Web Site Design For Accessibility

However pretty your Web site pages look in the lab, the Webmaster then has to consider how viewable they are by the intended audience.

By Andrew Ward

Whether a Web site is transactional or informational, and whatever business objective has been set for it, success is usually reliant on attracting and maintaining the maximum possible number of visitors. Clearly it therefore makes good sense if Web users are unlikely to encounter technical problems or viewing difficulties when visiting the site. The task of the Web page author is therefore to produce a site that is viewable on the widest possible range of platforms - both hardware and software - by the largest possible user population. However, the reality today is that many sites are poorly designed from this perspective, and many users encounter difficulties when visiting them.

One of the unfortunate drawbacks of the Internet, and of the Web in particular, is that there is virtually no regulation. Before publishing a Web page there is no requirement to submit the content or the html code to any authority for approval. As a result, Web authors are not used to having to write valid html, nor to taking into account the wide range of challenges that viewers may encounter when accessing sites.

Furthermore, most Web browsers are very forgiving. For example, if a browser encounters a table element, such as a row, without a table first having been defined, it will probably work out what to do with it and make a reasonable job. This tends to be very misleading for the Web author, who believes that the page is correct simply because it happens to give a reasonable display in one specific set of circumstances. However, the page may appear as complete nonsense to other users.

Browser Dependency

One of the most common traps that Web site designers fall into is browser dependency. Unfortunately, information from the browser companies themselves sometimes doesn't make it clear that features they offer are unique to their products, and people who republish the information then omit this warning. As a result, there are countless Web authoring guidelines that explain the use of the marquee tag, without mentioning that it only works with Microsoft Internet Explorer.

While Internet Explorer accounts for the majority of the Web browsing audience, there are still some 25% who use other browsers - and this figure may be much higher in certain industries where a different platform such as Unix, or a different browser such as Netscape Communicator, may predominate. In any case, even just 1% of the Internet population is some three million potential visitors. Another common error that many Web authors make is to create pages that aren't easily viewable on the Mac, simply because they don't have one to test on. Once again, the number of Mac users is small, but these systems are very popular in certain market segments such as media and advertising, which could be a key part of the target audience for some sites.

Different browsers and platforms render fonts to different sizes, so text that looks acceptable with Internet Explorer on a PC may be too small to read with Netscape, and even smaller on a Mac. And if someone has a very high resolution screen, although a small font won't lose resolution it will be physically quite tiny and require them to peer very closely.

Browser Testing

Fortunately, there are many free Web-based services that allow the Web author to

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test sites for performance with different browsers. These do not produce perfect renditions, and are not a substitute for proper testing on different platforms and with different browsers, but should alert the author to any major problems. Ideally, the Web designer should have access to a range of different hardware and software platforms, and in particular invest in a Mac, or at least a Mac emulator for the PC.

As well as compatibility between different browsers on different platforms, the author also has to worry about older versions of browsers that may not support more recent features. The html specification has undergone substantial change and improvement over the years. One of the browser compatibility viewers, hosted by Delorie Software, is located at **http://www.delorie.com/web/wpbcv.html**. This viewer allows you to turn off specific features, such as frames, fonts and scripting, to see what pages would look like with a browser that lacks support for them. Remember that WebTV doesn't support frames - in any case, frames seem to have fallen out of fashion, and are rarely used by major Web sites today.

It's also worth taking into account those users who will be operating with a text-only browser such as Lynx. It's not unusual to still see Web sites that advertise a text-only version consisting of an additional set of pages. However, unless the author is trying to create a particularly complex page, featuring many elements, most pages can be designed to produce an acceptable text-only display without significant design compromises. If support for text-only displays is important, there is a list of public Lynx viewers at **http://www.trill-home.com/lynx/public_lynx.html** that you can use to view your own Web pages. These aren't available at all times, and are not very easy to use, but Delorie Software has another viewer that allows the author to select a text-only display. See **http://www.delorie.com/web/purify.html**.

