

# Web design (basics)

Anastasia.Bezerianos

# media queries

ISO



from [mediaqueri.es](http://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



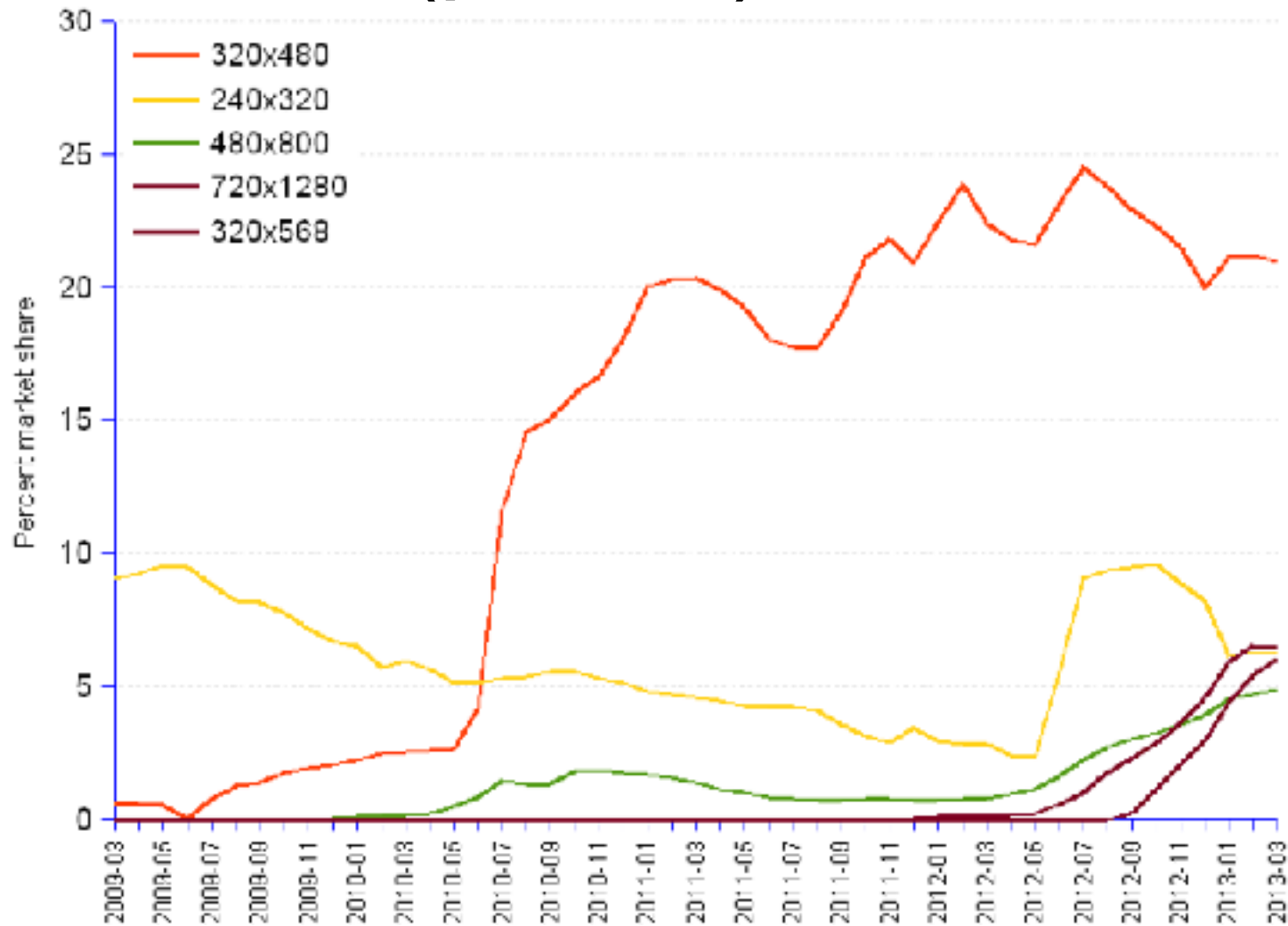
# Context

- 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](http://stats.areppim.com/stats/stats_mobiresxtime.htm)

# Screens

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

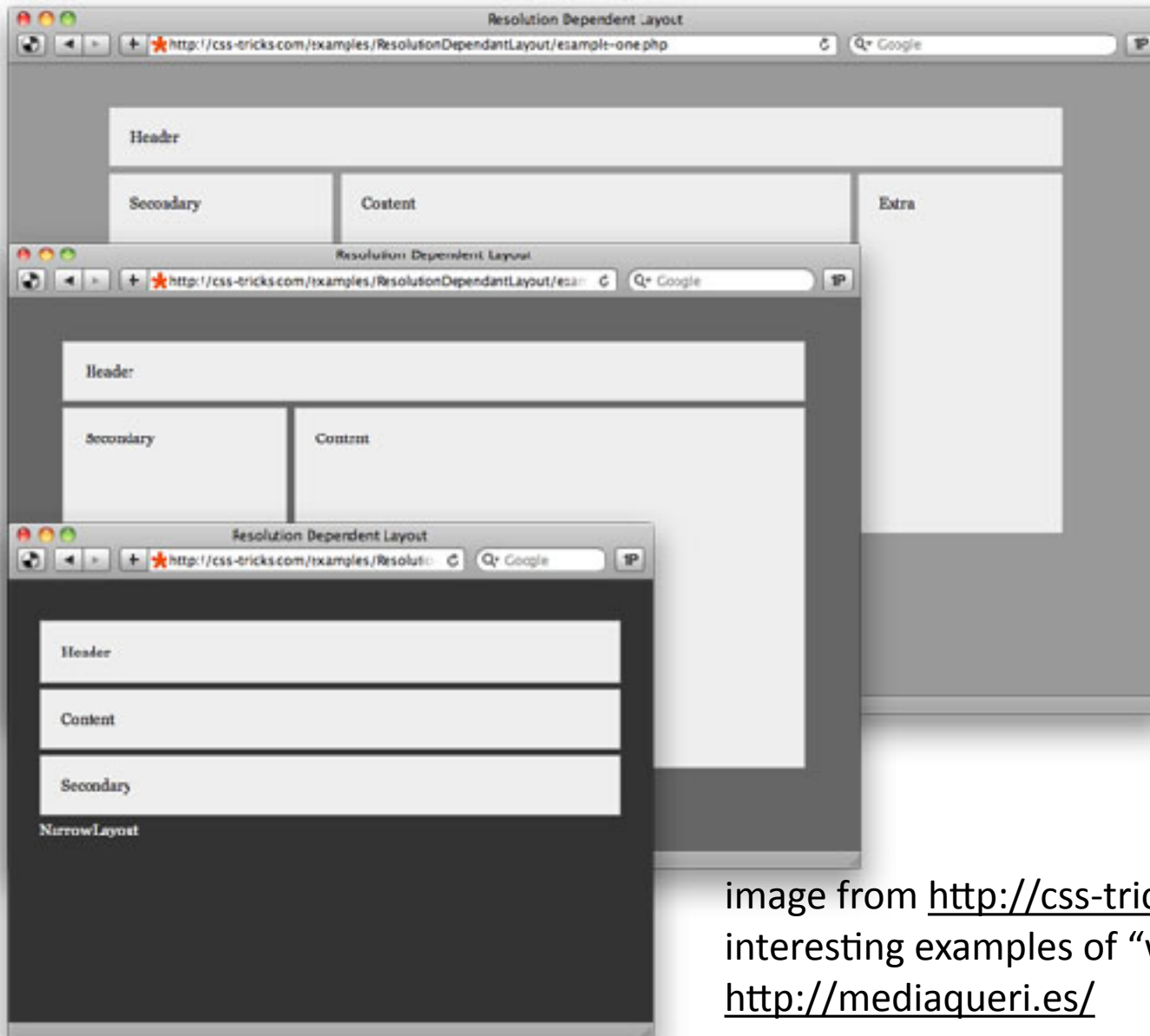
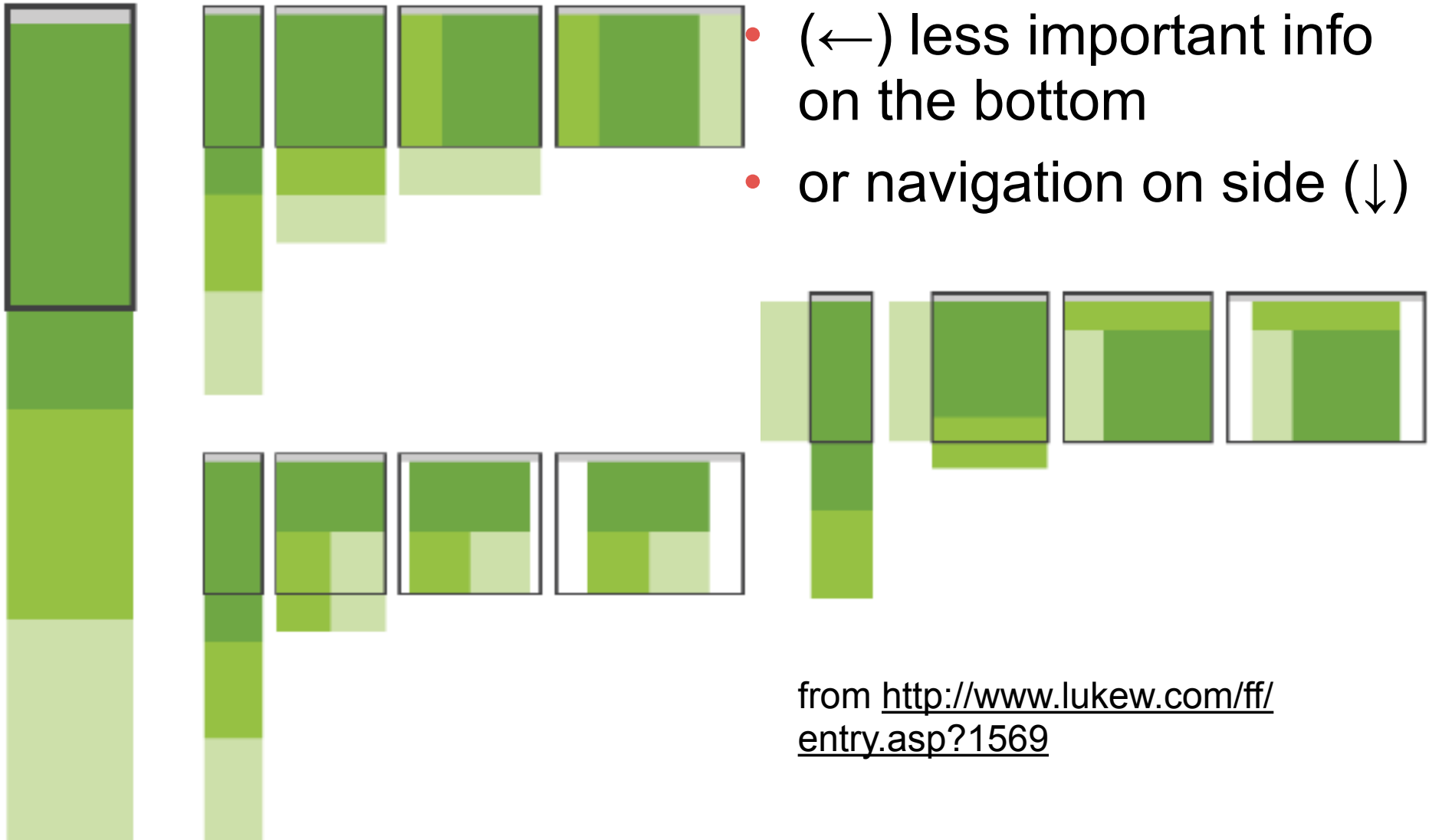


