REAL☀WORLD

Camera Raw
with Adobe® Photoshop® CS5

INDUSTRIAL-STRENGTH PRODUCTION TECHNIQUES

Exploring v5.2 features

Shooting for raw formats

Refining a workflow

JEFF SCHEWE and **BRUCE FRASER**

REAL WORLD CAMERA RAW WITH ADOBE PHOTOSHOP CS5
Jeff Schewe and Bruce Fraser

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PREFACE
Real World Raw

If you're reading this book because you want to be told that digital really is better than film, look elsewhere. The term "digital photography" may still be in current use, but sooner rather than later, it will be replaced by the simple term "photography." If you want to be told that shooting digital raw is better than shooting JPEG, you'll have to read between the lines—what this book does is explain how raw *differs* from JPEG, and how you can exploit those differences.

But if you're looking for solid, tested, proven techniques for dealing with hundreds or thousands of digital captures a day—moving them from the camera to the computer, making initial selects and sorts, optimizing the captures, enriching them with metadata, and processing them into deliverable form—this is the book for you. The entire reason for writing this book was to throw a life belt to all those photographers who find themselves drowning in gigabytes of data.

The combination of Photoshop CS5, Bridge CS5, and the Camera Raw 6 plug-in offers a fast, efficient, and extremely powerful workflow for dealing with raw digital captures, but the available information tends to be short on answers to questions such as the following:

- What special considerations should I take into account when shooting digital raw rather than film or JPEG?

- What edits should I make in Camera Raw?

- How and where are my Camera Raw settings saved?

- How can I fine-tune Camera Raw's color performance to better match my camera's behavior?

- How can I set up Bridge to speed up making initial selects from a day's shoot?

- How can I make sure that every image I deliver contains copyright and rights management notices?

- How do I make sure that all the work I do in Bridge, ranking or flagging images, entering keywords and other metadata, and sorting in a custom order, doesn't suddenly disappear?

- How can I decide which image-editing adjustments should I do in Camera Raw versus Photoshop?

- How can I automate the conversion of raw images to deliverable files?

Digital shooters face these questions, and many others, every day. Unfortunately, the answers are hard to find in the gazillion of Photoshop books out there—much less Photoshop's own manuals—and when they're addressed at all they tend to be downplayed in favor of whizzy filter effects. This book answers these questions, and the other daily workflow issues that arise, head-on, and focuses on everything you need to do *before* you get your images open in Photoshop.

Teach a Man to Fish

The old saw goes, "Give a man a fish, and you give him a meal; teach a man to fish, and you give him a living." By that reckoning, our goal is to make you, gentle reader, a marine biologist—teaching you not only how to fish, but also to understand fish, how they think, where they hang out, and how to predict their behavior.

Digital capture is the current state of photography, but if you're on a deadline and suddenly find that all your raw images are mysteriously being processed at camera default settings rather than the carefully optimized ones you've applied, or your images insist on displaying in order of filename rather than the custom sort order you spent an hour constructing, you can easily be forgiven for wishing for a nostalgic return to the days of smelly chemicals, rush processing at your friendly local lab, and sorting film on a light table with a grease pencil.

Our hope is that you'll turn to this book.

You Are the Lab

One of the best things about shooting raw is the freedom it confers in imposing your preferred interpretation on your images. The concomitant downside is that if you don't impose your preferred interpretation on the images, you'll have to settle for one imposed by some admittedly clever software that is nonetheless a glorified adding machine with no knowledge of tone and color, let alone composition, aesthetics, or emotion.

With raw capture, you have total control, and hence total responsibility. Too many photographers wind up converting all their raw images at default settings and then try to fix everything in Photoshop, because Photoshop is something they know and understand. You'd be hard pressed to find bigger Photoshop fans than Bruce Fraser and Jeff Schewe—we've been living and breathing Photoshop for over 20 years—but the fact is that Camera Raw lets you do things that you simply cannot do in Photoshop. If you don't use Camera Raw to optimize your exposure and color balance, you'll wind up doing a lot more work in Photoshop than you need to, and the quality of the results will almost certainly be less than you'd obtain by starting from an optimized raw conversion rather than a default.

Drowning in Data

If you had to edit every single image by hand, whether in Photoshop or in Camera Raw, you'd quickly find that digital is neither faster nor cheaper than film. A day's shoot may produce six or seven (or more) gigabytes of image data, and it all has to get from the camera to the computer before you can even start making your initial selects. Building an efficient workflow is critical if you want to make the digital revolution survivable, let alone enjoyable. So just about every chapter in this book contains key advice on building a workflow that lets you work smarter rather than harder.

Making Images Smarter

We're already living science fiction, and the future arrived quite a while ago. Some of the most-overlooked aspects of digital imaging are the opportunities offered by metadata. Your camera already embeds a great deal of potentially useful information into the image—the date and time of shooting, the ISO speed, the exposure and aperture settings, the focal length, and so on—but

Bridge makes it easy to enrich your images still further with keywords and other useful metadata, and lets you protect your intellectual property by embedding copyright and rights management.

Metadata is a means of adding value to your images. Camera metadata provides unambiguous image provenance, while keywords make it much likelier that your images will be selected by clients you've yet to meet. An image with no metadata is simply a collection of pixels, while an image that has been enriched with metadata is a digital asset that can keep earning for a lifetime.

Starting Out Right

The reason for doing a lot of work in Camera Raw and Bridge is simple. If you do the work correctly right at the start of the workflow, you'll never have to do it again. When you attach your preferred Camera Raw setting to a raw image, those settings will be used every time you open that raw image, with no further work required on your part. Any metadata you apply to the raw image will automatically be embedded in every converted image you create from that raw image unless you take steps to remove it (and yes, we'll show you how to do that too). Not only do you have to do the work only once, but you also greatly reduce the likelihood that it will be undone later.

BRUCE FRASER'S LEGACY

When Bruce penned the first edition of this book, he claimed to be the world's worst photographer. Jeff, however, knew better. Bruce had a sharp mind and an insatiable desire to understand and control the digital photographic process. He had far more capability than he was willing to admit and he had the unique capacity to express it.

Bruce also had something that every photographer should be infected with—an incurable desire to shoot. While Bruce did not try to make a profession out of his photographic endeavors, he did share a "love of the game" with everybody who picks up a camera.

It's lamentable that Bruce is no longer with us to carry this book forward. However, his spirit lives on in these pages. Bruce had asked his friend Jeff Schewe to take over *Real World Camera Raw*, and Jeff has tried to maintain

Bruce's structure and writing voice. It's proven to be a challenging task because so much of what is in Camera Raw 6 is completely new, but the job was made slightly easier by virtue of the fact that Bruce himself was a major influence on many aspects of Camera Raw.

This edition of the book still contains a lot of Bruce (the best stuff) and careful updates and additions by Jeff to illuminate just how Camera Raw has been changed.

Bruce is greatly missed, but he is remembered by the legions of people whose lives were touched and enriched by his teachings and writings.

HOW THE BOOK IS ORGANIZED

A significant problem faced in writing this book is that everything in the workflow affects everything else in the workflow, so some circularity is inherent.

The first two chapters look at the technical underpinnings of digital raw capture. Chapter 1, *Digital Camera Raw*, looks at the fundamental nature of raw images—what they are, and the advantages and pitfalls of shooting them. Chapter 2, *How Camera Raw Works*, looks at the specific advantages that Camera Raw offers over other raw converters.

Chapter 3, *Raw System Overview*, provides a road map for the remainder of the book by showing the roles of the three major components in the system: Photoshop, Bridge, and the Camera Raw plug-in.

Chapter 4, *Camera Raw Controls*, describes the many features offered by the Camera Raw plug-in, which has grown to the point where it's almost an application in its own right. Chapter 5, *Hands-On Camera Raw*, explores how to use these features quickly and effectively to evaluate and edit raw captures.

Chapter 6, *Adobe Bridge*, looks at the features in Bridge CS5 that are particularly relevant to a digital photographic workflow—Bridge is a surprisingly deep application that serves the entire Adobe Creative Suite, not just Photoshop. Chapter 7, *It's All About the Workflow*, doesn't evangelize a specific workflow, because our needs may be very different from yours. Instead, it introduces some basic workflow principles, then looks at the various ways in which you can use Bridge to perform common tasks, so that you can build the workflow that works for you.

Chapter 8, *Mastering Metadata*, delves into the various metadata schemes used by Camera Raw and Bridge and shows you how to make them work for you. Finally, Chapter 9, *Exploiting Automation*, shows you how to leverage the work done in Camera Raw and Bridge to produce converted images that require minimal work in Photoshop and contain the metadata you want.

A Word to Windows Users

This book applies to both Windows and Mac computers. But Bruce and Jeff have been using Macs for over 20 years, so all the dialog boxes, menus, and palettes are illustrated using screen shots from the Mac OS version. Similarly, when discussing the many keyboard shortcuts in the programs we discuss, we normally cite the Mac OS versions. In almost every case, the Command key translates to the Ctrl key and the Option key translates to the Alt key. In the relatively few exceptions to this rule, we've spelled out both the Mac OS and the Windows versions explicitly. We apologize to all you Windows users for the small inconvenience, but because Photoshop is so close to being identical on both platforms, we picked the one we know and ran with it.

The Pace of Innovation

When this edition of the book was started, Camera Raw 6 was pretty much finished even though CS5 had not yet been released. We struggled with the timing of the book's release, but knew that Adobe's Thomas Knoll and his crew were planning a June surprise, so we deferred the release in order to use Camera Raw 6.1 as the base version for the book. The 6.1 features and functionality should remain consistent until the next version of the Adobe Creative Suite, so if you are using Camera Raw 6.1, or above there shouldn't be any differences. If there are any important changes and updates that impact the features and functionality of Camera Raw 6, Bridge, and Photoshop CS5, they will be outlined on the Real World Camera Raw Web site at www.realworldcameraraw.com.

A Note About Camera Raw Updates

Adobe has stated that Camera Raw will be updated three or four times per year. These updates will be made to add compatibility for new cameras and address certain maintenance issues relating to known bugs and compatibility with Adobe Photoshop Lightroom. The Camera Raw 6.1 update was unusual in that it actually added new features and functionality.

You must run Photoshop CS5 in order to use Camera Raw 6.x. Some people may lament that fact that Camera Raw isn't compatible with older versions of Photoshop. Camera Raw 5 will only run in Photoshop CS4, Camera Raw 4 will only run in Photoshop CS3, and Photoshop CS3's last compatible version was Camera Raw 3.7. However, even Photoshop CS with Camera Raw 2.4 can open a DNG made with DNG Converter 6.x of a raw shot with a camera that was just released.

As far as updating Camera Raw, the easiest method now is to use the Adobe Updater. There have been a lot of tech support issues with users not understanding how and where to install the updates manually. If you feel compelled to update manually, just understand that Camera Raw doesn't go inside the normal Photoshop Plug-ins folder since it needs to be used by both Photoshop and Bridge. Below are the operating system–specific installation locations.

Mac OS X:

Root/Library/Application Support/Adobe/Plug-Ins/CS5/File Formats/Camera Raw.plugin

Windows XP and Vista and Windows 7 32-bit binaries:

Boot\Program Files\Common Files\Adobe\Plug-ins\CS5\File Formats\Camera Raw.8bi

Photoshop CS5 running as a 64-bit binary in Windows Vista x64 or Windows 7 x64 requires installations in two locations:

1. The 32-bit version of Camera Raw 6.x in:

    Boot\Program Files (x86)\Common Files\Adobe\Plug-Ins\CS5\File Formats\Camera Raw.8bi

2. The Camera Raw 6.x version found in the folder labeled 64-bit (which will be the 64-bit version of the plug-in) should be placed in the following directory:

    Boot\Program Files\Common Files\Adobe\Plug-Ins\CS5\File Formats\Camera Raw.8bi

If you put it anywhere else, either Bridge or Photoshop may not find it. You should also be sure to decompress the downloaded file so it has the correct extension, and you should never have more than one version in the final folder. Simply renaming the older version isn't sufficient; you have to remove it entirely or put a special character as the leading character of the name to tell Photoshop and Bridge to ignore it upon launch.

If you browse a folder and your raw images aren't showing up correctly, or you can't call up Camera Raw from either Bridge or Photoshop, the plug-in is probably not properly installed. Also note that the installation locations we just listed are not in your user folder but in the root level of your boot hard drive (unless you've installed Photoshop in an odd or alternative location, which we seriously suggest avoiding). Adobe will be happy to charge you money for tech support to correct your problems—so we suggest just using the Adobe Updater to avoid hassles.

DOWNLOADS

For those of you who may find such an exercise helpful, we've made some of the raw files of the images that we evaluated and processed in Chapter 5, *Hands-On Camera Raw*, available for download should you wish to go through the steps yourself. You can find them at www.realworldcameraraw.com. The login is   , and the password (in a Brucian tribute to Mel Brooks) is   .

CAMERA RAW CREDITS

Camera Raw was originally designed and written by Thomas Knoll, coauthor of Photoshop itself, along with his brother John Knoll. Thomas remains the founder and primary author of Camera Raw and the DNG format. Additional code was written by Mark Hamburg, Zalman Stern, and Eric Chan. Camera Raw's engineering manager is Peter Merrill; the product manager is Tom Hogarty; and the program manager is Melissa Itamura. Camera Raw QE (quality engineering) is done by Heather Dolan and Adriana Ohlmeyer, and the QE manager is Michelle Qi. Camera Raw's raw processing pipeline has been incorporated into Adobe Photoshop Lightroom, and the Camera Raw plug-in is used in Adobe Photoshop Elements (in a limited form) as well as in Adobe After Effects CS5 Professional.

THANK YOU!

Bruce and Jeff owe thanks to the many people who made this book possible. First, Thomas Knoll, both for creating Photoshop and Camera Raw, and for taking the time to patiently answer questions while chapters were under construction and for correcting a number of egregious errors. Thanks also to the inimitable Russell Preston Brown, who convinced Peachpit Press that this book was needed and that Bruce was the person to originally write it. Any errors or inadequacies that remain in the book are despite their best efforts and are solely our responsibility.

We couldn't have done this without the Peachpit Press Dream Team. Rebecca Gulick, our editor extraordinaire, somehow just makes things happen when and how they need to while appearing absolutely unflappable; production virtuoso Lisa Brazieal turned our virtual creation into a manufactured reality; WolfsonDesign finessed the text and graphics on the page; Kim Saccio-Kent and Patricia Pane painstakingly groomed the manuscript to make things more clear and consistent; Rebecca Plunkett provided the comprehensive index to make sure that everyone can find the information they need.

Thanks to our partners in PixelGenius LLC—Martin Evening, R. Mac Holbert, Seth Resnick, Andrew Rodney, and the late Mike Skurski—for forging a brotherhood that does business in a way that makes MBAs blanch but keeps our customers happy, and for being the finest bunch of people with whom it has ever been our pleasure and privilege to work. Thanks to Michael Keppel, our engineer, for really good engineering (since we can't) and thanks also to the Pixel Mafia—you know who you are!

Last but by no stretch of the imagination least, Bruce would no doubt have paid homage to his wife, Angela, for putting up with the stresses and strains that go with an author's life, for being his best friend and partner, and for making his life such a very happy one. Jeff would also like to thank his wife of 36+ years, Rebecca, for being the one and only, forever (or at least a really, really long time), and his daughter, Erica, who loses quality time with Dad because of the work.

Jeff Schewe, on behalf of Bruce Fraser

Chicago, June 2010

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CHAPTER FOUR
Camera Raw Controls

DIGITAL DARKROOM TOOLS

In this chapter, we'll look at the Camera Raw controls in excruciating detail. Camera Raw can start working as soon as you point Bridge at a folder full of raw images, creating thumbnails and previews. But its real power is in the degree of control and flexibility it offers in converting raw images to RGB.

Bear in mind as you go through this chapter that, while Camera Raw lets you make painstaking edits on each image, it doesn't force you to do so! Unless you're being paid by the hour, you'll want to take advantage of Camera Raw's ability to synchronize edits between multiple images and to save settings and subsets of settings that you can apply to multiple images in Bridge without actually launching Photoshop, or even opening the images in Camera Raw.

But before you can run, you must learn to walk—and before you can batch-process images with Camera Raw, you need to learn how to deal with them one at a time. If raw files are digital negatives, Camera Raw is the digital darkroom that offers all the tools you need to put your own unique interpretation on those digital negatives.

Like negatives, raw files are simply a starting point. The tools in Camera Raw offer much more control over the interpretation of the captured image than any wet darkroom. Camera Raw is a plug-in the way *War and Peace* is a story and The Beatles were a pop group. At first, the sheer number of its options may seem overwhelming, but they're presented in a logical order, and you can master them in a fraction of the time it takes to learn traditional dark-room skills.

Camera Raw, Photoshop, and Bridge

NOTE The decision of whether to launch Camera Raw in Bridge or in Photoshop is a bit complicated when you factor in 64-bit computing. Photoshop CS5 can run as a 64-bit application while Bridge CS5 is still a 32-bit application. That means that if you are running Photoshop as a 64-bit application and wish to take full advantage of the benefits of running 64-bit application (such as more addressable RAM and slightly faster processing) you will want to open Camera Raw hosted by Photoshop CS5. If you open a lot of images at one time in the filmstrip mode or are working with really large raw files, you will see performance benefits from having Camera Raw hosted by Photoshop CS5 when launched as a 64-bit application.

As we explained in the previous chapter, unlike the old Photoshop File Browser, Bridge CS5 is a stand-alone application. One of the many advantages that stand-alone status confers is that Bridge CS5 is capable of hosting Camera Raw when Photoshop is either not running or (more likely) is busy doing something else. You can open Camera Raw in Bridge *or* Photoshop, whichever is more efficient for the task at hand.

An important workflow consideration is whether you want to edit images hosted in Bridge or Photoshop. If you want to edit the Camera Raw settings for one or more images but don't plan on opening them in Photoshop, you can open Camera Raw in Bridge while Photoshop is, for example, busy running a batch process. Or you can edit images in Camera Raw in Photoshop while Bridge is busy caching a new folder. You can even open one Camera Raw window in Bridge and another in Photoshop, though doing so has the potential to make you a very confused puppy! The Default button is a subtle clue as to which application is currently hosting Camera Raw (see Figure 4-1).

Another important workflow consideration is the filmstrip mode in Camera Raw. You can open and edit multiple images in Camera Raw, and transfer settings from one image to another right inside the Camera Raw interface (see Figure 4-2). However, in this chapter, we'll concentrate on the tools Camera Raw offers for editing a single image, because as previously noted, you must learn to walk before you can run. So most of the screen captures of Camera Raw in this chapter will use the single-image mode.

The image controls are the same no matter which application is hosting Camera Raw and no matter how many images you've chosen to edit. We'll discuss workflow and ways to handle multiple images efficiently in Chapter 7, *It's All About the Workflow*. But for the bulk of this chapter, let's take our images one at a time and focus on the actual tools you use to manipulate them.
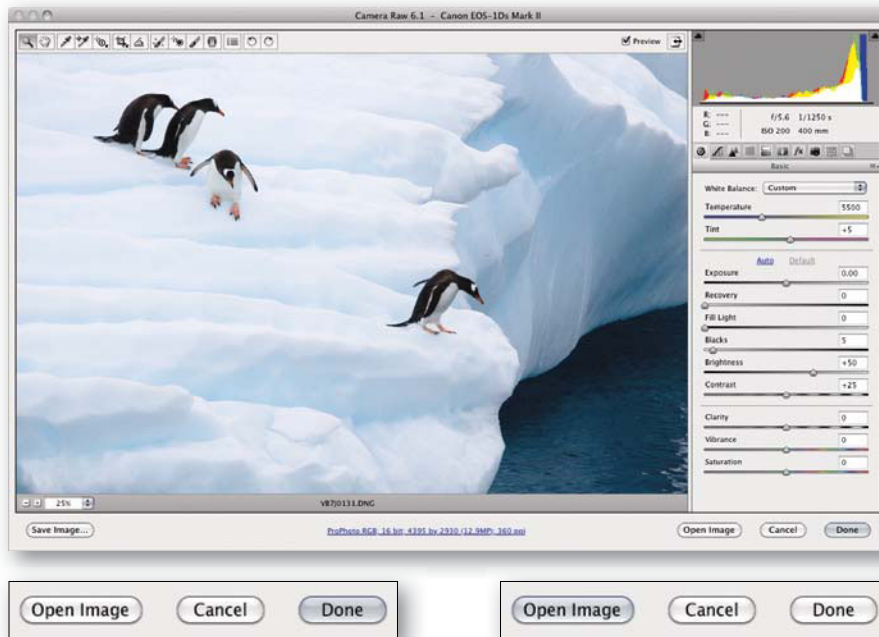
Camera Raw hosted by Bridge   Camera Raw hosted by Photoshop

Figure 4-1 Camera Raw in Bridge and in Photoshop (in single-image mode).

When Camera Raw is hosted by Bridge (left buttons), the default button is Done. Clicking it closes Camera Raw, applies the settings to the raw file, and returns you to Bridge.

When Camera Raw is hosted by Photoshop (right buttons), the default button is Open Image. Clicking it closes Camera Raw, applies the settings to the raw file, and opens the converted image in Photoshop.
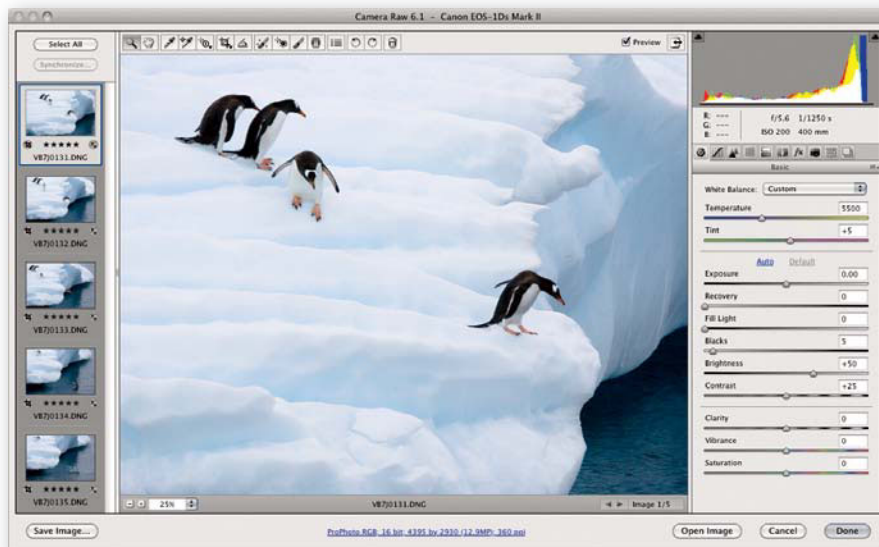
Figure 4-2 Camera Raw in filmstrip mode.

When you open multiple raw images in Camera Raw, they appear in the filmstrip at the left of the Camera Raw window, which allows you to work with multiple images in several useful ways.

Camera Raw Anatomy

Camera Raw opens automatically whenever you open a raw image in Bridge or Photoshop because neither program can read raw files. In addition to the static elements (the Toolbar, the histogram, the RGB readout, the settings panel), it offers two sets of controls: one static workflow set that is "sticky" (the settings remain unchanged unless and until you change them) and another dynamic image-specific set that changes depending on which panel is currently selected. But to understand all the controls, info readouts, and settings, you need to be familiar with what Camera Raw provides. In this section, we'll take a round-the-world look at the Camera Raw dialog box (see Figure 4-3) and check out all its nooks and crannies.

The static elements include the Toolbar; the dialog box title; the Zoom controls; the Preview, Highlight, and Shadow clipping toggles; the Panel settings; the Save Image, Open Image, Done, and Cancel buttons; the RGB readout; a live histogram that shows the conversion that the current settings will produce; and a Settings menu that lets you load and save settings.

The workflow options govern the kind of output Camera Raw will produce: They let you choose the color space, bit depth, size, and resolution of converted images.

The image controls, which apply to individual images, appear immediately below the Settings menu. In addition to the Presets panel, Camera Raw 6 offers eight separate panels, each with its own set of controls: Basic, Tone Curve, Detail, Curve, HSL/Grayscale, Split Toning, Lens Corrections, and Camera Calibration.

The image preview is based on Photoshop's recognition and use of a display profile and will use the same profile as Photoshop uses to accurately preview the image based on the final output color space. It is colorimetrically accurate and should match the display found in Photoshop.

Cursor and active tool icon

Camera Raw Preferences menu button

Image preview

Dialog box title

Preview and Full Screen toggle

Histogram

Clipping indicators

Toolbar

Camera Raw 6.1 - Canon EOS 20D

DO NOT GRAB HAMISH BY THE HORNS

_MG_5589.DNG

ProPhoto RGB: 16 bit; 3504 by 2336 (8.2MP); 360 ppi

Save Image...

Open Image   Cancel   Done

Save Image batch save button

Filename

Workflow Options readout and button

Process 2003 badge

Main control buttons

Zoom controls

RGB readouts

Panel icons

EXIF readouts

Camera Raw flyout menu

Panel settings

Figure 4-3 Camera Raw controls.

CAMERA RAW PROCESS VERSIONS

One of the biggest benefits that has come with Camera Raw 6 is a substantial improvement in image-quality potential from the raw processing pipeline. The baseline demosaicing in particular has been improved, in part by removing the noise-reduction component. Along with the improvement in demosaicing, additional fine-tuning was given to the Fill Light adjustment and subtle but important improvements in sharpening were made. But perhaps the most remarkable improvement is the noise-reduction capability.

The Camera Raw team didn't want to force these changes down users' throats—particularly if those users work with images with adjustment settings that had already been tuned. Forcing the new processing would change the way these images looked with Camera Raw 6. The team decided to draw a line in the sand. Older images that had any adjustments previously applied—meaning they use nondefault settings—would default to continue using the old process version of Camera Raw, which remains and was named Process 2003. The date indicates that the process does indeed date back to 2003 when Camera Raw was first released.

NOTE While the Camera Raw team tried to have Process 2003 match previous versions of Camera Raw's rendering exactly, that wasn't possible. Even Process 2003's rendering got slightly modified—we feel the term improved applies here. The Process 2003 demosaicing has the noise-reduction component removed, which results in slightly noisier images. However, the moniker of 2003 is still accurate. In Camera Raw 4.1 noise-reduction was added to demosaicing, which displeased some users. So, the demosaicing in Process 2003 is actually closer to the rendering of Camera Raw versions predating version 4.1. To approximate the post-version 4.1 noise-reduction, simply add an amount of between 15 and 25 (depending on the camera and ISO) in the Process 2003 Luminance noise-reduction slider.

When you open an image in Camera Raw 6 that has previously had nondefault settings applied, you'll get the old Process 2003. In order to alert you to the older process, Camera Raw displays the badge shown in Figure 4-4. This badge doubles as a button to allow you to update to the current Process 2010 (see Figure 4-4 for the tool tip indicating the update command).

Figure 4-4 Camera Raw's Process 2003 badge.
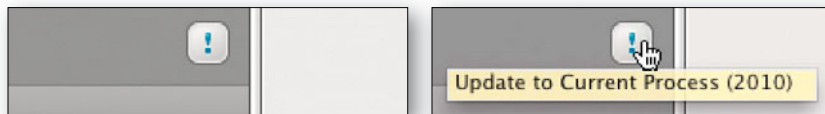
The Process 2003 badge icon indicating the image has settings that will be preserved

The Process 2003 badge showing the tool tip

There was quite a bit of debate about where the control over the process version would reside. The panel that has the greatest reliance on which process version is currently being deployed is the Detail panel shown in Figure 4-5. The most obvious differences show in the Noise Reduction portion of the Detail panel. When an image is in Process 2003, the only noise-reduction sliders are Luminance and Color Noise Reduction. Process 2010 adds Luminance Detail and Contrast as well as Color Detail. Noise reduction will be covered in depth later in this chapter starting with Figure 4-20.
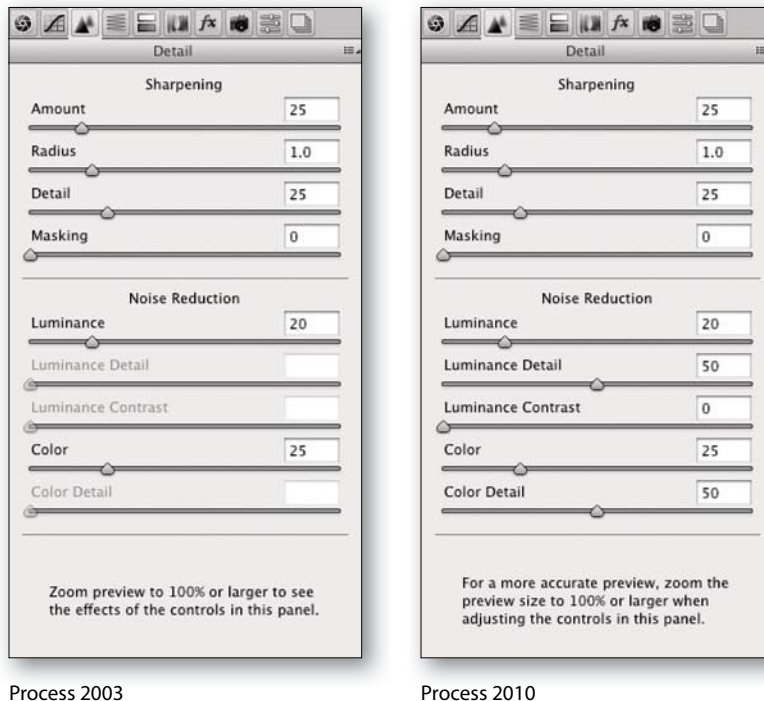
Figure 4-5 Detail panel differences between Process 2003 and Process 2010.

Process 2003

Process 2010

You'll also see that in Figure 4-5 there are different messages in the Detail panel depending on which process version is in use. Process 2003 has the old restrictions regarding the sharpening control's previews. You still need to zoom into a 100% zoom ratio to see the sharpening applied to the preview. Process 2010 changes the rules a bit: You will see an approximate sharpening and noise-reduction preview even at less than a 100% screen zoom. The caution noted in the Detail panel indicates that a preview at less than 100% is not accurate. You should heed this warning: You can't accurately determine the effects of sharpening and noise-reduction at a reduced screen zoom.

Also be aware that the Fit in View command in the Zoom tool will result in odd ratio zoom percentages that are even less accurate and therefore less useful. The 50% zoom is reasonably useful as long as you understand that the preview is a dithered approximation of the image detail and not an accurate preview.

You may be wondering where the Camera Raw team members decided to tuck the control over process versions since the Detail panel was too crowded. They decided to put it in the Camera Calibration panel. This does make a certain amount of sense. The Camera Calibration panel (as shown in Figure 4-6) has DNG Profiles and Camera Profiles going back to earlier versions of Camera Raw. So, adding the Process dropdown menu is a reasonable solution. The menu allows you to switch between the two versions. You'll notice that Process 2010 has a (Current) after it. We can only presume if there is yet another process version added down the road, the new version will also get the "Current" designation.

Figure 4-6
Camera Calibration panel showing the Process dropdown menu.

In order to visually explain the main differences between Process 2003 and Process 2010, we have done close-up screen shots of the Camera Raw image previews at a zoom of 400% of the Default settings in each process as well as tweaked settings and a final adjustment. Figure 4-7 shows the full image with an indicator where the detail crops are from. These detail crops are shown in Figure 4-8.

As you can see, we're engaging in what our good friend and colleague Michael Reichmann from the Luminious-landscape.com Web site calls *pixel peeping,* a practice of looking too close at an image. We feel in this case it's warranted so you can see the differences in the process versions.

Figure 4-7 Full image showing cropped portion.

The Process 2003 image detail with default sharpening of Amount 25, Radius 1.0, Detail 25, and Masking 0; no Luminance noise-reduction and 25 Color noise-reduction.

The Process 2010 image detail with the same settings, but with the addition of color noise Color Detail of 50.
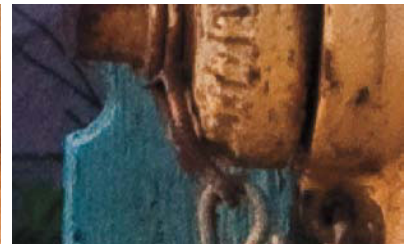
The Process 2003 version with tweaked settings of sharpening Amount 45, Radius 0.8, Detail 40, Masking 25. The Luminance noise-reduction has been bumped up to 25 to reduce some of the ISO 400 increased noise in the image.
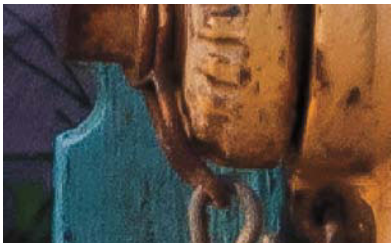
The Process 2010 version with same tweaked settings as the Process 2003 version, and with the enhanced new noise-reduction of Luminance 25, Luminance Detail 50, Luminance Constrast 0, the default Color 25 and the Color Detail 50.

The final image detail with further modified settings to reduce some of the undesirable increases that changing Process 2003 to Process 2010 produces. The modified settings are Amount 40, Radius 0.8, Detail 30, Masking 25. Thje noise-reduction remains at 25 but the Luminance Detail has been set to 30. The color settings remain the same.

Figure 4-8 Visual differences between Process 2003 and Process 2010.

As you can see in Figure 4-8, at the normal Camera Raw Defaults, the Process 2010 version has more fine-grained noise while the Process 2003 version seems softer. This is the result of the noise-reduction component being removed from Process 2010 demosaicing. The Process 2003 tweaked settings include sharpening needed not only to overcome the built-in noise-reduction but also to improve the image sharpens. The Process 2010 tweaked settings—which were produced by simply taking the Process 2003 settings and changing the process version—seem a bit mis-sharpened. Because Process 2010 does not have to fight to overcome built-in noise-reduction, a good argument could be made to reduce the sharpening.

The final image detail does just that. We've reduced both the Amount and the Detail settings. Those are the primary settings that may need adjustment when you are working with images with settings that have been previously optimized for the older processing. Images that have never been opened in a previous version will come in at the Camera Raw Default and will pick up and use the new process version. The settings you may need to adjust will vary by camera and by ISO. Higher-ISO images will need far less Detail slider settings and will require some additional noise-reduction because the Luminance Noise Reduction is off by default.

Examining the Camera Raw Tools in Depth

The environment of Camera Raw has become increasingly rich and powerful —and yes, complicated. No longer simply a raw processing plug-in, Camera Raw has moved into new and uncharted waters, giving you the ability to do both global tone and color corrections, and also make edits such as spot healing—tasks that once required a pixel-based image editor. We'll examine, in detail, each of the tools found in Camera Raw. But keep in mind that this chapter is intended to lay a foundation for what the tools do, *not* explain how to use them. We'll tackle that topic in Chapter 5, *Hands-On Camera Raw.*

As you can see in Figure 4-9, the main Camera Raw dialog box title displays the current version of Camera Raw being used as well as the camera model used to shoot the image.

Camera Raw 6.1 – Canon EOS 20D

Figure 4-9 Dialog box title.

The Preview Option and Full-Screen Toggle

The Preview option (see Figure 4-10) allows you to toggle the settings of an active adjustment panel on and off. This enables you to see the changes that have been made during the current editing session. Note that the Preview option is panel sensitive, which means that as you move from one panel to another and make changes, you'll see the preview adjustment for that particular panel. To reset the results of multiple panel changes, select Camera Raw Default in the Camera Raw flyout menu.

☑ Preview   ⬌

Figure 4-10 Preview option and Full-Screen toggle button.

The Full-Screen toggle (also shown in Figure 4-10) allows Camera Raw to expand to the entire screen of the display. By going to Full Screen you'll gain space by hiding the dialog box title. Note that when in full-screen mode, the version number and camera model shown in Figure 4-9 are hidden along with the dialog box title.

The Histogram

Arguably, the histogram is the most important but least understood of Camera Raw's information displays. The histogram is merely a graphical representation chart of the data distribution in your image, but it can reveal a lot. It can tell you how well distributed the values are in your image as well as whether values are near or past clipping. As shown in Figure 4-11, you can configure the histogram to show where in your image such clipping can be found.

