Web Standards & the Browser Wars
What Librarians Need to Know

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Overview

• What are web standards?
• Why are they important?
• Why haven’t vendors followed the standards?
• What can be done to make the web more fully accessible for any browser, platform, device or user?
What is the W3C?

• World Wide Web Consortium
  http://www.w3.org/

• created in 1994

• 379 member organizations (Nov. 2003)

• specifications and guidelines, such as:
  HTML, CSS, XML, XHTML and more
**Recommendation = Standard**

**W3C Recommendation (REC)**

W3C Recommendation is a specification or set of guidelines that, after extensive consensus-building, has received the endorsement of W3C Members and the Director. W3C recommends the wide deployment of its Recommendations. **Note:** W3C Recommendations are similar to the standards published by other organizations.
Web standards

• hammered out by committee
• designed to deliver greatest benefit to largest number of web users
Forward compatibility

• any web document can work across multiple browsers, platforms, and Internet devices

• will continue to work as new devices are invented
Examples of web standards

- structural languages: HTML, XML, XHTML
- presentation languages: CSS
- object models: W3C DOM
- scripting languages: ECMAScript
What is the DOM?

- Browser-independent, platform-neutral, language-neutral interface that allows “programs & scripts to dynamically access and update the content, structure, and style of documents.”

- Makes standard components of your page accessible to manipulation. Show/hide content in nav bars, sort table columns, etc.
What is the DOM?

- This means we don’t have to give up scripting and interactivity to be standards-compliant.
Some Standards-Compliant Browsers

- Mozilla 1.0 +
- Netscape 6 +
- IE 5+/Mac and IE 6+/Windows
- Opera 7 +

They understand and support XHTML, CSS, ECMAScript and the DOM.
1990s browser wars

• focus on “Netscape-only” or “Microsoft-only” proprietary technologies

• browser developers paid little heed to standards

• some paid lip-service by supporting standards partially and incorrectly
What did web authors do?

• wrote customized versions of (non-standard) markup for every browser

• browser-detection scripts

• costly and expensive, requires constant updating as new browsers are released
What did web authors do?

• wrote presentational markup - doubled the required bandwidth

• more code in pages means each page takes longer to load

• means more load on web servers, need for more servers, more costly to support
“Backward Compatibility”

• using non-standard, proprietary markup and code to ensure that every visitor has the same experience

• sounds great in theory

• there is no true “backward compatibility”
Presentational markup:

```html
<td width="100%"><font face="verdana, helvetica, arial" size="+1" color="#CCCCCC">
<span class="header"> <b>Join now!</b>
</span></font></td>
```

Structural markup:

```html
<h3>Join now! </h3>
```
Only one browser matters?

• Increasing number of sites designed to work only in Internet Explorer and sometimes only on Windows platform.

• Locking out 15 - 25% of their potential customers.
Only one browser matters?

- There is no guarantee that IE (or even desktop browsers) will continue to dominate web space.

- A few years ago Netscape dominated and people coded for that.

- There is no telling what will dominate in the future.
Only one browser matters?

- MIT has never been a one-browser environment (and probably never will be).
- At MIT we especially need to support cutting edge devices and platforms.
The cure? Web Standards.

- Standards make it possible to design for all browsers and devices as easily and quickly as for just one.
Forward compatibility

- any web document can work across multiple browsers, platforms, and Internet devices

- will continue to work as new devices are invented
Trinity of web standards

- **Structure**: HTML, XHTML, XML
- **Presentation**: CSS1, CSS2
- **Behavior**: ECMAScript, DOM
Structure

• Markup languages contain text data formatted according to its structural meaning.

