

“Pogue, the *New York Times* computer columnist, is among the world’s best explainer.” —Kevin Kelly, co-founder of *Wired*

David Pogue’s Digital Photography THE MISSING MANUAL

The book that should have been in the box[®]



O'REILLY[®]

David Pogue

Table of Contents

[The Missing Credits](#)

[Acknowledgments](#)

[The Missing Manual Series](#)

[Introduction](#)

[About This Book](#)

[About the Outline](#)

[About → These → Arrows](#)

[About MissingManuals.com](#)

[The Very Basics](#)

[I. The Camera](#)

[1. Camera Kinds](#)

[Small, Medium, or Large?](#)

[Pocket Cameras](#)

[Superzoom Cameras](#)

[SLRs](#)

[Cameraphones and iPhones](#)

[Where to Buy a Camera](#)

[2. The Only Features That Matter](#)

[A Big Sensor](#)

[Stabilizer](#)

[Zoom Power](#)

[Shutter Lag](#)

[Optical Viewfinder](#)

[Manual Controls](#)

[Face Recognition](#)

[Autofocus Assist Lamp](#)

[Flip-Out Screen](#)

[Memory Card](#)

[Memory Card Types](#)

[Burst Mode](#)

[Hi-Def Jack](#)

[Battery](#)

[Movies](#)

[Scene Modes](#)

[Wireless](#)

[Touch Screens](#)

[Megapixels](#)

[SLR Shopping](#)

[SLR Stabilizers](#)

[Body Size](#)

[Sensor Cleaning](#)

[Top-Mounted Status Screen](#)

[H. The Shoot](#)

[3. Taking the Shot](#)

[Compose the Shot](#)

[Fill the Frame](#)

[Add Interest](#)

[Lead the Eye](#)

[The Rule Guideline of Thirds](#)

[Simplify the Background](#)

[Patterns are Fun](#)

[Blur the Background \(or the Foreground\)](#)

[Change Your Point of View](#)

[Screen Displays](#)

[Take the Shot](#)

[The Half-Press Trick](#)

[Review and Repeat](#)

[Deleting on the Camera](#)

[4. The Ten Decisions](#)

[Beep On or Off?](#)

[Flash On or Off?](#)

[When to Avoid the Flash](#)

[When to Force the Flash](#)

[Ways to Control the Flash](#)

[Notes on Redeye](#)

[Flash Modes](#)

[Auto or Scene Mode?](#)

[Use a Manual Mode?](#)

[Burst Mode or One-Shot?](#)

[White Balance: Manual or Auto?](#)

[RAW or JPEG?](#)

[How Much Exposure?](#)

[Exposure Modes](#)

[Exposure Compensation](#)

[Exposure Bracketing](#)

[The Histogram](#)

[The Highlights Warning](#)

[Which Focus Mode?](#)

[Where to Focus](#)

[When to Focus](#)

[Adjust the Light Sensitivity \(ISO\)?](#)

[5. The Anti-Blur Chapter](#)

[Shutter Speed and Aperture](#)

[Use Stabilization](#)

[Speed Up the Shutter](#)

[Where to Find It](#)

[Open the Aperture](#)

[Where to Find It](#)

[Fire the Flash](#)

[Set Up a Tripod](#)

[Fake a Tripod](#)

[Use the Self-Timer](#)

[Goose the ISO](#)

[Where to Find It](#)

[6. How They Did That](#)

[The Frozen Sports Shot](#)

[Get Close to the Action](#)

[Use a Fast Shutter Speed](#)

[Use Burst Mode](#)

[Prefocus](#)

[Light Metering](#)

[The Speeding Vehicle](#)

[The Panorama](#)

[The Silky Brook](#)

[Trailing Car Lights](#)

[Fireworks](#)

[SLRs and Manual-Control Compacts](#)

[Pocket Cameras](#)

[Lightning](#)

[The Star-Trails Shot](#)

[The Stunning Landscape](#)

[Shoot with Sweet Light](#)

[Layer Your Lights and Darks](#)

