HTML5 & CSS3

Introduction

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Outline

1. History
2. Design
3. Rich Media
4. CSS3
5. Transitions
6. Selectors
7. Transformations
8. Visual Properties
9. Typography
10. Media Queries

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History

Brief History of Markup

- Invented by Tim Berners-Lee in 1991
- Based on an already existing language: SGML

- There's no HTML 1
- HTML 2.0 features was inspired by existing browsers' implementations
- HTML 4.01 published in 1999 by W3C

Turning Point

- XHTML 1.0: HTML reformulated as XML
- XHTML 1.1: real XML
  - IE could not render it!!
- W3C and implementations diverged
  - HTML was done at version 4.01
  - XHTML 2.0 wasn't going to be compatible with HTML
- Evolution aimed at semantic web concepts
  - every web page data is "understandable" by machines
  - data is interoperable, complex systems and mash-ups can be created

Rebellion

- Representatives from Opera, Apple, Mozilla proposed to extend HTML to allow the creation of web application
- Richer web pages, with animations, persistent data, better visuals
- The idea was rejected
- The Web Hypertext Application Technology Working Group was formed to carry on this vision

Reunification

- WHATWG worked on Web Forms 2.0 and Web Apps 1.0
- Over time, the specifications merged and have been called HTML5
- In 2009 W3C abandoned XHTML2 and embraced HTML5

Timeline

- When will HTML5 be ready?
  - Candidate reccomendation in 2012

- Does it matter?
  - Not really, what really matters is browsers support
  - Good news, most of them already do!

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Design

DOCTYPE

- The <!DOCTYPE> declaration is not an HTML tag; it is an instruction to the web browser about what version of HTML the page is written in.
- HTML5 DOCTYPE tells us something
- Because HTML5 needs to support existing content, the doc-type could be applied to an existing HTML 4.01 or XHTML 1.0 document.
- Any future versions of HTML will also need to support the existing content in HTML5, so the very concept of applying version numbers to markup documents is flawed
- Browsers supports features, not doctypes

HTML 5

- Semantic Tags
- Rich Media
- Rich Forms
- Local Storage
- Cross-document Messaging
- Web Sockets
- Geolocation
- Browser History

for browser support: http://www.findmebyip.com/litmus/

K e e p i t S i m p l e

- Simpler DOCTYPE
- Simpler <meta>, <script>, <link>
- Obsolete elements
  - frame, frameset, noframe, font, big, center, strike
- Old elements with different semantics

<b>
stylistically offset from the normal text

<i>

in an alternate voice or mood

Structural Elements

- Web developers use *div* elements to wrap semantic elements of the page

```
<div id="header">
   <h1>Title</h1>
</div>

<div id="navbar">
   <ul>
      <li><a href="#">Page 1</a><li>
      <li><a href="#">Page 2</a><li>
      ...
   </ul>
</div>

<div id="content">
   ...
</div>

<div id="footer">
   ...
</div>
```

Structural Elements

- Google's webstats: http://code.google.com/webstats/2005-12/classes.html

- HTML5 introduces new tags specifically designed to divide the page into logical regions

- *<header>, <footer>, <nav>, <section>, <article>, <aside>*

```
<header>
   <h1>Title</h1>
</header>

<nav>
   <ul>
      <li><a href="#">Page 1</a><li>
      <li><a href="#">Page 2</a><li>
      ...
   </ul>
</nav>

<section>
   <article>
      ...
   </article>
</section>

<footer>
   ...
</footer>
```

