CHAPTER 1

GETTING THE MOST FROM YOUR DIGITAL CAMERA

Today's digital cameras are both rich in features and highly capable of helping you get good photos when used in one of many auto modes — without requiring you to know much about your camera or photography. However, learning how to use your digital camera and its many features enables you to get even better photos and do things you never even imagined could be done. Technique 1 helps you get familiar with your camera. You then find out how to select important image-quality settings in Technique 2. Technique 3 shows you how to select an appropriate shooting mode. Being able to review photos is a significant benefit of using a digital camera, and Technique 4 shows you how to get the most from the review features on your camera. Technique 5 helps you figure out how to change settings quickly so that you don't miss getting the photos you want due to having the wrong settings.

1 LEARNING ABOUT YOUR CAMERA

1.1

ABOUT THE IMAGE

"Backdoor to the Club" Nikon Coolpix, hand-held, zoom set to 50mm (35mm equivalent), f/2.6@1 second, ISO 320.

If you were to come upon the scene shown in the photo in Figure 1.1, which shows the backdoor to a nightclub in Richmond, Virginia, what camera settings would you use? If you did not have a tripod, would you even consider taking a photo of this scene, which has such a low light level? Would you trust automatic focus to focus in the dim setting? Would you use a low or high ISO setting? What exposure mode would you use? Would you consider using other features your camera offers, such as noise reduction, exposure bracketing, a built-in flash, or maybe even a vivid image effect? Or would you simply shoot in auto mode and hope for the best?

Because you're reading this book, I'd bet that you're fairly serious about photography, and about taking the best photos that you can take. Many factors contribute to your ability to get the photos that you want. The features your camera has, when to use them, and how to properly use them are three of the most important things you can learn to improve your picture-taking skills.

Although this technique twice recommends the obvious — that you read the written documentation that came with your camera — it also provides a valuable digital camera feature and specification checklist that can help you learn more about your digital camera. By now, you may be thinking to yourself, "Thanks, but I'll just skip this technique and move on to the next one!" However, please don't — you'll have much more success with the rest of the techniques if you spend just an hour doing the exercises that are suggested in this technique.

Incidentally, the photo shown in Figure 1.1 has been edited with Photoshop Elements. The intent of the editing was to further increase color saturation and overall contrast. Because the camera was hand-held (instead of being mounted on a tripod), the photo is slightly out of focus, making the image soft, which adds to the dreamlike feel of the photo. When printed with an Epson Photo printer on a fine art paper such as Epson's Archival Matte paper, this photo made a nice print.

STEP 1: READ (OR GLANCE THROUGH) YOUR MANUAL

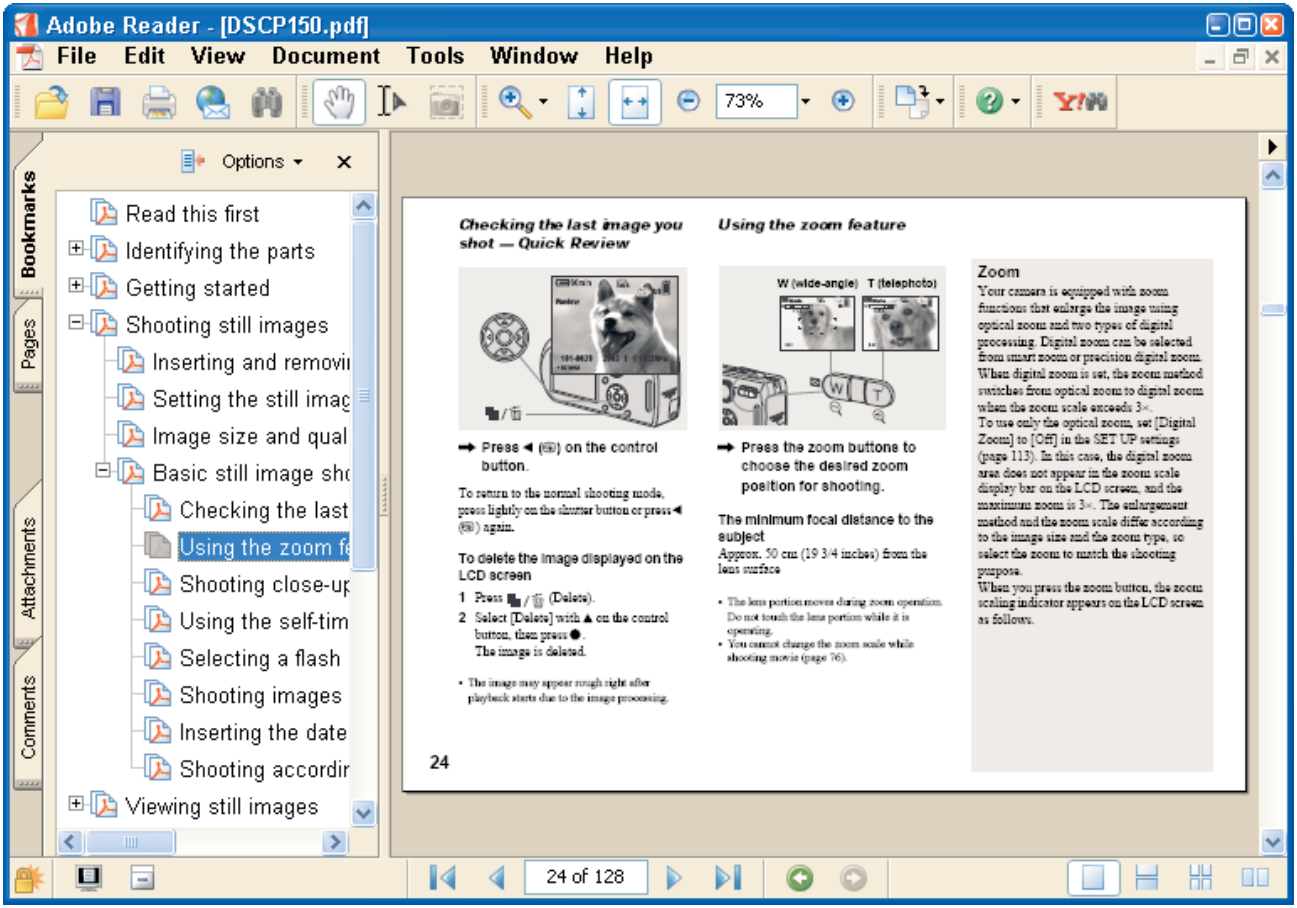
Most digital camera users have proven over and over that they can take good pictures without reading most of the written documentation that came with their camera; some never read any of it at all — ever! Not reading the documentation that came with your camera when you get the camera is okay. Not reading it at all just means that you can't take advantage of the many cool and useful features your camera offers. Not only does reading the manual help you to more fully enjoy your camera, but it also enables you to take better pictures. You will quite likely be more than compensated for your investment in time because your effort may help you avoid missing good shots of those important events that you get only one chance to shoot.

If you're somewhat familiar with cameras, when you first get your new camera, you can just go shoot with it. You bought it for taking pictures, so take them. After you have taken a couple dozen pictures so that you have a basic understanding of what your camera can do and where some of the controls are, then read your manual. Using your camera first helps make reading the manual easier and more useful than if you were to just pick up the manual and read it.

As the cost of printing manuals increases and as product life cycles shorten, digital camera vendors are increasingly providing some or all of the written documentation in electronic form on a CD-ROM or on their Web site. To read the documentation, you usually need to have Adobe Acrobat Reader installed. This free software application is available at `www.adobe.com` and is more often than not included on the CD-ROM provided by your camera vendor. After installing Acrobat Reader, you can read the documentation on your computer screen. Figure 1.2 shows a screenshot of Acrobat Reader displaying a page from the manual for a Sony Cyber-shot P150 digital camera.

STEP 2: SHOOT A FEW PHOTOS

After you have had a reasonably good read of the documentation that came with your camera, shoot a few more photos. Take a few photos of nearby objects, such as your foot, the pet at the other end of the room, books on the bookshelves, or any people who may be walking by. Try using a few different settings. Flip through the menus on your LCD monitor if you have one. Take a photo with a built-in flash if you have one. If you're inside, walk outside and take a few more photos.