[Layer Your Foregrounds and Backgrounds](#)

[The Classic Sunset](#)

[The Prize-Winning Kid Shot](#)

[Theater Shots](#)

[The Undersea Stunner](#)

[The Not-Boring Vacation Shot](#)

[Packing Up](#)

[Get Creative](#)

[The Museum Challenge](#)

[Vacation Portraits](#)

[The Wedding Shot](#)

[Shots to Look For](#)

[The Ultra-Closeup](#)

[The Flying-Bug Shot](#)

[The Flower Shot](#)

[The Blurry-Background Portrait](#)

[The Outdoor Portrait](#)

[Rim Lighting \(Back Lighting\)](#)

[Open Shade](#)

[Composition](#)

[Existing-Light Portraits](#)

[Keep it Steady](#)

[The Camera Setup](#)

[The Lighting](#)

[Taking the Picture](#)

[The Self-Portrait](#)

[The Indoor-Flash Portrait](#)

[The Nighttime Portrait](#)

[Aperture-Priority Mode](#)

[Nighttime Flash Mode](#)

[The Exploding Zoom](#)

[7. The SLR Chapter](#)

[Lenses](#)

[Changing Lenses](#)

[Film Equivalent](#)

[JPEG Compression](#)

[Ten Accessories Worth the Weight](#)

[Camera Bag](#)

[Lens Cloths](#)

[Lens Cap Leash](#)

[Tripod](#)

[Monopod](#)

[Cable Shutter Release](#)

[External Flash](#)

[Lightscoop](#)

[Filters](#)

[Battery Grip](#)

[III. The Lab](#)

[8. Camera Meets Computer](#)

[Picasa and iPhoto](#)

[Where to Get Them](#)

[Transferring the Photos by USB Cable](#)

[Connecting with a USB Camera](#)

[Step 1: Turn on the Camera](#)

[Step 2: Import](#)

[Step 3: Erase Them from the Camera, or Not](#)

[Step 4: "Eject" the Camera's Card](#)

[Transferring Photos with a Card Reader](#)

[Two More Cute Tricks](#)

[Importing Pictures on Your Hard Drive](#)

[The File Format Factor](#)

[Movies](#)

[The Post-Import Inspection](#)

[Step 1: Click the "Container"](#)

[Instant Slideshow](#)

[Music Options](#)

[Controlling the Show](#)

[iPhoto](#)

[Picasa](#)

9. The Digital Shoebox

The Source List

Working with Thumbnails

Selecting Photos

Hiding Photos

Seeing Photos While They're Hidden

Unhiding Photos

Albums

Creating an Empty Album

Viewing an Album

Removing Photos from an Album

Deleting an Album

Smart Albums

Photo Info

Keywords, Titles, and Event Info

Flagging Photos

How to Use Flagged or Starred Photos

Searching for Photos by Text

Searching by Calendar or Timeline

iPhoto Calendar

Picasa Timeline

Keywords/Tags

Keywords (iPhoto)

Tags (Picasa)

Using Keywords/Tags

Backing Up Your Photos

iPhoto Backups

Picasa

10. Fixing Your Photos

Opening a Photo for Editing

The Picasa Editor

The iPhoto Editor

The Toolbar and Thumbnails Browser

Notes on Zooming and Scrolling

Backing Out, Undoing, and Restoring

Undo

Reverting to the Original

Rotate

Cropping

How to Crop a Photo

Straightening

Fixing Color

Redeye

Retouching Scratches and Hairs

Fine-Tuning Exposure

Boosting Contrast

Color Correction

[Color Correction in iPhoto](#)

[Color Correction in Picasa](#)

[Automatic White-Balance Correction](#)

[Saturation](#)

[Sharpening](#)

[Cheesy Effects](#)

[iPhoto Effects](#)

[Picasa Effects](#)

[Copy and Paste for Edits](#)

[External Editing Programs](#)

[iPhoto Meets External Program](#)

[Picasa Meets External Program](#)

[Juicy Bonus Features](#)

[iPhoto: The Histogram](#)

