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- Take control of exposure, focus, and color
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IN FULL COLOR!

Julie Adair King

Author of Digital Photography For Dummies



Nikon® D90

FOR

DUMMIES®

by Julie Adair King



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Julie Adair King is the author of many books about digital photography and imaging, including the best-selling *Digital Photography For Dummies*. Her most recent titles include a series of guides to popular digital SLR cameras, including *Nikon D60 For Dummies* and *Nikon D40/D40x For Dummies*. Other works include *Digital Photography Before & After Makeovers*, *Digital Photo Projects For Dummies*, *Julie King's Everyday Photoshop For Photographers*, *Julie King's Everyday Photoshop Elements*, and *Shoot Like a Pro! Digital Photography Techniques*. When not writing, King teaches digital photography at such locations as the Palm Beach Photographic Centre. A graduate of Purdue University, she resides in Indianapolis, Indiana.

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X

Nikon D90 For Dummies

Introduction

Nikon. The name has been associated with top-flight photography equipment for generations. And the introduction of the D90 has only enriched Nikon's well-deserved reputation, offering all the control a die-hard photography enthusiast could want while at the same time providing easy-to-use, point-and-shoot features for the beginner.

In fact, the D90 offers so *many* features that sorting them all out can be more than a little confusing, especially if you're new to digital photography, SLR photography, or both. For starters, you may not even be sure what SLR means or how it affects your picture taking, let alone have a clue as to all the other techie terms you encounter in your camera manual — *resolution, aperture, white balance*, and so on. And if you're like many people, you may be so overwhelmed by all the controls on your camera that you haven't yet ventured beyond fully automatic picture-taking mode. Which is a shame because it's sort of like buying a Porsche and never actually taking it on the road.

Therein lies the point of *Nikon D90 For Dummies*. Through this book, you can discover not just what each bell and whistle on your camera does, but also when, where, why, and how to put it to best use. Unlike many photography books, this one doesn't require any previous knowledge of photography or digital imaging to make sense of things, either. In classic *For Dummies* style, everything is explained in easy-to-understand language, with lots of illustrations to help clear up any confusion.

In short, what you have in your hands is the paperback version of an in-depth photography workshop tailored specifically to your Nikon picture-taking powerhouse.

A Quick Look at What's Ahead

This book is organized into four parts, each devoted to a different aspect of using your camera. Although chapters flow in a sequence that's designed to take you from absolute beginner to experienced user, I've also tried to make each chapter as self-standing as possible so that you can explore the topics that interest you in any order you please.

The following sections offer brief previews of each part. If you're eager to find details on a specific topic, the index shows you exactly where to look.

Part I: Fast Track to Super Snaps

Part I contains four chapters that help you get up and running with your D90.

- ✓ Chapter 1, “Getting the Lay of the Land,” offers a tour of the external controls on your camera, shows you how to navigate camera menus to access internal options, and walks you through initial camera setup and customization steps.
- ✓ Chapter 2, “Taking Great Pictures, Automatically,” shows you how to get the best results when using the camera’s fully automatic exposure modes, including the Digital Vari-Program scene modes such as Sports mode, Portrait mode, and Landscape mode.
- ✓ Chapter 3, “Controlling Picture Quality and Size,” introduces you to two camera settings that are critical whether you shoot in automatic or manual mode: the Image Size and Image Quality settings, which control resolution (pixel count), file format, file size, and picture quality.
- ✓ Chapter 4, “Monitor Matters: Picture Playback and Live View Shooting” offers just what its title implies. Look here to find out how to review your photos and how to take pictures using your monitor to compose the scene — that is, how to use the D90’s Live View mode to shoot both still photos and record short digital movies. This chapter also discusses how to delete unwanted images and protect your favorites from accidental erasure.

Part II: Taking Creative Control

Chapters in this part help you unleash the full creative power of your D90 by moving into semiautomatic or manual photography modes.

- ✓ Chapter 5, “Getting Creative with Exposure and Lighting,” covers the all-important topic of exposure, starting with an explanation of three critical exposure controls: aperture, shutter speed, and ISO. This chapter also discusses your camera’s advanced exposure modes (P, S, A, and M); explains exposure options such as Active D-Lighting, automatic exposure bracketing, metering modes, and exposure compensation; and offers tips for using the flash.
- ✓ Chapter 6, “Manipulating Focus and Color,” provides help with controlling those aspects of your pictures. Head here for information about your camera’s many autofocusing options, for tips on how to manipulate depth of field (the zone of sharp focus in a picture), and for details about color controls such as white balance.
- ✓ Chapter 7, “Putting It All Together,” summarizes all the techniques explained in earlier chapters, providing a quick-reference guide to the camera settings and shooting strategies that produce the best results for specific types of pictures: portraits, action shots, landscape scenes, close-ups, and more.

Part III: Working with Picture Files

This part of the book, as its title implies, discusses the often-confusing aspect of moving your pictures from camera to computer and beyond.

- ✓ Chapter 8, “Downloading, Organizing, and Archiving Your Picture Files,” guides you through the process of transferring pictures from your camera memory card to your computer’s hard drive or other storage device. Look here, too, for details about using the D90’s built-in tool for processing files that you shoot in the Nikon Raw format (NEF). Just as important, this chapter explains how to organize and safeguard your photo files.
- ✓ Chapter 9, “Printing and Sharing Your Pictures,” helps you turn your digital files into “hard copies” that look as good as those you see on the camera monitor. This chapter also explains how to prepare your pictures for online sharing, create digital slide shows, and, for times when you have the neighbors over, display your pictures and movies on a television screen.

Part IV: The Part of Tens

In famous *For Dummies* tradition, the book concludes with two “top ten” lists containing additional bits of information and advice.

- ✓ Chapter 10, “Ten (Or So) Fun and Practical Retouch Menu Features,” shows you how to fix less-than-perfect images using features found on your camera’s Retouch menu, such as automated red-eye removal. You also find out how to apply color effects and perform a few other photo-enhancement tricks.
- ✓ Chapter 11, “Ten Special-Purpose Features to Explore on a Rainy Day,” presents information about some camera features that, while not found on most “Top Ten Reasons I Bought My D90” lists, are nonetheless interesting, useful on occasion, or a bit of both.

Icons and Other Stuff to Note

If this isn’t your first *For Dummies* book, you may be familiar with the large, round icons that decorate its margins. If not, here’s your very own icon-decoder ring:



- ✓ A Tip icon flags information that will save you time, effort, money, or some other valuable resource, including your sanity.
- ✓ Lots of information in this book is of a technical nature — digital photography is a technical animal, after all. But if I present a detail that is useful mainly for impressing your technology-geek friends, I mark it with this icon.



- I apply this icon either to introduce information that is especially worth storing in your brain's long-term memory or to remind you of a fact that may have been displaced from that memory by some other pressing fact.
- When you see this icon, look alive. It indicates a potential danger zone that can result in much wailing and teeth-gnashing if ignored.