image from <http://css-tricks.com/>  
interesting examples of “what is important” at  
<http://mediaqueri.es/>

# Layout Adaptation

## “off screen” alternatives



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

# 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.



# 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.



# 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)



# CRAP

contrast, repetition, alignment, proximity

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

Slide deck by Saul Greenberg. Permission is granted to use this for non-commercial purposes as long as general credit to Saul Greenberg is clearly maintained.  
Warning: some material in this deck is used from other sources without permission. Credit to the original source is given if it is known.

## **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.*



A first lesson in Graphical Design

Contrast

Repetition

Alignment

Proximity

Example: [this page](#).

Home page

[Original](#)

[Proximity 2](#)

[Alignment 3](#)

[Contrast 4](#)

[Repetition 5](#)

# A First Lesson in Graphical Design

**C**ontrast

**R**epetition

**A**lignment

**P**roximity

## Examples

[this page](#)

[Saul's Home Page](#)

[Proximity](#)

[Alignment](#)

[Contrast](#)

[Repetition](#)

# CRAP

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

# CRAP

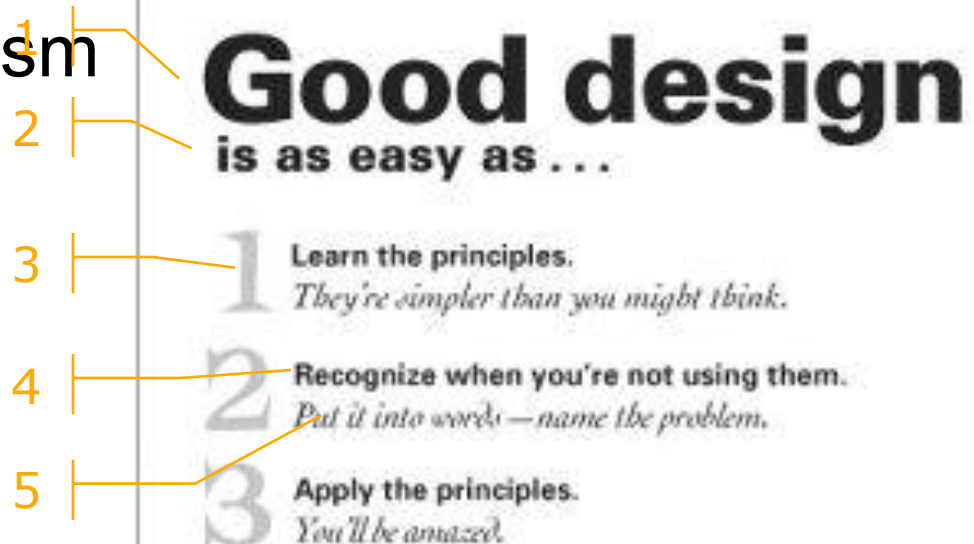
- **Contrast**

- 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.*

# CRAP

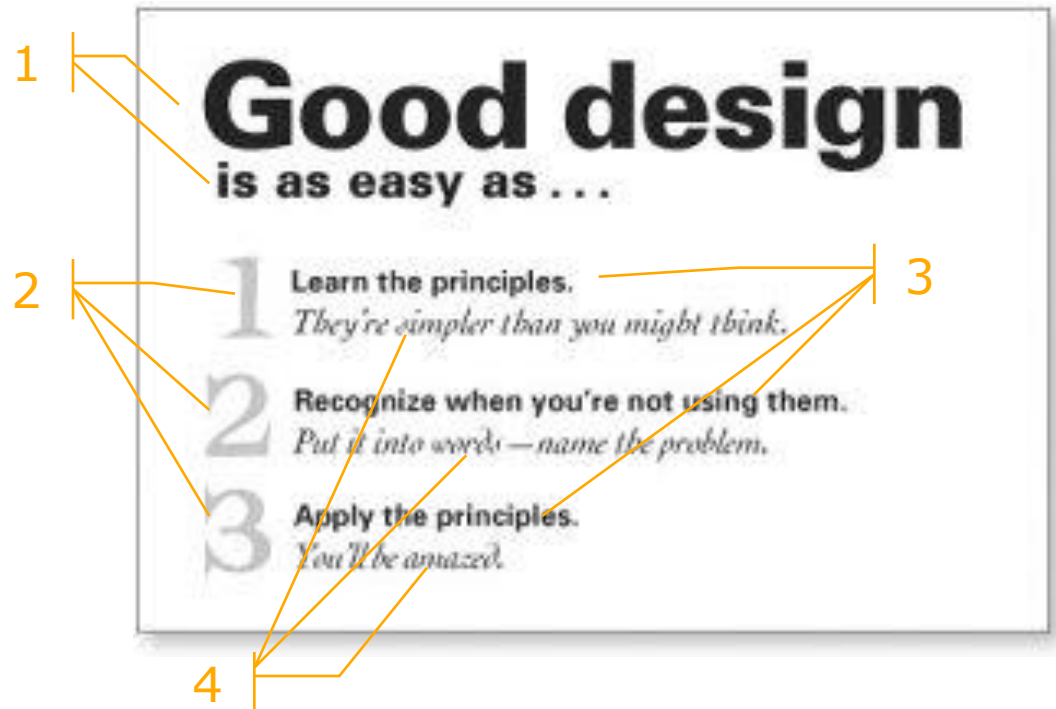
- **C**ontrast

- **R**epetition

- repeat design throughout the interface
- consistency
- creates unity

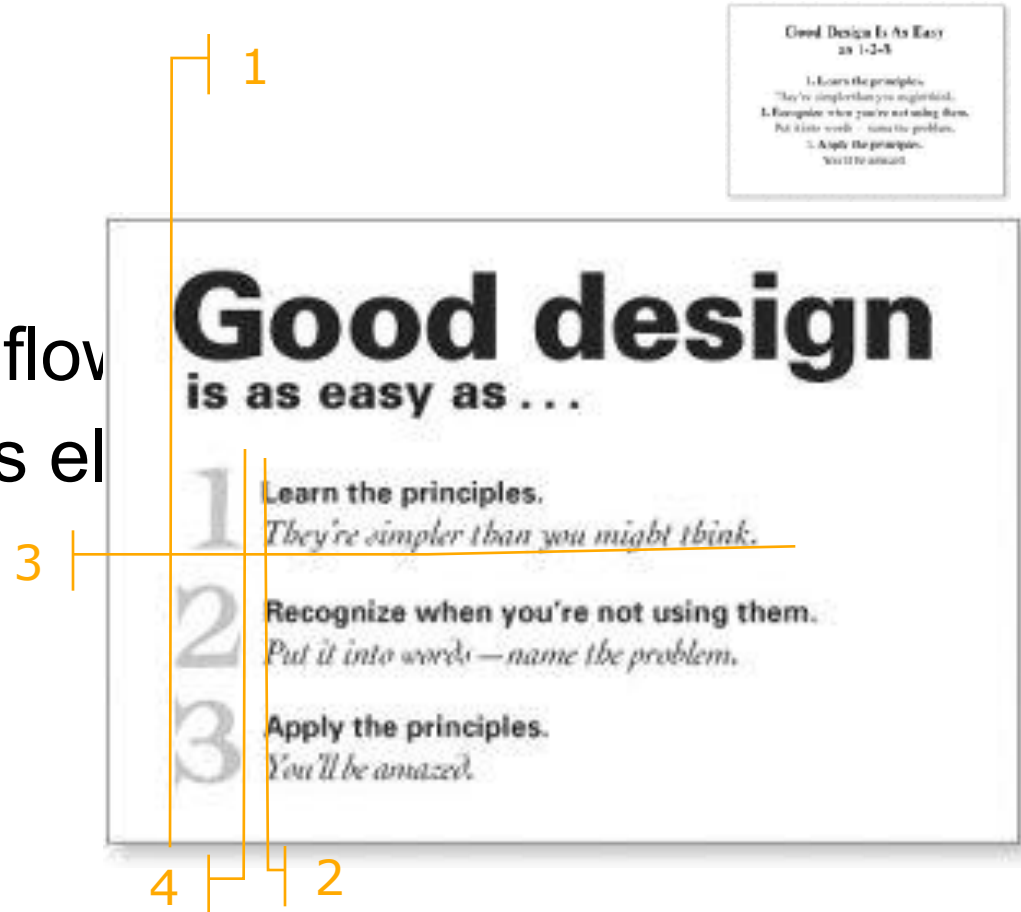
- **A**lignment

- **P**roximity



# CRAP

- Contrast
- Repetition
- Alignment
  - creates a visual flow
  - visually connects elements
- Proximity



