


R E A L  W O R L D

Camera Raw

with Adobe Photoshop CS2

INDUSTRIAL-STRENGTH PRODUCTION TECHNIQUES

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Raw System Overview

Camera Raw, Bridge, and Photoshop

This chapter provides a 30,000-foot overview of the whole digital raw system. I'll discuss the individual components in much more detail in subsequent chapters, but before delving into the minutiae (and there are a *lot* of details), it's helpful to have some idea of what the components do, and how they interrelate.

Camera Raw is an amazing piece of technology, but it's only one component of a powerful system that helps you do everything from making your initial selects from a shoot, to adding copyright and keywording metadata, to producing final files for delivery. One of the components of this system is, of course, Photoshop itself.

Photoshop is truly one of the deepest applications available on any platform, and has probably had more words written about it than just about any other application in existence. It's also seductive. One of my goals in writing this book is to wean photographers from doing everything in Photoshop—if you simply treat Camera Raw as a quick way to get raw images into Photoshop for correction, you're making extra work for yourself, and probably not getting everything you can from your raw captures.

For the purposes of this book, Photoshop is simply a tool for making localized corrections, hosting automated processes, and writing images out to different file formats. My friend and colleague Jeff Schewe remarked jokingly during the beta period of Photoshop CS2 that Photoshop had become a plug-in for Camera Raw rather than vice versa, to which I can only add that rarely was a truer word spoken in jest.

One of the biggest challenges the digital raw shooter faces is to avoid drowning in data. Raw captures typically create smaller files than film scans, but we have to deal with so many more raw captures than we did film scans that spending hours correcting an individual image in Photoshop has to become the exception rather than the rule if we want to make a living, or even have a life. So in this short chapter, I'll lay out the basics of the raw workflow.

Adobe Bridge

Adobe Bridge is a brand-new application that comes bundled with every copy of Photoshop CS2. It replaces the File Browser that was introduced in Photoshop 7. Bridge lies at the center of the entire Adobe Creative Suite—it can manage all sorts of file types besides Camera Raw files and images created by Photoshop, including InDesign and Illustrator files and the ever-ubiquitous PDF format, but since this is a book about digital raw capture, I'll focus on its use with digital raw files.

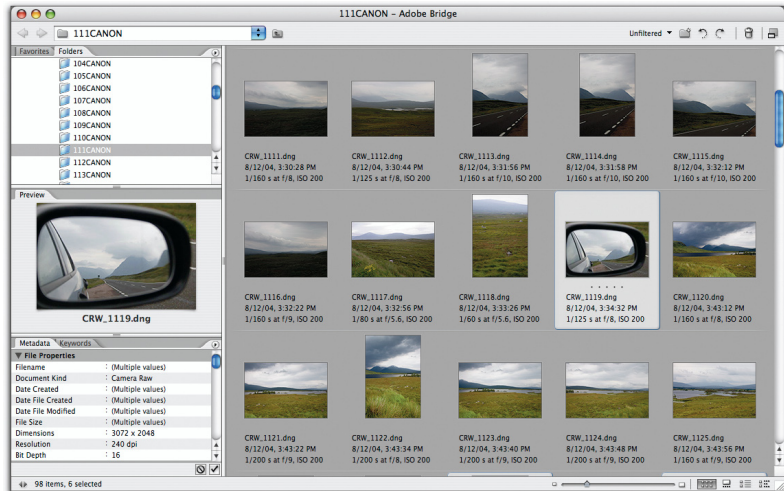
The Virtual Light Table

One of the key roles that Bridge plays is as a virtual light table. As soon as you point Bridge at a new folder of raw images, Camera Raw goes to work behind the scenes, generating thumbnails and large-size previews using its default settings. As a virtual light table, Bridge lets you view, sort, rank, and make selects from your raw images.

