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Practical HTML5 Projects

BUILD ATTRACTIVE AND USEFUL WEBSITES USING READY-MADE PRACTICAL EXAMPLES

Adrian W. West

Apress®

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About the Author

Adrian West resigned as a chartered engineer to become the UK director of a correspondence school. He has been teaching in one form or another since 1982. He introduced computers into his workplace in 1987 and taught the staff how to use them. For four years, he taught undergraduates computer skills at a college in Cheshire in the United Kingdom.

Adrian lives in Colyton, a town in Devon, England, and for the last 12 years, he has designed and produced web sites for local businesses and charities. For a time, he also served as a computer technician and teacher to about 100 people in his community, until he decided to concentrate on his favorite occupation, designing web sites. To avoid disappointing his former clients, he launched a free computer-help web site at `http://www.colycomputerhelp.co.uk`.

Adrian also writes monthly computer-help articles for two local magazines.

Frustrated by a lack of information on certain aspects of web design, he researched, tested, and developed solutions for these poorly documented techniques; this book is the result.

About the Technical Reviewer

Andrew Zack is the CEO of ZTMC, Inc. (`ztmc.com`), which specializes in search engine optimization (SEO) and internet marketing strategies. His project background includes almost 20 years of site development and project management experience, including more than 15 years as a SEO and internet marketing expert.

Mr. Zack has also been very active in the publishing industry, having coauthored *Flash 5 Studio* (Apress, 2001), and serving as a technical reviewer on more than ten books and industry publications.

Working with the internet nearly since its inception, Mr. Zack continually focuses on the cutting edge, new platforms, and technology to continually stay at the forefront of the industry.

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—Adrian West

Introduction

This book concentrates on the practical application of HTML5 to projects that are currently not well documented. The book focuses on projects that will enhance your web sites; therefore, you will not find a history of HTML5 nor will you see a detailed discussion on things that are not commonly used by the great majority of web designers, such as APIs (application programming interface). Several books are available on the history of HTML5 and on APIs, so duplicating them is pointless. The aim of this book is to help you produce attractive and useful web sites by combining the advantages of HTML5 with exciting techniques that were previously poorly documented.

The Origin of this Book

Although I have designed many web sites over many years, I often had moments when I said to myself "how on earth do I do that?" or "how on earth did they do that?" The subjects of these "how on earth?" moments concerned techniques that were not usefully covered by any manuals that I could find. So, I assembled a collection of how-to techniques consisting of the results of my research and my practical experiments. Best of all, I compiled a collection of templates based on these techniques. These were extremely useful time-savers. The resulting volume (stored on my hard drive) was so useful that I decided it should be shared in book form with other designers. My templates were created in HTML5 and they include, where necessary, hacks to enable Internet Explorer 7 and 8 to understand HTML5 semantic tags.My quest for solutions was like an archaeological dig. I had evidence that the treasure was buried. Having eventually unearthed it, I found that these precious artifacts were fragmented and widely scattered; they were also in poor condition. My task was to assemble the fragments, then clean and polish them for public display. One problem remained, however, because many fragments were missing. I had to re-create these through trial and error.

This book was born out of frustration. Most manuals, forums, and web sites give snippets of code on the topics covered in this book, but then the web designer is left to work out how to apply that code in the real world. That means sifting through many sources to piece together sufficient information. The practical application then requires more time for trial-and-error testing.

Practical, fully-worked examples of these tools are often as rare as hen's teeth. Busy web designers should not have to plough through pages of theory or history only to discover that no practical applications are provided. Nor should they have to read a verbose paragraph five times to extract some meaning from it.

It is true that five of the book's topics are already covered in hefty, single-subject manuals, but busy designers may not wish to buy a boatload of single-topic manuals and spend time trawling through them. In this book, these manuals are summarized in one chapter each, and the chapters are more than adequate for designers who wish to quickly create something such as a PayPal page or an accessible site, a web site optimized for search engines, or to acquire an introduction to HTML5 and CSS3.

I tried to avoid those problems in this book by providing the following:

- Practical and useful real-world examples
- Screenshots of the end results
- The markup in the form of fully-worked examples

- Step-by-step guidance in plain English to explain difficult items
- Time-saving summaries of some single-topic manuals
- Downloadable templates for users to adapt in their own web sites

Is this Book for You?