Figure 4-11

Main histogram display.

The Histogram display is a graphic representation of the relative levels count (vertical height) plotted over a range of 0–255. The Red, Green, and Blue displays show concentrations of red, green, and blue pixels while the intermediate colors of yellow, cyan, and magenta show two channels, respectively. The white areas show concentrations of equal amounts of red, green, and blue and are akin to luminosity.

Shadow clipping | Red | Yellow | Green | Blue | Cyan | Highlight clipping

Magenta

0 · White (luminance) · 255

Shadow clipping indicator (showing both green and blue channel clipping and displayed as cyan)

Highlight clipping indicator (showing red channel clipping)

Blue channel clipping display

Red channel clipping display
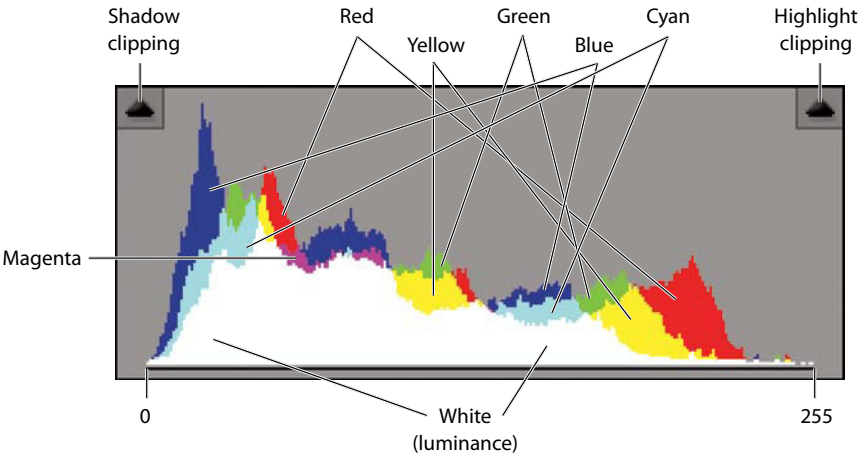
Histogram display showing clipping.

This histogram is displaying both highlight and shadow clipping by lighting up the clipping displays as well as showing single spiked columns of blue (shadow) and red (highlight) on either end of the histogram.

Shadow clipping preview on | Highlight clipping preview on | Live shadow clipping preview (showing in blue) | Live highlight clipping preview (showing in red)
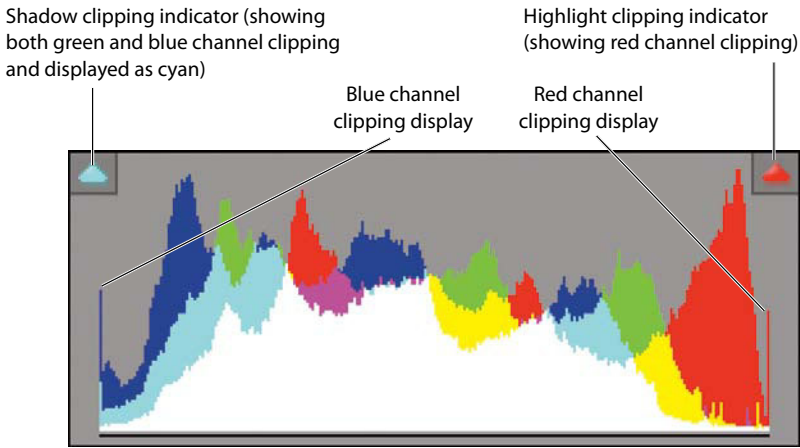
Histogram display showing clipping previews.
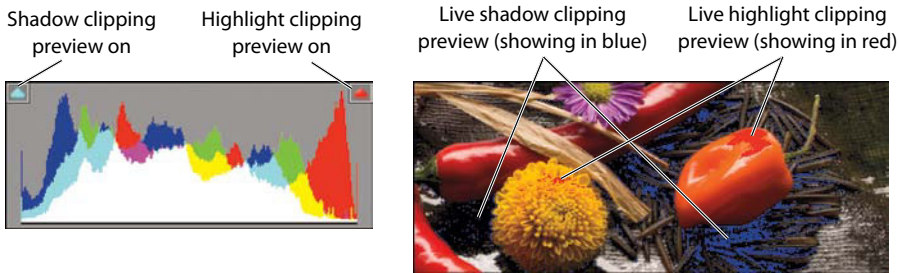
The histogram is calculated based on the Workflow Options color space you've chosen. The display is based on 8-bit/channel accuracy in the gamma of your color space. To view a 16-bit/channel histogram would be less useful, since the size would constrain how accurate the data could be plotted. The same could be said for viewing a linear-gamma histogram.

We'd like to stress that there is no such thing as a "perfect histogram." Nor should you try to adjust an image to arrive at some sort of optimal shape. The histogram's shape can give you hints as to what adjustments you'll need to make to more evenly distribute the levels in your image. A histogram with a concentration of data in the shadows with little or no data in the highlights may indicate underexposure, whereas concentration in the highlights may indicate overexposure.

The RGB and EXIF Readouts

The RGB readout (see Figure 4-12) shows the RGB values that will result from conversion at the current settings. The readout displays the RGB values for the pixels under the cursor: At zoom levels of 100% or less it always reads 5-by-5 screen pixels, so it may give different values at different zoom levels. When you fit the entire image into Camera Raw's preview, you're sampling a fairly large number of pixels; the exact number depends on the camera's native resolution and the size you've chosen from the Size menu in the Workflow controls. At zoom levels greater than 100%, however, the sample size is always 5-by-5 image pixels.
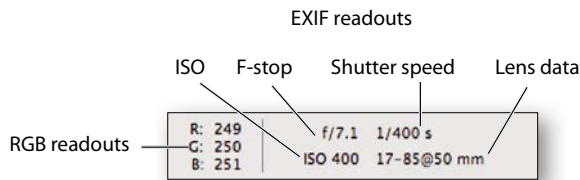
Figure 4-12 RGB and EXIF readouts.

The RGB readouts are based on the color space chosen in the Workflow settings and display from the area in the image the cursor is over. The EXIF readouts are based on the EXIF metadata contained in the image.

The EXIF readouts (also shown in Figure 4-12) transcribe the embedded EXIF metadata to provide readings familiar to photographers. The accuracy of the readouts will depend entirely on the way in which the camera you're using stores the EXIF metadata. Sometimes that can be ambiguous, particularly when reading lens data. Not all camera makers provide data on all lenses, and some third-party lenses can cause either inaccurate or faulty lens information.

The Adjustment Panel Icons

NOTE On the Mac OS, the system steals the Command-Option-8 keyboard command from Camera Raw. You can correct this by going into System Preferences, Keyboard and Mouse, then selecting Keyboard Shortcuts. Under Universal Access, uncheck the option "Zoom: on or off" in the Seeing panel. Unless you do this, Camera Raw cannot use this keyboard shortcut.

As shown in Figure 4-13, Camera Raw now has ten separate Adjustment panels with several panels containing two or more subpanel variations and various dropdown menus. In general, the panels are designed to be used from the top down and from left to right. That's not to say you won't be bouncing back and forth, but generally the optimal approach is to start in Basic, which displays by default. The easy way to get to the Adjustment panels is to use the keyboard commands shown in Figure 4-13. The Camera Raw team ran out of keyboard shortcuts for accessing the Snapshot panel, so it's the only panel that you cannot access via a shortcut. You'll have to click the icon.

Figure 4-13 The Adjustment panel icons and keyboard shortcuts to access them (for Windows, substitute Ctrl-Alt for Command-Option).

Basic (Command-Option-1)
Tone Curve (Command-Option-2)
Detail (Command-Option-3)
Effects (Command-Option-7)
Camera Calibration (Command-Option-8)

HSL/Grayscale (Command-Option-4)
Split Toning (Command-Option-5)
Lens Corrections (Command-Option-6)
Presets (Command-Option-9)
Snapshots (there is no keyboard command)

The order in which you make adjustments has no bearing on the manner in which Camera Raw carries out the processing. That order is fixed in the Camera Raw processing pipeline, which sets the optimal order. So there's no reason not to make various adjustments in any order that is useful to you, knowing that Camera Raw will do the right thing when it processes. Inevitably, we find ourselves moving back and forth between Basic and Tone Curve often to adjust the image's overall distribution of tones. Color adjustments, even after the white balance is set, are typical, with moves to the HSL/Grayscale and Split Toning panels common. The Camera Calibration panel gets less attention on an image-by-image basis. You'll generally use that panel only a couple of times when zeroing in on your camera's color response. Using presets is one area where even advanced users often fail to take maximum advantage.

TIP When working in Camera Raw, you can always reset any control slider to its Default settings by double-clicking on the slider knob. Also, you can use Camera Raw's Scrubby slider without even grabbing the knob—just hover above the adjustment line indicator and then drag the slider sideways to make adjustments (see Figure 4-14).

Figure 4-14 Resetting the slider to default and using the Scrubby slider.

Slider knob   Scrubby slider

In this section we'll define what each panel's adjustment sliders do. In the next chapter we'll explain how to combine them to maximum advantage.

The Basic Panel

The Basic panel is the primary location for general adjustments for tone and color corrections. With 11 sliders, a dropdown menu, and two active buttons, it ranks as the second-most complicated set of adjustments, but it ranks at the top in terms of importance (see Figure 4-15).
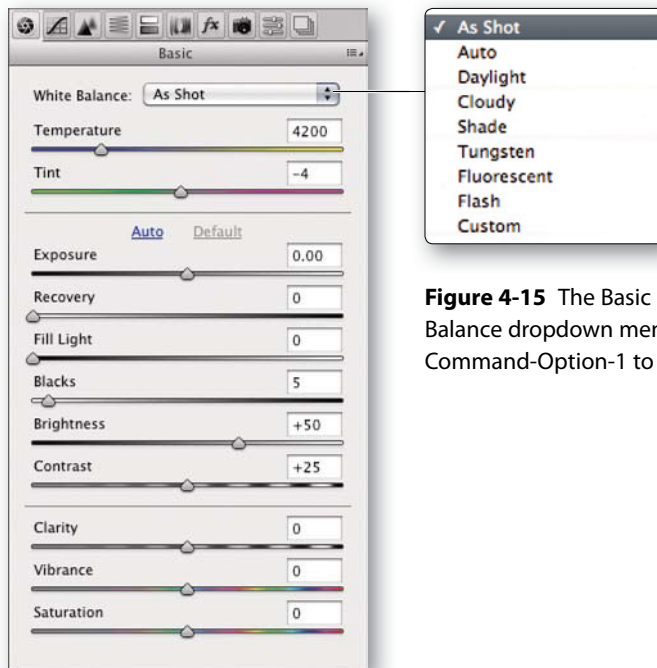
Figure 4-15 The Basic panel with the White Balance dropdown menu. You can press Command-Option-1 to display this panel.

The White Balance Adjustments

White Balance adjustments are so important they are placed at the top of the Basic panel. The White Balance adjusts the following:

White Balance. At the top resides the White Balance settings with a drop-down menu. In general, the most useful setting in the dropdown menu is As Shot. When you select As Shot you allow Camera Raw to attempt to decode the white balance data stored when your camera captured the image. Camera Raw may not exactly match the camera's numbers or its rendering of that white balance, but it does a pretty good job of accessing most cameras' white balance metadata. The Fluorescent menu selection is also helpful because it often gives a more useful starting point than As Shot, if the shot was taken under fluorescent lights.

Keep in mind that the moment you adjust either of the White Balance sliders, the readout in the menu field will change to Custom, indicating that you've overridden the As Shot settings.

The White Balance adjustments are split between Temperature and Tint. Camera Raw 6 has interface clues—blue and yellow in the Temperature slider and green and magenta in the Tint slider. The Up and Down arrow keys adjust the color temperature in increments of 50 Kelvins. Pressing Shift at the same time adjusts the temperature in increments of 500 Kelvins.

- **Temperature.** The Temperature control lets you specify the color temperature of the lighting in degrees Kelvin, thereby setting the blue-yellow color balance. Lowering the color temperature makes the image more blue to compensate for yellower light; raising the color temperature makes the image more yellow to compensate for the bluer light. (If this seems counterintuitive, remember that we think of higher color temperatures as bluer and lower ones as yellower. The trick is to keep in mind that the Temperature control *compensates* for the color temperature of the light, so if you tell Camera Raw the light is bluer, it makes the image more yellow.)

- **Tint.** The Tint control lets you fine-tune the color balance along the axis that's perpendicular to the one controlled by the Temperature slider—in practice, it's closer to a green—magenta control than any-thing else. Negative values add green; positive ones add magenta. The Up and Down arrow keys change the tint in increments of 1. Pressing Shift at the same time changes the tint in increments of 10.

If you are not using the White Balance tool to set the white balance, the sliders give you the ability to adjust either by numbers or by eye.

Auto control. Camera Raw has a single Auto control, which does its work evaluating the statistics of the image's histogram while attempting to produce an optimal distribution of values throughout the image. Can it be wrong? Yes—and it often is in subtle ways. However, this single Auto adjustment is superior to Camera Raw 3's multiple settings and brings with it compatibility with Photoshop Lightroom.

When you're first looking at an image that may pose significant adjustment challenges, it's useful to let Auto take a crack at the adjustments. It may not be correct in all its "guesses," but it's often right in at least a couple. And remember, since Camera Raw is a parametric editor (and has Multiple Undo) you don't risk anything other than a bit of time by trying.

Default control. The Default control (grayed out in Figure 4-15 because all the settings are at their defaults) provides a simple way to return to the Camera Raw Default settings in the Basic panel based on your current Default settings (which can be changed).

The Tone Adjustment Sliders

Once the White Balance adjustments are made, the general rule is to begin adjusting the tones in your image. The Tone adjustments you can make in the Basic panel include the following:

Exposure. The Exposure slider controls the mapping of the highlight tone values in the image to those in your designated working space, but it's first and foremost a white-clipping adjustment. Remember, half of the captured data is in the brightest stop, so Exposure is a highly critical adjustment!

Large increases in exposure value (more than about 0.75 of an F/stop) will increase shadow noise and may even make some posterization visible in the shadows, simply because large positive exposure values stretch the relatively few bits devoted to describing the shadows farther up the tone scale. If you deliberately underexpose to hold highlight detail, your shadows won't be as good as they could be.

Holding down the Option key while adjusting Exposure gives you a live view of the area in the image that is getting clipped. White pixels indicate highlight clipping, and colored pixels indicate clipping in one or two

TIP Camera Raw, just like Photoshop, has Multiple Undo. We've gone back a hundred steps (more than we need, since we have very short memories). To access multiple undo, use the keyboard shortcut Command-Option-Z to go back more than one undo. To go forward use Command-Shift-Z.

channels. The Up and Down arrows change the exposure in increments of 0.05 of an F/stop. Pressing Shift at the same time changes the exposure in increments of 0.5 of a stop.

Recovery. This deceptively named slider can have a major impact on the extreme highlights of your image. Unlike most raw converters, Camera Raw offers "highlight recovery." Most raw converters treat as white all pixels where one channel has clipped highlights, since they lack complete color information. But Camera Raw can recover a surprising amount of highlight detail from even a single channel. It does, however, maintain pure white (that is, clipped in all channels) pixels as white, unlike most converters that turn clipped pixels gray. It also darkens the rest of the image using special algorithms to maintain the nonwhite pixels' color. Use of Recovery generally entails interactive adjustments of Exposure as well as other tone mapping controls. It is one of the adjustments often correctly guessed by the Auto setting.

See the sidebar "How Much Highlight Detail Can I Recover?" in Chapter 2 for more technical details and see Figure 2-12 for a real-world example.

Fill Light. Fill Light has been revered by Camera Raw users for its ability to draw out shadow detail, but it does have its limits. It's one of Camera Raw's most processor-intensive algorithms, so on slow machines it can seem to drag when first making an adjustment. This is because under the hood it is producing a blurred mask of the image, on the fly, to adjust the shadows in the image. After the mask is generated (which isn't done until the slider is first moved above 0), slider adjustments should be swifter.

Because of this soft-edge mask, overuse can also lead to visible halos on areas of extreme high-contrast edges. (The halo tendency has been reduced in the new Process 2010 version.) Despite these minor potential shortcomings, Fill Light remains an absolutely critical tool for modifying the tone mapping in your image.

Blacks. The Blacks slider is the black clipping control. It works much like the black input slider in Photoshop's Levels, letting you darken the shadows to set the black level. Since the Blacks slider operates on linear-gamma data, small moves tend to make bigger changes than the Black input slider in Levels. In earlier versions of Camera Raw, this control (formerly called Shadows) was something of a blunt instrument, but in more recent versions it has a much gentler effect. That said, you may find the default value of 5 a

little too aggressive. You can alter the Camera Raw Default to a lower number; we often use 3 as a default instead of 5.

Adjustments between the low numbers of 1 to 5 can have a tremendous impact at each increment, whereas at higher numbers the changes smooth out. For this reason it's often useful to zoom into the deep shadow areas of your image and hold down the Option key to see what effect even small units of adjustments will have on your image. Black pixels indicate shadow clipping, and colored pixels indicate clipping in one or two channels. The Up and Down arrow keys change the shadows in increments of 1. Adding Shift changes the shadows in increments of 10.

Brightness. Camera Raw's Brightness slider is a nonlinear adjustment that works very much like the Gray input slider in Levels. It lets you redistribute the midtone values without clipping the highlights or shadows. Note, however, that when you raise Brightness to values greater than 100, you can drive 8-bit highlight values to 255, which looks a lot like highlight clipping. But if you check the 16-bit values after conversion, you'll probably find that they aren't clipped.

The Up and Down arrow keys change the brightness in increments of 1. Adding Shift changes the brightness in increments of 10.

Contrast. The Contrast slider differs from the Photoshop adjustment of the same name. While Photoshop's Contrast is a linear shift, Camera Raw's Contrast applies an S-curve to the data, leaving the extreme shadows and highlights alone. Increasing the Contrast value from the Default setting of +25 lightens values above the midtones and darkens values below the midtones, whereas reducing the Contrast value from the default does the reverse. Note that the midpoint around which Contrast adds the S-curve is determined by the Brightness value.

The Up and Down arrow keys change the contrast in increments of 1. Adding Shift changes the contrast in increments of 10.

Both Brightness and Contrast are rough-tuning adjustments that can often be better tuned by using the Tone Curve panel adjustments. However, they live on the Basic panel to allow you to do those rough adjustments in combination with the main levels of distribution adjustments of Exposure and Blacks. In the next chapter we'll provide examples of how to work interactively with Exposure and Blacks as well as Brightness and Contrast.

TIP One trick we often use is to combine the Blacks slider with the Fill Light to tune the results of the abruptness often encountered with the Blacks adjustment. Increasing the Blacks and then increasing the Fill Light can improve the deep shadows' tonality while still punching the Blacks down.

Clarity, Vibrance, and Saturation

In Lightroom, the adjustments named Clarity, Vibrance, and Saturation fall under the heading of "Presence"—and that's a pretty good description of what these adjustments are capable of. Subtle use of these adjustments can add a degree of presence to an image that can't be accomplished easily with other tools or adjustments (unless you count the 24 sliders in HSL/Grayscale). But while the HSL adjustments are scalpels, these tools are more "basic cutting tools," which is why they reside in the Basic panel in Camera Raw.

Clarity. The word really says it all: Clarity is like a lens-cleaning filter. It works in a mysterious way, using an adaptive image adjustment that is mask based (like the Fill Light adjustment) in that it creates a mask of the image and uses it to add midtone contrast. So why is it in the Basic panel?

TIP If you've often wished that Clarity could go above 100, you can now achieve that result (even though the Basic panel still stops at 100). Simply use the Adjustment Brush with a Clarity parameter to add even more Clarity than you can in the Basic panel. We can almost never have too much Clarity (well, OK, we do confess to sometimes needing some negative Clarity, which is good for people's skin tones).

Other than the fact it's a "basic" adjustment you'll want to use often, it's really a tone adjustment for the midtones. Clarity is a distant relative of Photoshop's Unsharp Mask filter. In fact, it uses an algorithm very much like Unsharp Mask set to a small amount but a large radius of sharpening that results in local-area contrast increases. The control is very image dependent: it uses the actual image to determine the area over which it will adjust contrast. The adjustments are tapered off the bright highlights and deep shadows so they concentrate on the midtones.

If you want to roughly duplicate the Clarity adjustment in Photoshop, here's the recipe: Take an image, duplicate the background layer, and apply an Unsharp Mask filter set to an Amount of 15% and a Radius of 100. Then in the layer's Blend If options (double-click the layer icon), select This Layer and split the highlight and shadows sliders to set the blend range so that shadows blend from 0/100 and the highlights blend from 127/255. Compare those steps with the effort it takes to merely adjust a slider in Camera Raw. Considering that this adjustment is done on the fly, it's a remarkable reinvention of an old technique in a new parametric wrapper. We'll provide examples in the next chapter, but for now keep in mind that almost every image can do with at least a small dose of Clarity; and sometimes a little negative Clarity does wonders.

Vibrance. While Vibrance is similar to the Saturation control that comes next, it has a twist: It increases the saturation of unsaturated colors more than it adjusts already saturated colors. An additional twist is that Vibrance will adjust all colors except for skin tones, which means it's safe to use on

people (Saturation would likely result in less-than-desirable saturation boosts to portraits). For those of you who recall Pixmantec and Raw Shooter Pro (RSP), this control will be familiar. The Vibrance setting in Camera Raw, though inspired by RSP, has been written to work in the Camera Raw pipeline.

Saturation. The Saturation control acts like a gentler version of the Saturation slider in Photoshop's Hue/Saturation adjustment. It offers somewhat finer adjustments than Hue/Saturation—but not as fine as HSL/Grayscale, which has saturation controls broken down by not six but eight separate hues. So while Saturation in the Basic panel can be a useful tool for boosting overall saturation, it does run the risk of potentially causing saturation clipping. Please use it sparingly.

The Tone Curve Panel

The Tone Curve panel is the first panel with two tabs: the Parametric Curve Editor and the Point Curve Editor (see Figure 4-16). Why two curve editors? Parametric curve editing was introduced in Lightroom, and to maintain cross-compatibility, it was also incorporated into Camera Raw. For some functions, such as relatively simple contrast adjustments, either curve editor can be used. Their capabilities are similar, but their usability is vastly different: The Parametric Curve Editor offers a quicker means of achieving a desired tone mapping, whereas the Point Curve Editor can help you obtain a more accurate placement of points on a curve. Your choice should be predicated on the precision your image needs versus the ease of accomplishing what you need. Both require practice.

Parametric. The Parametric Curve Editor uses a simplified user interface to allow quicker adjustments of the Highlights, Lights, Darks, and Shadows. The effectiveness is further enhanced by the Range Adjustment slider underneath the curve plot, which is used to expand or contract the range over which the curve adjustments are applied. The Highlights control the one-quarter tones and white; the Lights control the one-quarter tones; the Darks control the three-quarter tones; and the Shadows control the three-quarter tones and black. Neither black nor white is affected—those points remain the domain of Exposure and Blacks for setting clipping points.

The Up and Down arrow keys change the units in increments of 1; adding Shift changes the units in increments of 10.

TIP You can access the Tone Curve panel by pressing Command-Option-2.

TIP One obscure function of the Point Curve Editor is the ability to show you, on the curve, exactly where the cursor is hovering when you hold down the Command key. If you click on the image holding the key, you can place a point on the curve. This is useful when you zoom in to work on delicate highlights that may need special treatment to tease tone values apart to maintain textural detail.

The plot of the luminance image data is in the background, although it's in a different scale than Camera Raw's main color histogram.

Point. While the Parametric Curve Editor can often produce the right tone curves more quickly, there's no denying that the Point Curve Editor can accomplish far finer-tuned controls—particularly in the data-rich areas of extreme highlights. The curve behaves like Photoshop CS5's Curves adjustment. Moving a point will have an impact on the other side of the next point. To place very fine point curves, you can simply click on the curve to add a point; to delete a point, just drag it off the curve plot.

Figure 4-16 The two faces of the Tone Curve panel.
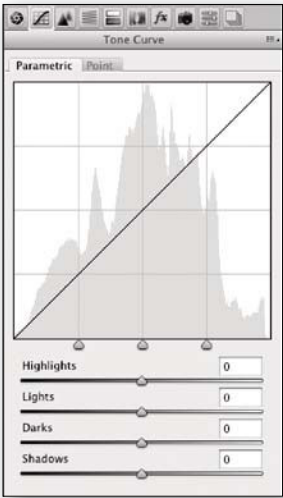
Parametric Curve Editor
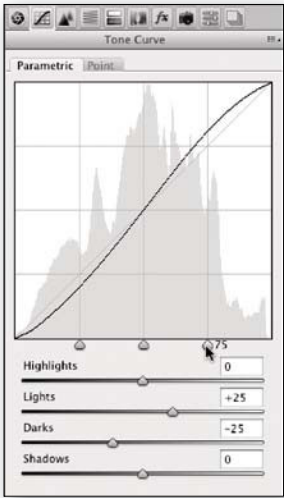
Parametric edit showing simple S-curve
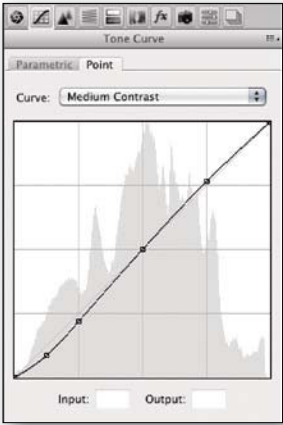
Point Curve Editor
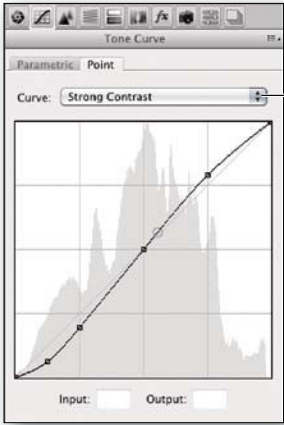
Point edit showing simple S-curve

Curve dropdown menu

The input/output readout is based on your current working space settings. The Up and Down arrows and right and left keys change the units in increments of 1. Adding Shift changes the units in increments of 10.

You can choose different hard-coded curve presets from the dropdown menu. You can save a new custom preset for just curves separated by parametric or point curves and apply presets in this manner.

The Detail Panel

It could be said, without much fear of contradiction, that in earlier versions of Camera Raw, the series of controls and the functionality provided in the Detail panel (see Figures 4-17a and 4-17b) didn't get much "true love." That changed with the release of Camera Raw 4.1 in Photoshop CS3 and now continues with Camera Raw 6 in Photoshop CS5. Not only did the luminance noise-reduction receive a much-needed overhaul, but the image sharpening has now reached near optimal capability and functionality as well. Adobe had a little special help to accomplish this task.
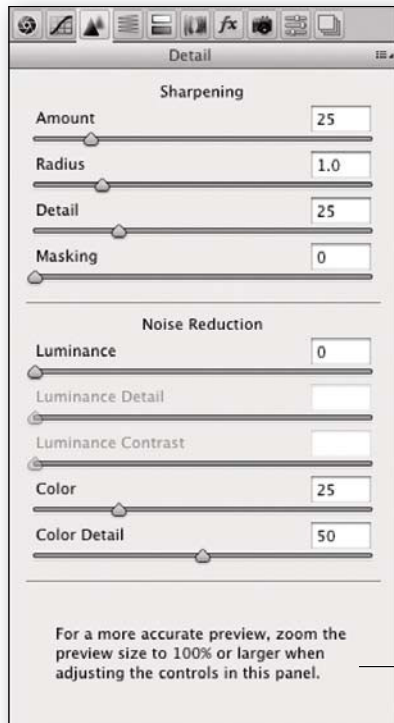
Figure 4-17a The Detail panel in Process 2010 and warning when the image is less than 100% zoom.

Access the Detail panel by pressing Command-Option-3.

Figure 4-17b The Detail panel in Process 2003 and warning when the image is less than 100% zoom.

Access the Detail panel by pressing Command-Option-3.

Zoom preview to 100% or larger to see the effects of the controls in this panel.
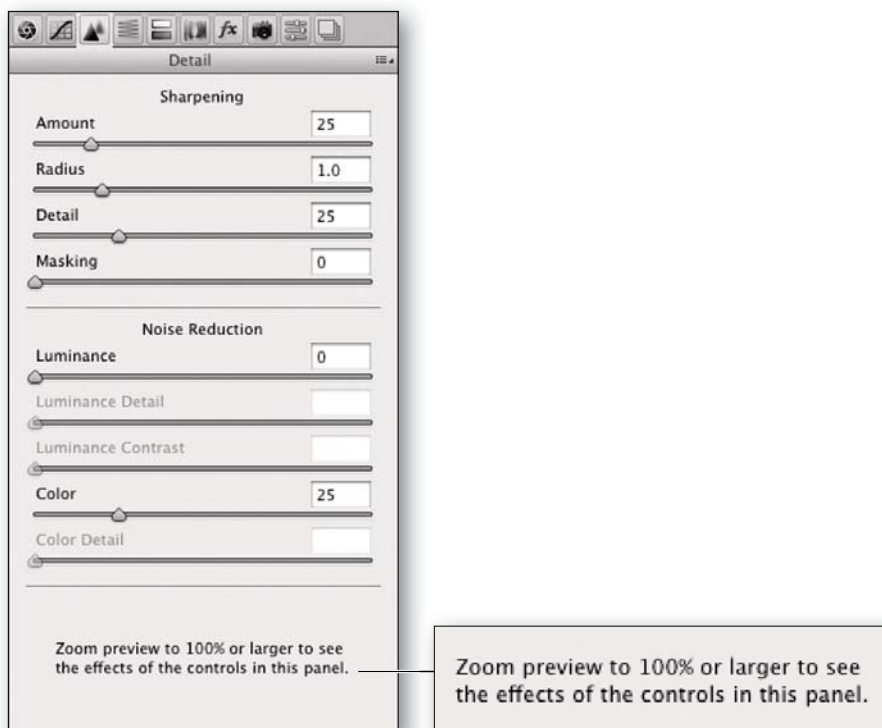
NOTE The fine-tuning added to the sharpening controls in Process 2010 includes a reduction in the dark halo generation as well as refinement in the sub 1.0 radius settings. The Masking adjustment was also improved to reduce the amount of sharpening being applied when using a high Masking setting. As noted previously, changing an image from 2003 to 2010 may require a slight reduction in the sharpening amount as well as the detail slider.

Bruce Fraser was hired as a special consultant to work with Thomas Knoll and Mark Hamburg (the founding engineer for Lightroom, which shares its processing pipeline with Camera Raw). With Bruce's untimely passing, Jeff Schewe had to step in to help fulfill the contract, but the results have Bruce's fingerprints all over them. Bruce's concept of a "sharpening workflow" that originated with a product he worked on for PixelGenius called PhotoKit Sharpener was embodied in Camera Raw's sharpening functionality.

That's not to say that Mark and Thomas, and more recently engineer Eric Chan, didn't do the hard work—they wrote the code. The Camera Raw engineers took Bruce's ideas as inspiration and incorporated those ideas into a series of four parametric sliders, which is astonishing when you consider the multitude of steps it takes to run PhotoKit Sharpener's Capture Sharpener inside Photoshop. That's exactly what Thomas wanted to be able to do in Camera Raw—capture sharpening.

The sharpening process, slightly tuned in Camera Raw 6, is specifically designed to work optimally as a "capture sharpener." The very process of capturing an image produces softness that must be reconstituted, and Camera

Raw now has excellent tools to do just that. However, you shouldn't fall prey to the temptation to overdo it, nor should you try to sharpen "for effect."

The Sharpening Controls

For all the sharpening controls, holding the Option key while adjusting the slider will give you a preview of what the control is doing and how. The ability to see what is being done is incredibly useful for making decisions and evaluating settings. Until you become familiar with the controls and how they interact, we strongly suggest using this preview to arrive at optimal settings for your images.

Sharpening. As shown in Figure 4-17, there are four main controls for image sharpening in Camera Raw 6. The defaults are designed to roughly approximate the results of previous versions of Camera Raw and are intended for general-purpose sharpening. Adjusting the parameters tunes the result, and the adjustments are predicated on capture size and image content. We'll provide examples in the next chapter of image content types and how content impacts the optimized settings. But in this section we'll focus on defining and describing what the controls offer.

Amount. As you might expect, Amount is a volume control that determines the strength of the sharpening being applied. It runs from 0 (zero), meaning no sharpening is being applied (this is the default amount set for non-raw images), all the way to 150. If you go to 150 without adjusting other controls, your image will be pretty much sharpened to death, but you can go to 150 when you apply other controls because they will alter how the sharpening is applied.

Radius. Radius defines how many pixels on either side of an "edge" the sharpening will be applied. Camera Raw's Radius control goes from a minimum of 0.5 pixels to a maximum of 3 pixels.

Detail. During development, the team tried to come up with a better name for this, but the word *Detail* is at least descriptive. Similar in concept to Photoshop's Unsharp Mask (but totally different in application and function), Detail varies how the sharpening attacks your image. If you run Detail all the way to the right (a setting of 100), Camera Raw's sharpening will be similar to Unsharp Mask—not exactly the same, but very similar. Moving Detail to the left does a halo dampening on the sharpening. Moving it all the way to the left (to 0) will almost completely pin the sharpening edge halo.

Masking. Masking reduces the sharpening of nonedge areas and concentrates the sharpening on edges, which is a principle of capture sharpening. The fact that Camera Raw is creating an edge mask on the fly is very impressive. Note, however, that as with Camera Raw's Fill Light, the Masking control is very processor intensive and you may see a slowdown on old machines when using it. By default, Masking is set to 0, meaning there's no masking and no mask needs to be built.

This brings us to the point where you may be asking what constitutes "optimal." In the old days, the general consensus was that you needed to make an image "slightly crunchy" (slightly oversharpened) onscreen at 100% zoom. That slightly crunchy part is a difficult and imprecise description—it's like "salting to taste." It's ambiguous at best and subject to gross oversharpening at worst.

While Bruce was not able to see the final iteration of Camera Raw's sharpening, Jeff has worked on determining how best to optimize an image. The current thinking is to aim for "just right" sharpening at 100% zoom. You should sharpen just below the threshold of seeing any undesirable sharpening effects, including any actual appearance of "crunchiness."

Sharpening halos are to be expected, yet halos should remain *invisible* when viewed at 100%. You may see some when viewing at 200% or above but not at 100%. There are no "magic numbers" that will automatically work because you must factor the capture size and the image content into the equation when making adjustments. Chapter 5 provides examples and explains these factors in depth. In the meantime, Figure 4-18 shows the logical process and the previews available while determining the optimal sharpening for this image. (Note that all intermediate figures in grayscale are being displayed while holding down the Option key.) Figure 4-19 compares the results.

The original at default settings

Adjusting the Amount to 70

Figure 4-18 Sharpening tutorial.

The aim of this image's sharpening was to increase the apparent sharpness of the high-frequency textural detail of the sake barrels and recover the sharpness the image lost during the process of being converted to pixels. Jeff shot the image using a Canon1Ds camera with a 17-35mm 2.8 lens, one of Canon's sharpest at the time, yet the image required additional sharpening beyond Camera Raw's default.

The Radius preview at 0.5

The Radius preview at 3

The Detail setting at 10

The Detail setting at 90

The Masking setting at 20 (Note: The preview is showing a preview with very few edges.)

The Masking setting at 90 (Note: The Masking at 90 shows only the edges that will be primarily sharpened.)

The image with Camera Raw defaults

The image with tuned results of:
Amount: 70, Radius: .8, Detail: 50, Masking: 50

Figure 4-19 Comparing results.

The Noise Reduction Controls

Noise can come from using a high ISO and the resultant amplification of the signal in the analog-to-digital conversion or be the result of underexposing the image and trying to recover detail from the extreme shadows. Noise-reduction in Camera Raw 6 with Process 2010 has been drastically improved. Not only is the demosaicing algorithm better, but also the Luminance noise-reduction was substantially refined using a wavelet algorithm that seeks to determine extremely high-frequency noise and separate it from high-frequency image texture. Additional controls have been added to allow you to fine-tune how the algorithm determines the sensor noise. Camera Raw's noise-reduction is now capable of doing heavy-duty noise obliteration like some third-party Photoshop filters.