[Picasa: Captions](#)

[IV. The Audience](#)

[11. Photos on Paper—and Everything Else](#)

[Making Your Own Prints](#)

[Resolution and Shape](#)

[Calculating Resolution](#)

[Aspect Ratio](#)

[Tweaking the Printer Settings](#)

[Paper Matters](#)

[Resolution Warnings](#)

[Printing from iPhoto, Step by Step](#)

[Step 1: Choose the Photos to Print](#)

[Step 2: Choose a Printing Style \(Theme\)](#)

[Step 3: Choose Print and Paper Sizes](#)

[Step 4: Adjust the Layout](#)

[Step 5: Print](#)

[Printing From Picasa, Step by Step](#)

[Step 1: Choose the Photos to Print](#)

[Step 2: Choose a Layout](#)

[Step 3: Add a Border](#)

[Step 4: Review the List](#)

[Step 5: Print](#)

[Ordering Prints Online](#)

[Calendars, Cards, and Books](#)

[Picking the Pix](#)

[How to Design Your Book/Calendar/Card](#)

[Way Beyond Paper](#)

[12. Electronic Photos](#)

[Emailing Photos](#)

[Emailing Photos from iPhoto](#)

[Emailing Photos from Picasa](#)

[Publishing Photos on the Web](#)

[iPhoto Web Galleries](#)

[Viewing an iPhoto Web Gallery](#)

[Picasa Web Galleries](#)

[Viewing a Picasa Web Album](#)

[Syncing a Picasa Web Album](#)

[The Screen Saver](#)

[The iPhoto Screen Saver](#)

[The Picasa Screen Saver](#)

[Photo Wallpaper](#)

[From Slideshow to Movie](#)

[iPhoto Slideshow Movies](#)

[Picasa Slideshow Movies](#)

[Slideshow DVDs](#)

[V. Appendixes](#)

[A. Where to Go From Here](#)

[Camera Reviews](#)

[Camera Reviews](#)

[Learning and Discussing Photography](#)

[Online Printing](#)

[The Real World](#)

[Beyond the Software Freebies](#)

[Photo Organizers](#)

[Photo Editors](#)

[B. The Top Ten Tips of All Time](#)

[Take a lot of shots.](#)

[Take a lot of shots.](#)

[Half press the button to eliminate shutter lag.](#)

[Get close.](#)

[Don't buy into the megapixel myth.](#)

[To get the blurred-background effect, back up and zoom in.](#)

[Turn off the flash whenever you can.](#)

[Turn on the flash for sunny outdoor portraits.](#)

[No tripod? Improvise.](#)

[Use the self-timer when sharpness counts.](#)

[Exploit the magic hour.](#)

[C. Photo Credits](#)

[Chapter 1](#)

[Chapter 1](#)

[Chapter 3](#)

[Chapter 4](#)

[Chapter 5](#)

[Chapter 6](#)

[Chapter 7](#)

[Chapter 8](#)

[Appendix B](#)

David Pogue's Digital Photography: The Missing Manual

David Pogue

Copyright © 2009 David Pogue

O'Reilly books may be purchased for educational, business, or sales promotional use. Online editions are also available for most titles (safari.oreilly.com). For more information, contact our corporate/institutional sales department: 800.998.9938 or corporate@oreilly.com.

The O'Reilly logo is a registered trademark of O'Reilly Media, Inc. iPhone: The Missing Manual and related trade dress are trademarks of O'Reilly Media, Inc.

Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and O'Reilly Media, Inc. was aware of a trademark claim, the designations have been printed in caps or initial caps. Adobe Photoshop™ is a registered trademark of Adobe Systems, Inc. in the United States and other countries. O'Reilly Media, Inc. is independent of Adobe Systems, Inc.

Cover photo courtesy of Canon USA. The Canon logo is the trademark of Canon Inc. All rights reserved.

While every precaution has been taken in the preparation of this book, the publisher and author assume no responsibility for errors or omissions, or for damages resulting from the use of the information contained herein.