Additionally, I need to point out three additional details that will help you use this book:

- **Other margin art:** Replicas of some of your camera's buttons also appear in the margins of some paragraphs. I include these to provide a quick reminder of the appearance of the button being discussed.
- **Software menu commands:** In sections that cover software, a series of words connected by an arrow indicates commands that you choose from the program menus. For example, if a step tells you to “Choose File→Convert Files,” click the File menu to unfurl it and then click the Convert Files command on the menu.
- **Camera firmware:** *Firmware* is the internal software that controls many of your camera’s operations. This book was written using version 1.0.0 of the firmware, which was the most current version at the time of publication. Occasionally, Nikon releases firmware updates, and it’s a good idea to check out the Nikon Web site (www.nikon.com) periodically to find out whether any updates are available. (Chapter 1 tells you how to determine which firmware version your camera is running.) Firmware updates typically don’t carry major feature changes — they’re mostly used to solve technical glitches in existing features — but if you do download an update, be sure to read the accompanying description of what it accomplishes so that you can adapt my instructions as necessary.

About the Software Shown in This Book

Providing specific instructions for performing photo organizing and editing tasks requires that I feature specific software. In sections that cover file downloading, archiving, printing, and e-mail sharing, I selected Nikon ViewNX and Nikon Transfer, both of which ship free with your camera and work on both the Windows and Mac operating systems.

Rest assured, though, that the tools used in ViewNX and Nikon Transfer work very similarly in other programs, so you should be able to easily adapt the steps to whatever software you use. (I recommend that you read your software manual for details, of course.)

Practice, Be Patient, and Have Fun!

To wrap up this preamble, I want to stress that if you initially think that digital photography is too confusing or too technical for you, you're in very good company. *Everyone* finds this stuff a little mind-boggling at first. So take it slowly, experimenting with just one or two new camera settings or techniques at first. Then, each time you go on a photo outing, make it a point to add one or two more shooting skills to your repertoire.

I know that it's hard to believe when you're just starting out, but it really won't be long before everything starts to come together. With some time, patience, and practice, you'll soon wield your camera like a pro, dialing in the necessary settings to capture your creative vision almost instinctively.

So without further ado, I invite you to grab your camera, a cup of whatever it is you prefer to sip while you read, and start exploring the rest of this book. Your D90 is the perfect partner for your photographic journey, and I thank you for allowing me, through this book, to serve as your tour guide.

Part I

Fast Track to Super Snaps

The 5th Wave

By Rich Tennant



In this part . . .

Making sense of all the controls on your D90 isn't something you can do in an afternoon — heck, in a week, or maybe even a month. But that doesn't mean that you can't take great pictures today. By using your camera's point-and-shoot automatic modes, you can capture terrific images with very little effort. All you do is compose the scene, and the camera takes care of almost everything else.

This part shows you how to take best advantage of your camera's automatic features and also addresses some basic setup steps, such as adjusting the viewfinder to your eyesight and getting familiar with the camera menus, buttons, and dials. In addition, chapters in this part explain how to obtain the very best picture quality, whether you shoot in an automatic or manual mode, and how to use your camera's picture-playback and Live View features.



Getting the Lay of the Land

In This Chapter

- ▶ Attaching and using an SLR lens
- ▶ Adjusting the viewfinder to your eyesight
- ▶ Working with memory cards
- ▶ Getting acquainted with your camera
- ▶ Selecting from menus
- ▶ Displaying onscreen help
- ▶ Customizing basic operations

1

I still remember the day that I bought my first SLR film camera. I was excited to finally move up from my one-button point-and-shoot camera, but I was a little anxious, too. My new pride and joy sported several unfamiliar buttons and dials, and the explanations in the camera manual clearly were written for someone with an engineering degree. And then there was the whole business of attaching the lens to the camera, an entirely new task for me. I saved up my pennies a long time for that camera — what if my inexperience caused me to damage the thing before I even shot my first pictures?

You may be feeling similarly insecure if your Nikon D90 is your first SLR, although some of the buttons on the camera back may look familiar if you've previously used a digital point-and-shoot camera. If your D90 is both your first SLR and first digital camera, you may be doubly intimidated.

Trust me, though, that your camera isn't nearly as complicated as its exterior makes it appear. With a little practice and the help of this chapter, which introduces you to each external control, you'll quickly become as



comfortable with your camera's buttons and dials as you are with the ones on your car's dashboard. This chapter also guides you through the process of mounting and using an SLR lens, working with digital memory cards, navigating your camera's menus, and customizing basic camera operations.

Getting Comfortable with Your Lens

One of the biggest differences between a point-and-shoot camera and an SLR (*single-lens reflex*) camera is the lens. With an SLR, you can swap out lenses to suit different photographic needs, going from an extreme close-up lens to a super-long telephoto, for example. In addition, an SLR lens has a movable focusing ring that gives you the option of focusing manually instead of relying on the camera's autofocus mechanism.

Of course, those added capabilities mean that you need a little background information to take full advantage of your lens. To that end, the next four sections explain the process of attaching, removing, and using this critical part of your camera.

Attaching a lens

Whatever lens you choose, follow these steps to attach it to the camera body:

- 1. Remove the cap that covers the lens mount on the front of the camera.**
- 2. Remove the cap that covers the back of the lens.**
- 3. Hold the lens in front of the camera so that the little white dot on the lens aligns with the matching dot on the camera body.**

Official photography lingo uses the term *mounting index* instead of *little white dot*. Either way, you can see the markings in question in Figure 1-1.

Note that the figure (and others in this chapter) shows you the D90 with its so-called “kit lens” — the 18–105mm Vibration Reduction (VR) zoom lens that Nikon sells as a unit with the body. If you buy a lens from a manufacturer other than Nikon, your dot may be red or some other color, so check the lens instruction manual.

- 4. Keeping the dots aligned, position the lens on the camera's lens mount as shown in Figure 1-1.**

When you do so, grip the lens by its back collar, not the movable, forward end of the lens barrel.

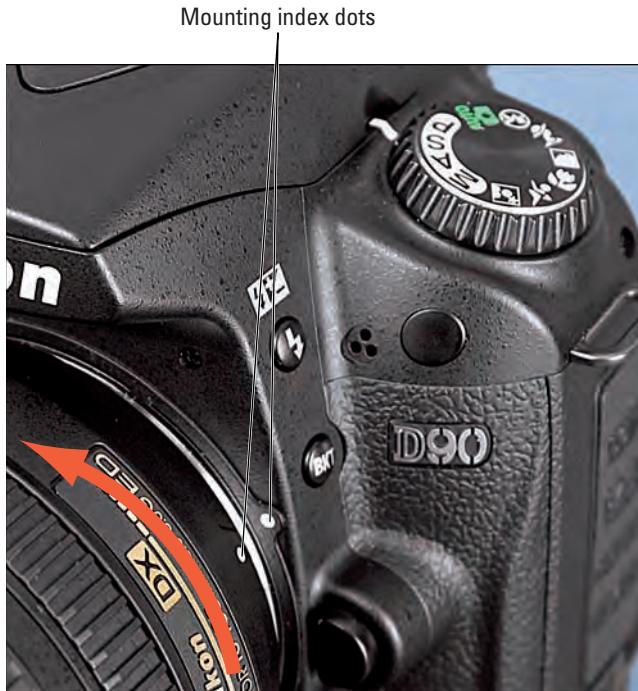


Figure 1-1: When attaching the lens, align the index markers as shown here.