1.2

STEP 3: COMPLETE THE CAMERA FEATURES AND SPECIFICATIONS FORM

If you're just getting started with photography, if you have only used a simple point-and-shoot camera, or even if you have a reasonable amount of experience with your digital camera, you're likely to find filling out the form shown in Figure 1.3 to be useful. Notice that on the right side of the form is a column for writing the page number of the manual where you can find the feature discussed. Completing this form helps you learn about the features your camera offers as well as any limitations it has.

TIP

If your camera vendor provides an electronic version of the documentation, for example PDF or DOC file format, consider printing out pages that contain key information. Menu settings, information displayed on the LCD monitor, or descriptions of shooting mode icons will be of interest. Place these pages in your camera bag for easy reference. If you just have printed documentation, check the vendor's Web site: You may be able to find electronic versions along with updated documentation, drivers, or additional software.

Digital Camera Features / Specifications Checklist

Manufacturer: _____ Model #: _____ Page #

Serial Number: _____

Image Characteristics

Maximum Resolution: _____ x _____ pixels Megapixels: _____ _____

Other Resolutions: _____, _____, _____, _____ _____

Compression Level settings: o Yes o No Settings: _____ _____

Image Formats: JPEG quality settings: _____ _____
TIFF: o Yes o No 16-Bit RAW Acquire: o Yes o No _____

ISO Sensitivity Settings: Auto o Yes o No _____ _____

White Balance Settings: Auto o Yes o No _____ _____

Other Exposure modes (sepia, B&W, etc.): _____ _____

Photo Storage Media

Image Storage Media: o Compact Flash o SmartMedia o Floppy Disk o CD-ROM _____
o Memory Stick o: xD-Picture Card o: Other_____ Maximum Capacity: ___ MB _____

View Finder / LCD

LCD: o Yes o No _____
View Finder: o Yes o No View Finder Adjustment: o Yes o No _____

Image Review

Image Review Modes: _____ _____
Histogram: o Yes o No Playback Zoom: o Yes o No Video Out: o Yes o No _____

Lens

Lens Aperture: o Fixed o Optical Zoom : _____ mm to _____ mm _____

Digital Zoom: o Yes o No Range: _____X to _____ X _____

Shutter speeds: _____ to _____ Maximum Manual Shutter Speed: _____ seconds _____

F-stops: _____ to _____ Increments: o 1/2 o 1/3 o 1 stop _____

Metering

Metering Modes: o Evaluative/Matrix o Center-weighted o Spot o Other: _____ _____
Exposure Compensation: o Yes o No _____
Increments: o 1/2 o 1/3 o 1 Range (Stops): _____ _____

Exposure Modes (auto, shutter-priority, portrait):_____ _____
Manual Mode : o Yes o No _____
Auto Exposure Bracketing: o Yes o No _____

Focus Features

Auto Focus Settings (continuous, 1-point, 3-point):_____ _____

Focal Points: _____ Selectable: o Yes o No _____
Manual Focus: o Yes o No Focus Range: _____ inches to Infinity _____

Macro Mode: o Yes o No Macro Focus Range: ____ inches to ____ inches _____

Continuous Shooting: o Yes o No FPS: _____ _____

Flash

Built-in Flash: o Yes o No Flash Shoe: o Yes o No Sync Socket: o Yes o No _____
Flash Compensation: o Yes o No _____

Flash Modes (auto, red-eye, etc.): _____ _____

Battery

Battery type: _____ Rechargeable: o Yes o No Proprietary: o Yes o No _____

Other Features

Video Mode: o Yes o No Movie Size(s): _____ _____

Movie Clip Maximum Time: _____ seconds Sound: o Yes o No _____

Self Timer: o Yes o No Maximum Shutter Time: _____ _____
Remote Shutter Control: o Yes o No _____

Connection to Computer: o Yes o No _____
Connection Type: o Serial o USB 1.0 o USB 2.0 o USB FireWire _____

Time Lapse Shooting: o Yes o No Panorama Mode: o Yes o No _____

Printer Capabilities: o DPOF o Direct Print o Other: _____ _____
Other Features:

Available Accessories

List optional accessories: _____

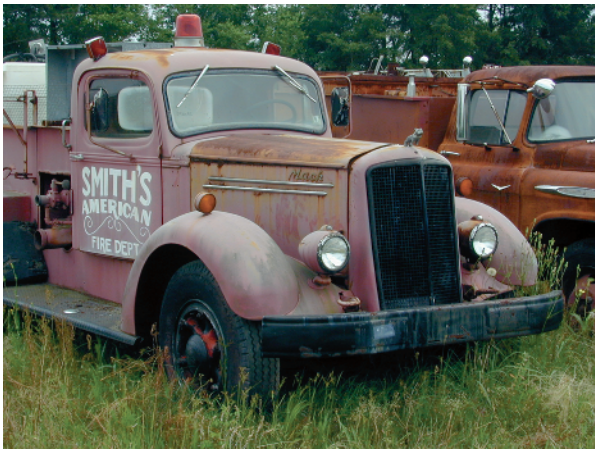
STEP 4: READ YOUR MANUAL AGAIN

"Yeah right," you're probably saying out loud to yourself. "Read the manual again — fat chance!" You're not likely to read the manual again right away, but as you use your camera, or when you have not used your camera for a while, you will find that going back and looking over the manual periodically is useful. Today's digital cameras are complex and feature-rich, and learning how to use all the features takes time and effort. Even if your objective is not to learn all about your camera, a periodic glance at the manual helps you to learn more about those features that you often use.

One of the reasons I enjoy reading manuals is that I always seem to find "surprise" features. Surprise features are features that I didn't know about, but that can help me take great photos in new ways. I have known many people who have had a digital camera for months and were not able to get the photos that they wanted. When I point out a feature that they have on their camera — that makes it easy for them to get the shots they always wanted — they are both surprised and pleased! That's all you'll hear from me for now about reading manuals.

Later in this chapter and throughout the book, you find out more about the features listed on the form shown in Figure 1.3 and how to use many of them. For now, just concentrate on getting the correct information on the form and note the page number where you can find more information in the documentation that came with your camera.

CHOOSING IMAGE-QUALITY SETTINGS



2.1

2.2

ABOUT THE IMAGE (2.1)

"Smith's American Fire Trucks Department" Nikon Coolpix, zoom set to 94mm (35mm equivalent), Fine image-quality setting, f/9.3@1/99, ISO 80.

In Technique 1, you learned about a multitude of features that are available on your digital camera. Many of these features are user-controlled, and depending upon what you want to shoot, how you plan on using the images, and where you shoot, one setting can be a much better choice than another. In this technique, you find out how to choose the most appropriate setting for seven of the more important and common image-quality settings as well as how to make sure your digital photo storage media is ready to use to take photos like the ones shown in Figures 2.1 and 2.2.

As you go through the steps in this technique, consult the form you completed in Technique 1 and the documentation that came with your digital camera. Be aware that you may have a digital camera that does not have one or more of the settings mentioned in this technique. Also, you may find that your camera has useful settings not mentioned here that you can set, too.

STEP 1: SET DATE AND TIME

The world is full of VCRs set to the wrong time and date. They are owned by people who either don't know how to set them, or by people who don't need to set them. Unlike VCRs, where a correct date and time is not often needed, setting the date and time correctly on your digital camera is more than worthwhile.

Each time you take a picture with your digital camera, a digital image file is written to the digital photo storage media in your camera. This file contains the picture, plus it contains *metadata*, which is a fancy term that means data or information about the picture. Most digital camera vendors conform to an industry standard; the cameras write this metadata in the EXIF format in each picture file.

In addition to writing precise time and date data, most cameras also write dozens of camera settings used for each photo, which means you can read these settings while the digital photos are in your camera, or later when you open up an image file with any one of many software applications that allow you to read the f-stop, shutter speed, exposure mode, and whether you used a flash, as well as lots of other information that you can use to learn how to shoot better photos. EXIF data can also become useful when you begin managing your digital image collection with an image management application such as Photoshop Elements or ACD Systems' ACDSee (`www.acdsystems.com`).

To read EXIF data, open the image in an application that can read EXIF data. For example, when you view a file in the Photoshop Elements File Browser, shown in Figure 2.3, Elements displays EXIF data in the Metadata tab. You can also view EXIF data by choosing **File ➢ File Info** in Photoshop Elements, which opens the file information dialog box shown in Figure 2.4.

If you set the date and time correctly, you can sort all your photos by date and time, or even search for photos taken on a specific day and at a specific time. If you don't set the date and time on your digital camera, you'll miss out on this valuable capability.

