

One Page Everywhere

Fluid, Responsive Design with Semantic.gs

Finished Responsive Site

Prat Itharat, M.D. - Board Certified Ophthalmologist - Chromium


Prat Itharat, M.D. - Board

dl.dropbox.com/u/101667/DrItharat/index.html

Prat Itharat M.D. Board Certified Ophthalmologist

History

Dr. Prat Itharat (Dr. I) was born in New York. He holds Ivy League degrees in the Biological Basis of Behavior and Psychology from the University of Pennsylvania. He graduated cum laude and was a Benjamin Franklin Scholar. After college, he received a research fellowship and spent a year at the National Institutes of Health and Aging



He then obtained a Masters of Science in Biology at the University of Michigan in Ann Arbor. He was one of the few graduate student instructors to receive an honorarium for outstanding teaching

Dr. Itharat then returned to New York to complete his medical school training at the State University of New York - Upstate (Syracuse). He graduated in the top 10% of his medical school class and was elected to the Alpha Omega Alpha honors society. After internship, he finished a three year ophthalmology residency at the prestigious Vanderbilt University in Nashville

Contact

Dr. Prat Itharat has been practicing in the Charleston area for the last three years. He is pleased to announce his current affiliations with the Storm Eye Institute at the Medical University of South Carolina and with Charleston Cornea. He is currently welcoming his former patients and accepting new patients. You may reach Dr. Prat Itharat at the following address:

Prat Itharat, M.D.
186 Seven Farms Drive, Suite F, #115
Daniel Island, SC 29492
Email: itharat.prat@gmail.com (preferable)
Telephone: 843-608-0393

He is currently seeing patients at (this may be subject to change):

Storm Eye Institute
167 Ashley Avenue
Charleston, SC 29425
843-792-8100
(note: wait times at this clinic may be lengthy)

The Citadel
Military Cdr
South Ca

Directions Search nearby more

Map Sat Ter

The Semantic Grid System

- Grid System
- Fluid or Fixed
 - Responsive
 - Semantic
- Sass or LESS

Grid Systems



[Download](#) - CSS, sketch paper, and templates for: Acom, Fireworks, Flash, InDesign, GIMP, Inkscape, Illustrator, OmniGraffle, Photoshop, QuarkXPress, Visio, Exp Design. Repository at [GitHub](#).

960 GRID SYSTEM

ADS BY FUSION

Big ol' DOWNLOAD button :)

 INTERVIEW ABOUT 960.gs

VIEW SLIDES ABOUT THE 960 GRID SYSTEM

ADAPT.JS - ADAPTIVE CSS

CUSTOM CSS GENERATOR

GRID OVERLAY BOOKMARK

Essence

The 960 Grid System is an effort to streamline web development workflow by providing commonly used dimensions, based on a width of 960 pixels.

Dimensions

The 12-column grid is divided into portions that are 60 pixels wide. The 16-column grid consists of 40 pixel increments. Each column has 10 pixels of

Purpose

The premise of the system is ideally suited to rapid prototyping, but it would work equally well when integrated into a production environment.

Grid System Fixed Size

Twitter

960
GRID SYSTEM

Download - CSS, sketch paper, and templates for: Acom, Fireworks, Flash, InDesign, GIMP, Inkscape, Illustrator, OmniGraffle, Photoshop, QuarkXPress, Visio, Exp Design. Repository at [GitHub](#).

ADS BY FUSION

Big ol' DOWNLOAD button :)

the changelog INTERVIEW ABOUT 960.gs

VIEW SLIDES ABOUT THE 960 GRID SYSTEM

ADAPT.JS - ADAPTIVE CSS

CUSTOM CSS GENERATOR

GRID OVERLAY BOOKMARK

Essence

The 960 Grid System is an effort to streamline web development workflow by providing commonly used dimensions, based on a width of 960 pixels. There are two variants: 12 and 16 columns, which can be used separately or in tandem. [Read more.](#)

Dimensions

The 12-column grid is divided into portions that are 60 pixels wide. The 16-column grid consists of 40 pixel increments. Each column has 10 pixels of margin on the left and right, which create 20 pixel wide gutters between columns. [View demo.](#)

Purpose

The premise of the system is ideally suited to rapid prototyping, but it would work equally well when integrated into a production environment. There are printable sketch sheets, design layouts, and a CSS file that have identical measurements.

More Columns

For those more comfortable designing on a 24-column grid, an alternative version is also included. It consists of columns 30 pixels wide, with 10 pixel gutters, and a 5 pixel buffer on each side of the container. This keeps text from touching browser chrome — helpful for devices like the iPhone, where a lower-case "l" or "1" might be easily missed. [View demo.](#)

Source Order

By utilizing the *push_XX* and *pull_XX* classes, elements can be rearranged, independent of the order in which they appear in the markup. This allows you to keep more pertinent info higher in the HTML, without sacrificing precision in your page layout. For instance, view the source code of this page to see how the *H1* tag has been re-positioned.

Keynote Wireframe Toolkit — 12 col [SHOW GRID](#)

Brand Rich Media — 12 col [SHOW GRID](#)

Wireframe Toolkit
For Keynote
version 3.1

Examples Buzz Media FAQ Tips \$12 BUY NOW

BR BRAND RICH MEDIA
DESIGN, TOOLS & TEMPLATES

PROJECTS CONTACT

Grid System Fixed Size



Semantic.gs: Fixed or Fluid

```
// Specify number of columns, set column and gutter widths
$columns: 12;

$column-width: 60;

$gutter-width: 20;

// Remove the definition below for a pixel-based layout
$total-width: 100%;
```

Grid System Clutter

```
<body>
  <div class="container_12">

    <h1 class="grid_4 push_4">
      960 Grid System
    </h1>
    <!-- end .grid_4.push_4 -->

    <p id="description" class="grid_4 pull_4">
      ...
    </p>
    <!-- end #description.grid_4.pull_4 -->
```


Grid System Clutter

```
<body>
  <div class="container_12">

    <h1 class="grid_4 push_4">
      960 Grid System
    </h1>
    <!-- end .grid_4.push_4 -->

    <p id="description" class="grid_4 pull_4">
      ...
    </p>
    <!-- end #description.grid_4.pull_4 -->
```

Semantic.gs: Layout in Stylesheets

```
<body>
  <div id="main-content">
    <header id="banner">
      <h1> ... </h1>
    </header>
    <section id="history">
      <h2>History</h2>
      <p> ... </p>
    </section>
```

```
#banner {
  @include column(12);
  padding-top: 3em; }

#history {
  @include column(6); }

#contact {
  @include column(6); }
```