<section>
grouping thematically-related content

<header>

a group of introductory or navigational aids

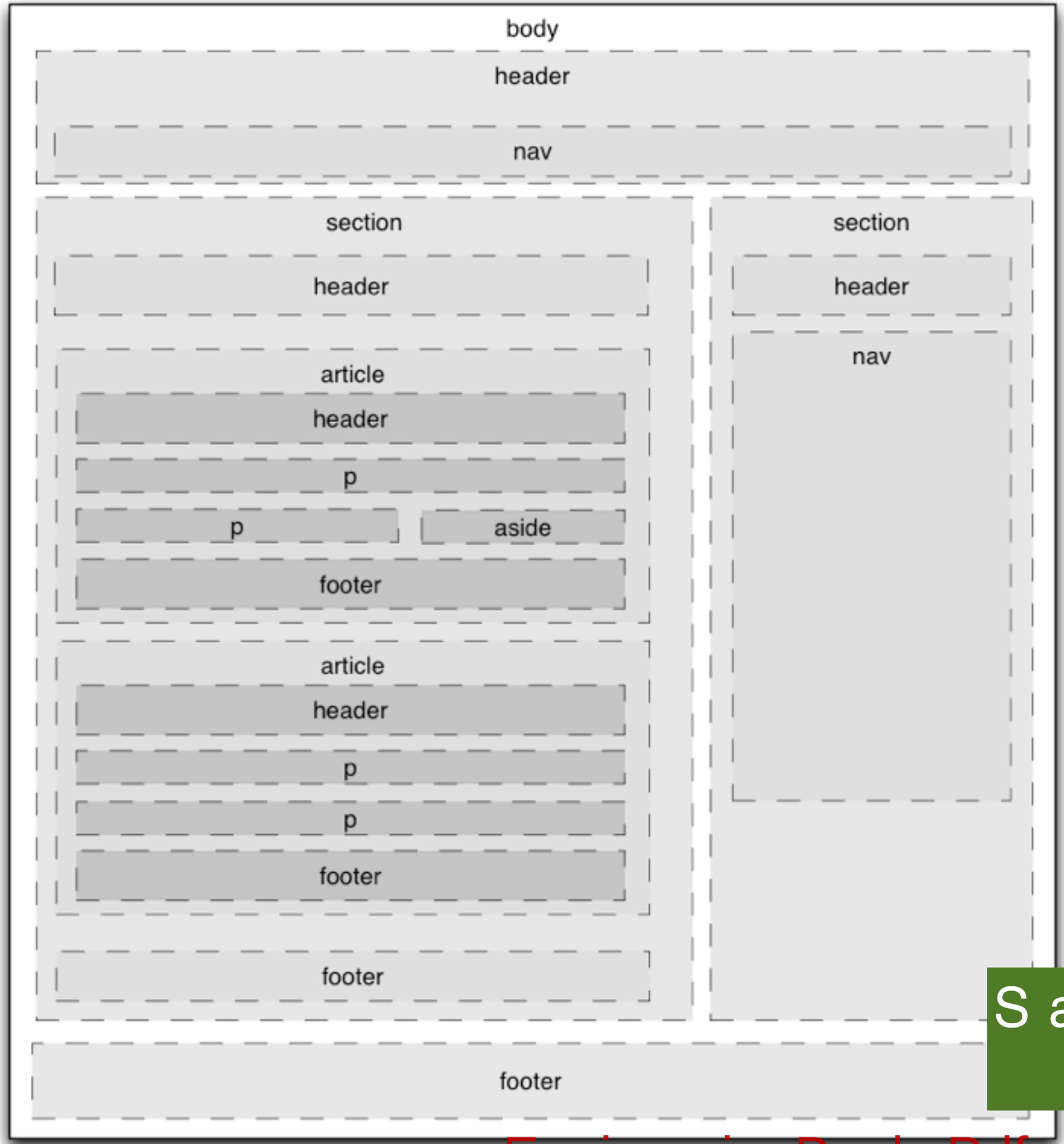
<footer>
information about its containing element

<aside>
related content

<nav>
navigation information

<article>

self-contained main content



Sample Blog Structure

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Rich Media

Rich Media

- Audio and video embed have a long history

```
<embed src="song.mp3" autostart="true"
loop="true" controller="true"></embed>
```

- Embed tag (not standard) or object tag (not understood by all browsers)

```
<object>
   <param name="src" value="song.mp3">
   <param name="controller" value="true">
   <embed ...></embed>
</object>
```

Rich Media

- Not every browser supported streaming this way
- Not every server was configured to serve it correctly
- Macromedia (now Adobe) realized Flash Player could be the perfect vehicle for audio and video (installed on 97% of machines)
- Flash plugin

Rich Media

- HTML5 supports audio and video natively rather then using plugins
- In HTML5 audio and video are first class citizens

<audio>

Codecs

- AAC [S4, C3, IOS]
- MP3 [IE9, S4, C3, IOS]
- Vorbis (OGG) [F3, C4, O10]