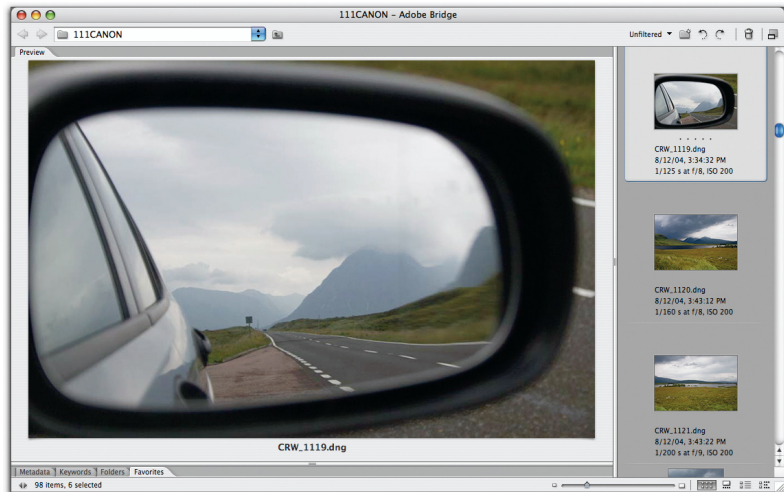
Bridge is highly configurable for different purposes. The thumbnails and previews are resizable, so you can see anything from tiny thumbnails to previews that are large enough to let you decide whether or not an image is a keeper. As with a physical light table, you can sequence and sort images by dragging them into position, but unlike the physical light table, Bridge can find and sort images based on all sorts of *metadata* criteria, such as the time shot, focal length, shutter speed, aperture setting, or any combination of the aforementioned. You can apply ratings or labels to images to further facilitate sorting and selecting, and you can use Bridge as the source for automated processing into Photoshop by selecting the thumbnails of the images you want to process. Figure 3-1 shows some of the many ways you can configure Bridge for different tasks. I'll discuss Bridge in much greater detail in Chapter 6, *Adobe Bridge*.

Figure 3-1
Bridge configurations

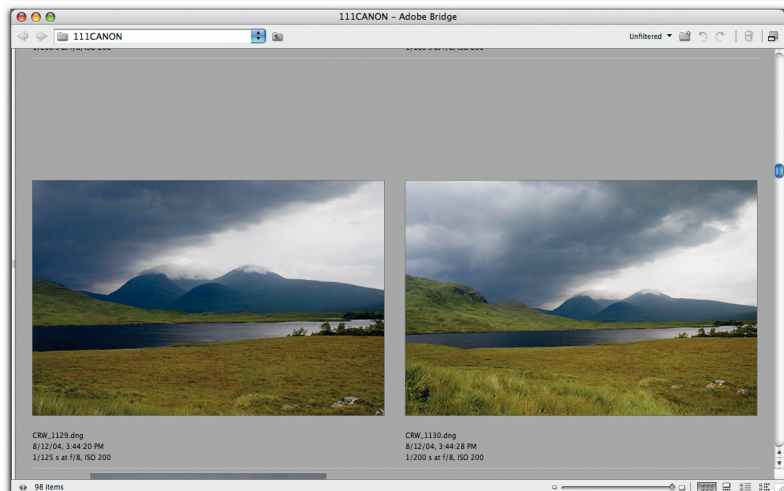
A general-purpose configuration gives access to all Bridge's tabs—the Folder and Favorites tabs for navigation, the thumbnails and previews for viewing images, and the Metadata and Keywords tabs for working with metadata.



You can enlarge the preview for detailed examination of each image.



You can enlarge the thumbnails to compare images.



Managing Metadata

Metadata literally means “data about data.” One of the useful aspects of shooting digital rather than film is that your images contain a wealth of metadata right out of the camera—the shutter speed, aperture, ISO speed, focal length, and other technical metadata are embedded right in the image. But you can and should supplement the camera-generated metadata with custom metadata of your own—copyright and rights-management notices, keywords, and anything else that will make your life easier and add value to your images.