- Do you want to understand and use the enhancements provided by HTML5 and CSS3?
- Are you an IT instructor or trainer looking for a set text that answers your students' questions on HTML5, provides you with many ready-made projects, and gives students a valuable resource for their personal libraries?
- Are you an IT student wishing to advance beyond the basic principles of HTML4, and CSS2?
- You could spend many days and weeks searching the internet for how-to techniques. Would you rather have a collection of fully-worked examples of these otherwise hard-to-find tools?
- Some of the projects in this book could eventually be constructed by piecing together snippets from a number of single-topic computer textbooks and web sites. Would you prefer to have them ready-constructed and described step-by-step in one book?
- Many single-topic web design manuals are big and verbose. It takes time to trawl though them. Would you like the practical content adequately summarized in one chapter?
- You will find several ways of doing the same job by searching for a technique on the internet or in books. I tested several of the techniques and chose the most straightforward methods that do the job well. Do you think the tried and tested techniques in this book will save you research and testing time?
- Would you like a downloadable toolkit consisting of free, easily-adaptable templates?
- Do your clients ask you to add enhancements to their web sites, but you're not sure how to do it?
- Do you need to know how best to update your client's older web sites because they contain deprecated markup or because they are not accessible to the disabled?
- Perhaps your prospective client used a paint-by-numbers kit, that is, a content management system (CMS) such as Joomla!, Textpattern, WordPress, or CMS Made Simple. Would you prefer to take full control of his web sites? This book will help you to break free from the limitations of the CMS templates and software. (Although if the web site is a blog or is database driven, the CMS approach may be a better choice.)

What this Book Does and Does Not Cover

The great majority of web site owners want a web site for the following reasons:

- To sell a service or a product
- To provide information
- To publicize an organization such as a charity, a church, or a society

This book caters to the great majority of web site owners. The book does not cover techniques that are adequately described and illustrated in readily available resources. It does, however, summarize four bulky manuals that are very time-consuming to read and extract information.

This book does not discuss RSS feeds, nor does it have much discussion on JavaScript-driven APIs. The great majority of owners would be horrified if users could tinker with their web sites. Business owners would not have the time or inclination to moderate entries in blogs. The only interactive elements covered in this book are the truly practical ones, such as methods of payment (for example PayPal), secure feedback forms, page-printing buttons, audio and video controls, go-back buttons, and accessibility features.

This book does not deal with blogs or database-driven web sites using SQL or MySQL. To learn how to take control of a CMS blog, I recommend *Blog Design Solutions* (Apress, 2006).

The Layout

Each chapter is self contained so that generally you can complete a task without jumping from chapter to chapter. I had to compromise occasionally when deciding where to locate a sub-topic; for example, where should I put CSS3 rounded corners: in the CSS3 chapter or in the chapter on rounded corners? I eventually placed it in the chapter on rounded corners.

The chapters are in no special order and they do not have to be read in a particular order. Just dive in anywhere to discover what you want to learn. However, if you have little knowledge of HTML5, start with the first chapter. It will introduce you to HTML5 and it provides worked examples to practice on.

I avoided unproductive detail such as the history of HTML5 or how a particular technique evolved. Instead, I concentrate on practical application. Some topics do need the *how* explained—such as how screen readers help the blind to read a web site—but my general aim has been to "cut to the chase" (as film producers say), that is, cut the waffle and get to the exciting bit as soon as possible.

My hope is that by collecting and presenting the tools, techniques, summaries, and templates in one book, web designers, students, and teachers will be spared many hours of research and testing.

The Level of Skill Required

The instructions in this book are intermediate level; that is, it is assumed that you already have a working knowledge of HTML4 and CSS2.

HTML5 and CSS3

Many HTML5 and CSS3 manuals have been published recently. They are good at describing the history behind the new recommendations and they tend to concentrate on less commonly used items such as APIs and the new canvas element. Worked examples in HTML5 were scarce, and very few were relevant to the real world. Most of the manuals dealt extensively with APIs, something that the vast majority of web site owners know nothing about and would not want anyway. This book emphasizes the practical

aspect of HTML5, CSS2, and CSS3. I have cut to the chase and provided fully-worked projects covering all the most useful new features.

Note CSS3 and HTML5 are not dependent on each other; they are totally separate recommendations.

