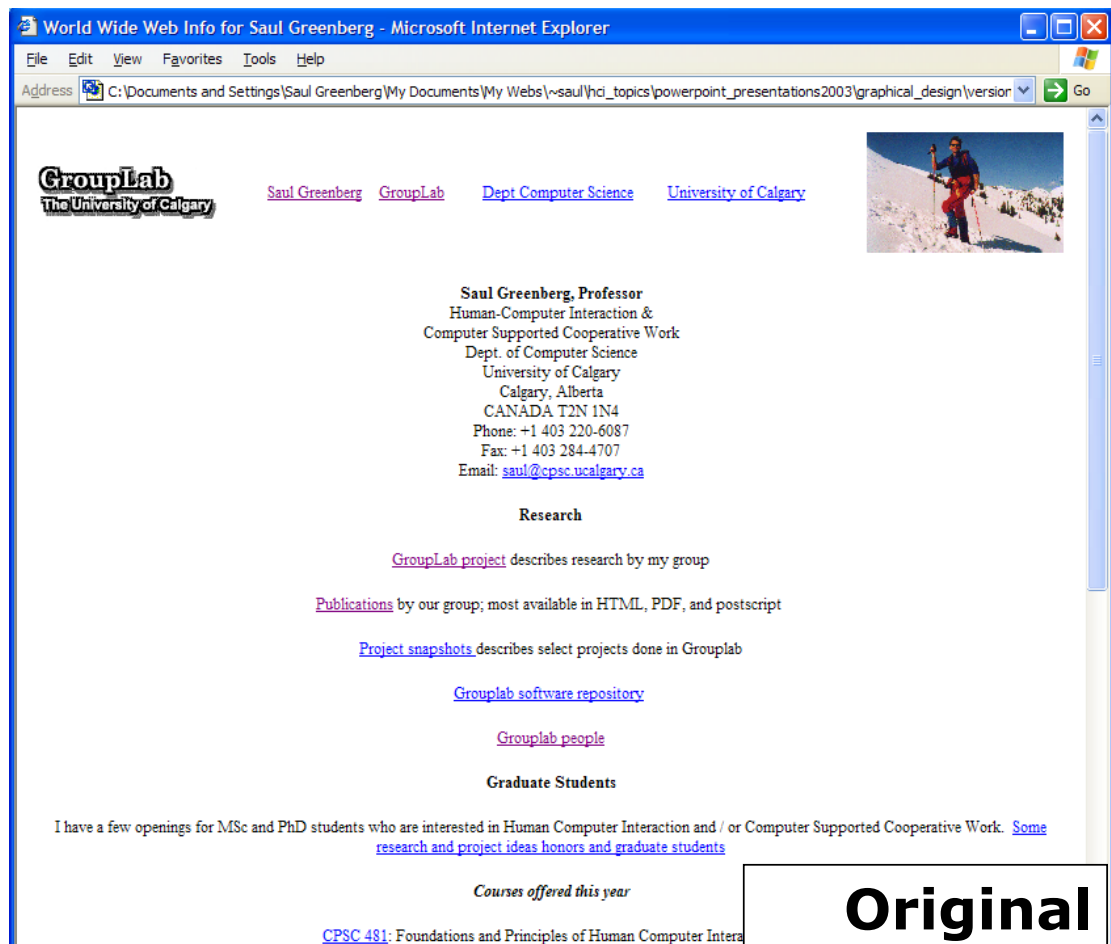
49



50





51



52

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\hdi\_topics\powerpoint\_presentations2003\graphical\_design\version 


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The University of Calgary

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**Saul Greenberg, Professor**  
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Email: [saul@cpsc.ucalgary.ca](mailto:saul@cpsc.ucalgary.ca)



**Research**  
[GroupLab project](#) describes research by my group  
[Publications](#) by our group; most available in HTML, PDF, and postscript  
[Project snapshots](#) describes select projects done in Grouplab  
[Grouplab software repository](#)  
[Grouplab people](#)

**Graduate Students**  
I have a few openings for MSc and PhD students who are interested in Human Computer Interaction and / or Computer Supported Cooperative Work. [Some research and project ideas honors and graduate students](#)