Semantic.gs Source Code

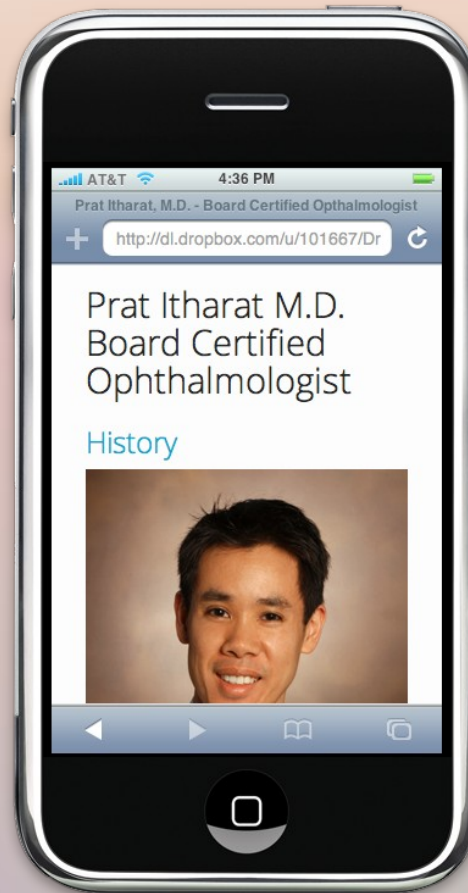
```
1 $column-width: 60px;
2 $gutter-width: 20px;
3 $columns: 12;
4 @function gridsystem-width($columns:$columns) {
5   > @return ($column-width * $columns) + ($gutter-width * $columns);
6 }
7 $total-width: gridsystem-width($columns);
8 // Uncomment these two lines and the star-hack width/margin lines below to enable sub-pixel fix for IE6 & 7. See http://tylertate.com/blog/2012/01/05/subpixel-rounding.html
9 // $min-width: 999999;
10 // $correction: 0.5 / $min-width * 100;
11 @mixin clearfix() {
12   > *zoom:1;
13
14   > &:before,
15   > &:after {
16     > content:"";
17     > display:table;
18   }
19   > &:after {
20     > clear:both;
21   }
22 }
23 body {
24   > width: 100%;
25   > @include clearfix();
26 }
27 @mixin row($columns:$columns) {
28   > display: block;
29   > width: $total-width*((($gutter-width + gridsystem-width($columns))/gridsystem-width($columns));
30   > margin: 0 $total-width*((($gutter-width*.5)/gridsystem-width($columns))-1);
31   > // *width: $total-width*((($gutter-width + gridsystem-width($columns))/gridsystem-width($columns))- $correction;
32   > // *margin: 0 $total-width*((($gutter-width*.5)/gridsystem-width($columns))-1)- $correction;
33   > @include clearfix();
34 }
35 @mixin column($x,$columns:$columns) {
36   > display: inline;
37   > float: left;
38   > width: $total-width*(((($gutter-width+$column-width)*$x)-$gutter-width) / gridsystem-width($columns));
39   > margin: 0 $total-width*((($gutter-width*.5)/gridsystem-width($columns));
40   > // *width: $total-width*(((($gutter-width+$column-width)*$x)-$gutter-width) / gridsystem-width($columns))- $correction;
41   > // *margin: 0 $total-width*((($gutter-width*.5)/gridsystem-width($columns))- $correction;
42 }
43 @mixin push($offset:1) {
44   > margin-left: $total-width*((($gutter-width+$column-width)*$offset) / gridsystem-width($columns)) + $total-width*((($gutter-width*.5)/gridsystem-width($columns));
45 }
46 @mixin pull($offset:1) {
47   > margin-right: $total-width*((($gutter-width+$column-width)*$offset) / gridsystem-width($columns)) + $total-width*((($gutter-width*.5)/gridsystem-width($columns));
48 }
```

Sass

```
$beige: #FDFDFD;  
$outer-pad: 5%;  
body {  
    background: $beige;  
    font-weight: 300;  
    line-height: 1.5em;  
}  
#main-content {  
    padding-right: $outer-pad;  
    padding-left: $outer-pad;  
}
```

```
body {  
    background: #fdfdfd;  
    font-weight: 300;  
    line-height: 1.5em;  
}  
#main-content {  
    padding-right: 5%;  
    padding-left: 5%;  
}
```

Semantic.gs: Responsive (iPhone)



Semantic.gs: Responsive (800x600)



Semantic.gs: Responsive (iPad)


iPad 100%

http://dl.dropbox.com/u/101667/DrItharat/index.html

Prat Itharat M.D. Board Certified Ophthalmologist

History

Dr. Prat Itharat (Dr. I.) was born in New York. He holds Ivy League degrees in the Biological Basis of Behavior and Psychology from the University of Pennsylvania. He graduated cum laude and was a Benjamin Franklin Scholar. After college, he received a research fellowship and spent a year at the National Institutes of Health and Aging.



He then obtained a Masters of Science in Biology at the University of Michigan in Ann Arbor. He was one of the few graduate student instructors to receive an honorarium for outstanding teaching.

Contact

Dr. Prat Itharat has been practicing in the Charleston area for the last three years. He is pleased to announce his current affiliations with the Storm Eye Institute at the Medical University of South Carolina and with Charleston Cornea. He is currently welcoming his former patients and accepting new patients. You may reach Dr. Prat Itharat at the following address:

Prat Itharat, M.D.
186 Seven Farms Drive, Suite F, #115
Daniel Island, SC 29492
Email: itharat.prat@gmail.com
(preferable)
Telephone: 843-608-0393

He is currently seeing patients at (this may be subject to change):

Semantic.gs: Responsive (1920x1080)

Prat Itharat, M.D. - Board C

dl.dropbox.com/u/101667/DrItharat/index.html

Van Dam Iron Works Ben Keep It! BMark.us Watch Queue Listen Queue Read Queue Heavens-Above Ho GRWebDev Other Bookmarks

Prat Itharat M.D. Board Certified Ophthalmologist

History

Dr. Prat Itharat (Dr. I.) was born in New York. He holds Ivy League degrees in the Biological Basis of Behavior and Psychology from the University of Pennsylvania. He graduated cum laude and was a Benjamin Franklin Scholar. After college, he received a research fellowship and spent a year at the National Institutes of Health and Aging.


He then obtained a Masters of Science in Biology at the University of Michigan in Ann Arbor. He was one of the few graduate student instructors to receive an honorarium for outstanding teaching.

Dr. Itharat then returned to New York to complete his medical school training at the State University of New York - Upstate (Syracuse). He graduated in the top 10% of his medical school class and was elected to the Alpha Omega Alpha honors society. After internship, he finished a three year ophthalmology residency at the prestigious Vanderbilt University in Nashville TN, training with some of the most renowned physicians in ophthalmology. At Vanderbilt, Dr. Itharat was elected as Chief Resident by his peers and faculty. He taught medical students and residents and served on the residency admission committee.