• Headline, secondary headline, paragraph, numbered list, etc.
Example of structural markup

<h1>MIT Libraries</h1>

<h2>About Us</h2>
<h3>Fall & Spring Term Hours 2003-2004</h3>

<ul>
  <li>Aero/Astro Library</li>
  <li>Barker Library</li>
  <li>Dewey Library</li>
</ul>
XML and XHTML

• XML: Extensible Markup Language: a language for creating markup languages

• XHTML: a transitional markup language and current W3 recommendation that works just like HTML in nearly every browser or Internet device
Presentation

• Presentation languages (CSS1, CSS2) format the web page, controlling typography, placement, color, etc.

• Replaces HTML tables, font and size tags and other non-standard junk.

• Makes it possible to easily change style without touching the content.
Behavior

• A standard object model (W3C DOM) works with CSS, XHTML, and ECMAScript to enable behaviors and effects that work across multiple platforms and browsers.

• No more Netscape-only Javascript or IE/Windows-only ActiveX and JScript.
What’s so great about web standards?

- Precise control over layout, placement and typography, while still allowing users to modify presentation for their own needs.

- Comply with accessibility laws & guidelines without sacrificing beauty, performance, or sophistication.
What’s so great about web standards?

• Support multiple browsers without the hassle and expense of creating separate versions.

• Support non-traditional devices: wireless gadgets, cell-phones, braille-readers, screen-readers.
What’s so great about web standards?

- Deliver print versions without creating separate “printer-friendly” pages.
- Separates style from structure and behavior: helps facilitate re-purposing documents for other uses (web/print/cd-rom).
If these standards are so great, why haven’t they been widely implemented yet?

- Many designers hold the mistaken belief that web standards are hostile to the needs of good graphic design. (i.e. standards = ugly!)
If these standards are so great, why haven’t they been widely implemented yet?

• Those who create standards are not in the business of selling them.

• W3C sites hold little inspirational appeal for graphic designers.
W3 Specs speak to engineers, not the public

- CSS2 is for designers, but most designers find it hard to read through the spec on W3’s site.

- W3C is not in the business writing designer-friendly tutorials.

- Purpose of a “spec” is to tell programmers who will implement the technology what features it will have.
If these standards are so great, why haven’t they been widely implemented yet?

- Designers have invested a lot of time learning proprietary scripting and markup.
- Or they use WYSIWYG editors that haven’t supported standards. (leading WYSIWYG editors now do support standards)
If these standards are so great, why haven’t they been widely implemented yet?

- Only recently have mainstream browsers offered meaningful standards compliance.
Examples

• http://www.csszengarden.com/
A brief history of browsers & standards
Version 0, 1 - 2 browsers

• 1993: NCSA Mosaic
• 1994: Netscape 1.0
• 1994: Mozilla 0.96b
• 1995: Internet Explorer 1.0
• others: Opera, Cello, Lynx
Version 2-3 browsers

• 1995: Netscape Navigator 2.0: frames, client-side imagemaps, Javascript, SSL

• 1995: Internet Explorer 3: above, plus stylesheets (limited), JScript, Active X
Version 4 browsers

• IE 4 greatly improved CSS support, but still buggy and incomplete.

• Netscape 4 offered CSS for the first time, but was still broken (better than IE 3’s first try, but broken).
First “modern” browser: Internet Explorer for the Mac

- March 2000: IE 5 for Macintosh: supported XHTML, ECMAScript, nearly all of CSS1, much of CSS2, most of the DOM.
Netscape’s bold move

• Netscape totally junked its old version 4 code and re-built from scratch. (1998 - late 2000)

• Took longer, so they lost market share. But they heroically hung in there and placed the future health of the web over their own self-interest.

• Used open source code parent: Mozilla.
Opéra 6

- No DOCTYPE switching and no DOM, but fine support for most other standards.
- Opéra 7 supports the DOM.
Internet Explorer 6 for Windows

• mostly caught up with Mac version, accurate CSS, strong support for XML, ECMAScript and the DOM

• they got CSS fixed-attachment backgrounds wrong and included a bug that broke the “float” property in CSS
No browser is perfect

- each of these was a major achievement, however
- demonstrated commitment to interoperability
- now designers are finally free to use CSS layout and other standards-based techniques
Standards-Compliant Browsers

- Mozilla 1.0 +
- Netscape 6 +
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They understand and support XHTML, CSS, ECMAScript and the DOM.
Too little, too late?