**Courses offered this year**  
[CPSC 481](#): Foundations and Principles of Human Computer Interaction  
[CPSC 581](#): Human Computer Interaction II: Interaction Design  
[CPSC 601.13](#): Computer Supported Cooperative Work

# Proximity

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Email: [saul@cpsc.ucalgary.ca](mailto:saul@cpsc.ucalgary.ca)



**Research**  
[GroupLab project](#) describes research by my group  
[Publications](#) by our group; most available in HTML, PDF, and postscript  
[Project snapshots](#) describes select projects done in Grouplab  
[Grouplab software repository](#)  
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[CPSC 581](#): Human Computer Interaction II: Interaction Design  
[CPSC 601.13](#): Computer Supported Cooperative Work



**Previous Years:**  
[CPSC 681](#): Research Methodologies in Human Computer Interaction  
[CPSC 699](#): Research Methodology for Computer Science (old!)  
[CPSC 601.48](#): Special Topics: Heuristic Evaluation

# Alignment

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**Graduate Students** [Research Ideas](#). I have a few openings for MSc and PhD students who are interested in Human Computer Interaction and / or Computer Supported Cooperative Work.

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[CPSC 581](#): Human Computer Interaction II: Interaction Design  
[CPSC 601.13](#): Computer Supported Cooperative Work

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[CPSC 699](#): Research Methodology for Computer Science (old!)  
[CPSC 601.48](#): Special Topics: Heuristic Evaluation  
[CPSC 601.56](#): Advanced Topics in HCI: Media Spaces and Casual Interaction  
[SENG 609.05](#): Graphical User Interfaces: Design and Usability  
[SENG 609.06](#): Special Topics in Human Computer Interaction  
[Ego alert](#): My entry on U Calgary's 'Great Teachers' Web Site

**Administration** [Ethics Committee](#) for research with human subjects; I am the chair



Last updated: March 20, 1967

# Contrast

55

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## Saul Greenberg

### Professor

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**Graduate Students** [Research Ideas](#) I have a few openings for MSc and PhD students who are interested in Human Computer Interaction and / or Computer Supported Cooperative Work.

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**Previous Years** [CPSC 681](#) Research Methodologies in Human Computer Interaction  
[CPSC 699](#) Research Methodology for Computer Science (old!)  
[CPSC 601.48](#) Special Topics: Heuristic Evaluation  
[CPSC 601.56](#) Advanced Topics in HCI: Media Spaces and Casual Interaction  
[SENG 609.05](#) Graphical User Interfaces: Design and Usability  
[SENG 609.06](#) Special Topics in Human Computer Interaction  
[Ego alert](#) My entry on U Calgary's 'Great Teachers' Web Site

**Administration** [Ethics Committee](#) for research with human subjects

Last updated: March 20, 1967

# Repetition

56

Form Title -- (appears above URL in most browsers and is used by 'www' search)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk		000080
E-Mail responses to (will not appear on)	Alternate (for mailto forms only)	
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto <input checked="" type="radio"/> CGI
Send Order	Clear Form	
Scrolling Status Bar Message (max length = 200 characters)		
****WebMania 1.5b with Image Map Wizard is here!****		
<< Prev Tab		Next Tab >>

- 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
  - blocks compete with alignment

