

Behind the Scenes at USNews.com

By Russell Heimlich

About Russell Heimlich

- Graduated with a B.S. from the Art Institute of Philadelphia in Sep. 2006
- Front-end Developer (HTML/CSS/JavaScript) at USNews.com
- Worked there since Nov. 2006 (nearly 2 years)

Stats about USNews

- USNews is 75 Years old
- USNews.com is 13 years old
- 460,000 pages
- 66 unique stylesheets
- 4 frontend developers
- Located right across the street

A Walk Down Memory Lane

This is what USNews.com looked like when I first arrived...



- Mostly tableless
- No CMS
- Updated by hand using Dreamweaver
- LOTS of PHP Includes
- Regularly scheduled syncs kept staging server and live site up to date.



The screenshot shows the U.S. News & World Report website homepage. At the top, there's a navigation bar with 'U.S. News & World Report' logo, 'usnews.com' URL, and links for 'Subscribe', 'About Us', and 'Contact Us'. Below this is a search bar and a secondary navigation menu with categories like 'USNews.com Home', 'Rankings & Guides', 'Nation & World', 'Inside Washington', 'Health', 'Money', and 'Opinion'.

The main content area is divided into several sections:

- America's BEST:** A sidebar with links to 'Best Colleges', 'Best Graduate Schools', 'Best Health Plans', 'Best Hospitals', and 'Best Leaders'.
- Today on USNews.com:** A featured image of a power plant at sunset with the caption 'The sun sets on a power-generating plant in California. CHRIS CARLSON—AP'.
- Global Warming's Day in Court:** An article with the sub-headline 'DEALING WITH A WARMER WORLD:' and a list of topics: 'Temperatures Rising: How to Handle It', 'Insurers May Cash In on Climate Change', 'Industry Spreads Green Fever', and 'Politicos: Hot Air on Global Warming'.
- News for Smokers:** An article titled 'Attention, tobacco lovers! Cutting back isn't enough. New research debunks the belief that reducing your cigarette intake can buy you time. Full Story'.
- Current Issue:** A section for 'Lincoln at Gettysburg' with a photo of Abraham Lincoln and a brief description of a new book by Gabor Boritt.
- Views You Can Use:** A section featuring columns by Michael Barone and Paul Bedard, with links to their archives and blogs.
- Top Stories:** A list of headlines including 'The Supreme Court: Global Warming Gets Its Day', 'Borger Blog: Iraq Study Group Is Baker & Co.'s Burden', 'The War in Iraq: Getting Out: At Least There Are Some Ideas | The Mess in Baghdad Has Many Fathers', and 'A Texas Mess Over Coal: Proposed Plants Have Stirred'.

Change Was In The Air!

- USNews worked with Siteworx on a new design and site architecture.
- Worked with Vanguardistas for a new CMS built on Zope.



I got to start over from scratch!

U.S. News & WORLD REPORT
Monday, October 9, 2006

Nation & World | Health | Money & Business | Education | Opinion | Photos & Video | Rankings

Search US News.com

Subscribe Now & Save!

Democrats Gain Senate & New Influence
Democrats gained control of the Senate on Thursday, giving them a majority in both houses of Congress for the first time since 1994.

- PHOTO GALLERY: Lorem ipsum dolor
- BLOG: Quisque facilisis erat a dui. Nam
- AUDIO: Lorem ipsum dolor sit amet.

Military Leaders Recommend Changes in Iraq Strategy. Nam malesuada ornare dolor. Quisque facilisis erat a dui.

INSIDE U.S. NEWS & WORLD REPORT

New Facts about Iraq
Lorem malesuada ornare dolor. Cras gravida, diam sit
Learn more

Wildfires Rage
Lorem ipsum
Lorem malesuada ornare dolor. Cras gravida, diam sit
Learn more

RANKINGS
Looking for a Great Law School?
Who was really first? From politics to polar exploration, surprising new views about the world's greatest breakthroughs.