One additional improvement is the ability to find and fix "outliers"—those random light or dark pixels that may occur as a result of demosaicing flaws that are often seen on high ISO captures. The key to successful use is to improve but not destroy the nature and look of the image. See Figures 4-20 and 4-21 for examples of the additional controls available in Process 2010 and examples of luminance and color noise-reduction. Figure 4-20 shows the base image in Camera Raw. The detail crops in Figure 4-21 show the front flower at a zoom of 400% in Camera Raw. The example image was shot with a Canon EOS Rebel T1i at an ISO speed of 12,800.

Figure 4-20 Large image and detail.
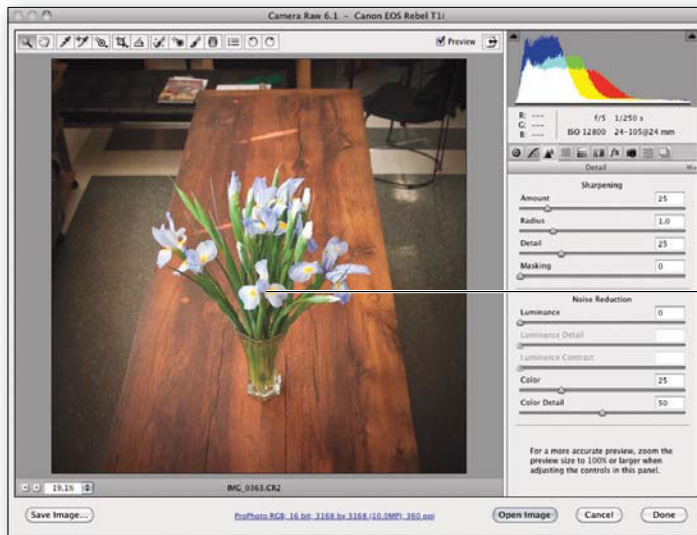
The image in Camera Raw. Note that the image was cropped on the sides but is the full height of the original 15.1MP raw capture.

The detail of the center flower at 400% zoom and with default sharpening but all noise-reduction off to show the noise at its worst.

Figure 4-21 Comparing the effects of the Noise Reduction adjustments. All images have Camera Raw's default sharpening of Amount 25, Radius 1.0, Detail 25, and Masking 0.

Default noise-reduction settings: Luminance 0, Color 25, Color Detail 50

Luminance 50, Luminance Detail 50, Luminance Contrast 0, Color at default

Luminance 50, Luminance Detail 0, Luminance Contrast 0, Color at default

Luminance 50, Luminance Detail 100, Luminance Contrast 0, Color at default

Luminance 50, Luminance Detail 50, Luminance Contrast 100, Color at default

Luminance 50, Luminance Detail 50, Luminance Contrast 0, Color at default

Luminance 50, Luminance Detail 50, Luminance Contrast 0, Color 25, Color Detail 0

Luminance 50, Luminance Detail 50, Luminance Contrast 0, Color 25, Color Detail 100

We realize that it's tough to try to get across exactly what the noise-reduction sliders are doing here in this book. We'll make the original flower shot available as a download from the Real World Camera Raw Web site (www.realworldcameraraw.com) so you can plug in these same numbers to see the effects of the slider on the image. We do, however, have a description of what each of the noise-reduction sliders are designed to do—and it's direct from the horse's mouth, so to speak. The following descriptions are from Eric Chan, the Camera Raw engineer largely responsible for creating the new noise-reduction adjustments (so we're pretty sure they're correct).

Luminance. This slider controls the amount, or "volume," of luminance noise-reduction applied. The adjustment is tuned so that a setting of 25 is a reasonable balance of noise-reduction applied and detail preserved. This also means that the extra range between 25 and 100 can be used to control how much additional noise-reduction to apply. A value of 0 means "do not apply any luminance noise-reduction." When set to 0, the Luminance Detail and Luminance Contrast sliders are disabled, or grayed out. This slider is always enabled for Process 2003 and Process 2010. Default value: 0.

Luminance Detail. This control sets the noise threshold. You can drag the slider to the right to preserve more details; however, this may cause noisy areas of the image to be incorrectly detected as details and hence will not be smoothed. You can drag the slider to the left to increase image smoothing; however, this may cause real image details to be incorrectly detected as noise and hence smoothed out. This effect is mainly observable on very noisy images only. This slider is new to Camera Raw 6. It is disabled for Process 2003, or when the Luminance slider is set to 0. Default value: 50.

Luminance Contrast. Drag this slider to the right to better preserve image contrast and texture; however, it may also increase perceived "noise blobs" or mottling in high ISO images. You can drag it to the left to achieve very smooth, fine-grained results; however, you may lose local image contrast and textures may get smoothed out. As with Luminance Detail, the results are more noticeable on very noisy images (above ISO 6400 on a DSLR). This slider is new to Camera Raw 6. It is disabled for Process 2003, or when the Luminance slider is set to 0. Default value: 0.

Color. This adjustment is designed so that its default value of 25 does a pretty good amount of color noise-reduction, balancing the competing requirements of suppressing ugly color noise blobs yet maintaining color edge detail. Setting the slider to 0 means that no color noise-reduction will

be applied. Setting the slider to values higher than 25 means that much more aggressive color noise-reduction will be applied; this will likely cause color bleeding at edges. Default values: 25 for raw files, 0 for non-raw files.

Color Detail. This control is most useful for extremely noisy images. It lets you refine color noise-reduction for thin, detailed color edges. At high settings (75 to 100), Camera Raw will try to retain color detail in edges, but this may cause pixel-level "color speckles" to remain in the image. At low settings (0 to 25), Camera Raw/Lightroom will suppress these small isolated color speckles, but thin features in the image may become desaturated (i.e., some color bleeding at fine edges). For testing purposes, try zooming to 400% pixel view to get a clearer understanding of the effect. This slider is new to Camera Raw 6. It is disabled for Process 2003, or when the Color slider is set to 0. Default value: 50.

If you examine the images in Figure 4-21 carefully you should be able to pick up the very subtle differences caused by the various settings. We realize it's tough to do in the context of the halftone process of this book. We do suggest downloading the noise example DNG so you can see the effects for yourself. Figure 4-22 shows the original Default settings (same used for Figure 4-21) and the final optimized sharpening and noise-reduction settings.

Figure 4-22 Comparing the Default settings with the optimized settings.

Camera Raw default sharpening and noise-reduction settings

The final optimized settings: Sharpening 35, Radius 1.2, Detail 20, and Masking 20. For noise-reduction: Luminance 50, Luminance Detail 65, Luminance Contrast 15, Color 25, and Color Detail 50.

The HSL/Grayscale Panel

The HSL/Grayscale panel has three separate subpanels, which can then transform to yet a fourth panel at the click of the Convert to Grayscale button. Depending on which mode you're displaying, Color or Convert to Grayscale, up to 24 separate sliders are in play (see Figure 4-23). With all these controls, you might expect the HSL portion of the panel to be a complicated beast to manage, but it's not. It's rather elegantly simple yet incredibly powerful—and far more useful than the basic Saturation control.

Figure 4-23 The HSL/Grayscale panel in Color mode. When in Color mode, this panel controls a total of 24 sliders separated by three tabs.
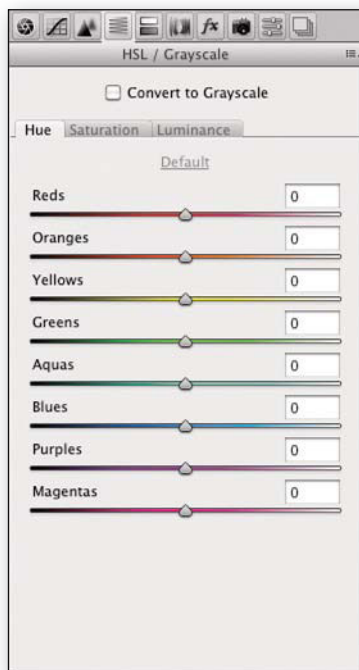
The Hue tab
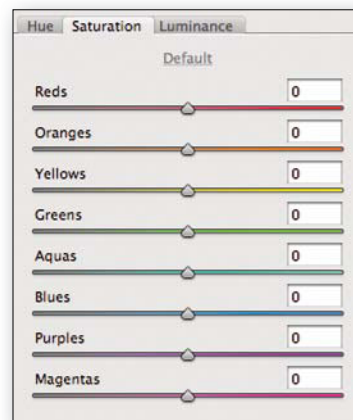
The Saturation tab
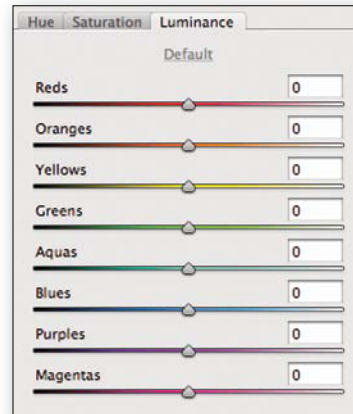
The Luminance tab

The HSL Controls

As you can see in Figure 4-23, the colors under control aren't the typical additive primaries (red, green, blue) or subtractive primaries (cyan, magenta, and yellow). No, the elves who worked on Camera Raw and Lightroom decided to throw in a twist by choosing color controls that are more useful for photographic correction than the primaries. And for good reason—the colors in nature often fall in between the spectral primaries, a fact that makes control of those colors more difficult using only the primaries.

Hue. The Hue control lets you "tween" a color between two related hues. Thus, red can move toward magenta (cooler) or toward orange (warmer). Each of the hues in the panel can have a useful impact on fine-tuning the exact color rendering the raw processing can deliver. While Hue is conceptually similar to the controls in the Camera Calibration panel, you shouldn't confuse its intended use. The Hue sliders are intended to correct photographic or "memory" colors, whereas Camera Calibration is intended to correct the technical rendering of your camera's spectral response. That said, you are free, of course, to use whichever tool catches your fancy.

Saturation. Saturation controls, well, the saturation of the target's hue. You'll note that on each of the HSL subpanels there is a Default button, which is grayed out since there currently are no adjustments. Once you move a slider it is enabled. Since there are three separate panels, the designers decided it would be useful to include a Default button so you could reset all the controls for that subpanel. It's quicker than going through all eight sliders per panel to reset them.

Luminance. The Luminance subpanel is the source of a lot of color and tone adjustment that may augment and improve on the overall tone mapping using Basic and/or Curves. Say, for example, the overall tone mapping is fine except that one particular color is too light or too dark in the resulting tone curve. It's simple to grab the slider for that color and lighten or darken it without affecting the rest of the tone mapping.

The Grayscale Controls

When you click the Convert to Grayscale checkbox (see Figure 4-24), the HSL/Grayscale dialog box displays the Grayscale Conversion tab, which lets you choose how certain colors convert to grayscale. Think of this as an infinitely variable "panchromatic response" filter for your images. Unlike the old days when B&W photographers would shoot with color contrast filters over their lenses to alter the color rendering of their B&W film, we can now exercise far more power and control by adjusting sliders.

Figure 4-24 The Grayscale version of the HSL/Grayscale panel.
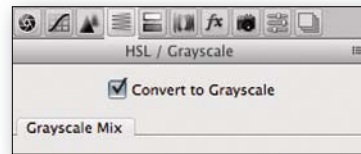
The same sets of colors are represented here as in the color version of the panel to allow you to fine-tune the tone rendering for various colors.

Auto. Clicking Auto (which behaves like a button) performs an automated adjustment of the color settings to optimize the conversion to grayscale while trying to preserve a tonal separation between colors. It's common to have two colors with considerable color contrast, but upon conversion to grayscale, they end up with almost the exact same tone. The Auto conversion tries to optimize the separation of colors to tones, as shown in Figure 4-25. In general, it's often close—so close that many times all that is needed is a couple of slider tweaks to finish off what Auto started.

The original color image

The image with the "default" settings

The image with "Auto" settings
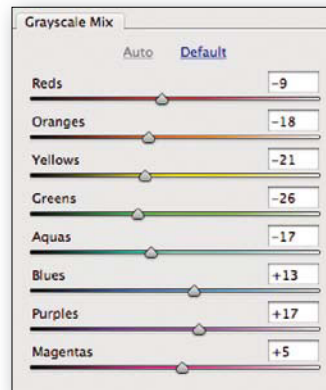
The final adjusted settings
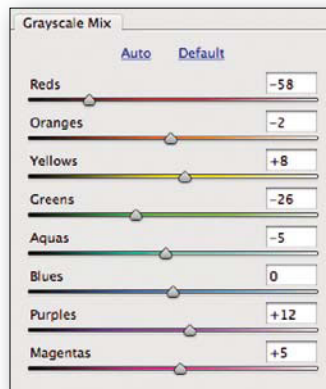
Figure 4-25 The Grayscale Mix subpanel.

The Split Toning Panel

With only five slider controls, the Split Toning panel is Camera Raw's simplest set of controls. Some people may think of this panel as a one-trick pony, but its usefulness would prove otherwise. Although many use the options on this panel only for grayscale conversion and to re-create chemical split toning, the adjustments can be used for color images as well. The functionality is pretty simple (see Figure 4-26): you select a color hue and a degree of saturation in Highlights or Shadows or both. Then, depending on the area you want to act as a balance point, you can adjust the Balance to bias the adjustment split lighter or darker.

Figure 4-26 The Split Toning panel.

This example shows the results of applying a warm/cool split tone to grayscale swatches originally photographed on a GretagMacbeth ColorChecker card. This effect is designed to look similar to a traditionally toned silver gelatin print using sepia toning chemicals.

Gray swatches before toning

Split Tone with Highlight Hue 62, Saturation 25, and the Shadow Hue 242, Saturation 25, Balance 0

Split Tone with previous Hue and Saturation settings but Balance +50 (making everything warmer)

Split Tone with previous Hue and Saturation settings but Balance −50 (making everything cooler)
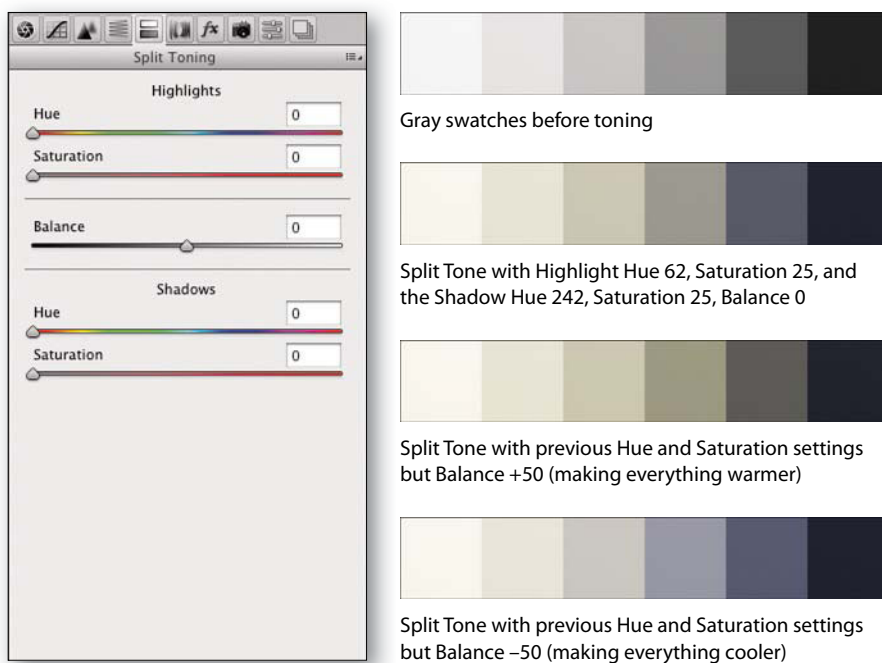
The Lens Corrections Panel

The release of Camera Raw 6.1 has brought with it a marvelous new set of tools in the Lens Corrections panel (it wasn't finished yet in the original 6.0 release). While there were a couple of tools in the previous version of this panel, the most recent release incorporates Adobe's important steps to offer automatic lens corrections via a system of lens profiles that fingerprint lens distortion, lateral chromatic aberration, and lens vignetting. The new lens

corrections first showed up inside the main Photoshop CS5 release and are now part of Camera Raw 6.1.

Why are lens corrections so important? Some camera lenses have defects that alter the precision of the recorded image. Lens distortions such as pin-cushion or barrel distortions (see Figure 4-27) distort images by bending the light as it passes through the lens. Also shown in Figure 4-27 is a detail of lateral chromatic aberration, the lens' inability to focus all colors of light at the same size that results in colored fringing and lens vignetting, which causes light falloff in the corners. The examples shown in Figure 4-27 are exaggerated for the purposes of clarity—although we have actually used lenses almost this bad.
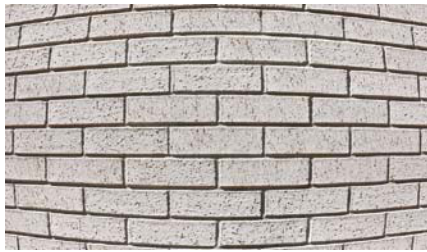
Barrel distortion
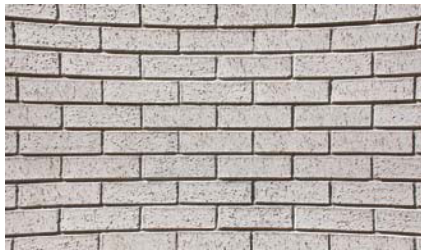
Pincushion distortion

Lateral chromatic aberration

Chromatic aberration fixed

Lens vignetting

Lens-corrected image

Figure 4-27 Examples of lens defects.

You can use both the new Profile and the Manual subpanel controls in the Lens Corrections panel to correct for lens defects and do perspective corrections, precise rotation, and scaling. The older Defringe, manual Chromatic Aberrations, and Vignetting controls are also still available.

The Profile Subpanel

A multitude of lens defects can negatively impact the final quality of photographs. Lens distortion, lateral chromatic aberration, and lens vignetting are the three defects that Camera Raw's new Auto Lens Profile Corrections (see Figure 4-28) can help resolve.

Figure 4-28 The Lens Corrections Profile panel.
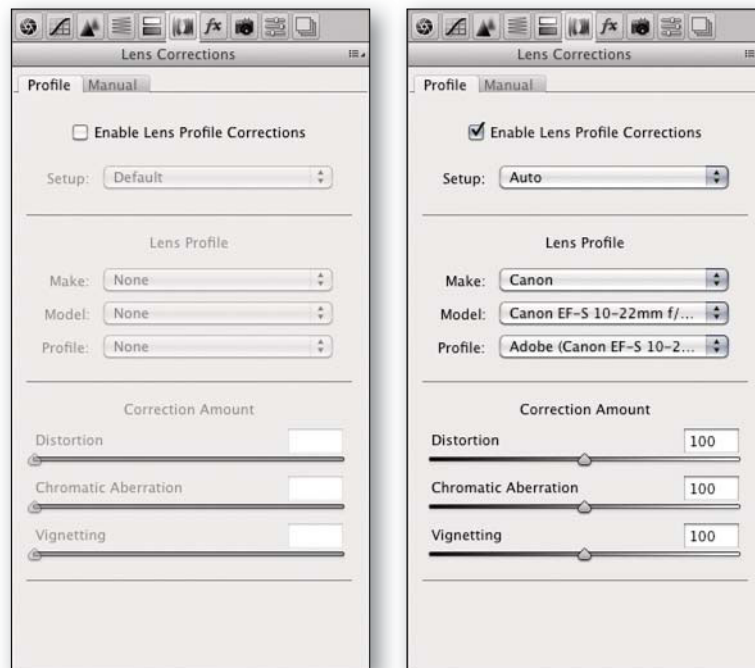
Unselected Enable Lens Profile Correction, showing dimmed controls

Enable Lens Profile Correction selected

Once you select Enable Lens Profile Corrections, Camera Raw searches through the installed lens profiles that came with the Photoshop CS5 install, matches the image's EXIF metadata with the lens profiles, and attempts to select the correct lens.

When people first started using the new Lens Profile tool inside of Photoshop CS5, there was a degree of confusion regarding the camera name being visible in the lens profile Search Criteria, as shown in Figure 4-29.
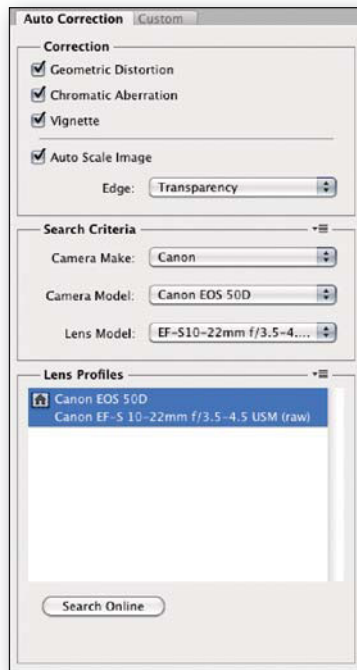
Figure 4-29 The Auto Corrections panel of Photoshop CS5's Lens Correction filter.

Users were dismayed to find that their camera model wasn't used to profile the lens. However, the actual camera being used when the lenses were profiled only matters relative to the sensor crop of the camera. So, if you shoot with a Canon EF-S 10-22mm lens on a Canon 50D, 7D, or even the Digital Rebel, it doesn't matter that the profile shows a different camera. While there may be reasons in the future that might make the mating of the lens and the camera important, currently the only critical criteria is the sensor size. As long as the lens was profiled for the largest sensor supported by the lens, the profile will be fine because the image circle of the lens is a constant regardless of the sensor size. A lens that was profiled on a Canon 1Ds Mark III will work fine on a Canon 5D Mark II and even the smaller sensor of the 50D or 7D.

To simplify the lens profile selection, Camera Raw has altered the display by concentrating only on the lens Make, Model, and Profile menus (see Figure 4-30).

Figure 4-30 Camera Raw's
Lens Profile menus.
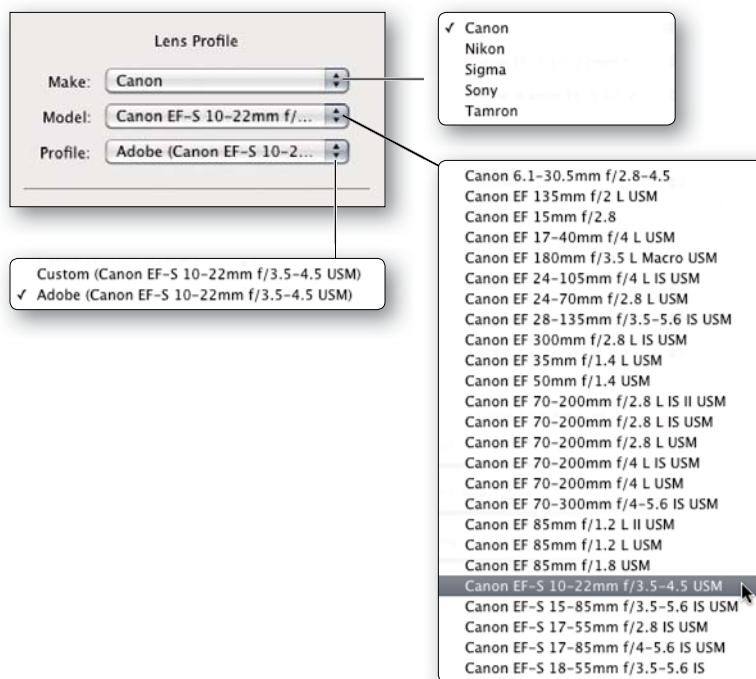
In Figure 4-30, Camera Raw has selected the Canon EF-S 10-22mm
f/3.5-4.5 USM lens. The lens make is Canon; the lens model is shown as the
Canon EF-S 10-22mm lens; and the lens profile is listed as Adobe (Canon
EF-S 10-22mm f/3.5-4.5 USM). The fact that the previous Photoshop CS5
search criteria (see Figure 4-29) notes that the lens profile was made with a
50D is irrelevant. You'll also notice that the Profile dropdown menu lists an
additional profile named "Custom (Canon EF-S 10-22mm f/3.5-4.5 USM)";
see Figure 4-30). This is what would show in the menu if you have made
your own custom profile for the lens (as we did here) and named it "Custom"
plus the lens model. We'll talk further about Adobe's profile creation tool
and the lens profiling community later in the chapter; see the "Adobe Lens
Profile Creator" section.

When you enable Camera Raw's lens-correction functionality, on the
Profile subpanel the Setup menu defaults to "Default." Tricky, huh? If you
modify the Profile selected or the Correction Amounts for the correction
parameters, the Setup menu changes to Custom. There is also a menu item
named Auto. We'll explain the Setup menu items further, but first take a
look at Figure 4-31.
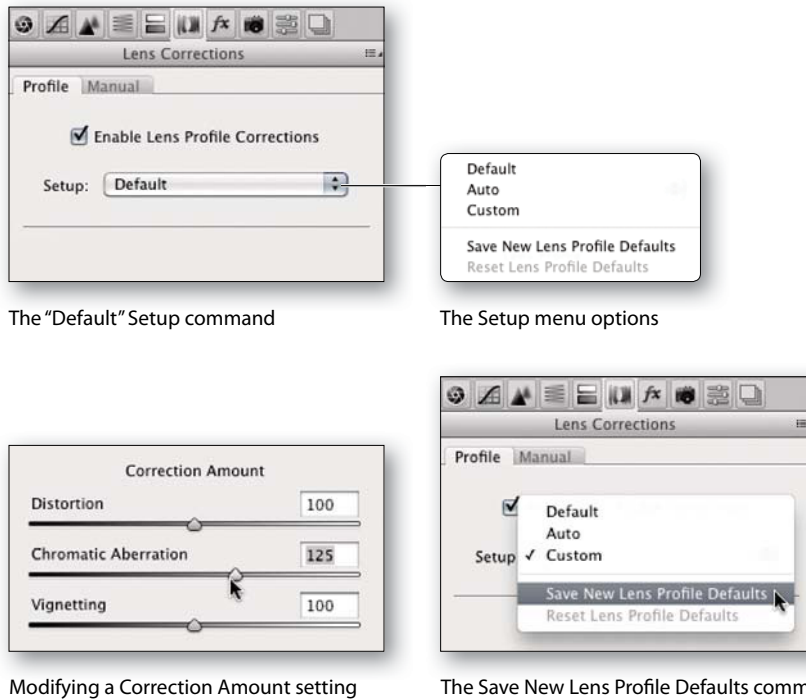
Figure 4-31 The Profile panel's Setup menu.

The "Default" Setup command

The Setup menu options

Modifying a Correction Amount setting

The Save New Lens Profile Defaults command

We realize it can look confusing—we were plenty confused when we first saw it—but you can grasp the behavior logic if you understand the options.

If you select Auto as a Setup menu item, Camera Raw will look for a matching profile and select it automatically. The Auto option seems pretty simple and straightforward, right? However, if you make any modifications to the Auto-selected profile's Correction Amounts or the lens profile selected (if you have multiple profiles for a lens) the menu will change to Custom. Assuming you do wish to save the modifications you've made into a lens profile Setup "Default," you can do so by selecting the Save New Lens Profile Defaults menu option.

Why do these different Setup menu items matter? They will dictate the way Presets you may make regarding lens-profile correction end up behaving. They will also play a role in the event you wish to have Camera Raw incorporate lens corrections automatically as the Camera Raw Default.

If you have Auto selected and you create a new Camera Raw Preset, you can apply that preset in Camera Raw or Bridge. Regardless of the camera model or lens on the camera, if Camera Raw can find a profile for the lens, an Auto

lens correction preset will apply the correct lens corrections. This is incredibly useful and time-saving.

However, you can make this even easier by having Camera Raw automatically lens correct whenever it sees a particular camera. We'll explain how you can alter your Camera Raw defaults by camera, serial number or even ISO later in this chapter; see "Camera Raw Preferences."

You might then ask why there's an "Auto" menu item as well as a "Default" menu item in the Setup menu options. We wondered as well. The fact is, the only difference between Auto and Default shows up when you alter the settings for a particular lens profile. If you alter a lens profile's settings and you save that as a new lens profile default, then there would be a difference in the menu items because Auto would be Custom unless you save a new lens profile default, in which case the menu would show Default.

Figure 4-32 The Reset Lens Profile Defaults command.

Some of the Adobe-provided lens profiles need slight modifications, in our experience. We usually give the chromatic aberration correction amount a boost to 125–130. In this case, we've used the Save New Lens Profile Defaults command (see Figure 4-31) and then we've saved a new Camera Raw Default to incorporate the new lens profile default automatically.

If you decide that you don't like the adjustments you saved as a new lens default, you can return it to the original settings by using the Reset Lens Profile Defaults command. Figure 4-32 shows this menu option.

There is one function of Photoshop CS5's Lens Correction that Camera Raw's Lens Correction feature can't do: automatically search for a lens profile on Adobe's Lens Profile server. Camera Raw is a plug-in and can't directly connect to the Internet, so you'll need to employ Photoshop CS5 for the task.

Adobe has been very busy profiling a lot of camera lenses, but the potential matrix of lenses that might be used is huge. We hope that Adobe's efforts to build a lens-profiling community will greatly improve lens-profile availability.

Figure 4-33 shows the Camera Raw warning that there's no lens profile found for a lens. The next step is to open the image taken with the lens that has no profile and in Photoshop CS5 select the Lens Correction filter. Once that filter is open, you can click the Search Online button. If it finds a profile, you are given the option to download it. Once the profile is downloaded and installed, Camera Raw can use it.

Figure 4-33 Searching for a lens profile online.
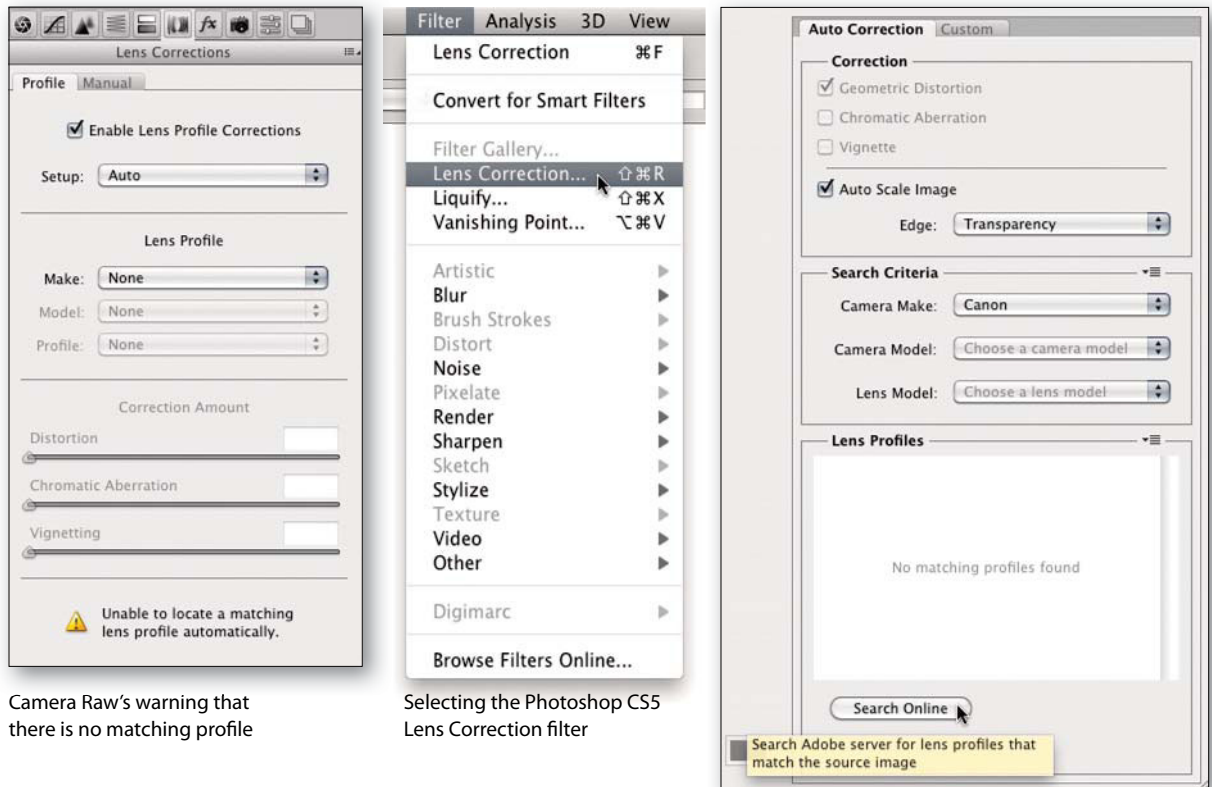
Camera Raw's warning that
there is no matching profile

Selecting the Photoshop CS5
Lens Correction filter

Using Photoshop's Lens Correction filter to
search online

The Manual Subpanel Transform Controls

While it might be a bit optimistic to hope that completely automatic lens
corrections can be now accomplished, sometimes you have to take the
hands-on approach and do things yourself. The Manual subpanel of the
Lens Corrections panel enables manual control over lens corrections as well
as correcting for distortion, adjusting both vertical and horizontal perspec-
tive, fine-tuning rotation, and adjusting the scale of the image. It's also where
the old manual Chromatic Aberration, Defringe, and Lens Vignetting con-
trols live. Figure 4-34 shows the full Manual subpanel.

Figure 4-34 The Manual panel in the Lens
Correction dialog box and the image we'll be
using to show the Manual Transform controls.

The Manual panel

The Defringe
dropdown menu
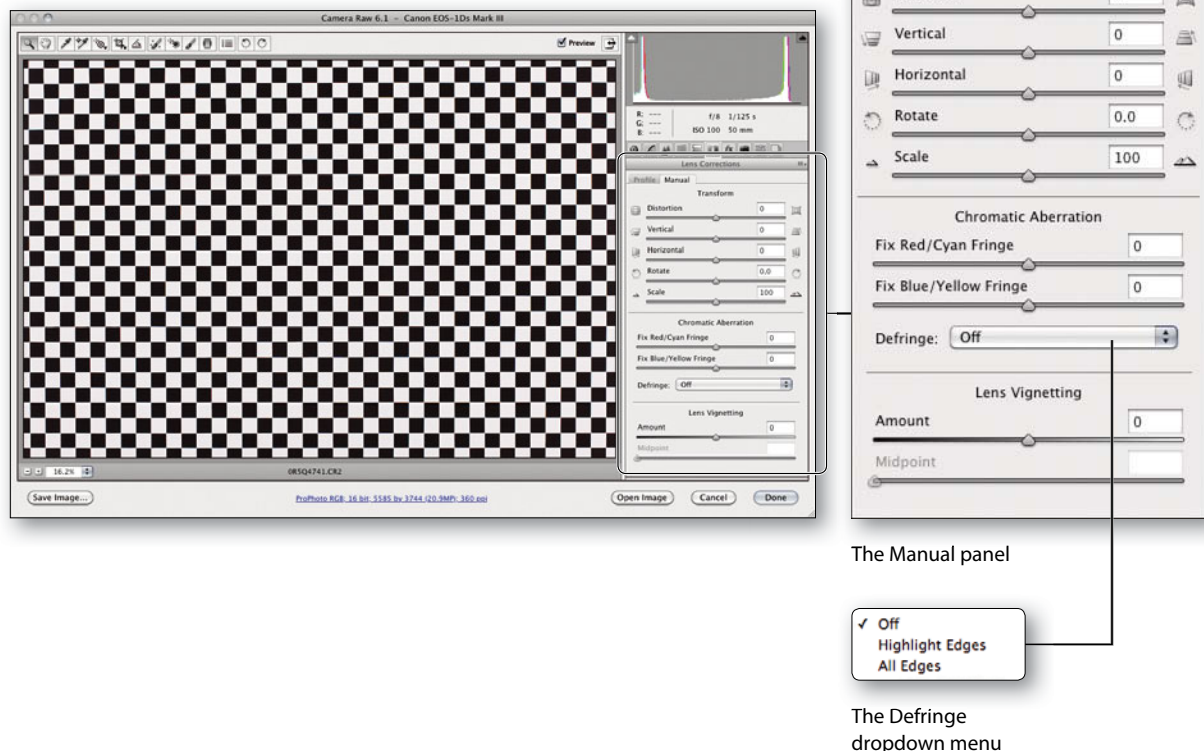
It's pretty remarkable that the Camera Raw team has engineered the ability
to parametrically correct not only for lens defects but also for perspective
problems as well. This is an impressive addition to the Camera Raw toolset.
The Manual Transform controls are as follows:

Distortion. The Distortion transform in the Manual subpanel has the same
sort of geometric distortion correction you find in the automatic lens correc-
tions. The manual controls correct between barrel and pincushion distortions
only, however. The Profile-based corrections can also correct for other lens
distortions such as a "mustache" distortion (yes, a distortion shaped like a
mustache). Pressing the Up or Down arrow keys changes the units by a
single digit.