Updates for CSS3

At the time of writing, Mozilla Firefox, Safari, and Chrome needed `-mozkit-` and `-webkit-` hacks in order to support some CSS3 features. When newer versions of these browsers are released, they may no longer need the hacks.

Minimum Use of Scripts

I have tried to reduce the use of scripts to a minimum. If there is a CSS solution, this will be used instead of a script. HTML5 and CSS3 offer script-free solutions for several new web site enhancements. The latest versions of most browsers support them.

PHP

Some PHP is used in two of the projects—visitor counters and forms—but no knowledge of PHP is required. Even though the script is fully explained, you can skip the explanations and simply insert your own details in the templates where indicated in the PHP markup.

JavaScript

To enable some HTML5 features to work in IE 7 and IE 8, a snippet of JavaScript is essential. This script is available for you to download from the book's Apress web site.

A small number of topics in this book use a little JavaScript; for example, CSS2 rounded corners (Chapter 7), enciphered email addresses (Chapter 11), and audio and video (Chapter 6), but no knowledge of JavaScript is required. The JavaScript files can be downloaded from the companion web site and placed in the root folder of your web site. Eventually, rounded corners will be achievable without scripts by using CSS3. Some browsers already support this technique. Cross-browser audio and video will eventually be achieved without scripts by using the new HTML5 `<audio>` and `<video>` tags. Meanwhile, a fallback solution is provided to enable audio and video to play using IE 7 and IE 8.

Conventions Used in this Book

The words *code*, *listing*, and *markup* are used in the book to mean the same thing. Code that should be replaced by the reader's own markup is shown in bold italics. For instructional purposes, bold adds emphasis to some markup.

The words *client* and *web site owner* are used synonymously to mean a person (or organization) commissioning you to produce a web site.

The words *tag* and *element* are also used interchangeably.

Resources

Many helpful books and free software programs are mentioned in this book. Wherever possible, freeware or open-source software has been chosen and fully tested.

Tip Install a text editor such as Notepad ++, which has several enhancements compared to MS Notepad.

When a piece of CSS markup cannot be contained on one line, a left-pointing arrow is used to indicate that the two lines belong together; for example:

```
#header { width:920px; height:180px; padding:0; margin: 20px auto; ↩
border:10px white solid; background: url(images/header3.jpg) no-repeat;
        }
```

Using the Book's Markup and Templates

Most of the worked examples are practical templates that readers can view and download from the companion web site. Readers can easily and quickly adapt these examples for their own use. No permission is required for using the markup or the templates in a web site. Permission will be required if you include the markup examples in media for sale, that is, printed matter or a CD. If you use markup examples in a web site offering instruction on web design, permission is required and you will be asked to acknowledge where you found the code. The attribution should give the source, as follows: *Practical HTML5 Projects* by Adrian West. Copyright 2012 Adrian West. Published by Apress Media, LLC. ISBN 978-1-4302-4275-8.

If you think that your particular use of the book's markup is not covered by this paragraph, please contact `permissions@apress.com`.

WYSIWYG Web Design Programs

WYSIWYG programs can be an excellent way of quickly starting a web page and a good way of learning the grammar and syntax of HTML. But don't always believe what you see. Sometimes layouts, when viewed in the design pane of a WYSIWYG program, are not what you expect to see. Until the WYSIWYG programs catch up, this particularly applies to pages using HTML5 or XHTML5 DOCTYPES. Don't struggle with the WYSIWYG layout, images, or menu bars; instead, test the page in Internet Explorer, Mozilla Firefox, Safari, Chrome, and Opera. You may be pleasantly surprised to see the layout, images, and menus displayed properly despite their odd appearance in the WYSIWYG editor.

I use MS Expression Web. It has an excellent error checker. Pressing the F9 key in code view reveals and explains the errors step-by-step. However, any WYSIWIG editor may need either updating or upgrading to error check HTML5 pages.

Web Design Programs and CMS

Web design programs and content management systems (CMS) claim that you don't need to learn HTML. They are the paint-by-numbers kits in the world of web site design.

I agree that you can design web sites using these programs without ever using or understanding HTML or CSS; however, you will be forced to use the templates that thousands of others are using. Your ability to adapt or fine-tune your web sites will be severely limited because most CMS use proprietary markup as well as JavaScript and PHP. All CMS sites load an enormous amount of baggage into your root folder; this may swallow up most of your available hosting capacity. For example, a basic five-page web site using HTML5 and CSS2 results in only two folders and six files. Using a CMS package for the same web site results in 17 folders with an average of 30 files in each, plus ten PHP files and several additional files for administering the web site.