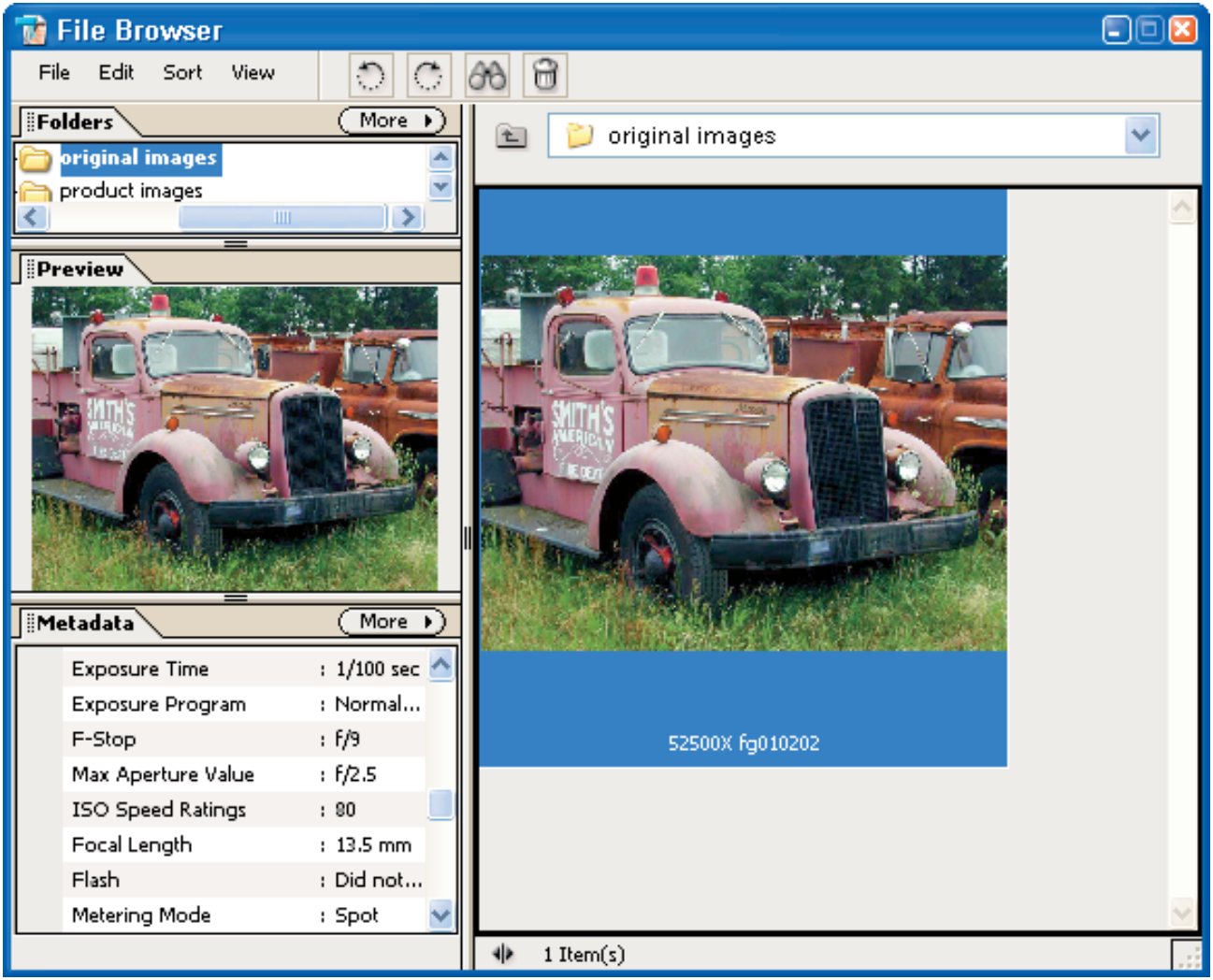
STEP 2: SET IMAGE RESOLUTION

In digital photography, not only are you faced with the traditional trade-offs between shutter speed and aperture size, but you also must choose from a number of settings that determine file size (which ultimately is a trade-off between files that take less space to store and less computer processor cycles to edit) and image quality. The five major factors determining image file size are image resolution, image format, compression level, ISO setting, and the subject. You can control the first four of those five factors with user-selectable settings that allow you to optimize image file size with image quality to meet your needs.

Almost all digital cameras offer user-changeable settings for image resolution. For example, a typical 7-megapixel digital camera will have an approximate maximum image size of 3,072×2,304 pixels. The same camera will have image resolution settings of 2,592×1,944 pixels or 2,048×1,566 pixels. Table 2-1 shows each image resolution setting, the total pixel count, the type of file, and the optimal print size.

So, the question remains: What image resolution setting should you use? The answer depends entirely on what you plan to do with the image, how much in-camera storage and computer storage space you have, and how important image quality is to you. Image resolution is costly in terms of file size — the higher the resolution, the more space required to store a single digital photo, and the more computer processor cycles required to edit it.

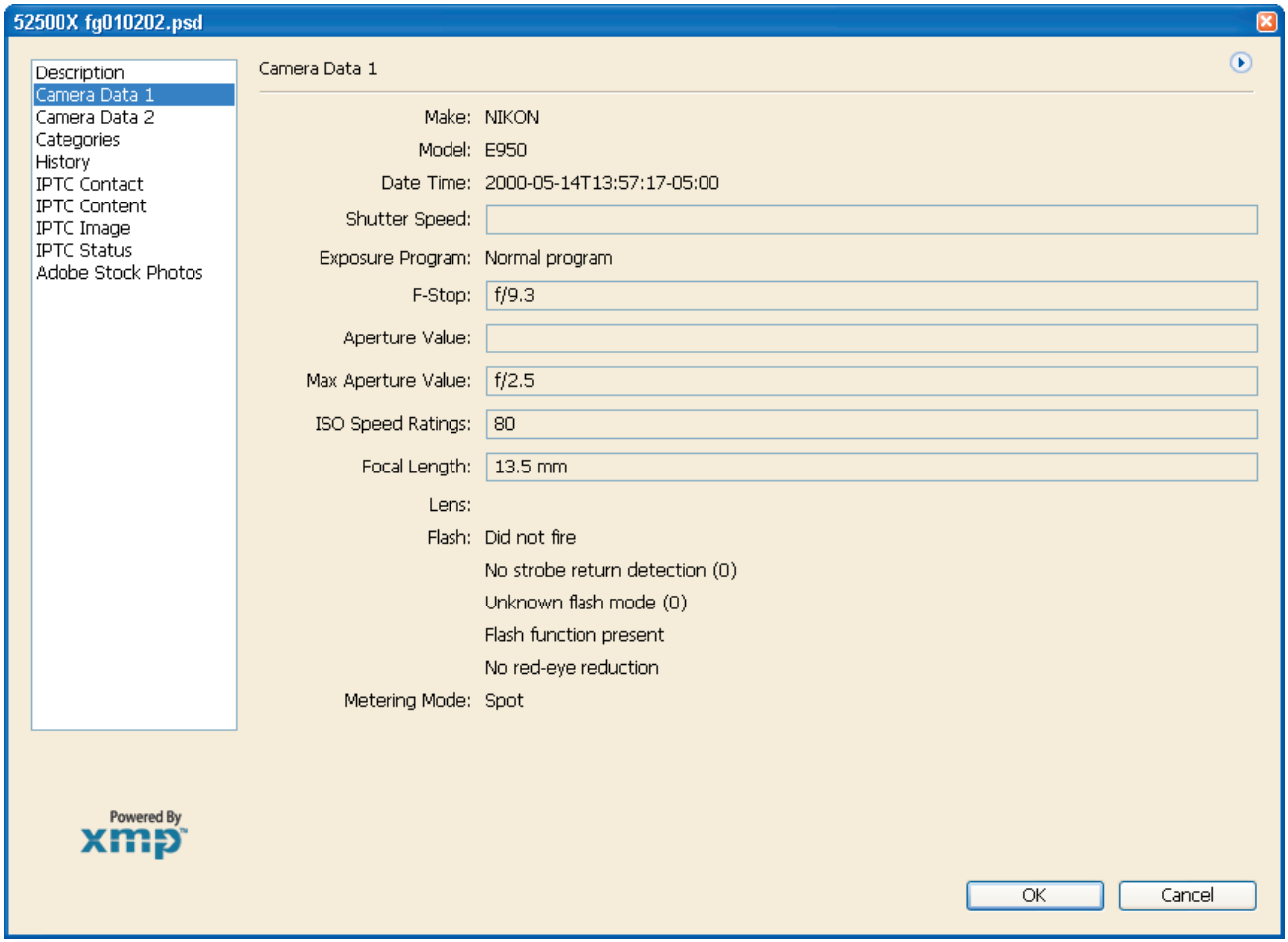
To make the best and largest print possible, always use the highest image resolution setting your camera offers. If you have a 4- or 5-megapixel or larger camera, you may not always want to use the highest image



2.3

resolution setting if you intend to print only 4×6 photos. Choosing a lower image resolution allows you to get more images on your digital photo storage media, and editing these smaller image files requires less computing power than larger images do.