5. Turn the lens in a counter-clockwise direction until the lens clicks into place.

To put it another way, turn the lens toward the side of the camera that sports the shutter button, as indicated by the red arrow in the figure.

6. On a lens that has an aperture ring, set and lock the ring so the aperture is set at the highest f-stop number.

Check your lens manual to find out whether your lens sports an aperture ring and how to adjust it. (The D90 kit lens doesn't.) To find out more about apertures and f-stops, see Chapter 5.



Always attach (or switch) lenses in a clean environment to reduce the risk of getting dust, dirt, and other contaminants inside the camera or lens. Changing lenses on a sandy beach, for example, isn't a good idea. For added safety, point the camera body slightly down when performing this maneuver; doing so helps prevent any flotsam in the air from being drawn into the camera by gravity.

Removing a lens

To detach a lens from the camera body, take these steps:

- 1. Locate the lens-release button, labeled in Figure 1-2.**
- 2. Grip the rear collar of the lens.**

In other words, hold on to the stationary part of the lens that's closest to the camera body and not the movable focusing ring or zoom ring, if your lens has one.

- 3. Press the lens-release button while turning the lens clockwise until the mounting index on the lens is aligned with the index on the camera body.**

The mounting indexes are the little guide dots labeled in Figure 1-1. When the dots line up, the lens should detach from the mount.

- 4. Place the rear protective cap onto the back of the lens.**

If you aren't putting another lens on the camera, cover the lens mount with the protective cap that came with your camera, too.



Figure 1-2: Press the lens-release button to disengage the lens from the mount.

Using a VR (vibration reduction) lens

If you purchased the D90 camera kit — that is, the body-and-lens combination put together by Nikon — your lens offers a feature called *vibration reduction*. On Nikon lenses, this feature is indicated by the initials *VR* in the lens name.

Vibration reduction attempts to compensate for small amounts of camera shake that are common when photographers handhold their cameras and use a slow shutter speed, a lens with a long focal length, or both. That camera movement during the exposure can produce blurry images. Although vibration reduction can't work miracles, it does enable most people to capture sharper handheld shots in many situations than they otherwise could.



However, when you use a tripod, vibration reduction can have detrimental effects because the system may try to adjust for movement that isn't actually occurring. That's why your kit lens — and all Nikon VR lenses — have an On/Off switch, which is located on the side of the lens, as shown in Figure 1-2. Whether you should turn off the VR feature, though, depends on the specific lens, so

check the manual. For the 18–105 kit lens, Nikon does recommend setting the switch to the Off position for tripod shooting, assuming that the tripod is “locked down” so the camera is immovable.

If you use a non-Nikon lens, the vibration reduction feature may go by another name: *image stabilization*, *optical stabilization*, *anti-shake*, *vibration compensation*, and so on. In some cases, the manufacturers may recommend that you leave the system turned on or select a special setting when you use a tripod, so be sure to check the lens manual for information.

Chapter 6 offers more tips on achieving blur-free photos, and it also explains focal length and its impact on your pictures. See Chapter 5 for an explanation of shutter speed.

Setting the focus mode (auto or manual)

Your camera can accept a variety of lenses, but only two types of lenses permit you to take advantage of autofocus: AF lenses and AF-S lenses. (The 18–105mm kit lens falls into the AF-S category.)



The AF stands for *autofocus*, as you may have guessed. The S stands for *silent wave*, a Nikon autofocus technology.

For times when you attach a lens that doesn’t support autofocus or the autofocus system has trouble locking on your subject, you can focus manually by simply twisting a focusing ring on the lens barrel. The placement and appearance of the focusing ring depends on the lens; Figure 1-3 shows you the one on the kit lens.

Take these steps to try out manual focusing:

1. Set the camera to manual focus mode.

The procedure depends on the type of lens, as follows:

- **AF-S lenses:** Set the switch on the lens itself to M, as shown in Figure 1-3. Note that the figure shows the switch as it appears on the D90’s kit lens; if you use a different lens, check the lens instruction manual if you have trouble finding the switch. (It may carry the label AF/MF instead of A/M.)
- **AF lenses:** For this type of lens, two switches are involved. First, set the lens switch to M, as just described. Then look for the AF-M switch on the camera body — it’s located just below the lens-release button, as labeled in Figure 1-3. Flip the switch to M for manual focusing.
- **All other lenses:** Set the switch on the camera body to M.

2. While looking through the viewfinder, twist the focusing ring to adjust focus.

If you have trouble focusing, you may be too close to your subject; every lens has a minimum focusing distance. You may also need to adjust the viewfinder to accommodate your eyesight; see the next section for details.



Some lenses, including the D90 kit lens, enable you to use autofocus to set the initial focusing point and then fine-tune focus manually. Check your lens manual for information on how to use this option, if available. With the kit lens, you set the lens switch to the A position and then press the shutter button halfway to autofocus. Then you simply twist the focusing ring to adjust focus further, if needed.

Zooming in and out

If you bought a zoom lens, it has a movable zoom barrel. The location of the zoom barrel on the D90 kit lens is shown in Figure 1-3. To zoom in or out, just move that zoom barrel forward and backward.

The numbers on the zoom ring, by the way, represent *focal lengths*. I explain focal lengths in Chapter 6. In the meantime, just note that when the lens is mounted on the camera, the number that's aligned with the lens mounting index (the white dot) represents the current focal length. In Figure 1-3, for example, the focal length is 35mm.



Figure 1-3: On the 18–105 kit lens, the manual-focusing ring is set near the back of the lens, as shown here.

Adjusting the Viewfinder Focus

Tucked behind the right side of the rubber eyepiece that surrounds the viewfinder is a tiny dial called a *diopter adjustment control*. With this control, labeled in Figure 1-4, you can adjust the focus of your viewfinder to accommodate your eyesight.

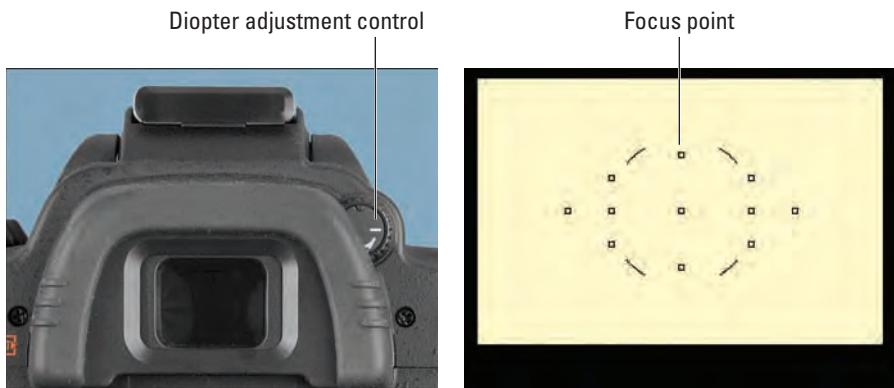


Figure 1-4: Use the diopter adjustment control to set the viewfinder focus for your eyesight.