Vertical. The Vertical correction transform will correct for keystoning, the distortion that occurs when you tilt a camera up to include the top of a building, for example. Pressing the Up or Down arrow keys changes the units by a single digit.

Horizontal. The Horizontal correction transform is essentially the same as the Vertical transform but designed for lateral perspective corrections. Pressing the Up or Down arrow keys changes the units by a single digit.

Rotate. The Rotate command allows numerical rotational correction that is more precise than Camera Raw's Straighten tool. Pressing the Up or Down arrow keys changes the units in increments of 0.1. The range is plus or minus 10 degrees.

Scale. This command allows scaling the image up or down from 50% through 150%. This is useful when trying to subtract or add to the image after manual transforms without using the crop tool. Pressing the Up or Down arrow keys changes the units by a single digit.

We'll show you what the controls do on a synthetic image (it's actually a close-up on a shot of a lens-profiling target). We hope the alternating checkerboard pattern doesn't make you nauseous! The baseline image and the Manual subpanel of the Lens Corrections panel are shown in Figure 4-34; the effects are shown in Figures 4-35a and 4-35b.

You'll note that in the images where the controls result in the actual image data being altered beyond the original boundaries, a gray null image area is added. This can be useful if the image correction results in a nonrectangular result. You can choose to keep the additional gray area or use the Scale control to make the overall image larger. Another alternative to using the Scale control is to use the Camera Raw Crop tool. Figure 4-36 shows drawing out a rectangular crop of the image. A new function of the Camera Raw Crop tool is the option to have the crop either constrained to the image or unconstrained depending on the option in the Crop dropdown menu. If the Crop tool is constrained to the image boundaries, none of the added gray filler will be in the final cropped image (shown in Figure 4-36).

Figure 4-35a The effects of the Manual Transform controls.
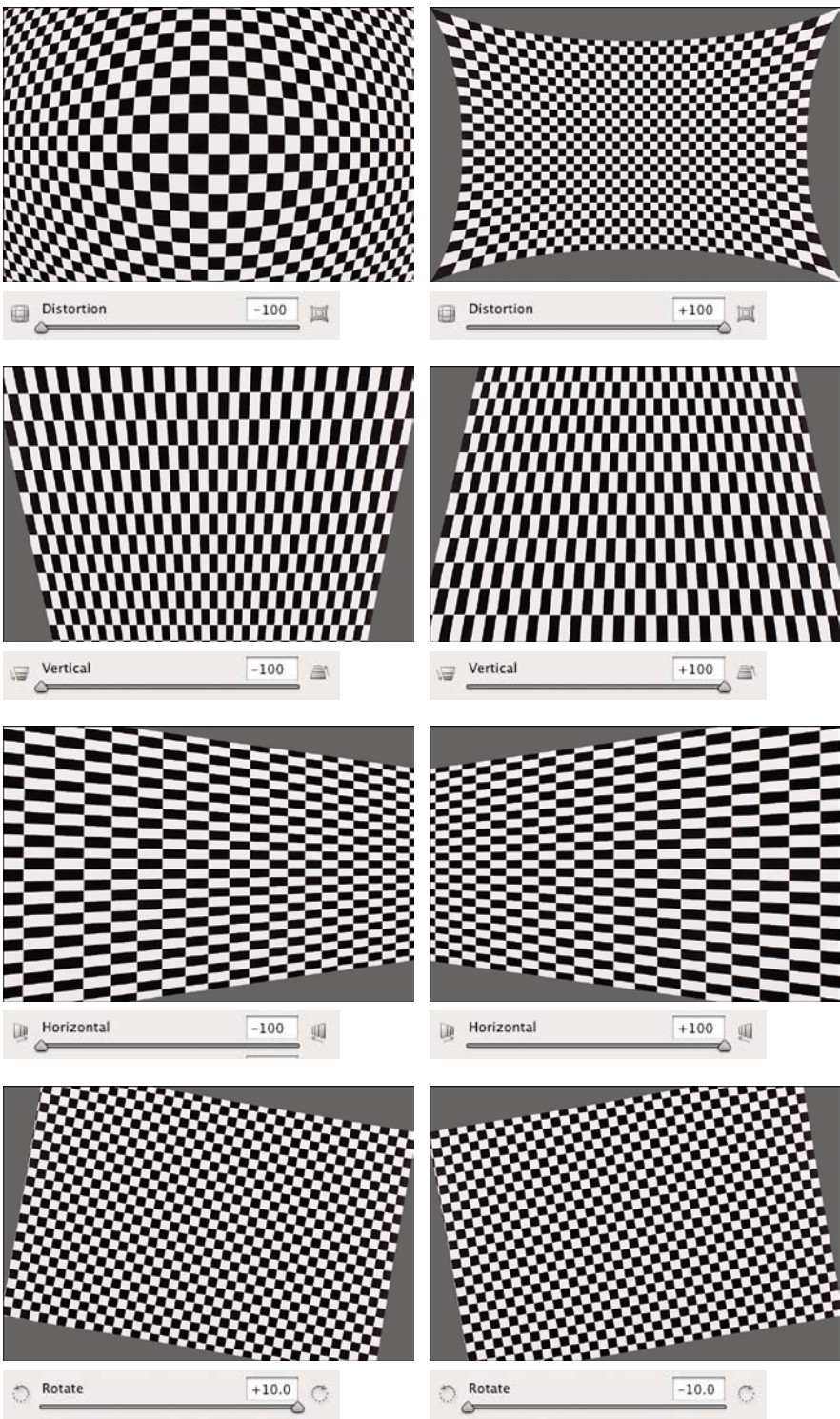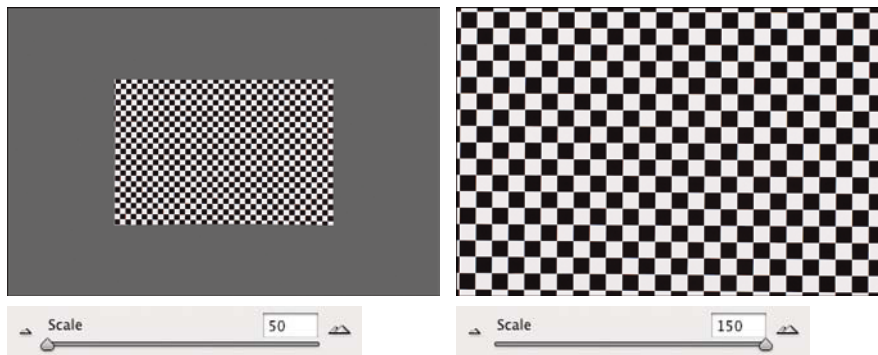
Figure 4-35b The effects of the Manual Transform controls.

Scale   50

Scale   150

Figure 4-36 Cropping in the Lens Correction panel
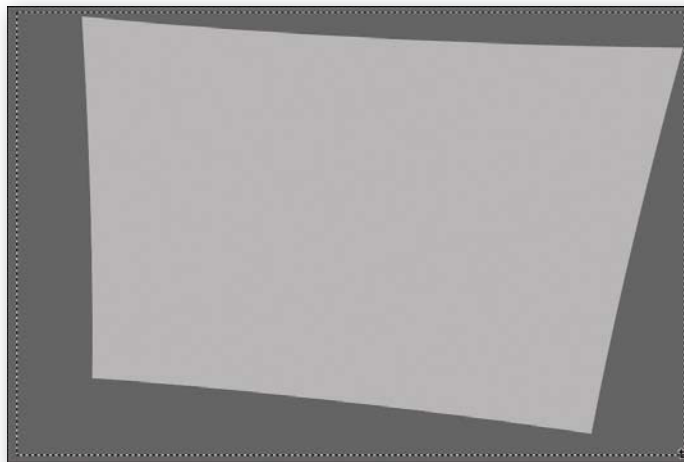
Drawing out an unconstrained crop

✓ Normal

1 to 1
2 to 3
3 to 4
4 to 5
5 to 7
9 to 16

Custom...

Constrain to Image

Show Overlay

Clear Crop
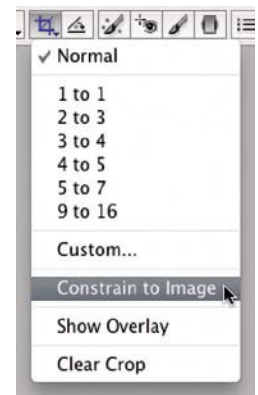
Selecting the Constrain to Image command in the Crop menu

Drawing out a crop constrained to the image boundaries

The last important function the Camera Raw team provided in the new Lens Correction panel is the ability to overlay a grid to aid in the alignment of both rotation and perspective transforms. You can display the grid by pressing the V key when you are in the Lens Correction panel or by navigating to the Camera Raw flyout menu and selecting the Show Grid command (see Figure 4-37).

Figure 4-37 The alignment grid overlay in the Lens Correction panel.

Selecting the Show Grid command in the Camera Raw flyout menu
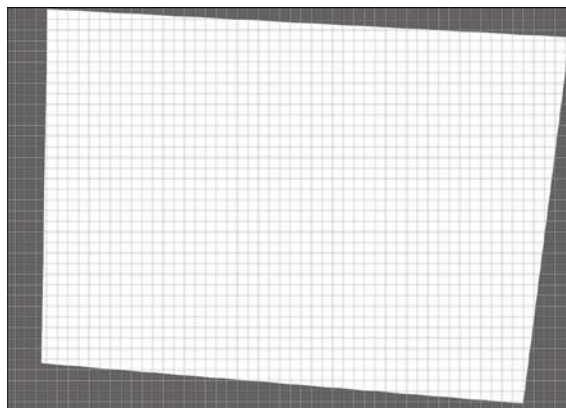
The grid overlay

The Manual Chromatic Aberration and Defringe Controls

There are two types of chromatic aberration: one that Camera Raw can work on and one that it can't. Longitudinal chromatic aberration, where the colors of light can't all be focused on the same plane (the sensor), will result in the type that Camera Raw can't do anything about. *Lateral* chromatic aberration, however, Camera Raw can help with. In lateral chromatic aberration the lens does focus light at the sensor plane, but does so in a manner in which the image formed is slightly different in size by color; for example, the red channel may actually be larger than the other channels. If the profile-based corrections don't work correctly (or you don't have a lens profile to use) you can use the Chromatic Aberration controls to make the correction manually.

In addition to color fringing caused by chromatic aberration, certain additional fringing effects can often found near extreme specular highlights. This effect is often caused by photo site *flooding*—too much exposure at a site flooding over to surrounding sites—or by demosaicing errors. Either or both can cause unwanted color fringe effects when you zoom in on your

image. Figure 4-38 shows the Chromatic Aberration sliders and the Defringe control in use. The images are shown at a screen view of 400% to better show the effects in reproduction.

Remember to concentrate on one Chromatic Aberration slider at a time. To help with this, press the Option key as you move a slider to simplify the view. You will notice that even with the Chromatic Aberration corrections and a Defringe setting of All Edges, there is still some very slight fringe—but this is normal.

Figure 4-38 Fixing chromatic aberration and color fringing.

A small crop of the upper-right corner of an image showing both chromatic aberration and color fringing

Working on the red/cyan fringe

Working on the blue/yellow fringe

The chromatic aberration fixed (to the greatest extent possible)

The results of using Highlight Edges from the Defringe dropdown menu

Fixing chromatic aberration and using All Edges from the Defringe dropdown menu
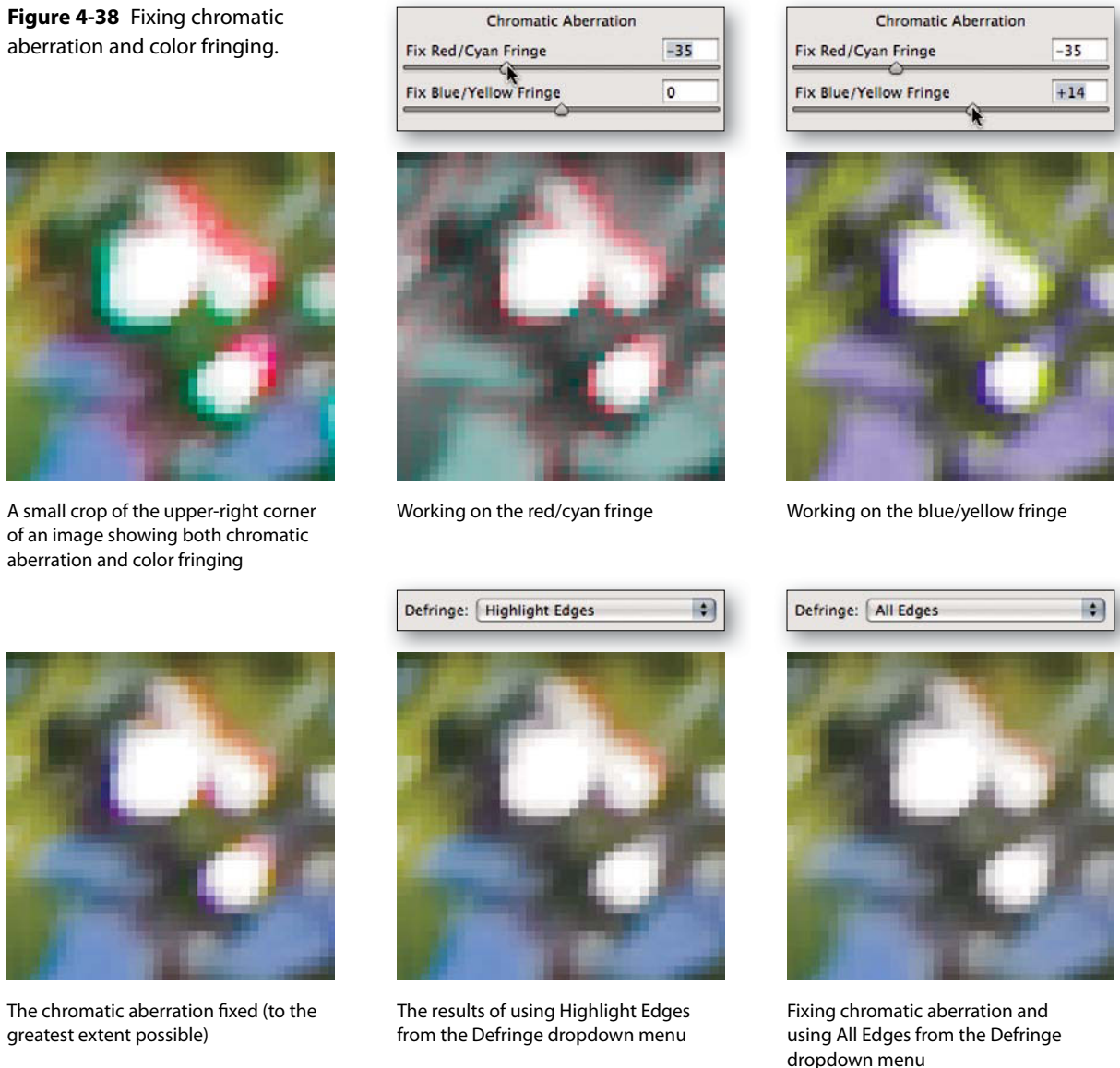
The Manual Lens Vignetting Controls

Many lenses create images that suffer from dark corners, for a variety of reasons. Some zoom lenses, because of their extremely complex lens groupings, can't project the image without causing light falloff. Some extreme wide-angle lenses suffer from lens barrel shadows because the lenses are trying to see such a wide angle of view. In either case, light falloff in the corners is common. If you don't have a lens profile for correction, you can use Camera Raw's Lens Vignetting controls to manually correct that falloff (see Figure 4-39).

Figure 4-39 Using the Lens Vignetting controls.

Uncorrected lens vignetting

Corrected lens vignetting

Adjusted settings
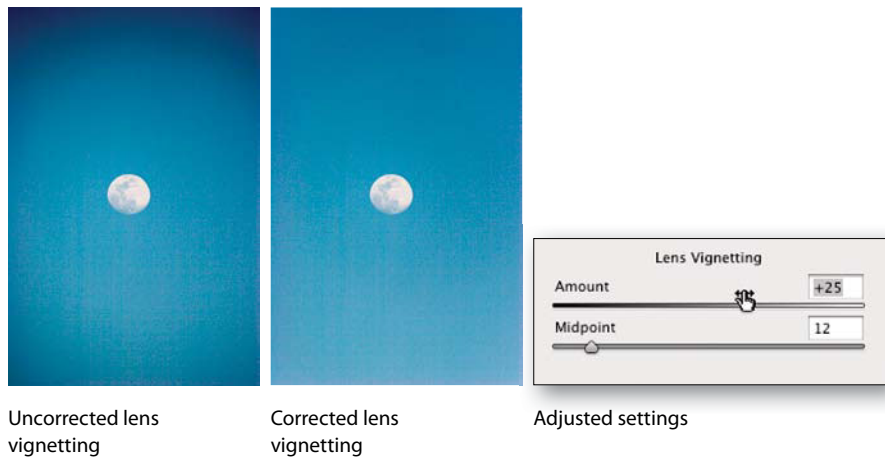
Amount. Moving the Amount slider to the right lightens the corners; moving it to the left darkens them. Darkening the corners is a common creative technique often referred as "hand-of-God burning," in which the center of the image is normally toned and the corners are burned (darkened) down. The Spot Healing, Red Eye, and Lens Vignetting tools are the only methods of adjusting local images in Camera Raw. Note that you apply the lens vignetting correction based on the total image size, not the cropped image. If you are cropping the image, the effect is also cropped. This is as it should be for technical corrections of lens vignetting, but it can be a problem if you're using the adjustment to darken the corners.

Midpoint. The Midpoint adjustment varies the area over which the Amount is applied. You can adjust it to taste. Midpoint is grayed out until the Amount slider is moved from the 0 Default setting.

The Effects Panel

The Effects panel is the new kid on the block in terms of Camera Raw panels (see Figure 4-40). Some people might find it odd that a raw processing engine would have features designed for creative effects, but this new set of functionality does have its uses.

TIP You can access the Effects panel by pressing Command-Option-7.
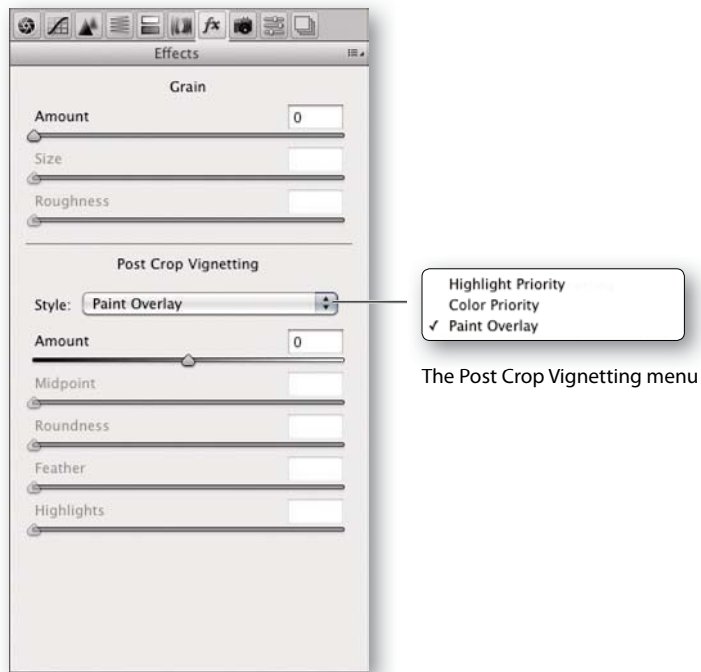
Figure 4-40
The Effects panel.

The Grain Effects

The Post Crop Vignetting menu

It may seem ironic that in the same version of Camera Raw touted for its superior noise-reduction powers that the Camera Raw engineers would design an ability to actually add Grain back into a photographic image. Yes, it's a delicious irony, yet the functionality can improve the final image quality. One of the rather counterintuitive aspects of digital imaging is that sometimes image sharpening added to substantial noise-reduction can have an

unnatural-looking affect on your images. Often, images optimized with the Detail panel settings can benefit from a gentle touch of added grain. Figure 4-41 shows you a range of grain effects applied to a gray field with a Camera Raw zoom of 200%.

Amount. This setting controls how strong the grain effect will be. Generally, you'll want to use a subtle amount unless you are looking for a specific effect. The Default setting is 0.

Size. This slider controls the size of the grain. The size of the grain is not dependent upon the resolution of your images, but the impact of the grain is. You'll want to use smaller grain for lower-resolution images to avoid having the grain blow out image detail. Larger grain sizes soften your image a lot. Also note that using a computer display is not a very accurate method of determining the optimal grain size. You may need to run tests on images all the way through your print processing to determine what size grain you wish to use. The default size is 25.

Roughness. You can use Roughness to alter the grain clumps to more accurately simulate film grain. The default is 50. Reducing the setting will make the grain look like a fine reticulated pattern. Increasing the Roughness will more closely simulate a high ISO film or film that has been push processed.

One additional use for the Grain effect is to match up multiple ISO digital captures in the event you need to do an image assembly. Trying to composite a high-speed ISO capture with a low-speed image is usually best done by knocking down as much of the high-speed ISO noise while adding a bit of grain to the lower ISO capture before assembly. Figure 4-42 shows applying a Grain effect to an ISO 100 capture in an attempt to match the apparent noise of an ISO 1600 capture.

Figure 4-41 The Grain effect at various settings.

Zero grain
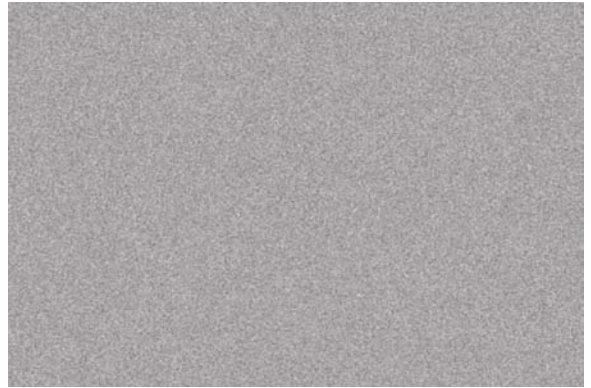
Amount 50, Size 25, Roughness 50
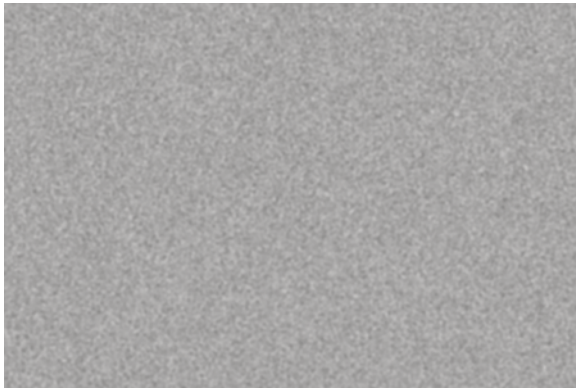
Amount 50, Size 75, Roughness 50
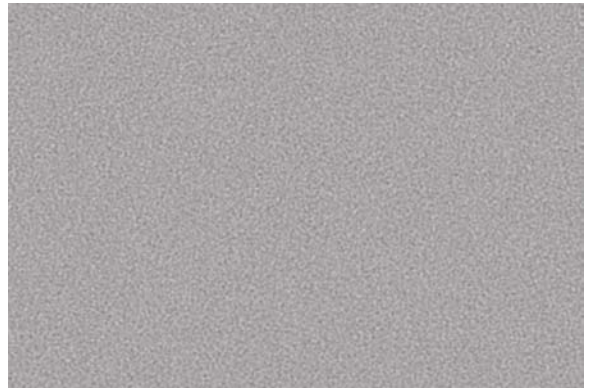
Amount 50, Size 50, Roughness 25
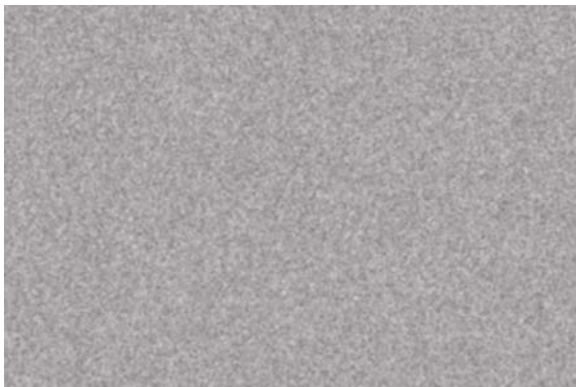
Amount 50, Size 50, Roughness 75

Figure 4-42 Simulating higher-speed ISO noise.

Original ISO 100 capture at 300% zoom

Original ISO 1600 capture at 300% zoom

ISO 100 capture at 300% zoom with
Amount 28, Size 30, and Roughness 33

The Post Crop Vignetting Controls

The Post Crop Vignetting controls have been moved from the Lens Correction panel to the Effect panel. They operate on the image after it has been cropped rather than on the entire image, as the Lens Vignetting controls do. This is much more a creative tool than a correction tool. As with any creative endeavor, however, a little can be good but a lot will not. Figure 4-43 shows how the controls work on a synthetic gray image. While Lens Vignetting corrections are usually used to lighten darkened corners, Post Crop Vignetting tools are more often used to darken the corners to concentrate viewer interest toward the center. Often, you'll need to twiddle all the sliders to achieve the final effect you want.

Amount. The Amount setting is just that, the amount of darkening or lightening that will occur in the Post Crop Vignette. We chose maximum -100 and +100 settings in Figure 4-43 to make sure the effect would be visible.

Midpoint. The Midpoint adjustment moves the effect in toward the center or out toward the corners.

Roundness. This control allows you to adjust how round or oval—or in the extreme, nearly rectangular—the resulting effect is applied. A value of -100 will result in almost an image edge–only effect.

Feather. This setting controls how hard or soft the effect will gradate in and out. Generally, you'll want the effect soft enough so you don't see obvious start or stop points.

Figure 4-43 The Post Crop Vignetting controls in action.
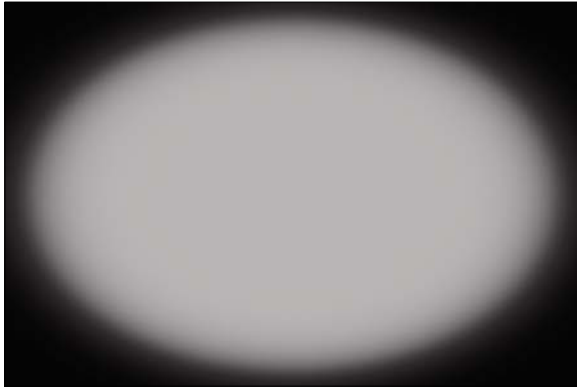
Amount -100, Midpoint 35, Roundness 0 and Feather 25
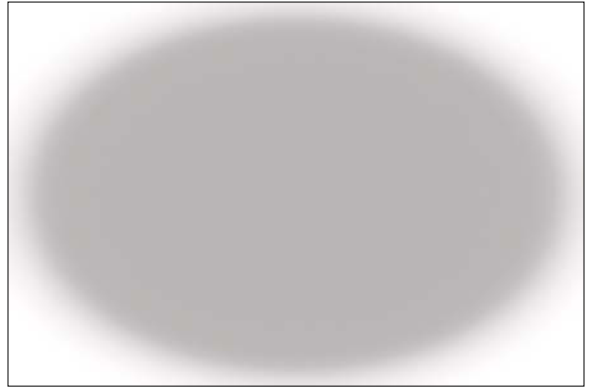
Amount +100, Midpoint 35, Roundness 0 and Feather 25
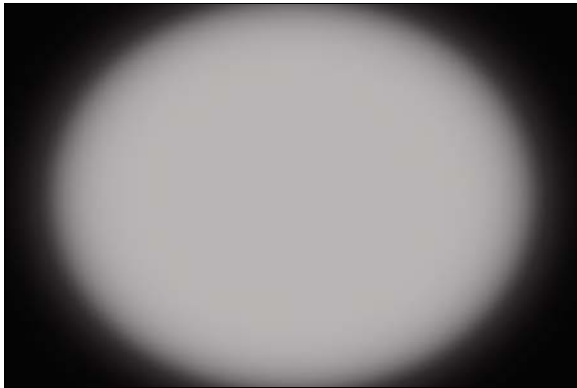
Amount -100, Midpoint 35, Roundness +50 and Feather 25
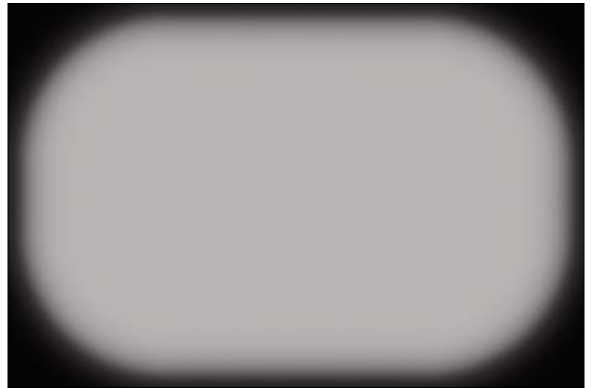
Amount -100, Midpoint 35, Roundness -50 and Feather 25
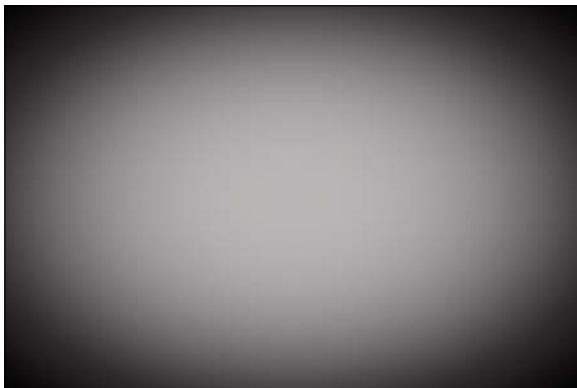
Amount -100, Midpoint 35, Roundness 0 and Feather 75

The best use of the Post Crop Vignetting effect is subtle. The effect is always exactly centered in the final cropped area of the image. You cannot move the coordinates left/right or up/down. To do that kind of adjustment, you would need to use either the Adjustment Brush or Graduated Filter (see "The Graduated Filter," later in this chapter). The examples shown in Figure 4-43 all use the Paint Overlay blending Style. New to Camera Raw 6 is the ability to change the blending style of the Post Crop Vignetting and modify the way colors and highlights are handled in the vignette effect. Figure 4-44 shows the full image we'll use to demonstrate the various blending options.

Figure 4-44 Post Crop Vignetting example image.

The full image
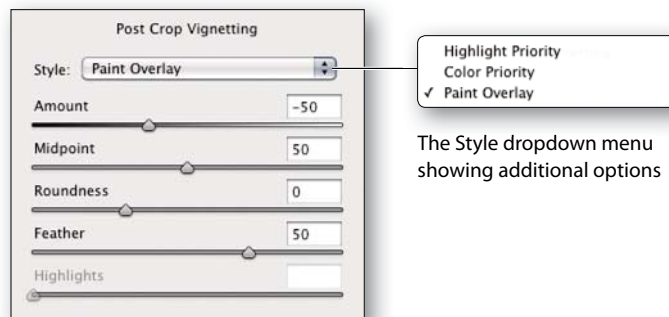
The Style dropdown menu showing additional options

The Post Crop Vignetting panel set to the Paint Overlay style

Paint Overlay. When the Post Crop Vignetting panel first appeared in Camera Raw, it had only a single blending option, which is now called Paint Overlay. This option simply darkens the image without regard to its contents. Everything gets darker and often results in a rather drab effect.

Color Priority. The Color Priority Style preserves the color appearance while making the corners darker. Color Priority also enables the Highlights slider to preserve the brightness of the highlights in the image that may be found in the corners. We tend to use the Color Priority the most as it is the best at maintaining color purity.

Highlight Priority. This control closely resembles the manual vignetting tools in the Lens Correction panel. The Highlights slider is available to help maintain the brightness of highlights in the corners. Highlight Priority tends to contaminate saturated colors, however.

Figure 4-45 shows the upper right corner of our sample image with various blend Style settings and adjusted Highlight settings. The settings from Figure 4-44 remain except for adjustments of the Highlights when using the Color Priority and Highlight Priority styles.

The image with a Style of Paint Overlay

The image with a Style of Color Priority with the Highlight slider at 0

The image with a Style of Color Priority with the Highlight slider at 100

Figure 4-45 Comparing the various blend Style options of the Post Crop Vignetting controls.

The image with a Style of Highlight Priority with the Highlight slider at 0

The image with a Style of Highlight Priority with the Highlight slider at 100

The Camera Calibration Panel

The controls in the Camera Calibration panel (see Figure 4-46) let you fine-tune the behavior of the built-in camera profiles to allow for any variations between *your* camera and the one that was used to build Camera Raw's built-in profiles for the camera model. This panel also allows you to control what process version Camera Raw 6 will use when rendering your image.

Figure 4-46 The Camera Calibration panel.
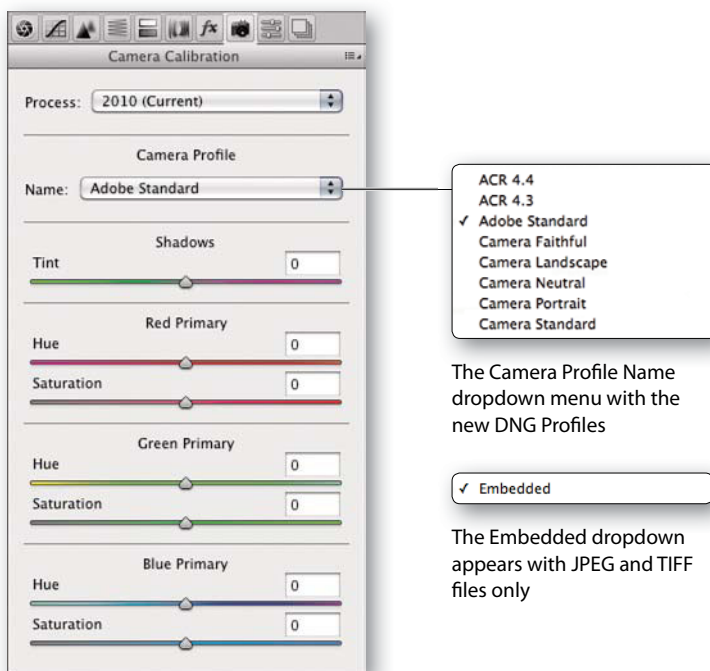
The Camera Profile Name dropdown menu with the new DNG Profiles

The Embedded dropdown appears with JPEG and TIFF files only

NOTE If you wish to explore the possibility of making your own DNG profiles or editing existing ones, Adobe has released a free application called the DNG Profile Editor at the Labs. Adobe.com Web site. With it you can create custom DNG profiles for your camera by shooting an X-Rite Color-Checker color chart.

X-Rite (www.xritephoto.com) has also released a new product called the ColorChecker Passport, which includes a newly developed Color-Checker color chart as well as software for easily making DNG profiles.

We will be making short articles about both of these technologies available to our readers at the Real World Camera Raw Web site (www.realworldcameraraw .com).

The Camera Profile dropdown menu displays the version of Camera Raw used when the camera was first profiled as well as subsequent updates and the new DNG Profiles for the camera.

The DNG Profiles are based on the camera's EXIF metadata. Not all cameras will show all these options, and the naming of the camera-based options will vary based on the naming convention the camera makers use. The options are meant to simulate the camera makers' JPEG rendering based on the settings used onboard the camera. Note, however, that Camera Raw can't automatically pick the profile based on the EXIF metadata so you must manually choose something other than the Camera Raw Default of the Adobe Standard profile.