O'REILLY®

Pogue Press

The Missing Credits



David Pogue (author, photographer, indexer) is the weekly tech columnist for the New York Times, an Emmy-winning correspondent for CBS News Sunday Morning, weekly CNET contributor, and the creator of the Missing Manual series. He's the author or co-author of 49 books including 24 in this series and six in the "For Dummies" line (including Macs, Magic, Opera, and Classical Music). In his other life, David is a former Broadway show conductor, a piano player, and a magician. He lives in Connecticut with his wife and three awesome children.

Links to his columns and weekly videos await at www.davidpogue.com. He welcomes feedback about his books by email at david@poguelman.com.

Julie Van Keuren (copy editor, proofreader) is a freelance editor, writer, and desktop publisher who runs her "little media empire" from her home in Billings, Montana. Before starting her own business in 2006, Julie edited for The Virginian-Pilot of Norfolk, Va.; The Olympian in Olympia, Wash.; and The Seattle Times. She was honored for her work by the Virginia Press Association in 2004 and 2005 and received the Pacific Northwest Excellence in Journalism Award in 1996. She holds a bachelor's degree in journalism from Northwestern University. Email little_media@yahoo.com.

Tim Geaney (consultant, photo editor, photographer) has shot editorial photographs for magazines like British Vogue, Harper's Bazaar, Glamour, GQ, Self, and InStyle, and his commercial work appears in catalogs like Victoria's Secret, Nautica, J.Crew, Spiegel, Krizia, Nordstrom, Burdines, Neiman Marcus, Talbots, Saks Fifth Avenue, and Polo Ralph Lauren. He's also done commercials for Avon, video and CD covers for Harry Connick Jr., Internet video for Polo, and music videos. He lives in Connecticut with his wife Nancy and their children Genevieve (20) and Jack (18). He loves playing the piano, golf, and eating Mexican food. He's currently represented by Ford Artists in New York.

Saurabh Wahi (technical reviewer) has been a photographer for over a decade, taking pictures over 20 different countries. He's a public relations consultant at MWW Group, where he has represented Nikon since 2001. He has helped to launch dozens of Nikon's digital cameras, including every SLR since the introduction of D1x and D1H cameras in 2001. Saurabh lives in New York with his wife, Pooja. www.saurabhwahi.com

Acknowledgments

The Missing Manual series is a joint venture between the dream team introduced on these pages and O'Reilly Media. I'm grateful to all of them, especially designer Phil Simpson, who has now seen me through 24 books, and prose queen Julie Van Keuren, who answered my Craigslist ad for an InDesign expert with years of copy-editing and proofing experience—and did a spectacular job. Maybe someday I'll meet her.

A few other friends did great favors for this book. They include my un-stumpable intern David Pierce, who sought out answers, wrote a few bits for the book, and assisted me on the index; computer reps Kevin McCarthy (Canon), Geoff Coalter (Nikon), Kyle Kappmeier (Samsung), MeeJin Annan Brady (Panasonic), Betsy Brill (Lightscoop), and John Nack (Adobe); and Lesa Snider King.

Thanks to David Rogelberg for believing in the idea and Laurie Petrycki for the deadline extension. Above all, my love and appreciation go to Jennifer, Kelly, Tia, and Jeffrey. They make these books—and everything else—possible.

—David Pogue

The Missing Manual Series

Missing Manual books are superbly written guides to computer products that don't come with printed manuals (which is just about all of them). Each book features a handcrafted index; cross-references to specific page numbers (not just "See Chapter 14"); and RepKover, a detached-spiral binding that lets the book lie perfectly flat without the assistance of weights or cinder blocks.