Additionally, smaller images require less storage and backup space on your hard drive or removable media. So, when possible, a lower resolution setting is a good choice. To find out more about the different resolutions and their resulting file sizes, and the number of images that you can store on a specific digital photo storage media card, check the documentation that came with your camera — vendors usually provide a table with this information.



2.4

Table 2-1:

Digital Camera Image Sizes

Image Resolution	Number of Pixels	Type	Output Size
3,456×2304	7.9 million	Large	Large prints of 13×19, 16×20, or larger. Great image detail for complex landscapes and portraits.
3,072×2,304	7.1 million	Large	Large prints of 8×10 to 11×14. Excellent image detail for complex landscapes and portraits.
2,592×1,944	5 million	Medium	Excellent 5×7 or even 8×10 prints.
2,048×1,566	3.2 million	Small	Excellent 4× 6 or even 5×7 prints.

One reason against using any image resolution other than the maximum size is that a larger image may allow you to crop an image to show exactly what you want. Figure 2.5 shows a photo of a five-lined skink that was taken with a Canon PowerShot at the maximum resolution of 2,200×1,704 pixels. Although the full-size image makes the skink look very small, the square in the figure shows that the skink and all of his beautiful blue tail won't fit in an 800×600 pixel image (see Figure 2.6), which is a very large image for a Web page or for display on a computer screen. If a smaller resolution image had been used, this cropping would not have been possible and the resulting image would feature a tiny skink.

With that information as a guide, set your image resolution on your camera to meet your requirements. You usually change image resolution settings via a menu or button shown on the LCD.

TIP

Using resolution settings of 3 or 4 megapixels can still produce stunning 8×10 inch or larger prints, depending on the quality of the image and image sensor used in the digital camera.

WARNING

After you learn how to change the image resolution setting, be careful! I once drove with a photographer friend for several hours to get to a remote place where we had heard there were some rare butterflies. After several hours of shooting in the hot sun, my friend noticed that he had far more room on his digital photo storage media than he should have had considering the number of photos that he had already taken. A quick look at the image resolution setting showed why. A day earlier he changed the setting to shoot images for a Web page and had forgotten to change the settings to the maximum image resolution. All of his wonderful shots of these rare butterflies were unprintable because he had been shooting 1,536×1,024 pixel images — not nearly enough for the 8×10 prints that he wanted to make. The lesson to be learned is that you should always check your settings before you start shooting.

2.5

2.6

STEP 3: SET FILE FORMAT

Depending on your camera model, you can likely choose from two or more different file formats. Three basic types of file formats are offered on compact-level digital cameras: JPEG, TIF, or a proprietary raw format. The most frequently used format is the JPEG format, which is a compressed file format. To make the image file smaller, a mathematical algorithm is applied that simplifies the image, thereby making it smaller. Simplifying an image also means that there is some decrease in image quality.

Proprietary *raw* formats are file formats that are unique to a single vendor, such as Nikon's nef format, or Canon's crw format. Both are compressed, raw file formats. Unlike non-raw formats, where an image is taken and the camera processes it to get optimal results, a raw format image file is written to the digital photo storage media as it was captured on the image sensor without any additional processing. The advantage to these raw files is that you can use Photoshop Elements, Photoshop, or special software to adjust the original image parameters such as white balance, contrast, sharpening, saturation, and so on. Because both NEF and CRW file formats have the additional advantage of also being compressed files, they take up less storage space than an uncompressed file such as TIF, which is a common uncompressed file format found on digital cameras.

On those occasions where you want to maximize image quality and you have plenty of digital photo storage media space, you should select "raw," if it is available on your digital camera, or TIF format. Besides being compressed, raw and TIF use 16-bit images instead of 8-bit images — meaning that they contain much more picture information, which can be useful if you edit the image with an image editor that can work with 16-bit images. The downside of using a proprietary format such as raw is that these files are typically larger than JPEG files.

So, pick the JPEG format unless you're seeking to get the best possible image quality that your camera can produce, and you plan on and are prepared to use an image editor to edit a TIF or proprietary image file. Be aware that the choice between a JPEG format, raw, and an uncompressed format like TIF is a decision between a relatively small file and a much larger file. Image quality can be better but not necessarily significantly better.

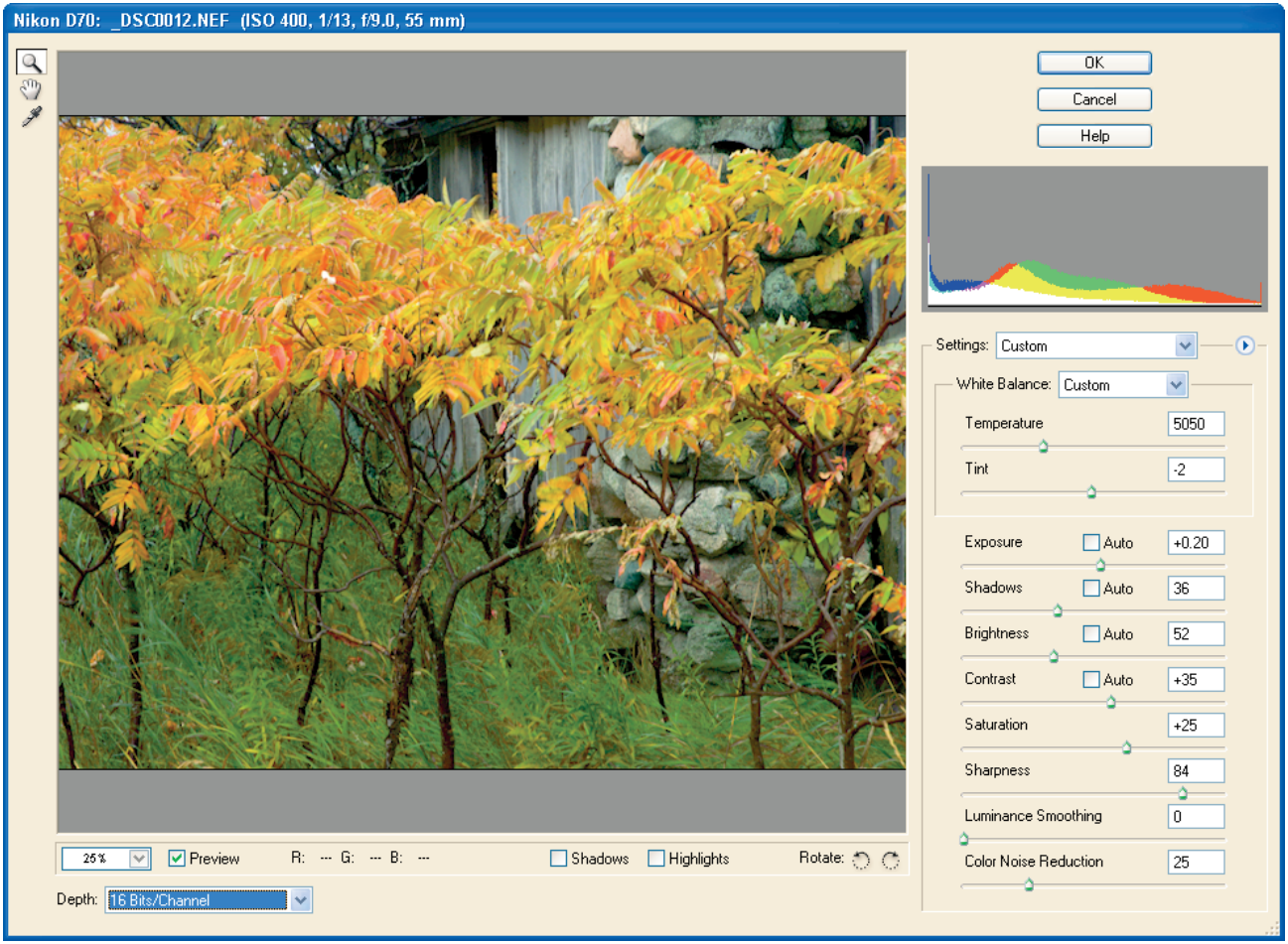
For example, a photo of trees in front of an abandoned farm house shot with a Nikon D70 using the best (least compressed) JPEG setting is 3MBs. The same image shot in Nikon's raw format (nef) is 5MBs; when it's opened up as a 16-bit image, it's a whopping 35.2MBs! The abandoned farm house raw file has been converted from its nef format using the Photoshop Elements Raw converter shown in Figure 2.7. Unless you're using the Raw conversion software supplied to you by your camera manufacturer or Photoshop Elements, you won't be able to open the nef file.