If you have already downloaded and used the previously released beta versions of these profiles, installing Camera Raw 6 and the current release of the profiles won't change what you've already done. You will need to take steps to change the profiles. You should consider making presets using only the Camera Calibration subsettings so you can apply the new profiles easily en masse from within Bridge.

JPEG or TIFF files opened into Camera Raw will have the Embedded profile (the profile that is currently embedded in the image). Files from Sigma cameras will also have the readout set to Embedded.

The JPEG image open in Camera Raw

The DNG image after changing the DNG Profile to Camera Standard

The Name dropdown menu

Figure 4-47 Changing the DNG Profile to match the camera JPEG.

Figure 4-47 shows applying the Camera Standard profile to simulate the JPEG setting of a Canon 1DsMIII. These images of Michael Reichmann holding a ColorChecker card were shot using the camera's Raw+JPEG mode while he and Jeff shot together in Niagara Falls, Ontario. The camera saved both a raw and JPEG version of the exact same capture. Within the

limits of halftone reproduction in CMYK, we think most readers will agree that the raw rendering of the DNG file using the Camera Standard profile looks very close to the same image shot in JPEG format.

The Camera Calibration Panel Adjustments

Camera Raw can now simulate the color rendering that the cameras produce very accurately. However, you can modify the results of the profiles by further adjustments of the following settings. These adjustments can be used for accuracy as well as creative color rendering.

Shadows Tint. This slider controls the green–magenta balance in the shadows. Negative values add green; positive values add magenta. Check the darkest patch on the target. If it's significantly non-neutral, use the Shadows Tint control to get the R, G, and B values to match as closely as possible— normally, there shouldn't be more than one level of difference between them.

Red, Green, and Blue Hue. These sliders work like the Hue sliders in Photoshop's Hue/Saturation command. Negative values move the hue angle counterclockwise; positive values move it clockwise.

Red, Green, and Blue Saturation. These sliders work like gentler versions of the Saturation slider in Photoshop's Hue/Saturation command. Negative values reduce the saturation; positive values increase it.

The key points to wrap your head around when using the Hue and Saturation adjustments are these: The Red Hue and Red Saturation sliders don't adjust the red value, they adjust the blue and green; the Green Hue and Saturation sliders adjust red and blue; and the Blue Hue and Saturation sliders adjust red and green.

The Presets Panel

TIP To access the Presets panel, press Command-Option-9. Remember, on Macs, the keyboard shortcut is used by the system unless you change the system preferences.

You should consider spending some quality time with the Presets panel (see Figure 4-48) because it's key to working efficiently inside of both Camera Raw and Bridge. If you find you are making the same types of adjustments over and over again, you can make your life easier by creating a preset. Not to be confused with the Camera Raw Default, presets are designed to be broken down by setting groups or individual subsettings.

Figure 4-48 The Presets panel and the New Preset dialog box.

The Presets panel

The new Presets button

The New Preset dialog box

The Subset dropdown menu

Sample Subset selection choosing White Balance
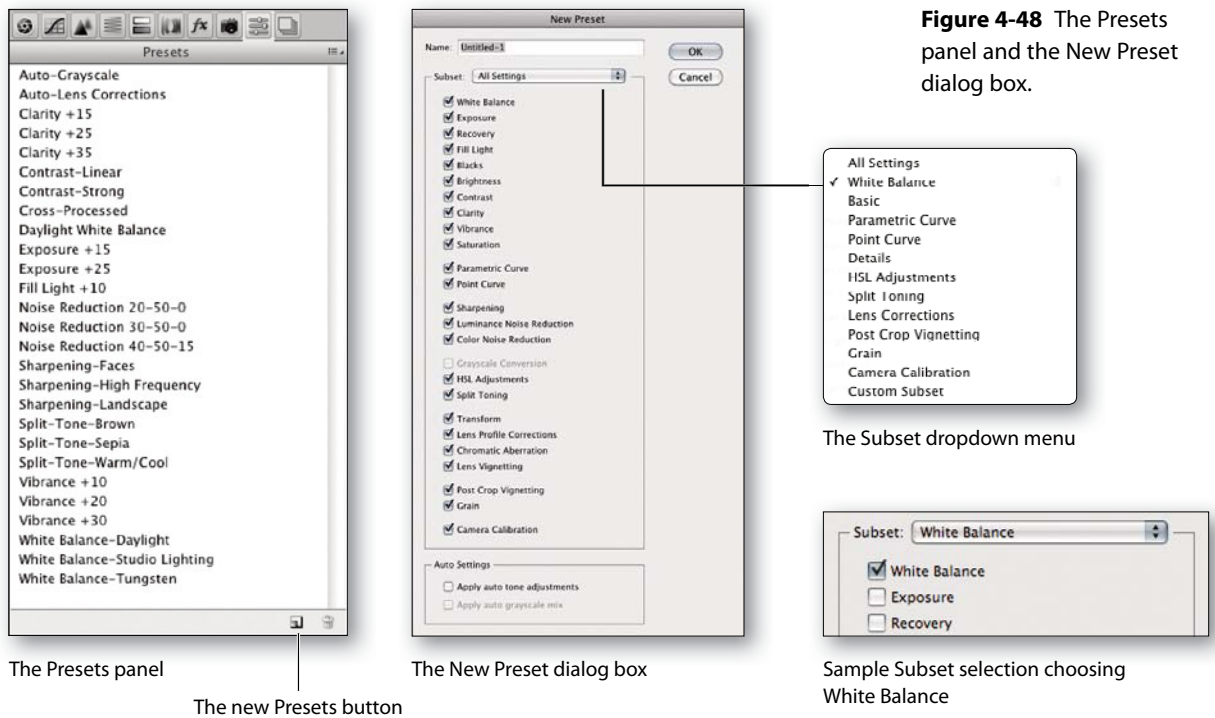
Presets can consist of all settings or, more efficiently, subsettings. When saving a new preset, give it a meaningful name so you know by looking at it what to expect when it's applied. As shown in Figure 4-49, we have a variety of saved presets listed in the panel. Examples vary between camera calibrations (the 1Ds and Rebel presets), clarity settings, and sharpening settings, among others.

Figure 4-49 Saved presets in Bridge's Develop Settings submenu.
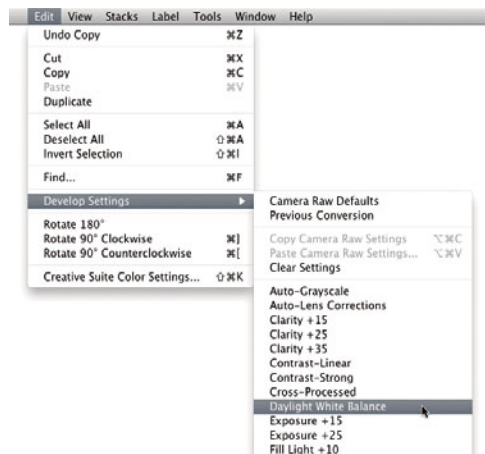
The reason that saving subsettings is so useful is that you can apply multiple settings, one after the other, to alter the total settings applied to single or multiple files. As long as the subsettings being applied don't overlap, they won't be altered by subsequent adjustments. So, you could apply a camera calibration preset, followed by a clarity setting, followed by additional presets to apply a custom mix of presets. And you can apply these presets either from within the Camera Raw dialog box or from Bridge's Develop Settings, found in the Edit menu, before ever opening an image in Camera Raw. The presets you create and save also appear in the Develop Settings in Bridge. You can create a new preset from any panel in Camera Raw by pressing Command-Shift-P.

The Snapshots Panel

Snapshots are multiple settings saved as .xmp data either in the raw file's sidecar file or directly within DNG, TIFF, and JPEG files. Figure 4-50 shows the Snapshots panel with a variety of snapshots already saved. This is the only panel that doesn't currently have a keyboard shortcut. However, you can press Command-Shift-S to create new snapshots from any panel.

Figure 4-50 The Snapshots panel (shortened to save space).
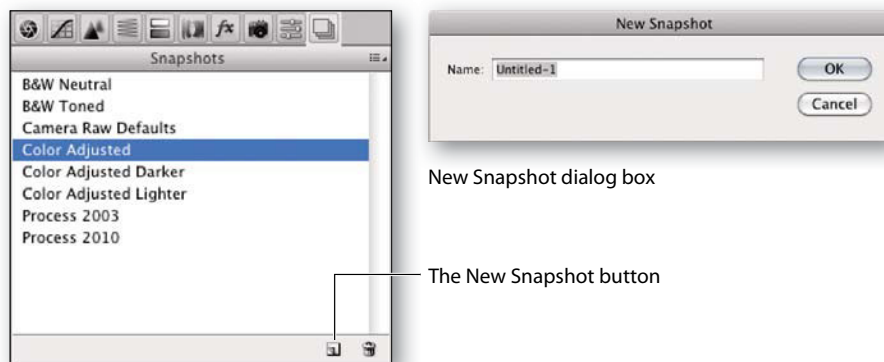
New Snapshot dialog box

The New Snapshot button

When you adjust the settings in a file, you can take a "snapshot" of all the settings that are being applied. This gives you the flexibility to try out new or different adjustments while always being able to come back to the previous settings, even after you close the file and reopen it. Figure 4-50 shows a variety of previously saved snapshots. The obvious ones such as Color Adjusted and B&W Neutral make it easy to pop back and forth when you need different rendering. Color Adjusted Darker and Color Adjusted

Lighter would make it easy to open the same file multiple times for layer stacking or as Smart Objects.

When you click on a snapshot, all the settings stored in the snapshot are applied to the file. You can rename the snapshot by pressing Control-click to access the context menu. Figure 4-51 shows the active snapshot as well as the context menu and the Rename Snapshot dialog box.

Figure 4-51 Selecting a snapshot and renaming it.
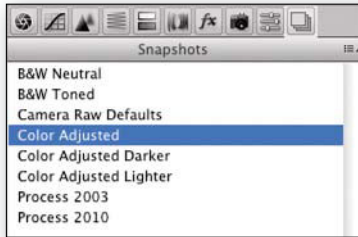
Snapshots panel showing the Color Adjusted snapshot selected
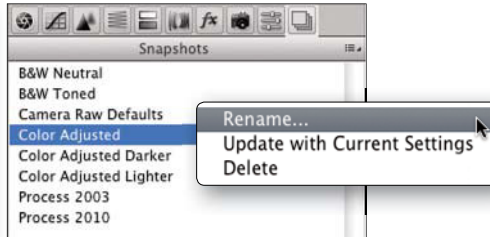
Selecting Rename from the context menu

The Rename Snapshot dialog box

Once you adjust an image and save a snapshot, it would be nice to be able to change your mind. Well, you can. If you want to make changes to an existing snapshot, just open the context menu and select Update with Current Settings after you've made the new adjustments that you want to save (see Figure 4-52).
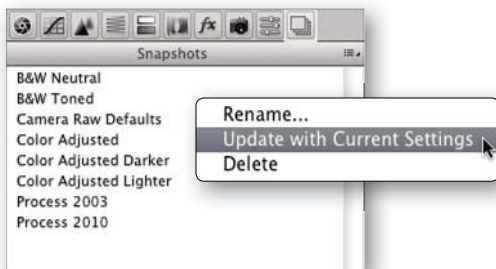
Figure 4-52 The Update with Current Settings option.

The Camera Raw Flyout Menu

Tucked away at the far-right side of the Adjustment panels is the sometimes obscure flyout menu, where you'll find some really important controls. Some of the items are occasionally grayed out when not in play or relevant. Look closely at Figure 4-53; some of these controls can have surprising effects if you don't pay attention.

Figure 4-53 The Camera Raw flyout menu.
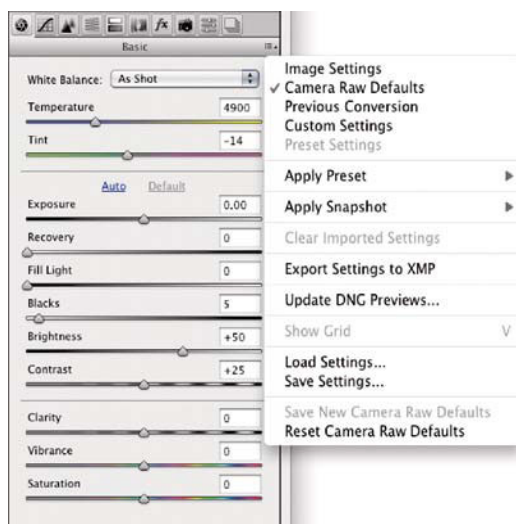
Here is what you would see when you have a raw image open with Camera Raw Defaults (without any applied settings).

The menu's top portion contains information and gives you the ability to toggle through several states of your image. In Figure 4-53 we've opened a raw image in Camera Raw. The current state indicates the settings are at the Camera Raw Defaults, which means nothing has yet been changed. A checkmark alongside Image Settings would indicate that you've made changes that differ from the defaults.

Selecting the Previous Conversion menu item will change the current image's settings to match those of the most recent image opened in Camera Raw. This option can be useful if the current image shares properties with the previously converted image, but it can lead to unpredictable results if the most recently processed image bears no relation to the current image. The Previous Conversion setting is constantly updated as you work through images.

The Custom Settings option changes the moment you alter the settings from the way the image was just opened.

The Preset Settings, currently grayed out in Figure 4-53, would show the name of the Camera Raw preset if you had selected a preset either in Bridge (before opening the image in Camera Raw) or in Camera Raw.

Here's the magic decoder ring version:

Image Settings. This option will be checked if the image already had settings when you opened it. If you changed the settings after opening the image, selecting this option will return the settings to the state when the image was last opened.

Camera Raw Defaults. If the image had no settings upon opening, this option will be checked. If, after making adjustments to an image, you want to return to the Camera Raw Default settings for this image, select this option.

Previous Conversion. Selecting this command will apply settings that match those of the most recent image opened in Camera Raw (not the current image settings).

Custom Settings. If you make any changes to an image, the Custom Settings will be checked.

Preset Settings. If you select a Camera Raw preset or a snapshot to apply to the image, the name of that preset or snapshot will be displayed here.

Apply Preset. When you open the Apply Preset submenu, you'll get a listing of all the currently saved Camera Raw presets, as shown in Figure 4-54. This list will be the same as the list available in Bridge as well as in the Presets panel. Remember, applying presets is cumulative as long as the settings do not overlap. In the event any settings overlap, the most recent setting prevails.
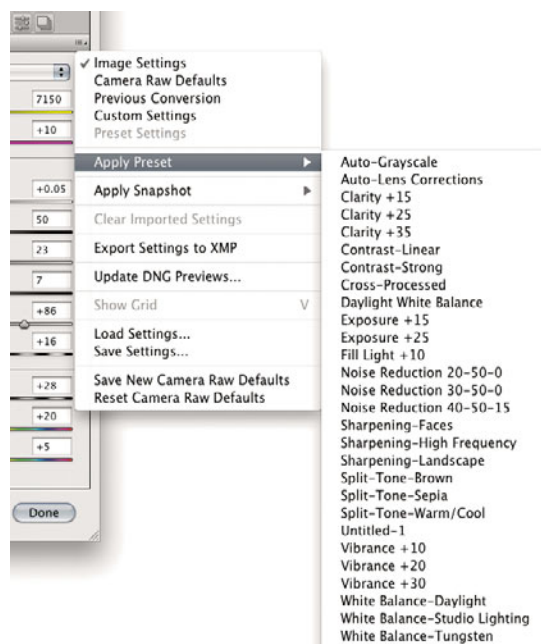
Figure 4-54 The Apply Presets flyout menu showing previously saved presets.

Apply Snapshot. If you have saved any snapshots inside the currently opened image, this flyout menu will show the names and allow you to select one to be applied to the image. Also note in Figure 4-55 that B&W Neutral is the currently active snapshot.

Figure 4-55 The Apply Snapshot flyout menu showing the image's saved snapshots.
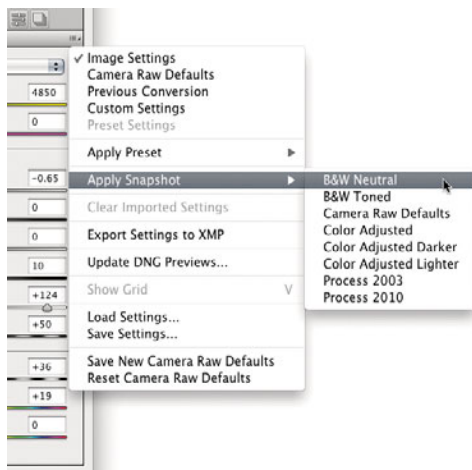
Clear Imported Settings. In Camera Raw 6, this menu choice is grayed out. However, it is active in other hosts, such as Photoshop Elements. It will clear all imported settings when that host doesn't offer controls to make certain adjustments. This is not the same as the Bridge CS5 Clear Settings command (Edit > Develop Settings > Clear Settings), which does clear all Camera Raw settings.

Export Settings to XMP. This command is similar to the main Camera Raw Done button: The current settings in an image will be updated to the XMP metadata, either embedded into the file (in the case of DNG, JPEG, or TIFF images) or written in an XMP sidecar file if the image is in a proprietary raw file format.

Update DNG Previews. If the image file that is currently open in Camera Raw is in DNG format, you can update DNG previews. Choosing this menu item opens a dialog box that lets you choose the preview size.

NOTE When you update the DNG Previews, Camera Raw will also embed the DNG profile that is selected in the Camera Calibration panel. See "The Camera Calibration Panel" earlier in this chapter.

Load Settings / Save Settings. Choosing either menu item opens a dialog box (see Figure 4-56) that allows you to save the file's settings or to load a specific setting preset that may not be in the Camera Raw Presets folder. After selecting the settings to save, you'll be prompted by a Save dialog, also shown in Figure 4-56.
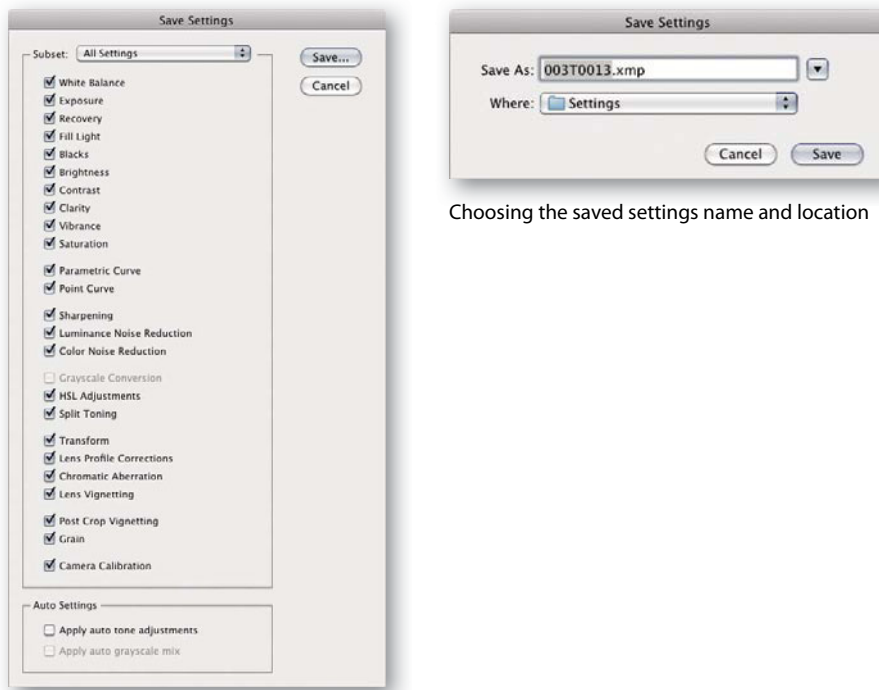
Figure 4-56 The Save Settings dialog box.

Choosing the saved settings name and location

The default location for Camera Raw Presets for the Mac OS is:

User/Library/Application Support/Adobe/CameraRaw/Settings

For Windows XP the location is:

Boot drive\Documents and Settings\User Name\Application Data\Adobe\
CameraRaw\Settings

For Windows Vista and Windows 7 the location is:

Users\User Name\AppData\Roaming\Adobe\CameraRaw

When saving settings as a preset, you have the same option in this dialog box as you do in the New Preset dialog box. You select which settings will be saved if you want to save a subset. After selecting the desired settings, you'll be prompted to choose a name and location. By default, Camera Raw enters the filename as the preset name, but unless you want to save the setting for only that image, be sure to give the setting a descriptive name that will be meaningful to you in a dropdown list.

Save New Camera Raw Defaults. We realize the Camera Raw seems to have a lot of "defaults," but you can control what those defaults are from within the main flyout panel. Figure 4-53 shows that the Save New Camera Raw Defaults menu is currently grayed out. That means that at the moment, the image inside of Camera Raw is at the Camera Raw Defaults currently set for this camera.

Reset Camera Raw Defaults. Regardless of how the Camera Raw Defaults may happen to be set, you can always return them to the initial settings as they were originally designed by the Camera Raw team. This way you can be assured that you can always turn the clock back in the event you wish to return to Camera Raw's initial Default settings.

The Camera Raw Main Buttons

You might assume that the main buttons wouldn't hold any magic clues or hidden functions. Well, you would be wrong. The main Open, Cancel, and Done buttons go a bit further than you might expect. As you can see in Figure 4-57, each of the main buttons can be in one of eight different potential conditions.

Camera Raw hosted by Bridge, normal

Camera Raw hosted by Photoshop, normal
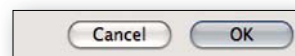
Camera Raw opened in a Smart Object, normal
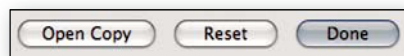
Camera Raw hosted by Bridge, holding the Option key

Camera Raw hosted by Photoshop, holding the Option key
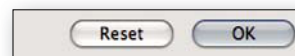
Camera Raw opened in a Smart Object, holding the Option key
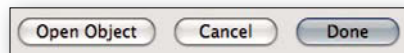
Camera Raw hosted by Bridge, with the workflow options set to open as a Smart Object
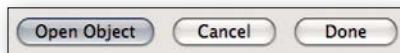
Camera Raw hosted by Photoshop, with the workflow options set to open as a Smart Object

Figure 4-57 The Camera Raw main buttons.

Since Camera Raw can be hosted by either Bridge or Photoshop, the high-lighted buttons are set to indicate which application is currently hosting Camera Raw. Holding down the Option key changes the Open button to Open Copy, which is useful if you want to open an image with different settings and not save the new settings in the metadata. For example, suppose you want to open an image twice: once with a lighter setting and again with darker settings for later blending in Photoshop. Using Open Copy opens the image without changing your previous settings. It's also comforting that by default, Camera Raw will auto-resolve filenaming if you need to open the same image multiple times.

If in your Workflow settings you've specified that an image open into Photoshop as a Smart Object, the Open button tells you that by changing to Open Object. Even if you have the Workflow settings set to Smart Object, you can bypass the Smart Object placement and just open the image into Photoshop by holding down the Option key and clicking the resultant Open Copy button.

If you have already made a Smart Object using Camera Raw and you reopen the Smart Object to edit the settings, you will see a third variant of the Camera Raw buttons from inside the Smart Object file.

The Filename and Image Count Indicators

Continuing on our round-the-horn tour are two small and relatively minor (but useful nonetheless) items: the filename of the currently open image and, when in the filmstrip mode, an indicator of how many images you currently have opened in Camera Raw and the ability to navigate between those images. Figure 4-58 shows both items.

The Workflow Options

On the main Camera Raw interface, the blue info readout at the bottom of the window provides information on the current settings and also acts as a button to access the Workflow Options dialog shown in Figure 4-59.

_MG_5589.dng

Filename

◄ ► Image 1/10

Image count in filmstrip mode
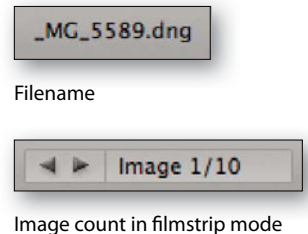
Figure 4-58 Filename and image count.

ProPhoto RGB; 16 bit; 3504 by 2336 (8.2MP); 360 ppi

Workflow settings info readout/button

Adobe RGB (1998)
ColorMatch RGB
✓ ProPhoto RGB
  sRGB IEC61966-2.1

Space dropdown menu

Workflow Options

Space: ProPhoto RGB   OK
Depth: 16 Bits/Channel   Cancel
Size: 3504 by 2336 (8.2 MP)
Resolution: 360   pixels/inch
Sharpen For: None   Amount: Standard

☐ Open in Photoshop as Smart Objects

✓ Adobe RGB (1998)
  ColorMatch RGB
  ProPhoto RGB
  sRGB IEC61966-2.1
  Gray Gamma 1.8
  Gray Gamma 2.2

Space dropdown menu
(with Gray Gamma options)

1536 by 1024 (1.6 MP) –
2048 by 1365 (2.8 MP) –
3072 by 2048 (6.3 MP) –
✓ 3504 by 2336 (8.2 MP)
  4096 by 2731 (11.2 MP) +
  5120 by 3413 (17.5 MP) +
  6144 by 4096 (25.2 MP) +

Size dropdown menu

✓ None
  Screen
  Glossy Paper
  Matte Paper

Sharpen For dropdown
menu

  Low
✓ Standard
  High

Sharpen Amount
dropdown menu

  8 Bits/Channel
✓ 16 Bits/Channel

Depth dropdown menu

✓ pixels/inch
  pixels/cm

Units dropdown menu

Figure 4-59 Workflow Options Button and dialog box.

The Camera Raw can be configured to output into Photoshop or save images. You can set the Workflow Options to process these images in a variety of color spaces, bit depths, sizes, and resolutions; and you can open them as Smart Objects in Photoshop. Your options are as follows.

Space. Camera Raw can output into one of four color spaces or two grayscale spaces. The grayscale spaces will appear in the dropdown menu only when you have Convert to Grayscale selected in the HLS/Grayscale panel, and you don't have any color options enabled, such as Split Toning or a local color tint.

Depth. You can choose to process into either 8 bits/channel or 16 bits/channel, as shown in Figure 4-59.

Size. Camera Raw can resize the original image size to a fixed number of output sizes based on optimized resampling algorithms. Whether you resample in Photoshop or Camera Raw, the results should be very similar. However, Photoshop offers more options for exact resampling. The size readout is measured in megapixels (MP) and pixel dimensions (see Figure 4-59).

Units. While here in the United States the inch rules, most of the world uses the metric unit, so this is where you can show your "unit colors."

Sharpen For. The output sharpening is based on a collaboration between Adobe and PixelGenius, and it incorporates Bruce's sharpening workflow available in Camera Raw 6. Note that sharpening for output should only be done in the size you are opening in Photoshop or the final size of the image if you are running a Batch Save operation. If you plan on doing any additional sizing, you should not apply sharpening at this stage. The options for Screen (shown in Figure 4-59) apply to any image that will be viewed on a display—be it a computer display or video. The options for Print are divided between Glossy and Matte papers, and are designed for inkjet or photo lab prints, not halftone CMYK output.

Sharpen Amount. If you have Sharpen For set to None, this menu option will be grayed out. If you do use Sharpen For: you can use this setting to select from one of three strengths. We almost always use Standard because the sharpening here in output is tied to the capture sharpening in the Detail panel (and we're pretty good at nailing the capture sharpening), so we really don't seem to need to vary this setting. But it's there in the event you do.

Open in Photoshop as Smart Objects. Camera Raw lets you specify in Camera Raw that you want to open a raw file in Photoshop as a Smart Object (see Figure 4-59). This option allows you to make subsequent adjustments to the raw image while not rendering the image until you flatten it. We'll cover the use of Camera Raw as a Smart Object in Photoshop in the Chapter 5, *Hands-On Camera Raw*.

The Save Button

If you've already discovered Camera Raw's Save button batch capability, you can skip ahead but with a warning: If you do review this section, you might pick up a thing or three that may make it worth the effort. For those who've never used this functionality, listen up—this is something you should factor into your workflow.

Clicking the Save button brings up the Save Options dialog box (see Figure 4-60). This dialog box lets you select a file destination, name, and format. We'll provide an item-by-item breakdown to make sure you understand each and every option.

NOTE The Workflow Options are sticky, meaning once you set them they will persist until you change them. There are three settings in Workflow Options that will vary from camera to camera: Size, Resolution, and Units. So if you have ever wondered why setting the resolution for one camera doesn't stick when opening an image from a different model, that's why. It's a feature, not a bug.

Save in Same Location
✓ Save in New Location

Destination dropdown
menu

Begin Numbering: 01

Begin Numbering entry
(if selecting a numbering
scheme in File Naming)

Save Options

Destination: Save in New Location

Select Folder... /Volumes/RAID-01/ACR-Processed/

Save
Cancel

File Naming
Example: 0R5Q9273.DNG

Document Name +   +

+

Begin Numbering:

File Extension: .DNG

Format: Digital Negative

Compatibility: Camera Raw 5.4 and later

JPEG Preview: Medium Size

Embed Original Raw File

Document Name
Document Name
document name
DOCUMENT NAME
1 Digit Serial Number
2 Digit Serial Number
3 Digit Serial Number
4 Digit Serial Number
5 Digit Serial Number
6 Digit Serial Number
Serial Letter (a, b, c...)
Serial Letter (A, B, C...)
mmddyy (date)
mmdd (date)
yyyymmdd (date)
yymmdd (date)
yyddmm (date)
ddmmyy (date)
ddmm (date)

File Naming dropdown menu

✓ Digital Negative
JPEG
TIFF
Photoshop

Format dropdown menu

✓ .dng
.DNG
.jpg
JPG
.tif
.TIF
.psd
.PSD

File Extension
dropdown menu

Figure 4-60 Click the Save
button to open the Save
Options dialog box.

Destination. The Destination option allows you to either save the pro-
cessed file in the same folder as the original or navigate to a different folder.
This setting is sticky until changed.

File Naming. If you need to change the processed name to a different file-
naming convention, you can use this option to add up to four naming tokens
or custom fields to the original filename. If you choose to add a renumbering
option, you can set the starting number. The maximum custom renaming
fields is four. If you need more extensive renaming, you can do so in Bridge
after the Save process.

File Extension. This dropdown menu gives you the option of using upper-
case or lowercase file extensions. Note that when you change the extension,
the file takes on the new extension's format options, so this is a shortcut to
changing formats.

Format. Camera Raw can save processed files in four different formats:
Digital Negative (DNG), JPEG, TIFF, and Photoshop PSD (see Figures
4-61 through 4-64). Ironically, that means you can save a JPEG or TIFF file
you may have opened in Camera Raw as a linear gamma DNG file. Is it
raw? Well, no. The JPEG has already been converted to a gamma-encoded

color space, and you can't get the toothpaste back into the tube. You can open a 16-bit/channel TIFF image and save it as DNG, and you may find that useful—but again, it will be a linear gamma, not a true raw file.

The File Format Options

Digital Negative. The Digital Negative (DNG) options (see Figure 4-61) have gotten a bit complicated. We covered the various DNG file format options, including backwards compatibility, in the section "Using Adobe DNG Converter" in Chapter 3, *Raw System Overview.* The same options apply here in the Camera Raw Save dialog. The options allow you to use lossless compression (almost always a good idea), convert to linear (not a good idea unless you need a linear file), and choose the size of the embedded DNG preview. You can also address the backwards compatibility and the version number of the DNG specification that will be used. If the file you are converting is a proprietary raw file, you can choose to embed the original raw file into the DNG file.

Figure 4-61 DNG format options.

JPEG Preview drop-down menu

Compatability dropdown menu

The Custom DNG Compatibility dialog box

The DNG specification version dropdown menu
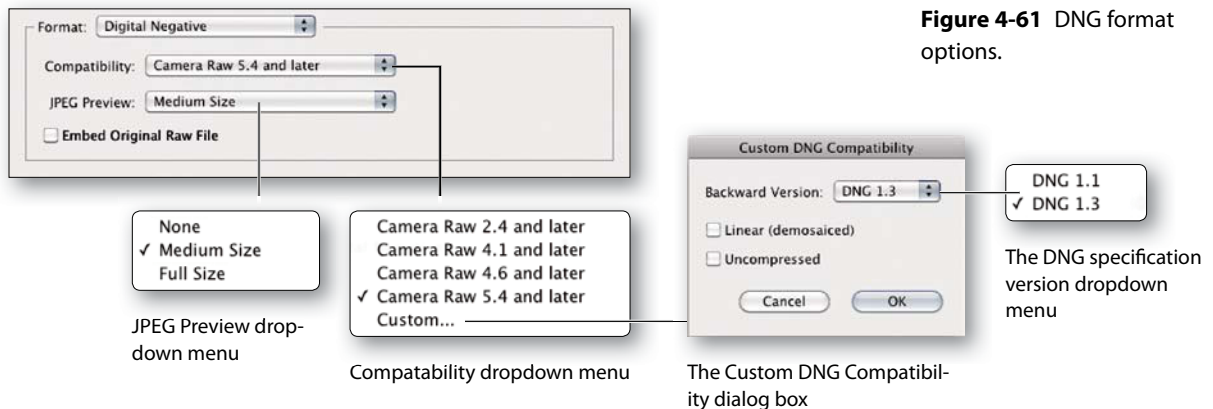
JPEG. The JPEG format options (see Figure 4-62) let you alter the compression settings. The processed JPEG will contain an embedded profile and all the embedded metadata—so if you are planning on using the processed JPEGs on the Web, keep in mind that they won't be the smallest files. Photoshop's Save for Web will do better.

Figure 4-62 JPEG format options.
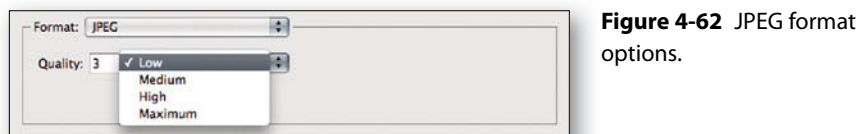
TIFF. The TIFF options (see Figure 4-63) offer either no compression or ZIP compression in 16-bit mode or None, ZIP, and LZW in 8-bit mode.

Figure 4-63 TIFF format options.

PSD. An interesting option for the Photoshop (PSD) file format (see Figure 4-64) is the ability to preserve cropped pixels upon opening in Photoshop. To access the cropped pixels in Photoshop, select Image > Reveal All.

Figure 4-64 Photoshop format options.

When processing images in Camera Raw in the filmstrip mode, Camera Raw provides a progress countdown, as shown in Figure 4-65. Figure 4-65 also shows how the Save button looks when you hold down the Option key. Holding the Option key allows Camera Raw to save images with the last set of save options while bypassing the Save dialog box. If you are serious about saving time, this is a good shortcut because Camera Raw will continue saving images and lining up additional images for a Photoshop processing queue. In fact, you can even go back to Bridge, open more images, adjust their settings, and keep adding images to the processing queue.

Figure 4-65 Progress countdown when in filmstrip mode.
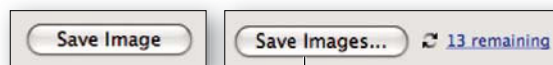
Save button when Option key is pressed

This batching capability is something even Photoshop's Batch processor or Bridge's Image Processor can't do. Camera Raw provides a powerful processing workflow all by itself (well, with Photoshop working away in the background).

Camera Raw Batch-Save Workflow

While the most powerful automation process is the Photoshop Batch feature (and Image Processor also gets a good workout), many people don't appreciate the potential time-savings that the Save button can offer. So we take a moment to explain another way Save can be useful.

A lot will depend on how quickly you need to edit a shoot. If you are like us, time is often of the essence. Once we open selected images in Camera Raw, we scroll down in the Camera Raw filmstrip mode and make image adjustments as needed. We set up the Workflow Options and the Save dialogs with the format and the save-to location and any renaming or sequence numbering needed. When we finish adjusting one image, we click the Save button, then move on to adjust the next image. When we're done with that image, we Option-click the Save button and move on to the next image. Now, as we adjust subsequent images, in the background Camera Raw is processing and saving the previously adjusted images. The result is when we're done adjusting all the images, we have a folder of processed images waiting for us. That's when the Done button in Camera Raw really means you are done!