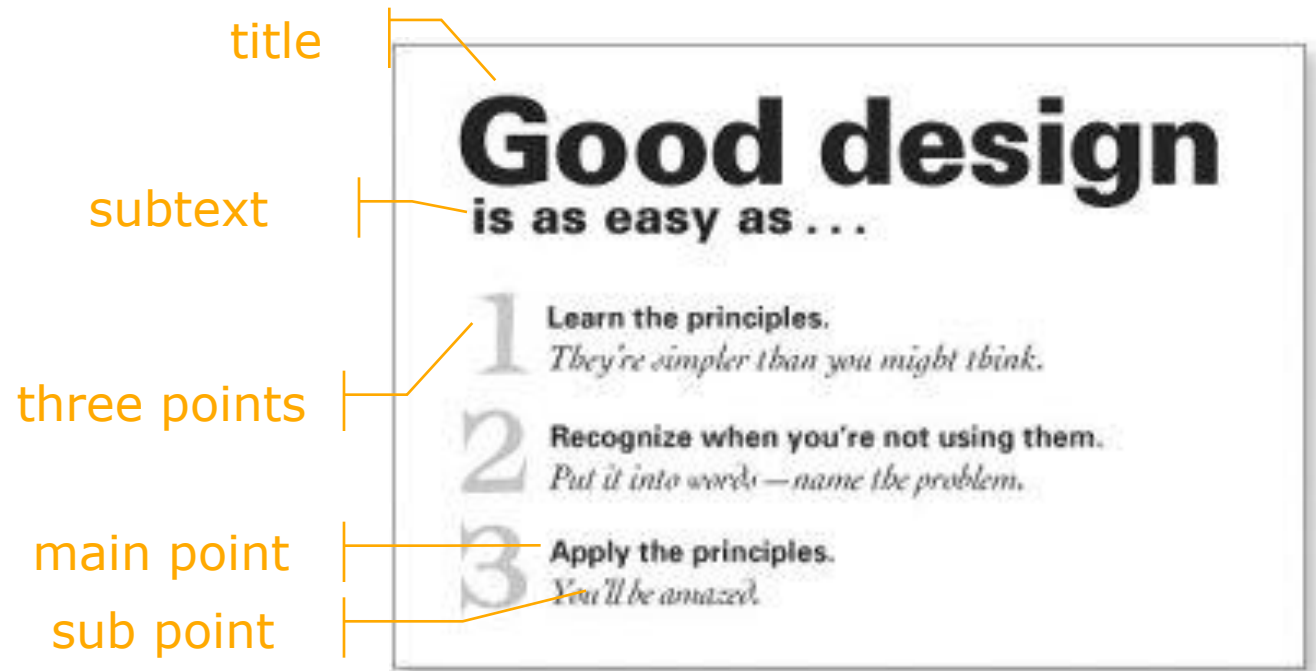
# CRAP

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



# Where does your eye go?

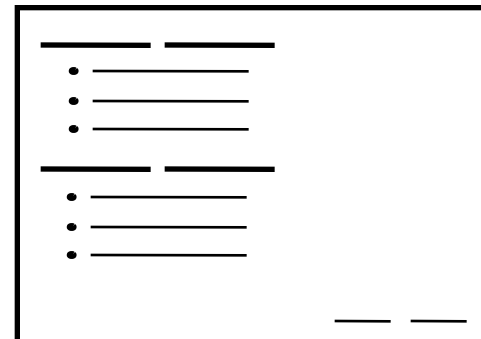
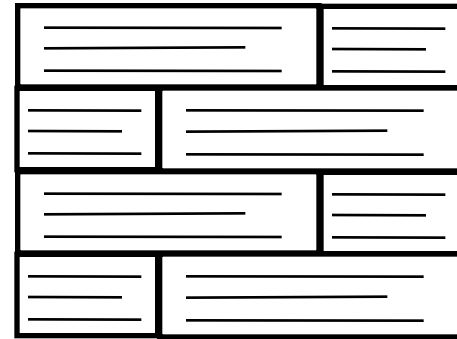
- CRAP combines to give you cues of how to read the graphic





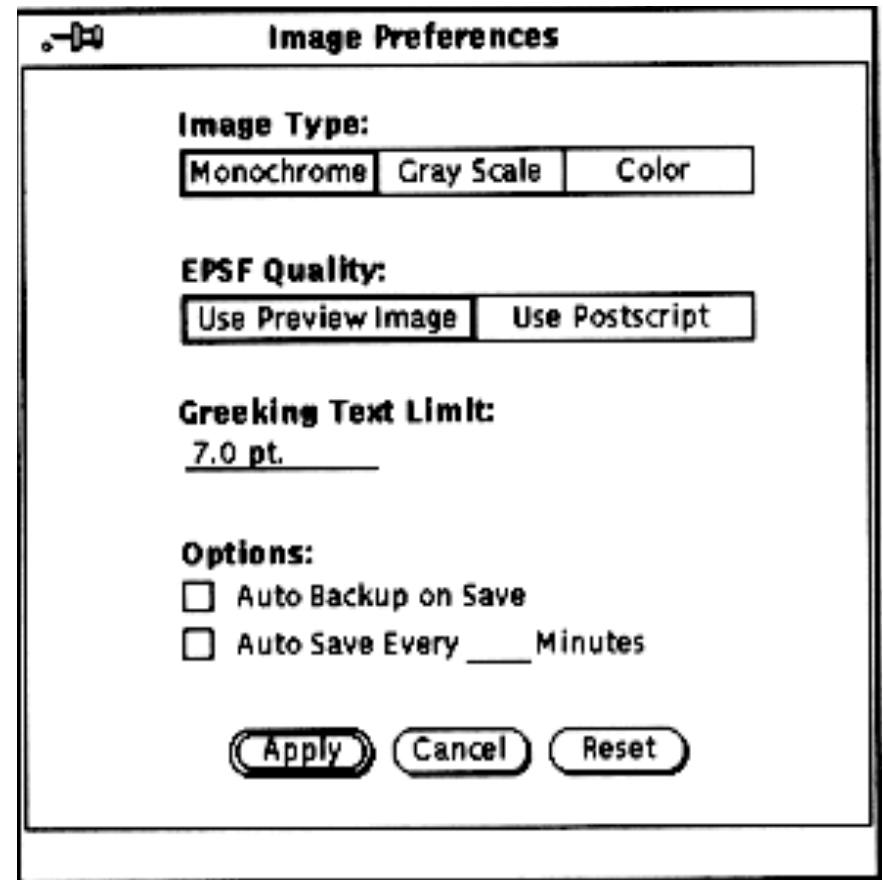
# Where does your eye go?

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



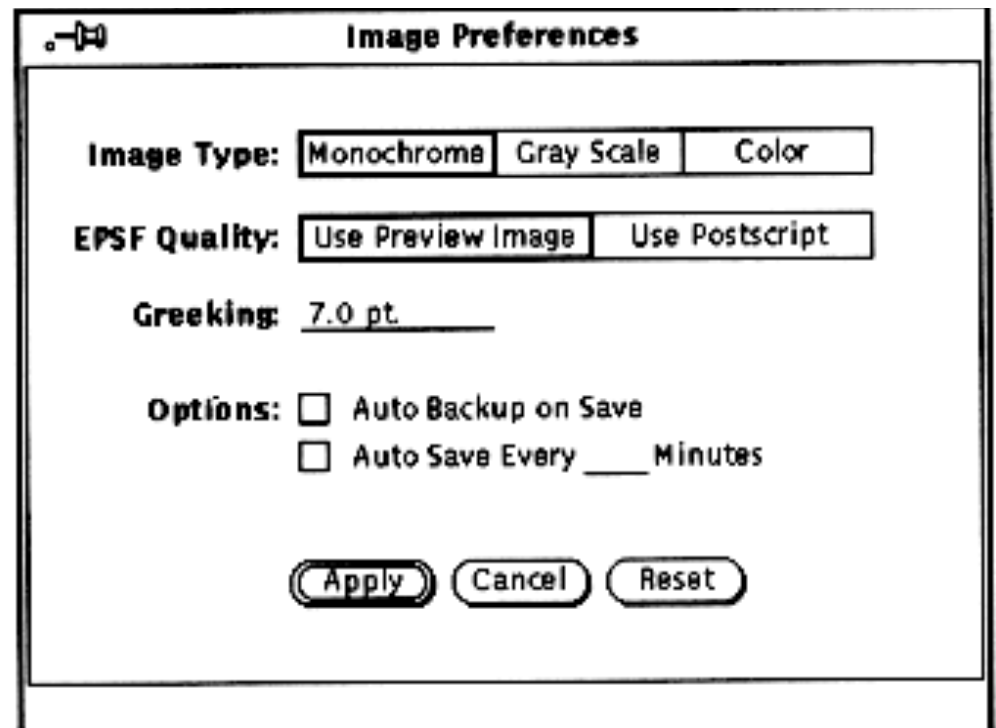
# Where does your eye go?

Some contrast and weak proximity  
interleaved items



# Where does your eye go?

Strong proximity (left/right split)  
unambiguous



# 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:

Mmmm:

A first lesson in Graphical Design

Contrast

Repetition

Alignment

Proximity

Example: [this page](#).