Webforms

57

No regard for  
order and  
organization

IBM's Aptiva Communication Center

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Haphazard layout

The screenshot shows the 'xbugtool 2.0 Beta 2' window. The title bar includes the server name 'e/mer-bb.Corp'. The menu bar contains 'Load', 'Store', 'Submit', 'View', 'Print', 'Reset', 'Props', and 'Gen. Help'. The main form area is crowded with various input fields and buttons. At the top, there are buttons for 'Load', 'Store', 'Submit', 'View', 'Print', 'Reset', 'Props', and 'Gen. Help'. Below these are fields for 'Bug Id:', 'Ct:', 'Mode:' (with 'Edit' and 'Create' buttons), and 'Update lists'. The form is divided into several sections: 'Category', 'Subcategory...', 'Resp Mgr...', 'State', 'Priority:' (with a 1-5 grid), 'Severity:' (with a 1-5 grid), 'Bug/Rfe:' (with 'bug' and 'rfe' buttons), and 'Responsible Engineer:'. There are also sections for 'Synopsis is:', 'Keywords:', 'Description', 'Work around', 'Suggested fix', 'Comments', and 'Public summary'. A 'State triggers:' section contains buttons for 'Evaluation', 'Commit to fix in rel...', 'Fixed in releases...', 'Integrated in releases...', 'Verified in releases...', 'Closed because', and 'Incomplete because'. Below these are 'Root cause...' and 'Fix affects docs'. At the bottom, there are fields for 'Duplicate of:', 'Interest list:', 'Patch id:', 'See also (bugids):', and a 'History:' section with fields for 'Submitter', 'Date', 'Generic SVR4 problem?' (with 'no' and 'yes' buttons), 'Dispatch operator', 'Date', 'Evaluator', 'Date', 'Commit operator', 'Date', and 'Fix operator', 'Date'.

Mullet & Sano

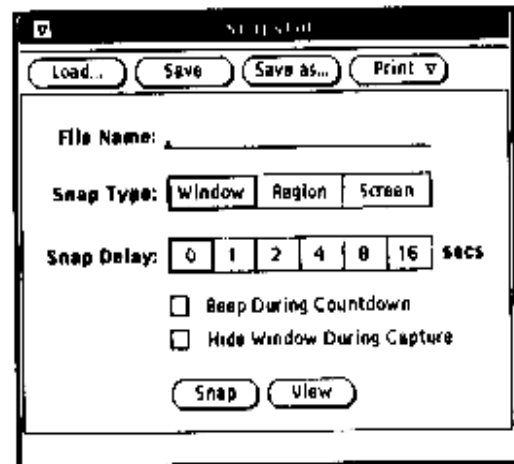
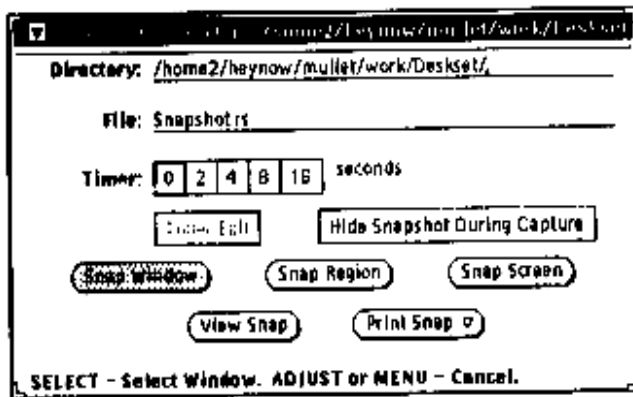
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Repairing the layout

The screenshot shows the 'Bugtool' window. The title bar includes the server name 'e/mer-bb.Corp'. The menu bar contains 'Report', 'View', 'Props', and 'Help'. The main form area is clean and organized. At the top, there are buttons for 'Report', 'View', 'Props', and 'Help'. Below these are fields for 'Bug ID:', 'Type:' (with 'Bug' and 'RFE' buttons), 'Category:' (with 'XView' selected), 'Subcategory:' (with 'library' selected), 'Release:' (with '1.0' selected), 'Status:' (with 'Submitted' selected), 'Priority:' (with a 1-5 grid), and 'Severity:' (with a 1-5 grid). There are also sections for 'Synopsis:', 'Keywords:', 'Pub Summary:', 'See also:', and 'Interest List:'. Below these are fields for 'Root Cause:' (with 'documentation-confusing' selected), 'Same as:', 'Resp Mgr:' (with 'none' selected), 'Resp Engr:' (with 'none' selected), 'Hook 1:', 'Hook 2:', 'Flags:' (with 'Fix Affects Documentation' and 'Generic SVR4 Problem' buttons), and 'Date:'.