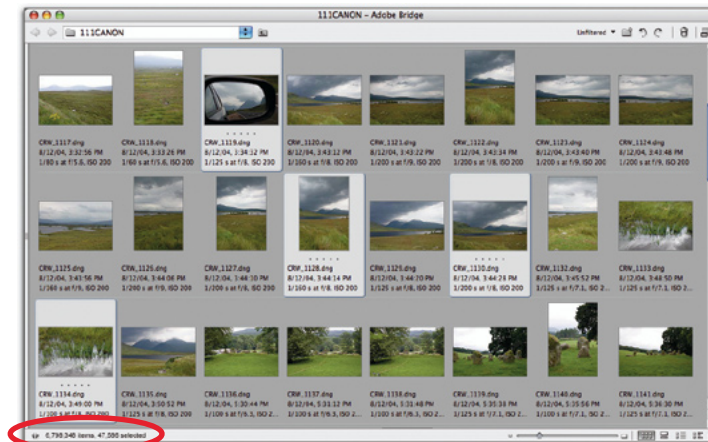
Moreover, the time and place to add custom metadata is as soon after loading your raw captures into Bridge as possible, for two reasons:

- ▶ Metadata added to raw files gets carried through to any image produced from that raw file, so if you enter key metadata such as copyright notices on your raw files, all your converted .PSDs, TIFFs, and JPEGs will already have that metadata entered.
- ▶ Where Photoshop’s File Info command lets you edit metadata on one image at a time, Bridge lets you edit metadata for multiple images in a single operation.

If you’re new to metadata, consider that as your collection of digital imagery grows, the role of metadata becomes ever-more vital in letting you and your clients find your images. I faked Figure 3-2 to make a point—don’t try to cache a folder containing 6,798,348 images on today’s hardware! But if it seems fanciful, consider the plight of an editorial shooter who shoots 1,000 images a day, three days a week, 48 weeks a year, over a 40-year career....

Figure 3-2
The need for metadata

If you fail to take advantage of metadata, you’ll eventually end up drowning in image data!



If you shoot even a tenth of this number of images, you will at some future date have a major challenge on your hands if you don't start planning for that future date now, and taking advantage of the power of metadata to help you manage your image collection. I'll discuss metadata in much greater detail in Chapter 8, *Understanding Metadata*.

Hosting Camera Raw

As a standalone application, Bridge can do things that the old File Browser could not, and one of those things is to act as a host for the Camera Raw plug-in. Hence, when you open raw images in Camera Raw, you have the choice of opening them in Camera Raw hosted by Bridge, or Camera Raw hosted by Photoshop.

Camera Raw edits are saved as metadata—the raw files themselves are read-only so editing in Camera Raw never changes the raw file itself. What you're doing when you edit in Camera Raw is to set the parameters for the conversion from the raw file to an RGB image. So you can use camera Raw hosted by Bridge to edit raw images—to set conversion parameters—without actually performing the conversions. Then when you open the images in Photoshop, Camera Raw creates an RGB version of the image using the conversion parameters you set in Camera Raw hosted by Bridge.

Of course, if your immediate goal is to open the file in Photoshop, you can host Camera Raw in Photoshop instead, and either open raw images directly into Photoshop, bypassing the Camera Raw dialog box (but not Camera Raw itself, which still carries out the conversion), or you can host the Camera Raw dialog box in Photoshop when it makes more sense to do so. I'll discuss these workflow decisions in detail in Chapter 7, *It's All About the Workflow*.

Camera Raw

Camera Raw is both the engine that translates your raw captures into color images, and the user interface that lets you control that translation. The role that Camera Raw plays when the user interface is exposed is fairly obvious: its role behind the scenes is less so.

One of the key roles that Camera Raw plays is to generate the thumbnails and previews you see in Bridge. When you first point Bridge at a folder full of new raw images, you may see, typically for a few seconds,

the camera-generated thumbnails. But Camera Raw immediately goes to work behind the scenes, generating the large, high-quality previews and downsampling them to produce new thumbnails.