Recent and upcoming books include:

Access 2007: The Missing Manual by Matthew MacDonald

AppleScript: The Missing Manual by Adam Goldstein

AppleWorks 6: The Missing Manual by Jim Elferdink and David Reynolds

CSS: The Missing Manual by David Sawyer McFarland

Creating Web Sites: The Missing Manual by Matthew MacDonald

Dreamweaver CS4: The Missing Manual by David Sawyer McFarland

eBay: The Missing Manual by Nancy Conner

Excel 2007: The Missing Manual by Matthew MacDonald

Facebook: The Missing Manual by E.A. Vander Veer

FileMaker Pro 9: The Missing Manual by Geoff Coffey and Susan Prosser

Flash CS4: The Missing Manual by Chris Grover

FrontPage 2003: The Missing Manual by Jessica Mantaro

Google Apps: The Missing Manual by Nancy Conner

The Internet: The Missing Manual by David Pogue and J.D. Biersdorfer

iMovie '08 & iDVD: The Missing Manual by David Pogue

iPhone: The Missing Manual, 2nd Edition by David Pogue

iPhoto '08: The Missing Manual by David Pogue

iPod: The Missing Manual, 7th Edition by J.D. Biersdorfer

JavaScript: The Missing Manual by David Sawyer McFarland

Mac OS X Leopard: The Missing Manual by David Pogue

Microsoft Project 2007: The Missing Manual by Bonnie Biafore

Office 2007: The Missing Manual by Chris Grover, Matthew MacDonald, and E.A. Vander

Veer

Office 2008 for Macintosh: The Missing Manual by Jim Elferdink

PCs: The Missing Manual by Andy Rathbone

Photoshop CS4: The Missing Manual by Lesa Snider King

Photoshop Elements 7: The Missing Manual by Barbara Brundage

Photoshop Elements 6 for Mac: The Missing Manual by Barbara Brundage

PowerPoint 2007: The Missing Manual by E.A. Vander Veer

QuickBase: The Missing Manual by Nancy Conner

QuickBooks 2009: The Missing Manual by Bonnie Biafore

Quicken 2009: The Missing Manual by Bonnie Biafore

Switching to the Mac: The Missing Manual, Tiger Edition by David Pogue and Adam

Goldstein

Switching to the Mac: The Missing Manual, Leopard Edition by David Pogue

Wikipedia: The Missing Manual by John Broughton

~~Windows XP Home Edition: The Missing Manual, 2nd Edition by David Pogue~~

~~Windows XP Pro: The Missing Manual, 2nd Edition by David Pogue, Craig Zacker, and~~

Linda Zacker

Windows Vista: The Missing Manual by David Pogue

Windows Vista for Starters: The Missing Manual by David Pogue

Word 2007: The Missing Manual by Chris Grover

Your Brain: The Missing Manual by Matthew MacDonald

Introduction

Digital photography is just about the only kind of photography left these days. At this point, 99 percent of all cameras sold are digital. Yes, it's taken awhile—the first consumer digital camera came out in 1994—but film photography has been reduced to a niche activity. No new film cameras are being designed, and very few companies still sell film.

It's easy to understand why digital has taken off.

- The quality is there. Practically nobody is still arguing that film photos look better than digital ones. The color, the tonal range, the resolution—it's all caught up with and even exceeded film.
- It's free—and freeing. When you shoot digitally, you don't pay a cent for film or photo processing. You can shoot dozens of variations of a shot, experimenting with angle, camera settings, lighting—and then throw away all but the winners.

That's incredibly liberating. You'll become a much better photographer much faster, because you can experiment forever without spending any money.

- Feedback is instantaneous. You can examine a photo on the screen a second after taking it. If something bothers you—like the telephone pole growing out of your best friend's head—you can just delete it and try again.

Digital photographers sleep much better at night. They never worry about how the day's pictures will turn out; they already know.

- You can be your own darkroom tech. Even an amateur can retouch and enhance photos, experiment with cropping and effects, and make prints and enlargements right at home.
- People will see your pictures. What's happened to most film photos taken by most people? Where are they at this moment? Probably still in their drugstore envelopes, stashed in attic boxes. Very few of them ever really saw the light of day.

Digital photos are another story. You can blast them to your friends by email or post them on a Web page. You can turn them into screensavers or desktop pictures. You can watch them play all day on a digital picture frame. You can create gorgeous slideshows, with music and crossfades, that play on your computer or TV.