Home page

[Original](#)

[Proximity 2](#)

[Alignment 3](#)

[Contrast 4](#)

[Repetition 5](#)

# A First Lesson in Graphical Design

**C**ontrast

**R**epetition

**A**lignment

**P**roximity

## Examples

[this page](#)

[Saul's Home Page](#)

[Proximity](#)

[Alignment](#)

[Contrast](#)

[Repetition](#)



[Saul Greenberg](#)

[GroupLab](#)

[Dept Computer Science](#)

[University of Calgary](#)



Saul Greenberg, Professor  
Human-Computer Interaction &  
Computer Supported Cooperative Work  
Dept. of Computer Science  
University of Calgary  
Calgary, Alberta  
CANADA T2N 1N4  
Phone: +1 403 220-6087  
Fax: +1 403 284-4707  
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 431](#) Foundations and Principles of Human Computer Interaction

Original



[Saul Greenberg](#) [GroupLab](#) [Dept Computer Science](#) [University of Calgary](#)

Saul Greenberg, Professor  
Human-Computer Interaction &  
Computer Supported Cooperative Work

Dept. of Computer Science  
University of Calgary  
Calgary, Alberta  
CANADA T2N 1N4



Phone: +1 403 220-6087  
Fax: +1 403 284 4707  
Email: [saul@cpsc.ucalgary.ca](mailto:saul@cpsc.ucalgary.ca)

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#### Graduate Students

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#### 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



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\hcd\_topics\powerpoint\_presentations2003\graphical\_design\version
Go

GroupLab  
The University of Calgary

[Saul Greenberg GroupLab](#) [Dept Computer Science](#) [University of Calgary](#)

Saul Greenberg, Professor  
Human-Computer Interaction &  
Computer Supported Cooperative Work

Dept. of Computer Science  
University of Calgary  
Calgary, Alberta  
CANADA T2N 1N4

Phone: +1 403 220 6087  
Fax: +1 403 284-4707  
Email: [saul@cpsc.ucalgary.ca](mailto:saul@cpsc.ucalgary.ca)



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Courses offered this year

[CPSC 481](#): Foundations and Principles of Human Computer Interaction  
[CPSC 381](#): Human Computer Interaction II: Interaction Design  
[CPSC 601.13](#): Computer Supported Cooperative Work

Previous Years

[CPSC 681](#): Research Methodologies in Human Computer Interaction  
[CPSC 692](#): Research Methodology for Computer Science (old!)  
[CPSC 601.18](#): Special Topics: Heuristic Evaluation

Alignment

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**GroupLab**  
The University of Calgary

# Saul Greenberg Professor

Human-Computer Interaction &  
Computer Supported Cooperative Work

Dept. of Computer Science  
University of Calgary  
Calgary, Alberta  
CANADA T2N 1N4

Phone: +1 403 220-0007  
Fax: +1 403 264-1707  
Email: [saul@cpsc.ucalgary.ca](mailto:saul@cpsc.ucalgary.ca)



## 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.

## *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

## *Previous Years*

**CPSC 601:** Research Methodologies in Human Computer Interaction  
**CPSC 699:** Research Methodology for Computer Science (old!)  
**CPSC 601.40:** Special Topics: Heuristic Evaluation  
**CPSC 601.56:** Advanced Topics in HCI: Media Spaces and Casual Interaction  
**SIENG 609.05:** Graphical User Interfaces: Design and Usability  
**SIENG 609.06:** Special Topics in Human Computer Interaction  
**I go alert:** My entry on U. Calgary's "Great Teachers" Web Site

## Administration

**Ethics Committee** for research with human subjects; I am the chair

Saul Greenberg GroupLab Dept Computer Science University of Calgary

**GroupLab**  
The University of Calgary

# Saul Greenberg Professor

Human-Computer Interaction &  
Computer Supported Cooperative Work

Dept. of Computer Science  
University of Calgary  
Calgary, Alberta  
CANADA T2N 1N4

Phone: +1 403 220-5007  
Fax: +1 403 261-1507  
Email: [saul@cpsc.ucalgary.ca](mailto:saul@cpsc.ucalgary.ca)



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**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

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**Ethics Committee** for research with human subjects


# Repetition

Form Title -- (appears above URL in most browsers and is used by W/W/W 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 <input checked="" type="checkbox"/> Center		000080
E-Mail responses to (will not appear on)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
***WebMania 1.5b with Image Map Wizard is here!!***		
<a href="#">&lt;&lt; Prev Tab</a>		<a href="#">Next Tab &gt;&gt;</a>

- 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

No regard for  
order and  
organization

**Advanced FAX Settings**

 **Aptiva Communication Center**

**Speaker setting**

☐ On    ☒ On until connect    ☐ Off

**Wait**  **seconds for connection**

**Retry after**  **seconds**    **Number of retries**

**Resolution**

☒ Fine    ☐ Standard

**Maximum transmit rate:**

**Paper size:**

☒ **Use custom editor:**  **Browse...**

**Save**    **Cancel**    **Help**

Haphazard layout

shagtool 2.0 Rev 2 Server: elman-bb.Corp

Load v Store Submit v View Print v Reset v Props Gen. Help v

Bug Id: \_\_\_\_\_ Cc: \_\_\_\_\_ Mode: Edit Create Update lists

Category \_\_\_\_\_ Priority: 

1	2	3	4	5
---	---	---	---	---

Subcategory... \_\_\_\_\_ Severity: 

1	2	3	4	5
---	---	---	---	---

Resp. Mgr... \_\_\_\_\_ Bug/Rfe: 

Inc	fe
-----	----

State \_\_\_\_\_ Responsible Engineer: \_\_\_\_\_

Synopsis: \_\_\_\_\_

Keywords: \_\_\_\_\_

Description Work around Suggested fix Comments Public summary

State triggers:

Evaluation

Commit to fix in rel. \_\_\_\_\_

Fixed in releases... \_\_\_\_\_

Integrated in releases... \_\_\_\_\_

Verified in releases... \_\_\_\_\_

Closed because \_\_\_\_\_

Incomplete because \_\_\_\_\_

Foot cause... \_\_\_\_\_

Fix affects ccs \_\_\_\_\_

Duplicate of: \_\_\_\_\_ Interest list: \_\_\_\_\_

Watch id: \_\_\_\_\_ See also (bugids): \_\_\_\_\_

History:

Submitter : \_\_\_\_\_ Date: \_\_\_\_\_

Generic SVR4 problem?: 

no	y05
----	-----

Dispatch operator : \_\_\_\_\_ Date: \_\_\_\_\_

Evaluator : \_\_\_\_\_ Date: \_\_\_\_\_

Commit operator : \_\_\_\_\_ Date: \_\_\_\_\_

Fix operator : \_\_\_\_\_ Date: \_\_\_\_\_

## Repairing the layout

Bugtool

Report View Props Help Mode: Create Edit

Bug ID:

Type:  Bug  RFE

Category:  XView

Priority:  1  2  3  4  5

Subcategory:  Library

Severity:  1  2  3  4  5

Release:  1.0

Status:  Submitted

Synopsis:

Keywords:

Pub Summary:

See also:

Interest List:

Description	Workaround	Suggested fix	Comments	Evaluation
<div><div></div><div></div></div>				

Root Cause:  documentation confusing

Same as:

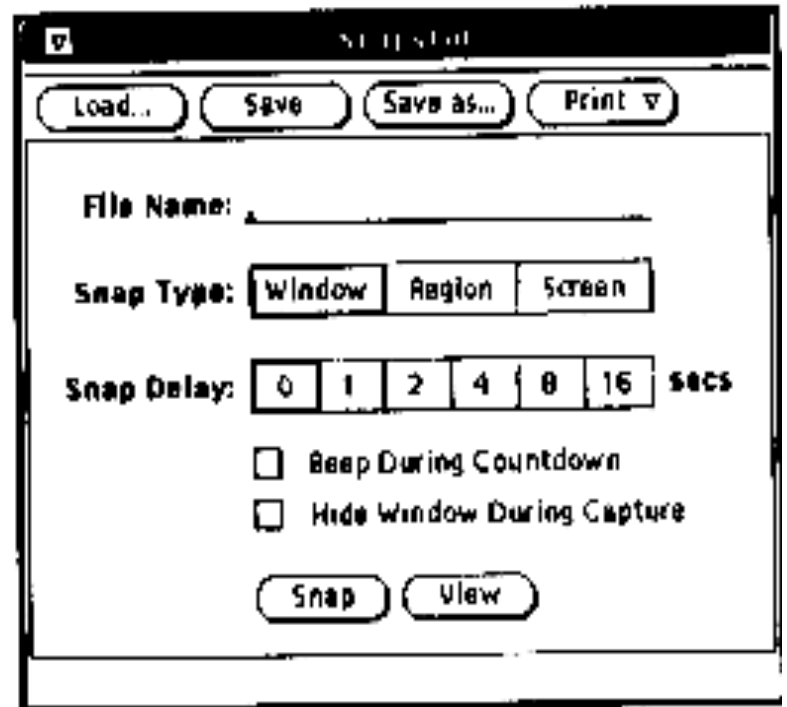
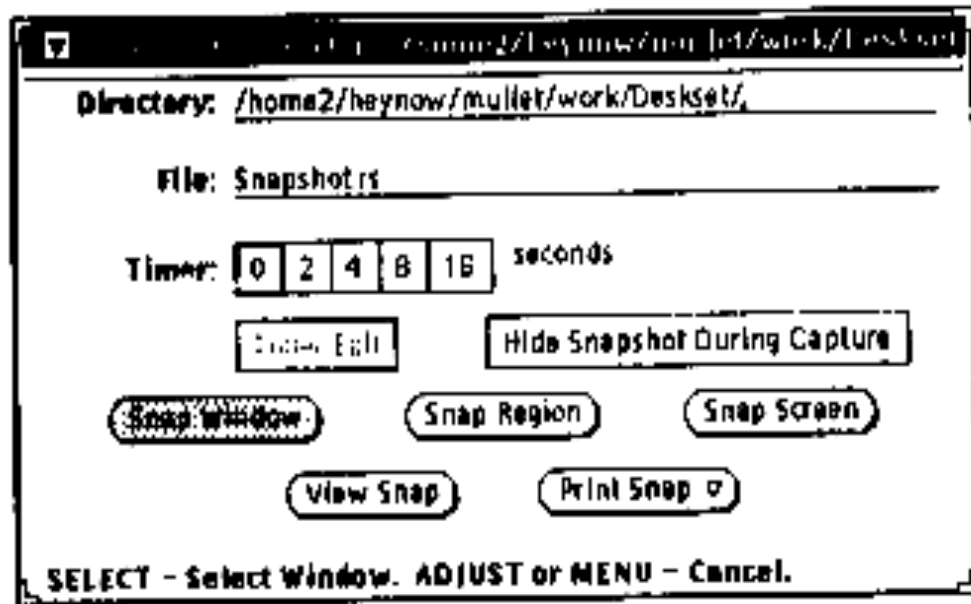
Resp Mgr:  none