- Best Colleges
- Graduate Schools
- Best Hospitals
- Health Plans

CURRENT ISSUE
Mysteries of History
Who was really first? From politics to polar exploration, surprising new views about the world's greatest breakthroughs.

- Table of Contents
- Past Issues
- Subscribe

NATION & WORLD Most E-mailed | RSS

Health Most E-mailed | RSS

MONEY & BUSINESS Most E-mailed | RSS

OPINION

Most Popular Articles

- 1. Lorem ipsum dolor sit amet, consectetur adipiscing elit facilisis erat a dui.
- 2. Quisque facilisis erat a dui. Nam malesuada ornare dolor facilisis erat a dui.
- 3. Lorem ipsum dolor sit amet, consectetur adipiscing elitfacilisis erat a dui.

Advertisement: We know life can take you virtually anywhere.

What's the source order?



How to organize the CSS?

- Global.css for things that appear sitewide
 - ▶ Header
 - ▶ Footer
 - ▶ Ad positions
 - ▶ Newsletter signup widget
- Specific styles for each page type
 - ▶ Homepage
 - ▶ Section
 - ▶ Articles
 - ▶ Blogs

Divide and Conquer

- We thought dividing each CSS file into sections would make it easier to maintain.
- Separated structure styles from visual styles.
- Indent CSS for maintainability.

```

/*-----
  Tabs
-----*/

.tabs {
  height: 24px;
  margin: 12px 0px 0px 0px;
  overflow: hidden;
  padding: 0px;
  padding-left: 10px;
}

.tabs li {
  float: left;
  overflow: hidden;
  width: 129px;
}

  .tabs li a {
    color: #003399;
  }
  
```

Slow and Steady Integration

Moved everything into the CMS one thing at a time...

- Home page
- Section fronts
- Blogs
- Articles
- Data Projects (Best Colleges, Best Hospitals etc.)

Clean up!

After a year of the new design & the CMS, things were getting messy under the hood.

Homepage

- 1 HTML document (52.9K)
- 4 Style Sheet Files (34.0K)
- 18 JavaScript Files (161.0K)

Article

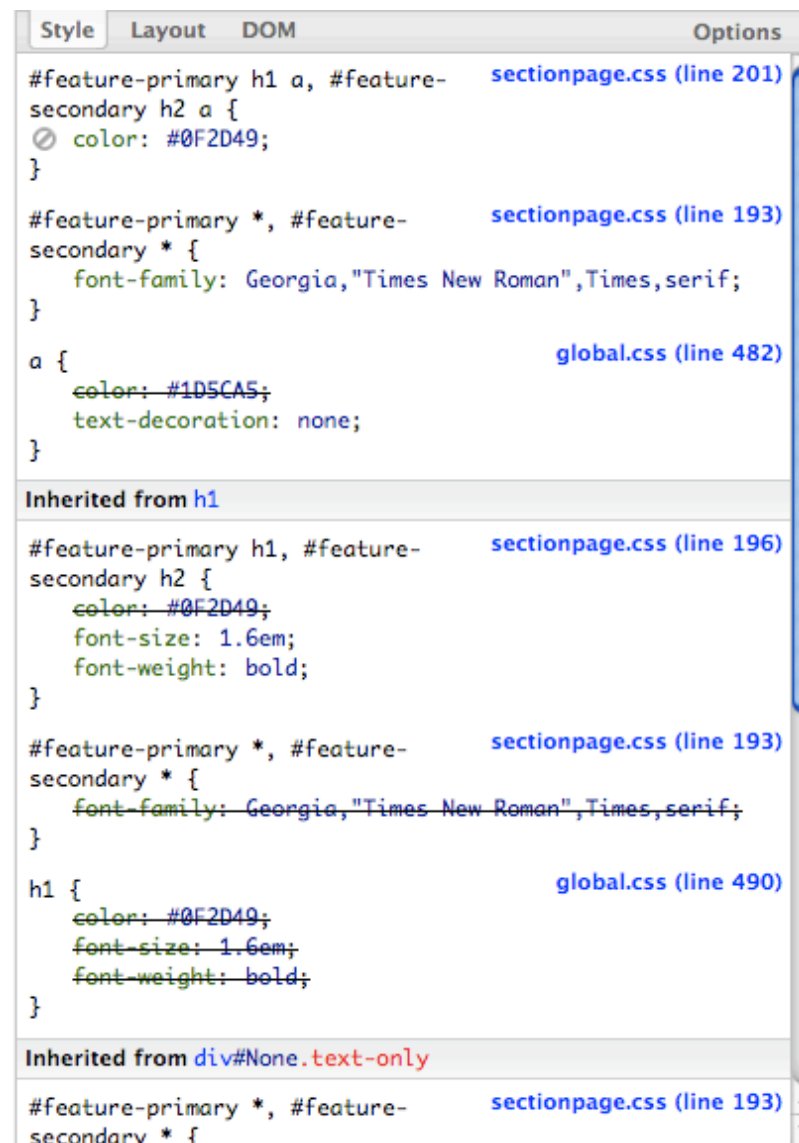
- 1 HTML document (28.7K)
- 16 Style Sheet Files (87.2K)
- 30 JavaScript Files (260.7K)