Camera Raw also has the interesting property of being shared by Bridge and Photoshop, which opens up some new workflow possibilities. You can, for example, edit images in Camera Raw hosted by Bridge, and hand off the processing of the raw image out to a saved RGB image file to Camera Raw running in Photoshop while you continue to edit more images in Camera Raw hosted by Bridge.

Camera Raw Defaults

The role of Camera Raw's default settings in generating Bridge's thumbnails and previews is pretty straightforward. Unless and until you tell it to do otherwise, Camera Raw uses its default settings to build thumbnails and previews for images that Bridge hasn't seen before.

The defaults aren't sacred, or "objectively correct," or "as shot"—they're simply one arbitrary interpretation of the raw image. There's no such thing as an "as shot" interpretation any more than there's a single correct way of printing a negative. One of the most common complaints I hear about Camera Raw is that the images don't look like the in-camera JPEGs or the default conversions from the camera vendors' raw converters. Invariably, those making the complaints haven't bothered to actually *use* Camera Raw's controls—they just use the defaults.

Part of the problem is likely that Camera Raw gives you access to all the data the camera captured. Many proprietary raw converters bury shadow noise by applying a strong contrast curve that maps most of the shadow data to black. A good many also boost the saturation. Camera Raw's default interpretations tend to be conservative by comparison, with flatter contrast and more open shadows. I prefer this approach because it makes it easier to see just what usable data the image contains, but that's only my personal preference. More importantly, Camera Raw offers sufficient control over the interpretation of the image that with a very little practice, you can get just about any "look" you want.

So if you consistently find that Camera Raw's default settings produce images that are too dark, too light, too flat, or too contrasty for your taste, *change them!* It only takes a very few minutes. I'll discuss Camera Raw's controls, and how to use them—including changing the defaults—in the next chapter, *Using Camera Raw*.

Adobe DNG Converter

Adobe DNG Converter is a handy standalone application that converts camera vendors' proprietary raw images to Adobe's new .DNG format. It's entirely up to you whether or not you choose to use it—Camera Raw, Bridge, and Photoshop are equally happy with proprietary raw files or .DNGs—but the following discussion may help you decide. My personal bias is that the advantages of .DNG outweigh any disadvantages, and using .DNG sends camera vendors an important message about the future of digital photography, but it *is* a bias. The choice is really up to you.

To .DNG or Not to .DNG

Adobe developed the .DNG format in response to a very real concern over the longevity of digital raw captures. One of the major problems with camera vendors' proprietary raw formats is that they're undocumented—only the camera vendor knows for sure what they contain. I bear no ill will to any camera vendor, and I hope that they'll all be around for decades to come, stimulating competition and innovation, but it's not beyond the bounds of possibility that one of today's vendors may not be around five, ten, or fifty years hence. The question then becomes, what happens to all the images locked up in a defunct vendor's proprietary raw format?

Archival format. A kindly third-party vendor *may* decide to take on the work of reverse-engineering the format to continue support (and let's all give a huge vote of thanks to Thomas Knoll for the huge amount of work he's already done in decoding all those proprietary raw formats), but absent that, you'll be stuck with old, non-upgradable software at best, and gigabytes of unreadable data at worst.

The .DNG format provides insurance against obsolescence because unlike proprietary raw formats, it's an open, documented format whose file spec is readily available, so any reasonably talented programmer can build a converter that reads .DNG files without any reverse engineering, even if Adobe should, perish the thought, no longer be in business. So unlike the proprietary raw formats, .DNG can fairly lay claim to being an archival format.

The first release of Adobe DNG Converter had one potential flaw—it stripped any private metadata that it couldn't understand. While the only things that could possibly use this metadata were the vendors' proprietary raw converters, few of us like the idea of losing something in the translation. Subsequent releases of Adobe .DNG Converter address this problem by letting you embed a bit-for-bit copy of the proprietary raw file that can be extracted at any time, at the cost of a somewhat larger file size.