Compatibility with earlier versions of html and the WebTV platform can also be tested at this location, by selecting the desired html version from a drop-down list. If WebTV is important, a viewer can be downloaded from **http://developer.webtv.net/design/tools/viewer**.

By the way, looking at web logs is not a good way of judging the importance of the WebTV audience for a particular site. There is a very active WebTV community and if a site is known to work well in the WebTV format, word will quickly get around. Conversely, a site that's known not to adapt very well to the restricted format will find itself with virtually no visitors from the community.

Yet another way to check browser compatibility is to run the Tune Up option at **http://dashboard.netscape.com**. This service will highlight any features used on a Web page or site that are unique to one particular browser. It also tests html code for validity, but there are much better validators around.

Display Dependency

One of the major problems resulting from the lack of regulation is that many Web authors have not appreciated that in theory at least, the presentation layer of the Web is under the control of the user. The screen size and resolution, browser window size and shape, colour scheme, and font size, style and colour are all supposed to be under control of the visitor.

With many sites, the problem is rather more fundamental than just restricting the visitor's choices. Often, authors haven't appreciated that there is such a thing as a presentation layer at all, and so many pages don't make clear distinctions between content (the actual text), structure (whether an element is a heading, list or whatever), and presentation. This not only makes it more challenging to produce viewable pages, but increases the difficulties of maintaining them.

This problem partly stems from the fact that html itself doesn't make it very easy to distinguish between content, presentation and structure. That issue has now largely been solved with the advent of cascading style sheets - but these are still very rarely used. In the future, the situation will be further clarified by the use of modularised xhtml - but that's still some way off from being a practical solution.

Style Sheets

Style sheets make life a lot easier for the html author as well as the Web site visitor, so it's well worth going to the trouble of learning how to use them. The full

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specifications are hosted by the World Wide Web Consortium (**http://www.w3.org**). Although the specifications appear complicated, the principle of style sheets is simple enough, and there are many tutorials available on the Web. One of the most useful is Microsoft's guide to Internet typography at **http://www.microsoft.com/typography/web/designer**.

At this site is a good explanation of why style sheets are to be preferred over other methods of specifying typography, and especially over the use of FONT FACE. Regrettably, many Web site authors learn by example - simply by inspecting how other sites have been written - and bad practices such as FONT FACE are propagated very quickly by this means.

Within the style sheet specification, styles can be specified in several ways, but by far the easiest is to use a separate file. Just one file can then specify the styles - font and background colours, font styles, sizes and weights - for all the elements such as titles, headings and body text, for all pages on the Web site. So changing the appearance of a Web site, perhaps by enlarging the body text or changing the suggested font for headings, becomes a matter of changing one line in one file.

Each html page needs to contain a declaration before it can use a style sheet. Styles are specified within the style sheet file itself, and then referenced by adding the class attribute to html tags where appropriate.

Style sheets solve several problems, but can still be misused. In particular, font sizes may be specified in pixels, point sizes and as percentages of the base font size. Of these three methods, only the third is sensible, because this allows the site visitor to choose the font size that is suitable for them - taking into account the size, quality and resolution of the display, the browser version, the operating system, the hardware platform and any vision problems or preferences they may have.

Readability also depends on the colour scheme. Some users may need to choose different combinations of font and background colour, so unless there is some compelling reason, authors should dictate the colour of neither.

Fluid Pages

With many different display devices in use, as well as personal preferences, the Web site designer should not seek to impose any particular size or shape of the content on the page, as well as the size of type. Instead, pages should be fluid, so that the content is rearranged to suit whatever size and shape browser window the viewer is using.

To achieve this, tables or other formatting techniques such as <div> that are used to lay out the page should be specified in percentages rather than in fixed pixel sizes. There are circumstances in which this is undesirable: it's normal for news sites to display columns of news text as a fixed size. Otherwise, when viewed at full screen width on a very large screen they would be very difficult to read.