Problems

- Dividing CSS into Sections = Duplicate Code
- Indenting CSS = More Work!
- Too many requests/stylesheets
- CSS was not flexible enough for our needs

Problems

- A lot of CSS code just overwrote other CSS code



```

Style  Layout  DOM  Options
#feature-primary h1 a, #feature-  sectionpage.css (line 201)
secondary h2 a {
  color: #0F2D49;
}

#feature-primary *, #feature-  sectionpage.css (line 193)
secondary * {
  font-family: Georgia,"Times New Roman",Times,serif;
}

a {  global.css (line 482)
  color: #1D5CA5;
  text-decoration: none;
}

Inherited from h1
#feature-primary h1, #feature-  sectionpage.css (line 196)
secondary h2 {
  color: #0F2D49;
  font-size: 1.6em;
  font-weight: bold;
}

#feature-primary *, #feature-  sectionpage.css (line 193)
secondary * {
  font-family: Georgia,"Times New Roman",Times,serif;
}

h1 {  global.css (line 490)
  color: #0F2D49;
  font-size: 1.6em;
  font-weight: bold;
}

Inherited from div#None.text-only
#feature-primary *, #feature-  sectionpage.css (line 193)
secondary * {

```

Problems

- Updating the same code in multiple places
- Blogs and Articles both use comments which required the same styles to be copied into two different stylesheets.
- To update, we must make a change to both stylesheets.
- Things were soon out of sync.

Problems

- The #1 culprit to our HTML/CSS woes was sloppy coding in our templates!
 - Lack of common structure
 - Unnecessary cruft
 - Bloated CSS

The Fix

- Cleanup our templates
- Implement our own framework
- Modularize CSS
- Create a CSS hierarchy

Template Cleanup

- Reduce code where possible
- Reuse as much code as possible
- `
` are stupid! (learn how to clear floats w/o markup)

What is a framework?

“A framework is a basic conceptual **structure** used to solve or address complex issues.”

“A set of **interrelated reusable classes** which form the basis for an application.”

“A framework is a **defined support structure** in which another software project can be organized and developed.”

In other words, a broad set of guidelines to structure our pages.

The screenshot shows the U.S. News & World Report website interface. At the top left is the logo with the URL 'usnews.com'. To the right of the logo is the date 'Tuesday, October 14, 2008' and links for 'Subscribe' and 'Contact Us'. Below this is a navigation bar with categories: 'Nation & World', 'Health', 'Money & Business', 'Education', 'Opinion', 'Science', 'Photo', 'Video', and 'Rankings'. A search box labeled 'Search U.S. News' with a 'Search' button is on the right. The main content area is titled 'Health' and includes a breadcrumb trail: 'Home > Health > On Parenting > Title of Blog'. Two yellow rectangular boxes are overlaid on the main content area, containing CSS code for a two-column layout. The first box is for the main content column, and the second is for a side widget column. At the bottom of the page, there is a footer with a navigation bar and copyright information.

```
.content {  
    float:left;  
    width:625px;  
}
```

```
.widgets {  
    float:left;  
    margin-left:10px;  
    width:336px;  
}
```