<video>

Codecs

- H.264 [IE9, S4, C3, IOS]
- Theora [F3.5, C4, O10]
- VP8 [IE9 with codec, F4, C5, O10.7, (Flash)]

Conversions

- Command line (ffmpeg)
- Free applications
- Commercial applications

Working with Multiple Formats

- Audio and video elements can specify multiple formats

- The *type* attribute helps the browsers to serve the right source

```
<audio controls>
   <source src=”song.mp3” type=”audio/mpeg”>
   <source src=”song.ogg” type=”audio/ogg”>
   <p>Fallback content here! Consider include a
   Flash Player for IE</p>
</audio>

<video controls poster="poster.png">
   <source src="earthsea.webm" type="video/webm">
   <source src="earthsea.mov" type="video/mp4">
   <source src="earthsea.ogv" type="video/ogg">
   <p>Please use a decent browser -_-'</p>
</video>
```

Rich Media Summary

- HTML5 provide the *<audio>* and *<video>* tag
- Similar syntax
- (boolean) attributes to control details: *autoplay*, *poster*, etc.
- Javascript API to control behavior
- Style with plain CSS
- Fallback content if tag is not supported

```
<audio src="song.mp3"></audio>

<audio id="player" src="song.mp3" autoplay loop
controls>
</audio>

<button
onclick="document.getElementById('player').play()
">
   Play
</button>
```

Canvas

- <canvas> element is an environment for creating dynamic images
- graphs, games
- example: http://www.spaceandflow.com/feature/second-html5canvas-experiment/

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CSS3

C S S 3

- Transparency
- Gradients
- Backgrounds
- Round borders
- Typography
- Shadows
- Transformations
- Transitions
- Layouts
- Advanced Selectors
- Flexible Box Model

for browser support: http://www.findmebyip.com/litmus/

Vendor-specific prefixes

- In addition to the CSS properties set by W3C, a browser developer can add browser-specific properties
  - specs still under development
  - try something new without waiting for W3C to accept it
- Each rendering engine has its own prefix

```
-webkit-transition: all 0.4s ease-in-out;
   -moz-transition: all 0.4s ease-in-out;
    -ms-transition: all 0.4s ease-in-out;
     -o-transition: all 0.4s ease-in-out;
        transition: all 0.4s ease-in-out;
```

Example (border-radius)

Extension	Engine	Browser(s)	Example
-moz-	Mozilla	Firefox	-moz-border-radius
-ms-	Trident	Internet Explorer	-ms-layout-grid
-o-	Presto	Opera	-o-border-radius
-webkit-	Webkit	Safari, Chrome	-webkit-border-radius

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Transitions

Transitions

- smoothing out value changes in your stylesheets
- easy to implement
- transition-property: The property to be transitioned
- transition-duration: How long the transition should last

```
<a href="#" class="foo">Transition me!</a>

a.foo {
   padding: 5px 10px;
   background: #9c3;
   transition-property: background;
   transition-duration: 0.3s;
   transition-timing-function: ease;
}

a.foo:hover {
   background: #690;
}
```

Transitions

- transition-timing-function: How the transition happens over time
- transition-delay

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Selectors

Selectors

- Powerful selectors to target specific elements
- Less classes, less elements = better code

Pseudo-class Selectors

- `p:hover {border: 1px solid #0c0; }`
- `div#intro p:first-child {font-size: 110%; }`
- `table tr:nth-child(odd) td {background: silver; }`
- `p::first-line {text-transform: uppercase; }`
- `p::first-letter {font-size: 200%; }`

