

JASON A. CLARK

RESPONSIVE WEB DESIGN IN PRACTICE

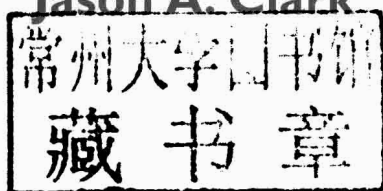


LIBRARY TECHNOLOGY ESSENTIALS | NO. 12

ELLYSSA KROSKI, SERIES EDITOR

RESPONSIVE WEB DESIGN IN PRACTICE

Jason A. Clark



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RESPONSIVE WEB DESIGN IN PRACTICE

Library Technology Essentials

About the Series

The *Library Technology Essentials* series helps librarians utilize today's hottest new technologies as well as ready themselves for tomorrow's. The series features titles that cover the A-Z of how to leverage the latest and most cutting-edge technologies and trends to deliver new library services.

Today's forward-thinking libraries are responding to changes in information consumption, new technological advancements, and growing user expectations by devising groundbreaking ways to remain relevant in a rapidly changing digital world. This collection of primers guides libraries along the path to innovation through step-by-step instruction. Written by the field's top experts, these handbooks serve as the ultimate gateway to the newest and most promising emerging technology trends. Filled with practical advice and projects for libraries to implement right now, these books inspire readers to start leveraging these new techniques and tools today.

About the Series Editor

Ellyssa Kroski is the Director of Information Technology at the New York Law Institute as well as an award-winning editor and author of 22 books including *Law Librarianship in the Digital Age* for which she won the AALL's 2014 Joseph L. Andrews Legal Literature Award. Her ten-book technology series, *The Tech Set*, won the ALA's Best Book in Library Literature Award in 2011. She is a librarian, an adjunct faculty member at Pratt Institute, and an international conference speaker. She speaks at several conferences a year, mainly about new tech trends, digital strategy, and libraries.

Titles in the Series

1. *Wearable Technology: Smart Watches to Google Glass for Libraries*, by Tom Bruno
2. *MOOCs and Libraries*, by Kyle K. Courtney
3. *Free Technology for Libraries*, by Amy Deschenes
4. *Makerspaces in Libraries*, by Theresa Willingham and Jeroen De Boer
5. *Knowledge Management for Libraries*, by Valerie Forrestal
6. *WordPress for Libraries*, by Chad Haeefe
7. *Game It Up!: Using Gamification to Incentivize Your Library*, by David Folmar
8. *Data Visualizations and Infographics*, by Sarah K. C. Mauldin
9. *Mobile Social Marketing in Libraries*, by Samantha C. Helmick
10. *Digital Collections and Exhibits*, by Juan Denzer
11. *Using Tablets and Apps in Libraries*, by Elizabeth Willse
12. *Responsive Web Design in Practice*, by Jason A. Clark

This book is dedicated to Jennifer and Piper who have endured and supported me as I slogged through the creative process known as writing.

To Jennifer, I thank you for your incredible patience and support as I found my way. I could not have done it without you.

To Piper, I apologize for the lack of pictures. I think you might have been right when you suggested this book needed more of them.

SERIES EDITOR'S FOREWORD

Responsive Web Design in Libraries is a start-to-finish guide to creating a responsive Web site that automatically resizes and adjusts itself to the dimensions of the device on which it is being viewed. Jason Clark, the authority on responsive Web design, provides a comprehensive overview of principles such as fluid grids, CSS media queries, flexible objects, and other core functionality inherent to this new but well-adopted standard in Web site design. Clark provides an in-depth walk-through for readers to learn how to retrofit an existing Web site to be responsive, how to create new responsive forms, and how to create a brand new responsive layout from scratch. This essential guidebook simplifies the complexity of designing responsive search interfaces, creating single page applications, and utilizing a responsive framework on a complete Web site.

The idea for the Library Technology Essentials book series came about due to the many drastic changes in information consumption, new technological advancements, and growing user expectations during the past few years, which forward-thinking libraries are responding to by devising groundbreaking ways to remain relevant in a rapidly changing digital world. I saw a need for a practical set of guidebooks that libraries could use to stay on the cutting edge by implementing new programs, services, and technologies to match their patrons' expectations.