Resp Engr:  none

Hook 1:

Hook 2:

Flags: ☐ Fix Affects Documentation  
☐ Generic SWRA Problem



Redesigning a layout using alignment and factoring



# CRAP examples

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

# CRAP: Contrast

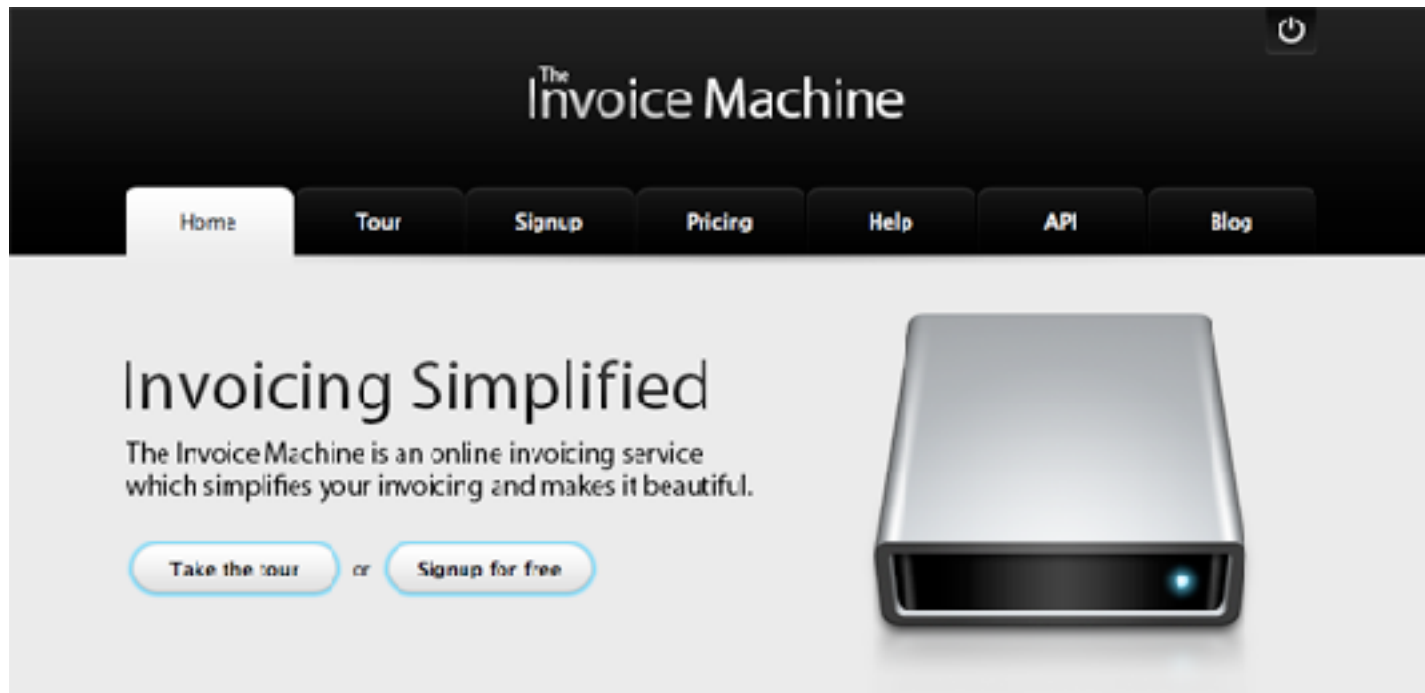
- Contrast
  - Without a focal point, the viewer is generally lost
  - Helps guide the user's experience
  - You can achieve contrast with
    - images,
    - colors,
    - and fonts

# 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*



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<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*



The image shows a website mockup for 'Fatburgr'. At the top is a blue navigation bar with the 'Fatburgr' logo and links for 'Home', 'Restaurants', 'Categories', a smiley face icon, and 'Contact'. Below the navigation bar is a large light blue section. On the left is a cartoon character of a man with a large head, wearing a red and white cap, holding a burger. To his right is the title 'What The Fat?!' in large orange letters. Below the title is a paragraph of text. Further down is a white box containing the section 'Why Fatburgr?' with two columns of text. To the right of the text is an illustration of a burger, a drink, and fries. On the far right of this section is a yellow box with a red and white striped awning at the top. It contains the title 'Find Your Food, Jiggle Less', a paragraph of text, and two red buttons labeled 'View Restaurants' and 'View Categories'.

**Fatburgr** | Home | Restaurants | Categories | ☺ | Contact

## What The Fat?!

When you go to a restaurant, do you know the nutritional content of what you're ordering? We didn't either. Fatburgr gives you nutritional information from your favorite restaurants.

### Why Fatburgr?

A Grilled Chicken Caesar Salad from **Chili's** is over 1000 Calories. A Billy Club Sandwich from **Jimmy John's** is over 850 calories (and that's with white bread - wheat is over 1000)!

The goal of Fatburgr is simple: to create a single repository of nutrition information for all your favorite restaurants.

### Find Your Food, Jiggle Less

You can search Fatburgr for menu items via their restaurant or category.

[View Restaurants](#) [View Categories](#)

<http://fatburgr.com/>

# CRAP: Contrast

*with color*

HOME

SEARCH

TAGS

CONTACT

FREE

ABOUT

FONT GAME

TYPENUTS

SHOP

TWITTER

SUBSCRIBE

## i love typography

MAR 17 2009 [36 COMMENTS]

### Malabar type family released

BY DAN REYNOLDS

#### Popular articles

How to make a font

Best 'fonts' of 2008

Type history series

Web typography guide

33,667  
SUBSCRIBERS VIA RSS

MARCH FONTS!

<http://ilovetypography.com/>

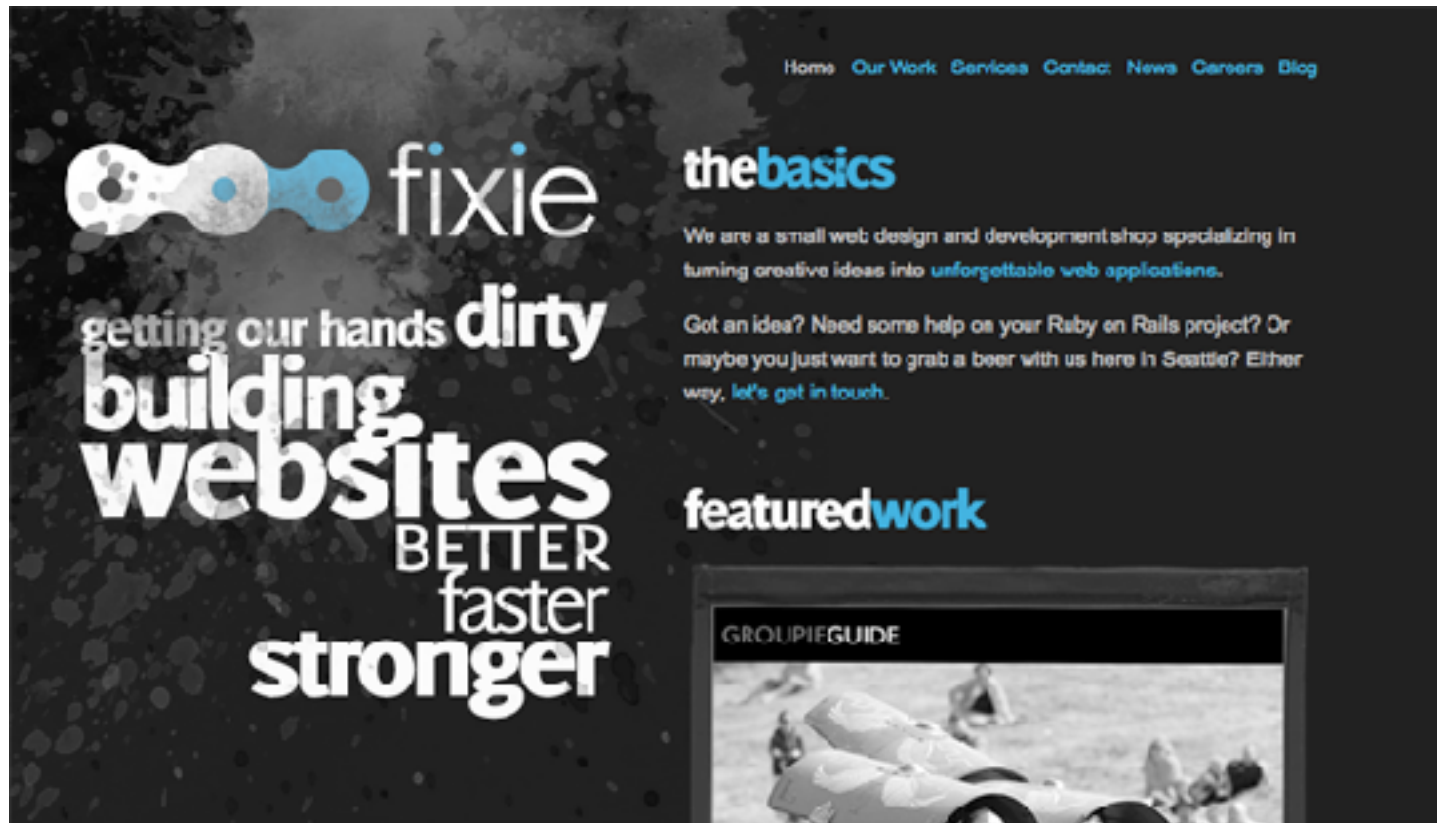


# CRAP: Contrast

- 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

**ten24media**

We are a full service marketing agency specializing in search engine optimization (SEO) and advertising (pay per click).  
We are friendly, straight-talking professionals who will put your products and services in front of motivated customers, increase traffic to your web site, and turn browsers into buyers.