- `abbr[title] {border-bottom: 1px dashed #0c0; }`

- `a[href="http://www.yourhtmlsource.com/"] {font-weight: bold; }`

- `a[title~="Mail"] {text-decoration: none; }`

Attribute Selectors

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Transformations

Transforms 2D

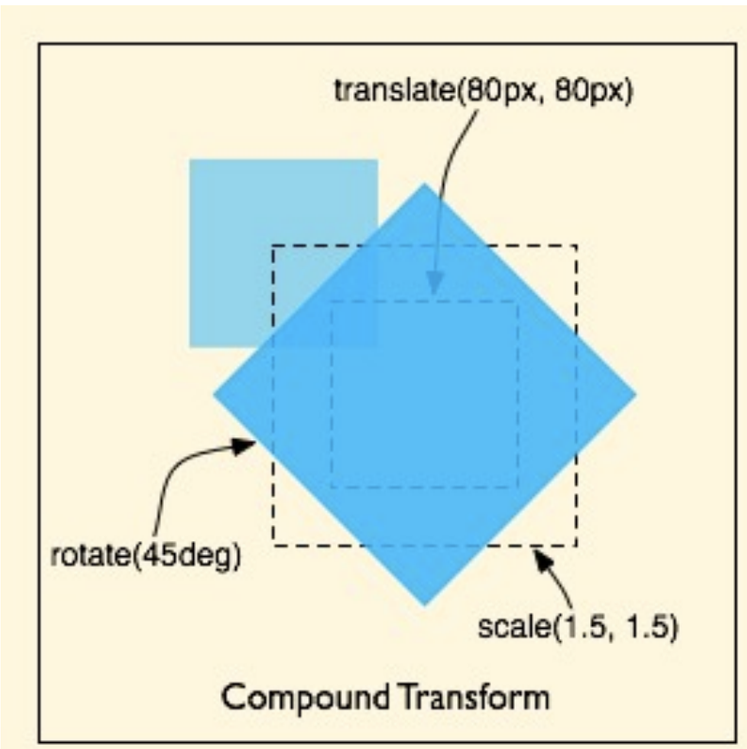
- SS 2D Transforms allows elements rendered by CSS to be transformed in two-dimensional space

- Transform functions: translate, scale, skew (both, X, Y), rotate (deg or rad), matrix

- Possible to define origin of transformation

```
transform: rotate(7.5deg);
-moz-transform: rotate(7.5deg);
-o-transform: rotate(7.5deg);
-webkit-transform: rotate(7.5deg);

transform-origin: 50% 50%;
-moz-transform-origin: 50% 50%;
-webkit-transform-origin: 50% 50%;
-o-transform-origin: 50% 50%;
```



Transform 3D

- translate3d(x, y, z), translateZ(z)
- scale3d(sx, sy, sz), scaleZ(sz)
- rotateX(angle), rotateY(angle), rotate3d(x, y, z, angle)
- perspective(p)
- matrix3d(…)
- backface-visibility

```
#contents {
     -webkit-perspective: 5000;
}

img {
   -webkit-transform: rotateY(45deg);
}
```

http://desandro.github.com/3dtransforms/examples/card-02-slide-flip.html

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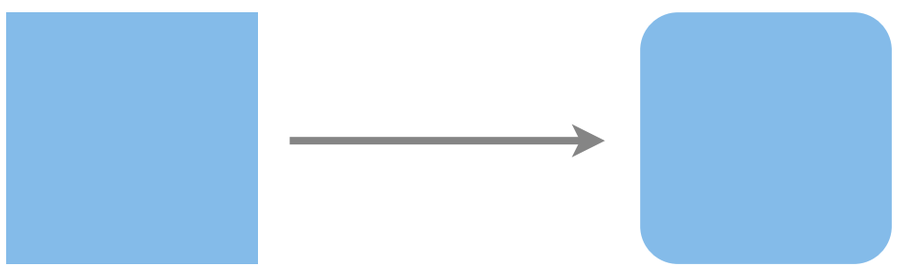
Visual Properties

Borders

- border-radius to set rounded corners (without images!)

- border-image to wrap an element with an image (not shown here)

```
-moz-border-radius: 8px;
-webkit-border-radius: 8px;
-o-border-radius: 8px;
border-radius: 8px;
```



Shadows

- Creates a shadow around a block-level element

- Parameters: offsets, blur radius, color, optional *inset*

- Multiple shadows allowed

```
#E {
   -moz-box-shadow: 0 0 5px #888;
   -webkit-box-shadow: 0 0 5px#888;
   box-shadow: 0 0 5px #888;
}
```