HTML Versions

In general, producing good quality Web pages necessitates writing html code by hand. Web authoring tools do not produce the best html, and do not give the author sufficient freedom to ensure the best viewability. Before doing anything else, the author has first to decide what version of html to use. Like all decisions this will be a compromise, but for most purposes, xhtml 1.0 will be the best choice. This has the advantage of being backwards compatible with html 4.0 and earlier versions, but forwards compatible with new types of Internet browsing device. Full information on xhtml 1.0 can be found at **http://www.w3.org/TR/xhtml1**.

Broadly speaking, it is very similar to html 4.0 but with two additional requirements. All tag names must be in lower case, and all tags must be terminated, so a line break becomes
</br> rather than simply <br>.

HTML Validators

One way to find the other differences between html 4.0 and xhtml 1.0 but without having to read the entire specification is to pass a page through an html validator. The best one to use is at **http://validator.w3c.org**. This will highlight anything in

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the page that doesn't comply with the new specification. However, before doing this it's necessary to change the document type declaration at the beginning of the page to indicate to the validator that it contains xhtml rather than html.

Many Web pages do not include a document type declaration at all. Although these declarations were ignored by earlier browser versions, some browsers today - such as Internet Explorer 6.0 - will change their behaviour according to the declaration. If a Web page doesn't include this declaration, it may not display as intended. Another validator is at **http://www.htmlhelp.com/tools/validator** and has the added advantage that it will validate an entire site, not just a single web page.

Accessibility

Fluid pages and relative font sizes also help improve the accessibility of Web pages to users whose vision may be impaired, or who may suffer from some other disability that makes viewing Web pages difficult by conventional means. The World Wide Web Consortium has produced a set of guidelines for site designers that help achieve accessibility for a wide range of visitors, and these are published at **http://www.w3.org/TR/WAI-WEBCONTENT**. Broadly speaking, the guidelines for accessibility are simply good practice for Web site design, with the addition of features that will help visitors that are using text-to-speech converters, such as providing proper alt and title attributes for image tags. However, there is one particular area that is more difficult, and that is the recommendation that tables are avoided for page layout and only used for tables of data.

Obviously, tables do provide a particularly convenient way to produce pages that look nice. Without tables it can be quite difficult to produce presentable pages easily. The use of style sheets in conjunction with the <div> tag does go some way to fulfilling the role that tables play, and there's some useful guidance on how to use <div> at **http://www.elementkjournals.com/wdv/0105/wdv0151.htm**.

Unfortunately, however, most Web design tutorials still rely heavily on the use of tables for positioning and layout. Tables can still be used, and the resultant pages will be usable by text-to-speech converters, as long as the tables are laid out in such a way that they would make sense if read out row by row. An alternative is to produce two entirely different sites, one for visual use and another that's either text-only, or is specifically suited to text-to-speech converters, but obviously this is an impractically large investment for most site designers. The documentation on the W3C web site provides sufficient information to include control over fine details such as image placing and spacing.

An accessibility testing and rating system is provided by the Center for Applied Special Technology (CAST), at **http://www.cast.org/bobby**.

Content Rating

Finally, it's worth considering obtaining a rating for a Web site. Content control technologies generally default to refusing access to any sites that haven't been rated. In reality, very few sites do have a rating, so it's arguable that no one could leave these settings at their default values since the result would be an unusable browser. However, it doesn't hurt to include a rating, as these are easily obtainable from **http://www.icra.org** and **http://www.safesurf.com**.

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Conclusion

Web site design has undergone many changes over the last few years, and only recently have the tools and technologies, as well as the necessary understanding, been in place to allow good practice site design for sites built from html pages and templates. Most old advice should now be discarded, and sites today should follow the latest standards and guidelines, to facilitate access by the widest number of users, both today and in the future.

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