Mullet & Sano

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Redesigning a layout using alignment and factoring

Mullet & Sano

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## CRAP examples

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

Examples & some discussion from  
<http://www.myinkblog.com/2009/03/21/4-principles-of-good-design-for-websites/>

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# 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

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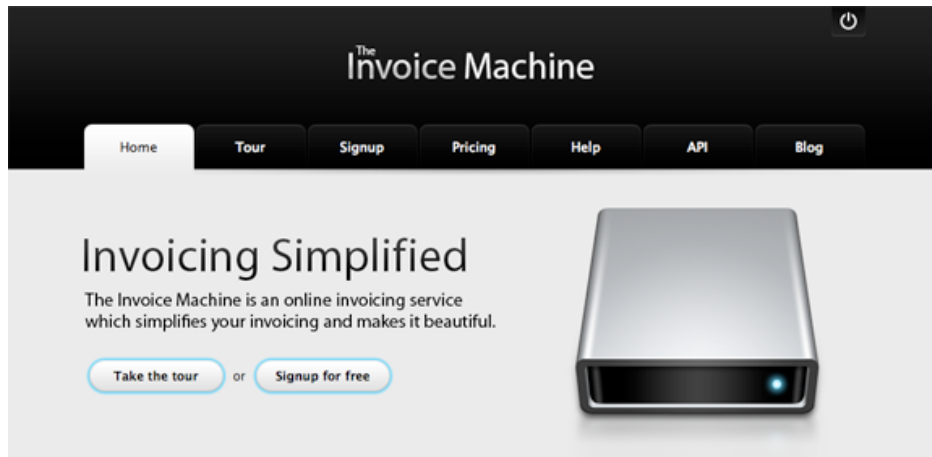
# CRAP: Contrast

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

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# CRAP: Contrast

*with images*



<http://invoicemachine.com/home>

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# CRAP: Contrast

*with images*



<http://www.instabox.com/>

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# 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

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# CRAP: Contrast

*with color*



<http://fatburgr.com/>

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# CRAP: Contrast

*with color*



<http://ilovetypography.com/>

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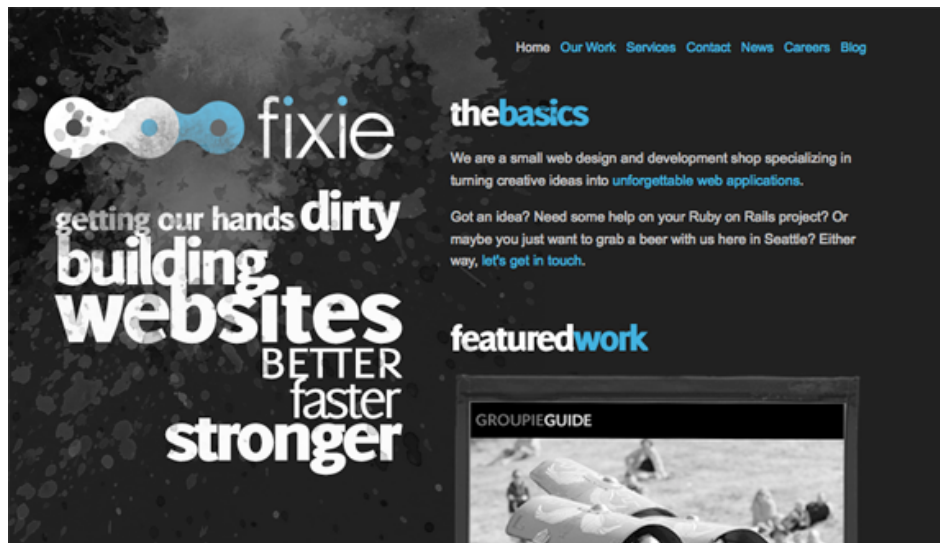
# CRAP: Contrast

- 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

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# CRAP: Contrast

*with fonts*



<http://fixieconsulting.com/>

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## 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