And you can have them printed on just about anything with a surface: posters, mugs, towels, underwear, Christmas ornaments, mouse pads, U.S. postage stamps, blankets, and on and on.

But this is just rational stuff. Creative freedom, instant gratification, economy, and ease of distribution—what people really love about all that is the emotional high it gives them. So many obstacles have been taken out of the way that there's almost nothing left standing between your vision and your audience. It's a blast!

All right, all right—down boy.

It turns out that this kind of talk really bugs veteran film photographers. Plenty of them resent all of this breathless digital-camera hype—or secretly fear it, thinking it might make all of their hard-won expertise obsolete.

The truth is, though, that veteran shutterbugs usually wind up becoming the best digital photographers. The basics of photography haven't changed. It's still your moment, your vision, and how you see the light falling on your subjects and backgrounds. All you're really losing is a lot of

expense and chemicals pouring down the drain.

~~Even so, the curmudgeons are right about one thing: There are still some "negatives" in digital photography.~~

Digital cameras are generally more expensive than film cameras. True, you make up the cost very quickly with the savings from film and developing. But technology marches on ridiculously fast; the big camera companies come out with new camera models (and retire old ones) every six months. It's critical that you buy your camera carefully and spend those dollars well. (See Chapters [Chapter 1](#) and [Chapter 2](#).)

There's plenty of complexity, too, both in the "digital" part and in the "photography" part. Now you're expected to learn both photography jargon (ISO, white balance, depth of field, shutter-priority mode...) and computer jargon (JPEG compression, EXIF tags, image resolution...).

Finally, there's the little issue of what to do with all those pictures. People wind up taking a lot more digital photos than they ever did with film, simply because it's free and easy. Before you know it, your hard drive creaks with 60,000 pictures of your kid playing soccer.

But what then? Dump them all on your hard drive, tens of thousands of JPEG files, stashed in folders?

People can still look at and enjoy photos (the paper kind) that were made 200 years ago. But will our JPEG files still be there for our ancestors in 200 years? Will the JPEG format even exist in 200 years? How about 50?

About This Book

This book was born to address all of these issues, and more. It's divided roughly in half, which you can think of as "photography" and then "digital":

- **Photography.** First, this book provides a complete grounding in professional photography, giving careful consideration to the artistic factors involved in shooting—composition, lighting, and exposure—and how to apply them using the 37 billion features in the modern digital camera. And by the way: Unlike most photography books, which concern themselves primarily with SLR cameras (those big black ones with removable lenses), this one lavishes equal love on the compact pocket cameras. They do, after all, represent 91 percent of all cameras sold.
- **Digital.** Second, this book provides a full course on what to do after you've taken the pictures. It follows the entire life cycle of those photos: transferring them to your Mac or PC, using free "digital shoebox" software to organize and edit them, and finally sending your pictures out to find their audience. Every conceivable distribution method is covered in this book: email, Web, prints, slideshows, desktop wallpaper, collages, movies, screensavers, even jigsaw puzzles and underwear.

Note

This book provides a guide to two photo-management programs: Picasa (for Windows, from Google) and iPhoto (from Apple, preinstalled on every Mac). It covers these two programs because they're (a) brilliant, (b) easy to use, and (c) free.

If you own Photoshop or Photoshop Elements, which are much more hard-core photo editors, then congratulations—you're ahead of the game. Picking up either *Photoshop: The Missing Manual* or *Photoshop Elements: The Missing Manual* will bring you 900 more pages of digital-photography goodness.