Dr. Itharat is board certified by the American Board of Ophthalmology (the nation's oldest medical specialty certifying board), having scored in the top 10% of ophthalmologists.

He is trained in the latest, small incision, sutureless cataract surgery. He practices comprehensive ophthalmology, including but not limited to cataracts, dry eyes, glaucoma, diabetes, macular degeneration, ocular trauma and injuries.

A great believer in education, Dr. Itharat currently serves as a clinical instructor at the Storm Eye Institute/Medical University of South Carolina. He teaches the next generation of ophthalmologists medical and surgical knowledge and techniques. His dedication to teaching



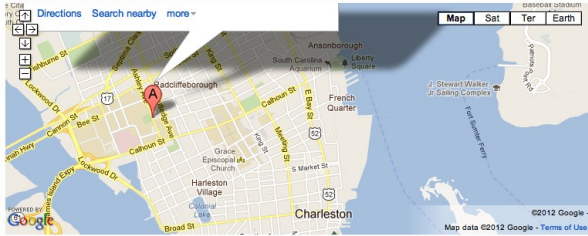
Contact

Dr. Prat Itharat has been practicing in the Charleston area for the last three years. He is pleased to announce his current affiliations with the Storm Eye Institute at the Medical University of South Carolina and with Charleston Cornea. He is currently welcoming his former patients and accepting new patients. You may reach Dr. Prat Itharat at the following address:

Prat Itharat, M.D.
186 Seven Farms Drive, Suite F, #115
Daniel Island, SC 29492
Email: itharat.prat@gmail.com (preferable)
Telephone: 843-608-0393

He is currently seeing patients at (this may be subject to change):

Storm Eye Institute
167 Ashley Avenue
Charleston, SC 29425
843-792-8100
(note: wait times at this clinic may be lengthy)



Map Sat Ter Earth

©2012 Google - Map data ©2012 Google - Terms of Use

View Larger Map

Beyond the Grid


Prat Itharat M.D.
Board Certified Ophthalmologist

History

Dr. Prat Itharat (Dr. I) was born in New York. He holds Ivy League degrees in the Biological Basis of Behavior and Psychology from the University of Pennsylvania. He graduated cum laude and was a Benjamin Franklin Scholar. After college, he received a research fellowship and spent a year at the National Institutes of Health and Aging.

He then obtained a Masters of Science in Biology at the University of Michigan in Ann Arbor. He was one of the few graduate student instructors to receive an honorarium for outstanding teaching.

Dr. Itharat then returned to New York to complete his medical school training at the State University of New York - Upstate (Syracuse). He graduated in the top 10% of his medical school class and was elected to the Alpha Omega Alpha honors society. After internship, he finished a three year ophthalmology residency at the prestigious Vanderbilt University in Nashville



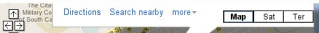
Contact

Dr. Prat Itharat has been practicing in the Charleston area for the last three years. He is pleased to announce his current affiliations with the Storm Eye Institute at the Medical University of South Carolina and with Charleston Cornea. He is currently welcoming his former patients and accepting new patients. You may reach Dr. Prat Itharat at the following address:

Prat Itharat, M.D.
186 Seven Farms Drive, Suite F, #115
Daniel Island, SC 29492
Email: itharat.prat@gmail.com (preferable)
Telephone: 843-608-0393

He is currently seeing patients at (this may be subject to change):

Storm Eye Institute
167 Ashley Avenue
Charleston, SC 29425
843-792-8100
(note: wait times at this clinic may be lengthy)




Prat Itharat M.D.
Board Certified Ophthalmologist

History

Dr. Prat Itharat (Dr. I) was born in New York. He holds Ivy League degrees in the Biological Basis of Behavior and Psychology from the University of Pennsylvania. He graduated cum laude and was a Benjamin Franklin Scholar. After college, he received a research fellowship and spent a year at the National Institutes of Health and Aging.

He then obtained a Masters of Science in Biology at the University of Michigan in Ann Arbor. He was one of the few graduate student instructors to receive an honorarium for outstanding teaching.

Dr. Itharat then returned to New York to complete his medical school training at the State University of New York - Upstate (Syracuse). He graduated in the top 10% of his medical school class and was elected to the Alpha Omega Alpha honors society. After internship, he finished a three year ophthalmology residency at the prestigious Vanderbilt University in Nashville TN, training with some of the most renowned physicians in ophthalmology. At Vanderbilt, Dr. Itharat was elected as Chief Resident by his peers and faculty. He taught medical students and residents and served on the



Contact

Dr. Prat Itharat has been practicing in the Charleston area for the last three years. He is pleased to announce his current affiliations with the Storm Eye Institute at the Medical University of South Carolina and with Charleston Cornea. He is currently welcoming his former patients and accepting new patients. You may reach Dr. Prat Itharat at the following address:

Prat Itharat, M.D.
186 Seven Farms Drive, Suite F, #115
Daniel Island, SC 29492
Email: itharat.prat@gmail.com (preferable)
Telephone: 843-608-0393

He is currently seeing patients at (this may be subject to change):

Storm Eye Institute
167 Ashley Avenue
Charleston, SC 29425
843-792-8100
(note: wait times at this clinic may be lengthy)



Media Queries

Prat Itharat, M.D. - Board Certified Ophthalmologist - Chromium


Prat Itharat, M.D. - Board

dl.dropbox.com/u/101667/Dritharat/index.html

Prat Itharat M.D. Board Certified Ophthalmologist

History

Dr. Prat Itharat (Dr. I) was born in New York. He holds Ivy League degrees in the Biological Basis of Behavior and Psychology from the University of Pennsylvania. He graduated cum laude and was a Benjamin Franklin Scholar. After college, he received a research fellowship and spent a year at the National Institutes of Health and Aging.



He then obtained a Masters of Science in Biology at the University of Michigan in Ann Arbor. He was one of the few graduate student instructors to receive an honorarium for outstanding teaching.

Dr. Itharat then returned to New York to complete his medical school training at the State University of New York - Upstate (Syracuse). He graduated in the top 10% of his medical school class and was elected to the Alpha Omega Alpha honors society. After internship, he finished a three year ophthalmology residency at the prestigious Vanderbilt University in Nashville.