If you need to move a CMS site to another web master, you may have difficulty finding someone willing to take on the learning curve necessary to grapple with the complexities of fine-tuning a CMS web site.

Encouraging beginners to use CMS (or online web site generators) is like saying to someone, "So, you're going to France on business for three months? Don't bother to learn French, just take a translator with you." Should beginners wish to fine-tune a CMS web site, they will eventually need to learn HTML, JavaScript, and PHP. Web sites that can be designed online can be even more restrictive. These are mainly JavaScript-based, resulting in even less designer control. Online methods and CMS sites also use JavaScript navigation menus that prevent search engines from probing past the home page.

You will never be in full control of your web design process unless you learn some HTML and CSS. If you want to produce unique, lean, clean, easily managed web sites, then HTML and CSS are the only way. HTML is not difficult, 40 words of HTML language will suffice, and all of them are English words or abbreviations of English words. Several free WYSIWYG web design programs are available to help you learn the syntax and grammar. Public libraries usually have HTML and CSS manuals on their shelves.

Which Browsers?

Currently, a majority of ordinary users surf with Internet Explorer because it comes free with Windows. A recent computer magazine poll showed that Internet Explorer, Mozilla Firefox, and Chrome are equally popular. Computer magazines cater to a small proportion of the population, so their survey results are rather biased. When considering IE, we need to be aware of the four versions in use.

I assumed we could dismiss the ten-year-old IE 6. Any people still using IE 6 deserve what they see on their screens. However, I had a shock when I designed a web site for a group supporting my local public library. The county library's computers were still using IE 6 despite its great age and vulnerability. The web site looked a mess on library computers; I fixed this with an IE conditional hack, (details of these hacks are provided in this book). Now *I always check to see which browsers my clients are using.*

User inertia ensures that older browsers and operating systems will be in use for the next five years. Many businesses and home users will stay with Windows XP, IE 7, and IE 8 until at least 2014. They will continue to use IE 7 and IE 8 because IE 9 is not compatible with XP. People buying new computers from mid-2011 will have IE 9 pre-installed. Over the next decade, IE 9 and later versions may increasingly be the most-used versions of Internet Explorer. Internet Explorer 9, which was released in March 2011, will be compatible with the most useful new HTML5 and CSS3 features. People who are savvy enough to download and use Mozilla Firefox, Opera, Safari, and Chrome will normally continue to download the latest versions. Designers should, therefore, test on the most recent versions.

For the present, so that your web sites reach the maximum audience, make sure they work in the five most popular browsers. They are, in order of importance, Internet Explorer 8 and IE 9+, Chrome, Mozilla Firefox, Safari for Windows, and Opera. They may not (and need not) display in an identical manner, but as long as they communicate the web site's message effectively, small differences are not important. After 2015 you may able to forget about hacks for IE 8.

■ **Tip** See the Appendix for a table showing the browser usage in the United States, the United Kingdom, and Europe. This is useful if you are targeting a particular area.

CHAPTER 1

Moving to HTML5

The projects in this book use HTML5. In this chapter, readers who are not familiar with HTML5 will be introduced to its essential features and will learn how it differs from HTML4/XHTML. You will also discover how to:

- Convert an HTML4/XHTML page or an entire web site to HTML5
- Create HTML5 pages that will display correctly in Internet Explorer 7 and 8
- Take advantage of the enhanced features in HTML5

HTML5 is the most exciting step forward in web development since the launch of XHTML 1.0 in the year 2000. HTML5 is the future of web design, but it can be implemented right now; and yet it does not make any of your current knowledge of HTML4 or CSS2 redundant. It is a welcome enhancement that increases the flexibility and usefulness of HTML. It also solves some problems; for instance, it can dispense with plugins for embedded video and audio clips, and the number of video file formats is drastically reduced. A raft of new semantic tags makes coding and maintaining a web site much easier. The number of DOCTYPES is reduced from six to two, and the HTML5 DOCTYPES are so brief that you can easily commit them to memory.

HTML5 has brought agreement between the browser vendors because they participated in its formulation. This means that the way they handle coding errors is now standardized; all those little differences are ironed out. A browser's parsing rules as specified by HTML5 ensure that all existing web sites continue to function as before; HTML5 is backwardly compatible.