Metadata-friendly. A related issue is that, since proprietary raw files are undocumented, Adobe treats them as read-only files, since writing to them runs the risk of overwriting potentially useful data. So when you add metadata to an image, it gets stored in either a sidecar .xmp file or in one or another application's database.

In contrast, since .DNG is a documented file format that's designed to hold metadata, it's safe to write metadata directly into the .DNG file, eliminating the need for sidecar files and thus simplifying the workflow. As with proprietary raw formats, the actual image data in the .DNG never gets changed. If you work for a client who demands that you submit raw files (as does National Geographic, for example), it's safer to hand off a .DNG file with all metadata embedded than it is to submit a proprietary raw along with a sidecar file that may get discarded.

Third-party support. As an open format, .DNG is much easier for third parties to support than are the proprietary raw formats. Asset managers and cataloging applications that support .DNG automatically gain support for every camera supported by Camera Raw. Thumbnails and previews can be stored directly in the image file so applications don't have to spend time building their own, and there's no possibility of the image losing its metadata because the metadata is right in the image file.

More specialized applications are also beginning to support .DNG. For example, DxO Labs' DxO Optics Pro, which provides sophisticated corrections for distortions introduced by many common lenses, now offers the ability to write the corrected images as .DNG files, so you can apply lens corrections, write them to .DNG files, then process the images in Camera Raw.

Ultimately, the proliferation of proprietary raw formats serves no one's interest, not even that of the camera vendors (although at the time of writing, many of them still seem to need convincing on this point). The

.DNG spec is flexible enough to let those vendors who insist on doing so put private, secret metadata tags into their images, while ensuring that those images will still be readable by any .DNG-compliant converter.

Downsides. The major disadvantage to using .DNG is that .DNG files will likely not be readable by your camera vendor’s proprietary converter. If you typically use Camera Raw on some images and a proprietary converter on others, it’s fairly inconvenient to extract the proprietary raws from the .DNG file, so you’ll want to either keep versions of the images in both formats, or forego the advantages of .DNG. If you don’t use the camera vendor’s software, this disadvantage doesn’t apply.

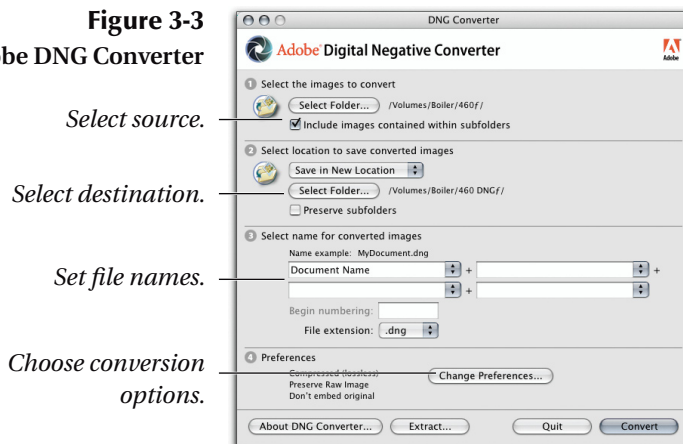
The second disadvantage is that when you choose the “bullet-proof” option that embeds the entire proprietary raw file in the .DNG, your files will be somewhat larger than the original proprietary raws.

My own solution has been to archive one copy of each image as .DNG-with-raw-embedded to long-term storage, while using the smaller, losslessly-compressed .DNG option for my working files. An equally viable option is to archive a copy of the original raws (bearing in mind that they’ll only be readable as long as the camera vendor chooses to support them) while using .DNG for working files.

Using Adobe DNG Converter

Adobe DNG Converter is a very simple application. It’s not the only way to convert proprietary raws to .DNG—you can save .DNGs right out of Camera Raw—but it’s a very convenient way to process large numbers of images into .DNG format. See Figure 3-3.