Contact

Dr. Prat Itharat has been practicing in the Charleston area for the last three years. He is pleased to announce his current affiliations with the Storm Eye Institute at the Medical University of South Carolina and with Charleston Cornea. He is currently welcoming his former patients and accepting new patients. You may reach Dr. Prat Itharat at the following address:

Prat Itharat, M.D.
186 Seven Farms Drive, Suite F, #115
Daniel Island, SC 29492
Email: itharat.prat@gmail.com (preferable)
Telephone: 843-608-0393

He is currently seeing patients at (this may be subject to change):

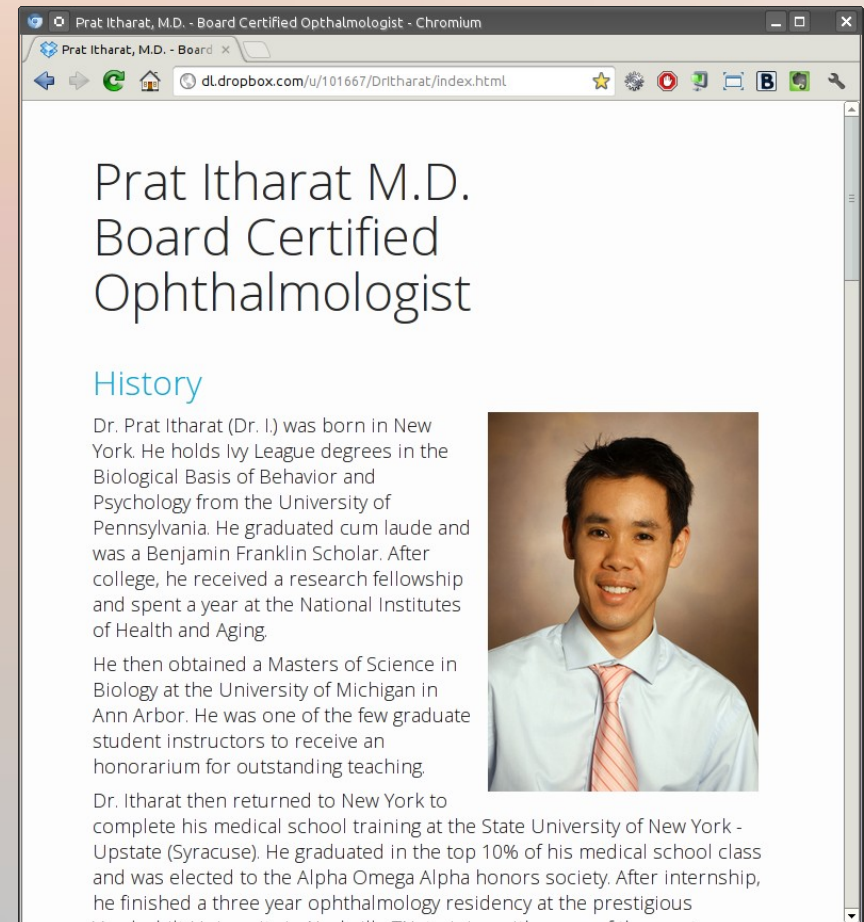
Storm Eye Institute
167 Ashley Avenue
Charleston, SC 29425
843-792-8100
(note: wait times at this clinic may be lengthy)

The City of Charleston, South Carolina
Directions Search nearby more
Map Sat Ter

Media Queries: Breakpoint @ 900px

```
@media screen and (max-width:
900px) {
    #history {
        @include column(12);
    }

    #contact {
        @include column(12);
    }
}
```



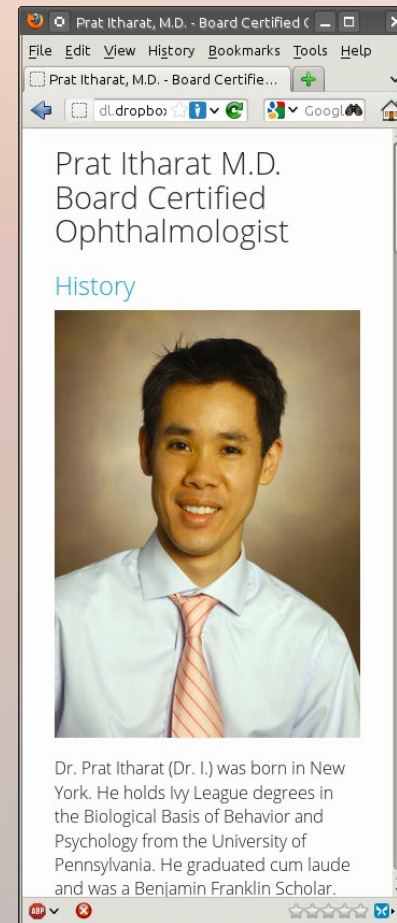
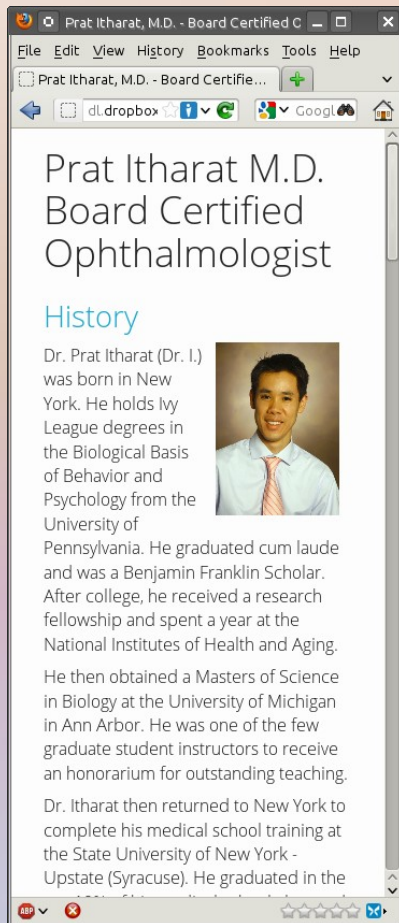
Choosing Media Query Breakpoints

1. Start big and go to small
2. Shrink window until something looks funky
3. Create a breakpoint, fix what looks funky
4. Repeat from #2
5. No need to worry about specific devices!