If you don't take this step, scenes that appear out of focus through the viewfinder may actually be sharply focused through the lens, and vice versa. Here's how to make the necessary adjustment:

- 1. Remove the lens cap from the front of the lens.**
- 2. Look through the viewfinder and concentrate on the little black markings shown on the right side of Figure 1-4.**
- 3. Rotate the diopter adjustment dial until the viewfinder markings appear to be in focus.**

The little rectangles represent the camera's autofocus points, which you can read more about in Chapters 2 and 6. The four curved lines represent the center-weighted metering area, which relates to an exposure option you can explore in Chapter 5.



The Nikon manual warns you not to poke yourself in the eye as you perform this maneuver. This warning seems so obvious that I laugh every time I read it — which makes me feel doubly stupid the next time I poke myself in the eye as I perform this maneuver.

Working with Memory Cards

Instead of recording images on film, digital cameras store pictures on *memory cards*. Your D90 uses a specific type of memory card called an *SD card* (for *Secure Digital*), shown in Figures 1-5 and 1-7. You can also use the new, high-capacity Secure Digital cards, which are labeled SDHC, as well as Eye-Fi SD cards, which enable you to send pictures to your computer over a wireless network. (Because of space limitations, I don't cover Eye-Fi connectivity in this book; if you want more information about these cards, you can find it online at www.eye.fi.)



Memory card access light

Figure 1-5: Insert the card with the label facing the camera back.

Do you need high-speed memory cards?

Memory cards are categorized not just by their storage capacity, but also by their data-transfer speed. SD cards (the type used by your D90) fall into one of three *speed classes*, Class 2, Class 4, and Class 6, with the number indicating the minimum number of *megabytes* (units of computer data) that can be transferred per second. A Class 2 card, for example, has a minimum transfer speed of 2 megabytes, or MB, per second. Of course, with the speed increase comes a price increase.

Photographers who shoot action benefit most from high-speed cards — the faster data-transfer rate helps the camera record shots at its maximum speed. Users who shoot at the highest resolution or prefer the NEF (Raw) file format

also gain from high-speed cards; both options increase file size and, thus, the time needed to store the picture on the card. (See Chapter 3 for details.) As for picture downloading, how long it takes for files to shuffle from card to computer depends not just on card speed, but also on the capabilities of your computer and, if you use a memory card reader to download files, on the speed of that device. (Chapter 8 covers the file-downloading process.)

Long story short, if you want to push your camera to its performance limits, a high-speed card is worth considering, assuming budget is no issue. Otherwise, even a Class 2 card should be more than adequate for most photographers.

Safeguarding your memory cards — and the images you store on them — requires just a few precautions:

- ✓ **Inserting a card:** First, be sure that the camera is turned off. Then put the card in the card slot with the label facing the back of the camera, as shown in Figure 1-5. Push the card into the slot until it clicks into place; the memory card access light (circled in Figure 1-5) blinks for a second to let you know the card is inserted properly.
- ✓ **Formatting a card:** The first time you use a new memory card or insert a card that has been used in other devices (such as an MP3 player), you should *format* it. Formatting ensures that the card is properly prepared to record your pictures.



Formatting erases *everything* on your memory card. So before formatting, be sure that you have copied any pictures or other data to your computer.

You can format a card in two ways:

- *Simultaneously press and hold the Delete and Metering Mode buttons.* See the little red Format labels next to the buttons? They're reminders that you use these buttons to quickly format a memory card. Hold the buttons down for about two seconds, until you see the letters *For* blink in the Control panel on top of the camera, as shown in Figure 1-6. The other data visible is the Shots Remaining value, which indicates how many pictures you can fit on the memory card at the current Image Quality and Image Size settings — 290, in the figure.

While the display is blinking, press and release both buttons again. When formatting is complete, the *For* message disappears, and the Control panel display returns to normal. (See the upcoming section “Monitoring Shooting Settings” for more about the Control panel.)

- *Choose the Format command from the Setup menu.* The upcoming section “Ordering from Camera Menus” explains how to work with menus. When you select the command, you’re asked to confirm your decision to format the card. Highlight Yes and press the OK button to go forward.

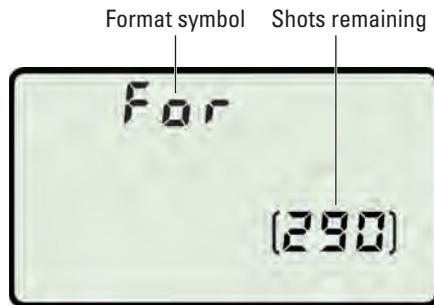


Figure 1-6: To format a memory card, press the Delete and Metering Mode buttons until you see this message in the Control panel; then press both buttons again.



If you insert a memory card and see the letters *For* in the Shots Remaining area of the Control panel, you must format the card before you can do anything else.

- ✓ **Removing a card:** After making sure that the memory card access light is off, indicating that the camera has finished recording your most recent photo, turn the camera off. Open the memory card door, as shown in Figure 1-5. Depress the memory card slightly until you hear a little click and then let go. The card should pop halfway out of the slot, enabling you to grab it by the tail and remove it.
- When no card is installed in the camera, the symbol [-E-] appears in the Control panel and viewfinder.
- ✓ **Handling cards:** Don't touch the gold contacts on the back of the card. (See the left card in Figure 1-7.) When cards aren't in use, store them in the protective cases they came in or in a memory card wallet. Keep cards away from extreme heat and cold as well.
- ✓ **Locking cards:** The tiny switch on the left side of the card, labeled *lock switch* in Figure 1-7, enables you to lock your card, which prevents any data from being erased or recorded to the card. Press the switch toward the bottom of the card to lock the card contents; press it toward the top of the card to unlock the data.

You can protect individual images from accidental erasure by using the camera's Protect feature, which is covered in Chapter 4.

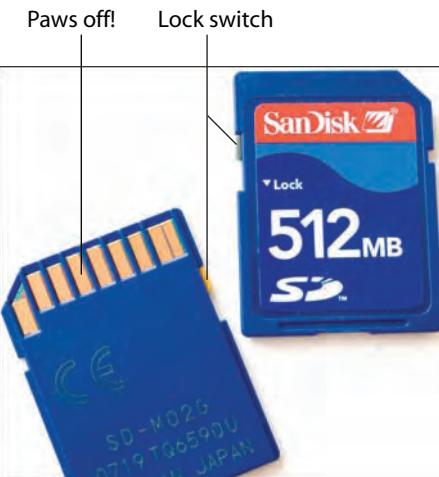


Figure 1-7: Avoid touching the gold contacts on the card.

Exploring External Camera Controls

Scattered across your camera's exterior are a number of buttons, dials, and switches that you use to change picture-taking settings, review and edit your photos, and perform various other operations. In later chapters, I discuss all your camera's functions in detail and provide the exact steps to follow to access them. This section provides just a basic road map to the external controls plus a quick introduction to each.