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# CRAP: Repetition



<http://www.1024media.com/>

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# CRAP: Repetition



<http://silverbackapp.com/>

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# CRAP: Alignment

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

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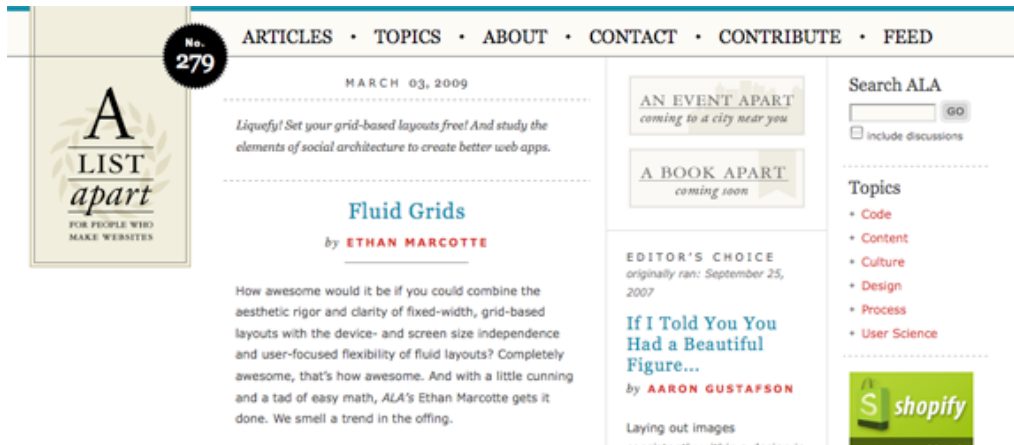
# CRAP: Alignment



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

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# CRAP: Alignment



<http://www.alistapart.com/>

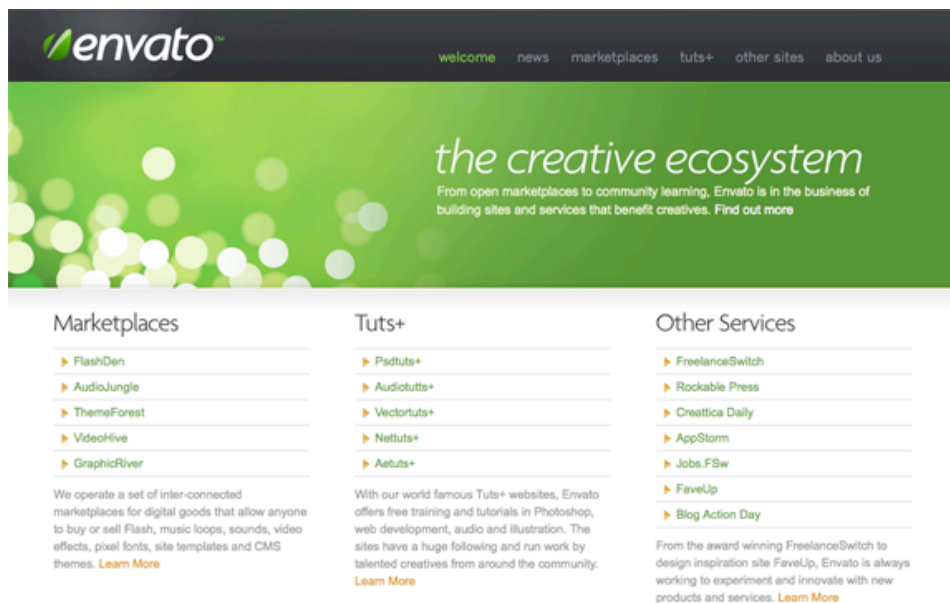
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# CRAP: Proximity

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

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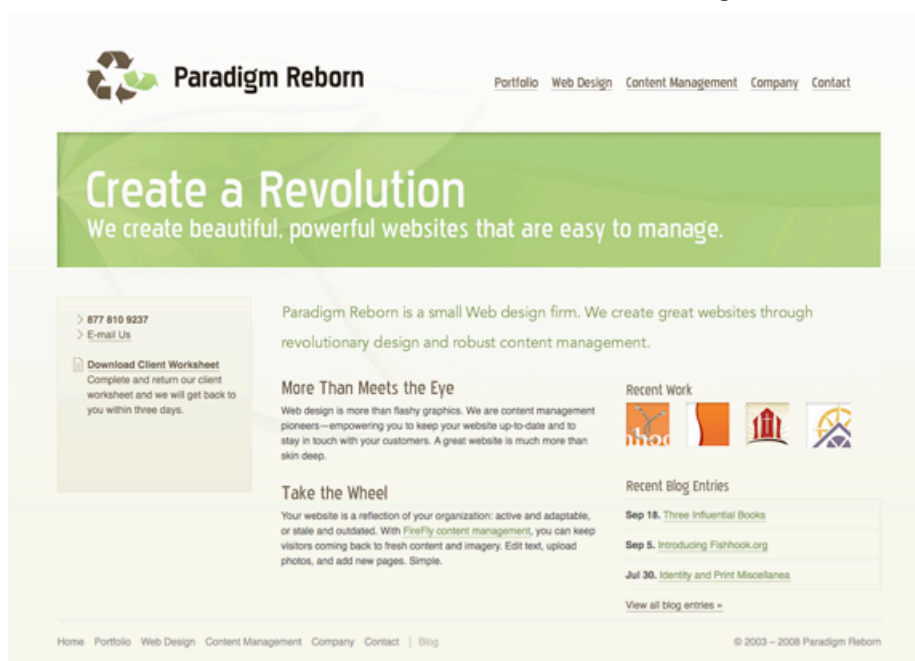
# CRAP: Proximity