STEP 4: SET COMPRESSION LEVEL

If you chose the JPEG format in Step 3, you may want to check to see whether your camera allows you to choose different compression levels. A moderate amount of JPEG compression can dramatically reduce file size while only slightly reducing image quality; in fact, you may not notice any image degradation at all relative to a noncompressed TIF or raw format. As compression level increases, file size decreases, as does image quality to some extent. Once again, you're faced with the trade-off between file size and image quality. On those occasions where you have limited photo storage capacity, you may want to increase the compression level so that you have room to take more photos. Otherwise, you should use a setting that applies the least amount of image compression.

STEP 5: SET ISO SENSITIVITY

Technique 3 explains the trade-offs between shutter speed and f-stop, two of the three variables that determine the amount of light that exposes the image sensor (the equivalent counterpart to film in a film



2.7

camera). The third variable is the ISO setting, which in earlier days was known as the ASA film speed. You could then, and you can now, still purchase film that has ISO (or ASA) ratings from 50 to 800 or even 1,600 or 3,200. The higher the ISO rating, the more sensitive the image sensor is to light. Changing the ISO sensitivity setting is like so many of the other settings on a digital camera — it offers trade-offs, some of which you may like, and some, depending on what you want to achieve, you may not like. The lower the ISO sensitivity (50 or 100), the less digital noise (the equivalent to *grain* when using a film camera) your photos will have. As the ISO rating goes up, your photos will have more digital noise.

You can make a decision on what ISO setting to use by answering these four questions:

- Do you want to avoid having digital noise in your photo, or might it be considered a feature of your photo?
- Does your scene or subject have enough light to use a low ISO setting?
- How much digital noise does your digital camera create at different ISO settings?

- Can you stop movement in the image and shoot without camera movement to avoid blurring the image, or is an intentional blur with a lower ISO setting something that you want?

Before making a final decision on which ISO settings are too grainy for your photos, take a few shots with different ISO settings and compare them yourself. After you've answered these questions, you'll know what ISO setting to use.

STEP 6: TURN ON FILE NUMBERING

One more useful feature many digital cameras offer is an automatic file (and sometimes folder) numbering feature. You realize how valuable this feature can be after you start storing and archiving your digital photos. If you have the option, I recommend that you set automatic file numbering to "On." When this feature is on, image files will be sequentially numbered — even when you remove the digital photo storage media and use a new one. The camera remembers the number of the last photo regardless of which digital photo image media was in the camera last.

If you don't have or don't use this feature, you will find that you have files with the exact same filename! Each time you remove a card and download the images to your computer, the digital camera starts numbering at 1 again. This means that you have to rename files if you want to put them in the same folder with another file with the same name. Additionally, sequentially numbered files just make keeping track of when you shot particular photos easy.

STEP 7: SET IMAGE SHARPNESS AND CONTRAST

Digital photos are inherently "soft" (as opposed to being "sharp"), because the image is represented by pixels, or "dots," instead of a smooth tonal range as in analog or traditional photos. But that's okay because you can sharpen an image and increase contrast in many ways. You can sharpen a photo by editing it with an image editor such as Photoshop or Photoshop Elements, or if your digital camera has an in-camera sharpening process, you can turn it on to increase the perception that an image is sharp. Likewise, you may find your digital camera has an in-camera contrast feature, too.

TIP

Generally, you should use the lowest ISO setting possible to get the most "digital-noise-free" and highest-quality photo that can be taken with your camera. The use of a tripod can help you to use a lower ISO setting by allowing you to shoot with a slower shutter speed that allows a lower ISO rating. Digital noise is not always bad: If you can't avoid it, use it as a design feature. Many photographers intentionally use high-ISO-rated settings or film speeds to add grain to their images.

Before you use either of these features, you need to carefully consider how you intend to use your photos, and you ought to experiment with the features before using them to shoot photos for an important event. If you don't plan on using an image editor to sharpen your photos, you may find that the sharpness and contrast features in your camera help you get better prints when you print on some printers. If you plan to use an image editor to edit your photos, I suggest that you not use either of these features because you'll have much more control over your image in the image editor.

STEP 8: FORMAT DIGITAL PHOTO STORAGE MEDIA

The prior seven steps discussed the many important settings that you need to set before you begin shooting. Besides taking care of these and possibly other settings, you also ought to consider formatting your digital

photo storage media in your camera — formatting your memory cards (after you have downloaded previous images and backed them up) is the preferred method of preparing memory cards for use. Remember, formatting your memory cards erases all images remaining on the card.

If you use a digital photo storage media reader to download your digital photos to your computer, the media card appears as one more "hard drive" to your computer's operating system. This means that you can rename a folder or images, delete or add files, or even format your photo storage media card with your computer. However, if you use your computer to add, change, or delete files on your photo storage media card, your digital camera may not recognize these files or changes or possibly may not even be able to read and write to the media. After you download photos to your computer, you should format the photo storage media card with your digital camera by selecting **Format** in one of the camera's menus. This formatting ensures that your camera has access to all the storage space contained on the media.

WARNING

You should always format your digital photo storage media with your digital camera. This is the best way to make sure that your media is able to store your photos as you and your camera expect. Making changes to or formatting a photo storage media card with your computer can cause problems that could cost you either storage space or lost photos. To prevent any problems and to keep your digital photo storage cards ready for recording, format them with your digital camera.

CHOOSING AN APPROPRIATE SHOOTING MODE

3.1

3.2

ABOUT THE IMAGE (3.1)

"Old Leather Boots" Nikon Coolpix, hand-held, 53mm (35mm equivalent), Fine image-quality setting, f/2.9@ 1/51, ISO 80.

If you came upon the old leather work boots shown in Figure 3.1, or the frog shown in Figure 3.2, what shooting mode would you use? Would you select one of the automatic modes, such as shutter priority or aperture priority? Or would you choose one of the other modes your camera offers? In this technique, you learn how to choose from among the various exposure modes your camera offers to get a photo that matches your vision of the photo you want.

STEP 1: DETERMINE OBJECTIVES

Before you can choose an appropriate exposure mode, you must first determine what you want the photo to look like. It sounds simple, but visualizing how a photo should look before you take it is a skill that must be acquired. Those who have this skill take better photos than those who don't. If you don't have it yet, don't worry; keep reading and keep shooting.

All cameras (digital or film) expose either an image sensor or film with light. Light entering the camera is controlled in three important ways: the amount of time the shutter is open, the size of the lens opening, and the ISO setting. The role of the ISO setting was discussed earlier in Technique 2. The larger the lens opening, the faster the light exposes the image sensor or film. The corollary is the smaller the lens opening, the longer the shutter must be open in order to allow the same amount of light in to expose the sensor or film.

The size of the lens opening (or aperture) is referred to as the *f-stop*. Most compact-level digital cameras have f-stops ranging between f/2.0 and f/11.0. Understanding f-stops can be a bit confusing because the number is actually the denominator of a fraction with 1 as the numerator. In other words, f/2.0 is really 1/2.0 (or 1/2) and f/8.0 is really 1/8.0 (or 1/8). These fractions represent the opening size; so, f/2.0 is a larger opening than f/8.0.

NOTE

Larger aperture numbers (f/8.0 or f/11.0) result in more depth of field than smaller aperture numbers (f/2.8 or f/4.0). Longer shutter speeds (1/60 or 1/30) are more likely to be blurred than shorter shutter speeds (1/250 or 1/400). When you're shooting low-light scenes, increasing the ISO setting (say, from 50 ISO to 200 ISO) allows the image sensor to capture more light more quickly, allowing the use of a faster shutter speed, or a smaller aperture setting. This increased ISO setting increases the amount of digital noise. These are the fundamental trade-offs of all cameras, film or digital.