Media Queries: Breakpoint @ 480px

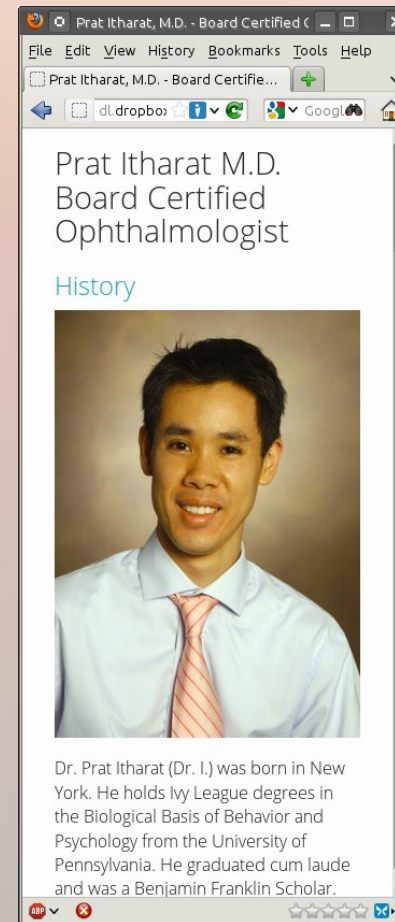


Media Queries: Breakpoint @ 360px



Media Queries: Breakpoint @ 360px

```
@media screen and (max-width:
360px) {
    h1 { font-size: 1.8em; }
    h2 { font-size: 1.5em; }
    #headshot {
        float: none;
        padding-right: 0;
        padding-left: 0;
        width: 100%; }
}
```



Crabby old man kitteh

tellz u boring storeez

Fixes for Old Internet Explorers

```
<head>
```

```
...
```

```
  <!--[if lt IE 9]>
```

```
    <script type="text/javascript" src="js/modernizr.js">
```

```
  </script>
```

```
  <script type="text/javascript" src="js/respond.min.js">
```

```
  </script>
```

```
  <![endif]-->
```

```
...
```

```
</head>
```


Things to Watch Out For

- Right and left padding and margins on grid elements can be finicky. Best to just wrap them with a div.
- Image sizing: small screens get large images and have to scale the images down.
- Can't really re-order sections.

Some Useful Utilities

- **Semantic.gs: The Semantic Grid System**
 - <http://semantic.gs>
- **Sass: Syntactically Awesome Stylesheets**
 - <http://sass-lang.com/>
- **Chrome Window Resizer Extension**
 - <https://chrome.google.com/webstore/detail/kkelicaakdanhinjdeammilcgefongh>
- **Modernizr**
 - <http://modernizr.com/>
- **Respond.js**
 - <https://github.com/scottjehl/Respond>

Additional Credits

- **iPhone screenshots simulated using iPhony**
 - <http://www.marketcircle.com/iphoney/>
- **iPad screenshots simulated using iPad Peek**
 - <http://ipadpeek.com/>
- **I can has cheeseburger?**
 - <http://icanhascheezburger.com/>

Additional Resources for Responsive and Mobile Web Design

- Luke Wroblewski @lukew <http://www.lukew.com/>

Contact Me

- Meatspace: Ben Rousch
- Email: brousch@gmail.com
- Twitter: [@brousch](https://twitter.com/brousch)
- Google+
 - <https://plus.google.com/102663141609195877664/>

One Page Everywhere

Fluid, Responsive Design with Semantic.gs

Hello. My name is Ben Rousch. I'm the entire IT department including the Manager of Information Systems for Van Dam Iron Works.

I also help organize and run a few of the local user and technical groups in West Michigan.

I've been making websites since I first discovered the Internet at The University of Michigan about 15 years ago.

Today I'm going to talk about a few of the tools and techniques you can use to make websites which will work across a variety of screen sizes and devices. This is often called "Responsive Design."

Finished Responsive Site



To do this, I'm going to introduce you to a small website I created for my friend Dr. Itharat. As I think you'll see, this website looks good on any size screen or device, and it wasn't very difficult to make it so.

One of the tools I used is called The Semantic Grid System, or semantic.gs. So let's start by talking about that.

The Semantic Grid System

- Grid System
- Fluid or Fixed
 - Responsive
 - Semantic
- Sass or LESS

The Semantic Grid System by default is a 12 column, 960 pixel grid. It can be fluid or fixed width. It works well with responsive designs. It works well with semantically-named elements. And it uses SASS or LESS to save you some CSS coding time.

Don't worry, I'll go into more detail on a few of these terms later.

Grid Systems



CSS grid systems have been around for a while. I've used Blueprint in the past, but there are many others available. Today I'm going to pick on The 960 Grid system.

Because keeping a lot of different elements lined up in CSS is hard, the general idea is that the grid system gives you a framework of columns and gutters to help you line things up nicely on your page.

Grid System Fixed Size



But there are a couple of problems with the typical grid system:

First, they're usually a fixed width. Often 960 pixels. This does not lend itself well to responsive design, which needs to adapt to many different screen sizes.

Here is the 960 grid on a large screen monitor. I think the empty areas on the sides are pretty excessive.

Grid System Fixed Size



Here is the same site on an iPhone.

I don't think I need to say anything about how this looks.

Semantic.gs: Fixed or Fluid

```
// Specify number of columns, set column and gutter widths
$columns: 12;
$column-width: 60;
$gutter-width: 20;

// Remove the definition below for a pixel-based layout
$total-width: 100%;
```

In contrast, The Semantic Grid System lets you use a fixed size if you want to, but it can also provide a fluid grid for you.

Fluid means that the sizes of elements change as the width of the screen changes. Instead of pixels, you use percentages and EMs to lay out element sizes and positions.

With semantic.gs, you can switch between fixed and fluid simply by commenting out this one line in your stylesheet.

Grid System Clutter

```
<body>
  <div class="container_12">

    <h1 class="grid_4 push_4">
      960 Grid System
    </h1>
    <!-- end .grid_4.push_4 -->

    <p id="description" class="grid_4 pull_4">
      ...
    </p>
    <!-- end #description.grid_4.pull_4 -->
```

Another problem with typical grid systems is they clutter up your HTML with extra divs and span or grid properties.

Here's some of the HTML from that 960Grid page we just saw.

Grid System Clutter

```
<body>
  <div class="container_12">

    <h1 class="grid_4 push_4">
      960 Grid System
    </h1>
    <!-- end .grid_4.push_4 -->

    <p id="description" class="grid_4 pull_4">
      ...
    </p>
    <!-- end #description.grid_4.pull_4 -->
```

This is layout stuff. It really doesn't belong in your HTML. It belongs in your stylesheets. And that's where The Semantic Grid System puts it.

Semantic.gs: Layout in Stylesheets

```
<body>
  <div id="main-content">
    <header id="banner">
      <h1> ... </h1>
    </header>
    <section id="history">
      <h2>History</h2>
      <p> ... </p>
    </section>
  </div>
</body>
```

```
#banner {
  @include column(12);
  padding-top: 3em; }

#history {
  @include column(6); }

#contact {
  @include column(6); }
```

This is a snippet of HTML and Sass from the Dr. Itharat website. You can see the column information is in the stylesheet. There's no sign of it in the HTML.