Nation & World | Health | Money & Business | Education | Opinion | Science | Photo | Video | Rankings

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Two Column Layout

The screenshot shows the U.S. News & World Report website on Tuesday, October 14, 2008. The page is titled "Health" and features a navigation menu with categories like Nation & World, Health, Money & Business, Education, Opinion, Science, Photo, Video, and Rankings. A search bar is located in the top right. The main content area is divided into three columns: a left sidebar, a central content area, and a right widget area. A horizontal line is drawn across the content area, with a ".holder" class name and CSS code overlaid on it. The CSS code for the columns is as follows:

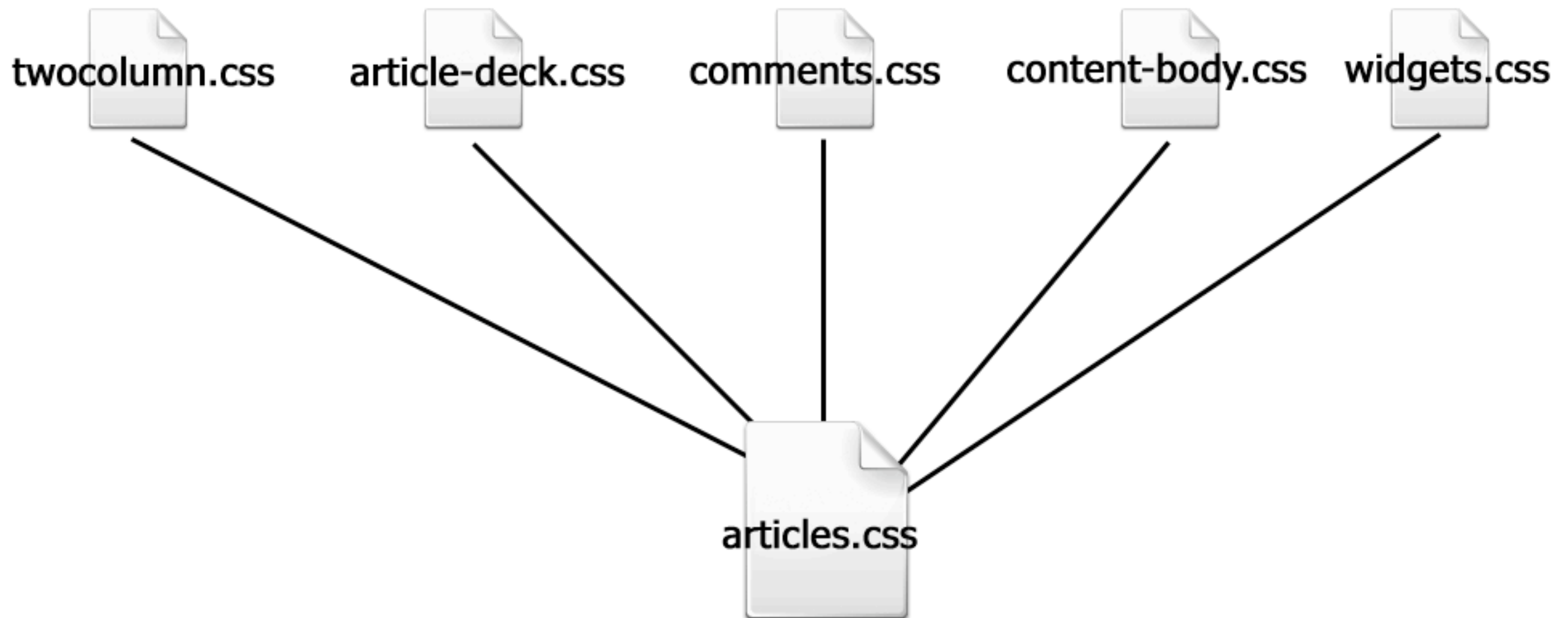
```
.side-nav {  
  float:left;  
  width:180px;  
}  
.content {  
  float:left;  
  height:500px;  
  width:430px;  
}  
.widgets {  
  float:left;  
  height:500px;  
  margin-left:10px;  
  width:336px;  
}  
.holder {  
  float:right;  
  width:780px;  
}
```