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### Properties

ten24media network of Web properties bring people from around the globe together on a wide variety of subjects. From our life idea factory we're building an expanding portfolio of targeted niche sites that now reach over 1 million visitors a month. [More](#)

### Marketing Services

ten24media is doing or managing your own web project for other select clients (those with great ideas and realistic budgets) world-class web design, application development, search engine optimization (SEO) and pay-per-click advertising services. [More](#)

### Latest from Company Blog:

#### We Love Hockey... Rumors!

Like most Canadians, we get pretty darn excited right around the NHL trade deadline. This year we're trying this one a year and we get pretty excited about our next big hockey rumors. Here are some of the best hockey rumors that might actually be true. Check the new hockey rumor down below. [Read More](#)

<b>Smash!</b>	FEB/13/2008
<b>Latest Launch: iStock.com</b>	FEB/13/2008
<b>Google's SEO Starter Guide</b>	FEB/13/2008
<b>Our Favorite New Websites</b>	OCT/25/2007
<b>Microsoft and Google's New Search Results Page</b>	FEB/13/2008
<b>The Economist Finally Values His Own Effect</b>	AUG/03/2007

[Glossary](#) [Vocabulary](#) [Dictionary](#)

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We are a full service marketing agency specializing in search engine optimization (SEO) and advertising (pay per click).  
We are friendly, straight-talking professionals who will put your products and services in front of motivated customers, increase traffic to your web site, and turn browsers into buyers.

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

# CRAP: Repetition



Clearleft presents

## Silverback

Spontaneous, unobtrusive usability testing software for designers and developers.

-  Capture screen activity
-  Video the participant's reactions
-  Record the participant's voice
-  Add chapter markers on the fly
-  Control recording with the remote
-  Export to Quicktime

**Download**  
FREE FOR 30 DAYS



<http://silverbackapp.com/>

# CRAP: Alignment

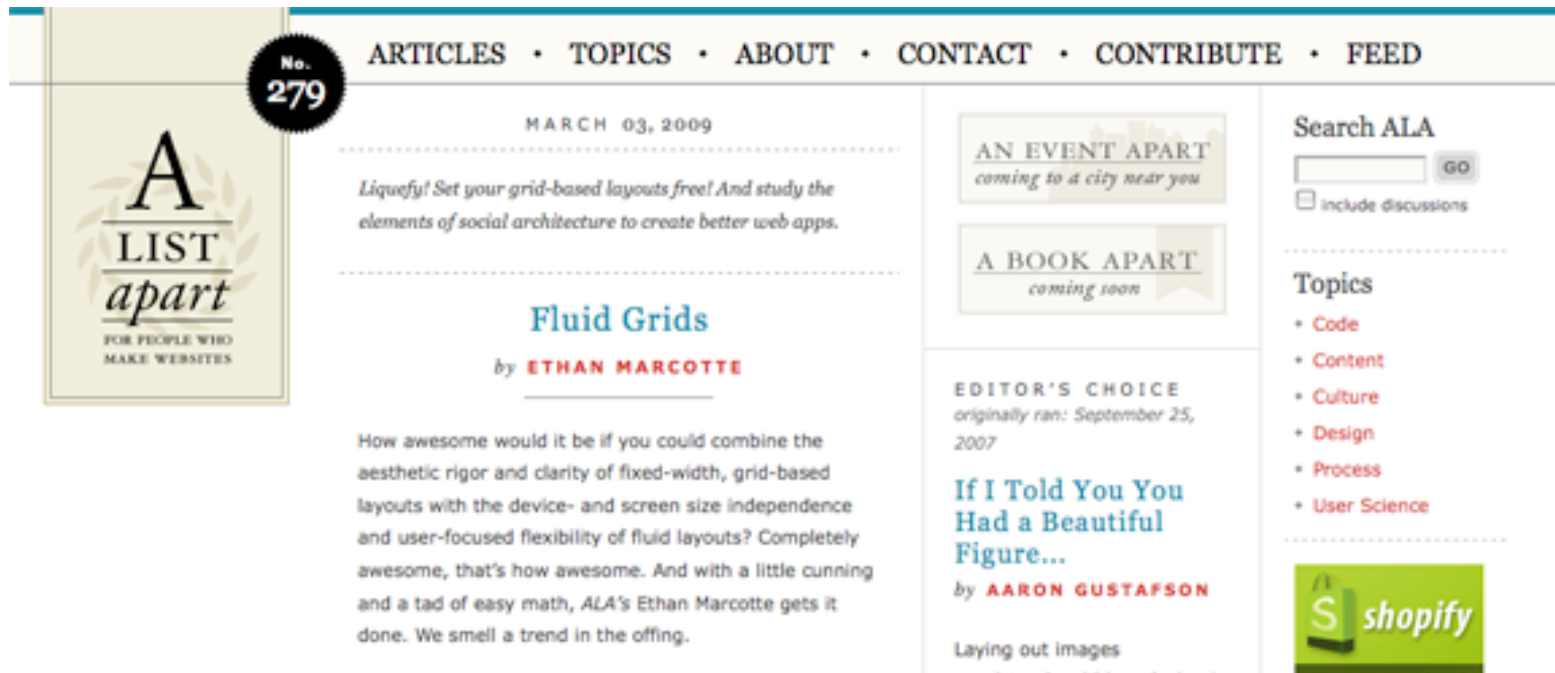
- Alignment
  - Can make designs looking amateur to professional
  - Easier for users to look for information
  - Try designing sites using a grid

# CRAP: Alignment



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

# CRAP: Alignment

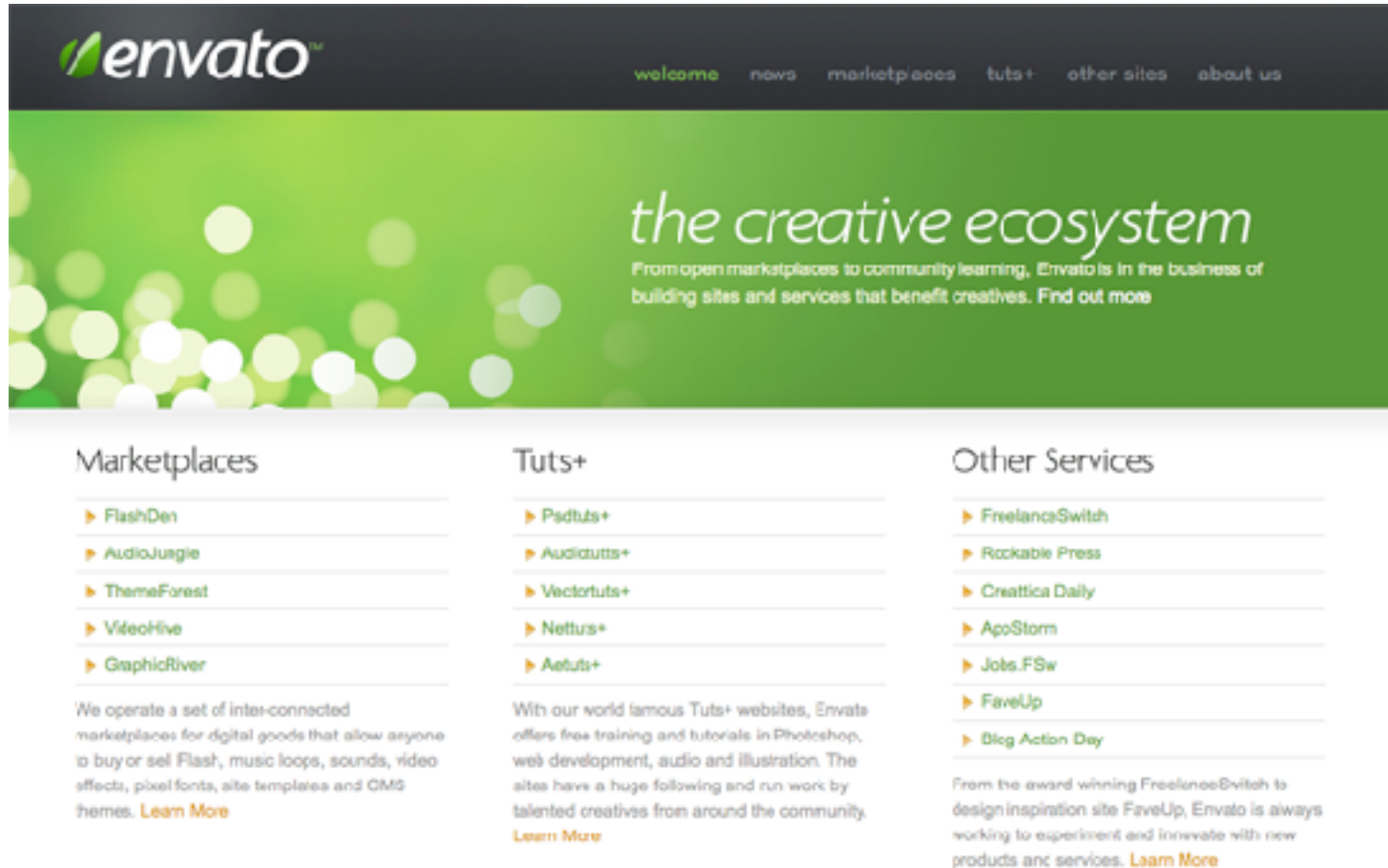




# CRAP: Proximity

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

# CRAP: Proximity

The image is a screenshot of the Envato website homepage. At the top, there is a dark grey header with the Envato logo on the left and a navigation menu on the right containing links for 'welcome', 'news', 'marketplaces', 'tuts+', 'other sites', and 'about us'. Below the header is a large green banner with a bokeh effect of white and yellow circles on the left. The text 'the creative ecosystem' is written in a white, elegant script font, followed by a smaller line of text: 'From open marketplaces to community learning, Envato is in the business of building sites and services that benefit creatives. Find out more'. Below the banner, the page is divided into three columns. The first column is titled 'Marketplaces' and lists five items: 'FlashDen', 'AudioJungle', 'ThemeForest', 'VideoHive', and 'GraphicRiver', each preceded by a small orange arrow. Below the list is a paragraph of text and a 'Learn More' link. The second column is titled 'Tuts+' and lists five items: 'Psdtuts+', 'Audiotuts+', 'Vectortuts+', 'Nettuts+', and 'Aetuts+', each preceded by a small orange arrow. Below the list is a paragraph of text and a 'Learn More' link. The third column is titled 'Other Services' and lists five items: 'FreelanceSwitch', 'Rockable Press', 'Creatica Daily', 'ApoStorm', and 'Jobs.FSW', each preceded by a small orange arrow. Below the list is a paragraph of text and a 'Learn More' link.