Semantic.gs Source Code

```
1 $column-width: 60px;
2 $gutter-width: 20px;
3 $columns: 12;
4 @function gridsystem-width($columns:$columns) {
5   @return ($column-width * $columns) + ($gutter-width * $columns);
6 }
7 $total-width: gridsystem-width($columns);
8 // Uncomment these two lines and the star-back width/margin lines below to enable sub-pixel fix for IE6 & 7. See http://tjlerate.com/blog/2012/01/05/subpixel-rounding.html
9 // $star-width: 500000;
10 // $correction: 0.5 / $star-width * 100;
11 @mixin clearfix {
12   *zoom: 1;
13 }
14 &before,
15 &after {
16   content: "";
17   display: table;
18 }
19 &before,
20 &after {
21   clear: both;
22 }
23 &body {
24   width: 100%;
25   @include clearfix();
26 }
27 @mixin row($columns:$columns) {
28   display: block;
29   width: $total-width * (($gutter-width + gridsystem-width($columns)) / gridsystem-width($columns));
30   margin: 0 $total-width * (($gutter-width * 3) / gridsystem-width($columns)) * -1;
31   // width: $total-width * (($gutter-width + gridsystem-width($columns)) / gridsystem-width($columns)) - $correction;
32   // margin: 0 $total-width * (($gutter-width * 3) / gridsystem-width($columns)) * -1 - $correction;
33   @include clearfix();
34 }
35 @mixin column($v,$columns:$columns) {
36   display: inline;
37   float: left;
38   width: $total-width * (((($gutter-width*$column-width)*$v) - $gutter-width) / gridsystem-width($columns));
39   margin: 0 $total-width * (($gutter-width * 3) / gridsystem-width($columns));
40   // width: $total-width * (((($gutter-width*$column-width)*$v) - $gutter-width) / gridsystem-width($columns)) - $correction;
41   // margin: 0 $total-width * (($gutter-width * 3) / gridsystem-width($columns)) - $correction;
42 }
43 @mixin push($offset: 1) {
44   margin-left: $total-width * (((($gutter-width*$column-width)*$offset) / gridsystem-width($columns)) + $total-width * (($gutter-width * 5) / gridsystem-width($columns)));
45 }
46 @mixin pull($offset: 1) {
47   margin-right: $total-width * (((($gutter-width*$column-width)*$offset) / gridsystem-width($columns)) + $total-width * (($gutter-width * 5) / gridsystem-width($columns)));
48 }
```

The program that enables this magic is incredibly small. It's only about 50 lines of code which defines a Sass mixin.

Sass

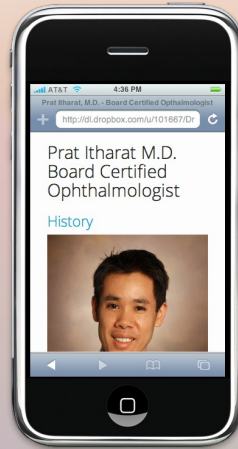
```
$beige: #FDFDFD;
$outter-pad: 5%;
body {
  background: $beige;
  font-weight: 300;
  line-height: 1.5em;
}
#main-content {
  padding-right: $outter-pad;
  padding-left: $outter-pad;
}

body {
  background: #fdfdfd;
  font-weight: 300;
  line-height: 1.5em;
}
#main-content {
  padding-right: 5%;
  padding-left: 5%;
}
```

Sass is a tool that extends regular CSS by giving you nice features such as variables and math capabilities. It takes your SCSS code, combines it with the semantic.gs mixin, and generates the plain old CSS for your website.

Here is a snippet of SCSS from the Dr. Itharat website showing how variables get compiled to values in the final CSS.

Semantic.gs: Responsive (iPhone)



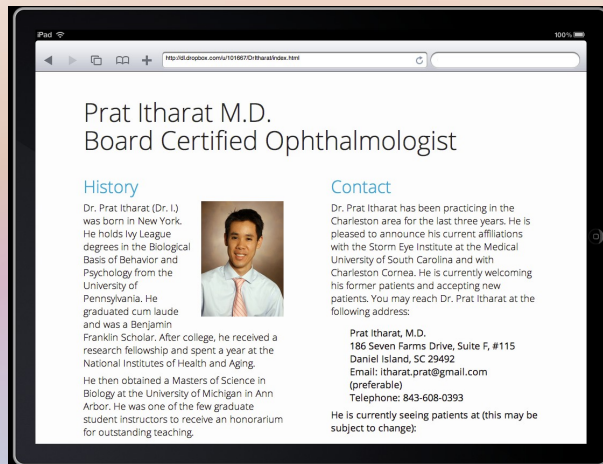
Moving on to what responsive means. As I mentioned earlier, “responsive” refers to a website's ability to adapt to different screen resolutions, sizes, and devices.

Semantic.gs: Responsive (800x600)



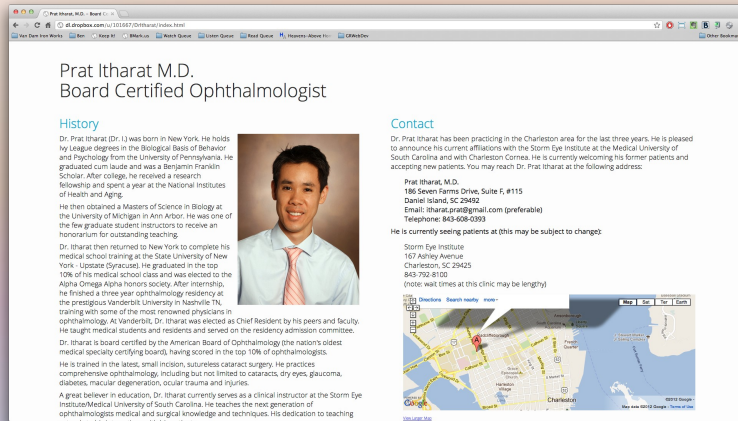
A typical grid system works well for a typical sized desktop or laptop screen, but it doesn't work well for very large screens or smartphones.

Semantic.gs: Responsive (iPad)



This is partly because the grid is defined in the HTML, which means you can't change it on the fly without resorting to Javascript tricks or completely different versions of the HTML for different sized screens.

Semantic.gs: Responsive (1920x1080)

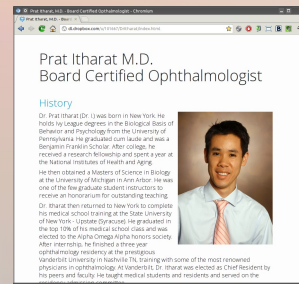
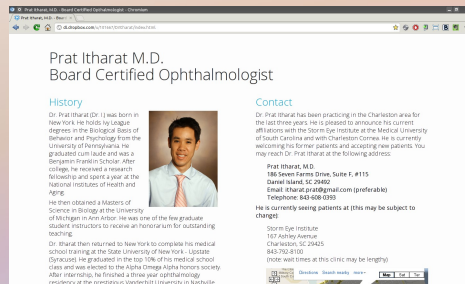


These were screenshots of the Dr. Itharat website on an iPhone, at 800x600 resolution, on an iPad, and at 1920x1080 or HD resolution.