Libraries today are embracing new and emerging technologies, transforming themselves into community hubs and places of co-creation through makerspaces, developing information commons spaces,

and even taking on new roles and formats, all the while searching for ways to decrease budget lines, add value, and prove the return on investment of the library. The Library Technology Essentials series is a collection of primers to guide libraries along the path to innovation through step-by-step instruction. Written by the field's top experts, these handbooks are meant to serve as the ultimate gateway to the newest and most promising emerging technology trends. Filled with practical advice and project ideas for libraries to implement immediately, these books will hopefully inspire readers to start leveraging these new techniques and tools today.

Each book follows the same format and outline, guiding the reader through the A–Z of leveraging the latest and most cutting-edge technologies and trends to deliver new library services. The “projects” chapters comprise the largest portion of the books, providing library initiatives that can be implemented by both beginners and advanced readers accommodating for all audiences and levels of technical expertise. These projects and programs range from the basic “How to Circulate Wearable Technology in Your Library” and “How to Host a FIRST Robotics Team at the Library,” to intermediate, such as “How to Create a Hands-Free Digital Exhibit Showcase with Microsoft Kinect,” to the more advanced options, such as “Implementing a Scalable E-Resources Management System” and “How to Gamify Library Orientation for Patrons with a Top-Down Video Game.” Readers of all skill levels will find something of interest in these books.

I had the pleasure of working with Jason Clark on a previous book for the Tech Set book series on mobile library applications. Right then I learned that Jason is one of those rare professionals who is incredibly knowledgeable about his area of expertise yet has the ability to express even the most complex concepts in an utterly accessible way. As head of library informatics and computing at Montana State University libraries, Jason is an experienced authority on responsive Web site design and that is evident through his outstanding book. If you're contemplating a Web site redesign for your library, you'll want to add this title to your professional collection.

—Ellyssa Kroski

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PREFACE

Today's library patrons are browsing the Web on a variety of devices including tablets, e-readers, mobile phones, and desktops. Responsive Web design (RWD) employs techniques that enable your library's website to automatically adapt to whatever screen size it's being viewed on. In this book, you will learn how to utilize HTML best practices and CSS techniques such as fluid grids and flexible images combined with responsive design techniques such as media queries to deliver an optimal experience for your users regardless of device.

With both beginner and expert developers in mind, this complete handbook guides readers through the process of developing and launching their own RWDs and introduces the craft of building multi-screen experiences. Chapters 1 through 4 introduce the history, context, and first steps for using the RWD development model. Chapter 5 is the centerpiece of the book and focuses on the "how to" with a set of projects ready for implementation, including detailed code recipes and working downloads to get the reader started. Chapter 6 takes a closer look at some tips and tricks that can be applied to the RWD model. Chapter 7 considers emerging best practices and possible future directions for RWD. Finally, chapter 8 looks at recommended reading and further resources for learning about RWD.

A primary goal of this book is to demystify the process behind developing and designing within the RWD model. As mentioned earlier, learning about RWD is the first step and this book covers the history and formation of RWD, how to think about design for the multiscreen

setting, possible future trends in RWD, and much more. However, the core of the book focuses on how to build sample RWD prototypes that use library data or that work in a library setting. Specific projects include an RWD retrofit of an existing site, an RWD bookreader interface, a responsive contact form, a single-page application applying the RWD model, a responsive search interface, and a Twitter Bootstrap prototype Web site. In the end, I'm hoping that readers are empowered to create new library applications and services based on the code samples and walkthroughs available here.

ACKNOWLEDGMENTS

I would like to acknowledge the terrific work of Ellyssa Kroski, my editor. Her vision for the Library Technology Essentials series helped frame my writing, her insistence on keeping the projects and writing accessible for a broad audience resulted in a better book, and her patience and consistent demeanor as I struggled with the creative process of writing was much appreciated.