**envato™**

welcome news marketplaces **tuts+** other sites about us

*the creative ecosystem*

From open marketplaces to community learning, Envato is in the business of building sites and services that benefit creatives. Find out more

### Marketplaces

- ▶ FlashDen
- ▶ AudioJungle
- ▶ ThemeForest
- ▶ VideoHive
- ▶ GraphicRiver

We operate a set of inter-connected marketplaces for digital goods that allow anyone to buy or sell Flash, music loops, sounds, video effects, pixel fonts, site templates and CMS themes. [Learn More](#)

### Tuts+

- ▶ Psdtuts+
- ▶ Audiotuts+
- ▶ Vectortuts+
- ▶ Nettuts+
- ▶ Aetuts+

With our world famous Tuts+ websites, Envato offers free training and tutorials in Photoshop, web development, audio and illustration. The sites have a huge following and run work by talented creatives from around the community. [Learn More](#)

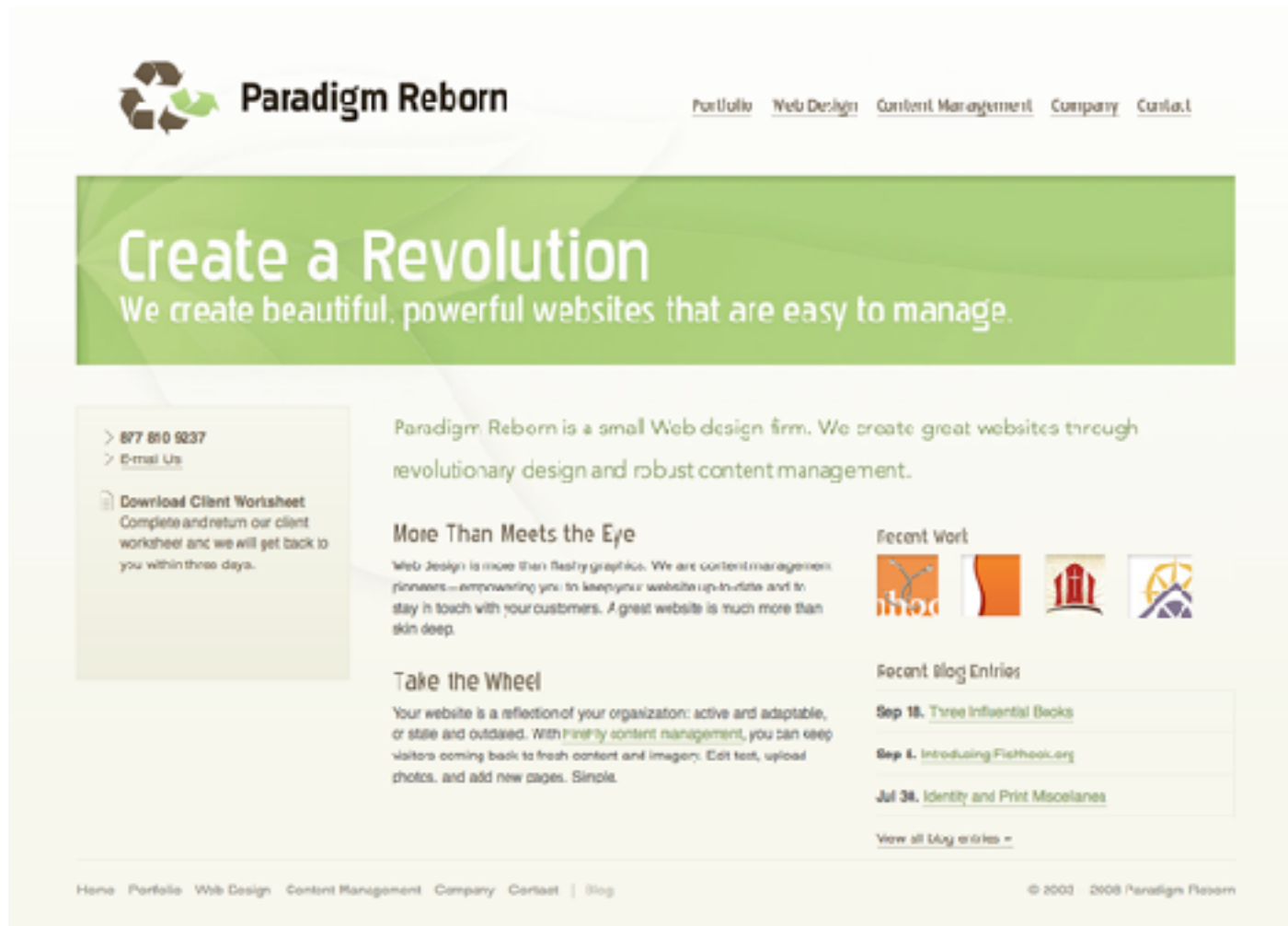
### Other Services

- ▶ FreelanceSwitch
- ▶ Rockable Press
- ▶ Creatica Daily
- ▶ ApoStorm
- ▶ Jobs.FSW
- ▶ FaveUp
- ▶ Blog Action Day

From the award winning FreelanceSwitch to design inspiration site FaveUp, Envato is always working to experiment and innovate with new products and services. [Learn More](#)

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

# Color (in software)

**Hue:** actual color

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

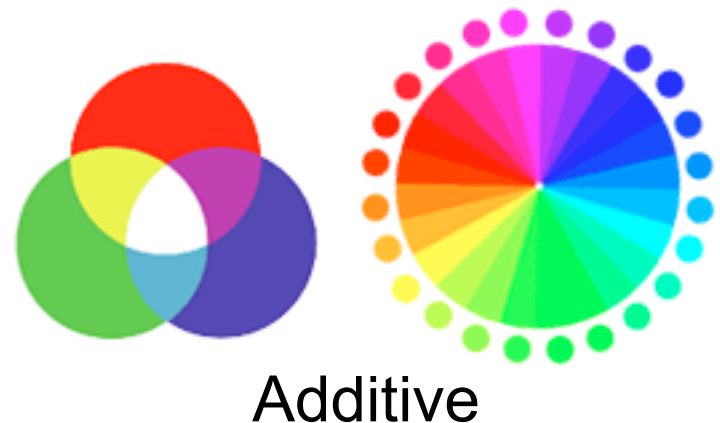
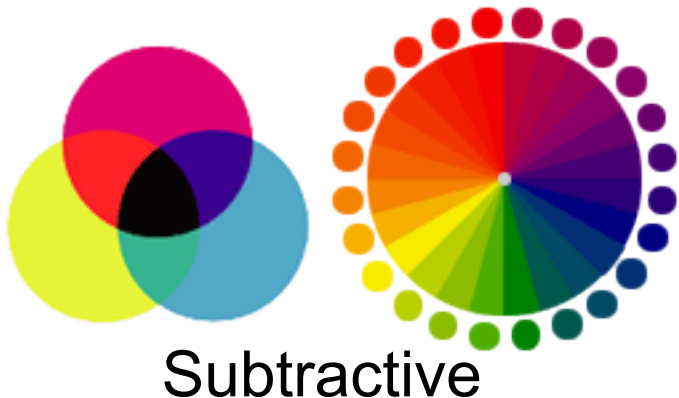
**Brightness / Value:** White (or black) mixed with color



# Color Systems

- We have 2 color systems

subtractive (print,paint), combined black, e.g. CMYK  
additive (computer), combined white, e.g. RGB