Granted, this workflow is not as powerful as Photoshop's Batch. Nor can you process out multiple file iterations like you can in Image Processor. But this batch-save workflow does give you one thing neither of the other processes does: the ability to multitask. So when time really matters, try this alternative workflow. You might be surprised just how fast you can be.

The Zoom Control

Camera Raw will respond to the typical keyboard commands used in Photoshop for zooming. Pressing Command plus the + or – keys will zoom in or out, respectively. As you resize the Camera Raw dialog box, it's useful to use Command-0 to set the Zoom setting to Fit in View (see Figure 4-66). However, remember that to see the effects of the Detail panel accurately, you must be zoomed to 100% (Command-Option-0). Camera Raw also uses only main fractional zooms such as 66%, 50%, and so on, and no infinite subfractions except for the Fit in View option.
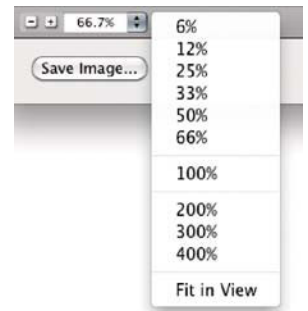
Figure 4-66 Zoom menu.

The Camera Raw Toolbar

We're in the home stretch, folks, so hang in there. The last big set of controls for Camera Raw resides in the main toolbar. Figure 4-67 shows the name and keyboard shortcut for each tool. To go to the tool you need only press the letter key.

Figure 4-67 The Camera Raw toolbar. Wherever possible, we suggest using the keyboard commands to make working in Camera Raw as efficient as possible.
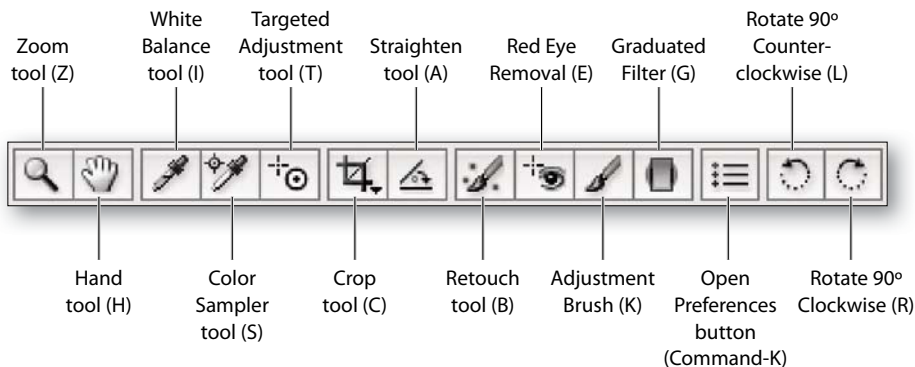
While it could be argued that almost everything in Camera Raw is a tool, the Camera Raw toolbar is the location for what are referred to specifically as "tools." For certain functions relating to white balance, cropping, and retouching, this is where you'll turn. Another function of the toolbar is to give you access to Camera Raw's Preferences, which offer critical control over the way Camera Raw behaves.

Zoom and Hand Tools

Zoom tool. By default, this tool is considered Camera Raw's home tool. It's the tool that is preselected whenever you launch Camera Raw. It's also considered a "safe tool" in that nothing you do with it will impact your image, only the display of your image. Dragging a marquee selection on your image will zoom to fill that area in the preview window. Holding down the Option key turns the Zoom tool into the Zoom-out tool.

Hand tool. As you might expect, the Hand tool allows you to move the image around in the preview window when zoomed in. Holding down the spacebar will turn any other tool into the Hand tool for as long as the spacebar is held down.

White Balance Tool

As shown in Figure 4-68, the White Balance tool allows you to sample an area in your image to determine the optimal white balance settings. Clicking on an area in your image will instruct Camera Raw to set the Temperature and Tint settings to achieve a technically correct white balance setting of Neutral. This is only a starting point; you are free to make further adjustments for effect, but the White Balance tool is useful to establish a technically correct starting point.

When Thomas Knoll designed the white balance adjustment in Camera Raw, he sampled a standard-sized ColorChecker card under two illuminations: D65 and Standard Illuminate A (2850°K). He used the second-to-brightest swatch as the white balance sample point, as shown in Figure 4-69. As a result, if you can include a ColorChecker card in your shot, you will have access to the same tools Thomas used. But that's not always convenient, is it? Alternatively, you can sample any nonspecular neutral in your image. If you try to use an area in your image that has one or more channels clipped, you'll receive the warning shown in Figure 4-69 telling you it's too bright.

If you receive this error, look for another area to sample. Trying to adjust the white balance using a gray that is too dark is not advised. Since you are working primarily with a linear capture when white balancing raw captures, a middle gray is too far down the tone scale to provide an optimal amount of image data to evaluate. A "graycard" that has traditionally been used by photographers in the past should be avoided because it's too dark, and graycards aren't noted for their neutrality. Third-party white balance cards are available whose spectral neutrality has been tested and found to be particularly useful when used as a white balance sample point for Camera Raw. WhiBal cards from RawWorkflow.com (www.rawworkflow.com) and WarmCards from Vortex Media (www.warmcards.com) are two popular options.

Regardless of how you first establish your white balance settings, it's important to understand that "technically correct" and "visually correct" may require different settings. White balancing a warm sunset to be neutral will perhaps be technically correct but visually wrong. We will have examples of when and why you would want to alter the white balance for effect in the next chapter.

Figure 4-68 The White Balance tool.
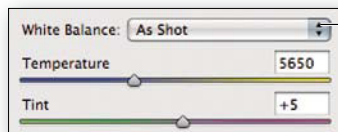
The original image

The original White Balance settings before adjustment
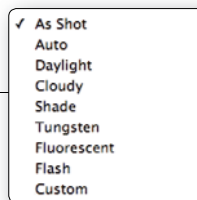
The White Balance dropdown menu

Selecting an area in the image to sample
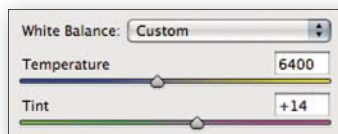
The result of clicking on the image area
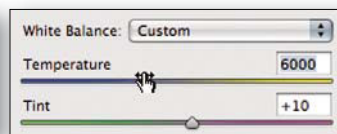
Manual adjustment warmer

Figure 4-69 Sampling on the ColorChecker and warnings for out of range.

The ColorChecker reference swatch used to determine Camera Raw's white balance
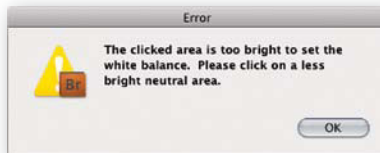
The warning when Camera Raw is hosted by Bridge

The warning when Camera Raw is hosted by Photoshop

Color Sampler Tool

The Color Sampler tool provides persistent color samples where you place them. They are persistent only for that single session in Camera Raw. You can place up to nine individual color samplers, as shown in Figure 4-70.
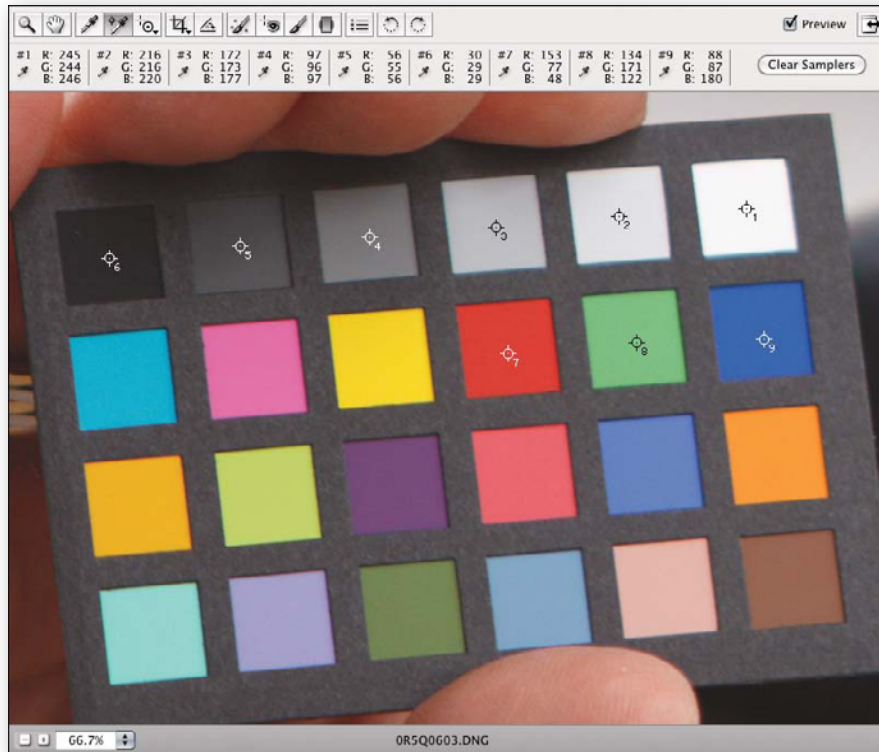
Figure 4-70 The Color Sampler tool with multiple samples set.

TIP The White Balance sampler and the Color Sampler tools are slightly different in their behavior. While the Color Sampler tool is fixed to 5 by 5 image pixels regardless of your zoom, the White Balance tool is 5 by 5 image pixels up to a 100% zoom and then remains at 5 by 5 screen pixels when you increase the zoom. With the White Balance tool you can zoom into an image to 200–400% and increase the effect accuracy of the sample. Personally, we wish this was also how the Color Sampler tool behaved as well. Maybe in the next Camera Raw version.

The Color Sampler is different from the cursor-based RGB readouts in that it is fixed at 5 by 5 actual image pixels. That ensures the readings will be consistent throughout Camera Raw's zoom range. To place the Color Sampler accurately, be sure to zoom in to 100%. The readings respect the Workflow settings and will read out in whatever color space is set there. Once you've placed a sampler, you can move it by clicking on the sample and dragging. To remove any samplers, click the Clear Samplers button.

Targeted Adjustment Tool

Originally introduced in Lightroom, the Target Adjustment tool (or TAT for brevity) is a now a feature for Camera Raw. The TAT lets you adjust parameters by simply clicking on the image and mousing up or down. The area of the image dictates what parameter will be adjusted. Figure 4-71 shows an exploded view of using the TAT on an image to adjust the Parametric Tone Curves and the HSL/Grayscale panels. You access the TAT by selecting the Targeted Adjustment tool dropdown menu and choosing which adjustment panel to activate.

Parametric Tone Curves TAT Adjustment. The TAT will default to adjusting the Parametric Tone Curves regardless of what panel may be visible, with the exception of the HSL/Grayscale panel. Even when you are in the Basic panel, clicking on the TAT tool activates the TAT adjustments in the Parametric panel, although you still have access to the Basic settings.

To adjust one of the Parametric settings, click on a portion of the image. While holding down the mouse button, move the mouse up or down to increase or decrease the settings. If you have the Parametric Tone Curves panel visible, you can see which setting is active and watch as the settings go increase or decrease. Figure 4-71 shows all four of the Parametric Tone Curves settings being used. The lighter area of the sign activated the Lights parameter. The wooden area toward the bottom engaged the Darks, the darker portion of the pelican's neck activated the Shadows, and the head activated the Highlights.

HSL/Grayscale TAT Adjustments. To use the TAT in HSL/Grayscale, that panel must be visible. Since the default TAT behavior is to use the Parametric curve, you must designate the change of that default. Switching to HSL/Grayscale does that. In Figure 4-71, the TAT was used to adjust the blue sky saturation as well as the luminance. The blue saturation was increased and darkened. Then the mustard color hue was adjusted to be less orange.

You should note that the TAT can also be used when you engage the Convert to Grayscale mode of the HSL/Grayscale panel. Whether you use the TAT for tone or color adjustments, this new usability greatly aids the speed in which you can make critical adjustments. Activating the relevant panel, you simply click in the area of the image you want to adjust and slide the mouse up or down to make the changes. This is good stuff!

Figure 4-71 Using the TAT.

Saturation adjustment

Luminance adjustment

Hue adjustment

Lights adjustment

Targeted Adjustment tool
dropdown menu

Darks adjustment

Shadows adjustment

Highlights adjustment

Crop and Straighten Tools

Crop and Straighten are just two variations of the same tool. The Crop tool is used to set the image pixels that will be processed by Camera Raw. You can drag out a marquee selection to set the crop and use command keys to alter the behavior of the marquee selection. Holding the Shift key allows you to constrain to a current crop proportion, whereas holding the Option key allows the crop to move in or out from the center. See Figure 4-72 for basic crop and straighten tasks.

Figure 4-72 The Crop and Straighten tools.

Using the Straighten tool option to find a straight line

Image showing Crop tool handles

The resulting cropped image with Straighten and Crop applied

Figure 4-73 shows how you can crop outside the constraints of the image boundaries. Disabling the option to Constrain to Image in the Crop menu allows you to maximize the image area; Camera Raw will fill in the outer area with gray.

If you examine the menu options shown in Figure 4-73, you'll find that the Crop tool has some hidden powers. For example, you can use standard cropping ratios or enter your own custom ratio.
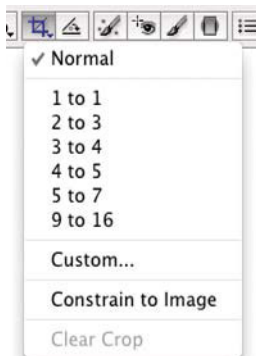
The Crop tool dropdown menu with the Constrain to Image option unchecked

Figure 4-73 Crop tool drop-down menu and unconstrained crop. The image shows an unconstrained crop with a 90% Scale from the Manual Lens Correction panel

The Straighten tool is a semi-modal and related state of the Crop tool that allows you to draw a line to calculate the rotation of the horizon line. As soon as you release the line, the Crop tool is reselected. You can manually rotate the crop after doing the autostraighten. You can also fine-tune the image rotation by using the Rotate control in the Manual Lens Corrections panel.

If you select Custom in the Crop dropdown menu you can enter in a custom crop as shown in Figure 4-74. If you specify the ratio in pixels, you can enter a maximum of 65,000 in either dimension (this will give the effect of upsampling to the maximum size of 512 megapixels) to the image upon processing. If you try to enter in a size beyond Camera Raw's limits, you'll receive the warning also shown in Figure 4-74.
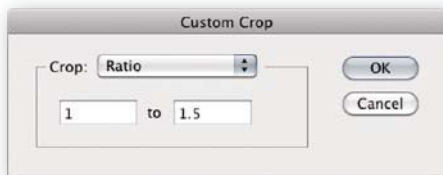
The Custom Crop dialog box
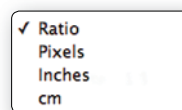
Crop unit options menu

Figure 4-74 Custom Crop and maximum size.
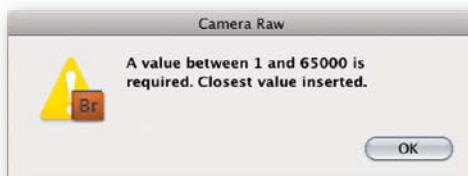
Warning for maximum crop entry

To remove the crop from the image, either select the Clear Crop command in the Crop tool dropdown menu or click anywhere outside the image preview area in the canvas. If you are zoomed in, you must use the dropdown menu to remove the crop. If you process your image to a PSD format using the Save function in Camera Raw, you can undo the crop after the fact in Photoshop.

Spot Removal Tool

The Spot Removal tool (Figure 4-75) lets you do local spot healing and cloning when you need to remove those nasty sensor spots or that blemish on a person's face. In this regard, it competes directly with Photoshop for some quality brush time. But in reality, Camera Raw is not designed to offer extensive retouching capabilities; use it only to remove the occasional sensor spot or facial blemish.

There is a fine line but it's pretty definitive: If you have the exact same spot in the exact same location in a group of images, you will be a lot better off fixing it in Camera Raw if you can and then syncing it across the images that have that spot. However, if you need to spend considerable time spotting, cloning, or otherwise substantially retouching an image, you'll be better off waiting for Photoshop to do so.

As shown in Figure 4-75, the Spot Removal tool lets you set points for either healing or cloning. Healing uses a texture-based source to apply Photoshop's healing logic to adjust the tone and color to blend in the area surrounding the destination spot. Cloning just moves pixels without the blending logic. The image in Figure 4-75 has a lot of sensor spots on it. It was shot in Antarctica, one of the driest and windiest places on Earth. As such, it's a great place to test the sensor-cleaning skills of photographers. As you can see, the sensor was not very clean (which makes it useful for this example).

After deciding whether you want to heal or clone, place the cursor over the area you want to spot heal and click. If you click and hold, you can drag the spotting circle to make it larger or smaller. You can also use the brush size control in the interface, but we rarely do that.

Camera Raw uses logic to try to find the best source from which to heal. It's right about three out of four times. In this example, it was wrong. It located an area that was discontiguous with the gradations in the image. You can select the source circle and move it until the gradations align; select the edge of the circlet to alter its size. You can select previous spots by clicking on them to edit them. Pressing the Delete key will remove them. You can check your progress by deselecting the Show Overlay option at the top.

Healing and cloning are cumulative processes, which means that the order of the healing or cloning will build up the effect. You can start small and add additional larger spot points, or adjust the opacity of a healing or cloning spot. The Opacity slider allows you to adjust how much of the healing or cloning is blended into the resulting spot (see Figure 4-76). The Opacity adjustment is more useful for retouching than spotting because while you want to obliterate spots, when retouching a person's face you may want to only soften a blemish or mole. The Opacity slider gives you that option.

Once you have the sensor spots cleaned for a single capture frame, you can synchronize those spots to additional frames. When doing so, Camera Raw follows these rules: If the Spot Removal tool has autodetected the area on its own, it will autodetect the area in subsequent images while allowing the autodetect to be based on that subsequent image's unique parameters. If you move the source spot after autodetection, the Spot Removal tool will respect the moved destination and use those same coordinates for syncing.

In practice, this seems to work very well—most of the time. However, even if you let Camera Raw autodetect the optimal source location and it's correct for one image, it may not be correct for subsequent images. So, make a habit of double-checking images that you've synced to confirm that the source and destination healing or cloning are both correct.

For spots that move around in an image (for example, a blemish on a person's face), there is no way of syncing multiple images. That sort of job requires image-by-image evaluation and retouching. You should also consider whether the best results will be provided by Camera Raw or after the fact in Photoshop. In Camera Raw there is no manual blending or opacity control; either it works or it doesn't. That said, being able to do parametric retouching is an impressive accomplishment for Camera Raw.

Figure 4-75 The Spot Removal tool.

Heal or Clone dropdown menu

Spot Removal tool options panel
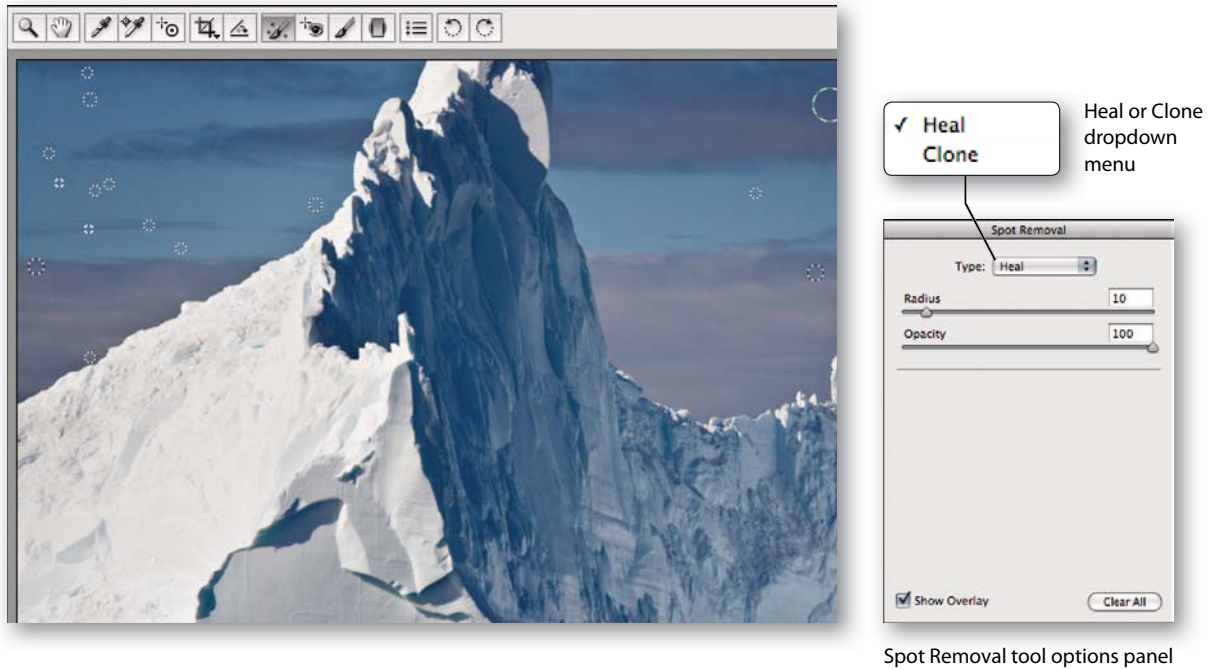
Placing a healing spot
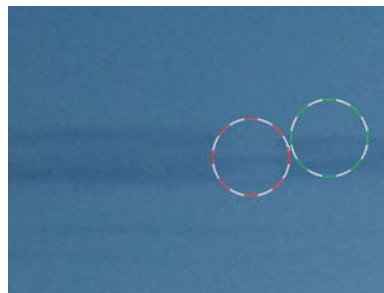
Camera Raw's Autodetection
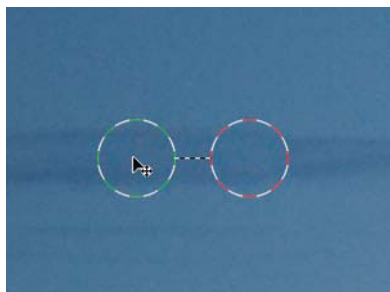
Adjusting the source spot
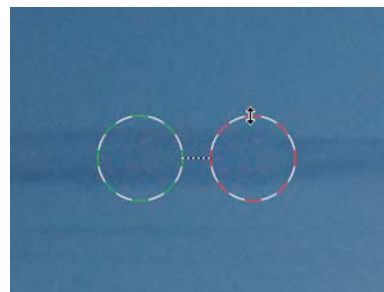
Adjusting the destination spot size
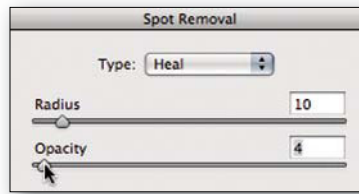
Figure 4-76 Adjusting opacity.

The default 100% opacity

Opacity reduced to 4%
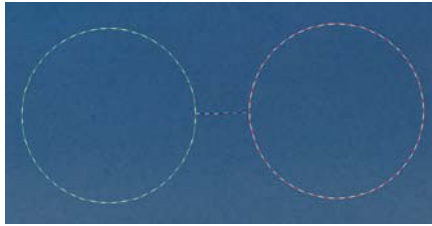
Spot Healing result
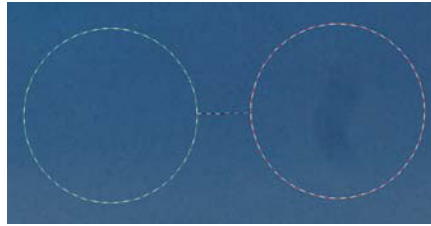
Spot Healing result with reduced opacity

Red Eye Removal Tool

The Red Eye Removal tool is another one-trick-pony feature that some people may question, but when you have a shot that contains red-eye, you'll appreciate the ability to remove it. Truth be told, it was difficult to find a shot that contained red-eye. In over 2.5 TB of files representing over 130,000 raw images, Figure 4-77 shows the only example we could find. The shot is of Mac Holbert (left) and Graham Nash (right) at their gallery opening in Seattle. Mac and Graham are partners in Nash Editions, a premiere fine art printing studio. (By the way, you should also check out *Nash Editions: Photography and the Art of Digital Printing*, ISBN 0-321-31630-4.)

When the Red Eye Removal tool works, it's great—and it works pretty well most of the time. The key is to not be shy about locating the eye (don't try to be too precise). It's better to draw out the marquee as large as you can. Camera Raw's red-eye logic will work to find the eye inside the marquee area and then locate and remove the red. The default Darken setting is 50%, but you can reduce that value if it makes the pupil too dark. You can also use the slider to alter the pupil size. We've found the Red Eye Removal tool useful when the eye size is relatively small, as it often is when shooting groups and the on-camera flash causes red-eye on several people. Unfortunately, it doesn't do much for a cat's or dog's eyes, which may be glowing in different colors.

Main image panel

Tool options panel

Placing the pupil selection marquee over the eye

The Red Eye Removal tool's "guess"

The red-eye removal result
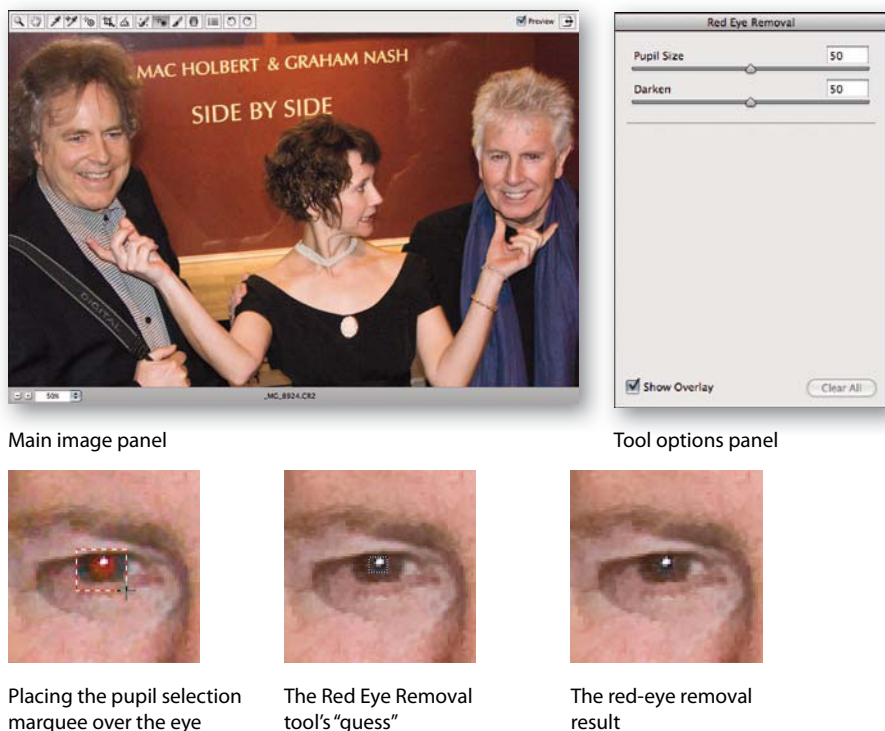
The Adjustment Brush

One of the biggest bits of news for the last version of Camera Raw was the addition of parametric localized image adjustments. Figure 4-78 shows the various parameters available in the Adjustment Brush, which is essentially unchanged in Camera Raw 6.

Using the Adjustment Brush in Camera Raw shares some passing similarities with working in Photoshop, but there are some fundamental differences. First and foremost, when painting with the Camera Raw Adjustment Brush, you aren't painting adjusted pixels into the image but instead are modifying a mask through which the adjustments will be processed. In this regard, it shares a closer resemblance to painting in an Adjustment Layer mask. You can paint and then erase the mask. It's common for us to paint large, soft paint strokes and then zoom into the image to erase bits of the mask with a smaller and more precise brush.

Figure 4-78 The Adjustment Brush and options.

Brush stroke pins

Visible mask (due to cursor rollover)

Current active brush pin

Brush cursor

IMG_5771.DNG

25.8%

Add adjustment

New adjustment

Control Channel parameters

Brush Controls

Auto Mask toggle

Show Pins toggle

Control Channel presets

Erase adjustment

Quick adjust button

Show Mask toggle

Mask color options

Clear All button

You should also understand that while you may start by setting a single adjustment parameter, you can go back to add more adjustments and continue to tweak the original adjustments. In point of fact, it's optimal to adjust as many parameters as possible with a single mask because adding many new single parameter adjustment masks will slow things down.

When you add additional masks, "pins" are put on the image. Each pin is a single discrete mask made up of multiple dabs or strokes and indicated by the pin shape, which shows up once you start painting. Clicking a pin activates the mask and parameters for editing. All of the mask particulars such as opacity and stroke coordinates are stored along with the adjustments as metadata in the file or file's sidecar.

While the Adjustment Brush is a really cool tool for the nondestructive editing of raw files, it is not a replacement for Photoshop. There will be many tasks more suited to Photoshop's strengths. Some tasks—while possible in Camera Raw—might not make good workflow sense when doing final high-quality digital imaging. That caveat presented, what you can do with the Adjustment Brush and its related tool, the Graduated Filter (see "The Graduated Filter" later in this chapter), can greatly improve a raw processing workflow and substantially reduce the amount of time spent in Photoshop.

Control Channel Parameters. When making a local adjustment, you select one of the seven control channels offering adjustments. These channels do not directly correspond to the similarly named controls offered elsewhere in Camera Raw. The results will be similar, to be sure, but the control channels are tuned for use locally rather than their global cousins.

Figure 4-79 shows the tool options for the controls. You begin by either clicking one of the Quick Adjust buttons (the + and - circles at either end of the sliders) or grabbing a slider to make the adjustment. After you've applied a brush stroke, the options change from New to Add. This allows you to add more channels or to adjust the original. When you hold down the Option key, the Additive brush turns into an Erase brush that lets you delete portions of the painted mask. You can change the Separate Eraser Size behavior in the Adjustment Brush flyout menu (shown in Figure 4-80). Once you've made an adjustment, you can click one of the Quick Adjust buttons to pick a new primary adjustment and start a new brush stroke.

NOTE The behavior and functionality of the Sharpness control channel in Camera Raw 6 has been changed and enhanced. When selecting a negative parameter from -1 until -50, painting will actually have the effect of creating a mask to keep the sharpening settings in the Detail panel from being applied in that area. Below -50 the Sharpness parameter actually adds a blur to the image. The effect is a mild lens blur. Adding additional sharpening to your image has the effect of increasing the Detail Panel Amount settings.

TIP If you click on a new brush, it will inherit the last-used settings, which may or more likely may not be what you want. We find it useful to click the Quick Adjust buttons to add a new mask and deselect all the other previous used settings in one click.

Figure 4-79 Adjustment Brush tool control channels and options.

The control channels when adding a new brush adjustment
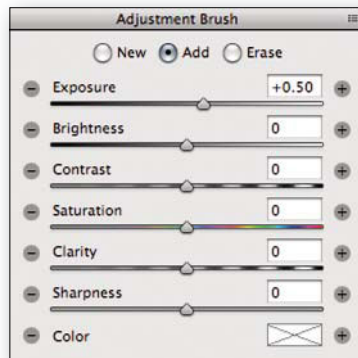
The controls after an adjustment that allows adjusting parameters
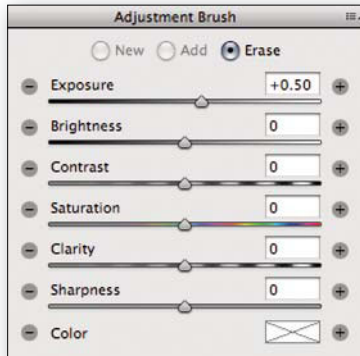
The controls toggled to the Erase mode
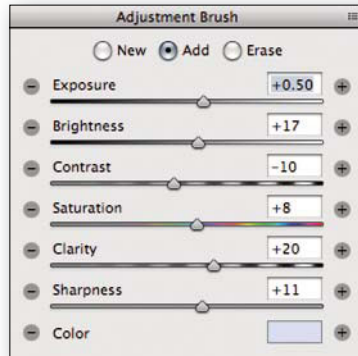
Additional channels adjusted
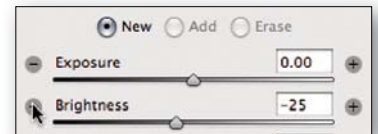
Using the quick setting button

Control Channel Presets. If you find that you're constantly making the same sort of adjustment with the same settings on multiple channels, you should consider making a Control Channel Preset. Why fight the sliders if you already have a preset saved? Figure 4-80 shows one preset already saved named "Skin smoother," which is a combination of Brightness +17, Contrast -12, Clarity -30, and Sharpness -42. This preset will smooth skin tones by gently lightening and decreasing contrast while adding negative Clarity and negative Sharpness.

To create a new preset, make the adjustments you want to have in the preset (including the color) and select the New Local Correction Setting option in the flyout menu. When you select it, you'll be prompted to name and save the preset (see Figure 4-80).
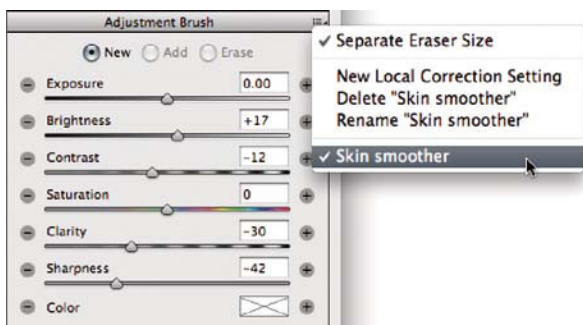
Skin smoother saved preset
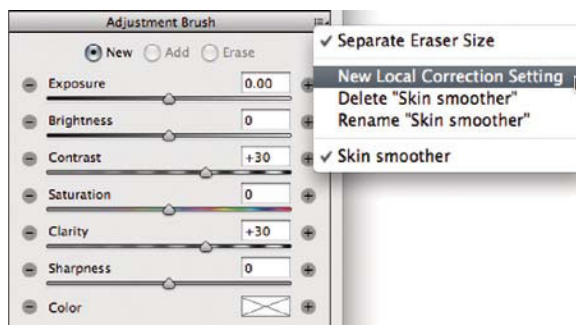
New Local Correction Setting menu command
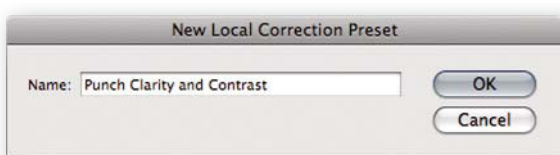
New Local Correction Preset dialog box
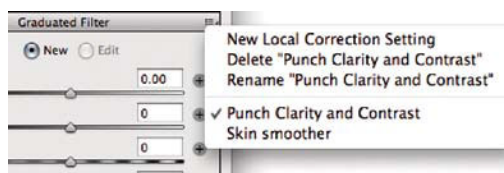
Control Channel Preset flyout menu in the Graduated Filter tool options

Figure 4-80 Control channel presets.

When you save a preset in the Adjustment Brush menu, the same preset will also be available in the Graduated Filter menu. So, what you create in one tool option is available in both.

Paint Brush Sizing. Camera Raw's brushes are not a fixed pixel size; they are based on the pixel dimensions of your image. Thus, a size setting of 100 will be the maximum allowed based on your image. Setting the size to 50 will be 50% of the maximum and so forth until you get to the smallest size. Figure 4-81 shows the relative sizing based on the maximum and minimum for this image.

Figure 4-81 Brush sizing.
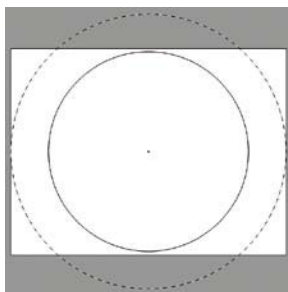
The maximum size of 100
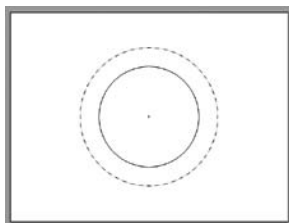
The size set to 50
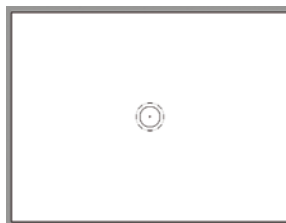
The size set to 10
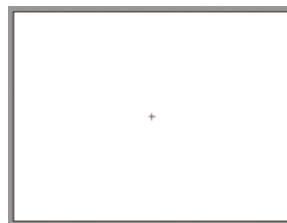
The minimum size (no brush cursor shown, only a crosshair)

Brush Feather. Not unlike Photoshop's brushes, you can change the soft-ness and hardness of a brush. Remember that what you are painting is the mask; you are not adjusting the image directly. The brush cursor indicates the current softness by showing an inner, more solid line (where the dab will be applied at the full amount of the Flow/Density setting) and an outer circle where the dab drops off to nothing. Figure 4-82 shows different amounts of feather.
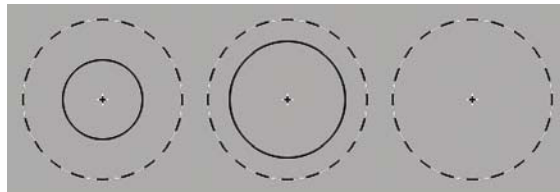
Figure 4-82
Brush feathering.