When thinking about this concept, you may wonder why photographers care so much about which combination of f-stop and shutter speed they use if different combinations result in the same level of light entering the lens. Photographers care because a small opening results in more depth of field than a large opening. *Depth of field* is a term that describes the area from near to far that is in focus; in other words, it describes how much of the image is in focus.

Furthermore, because a smaller opening requires that the lens be open longer to get the same amount of light as a larger opening, an image has an increased chance of being blurred if the camera or the subject moves during exposure. In this case, a camera support would be recommended. So, the trick is to get the proper depth-of-field and the desired degree of image sharpness with the available light.

The photo of the old work boots shown in Figure 3.1 is a good example of having to deal with the trade-offs between f-stop and shutter speed — you'll find you can't always choose the settings you want. Because the objective was to have as much of the photo as possible be in focus, the choice of f-stop was near the maximum f-stop available on the Nikon Coolpix, such as f/8.0. However, because no tripod was available and not much light was in the barn where the boots were laying, the smallest f-stop that could be used was f/2.9. This setting was just about the worst setting that could be used to maximize the depth of field, but it worked! If a tripod had been available, the camera could have been set to f/8.0 and the photo would have been entirely in focus.

Figure 3.3 shows a photo of a small frog. The objective here was exactly the opposite of the photo of the old work boots — it was to have as shallow a depth of field as possible. Notice how the right eye of the frog is clearly focused and the left eye and everything further from it is blurred. Likewise, the foreground

leaves are also blurred. Given the chance to shoot this photo again, I would try to shoot with a slightly smaller f-stop (for example, f/8.0 instead of f/4.0) so that both eyes would be in focus. The problem then would have been to hold the camera still enough to avoid causing image blur due to camera movement at the resulting slower shutter speed.

You should also now understand the importance of deciding what your photo should look like before shooting. Otherwise, how can you set the camera settings? You can shoot with an automatic setting, or you can choose your settings carefully for each shot you take. Often, many of photography's trade-offs and limitations make getting the photo that you want challenging and that is why some photographers are better than others. The good ones learn to envision a shot, and choose the best settings based upon the constraints and trade-offs that face all photographers.

With that quick and possibly overly simplistic overview of f-stop and shutter speed, the discussion of the resulting effects that different combinations can have on image blur (due to subject movement or to the photographer's inability to hold the camera still while shooting), and the nuances of depth of field, you can understand the challenges of capturing a photo as you envision it!

3·3

STEP 2: CHOOSE BETWEEN AN AUTOMATIC OR CREATIVE EXPOSURE MODE

In an effort to compete, as well as provide lots of control to users of digital cameras, camera vendors have created a wide variety of different exposure modes. All of these modes fall into one of four categories: automatic, creative, manual, or special.

When you use an automatic mode, the camera chooses both f-stop and shutter speed for you based upon its attempt to optimize exposure for a particular type of subject. Besides choosing f-stop and shutter speed, some automatic setting modes also control the ISO setting based upon the available light, or white balance. They can automatically turn on a built-in flash if it is needed, or make other settings for you automatically. One drawback of using some automatic modes is they do not let you modify some settings such as exposure compensation, automatic exposure bracketing, or the light metering or focus methods. A creative exposure setting allows you to choose either f-stop or shutter speed, and then the camera attempts to choose the other settings for you based upon your initial choice. If there is not enough light, or there is too much light to get a good exposure, your camera may not let you even take a photo! Using a manual setting, you get to set everything yourself, which means that you can do all kinds of creative things like over- and under-exposures without having to fight with the camera in any way.

Special modes include modes optimized for doing panoramas, movies, night scenes, or other special effects. Most digital cameras offer an exposure mode dial like those shown in Figures 3.4 and 3.5. These exposure dials are from a Canon PowerShot and a Nikon Coolpix, respectively.

With all these choices of exposure modes, how do you decide which one to use? Because of the sophisticated and usually accurate light metering on many digital cameras, you can often get excellent results by using one of the automatic modes. Just make sure to pick one that is appropriate for your subject! For example, if you're shooting a portrait and your vision is to have a sharply focused face or faces against a soft blurred background, you can use a portrait mode. Most automatic portrait modes are designed to have a shallow depth of field, which results in a soft background. If you want an even shallower depth of field, then you have to choose another exposure mode that allows you to change the aperture setting.

TIP

One of the advantages of compact-level digital cameras is that they have an extremely deep depth of field — that is, they can be used to take photos of subjects where the entire image is in focus. This is partly due to the small image sensor size. The downside is these same digital cameras are limited in their ability to take a sharply focused subject with a soft blurred background. To get a good idea of how much control you have over depth of field with your camera, try shooting a row of small objects, such as pencils or leaves on a bush, while varying the aperture from the smallest f-stop to the largest f-stop. Try again by varying the distance between the objects and the camera. Using a tripod for this exercise is best, if you have one.

3.4

3.5

If you want to shoot a landscape with everything in focus, try using a landscape mode. Or you can use one of the automatic modes or creative modes that allow you to change the aperture setting, too. The more you learn about the relationships between f-stop and shutter speed, the more likely you are to want to have control over your settings instead of leaving it up to your camera to choose for you.

Before you go on to Step 3, carefully read the pages in the manual that came with your camera that describe each of the exposure modes on your camera. You need to understand what each mode has been designed to do and what settings you can change while in that particular mode.

WARNING

If you're using an automatic (auto) exposure setting, make sure to read the documentation that came with your camera to find out whether auto exposure settings also automatically change the ISO setting. Significantly more digital noise exists in photos taken with the higher ISO settings, such as 400 or 800 ISO. Be aware of whether your camera automatically changes to a higher ISO setting if there isn't enough light. If you want to avoid using these higher ISO settings, use another exposure mode or shoot with a flash.

STEP 3: CHOOSE F-STOP OR SHUTTER SPEED

After you've chosen a specific exposure mode, you may then need to make additional changes to either the f-stop or shutter speed. If you have chosen one of the automatic modes that selects all the settings for you, you may not be able to make any changes. If you have selected one of the creative modes, an automatic mode that allows changes, or the manual setting, now is the time to make changes to the f-stop or shutter speed to get the results you want.

WARNING

One of the common mistakes made by those new to photography is to use one of the creative modes, like aperture or shutter priority mode, and simply shoot without considering what the results will be. Although these modes are automatic, meaning that the aperture priority mode automatically sets the shutter speed, you still have to set the right aperture. Similarly, the same thing applies to the shutter priority mode. You set the shutter speed to be what you want and then the camera sets the aperture to get the right exposure. If you don't choose these settings, you're simply using the setting that the camera was last set on.

4 TAKING AND REVIEWING PHOTOS

4.1 *Original image*

4.2 *Edited image*

ABOUT THE IMAGE

"North Carolina Farm Buildings" Canon PowerShot, mounted on a tripod, 102mm (35mm equivalent), Super-Fine image-quality setting, f/8@1/320, ISO 50.

Being able to take a photo and immediately see it is one of the more significant benefits of using a digital camera. If you want to take the best possible photos, you need to learn about those features your camera offers for both previewing and reviewing photos to assess the technical as well as compositional aspects of your just-taken photo. After you get used to using these features, you'll have one more reason why you want to shoot with a digital camera instead of a film camera!

The photo shown in Figure 4.1 was actually the third of four photos that were taken of the North Carolina farm buildings. Figure 4.3 shows how the camera was set up on a tripod with the LCD monitor set to preview the image of the farm buildings. Each time the shutter release button was pressed, a review screen displayed the image settings and the captured image for two seconds. Several additional shots were taken with different adjustments to the settings based upon the information on the review screen.

To make sure that one of the images was exposed properly, the Canon PowerShot was put in review mode and the exposure histogram (you learn more about this in Technique 11) was examined to determine that the photo in Figure 4.1 was the best shot and that it was exposed correctly. The photo in Figure 4.2 is the result of some basic image editing in Photoshop Elements to improve image contrast, exposure, and image sharpness.

In this technique, you learn how to get the most from the preview and review features your digital camera offers, so that you can take better photos.

STEP 1: SET PREVIEW AND REVIEW FEATURES

Digital cameras have many different features to preview and review photos. There are also many different ways in which you access these features. A *preview* feature allows you to take a look at an image on an LCD monitor before you press the shutter release button and to have a quick visual check of the camera settings and composition.