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INTRODUCTION

Responsive Web Design (RWD) in Practice

1.1 WHAT IS RWD?

At the time of this writing, 2010 was five years ago. What is interesting about these five years is how much has changed in the Web design and development world. We have moved from mobile computing—the ability to carry out most tasks such as browsing the Web, watching movies, word processing, ordering food, coding, and so forth—being something that might be considered useful in a mobile setting to mobile computing being the expectation. With this expectation of computing and working from anywhere, the Web design and development community needed a new model for building a Web that could support an emerging mobile platform and a growing number of devices and operating systems. We found that model in the phrase “responsive Web design,” also referenced by the acronym “RWD.” Ethan Marcotte introduced the phrase and foundational RWD model in his List Apart article “Responsive Web Design” in May 2010 and followed with a book, *Responsive Web Design*, to further define and explicate the method. What is interesting about the passage of these five years is how far RWD has come from a fascinating, groundbreaking way of thinking about Web design and development to the industry standard today.

At its core, RWD is a set of techniques for building Web sites that work on multiple devices and screens. It allows content to flex and

layout to change based on the size and capabilities of the device and screen.

When coming up with the idea, Marcotte took his inspiration from the emerging field of “responsive architecture,” which considered how physical spaces adapt and respond to the presence of people passing through them. Building on this idea of responsiveness and HTML content passing through many screens and devices, Marcotte introduced the core concepts of RWD including:

- Fluid Grid Layouts—constructing HTML to be modular and adaptable to screen size.
- Flexible Objects—optimizing images, audio, videos, and so on to adjust to their containing elements as screen sizes change.
- Media Queries—applying the CSS media query to watch for screen and content breakpoints that allow pages to have specific styles tailored for the current display.

Placing the idea of flexible content first liberated our conception of the Web as a fixed medium, and a new way of designing and developing for the Web emerged.

1.2 WHY DO I NEED TO LEARN RWD (AND READ THIS BOOK)?

I love history and it is good to have in mind the broader picture of how we got here, but this book is primarily a practical guide. In this book, I focus on the whys and hows of RWD. The core of the book is an implementation chapter (chapter 5) that follows a cookbook model where readers can download the RWD code project and build it following a code walk-through. My goal was to make sure readers had a chance to learn and do. RWD is a fun enterprise and seeing the code in action can deliver a number of “aha!” moments; this book should provide those opportunities. Other chapters provide background on the conceptual model of RWD (chapter 2) and look forward to what’s next for RWD (chapter 7). Some chapters are more reference based and I work through and discuss the current tools, frameworks resources, and tips and tricks for applying RWD (chapters 3, 6, and 8). And finally, we

get to hear from a number of library practitioners speaking about their approaches to RWD and how they have changed their design and development practices in the case studies in chapter 4.

But even beyond the book content itself, there are some compelling reasons to learn RWD. I'll pick out some of the top reasons here. First on the list is the proliferation of operating systems and devices. Think about our contemporary computing environment—desktops, laptops, large-screen televisions, gaming consoles, tablets, notebooks, e-readers, and smartphones—each utilizing its own browser, screen resolutions, orientations, and layouts. In applying the RWD model, we can build once and let our content flow and respond to these various environments. Second, it saves money—money that otherwise might be spent for development of a site that works on specific devices and one that works on a desktop. A single RWD site is the cheaper option (most of the time). Third, RWD helps with search engine optimization (SEO) and machine readability of your content. Because RWD utilizes a consistent URL for each page, any site you design has uniform structure for desktop and mobile users and a consistent crawl pattern for search indexing bots. This improves user interaction, makes it easier for Google's link algorithms, and increases crawler efficiency. There are even new ranking metrics emerging within search engines that favor sites optimized to work across platforms using RWD principles (<https://developers.google.com/webmasters/mobile-sites/mobile-seo/configurations/responsive-design>). And finally, RWD asks you to think long and hard about performance and necessary content. This makes for a better user experience and a Web site centered around core actions. When you start to scale your design into small screens, the necessity of an extra link or an extra word to describe an action starts to matter. RWD creates restrictions, and this can be liberating, as a site is distilled to its essence. Cleaner designs and less code are the result.

1.3 WHAT PROBLEM IS RWD TRYING TO SOLVE?

RWD is starting to address the question of what it means to build for the Web in the age of mobile computing. And it is in its early stages. We are already seeing innovations in the RWD model, in the way that Web browsers process and serve content, and even in changes to the HTML

specification itself to accommodate our multiple device and screen reality. As we work through the book together, we walk through what it means to apply a design solution to the problem of ubiquitous computing. We make things and break things and learn how RWD is evolving. Let's get started with RWD in practice.