At the bottom of the page, there is a footer with navigation links and a copyright notice: "Copyright © 2008 U.S. News & World Report, L.P. All rights reserved."

Three Column Layout

Modular CSS

The final CSS file is made up of smaller modules.



Modular CSS

Everything is defined in one XML file and built when we push it live.

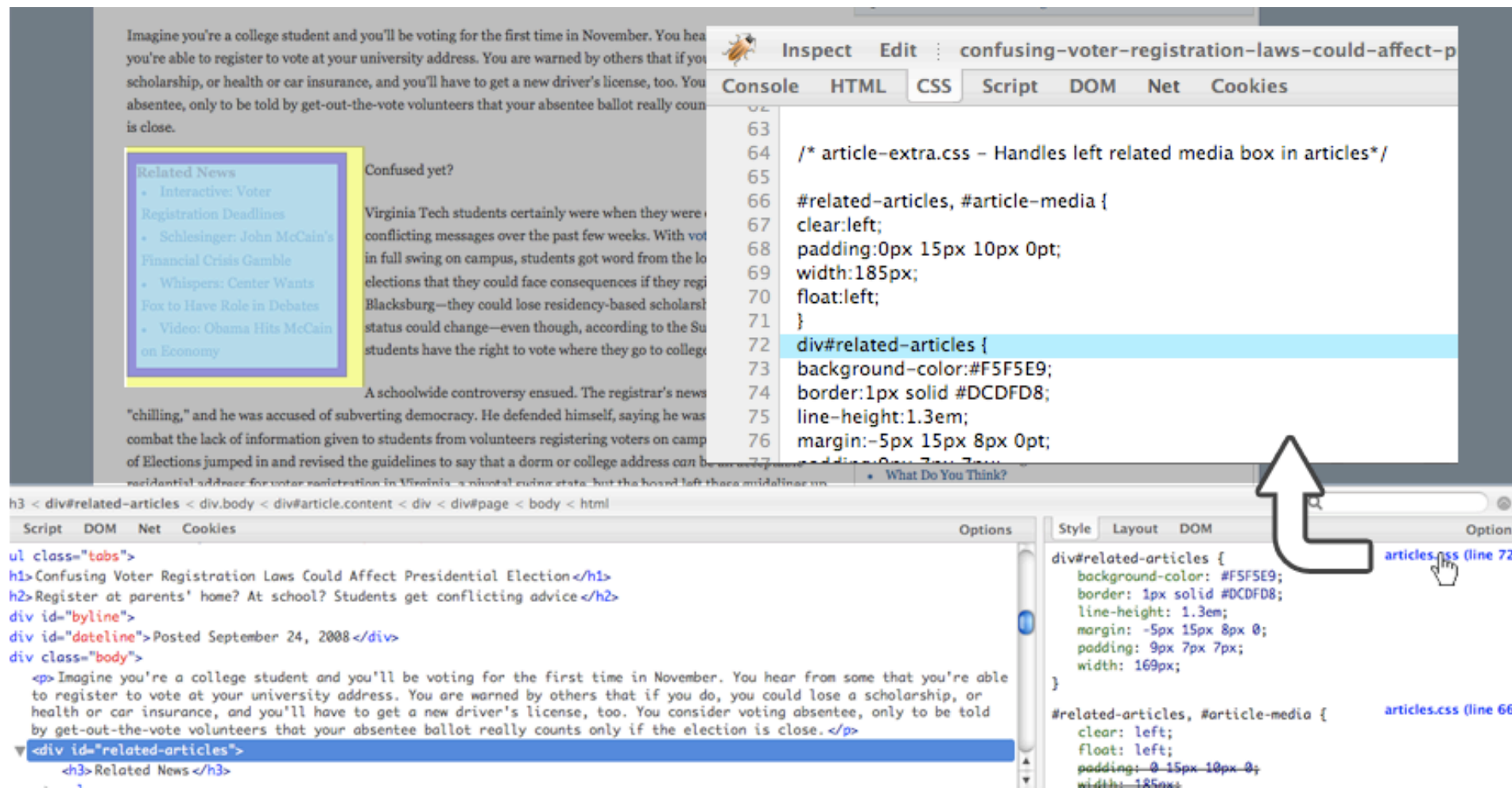
```
<file>  
  <module/>  
  <module/>  
  ...  
</file>
```

```
<file name="articles.css">  
  <module name="twocolumn.css"/>  
  <module name="article-deck.css"/>  
  <module name="article-extra.css"/>  
  <module name="comments.css"/>  
  <module name="content-body.css"/>  
  <module name="content-table.css"/>  
  <module name="content-navigation.css"/>  
  <module name="ibox.css"/>  
  <module name="newsletter.css"/>  
  <module name="sharetools.css"/>  
  <module name="tabs.css"/>  
  <module name="tags.css"/>  
  <module name="quiz.css"/>  
  <module name="widget.css"/>  
  <module name="sponsor-impletuition.css"/>  
</file>
```