4.3

A *review* feature allows you to look back or to review an image after the photograph has been taken. Some of the new Minolta and Sony digital cameras have gone one additional step forward — they actually allow you to view "after" image and exposure information before you've taken the photo! This means that you can make all the settings adjustments you want to get the photo you want, before taking a single photo!

Depending on your camera model, the differences between the preview and review features can be substantial. Once again, you should consult the documentation that came with your camera. Look for features that "replay," "preview," or "review" images. Also, check to see whether your camera offers a histogram. I have known many digital camera owners who have had their cameras for months and were not aware of the many useful features that could be used to substantially improve their photos. Don't be a part of this group! Check out your documentation.

Assuming that you have sufficient battery power and that your camera has a review feature, set it to display an image for a couple of seconds after a shot has been taken, as shown in Figure 4.3. This quick review is good enough to get an idea of how close you were to getting the shot you wanted. Usually, these review modes also let you read a few other important camera settings on the monitor as well as the number of photos you've taken and the number that you can take based upon current camera settings. Not every digital camera allows you to preview a photo until you change to a preview mode, which takes you out of shooting mode.

If your camera has a review mode, you should also check to see whether it has alternative review modes. Some are simply views of the image, while other modes show shot information on the screen, too.

WARNING

The use of some LCD monitors can rapidly drain power from batteries. Consider turning off any automatic review features that your camera may have when you need to conserve battery power.

STEP 2: DETERMINE OBJECTIVES AND SELECT APPROPRIATE SETTINGS

Step 1 in Technique 3 discussed the importance of visualizing how you want your photo to look before you take it. After you have decided, you should then, and only then, choose the most appropriate settings to get the shot you want. Selecting focal length, exposure mode, metering mode, aperture, and shutter speed are just a few of the many settings that you are likely to want to set.

STEP 3: COMPOSE IMAGE AND TAKE PHOTO

After you have set all the necessary settings to get the photo you want, you're ready to compose your shot. Most digital cameras offer two ways to view and compose your photo — you can either view the scene on an LCD monitor or through an optical viewfinder.

If your camera has an optical viewfinder, you need to be aware that it may not provide you with an accurate view of the photo that you're taking. Most compact digital cameras with optical viewfinders have what is known as the parallax phenomenon. This phenomenon is due to the physical separation between the viewfinder and the lens. The closer your subject is to your lens, the less your photo is likely to look like the view you see when looking through the viewfinder. Some of the newer cameras have electronic viewfinders, or ELFs. These viewfinders are actually high-resolution LCDs and they show the same image as the LCD monitor.

Optical viewfinders do have two advantages. First, they do not consume battery power like LCD monitors, which can be important if you have limited battery power. Second, viewfinders can often be easier to use in bright daylight because light can wash out the image on an LCD monitor. If you use the viewfinder, you should also check to see whether it has a diopter adjustment to adapt to your vision.

When you've composed your shot as you want it, press the shutter button to take a photo. If you have a preview feature and it has been turned on, you should now be able to get a quick two-second view of the image you just shot.

STEP 4: REVIEW IMAGE AND CHECK SETTINGS

If you want to look more carefully at the shot you've just taken (or earlier shots, too), you probably need to change to a review mode. You usually do so using the same dial that allows you to change exposure settings. Check your documentation to learn how to change to a review mode and to learn about the various review modes that are available. Some digital cameras allow you to view up to 16 small thumbnails on the LCD monitor so that you can quickly find the photo that you want to examine. Many cameras also have options for how much shooting data is displayed on the LCD monitor in addition to the image.

Figure 4.4 shows the detailed review screen in the LCD monitor of the Canon PowerShot. This is just one of two display settings offered on the digital camera. From that screen, you can see that aperture was set to 1/400, f-stop was set to f/8.0, no exposure compensation was used, white balance was set to daylight, metering mode was set to evaluative, image resolution was set to the maximum resolution, and the lowest level of compression was used. You can also read the date and time, plus the image file number and folder number. Equally important is that you can also see the exposure histogram, which gives you excellent insight into how well your photo was exposed (even more so than what you can determine from looking at the image).

TIP

To avoid having to look at a washed-out LCD monitor in bright sun, consider getting an LCD hood. These hoods shield LCD monitors from bright sunlight, allowing you to view your LCD in those conditions. You can find these accessories at `www.hoodmanusa.com`**.**

4.4

To determine whether your image is in focus, check to see whether your camera allows you to zoom in on the displayed photo. A zoom feature not only helps you to check an image to see whether it's in focus, but it also helps you check on subject details such as eyes to see whether they blinked or have red-eye.

As you review your images, you can also delete those that you don't want to keep. Deleting images gives you more space for more photos and reduces the amount of time you spend later when you download your photos to your computer.

STEP 5: SHOOT AGAIN IF NEEDED

After you have reviewed your photos, you can decide whether you have the shots you want. If not, compose your picture again with new settings, and then, once again, press the shutter button to take another photo. If you're not sure you have what you want, try a few other settings and take a few more photos. In Technique 12, you learn about *exposure bracketing* — a great technique for ensuring that you have the exposure you want.

WARNING

Although you may be tempted to review and delete all the photos that you think you don't want while shooting, you may end up tossing out shots that you would like to keep. As useful as the LCD monitors are, they are quite small and you may not be able to see as much as you think you can. Photos that look like they are in focus or exposed may not be. If you have enough space on your digital photo storage media, you're usually better off deleting images on your computer because you can view them full-size on your computer monitor before making any deletions.

CHANGING CRITICAL SETTINGS QUICKLY

5.1 *Original image*

5.2 *Edited image*

ABOUT THE IMAGE

"A Garden Wedding" Nikon Coolpix, hand-held, 103mm (35mm equivalent), Fine image-quality setting, f/3.9@ 1/58, ISO 80.

"The picture of a life-time." "Capturing the perfect moment." "Capturing the decisive moment." These are just a few of the many often-used phrases that vividly refer to the fleeting moment where a photo ought to be taken! So many of the perfect moments for the perfect photo are either missed or are badly taken! Many reasons exist for why the moment was not captured as it should have been. The two most common reasons are that the wrong camera settings were used, or the appropriate settings were not set quickly enough.

So, how do you avoid these problems? Learn how to reset your camera, and how to select the correct settings quickly. How do you make sure you select the right settings in time to take a photo? After you've learned about each setting, practice changing them so that you can quickly get the settings you want, and learn where on your camera you can check the current settings. If you know where to check the settings and can make the setting changes quickly, you're more likely to get the perfect shot.

This technique has eleven steps that take you through each of the most critical camera settings that you should know how to change instinctively. But don't panic because it has eleven steps — this technique is more of a "pre-flight" or "pre-photo" checklist, rather than an informative technique where you'll learn how to do eleven things with your camera. Use it when you have not used your camera for a while or when you want to make sure you're ready to shoot an important event like the wedding shown in Figures 5.1 and 5.2.

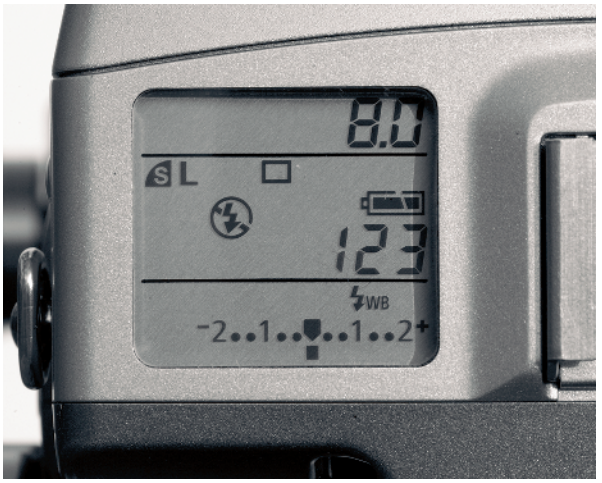
STEP 1: LEARN HOW TO READ CURRENT CAMERA SETTINGS

The more features your digital camera has, the more likely you are to find yourself shooting with the wrong settings; that is, unless you know how to read the settings and you're compulsive about checking them before you shoot. There is a reason why I know this!