Opacity

- opacity
- rgba

Text Shadows

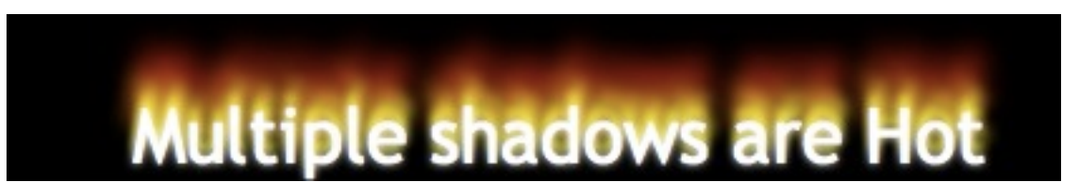
- Shadows for text elements

- This feature is NOT new in CSS3; it was originally proposed in CSS2. Safari had it from version 1

```
text-shadow: 0px 0px 10px black;
```

http://line25.com/articles/using-css-text-shadow-to-create-cool-text-effects

This text has a shadow



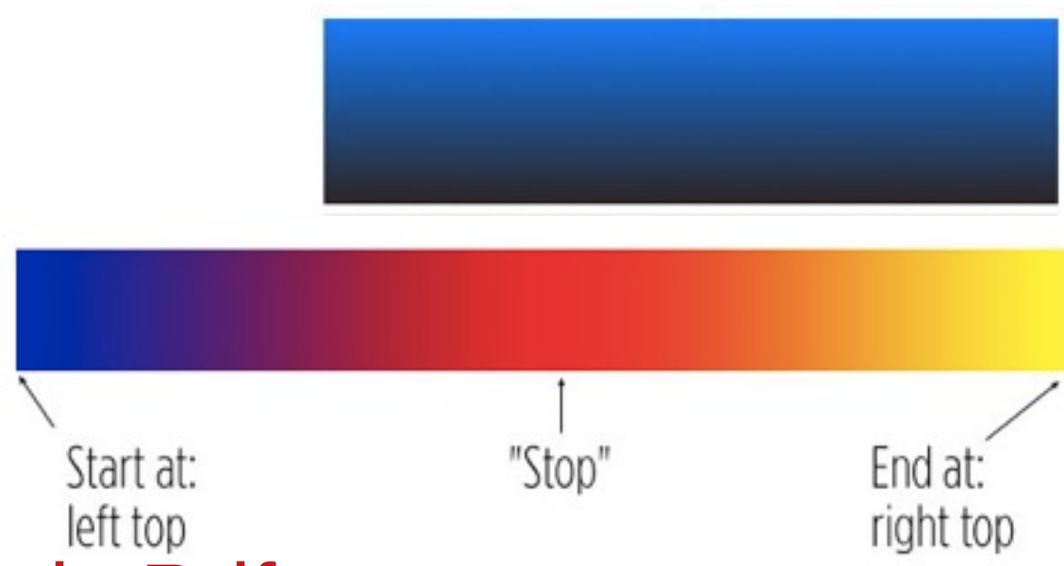
Gradients

http://gradients.glrzad.com/

- Gradients without using images
- Linear or radial
- Two or more colors
- ~~Syntax is not final~~

```
background-color: #1a82f7; /* fallback color */

background-image:
   -moz-linear-gradient(top, #2F2727, #1a82f7);
background-image:
   -webkit-gradient(linear, left top, left bottom,
   from(#1a82f7), to(#2F2727));
```



http://css3please.com/

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Typography

Web Safe Fonts

http://www.ampsoft.net/webdesign-l/WindowsMacFonts.html

Web Typography

- Real custom fonts downloaded automatically from server

- FontSquirrel's generator

- Different formats for different browsers (IE = eot, others = ttf/otf, iOS = svg)

```
@font-face {
    font-family: 'Mutlu';
    src: url('../fonts/mutlu-webfont.eot?')
format('eot'),
         url('../fonts/mutlu-webfont.woff')
format('woff'),
         url('../fonts/mutlu-webfont.ttf')
format('truetype'),
         url('../fonts/mutlu-
webfont.svg#webfont1zOSZuoH') format('svg');
}
```

Typography
Multicolumn Text

```
column-count: 2;
column-gap: 40px;

column-gap: 1em;
column-rule-width: thin;
column-rule-style: solid;
column-rule-color: black;
```

- Text on multiple columns
- Style the rule

normal css box model

with CSS3 column-count

```
<div id="entry">
  <p>...</p>
  <p>...</p>
</div>
```

```
#entry {
  column-count: 2;
}
```

Example Typography
Fonts and Columns

HTML5 & CSS3 PArTy ToNighT!