One note before you move on: Many of the buttons perform multiple functions and so have multiple “official” names. The WB (white balance) button, for example, is also known as the Help button and the Protect button. In the camera manual, Nikon’s instructions refer to these multi-tasking buttons by the name that’s relevant for the current function. I think that’s a little confusing, so I always refer to each button by the first moniker you see in the lists here.

Topside controls

Your virtual tour begins with the bird’s-eye view shown in Figure 1-8. There are a number of controls of note here:



Figure 1-8: The tiny pictures on the Mode dial represent special automatic shooting modes.

- ✓ **Control panel:** On the D90, you can view basic camera settings on this topside LCD panel or on the main monitor. See the upcoming section “Monitoring Shooting Settings” for more info.
- ✓ **On/Off/Illuminate switch and shutter button:** Okay, I’m pretty sure you already figured this combo button out. But check out Chapter 2 to discover the proper shutter-button-pressing technique — you’d be surprised how many people mess up their pictures because they press that button incorrectly. And note that if you want to illuminate the Control panel, you just rotate the On/Off switch past the On position to the little light-bulb icon. Release the switch to return to shooting; the Control panel will dim to its normal state after a few seconds.



- ✓ **Metering Mode button:** Press this button to select an exposure *metering mode*, which determines what part of the frame the camera considers when calculating exposure. Chapter 5 has details.

The little red Format label above the button reminds you that you can press this button together with the Delete button — which also sports the label — to quickly format a memory card. See the earlier section “Working with Memory Cards” for details.



- ✓ **Exposure Compensation button:** This button activates a feature that enables you to tweak exposure when working in three of your camera’s autoexposure modes: programmed autoexposure, aperture-priority autoexposure, and shutter-priority autoexposure, represented by the letters P, S, and A on the camera Mode dial. Chapter 5 explains.



- ✓ **Release Mode button:** With this button, you can switch from normal shooting, where you take one picture with each press of the shutter button, to one of the camera’s other modes, including Self-Timer mode. See the end of Chapter 2 for a look at all your options.



- ✓ **AF Mode/Reset button:** Press this button to access the Autofocus mode setting, which affects your camera’s autofocus performance. Check out Chapter 6 for an explanation of the available modes.



See the little green dot above this button and the Exposure Compensation button? The dots are a reminder that pressing these two buttons simultaneously for more than two seconds restores the most critical picture-taking options to their default settings. See “Restoring default settings,” at the end of this chapter, for more on this topic.

- ✓ **Mode dial:** With this dial, labeled in Figure 1-8, you set the camera to fully automatic, semi-automatic, or manual photography mode. The little pictographs, or icons, represent the Nikon Digital Vari-Program modes, which are automatic settings geared to specific types of photos: action shots, portraits, landscapes, and so on. Chapter 2 details the Digital Vari-Program and Auto modes; Chapter 5 explains the four others (P, S, A, and M).

Back-of-the-body controls

Traveling over the top of the camera to its back side, shown in Figure 1-9, you encounter the following controls:

- ✓ **Main command dial:** After you activate certain camera features, you rotate this dial, labeled in Figure 1-9, to select a specific setting. For example, to choose a White Balance setting, you press the WB button as you rotate the main command dial. (Chapter 6 explains white balancing.)



- ☛ **AE-L/AF-L button:** When you're taking pictures in some automatic modes, you can lock in your focus and exposure settings by pressing and holding this button. Chapter 5 explains why you may want to do so.

You can adjust the performance of the button as it relates to locking focus and exposure, too. Instructions in this book assume that you stick with the default setting, but if you want to explore your options, see Chapter 11.



- ☛ **Lv (Live View) button:** You press this button as the first step in recording a movie or taking advantage of Live View shooting, in which you can use the monitor to compose your shots. Chapter 4 introduces you to both Live View features.

- ☛ **Multi Selector/OK button:** This dual-natured control, labeled in Figure 1-9, plays a role in many camera functions. You press the outer edges of the Multi Selector left, right, up, or down to navigate camera menus and access certain other options. At the center of the control is the OK button, which you press to finalize a menu selection or other camera adjustment. See the next section for help with using the camera menus.



Figure 1-9: You use the Multi Selector to navigate menus and access certain other camera options.



☛ **Focus Selector Lock switch:** Just beneath the Multi Selector, this switch relates to the camera's autofocus system. When the switch is set to the position shown in Figure 1-9, you can use the Multi Selector to tell the camera to base focus on a specific focusing point. Setting the switch to the L position locks in the selected point. See Chapter 6 for details on all this focusing stuff.

☛ **Info button:** In addition to viewing current camera settings on the Control panel, you can press this button to display the Shooting Information screen on the camera monitor. The screen not only gives you an easier-on-the-eyes view of the camera settings but also enables you to adjust some settings more quickly than by using the camera menus. See the upcoming section “Monitoring Shooting Settings” for details.

☛ **Delete button:** Sporting a trash can icon, the universal symbol for delete, this button enables you to erase pictures from your memory card. Chapter 4 has specifics.

☛ **Playback button:** Press this button to switch the camera into picture review mode. Chapter 4 details the features available to you in this mode.

☛ **Menu button:** Press this button to access menus of camera options. See the next section for details on navigating menus.

☛ **WB/Help/Protect button:** This button serves several purposes:

- *White balance control:* For picture-taking purposes, the button’s main function is to access white balance options, a topic you can explore in Chapter 6.
- *Help:* You also can press this button to display helpful information about certain menu options. See “Asking Your Camera for Help,” later in this chapter, for details.
- *Protect:* In playback mode, pressing the button locks the picture file — hence the little key symbol that appears on the button face — so that it isn’t erased if you use the picture-delete functions. (The picture *is* erased if you format the memory card, however.) See Chapter 4 for details.

☛ **ISO/Playback Zoom Out/Thumbnail button:** In picture-taking mode, pressing this button accesses the ISO setting, which controls the camera’s sensitivity to light. Chapter 5 has details.

In playback mode, pressing the button enables you display multiple image thumbnails on the screen and to reduce the magnification of the currently displayed photo. See Chapter 4 for a complete rundown of picture playback options.



- ✓ **Qual (Quality)/Playback Zoom In button:** In playback mode, pressing this button magnifies the currently displayed image and also reduces the number of thumbnails displayed at a time. Note the plus sign in the middle of the magnifying glass — plus for zoom in.

In picture-taking mode, pressing the button gives you fast access to the Image Quality and Image Size options, both of which you can explore in Chapter 3.



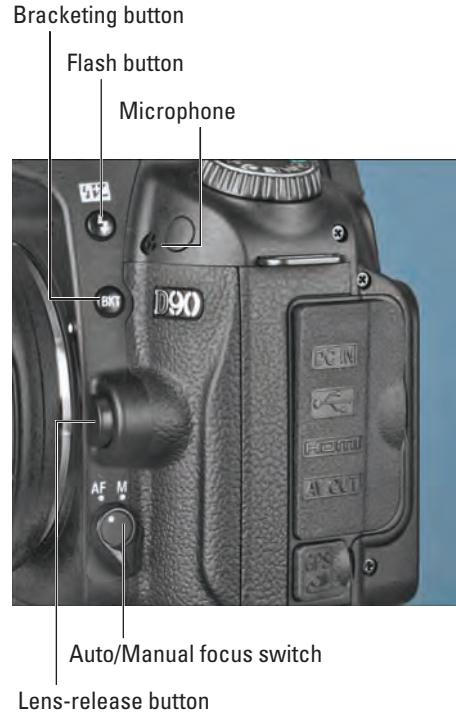
As for the monitor, I show it in this book without its protective plastic cover. But when the camera isn't in use, it's a good idea to keep the cover on to protect the screen from scratches and other damage.