Modules

Each module has a comment at the top with the name of the module and a description.

This makes it easier to debug.



Auto Optimize

- Optimize with CSS Tidy
 - `#ffffff -> #fff`
 - `margin:1px 1px 1px 1px -> margin:1px`
 - `color:#ff0000 -> color:red`



CSS Hierarchy

- Site Wide (global.css)
- by Page Type (articles.css, blogs.css)
- by Section (news.css, business.css)
- for an individual page (custom CSS field in CMS)

A New Subdomain

- Moved all CSS/JavaScript to a new sub-domain, `static.usnews.com`
- Set-up a development static subdomain.
- Using bookmarklet, we can switch CSS of the live site to staging CSS.

Clean up!

After a year of the new design & the CMS, things were getting messy under the hood.

Homepage

- 1 HTML document (52.9K)
- 4 Style Sheet Files (34.0K)
- 18 JavaScript Files (161.0K)

Article

- 1 HTML document (28.7K)
- 16 Style Sheet Files (87.2K)
- 30 JavaScript Files (260.7K)

Final Results

Homepage

- 1 HTML document (22.3K)
- 2 Style Sheet Files (23.2K)
- 21 JavaScript Files (99.5K)

Article

- 1 HTML document (9.2K)
- 5 Style Sheet Files (53.1K)
- 29 JavaScript Files (91.0K)

Final Results

Article CSS

- 11 less stylesheets
 - 33K smaller!
- ➔ Savings of 31GB in bandwidth per 1 million hits

Growing Pains

- One day we got linked to from the homepage of Yahoo!

Growing Pains

- One day we got linked to from the homepage of Yahoo!

Growing Pains

- One day we got linked to from the homepage of Yahoo!
- 15 minutes later we had to ask them to remove it

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Growing Pains

- One day we got linked to from the homepage of Yahoo!
- 15 minutes later we had to ask them to remove it
- Decided to run everything through Akamai

Akamai Works

- On America's Best Colleges launch day we served 15 million pageviews
- 2 million/hour
- The site didn't even hiccup!

Downsides to Caching

- Updating a site with caching is like tying your shoes with mittens on.
- Frequent little changes become impossible.
- Less flexibility is worth the stability!

A few more things...

We're Hiring!

- Front-end developers (HTML/CSS/JavaScript)
- Zope/Python Developers
- Send resume, cover letter, and salary requirements to rheimlich@usnews.com

How did I do?

- Please give me feedback at <http://www.RussellHeimlich.com/barcamp>
- Slides are available for download there too!

Questions?