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Vestibulum tortor quam, feugiat vitae, ultricies eget, tempor sit amet, ante.

Donec eu libero sit amet quam egestas semper. Aenean ultricies mi vitae est. Mauris placerat eleifend leo.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Vestibulum tortor quam, feugiat vitae, ultricies eget, tempor sit amet, ante. Donec eu libero sit amet quam egestas semper. Aenean ultricies mi vitae est. Mauris placerat eleifend leo. Quisque sit amet est et sapien ullamcorper pharetra. Vestibulum erat wisi, condimentum sed, commodo vitae, ornare sit amet,

wisi. Aenean fermentum, elit eget tincidunt condimentum, eros ipsum rutrum orci, sagittis tempus lacus enim ac dui. Donec non enim in turpis pulvinar facilisis. Ut felis. Praesent dapibus, neque id cursus faucibus, tortor neque egestas augue, eu vulputate magna eros eu erat. Aliquam erat volutpat. Nam dui mi, tincidunt quis, accumsan porttitor, facilisis luctus, metus

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Vestibulum tortor quam, feugiat vitae, ultricies eget, tempor sit amet, ante.

Donec eu libero sit amet quam egestas semper. Aenean ultricies mi vitae est. Mauris placerat eleifend leo.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Vestibulum tortor quam, feugiat vitae, ultricies eget, tempor sit amet, ante. Donec eu libero sit amet quam egestas semper. Aenean ultricies mi vitae est. Mauris placerat eleifend leo. Quisque sit amet est et sapien ullamcorper pharetra. Vestibulum erat wisi, condimentum sed, commodo vitae, ornare sit amet,

wisi. Aenean fermentum, elit eget tincidunt condimentum, eros ipsum rutrum orci, sagittis tempus lacus enim ac dui. Donec non enim in turpis pulvinar facilisis. Ut felis. Praesent dapibus, neque id cursus faucibus, tortor neque egestas augue, eu vulputate magna eros eu erat. Aliquam erat volutpat. Nam dui mi, tincidunt quis, accumsan porttitor, facilisis luctus, metus

Pellentesque habitant morbi tristique senectus et netus et

Donec eu libero sit amet quam egestas semper. Aenean

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Media Queries

Media Queries in CSS2

- specific stylesheet to come into play under certain conditions
- enabled in CSS2 by media types: media Types let you specify a type of media to target
- print, handheld, braille, projection, screen, tv, ...
- not very popular aside screen and print

```
@media print {
  /* style sheet for print goes here */
}
```

Media Queries in CSS3

- CSS3 take this idea and extend it

- Rather than looking for a type of device they look at the capabilities of the device

- width, height, orientation, resolution, ...

```
<link type="text/css"
   rel="stylesheet"
   media="only screen and (max-device-width: 480px)"
   href="http://example.com/iPhone.css"
/>

<link type="text/css"
   rel="stylesheet"
   media="only screen and (min-device-width: 768px)
   and (max-device-width: 1024px)"
   href="http://example.com/iPad.css"
/>
```

Responsive Web Design

Control Mobile Appearance

- <meta name="viewport" content="width=device-width, minimum-scale=1.0, maximum-scale=1.0" />

Media Queries

```
<link href="css/style.css" media="screen" rel="stylesheet" type="text/css" />

<link href="css/large.css" media="only screen and (min-width: 1280px)"
rel="stylesheet" type="text/css" />

<link href="css/small.css" media="only screen and (max-width: 960px)"
rel="stylesheet" type="text/css" />

<link href="css/iphone.css" media="only screen and (max-device-width:480px)"
rel="stylesheet" type="text/css" />
```

Case of study: NoPlaceLike

Conclusions

- HTML5 and CSS3 propose new, powerful ways to develop web sites and web applications
- You can start using them NOW! (but check browser support! http://www.findmebyip.com/litmus/)
- Provide a javascript fallback when necessary
  - how? use modernizr.js (http://www.modernizr.com/)