One more time

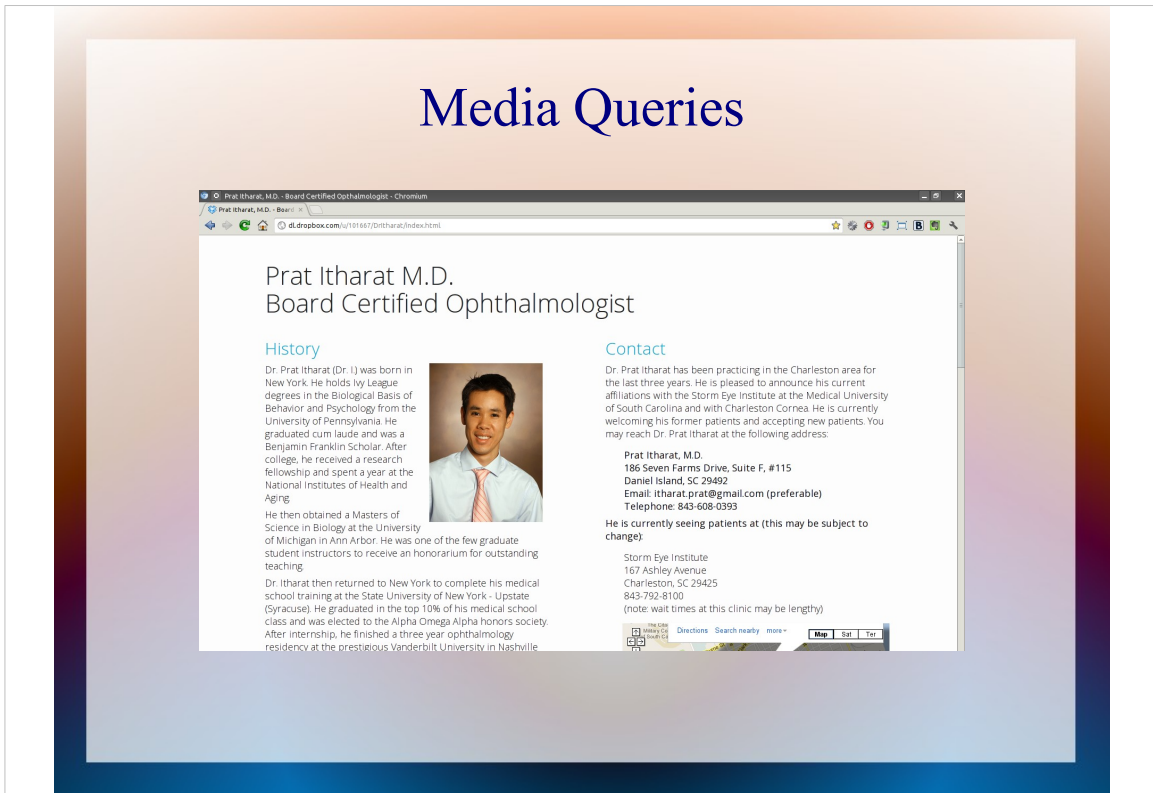
* show them again *

Beyond the Grid



So The Semantic Grid System is what gives us an easy way to lay things out and have them change size as the screen size changes, but what about when we need to drastically change the layout, such as when we go from 2 columns to 1 in the Dr Itharat website?

Media Queries



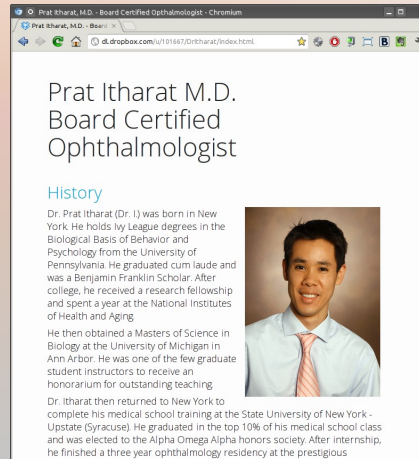
That's where a relatively new CSS feature called Media Queries comes in.

Media queries let you specify new values for CSS elements depending on whether certain criteria are met. For this page, I am only checking whether the width of the viewport is below a certain value.

Here is the large version of the site.

Media Queries: Breakpoint @ 900px

```
@media screen and (max-width: 900px) {  
  #history {  
    @include column(12);  
  }  
  
  #contact {  
    @include column(12);  
  }  
}
```



When the site drops below 900 pixels, this media query kicks in. It changes the number of columns occupied by the History and Contact sections from 6 to 12, effectively making them each take up the full width of the screen instead of half.

Nothing else changes here. All of the font sizes stay the same and the image size is still 40% of the History column width.

So how do I figure out where to make a media query breakpoint?

Choosing Media Query Breakpoints

1. Start big and go to small
2. Shrink window until something looks funky
3. Create a breakpoint, fix what looks funky
4. Repeat from #2
5. No need to worry about specific devices!

I like to start with the largest version of the website and shrink it.

When some element of the site starts to look too cramped or overflows its bounds, that's where you create a media query breakpoint.