Figure 3-3
Adobe DNG Converter

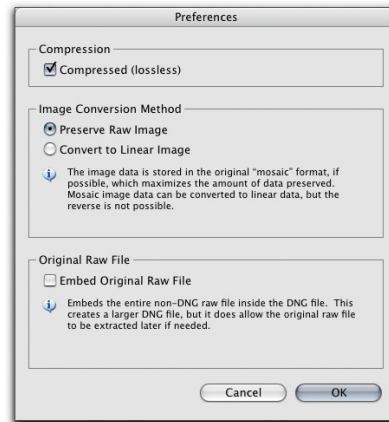


The main screen lets you set the following options:

- ▶ You can choose a source folder full of raw images for conversion, and optionally include subfolders;
- ▶ You can choose a destination, either in the same location as the source raw files or in a new folder, with the option to preserve the subfolder organization;
- ▶ You can rename the converted images with the same options as the Batch Rename command in Photoshop and Bridge.
- ▶ If you have previously saved .DNG files with the original raw file embedded, you can extract the original raw file.

To change the conversion options, click the Preferences button to open the Preferences screen—see Figure 3-4.

Figure 3-4
Adobe DNG Converter
Preferences



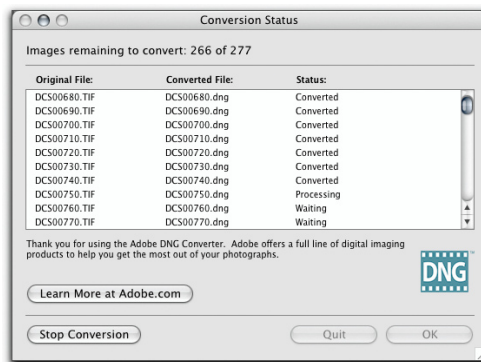
The conversion options are likewise very straightforward.

- ▶ **Compression (lossless)** applies lossless conversion. Unless you own stock in a hard drive vendor, I can't think of a reason to turn this off.
- ▶ **Preserve Raw Image** preserves the raw pixel data in its original mosaic format. Use this option if you want to be able to take advantage of all Camera Raw's features. You can convert a .DNG saved this way to a linear .DNG, but not vice-versa.

- ▶ **Convert to Linear Image** saves a demosaiced version of the image. This option is mostly useful if you want to use a .DNG-compliant raw converter other than Camera Raw on images from a camera with a mosaic pattern that isn't supported by the raw converter. Linear .DNGs are much larger than mosaic-format ones, so if you're thinking you can save processing time by converting to linear .DNG, think again—any savings in processing time are offset by the extra time needed to read the data.
- ▶ **Embed Original Raw File** embeds a bit-for-bit copy of the original raw file in the .DNG, from which it can be extracted at any time. I use this option for my archived images just in case I need to retrieve the original raw files at some future date, but I turn it off for my working files to save space, because embedding the original raw file increases the file size considerably.

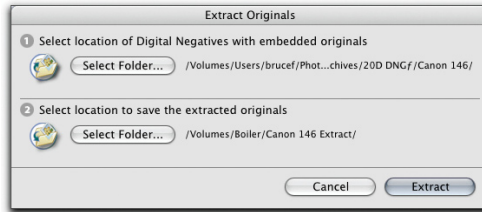
When you click Convert, Adobe DNG Converter goes to work converting the selected raw files to .DNG format using the options specified in Preferences, and displays a status window that shows the progress of the conversions—see Figure 3-5.

Figure 3-5
Adobe DNG Converter
status window



To extract the original raw files from .DNGs with the original raw embedded, click Extract, which opens the Extract Originals dialog box. Here you can specify source and destination folders for the extraction. When you click Extract, Adobe DNG Converter extracts the original raw files from the .DNGs. See Figure 3-6.