• Many designers were convinced that web standards were a pipe-dream and had ceased trying to implement them.

• CSS1 - issued in Dec. 1996!
Too little, too late?

- IE 3 supported just a little CSS, very buggy.
- Designers were thrilled at first with what you could do, then realized all the bugs - soon decided CSS not ready for prime time.
Bad browsers lead to bad practices

• CSS is designed to separate presentation from structure.

• By default most browsers display `<h1>` as big and bold with whitespace above and below.

• CSS allows you to change that.
Bad browsers lead to bad practices

• With CSS <h1> can be small, italic, and margin-free if the designer wants.
• Alas, not in Netscape 4: adds its default legacy renderings to any CSS rule.
• So Netscape 4 will add whitespace there anyway.
Bad browsers lead to bad practices

• Some designers gave up on CSS.
• Other designers got rid of structural markup and instead did this:

<div class=“headline1”>

• This solved the display problem at the expense of structural markup.
Bad browsers lead to bad practices

• This led to numerous problems which have now come home to roost.

• Content management systems and visual web editors developed during the 4.0 browser era are littered with that sort of meaningless markup.

• Makes it hard to migrate your pages to structural markup.
Bad browsers lead to bad practices

• Large sites created by multiple designers might have different non-standard tags, making it impossible to gather all the data and reformat it.

• Also, to a Palm device or screen-reader, markup like the previous example is plain text, not a headline. <div class=“headline1”>
Junk markup

• Older web browsers are lax and forgiving about bad code. Pages with many errors display OK.

• Newer browsers are getting more strict. So bad code is now breaking.
Browser History

http://www.dejavu.org/

Try their browser emulator to see your site in old browsers.
What does this mean for us at MIT?
A diverse environment

• MIT is an environment of diverse platforms, devices, and users.

• MIT is the home of W3C.

• It’s especially important for us to implement these web standards.
What does this mean for our web site?

• We will take an incremental approach.
• Next complete redesign will be standards compliant.
Until then:

• Our new home page will be standards-compliant.

• New templates for Subject Guides, Publication Type Guides, Database Cheatsheets, and Course pages will be standards-compliant.
What does it mean for you as a web author?

- We will offer training as we move to new ways of authoring.
- We will offer new tools that make it simpler to author pages without knowing so many technical details.
- In some ways it will be simpler than the current environment.
What does this mean for Barton?

• The HTML for Barton is not web standards compliant.

• McGill has written standards compliant code for their ALEPH web opac (as far as they can go). Some screens can’t be changed.

• muse.mcgill.ca
What does this mean for Barton?

- We are advocating for ExLibris to write standards-compliant code in a future version.
- We have a project in our list of future projects to re-do our web OPAC pages in a standards-compliant way (as McGill did).
What does this mean for Barton?

A standards-compliant OPAC would work allow us to offer one version for all:

- screen-readers
- PDAs
- Athena, Mac, Windows
- future devices
What does this mean for databases & e-journals that we purchase?

• We should ask vendors if their code is standards-compliant, i.e. uses XHTML, CSS, at the very least.

• Where there is a choice, we should consider standards as much as we consider usability of the interface.
What about other web-based products?

We should consider standards-compliance as part of the mix when choosing web-based products, such as:

- portals
- meta-search & database-discovery tools
- open-URL tools (SFX)
- content management systems
- future Vera replacements, such as the “green box.”
For more information
For more information

A List Apart
http://www.alistapart.com/

CSS Zen Garden
http://www.csszengarden.com/

CSS Tutorial:

HTML and XHTML for CSS
http://www.westciv.com/courses/course_info/html_and_xhtml/