Front-left buttons

On the front-left side of the camera body, shown in Figure 1-10, you find the following controls:



- ✓ **Flash/Flash compensation:** Pressing this button pops up the camera's built-in flash (except in automatic shooting modes, in which the camera decides whether the flash is needed). By holding the button down and rotating the main command dial, you can adjust the flash mode (normal, red-eye reduction, and so on). In advanced exposure modes (P, S, A, and M), you also can adjust the flash power by pressing the button and rotating the sub-command dial. (That's the dial just below the shutter button.) See Chapter 5 for all things flash related.



Lens-release button

Figure 1-10: Press the Flash button to pop up the built-in flash.

BKT

- ✓ **BKT (Bracket) button:** This button is key to enabling automatic *bracketing*, a feature that simplifies the job of recording the same subject at various exposure, flash, and white balance settings. Chapter 5 details flash and exposure bracketing; Chapter 6 discusses white balancing.
- ✓ **Lens-release button:** You press this button before removing the lens from your camera. See the first part of this chapter for help with mounting and removing lenses.
- ✓ **AF/M (autofocus/manual) switch:** This switch comes into play if you use certain types of lenses. See the earlier section “Setting the focus mode (auto or manual)” for the short story; see Chapter 6 for help with autofocus.

Make note, too, of the tiny microphone perched just above the D90 label. Be careful not to obscure the microphone with your finger when you’re recording a movie, a subject you can explore in Chapter 4.

Front-right controls

Wrapping up the list of external controls, the front-right side of the camera offers the following features. Figure 1-11 shows this part of the camera without a lens attached to make this foursome easier to see.

- ✓ **Sub-command dial:** This dial is the counterpart to the main command dial on the back of the camera. As with the main dial, you rotate this one to select certain settings, usually in conjunction with pressing another button.
- ✓ **AF-assist lamp:** In dim lighting, a beam of light shoots out from this little lamp to help the camera’s autofocus system find its target. In general, leaving the AF-assist option enabled is a good idea, but if you’re doing a lot of shooting at a party, wedding, or some event where the light from the lamp may be distracting, you can disable it through an option on the Custom Setting menu. Chapter 6 explains this and other autofocus features.
- ✓ **Function button:** By default, this button locks the flash exposure value when pressed. (See Chapter 5 for details on this flash feature.) But if you don’t use that feature often, you can use the button to perform one of nine other operations. Chapter 11 provides the details on changing the button’s purpose. (**Note:** All instructions in this book assume that you haven’t changed the function, however.)
- ✓ **Depth-of-Field Preview button:** By pressing this button, you can see how different aperture settings affect depth of field, or the zone of sharp focus in your image. Chapter 5 explains aperture settings and Chapter 6 delves into depth of field.



Figure 1-11: You can assign the Function button to perform any of 10 operations.

Ordering from Camera Menus



You access many of your camera's features via internal menus, which, conveniently enough, appear when you press the Menu button. Features are grouped into six main menus, described briefly in Table 1-1.

Table 1-1

D90 Menus

Symbol	Open This Menu . . .	to Access These Functions
	Playback	Viewing, deleting, and protecting pictures
	Shooting	Basic photography settings
	Custom Setting	Advanced photography options and some basic camera operations
	Setup	Additional basic camera operations
	Retouch	Built-in photo retouching options
	Recent Settings/ My Menu	Your 20 most recently used menu options or your custom-designed menu

After you press the Menu button, you see on the camera monitor a screen similar to the one shown in Figure 1-12. Along the left side of the screen, you see the icons shown in Table 1-1, each representing one of the available menus. The icon that is highlighted or appears in color is the active menu; options on that menu automatically appear to the right of the column of icons. In the figure, the Shooting menu is active, for example.

Menu icons

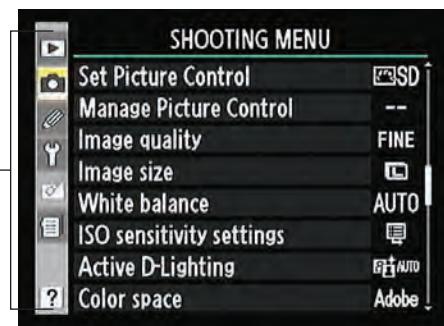


Figure 1-12: Highlight a menu in the left column to display its contents.

I explain all the important menu options elsewhere in the book; for now, just familiarize yourself with the process of navigating menus and selecting options therein. The Multi Selector, shown in Figure 1-9, is the key to the game. You press the edges of the Multi Selector to navigate up, down, left, and right through the menus.



In this book, the instruction “Press the Multi Selector left” simply means to press the left edge of the control. “Press the Multi Selector right” means to press the right edge, and so on.

Here’s a bit more detail about the process of navigating menus:

- ✓ **To select a different menu:** Press the Multi Selector left to jump to the column containing the menu icons. Then press up or down to highlight the menu you want to display. Finally, press right to jump over to the options on the menu.
- ✓ **To select and adjust a function on the current menu:** Again, use the Multi Selector to scroll up or down the list of options to highlight the feature you want to adjust and then press OK. Settings available for the selected item then appear. For example, if you select the Image Quality item from the Shooting menu, as shown on the left in Figure 1-13, and press OK, the available Image Quality options appear, as shown on the right in the figure. Repeat the old up-and-down scroll routine until the choice you prefer is highlighted. Then press OK to return to the previous screen.

In some cases, you may see a right-pointing arrowhead instead of the OK symbol next to an option. That’s your cue to press the Multi Selector right to display a submenu or other list of options.

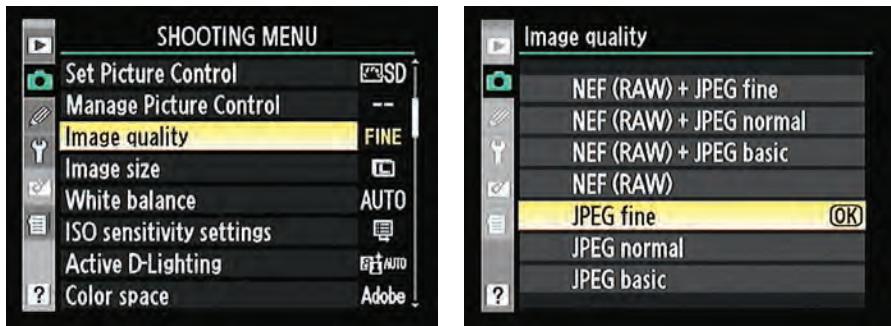


Figure 1-13: Select the option you prefer and press OK again to return to the active menu.