Feather of 100   Feather of 50   Feather at 0

Brush Flow. The brush Flow modifies how strong the mask will be applied and the resulting buildup of strokes. A low Flow allows you to sneak up on the strength of the resulting effect. You can adjust the control parameters to be stronger and then gently apply the effect by using a lower Flow setting and more strokes. Figure 4-83 shows the subtlety of various Flow settings.
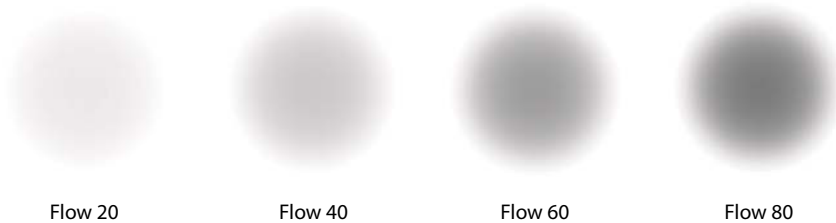
Figure 4-83 Brush Flow settings.

Flow 20   Flow 40   Flow 60   Flow 80

Density vs. Flow. While both Density and Flow will modify the opacity of the resulting painted mask, they do so in a different manner. Flow modifies the gentle buildup of strokes; Density sets a maximum threshold of opacity for those strokes. Figure 4-84 shows the difference.

As you can see, a reduced Flow at full Density will result in a buildup in those areas where the strokes overlap. With a Density setting of 50, the maximum density of the resulting strokes will be limited to 50. So, in use, when you're trying to build up an effect, and you do want the overlap to build up, you would use a higher Density with a lower Flow. Where you want to paint in an area that needs a specific mask opacity, the Flow matters less than the threshold set in Density.

Figure 4-84
Density vs. Flow.

| Flow | 50 |
| Density | 100 |

| Flow | 100 |
| Density | 50 |
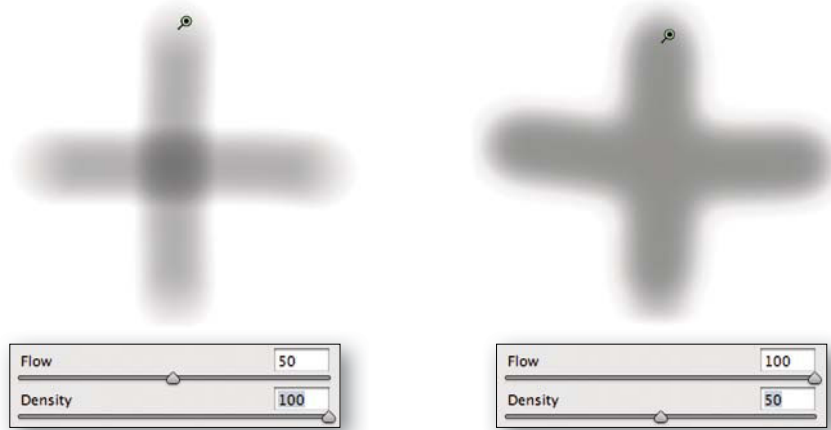
Two strokes showing overlap with Flow 50 and Density 100

Two strokes showing Flow 100 and Density 50

Brush stroke and Mask relationship. When you paint a stroke, a pin is added and you'll see the results of the current control parameters. Sometimes it's difficult to know where you have and haven't painted. To find out, use the Show Mask toggle or hover the brush cursor over the pin; either will make the mask visible. Figure 4-85 shows a stroke and the stroke's mask.

Figure 4-85 Brush stroke and mask.
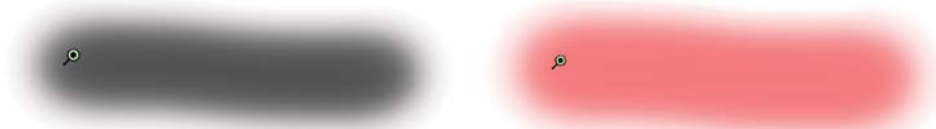
The normal view showing the brush stroke

The view showing the mask

You can adjust the color and how the mask is previewed. Clicking the mask color options (the actual color swatch is a button) brings up a Color Picker that allows you to choose the color that the mask will be shown in and whether the preview will be of the Affected or Unaffected areas. Figure 4-86 shows the mask color options.

Figure 4-86 Mask color options.

The Color Picker dialog box showing "Select mask overlay color." The color selected is green, at about a 50% opacity. Color Indicates is set to preview the unaffected areas

The resulting mask preview set to green

Erasing the Mask. After the mask has been painted in, you can go back into the mask and, while holding the Option key, "unpaint" or erase the mask. Figure 4-87 shows a small part in the center of a paint stroke being erased.

Figure 4-87 Erasing a mask.
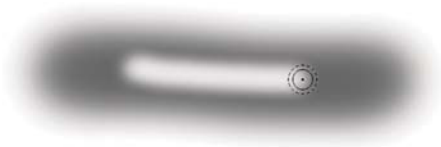
Erasing a portion of the mask

The resulting mask

Auto Mask. When you select the Auto Mask option, the mask is generated based on the color and tone of the image area under the center of the cursor when painting is started. This allows you to paint in an area and automatically have the mask set to the shape of the object you paint into. Figure 4-88 shows an area with an auto mask.

Image before adjustment

Image after adjustment

Image showing the Auto Mask

Figure 4-88 Using the Auto Mask.

The trick is to make sure the center of the brush cursor remains inside the area where you want the mask to be painted. Note that the Auto Mask option works when erasing a mask, so if you go over an area a bit, you can use it to help erase the overpaint. Simply hold down the Option key when erasing with the Auto Mask option selected.

The Graduated Filter

The Graduated Filter uses the same set of control channels as the Adjustment Brush, to allow you to draw out a gradation over which the adjustments are applied. See Figure 4-89 for a diagram of the parts.

The diagram shows you some elements that would not be visible at the same time. For demonstration purposes, we've included the cursor icons for rotate, move, and adjust all in one figure. Normally, you would only see a single cursor.

As with the Adjustment Brush, you choose single or multiple controls to adjust and then drag out a gradation over which the adjustments will be applied. Rather than the pins of the Adjustment Brush, a Graduated Filter displays colored lines: green for the starting point and red for the ending point. While it's tempting to place many different filters, doing so will slow down Camera Raw. Each Graduated Filter and its parameters are stored as metadata in the file or sidecar file. Ideally, if you need multiple adjustments, deploy as many adjustments in a single filter as you can.

The example in Figure 4-91 shows how to use the Graduated Filter and the Adjustment Brush combined to optimize an image's tone and color. Figure 4-90 shows the image before and after the adjustments.

Figure 4-89 The Graduated Filter in use.

Graduated Filter start   Move Graduated Filter

Rotate
Graduated Filter

Graduated
Filter end

Active
Graduated
Filter

Adjust
Graduated
Filter
starting
point

Inactive
Graduated Filter

Adjust Graduated
Filter ending point

Control Channel
presets

New gradation

Edit gradation

Quick adjust button

Control Channel parameters

Show Overlay toggle

Clear All button

Figure 4-90 Graduated Filter and Adjustment Brush—before and after.

Globally optimized before local adjustments

After local adjustments

As you can see, using Camera Raw's local adjustments can substantially improve your image without having to go into Photoshop and engage in pixel editing. Figures 4-91a through 4-91c show step by step how the Graduated Filter and Adjustment Brush tools can be combined.

Figure 4-91a Step by step using the Graduated Filter and Adjustment Brush.

Graduated Filter darkening the sky and adding clarity
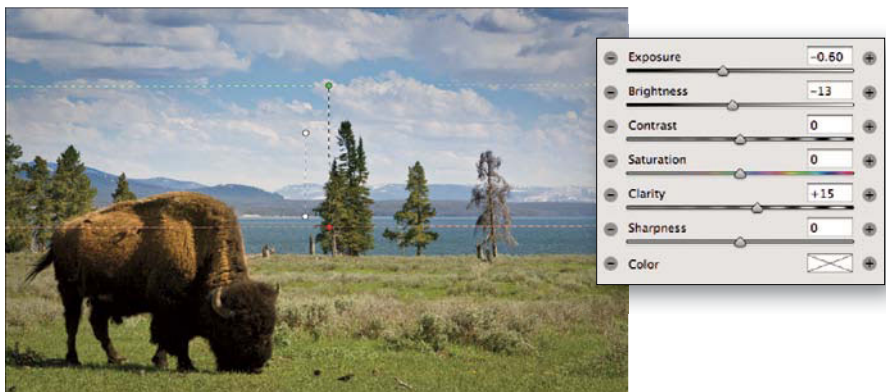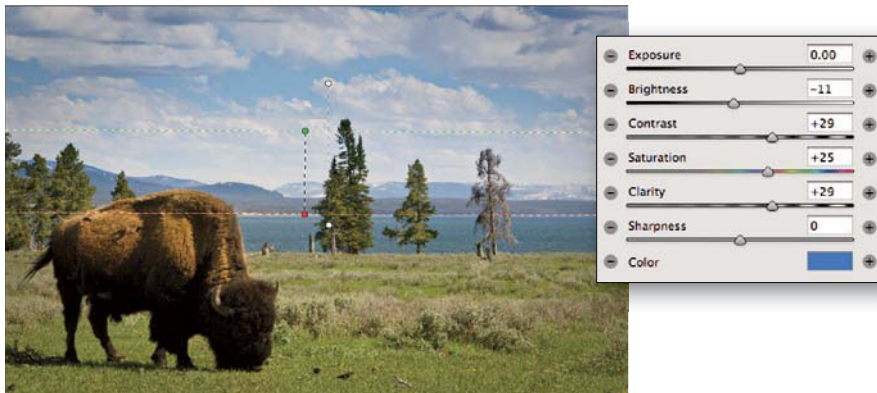
Figure 4-91b Step by step using the Graduated Filter and Adjustment Brush.

Graduated Filter that increased the sky contrast, saturation, and clarity as well as adding blue color

Adjustment Brush to add more clarity to sky
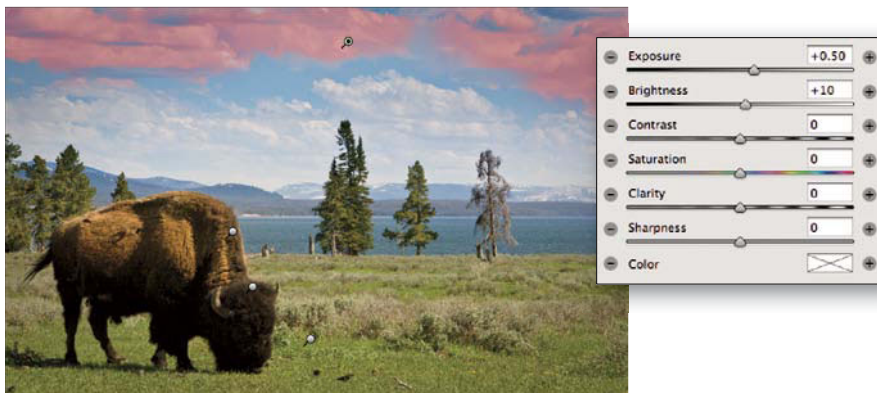
Adjustment Brush to lighten clouds

Figure 4-91c Step by step using the Graduated Filter and Adjustment Brush.

Adjustment Brush to add green to grass

Adjustment Brush to lighten the buffalo shadows

Adjustment Brush to add saturation, clarity, and color to the buffalo

When combining the Adjustment Brush and Graduated Filter, there is no function that currently allows you to use the brush tool to erase a portion of a gradient. So, if a Graduated Filter darkens an object too much, you'll need to use an Adjustment Brush to bring back the color or tonality that the filter overcorrected. This was done to the clouds in the sky (Figures 4-91a and 4-91b) that were made too dark when the Graduated Filter darkened the sky. You should also be prepared to go back to various adjustment panels to make global corrections where needed if the local adjustment affects the global adjustment. To give you an idea of the time it took to do this series of adjustments, it took about 10 minutes after the global adjustments were made.

Local adjustments can't be used to create templates, and some people may wonder why. While you can move a Graduated Filter to fine-tune for image-by-image variation, the Adjustment Brushes can't be moved. Thus, local adjustments can't really be easily applied to multiple images with simple modifications of the local adjustments. You can, however, use local adjustments when syncing multiple images; see Figure 4-92 for the steps.

Figure 4-92 Synchronizing local adjustments.

The selected image's adjustment mask

Camera Raw in filmstrip mode with five images selected

Synchronize dialog box with Local Adjustments selected
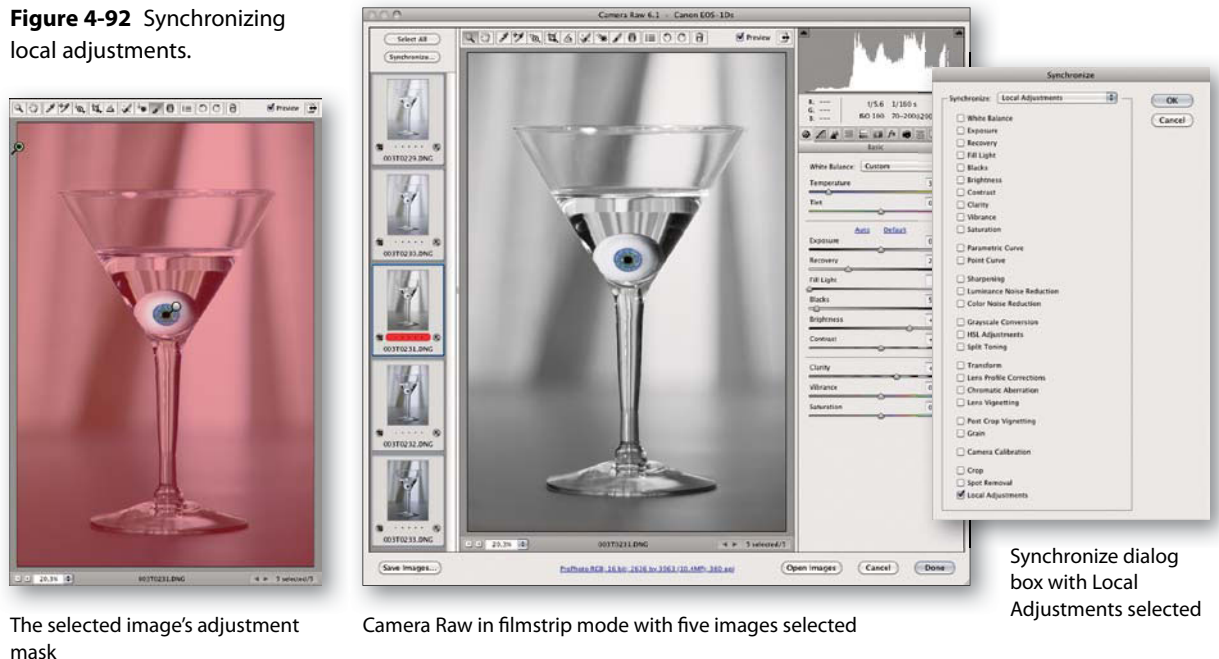
The selected image had an Adjustment Brush with the settings of -100 Saturation to completely desaturate the background and another to increase the saturation of the eye. After selecting all five images, the Synchronize button was clicked to bring up the Synchronize dialog box with Local Adjustments selected. This synced all the images with the local adjustments, which worked well because the image was shot using a tripod with no movement between shots.

The Color Picker

The one topic that we haven't yet covered in depth is the Camera Raw Color Picker. If you are familiar with Photoshop's Color Picker, that won't do you much good—it's different in Camera Raw. Camera Raw's Color Picker is available in the control channel settings for the Adjustment Brush and the Graduated Filter. To access the Color Picker, click the color swatch icon shown in Figure 4-93.

Once you have the Color Picker dialog box open, you select a color either in the color spectrum or in the Color Swatch subpanel. You can save up to five different colors in the subpanel. Once the color is selected, you can adjust the saturation of the resulting color's tint.

Figure 4-93 The Camera Raw Color Picker.

Selecting the Color Picker

Accessing a saved color swatch

The main Color Picker dialog box

Adjusting the current color's saturation
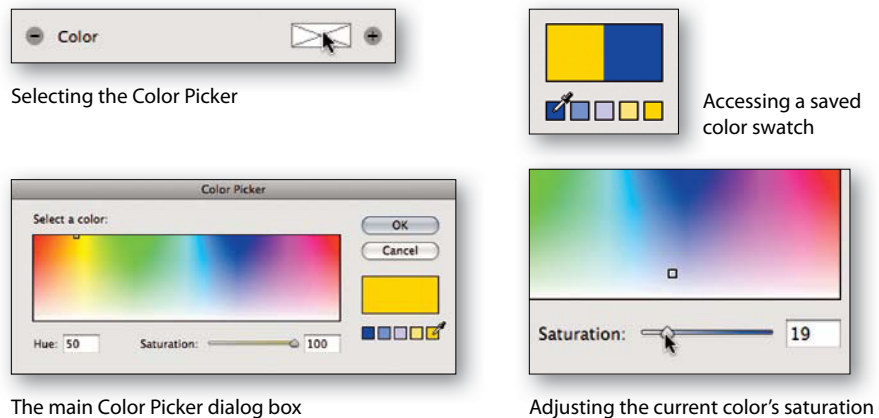
One limitation of the Color Picker (that we hope will be addressed in the future) is that you can't grab a color sample from your image. But, once you have a color selected, you can add that color to the Color Swatch subpanel for later use. Figure 4-94 shows adding a new color to the swatch subpanel.

Color Picker dialog box with new color selected

Adding a new color to the swatches
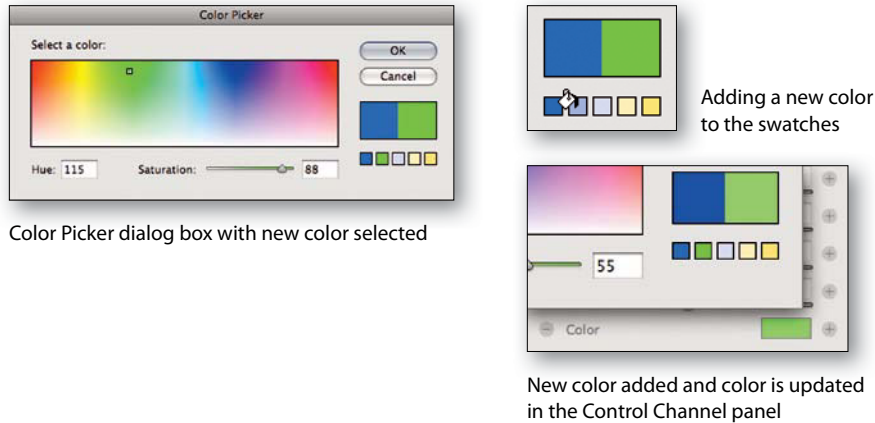
Figure 4-94 Adding a new color swatch.

New color added and color is updated in the Control Channel panel

To add a new color, hold down the Option key to access the Paint Bucket. Once added, the color swatch will also appear on the Control Channel panel. The color selected is persistent when you switch between the Adjustment Brush and Graduated Filter.

Camera Raw Preferences

Setting Camera Raw preferences is a relatively boring subject, but having control over the preferences is essential to making Camera Raw behave in a predictable and consistent manner. When you get unexpected results, it's useful to check the preferences (see Figure 4-95) to make sure they are set as desired. Unlike in other applications, Camera Raw's preferences are not prone to corruption. So, while it may be typical to reset preferences in Bridge or Photoshop, it's unlikely you'll need to do so in Camera Raw.

The main Preferences dialog box contains the Camera Raw version number in its title. The preferences are grouped by function and include General, Default Image Settings, Camera Raw Cache, DNG File Handling, and JPEG and TIFF Handling. We'll cover each group separately.

Figure 4-95 The Camera Raw Preferences dialog box.
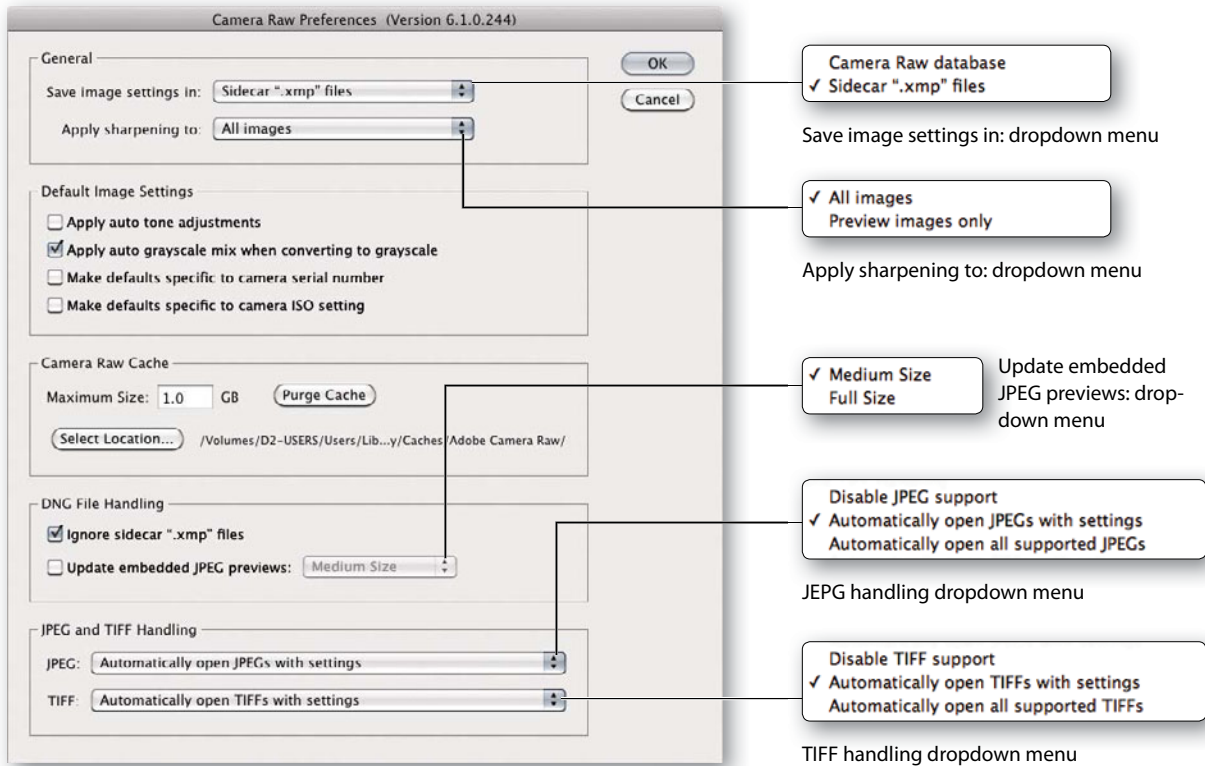
General. The General preferences (see Figure 4-95) allow you to control the way Camera Raw deals with its image-setting metadata and whether to apply sharpening to images or only to previews.

The location where you save the image settings is important if you ever need to move your images (for example, from a laptop to a workstation). To be honest, we're not really sure there is a good-use case for not storing the image settings with the images, but the option is there. Our preference is to always save the image settings to the XMP metadata, either in sidecar files if you are using proprietary raw files or embedded into the DNG, JPEG, or TIFF files (Camera Raw can safely write the metadata into those formats).

Whether or not you want to apply the sharpening settings in Camera Raw to your processed images or only the image previews is the next choice you need to make. In the past, many people didn't use Camera Raw's image sharpening and instead chose to defer sharpening to a later time. However, it was useful to at least apply sharpening to the previews of images—hence

the option. Since Camera Raw has substantially improved sharpening, we suggest that you make sure the "Apply sharpening to" option is set to All Images.

Default Image Settings. In this section (see Figure 4-95) you can choose how Camera Raw will behave regarding its default image settings. If you want Camera Raw to always determine the tone adjustments, select the "Apply auto tone adjustments" checkbox. If you often use exposure bracketing, you'll want to deselect this option.

The "Apply auto grayscale mix when converting to grayscale" option is indeed useful since Camera Raw generally does an excellent job. Usually, you'll only need to tweak a color or two to optimize the settings. We keep this selected.

The next two options are pretty powerful. Camera Raw can create different Camera Raw Default image settings based on your camera's serial number and the EXIF embedded ISO setting. For example, if you have two or more camera bodies of the exact same model, you may find the sensors in the bodies to be slightly different. You can then run a camera calibration for each body and set the respective calibration to be active based on the camera's serial number. Additionally, if you want to have a certain degree of luminance noise-reduction set based on the camera ISO, you can now do so.

The key in each of these options is to open an image from either a camera with the correct serial number or with the ISO setting set to the one you want to adjust. Make your adjustments as desired, and then in the Camera Raw flyout menu (see Figure 4-53), select the Save New Camera Raw Defaults command. This will update the Camera Raw Defaults for either that camera serial number, that ISO, or both. To remove these new defaults, select Reset Camera Raw Defaults in the flyout menu to return the defaults to Camera Raw's original defaults.

Camera Raw Cache. Camera Raw creates its own cache of image previews to make working with images more efficient. Accessing the same images over and over without a cache would force Camera Raw to generate a new preview from scratch each time. Instead, Camera Raw keeps track of a limited number of image previews and can serve them up when the images are opened in Camera Raw. Depending on your image capture size, these preview files can be rather large. Most previews are in the 4–5MB file size range. You can see that opening a lot of images could rack up a lot of image preview files. As a result, Camera Raw allows you to set a limit and change the location of where it stores the cache files (see Figure 4-96). Camera Raw

6 allows you to enter up to 200GB. If you have lots of free space on your hard drive, you might want to give Camera Raw a higher limit. Jeff sets the full 200GB on his main workstation at his studio but keeps the Cache set to 5GB on his laptop.

Figure 4-96 Increasing Camera Raw's cache.
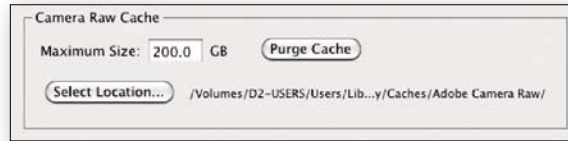
You can also choose to relocate the cache because it's useful for the cache to be on a really fast drive. But if you choose to locate the cache on a removable drive and that drive is removed, at the next launch, Camera Raw will re-create a cache file in the default location and forget about the cache in the removable drive.

DNG File Handling. When you are working with DNG files, Camera Raw offers a couple of important options: You can choose to ignore .xmp sidecar files and you can update embedded JPEG previews (see Figure 4-95).

Some applications, rather than writing to the DNG file, will place the XMP metadata in a sidecar file. If you then use a product that writes XMP to the DNG image file, you end up with a metadata collision. Which contains the correct metadata about the image, the image file or the sidecar file? The "Ignore sidecar '.xmp' files" option allows you to tell Camera Raw to ignore any sidecar files and pay attention to the embedded XMP metadata only.

In addition, when you change the image settings for a DNG image file, you can choose whether or not to update the embedded JPEG preview, and if you do decide to update it, what size to use when updating (see Figure 4-95). Generally, we feel it's a good idea to update the embedded preview when working with DNG files.

JPEG and TIFF Handling. When Photoshop CS3 and Camera Raw 4 were released, this option for Camera Raw was, to put it mildly, very confusing. There were multiple locations in Camera Raw, Bridge, and Photoshop where behavior preferences were stored. Photoshop CS5 and Camera Raw 6 take care of that confusion by always being in charge of this behavior.

There are now three options each for JPEG and TIFF images, and you can be assured that changing them in this dialog will disable or enable the proper behavior. We suggest that if you want to use Camera Raw and Lightroom in

a single workflow, you may want to select the "Automatically open JPEGs (or TIFFs) with settings" option. This will enable a workflow back and forth between files in Lightroom with settings and files in Camera Raw.

Keep in mind that if you have installed any third-party camera software for the handling of raw files, the camera company's software can conflict with Camera Raw's ability to access those files—hence, the Photoshop CS5 "Prefer Adobe Camera Raw for Supported Raw Files" preference. This option tells Photoshop and Camera Raw to ignore the "other" plug-in and use Camera Raw for supported raw files. See Figure 4-97 for the Photoshop CS5 preference setting that enables Camera Raw to ignore other raw processing plug-ins.

TIP The Camera Raw Warning icon appears whenever Camera Raw is in the process of creating an accurate pixel preview of your image. While this warning is displayed, you are seeing a low-resolution preview, not the final pixel-accurate preview.
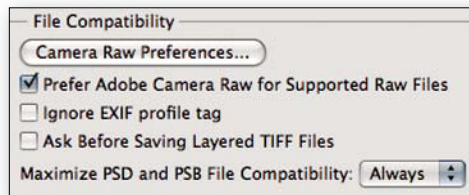
Figure 4-97 Photoshop's preference option to allow Camera Raw to override a third-party plug-in's raw handling.

THE CAMERA RAW KEYBOARD COMMANDS

We use keyboard commands wherever possible to make working in Camera Raw more efficient. In the following charts we've laid out every keyboard shortcut that we're aware of.

Camera Raw Keyboard Shortcuts for the Mac OS (single-image mode)

Command	Shortcut
Reset Camera Raw Preferences	Cmd-Opt-Shift and double-click on raw image
Apply Auto Tone Adjustment	Cmd-U
Cancel Auto Tone	Cmd-R
Undo/Redo Toggle	Cmd-Z
Multiple Undo	Cmd-Opt-Z

Camera Raw Keyboard Shortcuts for Macintosh (single-image mode) *continued*

Command	Shortcut
Multiple Redo	Cmd-Shift-Z
Reset Image Adjustment Settings	Opt-click and click Reset button
Open Image	Cmd-O
Open Copy	Cmd-Opt-O or click Open Copy button
Save Image	Cmd-S
Save Image (bypass dialog box)	Cmd-Opt-S or Option Save
Zoom Out	Cmd-minus sign
Zoom In	Cmd-plus sign
Zoom to Fit	Cmd-0 (zero)
Zoom tool 100%	Cmd-Opt-0 (zero)
Navigate down through image	Page Down
Navigate up through image	Page Up
Temporary Zoom In tool	Cmd-click in Preview
Temporary Zoom Out tool	Opt-click in Preview
Temporary Hand tool	Spacebar
Temporary White Balance tool	Shift
Open Basic panel	Cmd-Opt-1
Open Curves panel	Cmd-Opt-2
Open Detail panel	Cmd-Opt-3
Open HSL/Grayscale panel	Cmd-Opt-4
Open Split Tone panel	Cmd-Opt-5
Open Lens Correction panel	Cmd-Opt-6
Open Effects panel	Cmd-Opt-7
Open Camera Calibration panel	Cmd-Opt-8
Open Presets panel	Cmd-Opt-9
Open Snapshots panel	None at this time
Zoom tool	Z
Hand tool	H
White Balance tool	I
Sample tool	S

Command	Shortcut
Targeted Adjustment tool	T
Crop tool	C
Straighten tool	A
Spot Removal tool	B
Red Eye Removal tool	E
Adjustment Brush	K
Graduated Filter tool	G
Switch to parametric curve TAT	Cmd-Opt-Shift T
Switch to Hue TAT	Cmd-Opt-Shift H
Switch to Saturation TAT	Cmd-Opt-Shift S
Switch to Luminance TAT	Cmd-Opt-Shift L
Switch to Grayscale mixer TAT	Cmd-Opt-Shift G
Toggle Pins On/Off in Adjustment Brush	V
Toggle Pins On/Off in Graduated Filter	V
Toggle Grid On/Off in Lens Correction	V
Camera Raw Preferences	Cmd-K
Rotate 90º counterclockwise	L or Cmd-[(left bracket)
Rotate 90º clockwise	R or Cmd-] (right bracket)
Preview Adjustments on/off	P
Toggle Full Screen on/off	F
Highlight Clipping on/off	O
Shadow Clipping on/off	U
Display Clipped Highlights	Opt-drag Exposure/Recovery
Display Clipped Shadows	Opt-drag Shadow
Preview Sharpen Effects (Detail)	Opt-drag Amount/Radius/Detail/Mask
Preview Split Tone Effects	Opt-drag Hue/Balance
Hide Blue/Yellow Fringe (Lens) panel	Opt-drag Red/Cyan
Hide Red/Cyan Fringe (Lens) panel	Opt-drag Blue/Yellow
Increase/Decrease Clone/Heal	] and [(right and left bracket)
Add Point to Curve	Cmd and click in Preview

Camera Raw Keyboard Shortcuts for Macintosh (single-image mode) *continued*

Command	Shortcut
Deselect Point in Curve	D
Select Next Point in Curve	Ctrl-Tab
Select Preview Point in Curve	Ctrl-Shift-Tab

Camera Raw Keyboard Shortcuts for Mac OS (filmstrip mode)

Command	Shortcut
Move Up One Image	Up Arrow or Cmd-Left Arrow
Move Down One Image	Down Arrow or Cmd-Right Arrow
Select All	Cmd-A
Deselect All	Cmd-Shift-A
Select Rated Images	Opt Select All
Synchronize (bypass dialog box)	Opt Synchronize
Select First Image	Home
Select Last Image	End
Add to Selection (Discontiguous)	Cmd-click image
Add to Selection (Contiguous)	Shift-click last image
Delete Selected Image	Cmd-Del (Delete or Backspace)
Assign * Rating to Image	Cmd-1
Assign ** Rating to Image	Cmd-2
Assign *** Rating to Image	Cmd-3
Assign **** Rating to Image	Cmd-4
Assign ***** Rating to Image	Cmd-5
Decrease Rating *	Cmd-, (comma)
Increase Rating by *	Cmd-. (period)
Assign Red Label to Image	Cmd-6
Assign Yellow Label to Image	Cmd-7
Assign Green Label to Image	Cmd-8
Assign Blue Label to Image	Cmd-9
Assign Purple Label to Image	Cmd-Shift-0 (zero)

Camera Raw Keyboard Shortcuts for Windows (single-image mode)

Command	Shortcut
Reset Camera Raw Preferences	Ctrl-Alt-Shift and double-click on raw image
Apply Auto Tone Adjustment	Ctrl-U
Cancel Auto Adjustment	Ctrl-R
Undo/Redo Toggle	Ctrl-Z
Multiple Undo	Ctrl-Alt-Z
Multiple Redo	Ctrl-Shift-Z
Reset Image Adjustment Settings	Ctrl-click and click Cancel button
Open Image	Ctrl-O
Open Copy	Ctrl-Alt-O or Alt-click
Save Image	Ctrl-S
Save Image (bypass dialog box)	Ctrl-Alt-S or Alt-click Save
Zoom Out	Ctrl-plus sign
Zoom In	Ctrl-hyphen
Zoom to Fit	Ctrl-0 (zero)
Zoom tool 100%	Ctrl-Alt-0 (zero)
Navigate down through image	Page Down
Navigate up through image	Page Up
Temporary Zoom In tool	Ctrl-click in Preview
Temporary Zoom Out tool	Alt-click in Preview
Temporary Hand tool	Spacebar
Temporary White Balance tool	Shift
Open Basic panel	Ctrl-Alt -1
Open Curves panel	Ctrl-Alt-2
Open Detail panel	Ctrl-Alt-3
Open HSL/Grayscale panel	Ctrl-Alt-4
Open Split Tone panel	Ctrl-Alt-5
Open Lens Correction panel	Ctrl-Alt-6
Open Effects panel	Ctrl-Alt-7

Camera Raw Keyboard Shortcuts for Windows (single-image mode) *continued*

Command	Shortcut
Open Camera Calibration panel	Ctrl-Alt-8
Open Presets panel	Ctrl-Alt-9
Open Snapshots panel	None at this time
Zoom tool	Z
Hand tool	H
White Balance tool	I
Color Sampler tool	S
Targeted Adjustment tool	T
Crop tool	C
Straighten tool	A
Spot Removal tool	B
Red Eye Removal tool	E
Adjustment Brush	K
Graduated Filter tool	G
Switch to parametric curve TAT	Ctrl-Alt-Shift T
Switch to Hue TAT	Ctrl-Alt-Shift H
Switch to Saturation TAT	Ctrl-Alt-Shift S
Switch to Luminance TAT	Ctrl-Alt-Shift L
Switch to Grayscale mixer TAT	Ctrl-Alt-Shift G
Toggle Pins On/Off in Adjustment Brush	V
Toggle Pins On/Off in Graduated Filter	V
Toggle Grid On/Off in Lens Correction	V
Camera Raw Preferences	Ctrl-K
Rotate 90° counterclockwise	L or Ctrl - [(left bracket)
Rotate 90° clockwise	R or Ctrl -] (right bracket)
Preview Adjustments on/off	P
Toggle Full Screen on/off	F
Highlight Clipping on/off	O
Shadow Clipping on/off	U
Display Clipped Highlights	Alt-drag Exposure/Recovery

Command	Shortcut
Display Clipped Shadows	Alt-drag Shadow
Preview Sharpen Effects (Detail)	Alt-drag Amount/Radius/Detail/Mask
Preview Split Tone Effects	Alt-drag Hue/Balance
Hide Blue/Yellow Fringe (Lens panel)	Alt-drag Red/Cyan
Hide Red/Cyan Fringe (Lens panel)	Alt-drag Blue/Yellow
Increase/Decrease Clone/Heal	] and [(right and left bracket)
Add Point to Curve	Alt-click in Preview
Deselect Point in Curve	D
Select Next Point in Curve	Ctrl-Tab
Select Preview Point in Curve	Ctrl-Shift-Tab

Camera Raw Keyboard Shortcuts for Windows (filmstrip mode)

Command	Shortcut
Move Up One Image	Up Arrow or Ctrl-Left Arrow
Move Down One Image	Down Arrow or Ctrl-Right Arrow
Select All	Ctrl-A
Deselect All	Ctrl-Shift-A
Select Rated Images	Alt Select All
Synchronize (bypass dialog box)	Alt Synchronize
Select First Image	Home
Select Last Image	End
Add to Selection (Discontiguous)	Ctrl-click image
Add to Selection (Contiguous)	Shift-click last image
Delete Selected Image	Ctrl-Del (Delete or Backspace)
Assign * Rating to Image	Ctrl-1
Assign ** Rating to Image	Ctrl-2
Assign *** Rating to Image	Ctrl-3
Assign **** Rating to Image	Ctrl-4
Assign ***** Rating to Image	Ctrl-5
Decrease Rating by *	Ctrl-, (comma)

continues on next page

Camera Raw Keyboard Shortcuts for Windows (filmstrip mode) *continued*

Command	Shortcut
Increase Rating by *	Ctrl-. (period)
Assign Red Label to Image	Ctrl-6
Assign Yellow Label to Image	Ctrl-7
Assign Green Label to Image	Ctrl-8
Assign Blue Label to Image	Ctrl-9
Assign Purple Label to Image	Ctrl-Shift-0 (zero)

ADOBE LENS PROFILE CREATOR

With the release of Photoshop CS5, Adobe has started off on an ambitious effort to build a community of camera lens profile builders: it released a free utility that enables the creation of lens profiles for use in Photoshop CS5's Lens Correction filter as well as Camera Raw 6.1 and Lightroom 3.0. The profile that the Adobe Lens Profile Creator (ALPC) creates characterizes three types of lens defects and prescribes how to computationally correct the defects.