Figure 3-6
Extract Originals



At the time of writing, the main benefit offered by .DNG is the elimination of sidcar files, and it's entirely up to you whether or not you want to use it, though it's very easy to do so. There's no particular urgency to adopting .DNG, but if you care about the longevity of your images, I do recommend archiving at least one copy of each image in .DNG format, and if you want to be able to retrieve the original raw files, embed the original raw in the .DNG. That way, you've preserved the raw image in a format that's documented and hence is likely to readable as long as humans can still read.

Photoshop

Photoshop is an extremely powerful and very deep application that has grown in power and, it must be said, complexity for over a decade (which is something close to a century in software years). Legions of scribes, myself included, have penned millions of words on its capabilities and quirks. This isn't, however, a book about Photoshop. Instead, it's a book about how to get raw images into Photoshop as quickly, as efficiently, and in as close to an optimal state as possible.

In short, it's mostly about all the things you do *before* the image lands in Photoshop.

Automation and Actions

The one key area of Photoshop that this book covers in some depth is automation, and especially Photoshop Actions. As a digital photographer, you will routinely be called upon to push amounts of data through your system that only a few years ago would have given NASA nightmares. The hardware you use to do so will doubtless get faster, but one key component in the system, the wetware, the part that occupies the space between the

keyboard and the chair, will almost certainly continue to operate at the same speed it has done for the past 20,000 years or so.

Exploiting the power of Photoshop Actions to automate repetitive tasks isn't just good sense—it's a key survival strategy. Writing Actions isn't without its quirks and challenges, but if you're saying to yourself "but I'm not a programmer," rest assured that writing Actions is like programming the way driving to the grocery store is like competing in the Dakar Rally.

Any repetitive Photoshop task is a candidate for automation. My copy of Photoshop spends a lot of time doing its own thing, and my hope is that by the time you've finished this book, yours will too. It's rare for me to open an image directly from Camera Raw into Photoshop—I almost invariably apply my raw edits in Bridge, then use batch processes to open the already-edited images into Photoshop.

The batch processes may also include things like sharpening routines, adding adjustment layers, and renaming and saving the files so that when I do get them into Photoshop, the layers are there ready for me to go to work on localized corrections, and the files are already named and saved in the format I need so that when I've done my work, I can simply press Command-S. Automating simple things like file renaming, or saving in a specific format with the necessary format options, only saves a small amount of time on any one image. But doing so brings at least three benefits:

- ▶ Small savings on one image add up to significant savings on dozens or hundreds of images.
- ▶ My brain likes being liberated from repetitive drudgery.
- ▶ Automated processes don't make mistakes!

I'll talk about the ways we can make the computer do our work for us in detail in Chapter 9, *Exploiting Automation*.

Putting It All Together

Collectively, Bridge, Camera Raw, Photoshop and, optionally, Adobe DNG Converter provide a powerful system for managing and converting raw images. As you go through the following chapters which examine each component in detail, keep this bigger picture in mind, because it provides the context that makes the details relevant.

- ▶ Raw images don't change. Instead, they're like negatives. You can interpret them many different ways during the conversion to an RGB image just as you can make many different prints from the same negative.
- ▶ Bridge is the tool for sorting and selecting images, and for adding and editing metadata. The thumbnails and previews you see in Bridge are generated by Camera Raw using the last settings you applied to the image, or (if you haven't edited the image) the Camera Raw default settings for the camera model from which the image came.
- ▶ If you don't like Camera Raw's default settings for a particular camera model, you can and should change them to ones that are closer to your taste.
- ▶ Editing raw images and converting raw images are logically separate operations, though you can combine them.
- ▶ If you have 100 raw images from which you need to produce, for example, a high-res TIFF and a low-res JPEG, the most efficient way to do so is to first edit the images in Camera Raw hosted by Bridge, then run batch operations hosted by Photoshop to open the raw images, using the Camera Raw settings you've applied, and save them in the appropriate formats.

With the bigger picture this chapter presents in mind, it's time to drill down in detail on the Camera Raw plug-in, which is the topic of the next chapter.