<http://envato.com/>

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# CRAP: Proximity



<http://www.createarevolution.com/>

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some color theory

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## Color Selections

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

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# 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	$1 \cdot 16 + 5$	21
A4	$10 \cdot 16 + 4$	164

by Jerry Post

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## 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



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# Color Systems

- We have 2 color systems

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

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



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## Color Theory: Color Wheel

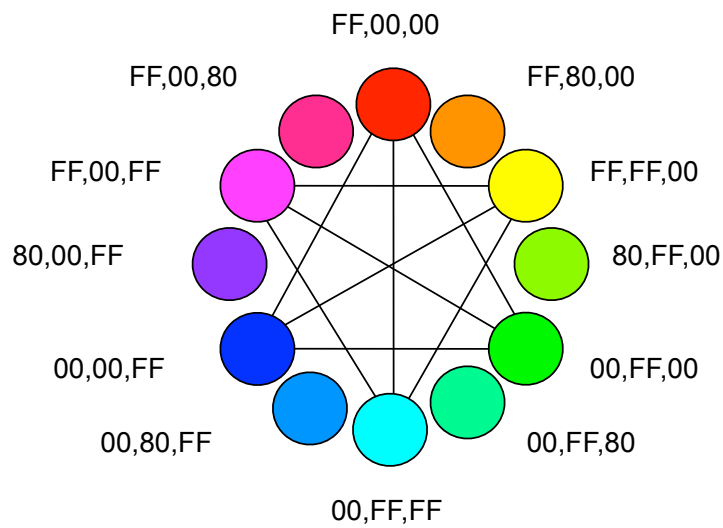
- visual representation of colors

according to their chromatic relationship



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# Color Wheel

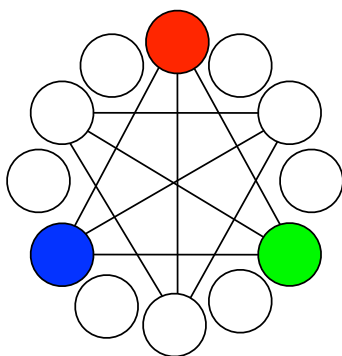


<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnhess/html/hess08142000.asp>

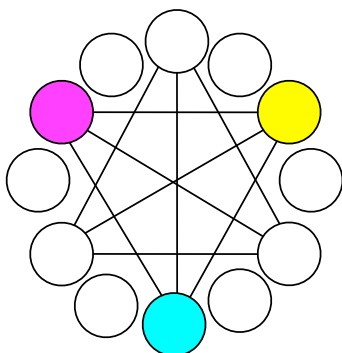
by Jerry Post

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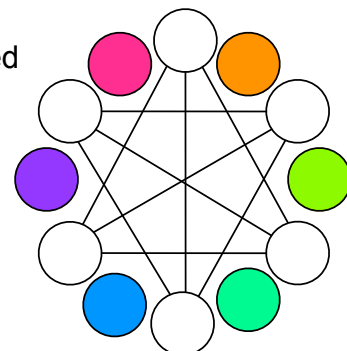
## Color Groups



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



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



**Tertiary additive colors:**  
middle of primary and secondary

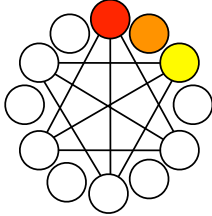
by Jerry Post

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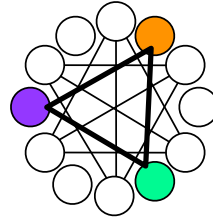
# Color Groups

## Analogous colors



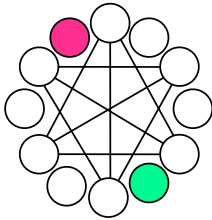
Adjacent colors  
are harmonious

## Triad colors



Equidistant colors  
create tension.