- To quickly access your 20 most recent menu items or create a custom menu: The sixth menu is actually two menus bundled into one. The Recent Settings menu, shown in Figure 1-14, provides a list of the 20 menu items you ordered most recently. So if you want to adjust those settings, you don't have to wade through all the other menus looking for them — just head to this menu instead.

Through the Choose Tab option at the bottom of the menu, you can switch to the My Menu screen. From there, you can create your own custom menu that contains your favorite options. Chapter 11 details the steps involved in making and using your menu. The My Menu screen also contains a Choose Tab option so that you can switch back to the Recent Settings menu at any time.

The menu icon changes depending on which of these two functions is active; Table 1-1 shows both icons.

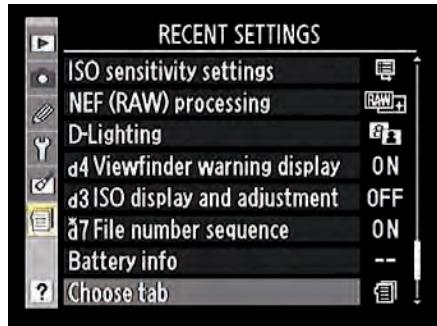


Figure 1-14: The Recent Settings menu offers quick access to the last 20 menu options you selected.

Monitoring Shooting Settings

Your D90 gives you the following three ways to monitor the most critical picture-taking settings.



- Control panel:** The LCD panel on top of the camera offers an array of shooting data, as shown on the left in Figure 1-15. Remember that you can illuminate the panel temporarily by rotating the On/Off switch past the On position to the little light bulb marker, shown on the right in the figure, and then releasing the switch. (You also can turn on the illumination for a longer period of time; see the upcoming section “Customizing shooting and display options” for details.)
- Shooting Info display:** If your eyesight is like mine, making out the tiny type on the Control panel can be difficult. Fortunately, you can press the Info button to display the Shooting Information screen on the monitor.

As shown in Figure 1-16, this screen displays the current shooting settings at a size that's a little easier on the eyes. Depending on the ambient light, the display either shows black text on a light background, as shown here, or white on black. See the section "Customizing shooting and display options" for information on how to adjust the display if you prefer one color scheme over the other.



Figure 1-15: Rotate the On/Off switch to the light bulb position to illuminate the Control panel.

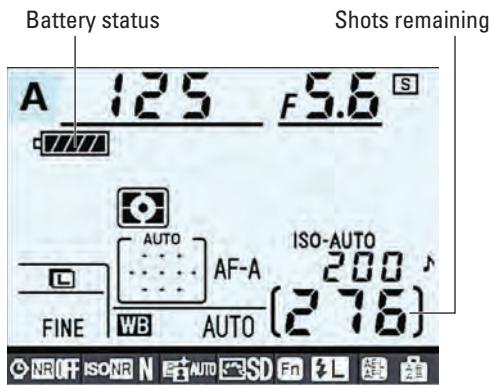


Figure 1-16: Press the Info button to view picture-taking settings on the monitor.



By pressing the Info button again, you switch the display to Quick Settings mode. In this mode, you can access additional camera settings, represented by the icons at the bottom of the screen. Press the Multi Selector left or right to highlight the icon for the setting you want to adjust — a little label appears to tell you what each icon means, as shown in Figure 1-17. Press OK to jump directly to the menu where you can change the setting.

- ✓ **Viewfinder:** You can view some camera settings in the viewfinder as well. For example, the data in Figure 1-18 shows the current shutter speed, f-stop, ISO setting, and number of shots remaining. The exact viewfinder information that appears depends on what action you're currently undertaking.

If what you see in Figures 1-15 through 1-18 looks like a big confusing mess, don't worry. Many of the settings relate to options that won't mean anything to you until you make your way through later chapters and explore the advanced exposure modes. But do make note of the following two key points of data that are helpful even when you shoot in the fully automatic modes:

- ✓ **Battery status indicator:** A full battery icon like the one in Figures 1-15 and 1-16 shows that the battery is fully charged; if the icon appears empty, go look for your battery charger.
- ✓ **Pictures remaining:** Labeled in Figures 1-15 and 1-16 and also visible in the viewfinder in Figure 1-18, this value (276, in the figures) indicates how many additional pictures you can store on the current memory card. If the number exceeds 999, the value is presented a little differently. The initial K appears above the value to indicate that the first value represents the picture count in thousands. For example, 1.0 K means that you can store 1,000 more pictures (K being a universally accepted symbol indicating 1,000 units). The number is then rounded down to the nearest hundred. So if the card has room for, say, 1,230 more pictures, the value reads as 1.2K.



Figure 1-17: Press the Info button twice to access more options via the Quick Settings display.

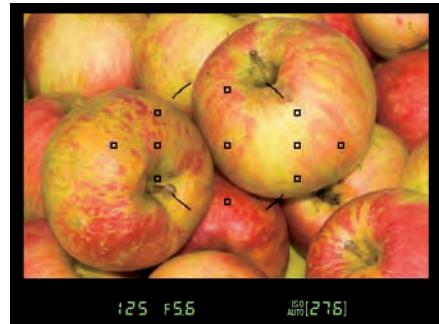


Figure 1-18: You also can view some camera information at the bottom of the viewfinder.

Asking Your Camera for Help



WB
?/

Programmed into your camera's internal software is a handy information help line — a great tool for times when you forget the purpose of a particular feature or would like a little picture-taking guidance. This digital 411 offers assistance in several ways:

- ✓ If you see a small question mark in the lower-left corner of a menu, press and hold the WB button to display information about the current shooting mode or selected menu option. For example, Figure 1-19 shows the Help screen associated with the Picture Control setting. If you need to scroll the screen to view all the Help text, keep the button depressed and scroll by using the Multi Selector. Release the button to close the information screen.
- ✓ Little tip flags appear on the Shooting Information display when you access certain options. (Refer to Figure 1-17.) If you don't want to see the tips, you can turn them off via the Custom Setting menu, as explained later in this chapter.

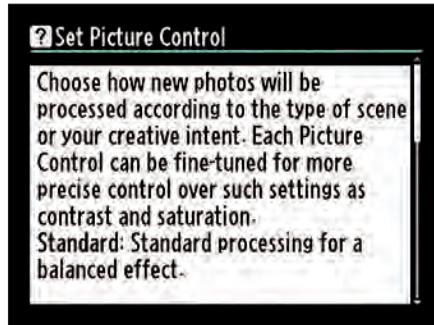


Figure 1-19: Press and hold the WB button to display onscreen help.

Reviewing Basic Setup Options

Your camera offers scads of options for customizing its performance. Later chapters explain settings related to actual picture taking, such as those that affect flash behavior and autofocusing. The rest of this chapter details options related to initial camera setup, such as setting the date and time, adjusting monitor brightness, and the like.

Cruising the Setup menu

Start your camera customization by opening the Setup menu. It's the menu marked with the little wrench icon, as shown on the left in Figure 1-20. Scroll down the menu using the Multi Selector to display the second screen of the menu, shown on the right.



Figure 1-20: Visit the Setup menu to start customizing your camera.