About the Outline

This book is divided into four parts, each containing several chapters:

- [Part I](#), The Camera, is a distillation of everything that I, your cheerful author, have learned over eight years of testing and reviewing digital cameras for the New York Times. It's the ultimate buying guide. It tells you which features are worth looking for, and which are just marketing blather.
- [Part II](#), The Shoot, is a course in photography and digital cameras. These chapters cover composition, lighting, shutter speed, aperture, when to use the flash, eliminating blur—and how your digital camera controls all of these parameters. [Chapter 6](#), in particular, is a gold mine: it features all the classic professional photo types (frozen action, silky-smooth waterfall, car headlight trails at night, and so on) and tells you precisely how to achieve those effects yourself. This section of the book creates a bridge between everyday snapshots and the kinds of emotionally powerful shots you see in magazines and newspapers.
- [Part III](#), The Lab, covers the fundamentals of getting your photos into iPhoto or Picasa, organizing and filing them, searching them, and editing them to compensate for weak lighting (or weak photography).
- [Part IV](#), The Audience, is all about the payoff. This is the moment you've presumably been waiting for ever since you snapped the shots: showing them off. It covers the many ways you can present those photos to other people: as a slideshow, as prints you order from the Internet, as a photo book you make yourself, as a published custom book, as a Web page, as an email attachment, as a slideshow movie that you post on the Web, as a photo gift, and so on.

At the end of the book, [Appendix A](#) offers some Web sites and magazines that will help fuel your growing addiction to digital photography; [Appendix B](#) offers a tidy summary of the 10 best tips in the book; and [Appendix C](#) lists the credits for the photos in this book.

About → These → Arrows

Throughout this book, and throughout the Missing Manual series, you'll find sentences like this one: "Choose File → Open." That's shorthand for a much longer instruction: "Click the File menu, open it; from the menu, choose the Open command."

About MissingManuals.com

At www.missingmanuals.com, you'll find news, articles, and updates to the books in this series.

But if you click the name of this book and then the Errata link, you'll find a unique resource: a list of corrections and updates that have been made in successive printings of this book. You can make important corrections right into your own copy of the book, if you like.

In fact, the same page offers an invitation for you to submit such corrections and updates yourself. In an effort to keep the book as up-to-date and accurate as possible, each time we print more copies of this book, we'll make any confirmed corrections you've suggested. Thanks in advance for reporting any glitches you find!

In the meantime, we'd love to hear your suggestions for new books in the Missing Manual line. There's a place for that on the Web site, too, as well as a place to sign up for free email notification of new titles in the series.

The Very Basics

You'll find very little nerd terminology in this book. You will, however, encounter a few terms and concepts that you'll see frequently in your computing life:

- **Clicking.** To click means to point the arrow cursor at something onscreen and then—without moving the cursor at all—press and release the clicker button on the mouse (or laptop trackpad). To double-click, of course, means to click twice in rapid succession, again without moving the cursor at all. And to drag means to move the cursor while keeping the button continuously pressed.

When you're told to Shift-click something, you click while pressing the Shift key. Control-clicking (in Windows) and ⌘-clicking (on the Mac) work the same way—just click while pressing the corresponding key on your keyboard.

Note

On Windows PCs, the mouse has two buttons. The left one is for clicking normally; the right one produces a tiny shortcut menu of useful commands.

Desktop Macs come with a mouse that looks like it has only one button but can actually detect which side of its rounded front you're pressing. If you've turned on the feature in the Keyboard & Mouse pane of System Preferences, you, too, can right-click things on the screen. You can right-click on a Mac laptop by clicking while resting two fingers on the trackpad.

So if you have a Mac, and you see the phrase, "Right-click the photo," well, right-click the photo. If nothing happens, then you haven't turned on this feature in System Preferences. If you can't be bothered, then Control-clicking achieves the same effect.

- **Keyboard shortcuts.** Every time you take your hand off the keyboard to move the mouse, you lose time and potentially disrupt your creative flow. That's why many experienced computer fans use keystroke combinations instead of menu commands wherever possible. Pressing ⌘-P (on the Mac) or Ctrl+P (on the PC) opens the Print dialog box, for example.

When you see a shortcut like ⌘-Q, it's telling you to hold down the ⌘ key, and, while it's held down, type the letter Q, and then release both keys.

If you've mastered this much information, you have all the technical background you need to enjoy *Digital Photography: The Missing Manual*.

Part I. The Camera

[Chapter 1](#)

[Chapter 2](#)

Chapter 1. Camera Kinds

Year after year, the digital camera is one of the hottest-selling products on the face of the earth. Every year, 15 million people snap them up, spend \$42 billion in the process, and take 50 billion photos with them.