Because this chapter focuses on the aspects of HTML5 that will enhance the most common types of web site, you will not find a comprehensive discussion on APIs (Application Programming Interfaces); nor will you find a history of the development of HTML5. Several books are available on APIs and the history of HTML5. They cover those topics very well; duplicating them would be pointless (see the tip at the end of the chapter for a list of resources).

The chapter ends with a brief mention of some APIs, but it is probably safe to assume that the great majority of web designers and site owners are not yet implementing them on traditional web sites. This view is reinforced by a recent poll taken by CSS Tricks (`http://css-tricks.com`). Two years after the release of the APIs, the poll asked web designers the following question: Which HTML5 features have you implemented on production sites?

The results were as follows:

Semantic tags	58%
Forms	36%
Audio/video	30%
Other	16%

The "Other"16 percent was split between nine APIs: Canvas, Web Workers, Web Storage, Geolocation, Drag and Drop, ContentEditable, History, and Microdata. The total adds up to more than 100 percent because most respondents implemented more than one feature.

Moving to HTML5

Now is the time to take advantage of the new features in HTML5; by trying the projects in this and subsequent chapters, you will discover the benefits and enhancements made possible by the new version of HTML. The emphasis of this book is the word *Practical* in the title; therefore, I have "cut to the chase" and provided fully-worked projects covering all the most useful new features of HTML5. I expect you are eager to get started, so let's move on!

The HTML5 and XHTML5 DOCTYPES

HTML 4/XHTML have several DOCTYPES, but HTML5/XHTML5 have only one DOCTYPE each, as follows:

HTML5:

```
<!doctype html>
<html lang=en>
<head>
<title>HTML5 test document</title>
<meta charset=utf-8>
        meta details go here
</head>
```

XHTML5:

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml" lang="en">
<head>
<title>XHTML5 test document</title>
<meta charset="utf-8" />
        meta details go here
</head>
```

■ **Note** The simpler HTML5 DOCTYPE can be used for a page containing XHTML markup and it will validate. In fact, you can ignore the XHTML5 DOCTYPE altogether. HTML5 does not care whether you use closed tags (such as `<br />`) or not. The examples in this book do not use the closed tag; however, if you have been using XHTML, you may prefer to continue using closed tags—HTML5 will it accept either way.

HTML5 DOCTYPES specify the English language with lang=en. For other languages, see

`http://wwww.iana.org/assignments/language-tags/language-tags.xml`.

To change web pages to HTML5 or XHTML5, just change the DOCTYPE. The markup won't be broken, but you will be able to use the more useful elements such as `<audio>` and `<video>` (even in IE 7 or IE 8 with a little bit of JavaScript) and your pages will validate.

■ **Caution** The current HTML5 and XHTML5 validators are `http://validator.w3.org` and `http://html5.validator.nu`. These are still experimental and you should be aware that they may change as time goes by.

To keep up with the development and release of HTML5 items visit

`http://html5doctor.com`

Remy Sharp is one of the experts at the HTML5 Doctor web site. Read his useful article at

`http://html5doctor.com/html-5-boilerplates/`

where he writes that the following markup is "completely valid HTML5":

```
<!doctype html>
<title>Small HTML 5</title>
<p>Hello world</p>
```

Amazing! No <html>, no <body>, no language, no charset, no quote marks, how can it be so lax? It will validate, but it will not support current screen readers, so stay with the following structure for HTML5 markup:

```
<!doctype html>
<html lang=en>
<head>
<title>HTML5 test document</title>
<meta charset=utf-8>
        meta details go here
</head>
<body>
        content goes here
</body>
</html>
```

■ **Note** HTML5 attributes do not have to be wrapped in quotes, and many MIME types can now be omitted in HTML5—but leave the quotes and MIME types in for XHTML5.

A web site can contain a mixture of pages, provided the DOCTYPE for each individual page is correctly specified. This can be useful if you wish to use the new <audio> and <video> tags on only one or two HTML5 pages on an existing web site.

Table 1-1 shows the DOCTYPE of an XHTML page that was changed to an HTML5 DOCTYPE. This page was submitted to the W3C HTML5 validator. It validated and displayed exactly the same as the original page in all browsers. The two DOCTYPES are compared in Table 1-1.