ALPC uses photographic images to evaluate geometric lens distortions, lateral chromatic aberrations, and lens vignetting. To generate a lens profile, you print a checkerboard target, set up the target with consistent lighting, and shoot reference images with the lens to be profiled. The images—either DNG, JPEG, or TIFF—are then loaded into ALPC. The application evaluates the images and creates a lens profile.

In addition to creating profiles for themselves, people who spend the time and effort creating profiles can then share their profiles by uploading them to the Adobe Lens Profile server. Even though Adobe created a large number of lens profiles to ship with Photoshop CS5, Camera Raw 6, and Lightroom 3, clearly not every lens that might potentially be used has been profiled. That's why Adobe hopes individuals make the effort to create their own lens profiles and make them available to the community at large.

How do you get ALPC? Simply browse the Adobe Labs Web site and look for the Lens Profile Creator section (www.adobe.com/go/alpc for a direct link). You'll need to have a free Adobe ID and agree to the terms. The download includes a folder that contains the application and a large number of PDF-formatted profiling targets specifically designed for lens profile creation. You'll also receive good documentation and sample JPEG files for practice. We highly suggest reading the documentation and using the sample JPEG files to build test profiles before jumping into target shooting with both feet.

Printing the Calibration Chart

You'll need to select a checkerboard target to print from the provided PDF calibration charts. Which one you choose will depend on several factors: the size of your shooting space, the maximum size you can print, the focal length of the lens, and the number of target shots you wish to shoot. The rule of thumb is to select the largest chart that you could readily print, and pick one with the smallest squares that the Lens Profile Creator can still reliably detect for the planned shooting distances. The size of the printed target should allow you to light it very evenly and frame the camera so that the target takes up between ½ to ¼ quarter of the frame. You want to shoot multiple images; don't try to use a single shot. The size of the square on the final digital capture, once brought into ALPC, must be at least 20 pixels, but ideally 40 to 50 pixels. If none of the targets will work for your project, you can modify a PDF target in Illustrator.

Setting Up the Target

Once you have the target printed, you'll need to mount the target to a flat, stiff board in order to make absolutely sure there is no bend or warp that might confuse the ALPC algorithms. Adobe had its targets mounted on foam core, then put the mounted targets inside of picture frames to keep them from bowing. Jeff mounted his printed targets to a sheet of ¼ inch glass that was perfectly flat. However you choose to mount your target, it's critical to make sure it is flat.

Once you have the calibration chart mounted, you'll need to set up lighting to evenly light the target. The setup should be a basic copy-lighting setup with one light on either side of the target set to a 45º angle to the target and 90º to each other. An overhead diagram is shown in Figure 4-98.

Figure 4-98 Overhead diagram of lighting setup.

Mounted Calibration Chart

90º angle

45º Angled
Light Source

Camera

45º Angled
Light Source
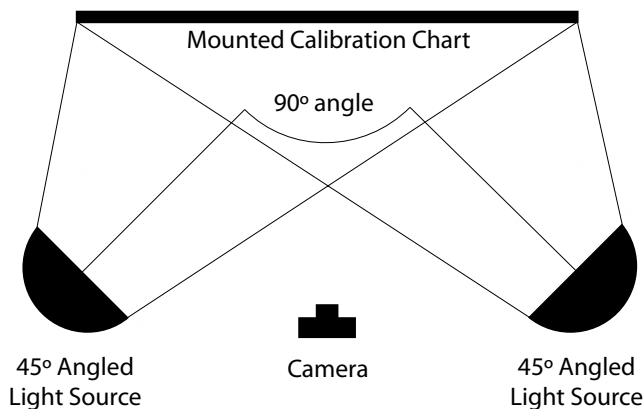
TIP The lighting can be electronic flash, a continuous light source such as tungsten floodlights, or even daylight. The key factor in selecting lighting is that the target must be consistently illuminated.

Once you've set up the lighting and camera, it's very important to measure the light falling on the target. Make sure that the light is equal from both sides and that the light falling on the target is even and consistent. The lighting must remain consistent between multiple shots for a given image set.

The lens Jeff profiled was a Canon EF 50mm F/1.2, which is mounted on his 1Ds Mark III camera (see Figure 4-99). The target shown in this shot is the PDF named "Landscape ANSI_E - 34.00 In x 44.00 In (Square Print Dimension 72 Pts, Version 31 x 41)," which means the dimensions were 34

Figure 4-99 Jeff's target setup.

A view of the target setup in Jeff's studio
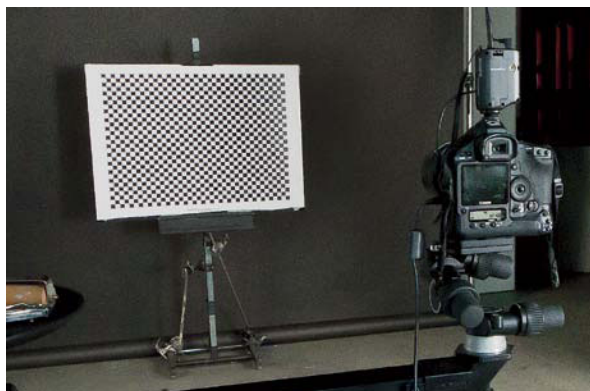
Closeup of the camera and the mounted target on an easel

by 44 inches and the checkerboard size was 72 points. Jeff used a pair of studio strobes on either side of the calibration target bounced into white umbrellas. The distance was far enough that there was less than 1/10 of an F/stop difference when metering from one side of the chart to the other. The lighting can be electronic flash, a continuous light source such as tungsten floodlights, or even daylight. The key factor in selecting lighting is that the target must be consistently illuminated.

Capturing the Calibration Image Set

Once you've properly set up the lighting and the camera, you'll need to do a bit of planning before firing away. First off, you need to make sure that the lens is mounted on your camera with the largest sensor crop factor you will be using. If you think you'll want to use the lens profile for a full-frame camera and also a camera with a smaller sensor, you'll want to shoot the targets with the full-frame sensor.

You'll also need to plan how many frames you'll be capturing of the target. Jeff chose to shoot a series of nine captures at each of 5 F/stops at three focus distances. You may wonder why you should shoot the targets multiple times and overlap them rather than shoot one single target full frame. The way that ALPC's processing algorithms are designed, turning the camera left and right and tilting up or down to shoot the corners actually helps the algorithms determine the lens defects.

The Calibration Shooting Guide included in the download suggests the following guidelines when determining how to plan and organize a series of target shots meant for a basic lens profile:

• For wide-angle/fisheye zoom lenses, shoot at the nominal focal length positions as marked on the ring of the lens with a fixed f/11 aperture.

• For telephoto zoom lenses, shoot at the minimum, maximum, and medium focal lengths positions with a fixed f/11 aperture.

• For prime lenses, shoot at (1 × minimum focus distance) and (5 × minimum focus distance) focus distance positions with a fixed f/11 aperture.

The following guidelines are recommended when shooting the image sets to create a more advanced lens profile:

- For wide-angle/fisheye zoom lenses, shoot 72 image sets (6 focal length positions × 3 focus distance positions × 4 aperture positions).

- For telephoto zoom lenses, shoot 36 image sets (3 focal length positions × 3 focus distance positions × 4 aperture positions).

- For prime lenses, shoot 12 image sets (1 focal length position × 3 focus distance positions × 4 aperture positions.

Once you are ready to start shooting, make sure your exposure is set to avoid clipping in the highlights. Slightly less exposure is better than blowing out the whites. It's best to use a tripod so you can be precise with your framing, and it's important to tilt and move your camera when shooting the image series and to make sure you frame the corners carefully. You want to avoid cropping into any of the target's checkerboard. Figure 4-100 shows the first series of shots Jeff did, loaded into Bridge. You'll notice that the files are in DNG format because ALPC can't read proprietary raw file formats.

Figure 4-100 The initial nine DNG captures viewed in Bridge.
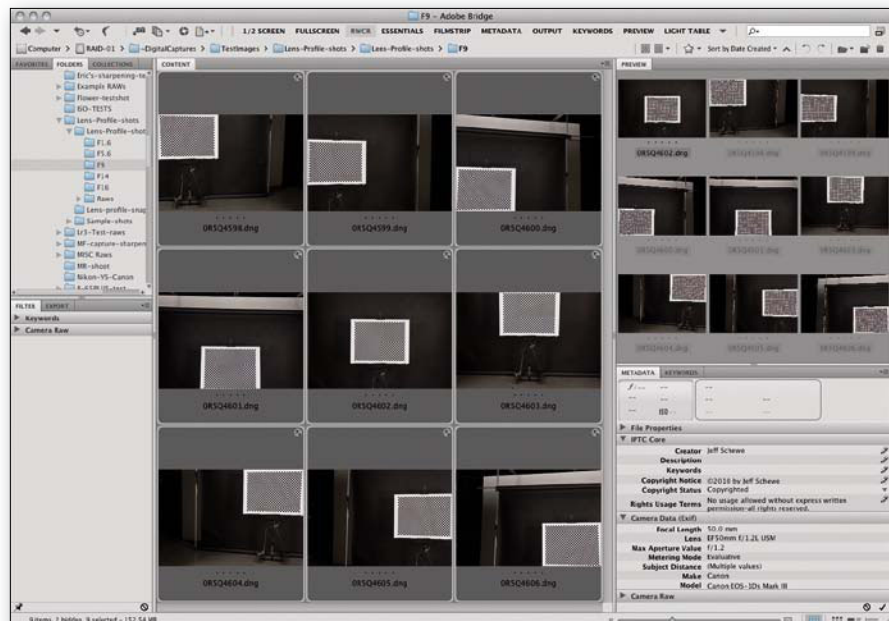
Using Adobe Lens Profile Creator

After taking the shots and converting the image files to DNG, the next step is to launch ALPC and load the images. You can do so by selecting Add Images to Project in the File menu (see Figure 4-101) or dragging and dropping files from Bridge into ALPC. Jeff used the latter method to make sure the correct images were added as a group. Figure 4-102 shows the images loaded into ALPC.
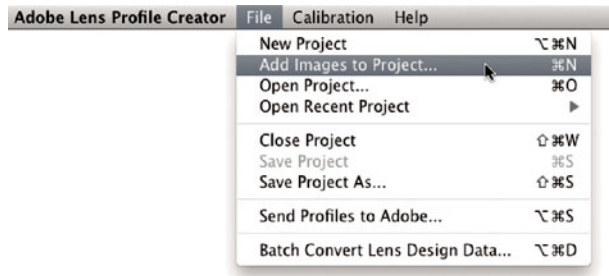
Figure 4-101 Adding images to ALPC.

Figure 4-102 The main ALPC window.
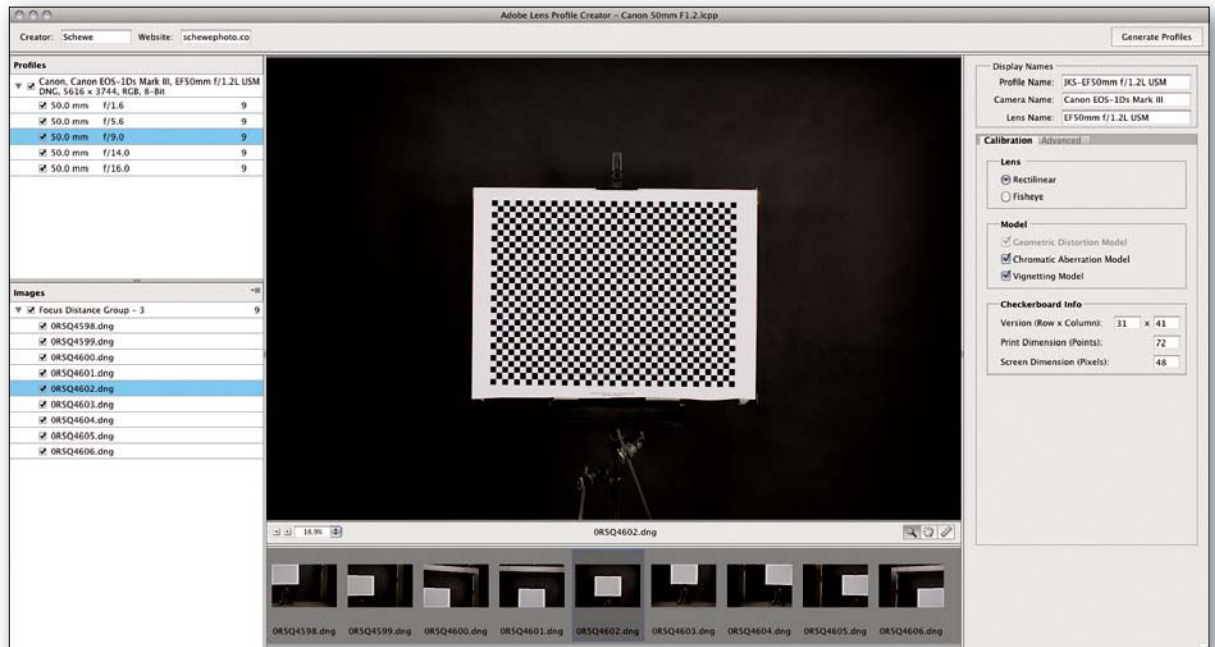
In the Profiles panel on the top left side of the ALPC window you'll see the camera, lens, file format, and resolution listed; under that are the various F/stops of the target shots (see Figure 4-103). You'll see that Jeff shot the 50mm F/1.2 lens nearly wide open at F/1.6 (He couldn't knock the light down quite enough to shoot wide open). The last series was at F/16 with close focusing at the shortest distance.

Figure 4-103 Left-side panel details.
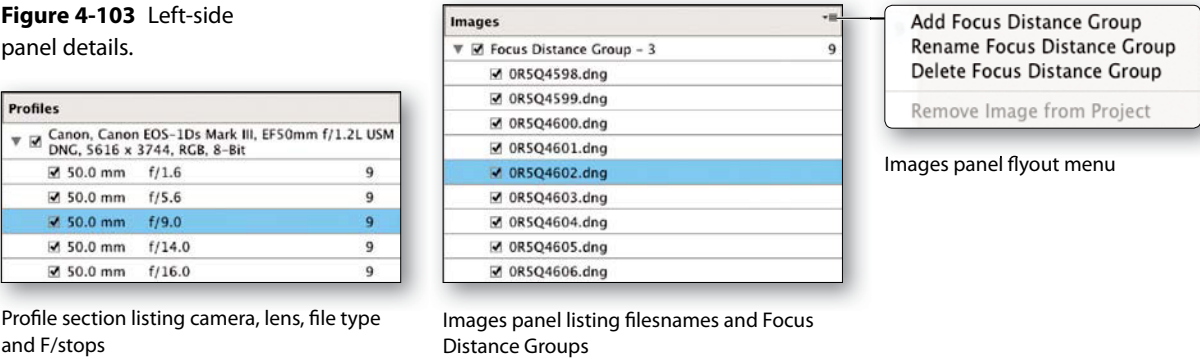
Profile section listing camera, lens, file type and F/stops

Images panel listing filenames and Focus Distance Groups

Images panel flyout menu

Under Profiles is the Images panel. Here you can see exactly what images have been assigned to which Focus Distance Group (in this case the Focus Distance Group was number 3). The flyout menu, also shown in Figure 4-103, allows you to add, delete, and rename Focus Distance Groups.

In the center panel ALPC shows you a filmstrip of the images listed in the selected group as well as a larger preview. On the left is a zoom menu similar to Camera Raw's zoom menu. On the right are three tools: Zoom, Hand, and Measure. Figure 4-104 shows the center panel and a detail of the toolbar.

The Measure tool is critical for determining the dimensions of the photographed calibration-target checkerboard square size in the image capture. In addition to the number of rows and columns in the target and the target's square size in points, ALPC needs to know the final captured size of the checkerboard square when opened in ALPC. To determine this, select the Measure tool, zoom in, and drag the tool from one side of a square to the other. It doesn't matter whether you measure a white or black square. It also doesn't really matter which image in your series you use to make your measurement, but we find it best to use the centermost of the nine images as there will be less distortion that might impact the dimensions of the square. Figure 4-105 shows the process of using the Measure tool. It also shows a dialog box asking if you want to use the measured value to set the Screen dimension and also shows the final measured value. This value must be at

least 20 pixels, but over 30 pixels is better because it will lead to fewer errors. You do not want the pixel size to be too large because the lens-profiling algorithm needs a fairly dense checkerboard pattern to produce accurate profiles.
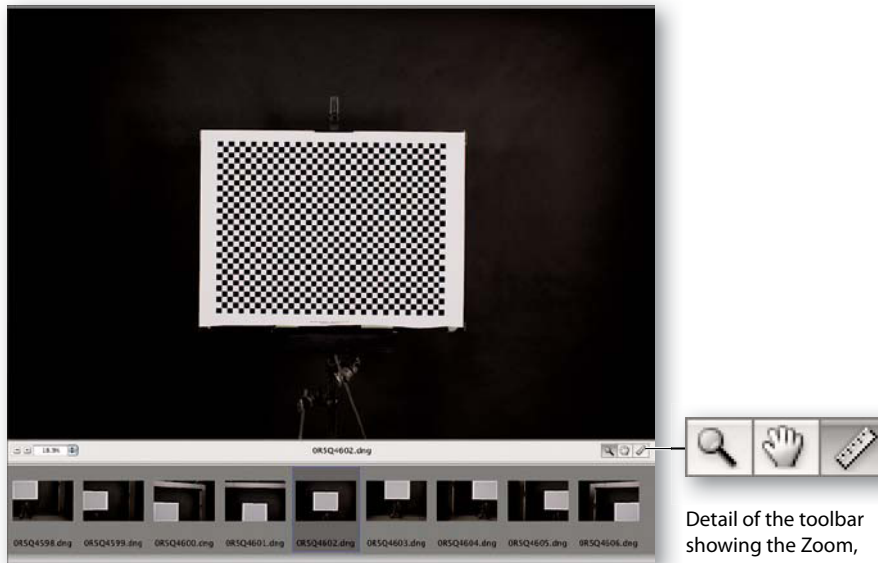
Figure 4-104 Center panel details.

Center panel showing filmstrip and preview

Detail of the toolbar showing the Zoom, Hand, and Measure tools

Figure 4-105 Measuring the checkerboard square size.
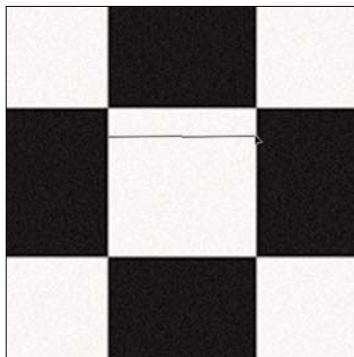
Dragging the Measure tool across a square
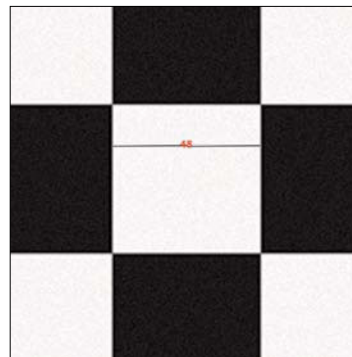
The measured value readout in pixels

Adobe Lens Profile Creator

Do you want to use the measured value to set the screen dimension?

☐ Do not show again   (Yes)   (No)
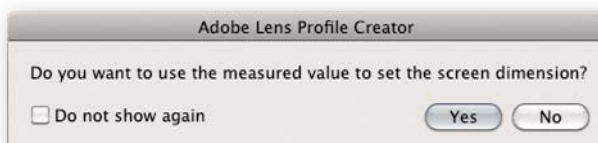
Dialog box about using the measured value

In addition to providing ALPC with the chart square's pixel dimensions after being photographed, you must also enter the number of rows and columns of the printed chart and the size of the checkerboard square prior to photographing. To get this information, zoom into the photographed target and read the specs that were printed along with the target. Enter that data in the ALPC Calibration panel's Checkerboard Info fields. A close-up of the photographed target and the Calibration panel is shown in Figure 4-106.

Figure 4-106 Reading and entering the checkerboard info.
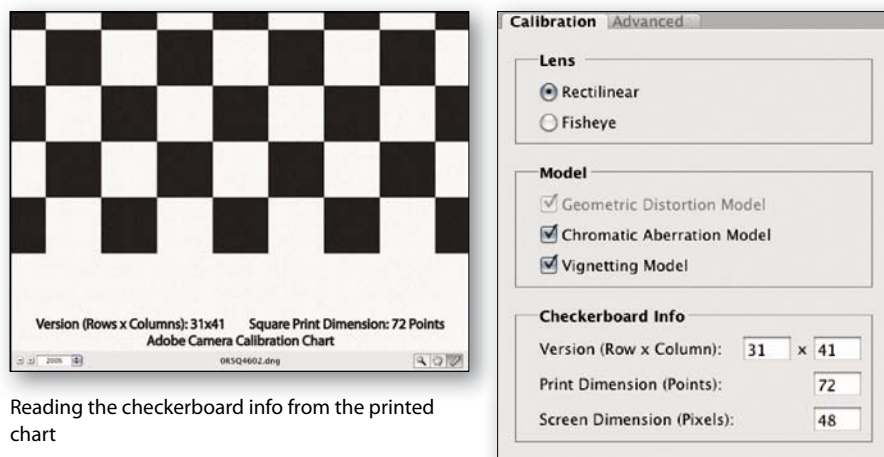
Reading the checkerboard info from the printed chart

Entering in the Checkerboard Info data

This calibration chart has 31 rows and 41 columns; each square was 72 points across. The measured screen size of each square was 48 pixels. Be careful to correctly enter this information; it is critical to ensure that ALPC has the calibration data it needs to calculate the lens defects and create the proper correction.

In the Lens options, indicate whether the lens is Rectilinear or Fisheye. Rectilinear includes all "normal" perspective fixed and zoom lenses, including extremely wide-angle rectilinear focal lengths. Fisheye includes fixed or zoom fisheye lenses and circular fisheye lenses.

The Lens section provides options for which correction Model (or models) you want the lens profile correction to calculate. Generally, you'll want to select the Chromatic Aberration Model as well as the Vignette Model. The Geometric Model is selected by default.

Prior to calculating the lens profile, you'll want to enter information regarding the resulting profile's name and the lens and camera name. These are the "Display Names" that will show up in the Lens Correction filter in Photoshop and the Lens Correction panel in Camera Raw and Lightroom. These do not represent the profile's filename. Jeff has named his profile JKS-EF50mm f/1.2L USM. As shown in Figure 4-107, Jeff added his initials to keep track of the profile he has made in the event another 50mm f/1.2 lens profile may get installed on his system down the road.

Figure 4-107 Entering in the display names for the profile.

Lens Profile Creator reads the DNG's EXIF metadata and automatically enters the Camera Name and the Lens Name (see Figure 4-107).

Saving an ALPC Project

Before you generate a lens profile, you'll want to save the work you've done so far as an ALPC Project. Where you save the project really doesn't matter (but where you save a generated profile *does* matter). Jeff created a folder named Canon 50mm F1.2 Lens to save the project in. He also put the DNG files inside their respective folders, which are organized by F/stop inside the project folder. Once you've loaded the images inside of an ALPC project, you don't need to keep the DNG files in any specific location.

Generating a Lens Profile

In the Profile panel, you'll want to make sure all the relevant F/stop groups are selected. Failing to select a group will leave it out of the profile calculation. Once the groups are selected, click the Generate Profiles button. Figure 4-108 shows the Profile panel and the button.

Figure 4-108 Generating a lens profile.

Selecting the groups on images to be used to calculate a profile

The Generate Profile button

Once the button is clicked, ALPC goes about its business of finding each image's target, evaluating the target, and adding the target data into the calculations for the generation of a lens profile. This can take some time depending on your computer's processor speed and the size of the DNG files. While you might think that you could save time by processing out the raw DNG files as JPEGs, that's not a good idea. ALPC can create a profile from DNG files, JPEGs, or TIFFs, but profiles made for DNG files won't work optimally on JPEG/TIFF files and vise versa.

While ALPC is working, you'll see a progress bar at the top of the main window. You'll also note that watching this progress bar is about as useful as watching a pot of water come up to boil (and almost as much fun). We suggest finding something entertaining to do while your profile is being calculated. In the event you do want to watch, you'll also see each of the various images being evaluated and an indicator that the algorithm has successfully detected the chart.

In the event that the checkerboard grid can't be correctly detected, you'll see a warning show up in the Images panel by the failed image and the marker indicators will be red instead of yellow.

In our experience (which we freely admit is somewhat limited) the primary reason for a grid detection or a profile generation failure is that the the correct rows and columns, point size, and pixel dimensions aren't entered in the Checkerboard Info section of the Calibration panel. The full calibration chart must be clearly visible in each and every shot: if the focus on a shot was off or if you cropped into the chart, the grid will not be detected.

Saving a Lens Profile

Assuming you have successfully generated a lens profile, the next step is to save it in the correct location so Photoshop, Camera Raw, and Lightroom can access it. Figure 4-109 shows the Save Profile dialog.
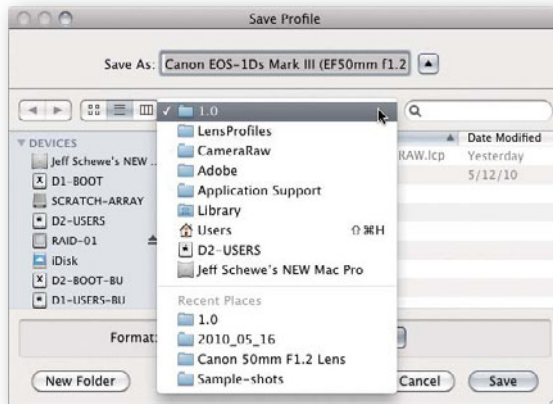
Figure 4-109 The Save Profile dialog box.

While you can save a lens profile anywhere, in order for Photoshop, Camera Raw, and Lightroom to use it correctly, the profile must be located where they expect it to be. The applications can find lens profiles in "user specific" and "all users" locations.

User profiles (user specific):

- Mac OS X: /Users/(User Name)/Library/Application Support/Adobe/ CameraRaw/LensProfiles/1.0

- Windows 7 or Vista: C:\User\(User Name)\AppData\Roaming\Adobe\ CameraRaw\LensProfiles\1.0

- Windows XP: C:\Documents and Settings\(User Name)\Application Data\Adobe\CameraRaw\LensProfiles\1.0

Shared profiles (all users):

- Mac OS X: /Library/Application Support/Adobe/CameraRaw/ LensProfiles/1.0

- Windows 7 or Vista: C:\ProgramData\Adobe\CameraRaw\ LensProfiles\1.0

- Windows XP: C:\Documents and Settings\All Users\Application Data\ Adobe\CameraRaw\LensProfiles\1.0

It may take a while to create a lens profile, particularly a profile for a zoom lens. You'll need to select the calibration chart; shoot it at multiple F/stops, focus distances, and zoom focal lengths, and combine multiple profile calculations in the final profile. You can do this shot by shot if you want. If you close and then reopen a lens project and wish to add new profile data into an existing profile, you'll see a Choose to Append or Replace dialog box as shown in Figure 4-110.

Figure 4-110 The Choose to Append or Replace dialog box.
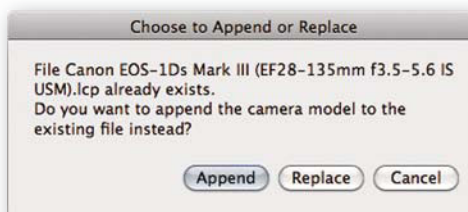
If you choose to append, you'll add to the existing lens profile rather than overwrite the old one. By appending you can build up a rich and very precise profile for your lens.

Using a Lens Profile

After creating and saving a lens profile, the next step is to test it to see if it actually does something good. It would be very disappointing to go through all that effort for no gain. After saving his profile for the Canon EF50mm F/1.2 lens, Jeff did some sample shots to evaluate the effectiveness of the profile. Once the profile is saved in the correct location, Camera Raw can access it as shown in Figure 4-111.

Figure 4-111 Using the lens profile in Camera Raw's Lens Corrections panel.
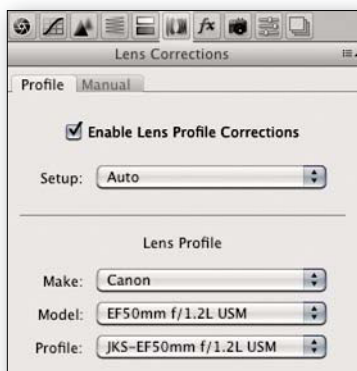
The 50mm F/1.2 lens is a rather pricey lens and Jeff was hoping that its performance would be pretty good. Of course, he was also hoping that a sample image processed using a profile specifically created for the lens would show visible improvement. The Before and After images shown in Figure 4-112 do show an improvement, particularly for correcting barrel distortion. You can see in the Before image how the horizontal lines in the building bow out in the middle of the frame. You can also see a bit of correction in the After image for lens vignetting. The detail shot shows the before and after correction for lateral chromatic aberration. We think the lens profile is doing a good job of correcting for the lens defects—but we're not happy that the expensive lens has defects that need correcting.

Figure 4-112 Before and after using the lens profile correction.

Image before correction
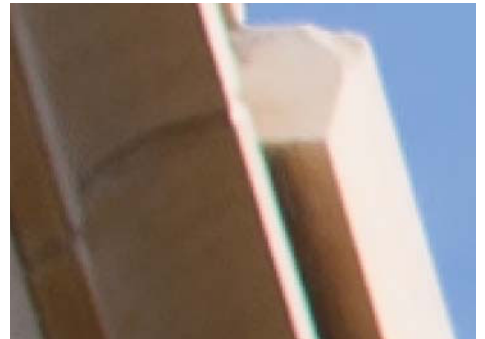
Detail of image before correction

Image after correction
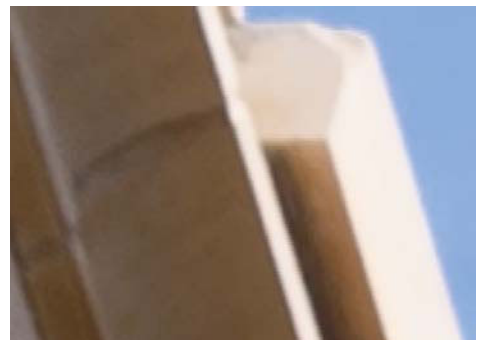
Detail of image after correction

Sharing a Lens Profile

We mentioned in the beginning of this section that it is Adobe's hope that individuals will create lens profiles and share them with the community. To further that goal, Adobe has added a feature that lets you select and email a lens profile to the company for posting on the Adobe Lens Profile server. Figure 4-113 shows the ALPC command.

Figure 4-113 Sharing a lens profile.
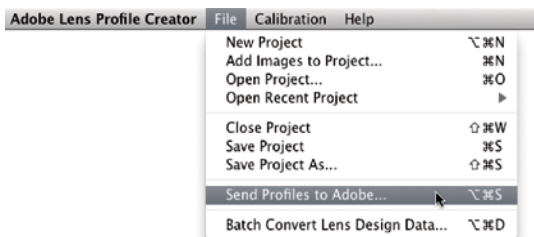
The Send Profiles to Adobe command in Lens Profile Creator

You should know that sending the profile to Adobe means you've agreed to the terms of the profile submission shown here:

By sending this e-mail containing the attached lens profile data to Adobe, you grant Adobe a nonexclusive, worldwide, royalty-free and fully paid license to use, modify, reproduce, publicly perform and display, and distribute such lens profile data in products and services created by or on behalf of Adobe.

Jeff agreed to these terms and submitted his profile to the community. If you happen to shoot with a Canon EF 50mm F/1.2 lens, you can search for its profile in the Lens Correction filter in Photoshop.

We offer our thanks to Adobe engineers Eric Chan (Camera Raw) and Simon Chen (primary engineer for Adobe Lens Profile Creator) for their assistance in the writing of this section. Our congratulations go to the whole team that worked so hard to bring lens corrections to Photoshop, Camera Raw, and Lightroom.

THE DARKROOM TOOLKIT

In this chapter, we've concentrated on describing each of Camera Raw's tools individually, with simple examples of their effects on images. But it's a mistake to fall in love with a single tool and ignore the others: When all you have is a hammer, everything tends to look like a nail! The way the tools interact is as important as their individual functions.

Many different combinations of Camera Raw settings can produce superficially similar results. But when you look closely or when you start to push the converted images further in Photoshop, you'll invariably find that one combination works better than the others. So in the next chapter, we'll show you how the tools all work together to help you evaluate and optimize your images.

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