All that popularity is good, because it means the marketplace is crowded. Competition means lower prices, nicer features, and better cameras.

But it's also bad, because all those hundreds of models make camera shopping much more complicated. And not to depress you or anything, but camera companies generally update their lineups twice a year (in October and February). Each generation offers better features, improved resolution, and lower prices. That's right: Whatever camera you buy today will be obsolete—well, at least no longer sold—in about six months.

On top of all that, the features and specs that should matter when you shop for a camera usually aren't easy to figure out. (Just try, for example, to find out the sensor size for a camera you're considering; it's not on the box and not in the brochure.) Meanwhile, the camera makers and camera stores often flog features and specs that don't matter at all, like the number of megapixels the camera has. (Yes, that's right. Read [Chapter 2](#) to find out why having a lot of megapixels is irrelevant—even a bad thing.)

The major players include companies like Canon, Nikon, Sony, Kodak, Panasonic, Olympus, HP, Casio, and Fujifilm. Each company offers a variety of models and a prices to compete for your dollar.

Before you learn how to use a camera, of course, you have to have a camera. This chapter and the next provide an overview of every kind of camera, and every feature on those cameras, accompanied by notes that tell you whether each one is genuinely useful or just marketing blather. May these chapters guide you the next time you're shopping for a digital camera.

Small, Medium, or Large?

Cameras come in an enormous range of sizes—a much bigger variation than you'd find in, say, music players or cellphones. They're so differentiated, they almost constitute different product categories.

Pocket Cameras

The huge majority of people—more than 90 percent—wind up buying those little shirt-pocket cameras, about the size of an iPod or cellphone. There's an overwhelmingly convincing reason for this: If the camera is small, you'll be more likely to have it with you when life's great photo ops arise.

And real life proves them right. You can carry these minicams in your pocket, purse, or glove compartment, or toss one into your carry-on bag for a trip, without adding any real weight or bulk. Even professional photographers, usually laden with 30-pound bags of camera gear, often carry around a pocket cam when they're "off duty," just in case (or as a backup).



Pocket cams usually take perfectly good photos; occasionally, terrific ones. They also take movies, which is a huge advantage (and one that accounts for the slow but steady crashing of the camcorder market). But there's a big difference between usually and always, and there's a huge gulf between perfectly good photos and amazing ones.

Here, for example, are some of the frustrations with pocket cams:

- **Shutter lag.** This is it: the one that drives everybody crazy. Shutter lag is the delay between the time you press the shutter button and the time you get the shot. It's only half a second, or even less, but that delay can make all the difference. In that time, the kid has left the diving board, the expression you wanted is gone, and you've missed the home-run swing.

Technically speaking, shutter lag is the time it takes for the camera to calculate focus and exposure (how bright to make the scene). Little cameras don't sell unless they're inexpensive, so they contain fairly feeble circuitry—slowish chips that take their time doing those calculations.

Tip

There is, of course, a simple way to eliminate shutter lag: Use the half-press technique. It's described on [Take the Shot](#).

- **Lousy low-light shots.** Tiny cameras usually have tiny sensors—the small, rectangular light-sensing chips that do what film used to do in the cameras of old. Sensors improve each

- [Ethnicity in Ancient Amazonia: Reconstructing Past Identities form Archaeology, Linguistics, and Ethnohistory for free](#)
- [New York Magazine \(16-22 November 2015\) for free](#)
- [Sten \(The Sten Chronicles, Book 1\) pdf, azw \(kindle\), epub](#)
- [download online Write Great Fiction: Plot & Structure pdf, azw \(kindle\), epub](#)

- <http://www.netc-bd.com/ebooks/Piano-Stories.pdf>
- <http://damianfoster.com/books/Philosophy-Today--Volume-54--Number-2--Summer-2010-.pdf>
- <http://fortune-touko.com/library/Wife-22.pdf>
- <http://cavalldecartro.highlandagency.es/library/The-Broken-Man.pdf>