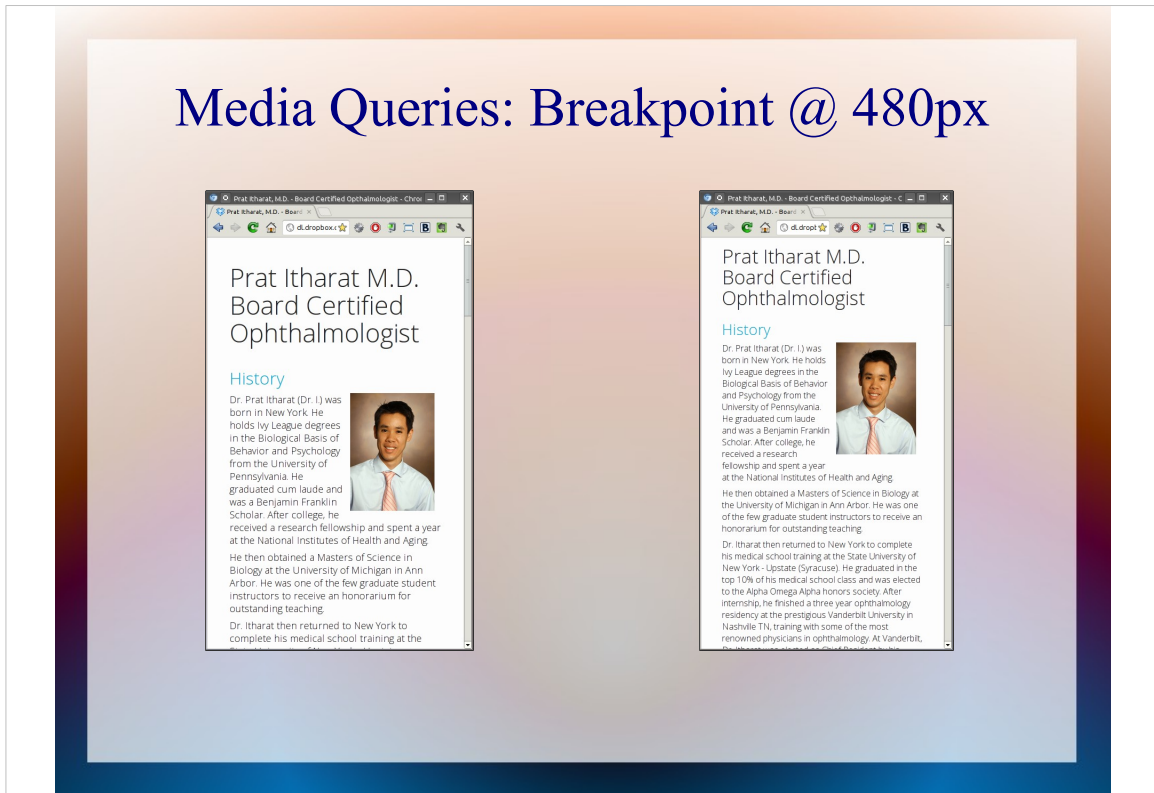
You then change things like your font sizes or element widths until the site looks good, and start shrinking it again.

This tends to go pretty fast because at each breakpoint you're not re-designing the whole site, you're making the minimum changes needed to make it look good again.

I should note that many other people like to start with a mobile-optimized version of the website and make media query breakpoints as the site gets bigger. I suggest you try it both ways and see which method you prefer.

One of the best things about this technique is that you don't need to worry about specific devices, you're just going by how your site looks at each width.

Media Queries: Breakpoint @ 480px



The image on the left shows the web site at a width of about 481 pixels. You can see the title has reached the right edge of the page and is about to wrap to a fourth line. Also the text to the left of the picture is getting cramped. This is a good point for another media query break point.

The image on the right is at 479 pixels width and has had several changes to font sizes so things will look good for a while as we shrink it further.

Media Queries: Breakpoint @ 360px

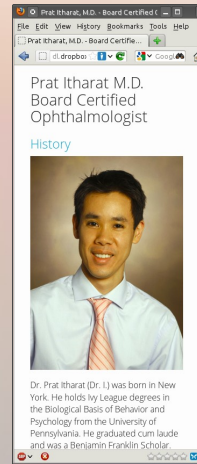


This time the image on the left is at a width of 361 pixels. Things are getting pretty cramped again, so it's time for a breakpoint.

The image on the right is at 359 pixels width. You can see we've blown up the picture to 100% of the page width and made a few font size tweaks so it once again looks good.

Media Queries: Breakpoint @ 360px

```
@media screen and (max-width: 360px) {  
  h1 { font-size: 1.8em; }  
  h2 { font-size: 1.5em; }  
  #headshot {  
    float: none;  
    padding-right: 0;  
    padding-left: 0;  
    width: 100%; }  
}
```



Here is the SCSS code for that 360 pixel media query breakpoint. You can see it's just the changes we want to tweak to make it look right. We don't need to redefine the entire style.



Media queries are relatively new, so they don't work on crusty old browsers like Internet Explorer 6, 7, or 8. So do we just say forget those pitiful people stuck in the past? Of course not. Much of Dr I's audience is likely to be people still running Windows XP on a decade old computer handed down to them by their grandkids.

Fixes for Old Internet Explorers

```
<head>
...
<!--[if lt IE 9]>
  <script type="text/javascript" src="js/modernizr.js">
  </script>
  <script type="text/javascript" src="js/respond.min.js">
  </script>
<![endif]-->
...
</head>
```

Luckily there is an easy fix for enabling new-fangled CSS3 and HTML5 features in non-compliant browsers. Here I'm using the Modernizr and respond.js projects to make it all work well in Internet Explorer.

Things to Watch Out For

- Right and left padding and margins on grid elements can be finicky. Best to just wrap them with a div.
- Image sizing: small screens get large images and have to scale the images down.
- Can't really re-order sections.

There are a few things you need to watch out for as you design your responsive site using The Semantic Grid System.

The first is right and left padding and margins on elements that are columns. Your columns are actually defined by margins after they're compiled, so creating additional margins tends to make things not work right. It's best to just wrap those elements in a div and add the margins or padding to the div.

The second is image sizing. To make the website look good on a large screen you sometimes need large images. Using just the methods I've mentioned here, your mobile-sized website will use the same big images and have to scale them down. This is not the best use of bandwidth or low power processors, but solutions to this problem are not ready yet.

The third thing is that you can't really re-order your sections. In the Dr. Itharat site, The header will always come before the history, which will always come before the Contact Info.

Some Useful Utilities

- **Semantic.gs: The Semantic Grid System**
 - <http://semantic.gs>
- **Sass: Syntactically Awesome Stylesheets**
 - <http://sass-lang.com/>
- **Chrome Window Resizer Extension**
 - <https://chrome.google.com/webstore/detail/kkelicaakdanhinjdeammilcgefonfh>
- **Modernizr**
 - <http://modernizr.com/>
- **Respond.js**
 - <https://github.com/scottjehl/Respond>

Here are most of the projects and tools I used today.

Additional Credits

- **iPhone screenshots simulated using iPhony**
 - <http://www.marketcircle.com/iphony/>
- **iPad screenshots simulated using iPad Peek**
 - <http://ipadpeek.com/>
- **I can has cheeseburger?**
 - <http://icanhascheezburger.com/>

And a few credits for things I used to make today's presentation.

Additional Resources for Responsive and Mobile Web Design

- LukeWroblewski [@lukew](https://twitter.com/lukew) <http://www.lukew.com/>

And here is the best resource I have found for keeping up on mobile and responsive web design. Seriously, follow this guy on Twitter.

Contact Me

- Meatspace: Ben Rousch
- Email: brousch@gmail.com
- Twitter: [@brousch](https://twitter.com/brousch)
- Google+
 - <https://plus.google.com/102663141609195877664/>

And that's all I've got. Feel free to contact me if you have questions or comments.