## Complementary colors



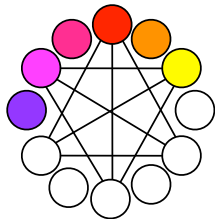
Opposite colors  
are used for  
contrast—text and  
background.

by Jerry Post

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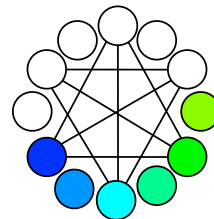
# Color Groups

## Warm (active) colors



Add warmth and appear to move  
toward the viewer

## Cool (passive) colors



More reserved, and appear to  
recede into the screen

by Jerry Post

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# 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

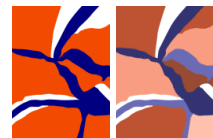
blue text on a black background

- “Simultaneous contrast”, eye-strain

such as red text on a blue background

- Full saturation high contrast

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

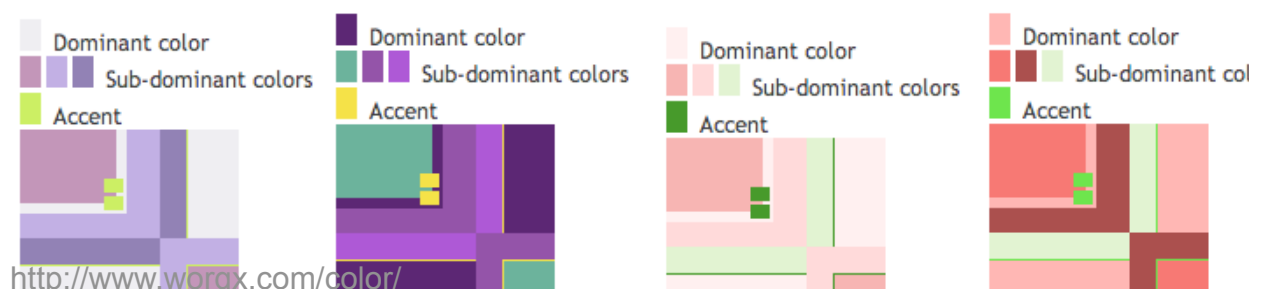


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## Proportion and Intensity

- 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

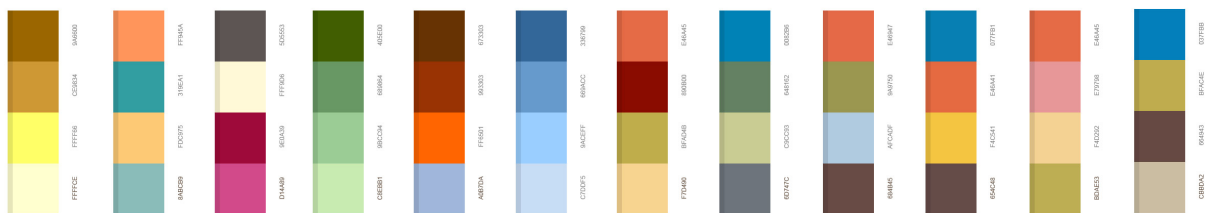


<http://www.worqx.com/color/>

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# Color pallets

- many many many color pallet generators online ...



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## 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

# 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 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

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## 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

B | B | C | UX&D

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# 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

B | B | C | UX&D <http://www.onextrapixel.com/2011/12/13/the-psychology-of-fonts/>  
<http://blog.templatemonster.com/2012/05/16/font-psychology/>

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# 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/>

B | B | C | U X & D

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# 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/>

B | B | C | U X & D <http://blog.templatemonster.com/2012/04/24/40-free-fonts-big-bold-headlines/>

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# 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 per 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