A few years ago, I took photos at a friend's wedding, the day after I had shot still-life photos inside a kitchen. Because of the incandescent lights in the kitchen, I had changed the white balance setting to incandescent. The next day, the wedding day, I shot with the incandescent light setting even though I was shooting outside in daylight. All the wedding photos had a horrible blue cast! The good news was that the images were easily fixed with Photoshop, and I was not the hired wedding photographer! Maybe, with this story in mind, and this technique, you can avoid a similar experience. Figure 5.1 shows the original wedding photo with an awful blue color cast. Figure 5.2 shows the photo after Photoshop Elements was used to enhance the photo and correct the color cast.

The best way to avoid using the wrong settings is to learn where and how to read the current settings on your camera. Camera settings can be shown in more than one place. On the Canon PowerShot, they can be found on a display panel, shown in Figure 5.3. You can check the exposure mode by looking at the exposure mode button. You change some of the less frequently changed settings via menus on the LCD monitor like the one shown in Figure 5.4. You can view other settings when looking through the viewfinder.

Because of the number of settings and the lack of space to display them, you have to get familiar with quite a few icons. The time you spend learning where various settings are displayed and how to change them is well worth the effort. Take a few minutes now and find out where you can read the settings on your camera.



5.3

5.4

STEP 2: LEARN HOW TO RESET YOUR CAMERA

Most digital cameras have dozens of settings that can be changed, and when you change settings from their default settings, you may get unexpected results. A good way to start with the default settings is to reset your camera. You may have to read your manual to learn how to do this. Resetting your camera is usually as simple as selecting the right menu function and pressing a button!

STEP 3: CHANGE WHITE BALANCE SETTING

The white balance setting is an important one that you must set correctly to get photos with accurate colors. When you set the white balance setting to match the light source, white is white and all other colors are as they should be. When the white balance setting is not correct, the photos have an unwanted color cast, as was the case with the wedding photos shown earlier.

Most digital cameras offer an auto white balance setting that generally is quite good at minimizing color casts. However, you may find that you get better pictures when you use a specific setting to match the light source in the scene you are shooting. This is especially true if you shoot in a room with fluorescent or tungsten light; in these cases, use a fluorescent or tungsten setting to match the light source. You generally change the white balance through a menu displayed on an LCD monitor that you access with a dial or button.

Because using a correct color temperature (white balance setting) is so important, many vendors are increasing the number of available settings. For example, many current digital camera models offer different white balance settings. Typical white balance settings include Auto, Daylight, Cloudy, Tungsten, Fluorescent, Fluorescent H, Flash, and Custom. Learning about the different white balance settings offered by your digital camera, and using the most appropriate white balance setting for each photo you take, helps you get better photos.

STEP 4: CHANGE ISO SETTING

As explained earlier, ISO is a setting that determines how sensitive the digital camera is to light.

The lower the ISO setting (for example, 50 or 100), the longer it takes for the light to be recorded and, even more importantly, there is less digital noise (similar to a film's grain). The higher the ISO setting (for example, 400 or 800), the quicker the light gets recorded and the more digital noise you find in the resulting photos. The benefit of using a higher ISO setting is that it allows you to get a properly exposed photo in a low-light-level scene. Assuming you want to minimize digital noise, you may want to look at ways to add more light instead of changing the ISO setting, or maybe not even take the photo at all. You can often use a lower ISO setting if you use a camera support as the extra support, which allows you to shoot with a slower shutter speed and still avoid image blur due to camera shake.

STEP 5: CHANGE EXPOSURE MODE

Technique 3 covered the topic of how to choose and use an appropriate exposure mode. Although this setting is an easy one to make, it is one of the most important ones to choose correctly.

STEP 6: TURN FLASH ON OR OFF

Several other techniques in this book help you learn more about using a flash. Besides just turning a flash on and off, your camera may offer many other flash-related features as well. You ought to know how to turn on any built-in flash as well as turn it off. You should also be aware that some automatic exposure modes automatically turn on the flash if extra light is needed to get a proper exposure. If you choose not to use a flash in these situations, you need to learn how

to avoid using the flash by turning it off, or by changing to a more appropriate exposure mode.

STEP 7: SELECT METERING MODE

If your camera is not in manual exposure mode, you're quite likely to be using one of the electronic metering modes to determine the proper exposure. Depending on what you're shooting and how you want to expose the image, one metering mode may be preferred over the other. Typical metering modes are evaluative (also called matrix or program mode), center-weighted averaging, center, or spot. You learn much more about how to pick a metering mode in Technique 13. For now, just find out what modes your camera has and how to change them.

STEP 8: SELECT FOCUS POINTS

The more skilled you become at envisioning a photograph, and then setting your camera settings to get the shot you want, the more you want to learn about how to control focus. All photos must not necessarily be completely in focus. Great photographers are skilled at deciding what should be in focus and what should be blurred and to what degree. Choosing a focus method and focal points is essential for getting the photos you want. In Technique 10, you find out more about how to control focus. Once again, for now, take a quick look at the documentation that came with your manual and learn how you can control the focus.

STEP 9: TURN ON/OFF RED-EYE REDUCTION

When photographing people with a camera that has a built-in flash or one that is directly mounted on top on a flash shoe, the subjects in the picture get red-eye — unless you use a red-eye reduction feature. Learn how to turn on and turn off the red-eye feature if your camera has a built-in flash. This simple setting is one you'll want to use if you're shooting people up close; nothing affects the quality as much as red eyes on an otherwise wonderful photo.

STEP 10: CHANGE EXPOSURE COMPENSATION

Throughout this book, you learn many entirely different exposure techniques to shoot the same subjects. If you're like me, and you often use exposure compensation, you find that you frequently put yourself at risk of taking a poorly exposed photo because you forgot to reset exposure compensation. If you use exposure compensation, make sure you learn how to adjust it and then make sure you set it back to 0 when it ought to be set to 0. Technique 12 covers exposure compensation in detail.

STEP 11: CHANGE OTHER SPECIAL SETTINGS

If you're someone who likes to use special features (like me), then you need to learn how to use them — and then make sure that you turn them off when they're no longer needed. One of my favorite features, and one that has become a common and widely used feature on many digital cameras, is the panorama mode. I've also been known to experiment with color effects and occasionally use the timed shutter release so that I can be in the photos, too. When you use special features like these, make it a practice to turn them off as soon as you're through using them. Otherwise, they'll be on when you don't want them to be and you may miss getting the photo that you want.

So, are you ready for a quick test to see whether you're ready to shoot an important event? If so, then do the following:

- Quickly set your camera to a shooting mode suitable for shooting portraits.
- Turn on the flash to get some *fill flash,* a small amount of light to supplement the existing light.

- Make sure you turn on the red-eye reduction feature.
- Set ISO to 100 to minimize digital noise.
- Set white balance for shooting with flash.
- Quickly review your settings to make sure they are set as you want and that you do not have a setting that would be contrary to your intentions!
- Now, set your camera to an exposure mode suitable to shoot a landscape on a tripod in late evening light.
- Set ISO to the lowest setting (for example, 50 or 100) to ensure a high-quality image. Check to see that your white balance setting is appropriately set.

If you made the changes for both of these photos in less than 20 seconds, you're just about ready for the next chapter! Before you head to the next chapter, allow me to share a quick and true story to reiterate a couple of important points. The weekend before I submitted this chapter to my editor, I attended an old car and airplane show to shoot photos and to enjoy a day away from writing. As I wandered around the airfield, I noticed that far more people were shooting with digital cameras than film cameras. I spoke to about a dozen people shooting with digital cameras and asked a few questions about the settings they were using.

One person was shooting with an incandescent light setting — outdoors in bright sunlight. "Oops!" he said. Another was pleased to have chosen the shutter speed exposure mode because he knew it was important to have a fast shutter speed, but he did not set it — he just shot using the last setting — 1/30 of a second, ensuring all his photos would be blurred. A husband who was proud to have "a wife who reads manuals," told me that she learned how to adjust exposure compensation — so he had been shooting all day with a –1 exposure compensation setting (minus one stop), thereby underexposing many of his photos by a full stop. Another photographer used a one-shot focus setting, making certain that every incoming and outgoing plane that he shot would be blurred. Four out of twelve seemed to have all the settings just right — the four of them were using auto exposure modes. Because it was a very bright day, even these four could have spent their day taking better photos if they knew a little more about their cameras.

The point of this story is that as you learn to use different camera features, also make sure you know when to use them and how to turn them off. After you move away from auto modes and into the creative picture taking world, you have a chance to both get better photos and to really mess them up! The next nine chapters show you much more about how to use your camera well.