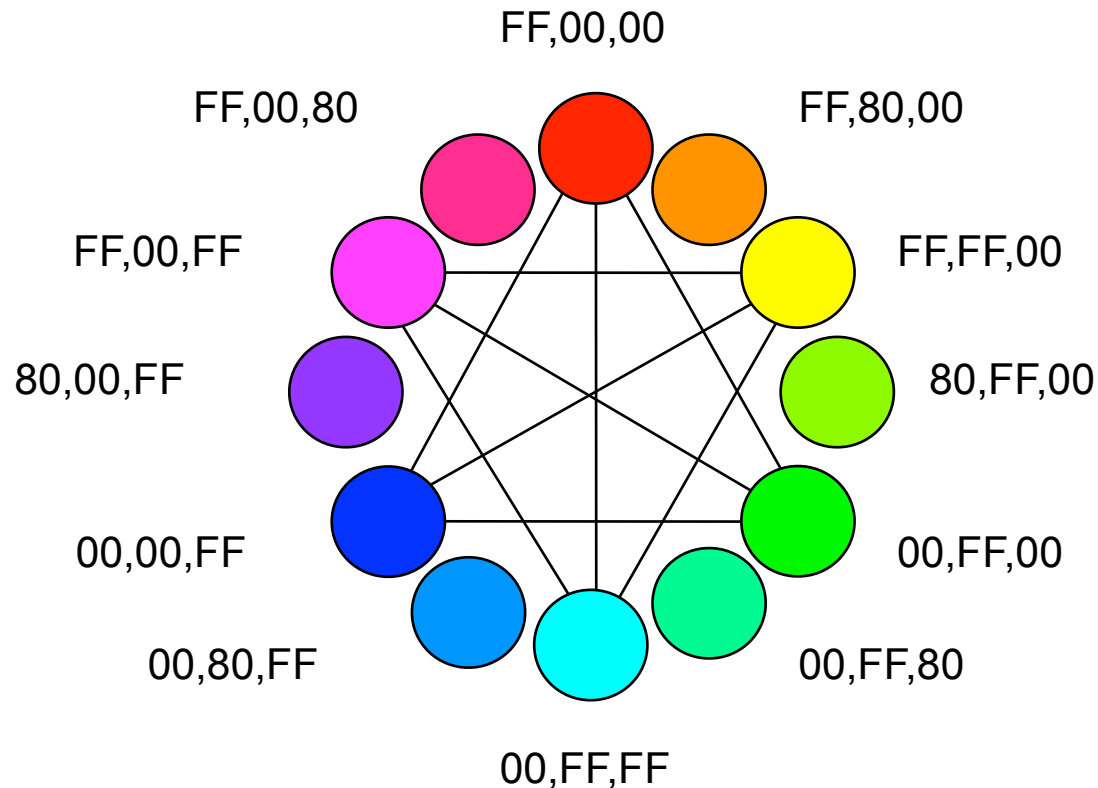


# Color Theory: Color Wheel

- visual representation of colors according to their chromatic relationship

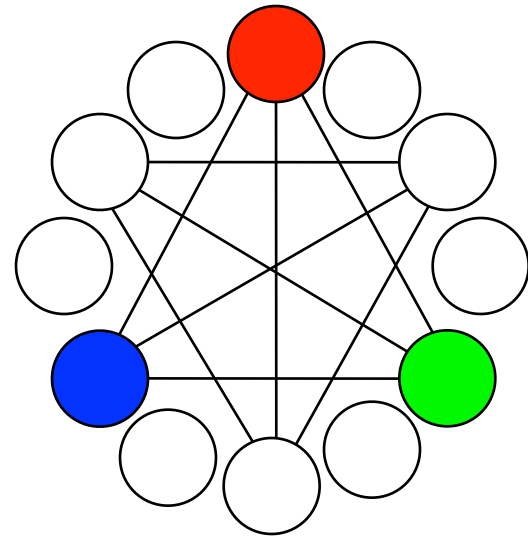


# Color Wheel

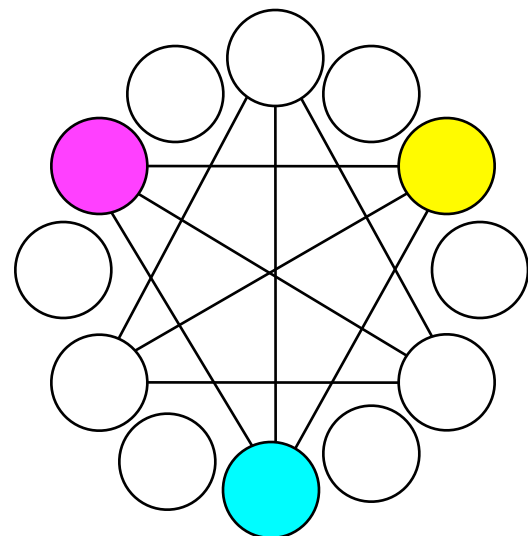


<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnhess/html/hess08142000.asp>

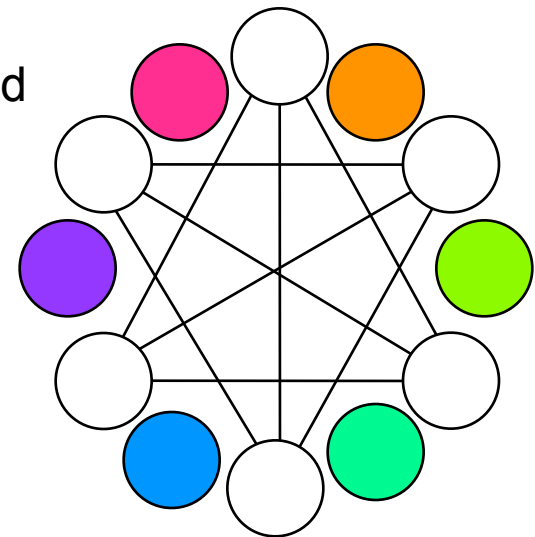
# Color Groups



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



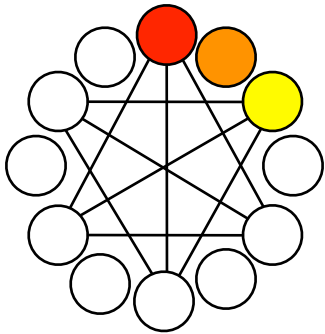
**Secondary additive colors:**  
By mixing primary ones  
cyan, magenta, yellow



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

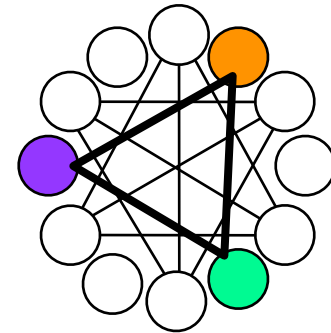
# Color Groups

## Analogous colors



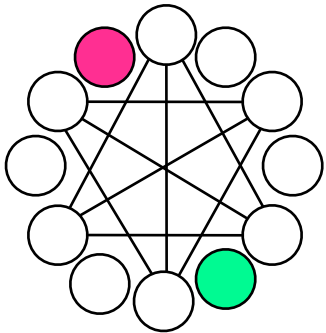
Adjacent colors  
are harmonious

## Triad colors



Equidistant colors  
create tension.

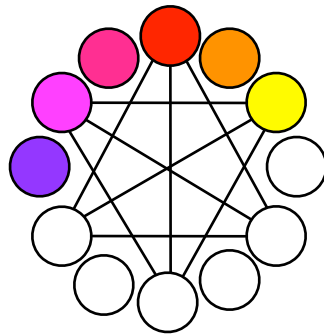
## Complementary colors



Opposite colors  
are used for  
contrast—text and  
background.

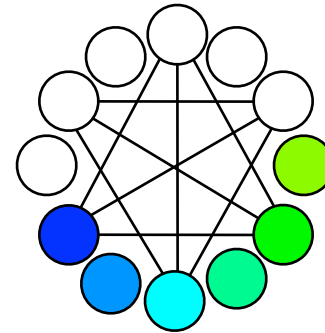
# Color Groups

## 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**



# Color Groups



**Split-Complementary**



**Triad**



**Double-Complementary**

# 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

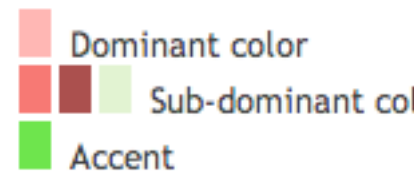
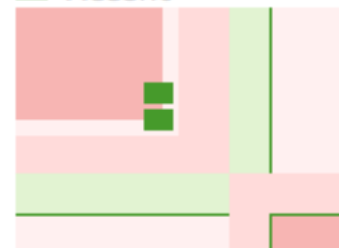
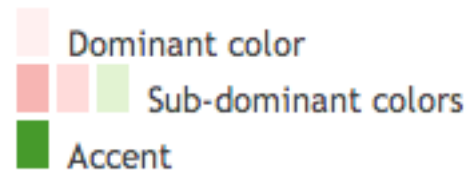
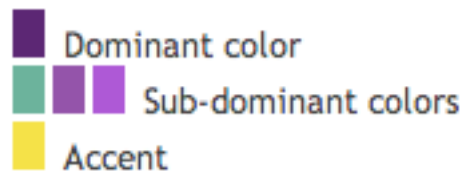
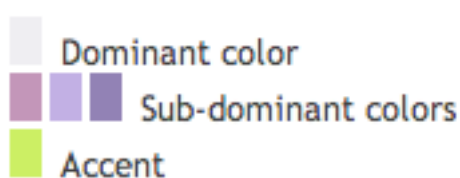




# Proportion and Intensity

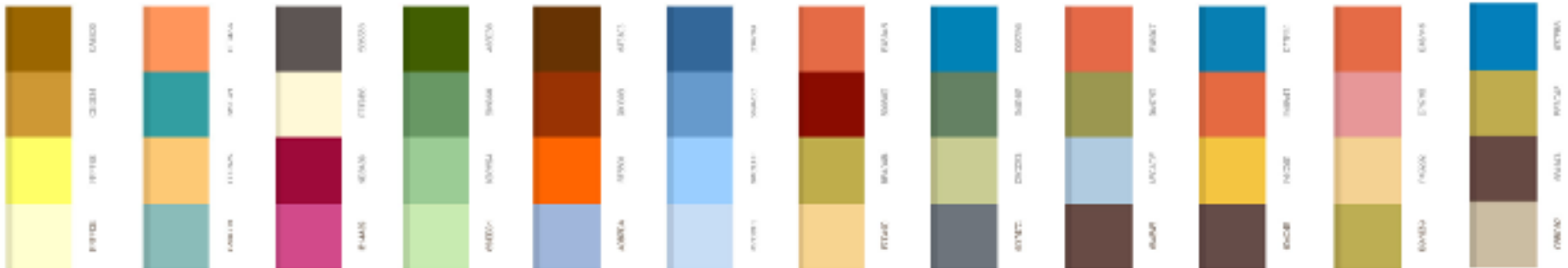
- Our eyes perceive a visual mix, depending on proportions
- Color of largest proportional area: dominant color (ground)
- Smaller areas are subdominant colors
- Accent colors have small relative area, but offer a contrast

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



# Color palettes

- many many many color palette 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

# Color and perception

- Brewer palettes  
selected for perceptual properties  
(created by Cynthia Brewer for cartography)
- Types of Brewer palettes :  
qualitative, sequential, diverging



# 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/>

B|B|C| UX&D <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 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