Here's a quick rundown of each menu item:



- ✓ **Format Memory Card:** You can use this command to format your memory card, which wipes all data off the card and ensures that it's properly set up to record pictures. Or, for quicker results, you can use the two-button formatting process outlined in the earlier section, "Working with Memory Cards."
- ✓ **LCD Brightness:** This option enables you to make the camera monitor brighter or darker. If you take this step, keep in mind that what you see on the display may not be an accurate rendition of the actual exposure of your image. Crank up the monitor brightness, for example, and an underexposed photo may look just fine. So I recommend that you keep the brightness at the default setting (0). As an alternative, you can display the *histogram*, an exposure guide that I explain in Chapter 4, when reviewing your images.
- ✓ **Clean Image Sensor:** Your D90 is set up at the factory to perform an internal cleaning routine each time you turn the camera on or off. This cleaning system is designed to keep the image sensor — that's the part of the camera that actually captures the image — free of dust and dirt. By choosing the Clean Image Sensor command, you can perform a cleaning at any time, however. Just choose the command, press OK, select Clean Now, and press OK again. You also can tell the camera to perform automatic cleaning only at startup, only at shutdown, or never; to do so, select Clean At Startup/Shutdown instead of Clean Now. Then press the Multi Selector right, highlight the cleaning option you prefer, and press OK.
- ✓ **Lock Mirror Up for Cleaning:** This feature is necessary when cleaning the camera interior — an operation that I don't recommend that you tackle yourself because you can easily damage the camera if you don't know what you're doing. And if you've used mirror lock-up on a film

camera to avoid camera shake when shooting long-exposure images, note that in this case, the lock-up feature is provided for cleaning purposes only. You can't take pictures on the D90 while the mirror lock-up is engaged.

- ✓ **Video Mode:** This option is related to viewing your images on a television, a topic I cover in Chapter 9. Select NTSC if you live in North America or other countries that adhere to the NTSC video standard; select PAL for playback in areas that follow that code of video conduct.
- ✓ **HDMI:** See Chapter 9 for information about this setting, which relates to options involved with connecting your camera to an HDMI device.
- ✓ **World Time:** When you turn on your camera for the very first time, it automatically displays this option and asks you to set the current date and time. Keeping the date/time accurate is important because that information is recorded as part of the image file. In your photo browser, you can then see when you shot an image and, equally handy, search for images by the date they were taken.

Also, if you see the message “Clock” blinking in the Control panel, the internal battery that keeps the clock running is depleted. Simply charging the main camera battery and then putting that battery back in the camera sets the clock ticking again, but you need to reset the camera time and date.

- ✓ **Language:** You're asked to specify a language along with the date and time when you fire up your camera for the first time. Your choice determines the language of text on the camera monitor. Screens in this book display the English language, but I find it entertaining on occasion to hand my camera to a friend after changing the language to, say, Swedish. I'm a real yokester, yah?
- ✓ **Image Comment:** See Chapter 11 to find out how to use this feature, which enables you to add text comments into a picture file. You then can read that information in Nikon ViewNX, the software that shipped with your camera. (The text doesn't actually appear on the image itself.)
- ✓ **Auto Image Rotation:** Keep this option set at the default setting (On) so that the image is automatically rotated to the correct orientation (horizontal or vertical) in playback mode. The orientation is recorded as part of the image file, too, so the auto-rotating also occurs when you browse your image thumbnails in ViewNX. **Note:** The rotation data may not be accurate for pictures that you take with the camera pointing directly up or down. See Chapter 4 for more about picture playback.
- ✓ **Image Dust Off Ref Photo:** This specialty feature enables you to record an image that serves as a point of reference for the automatic dust-removal filter available in Nikon Capture NX 2. I don't cover this accessory software, which must be purchased separately, in this book.

➤ **Battery Info:** Select this option to view detailed information about your battery, as shown in Figure 1-21. The Bat Meter data shows you the current power remaining as a percentage value, and the Pic Meter value tells you how many times you've pressed and released the shutter button since the last time you charged the battery. The final readout, Battery Age, lets you know how much more life you can expect out of the battery before it can no longer be recharged. When the display gets toward the right end of the little meter, marked with the number 4, it's time to buy a new battery.

➤ **GPS:** If you purchase the optional Nikon GPS tracking unit for your camera, this menu item holds settings related to its operation. This book doesn't cover this accessory, but the manual that comes with the unit explains everything you need to know about using it.

➤ **Eye-Fi upload:** Your camera can work with some Eye-Fi memory cards, which enable you to send your pictures over a wireless network to your computer. If you do put one of the cards in the camera, this menu option contains settings for making the transfer.

Unfortunately, Eye-Fi cards are significantly more expensive than regular cards — about \$80 for a 2MB card. But if you do use the cards and you find yourself in a situation where wireless devices are not allowed, choose Disable from the Eye-Fi upload menu to shut off the signal. For the whole story on Eye-Fi, including help with setting up your wireless transfers, visit the company's Web site at www.eye.fi.

➤ **Firmware Version:** Select this option and press OK to view what version of the camera firmware, or internal software, your camera is running. You see three separate firmware items, A, B, and L. At the time this book was written, all three items were in version 1.0.0.

Keeping your camera firmware up-to-date is important, so visit the Nikon Web site (www.nikon.com) regularly to find out whether your camera sports the latest version. You can find detailed instructions on how to download and install any firmware updates on the site.

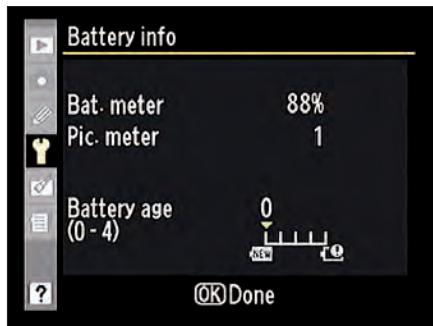


Figure 1-21: You can check the health of your battery via the Battery Info menu item.

Browsing the Custom Setting menu

Displaying the Custom Setting menu, whose icon is a little pencil, takes you to the screen shown in Figure 1-22. Here you can access six submenus that carry the labels A through F. Each of the submenus holds clusters of options related to a specific aspect of the camera’s operation. Highlight a submenu and press OK to get to those actions, as shown in Figure 1-23.



Figure 1-22: The Custom Setting menu contains six submenus (A through F).

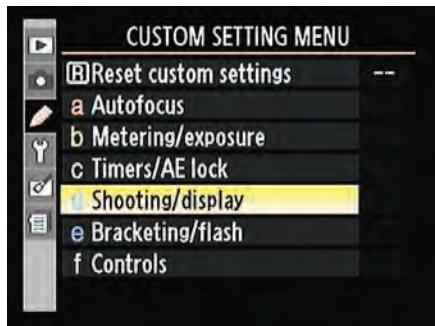


Figure 1-23: Highlight a submenu and press OK again to access the available settings.

In the Nikon manual, instructions sometimes reference these settings by a menu letter and number. For example, “Custom Setting a1” refers to the first option on the Autofocus submenu. I try to be more specific in this book, however, so I use the actual setting names. (Really, we’ve all got enough numbers to remember, don’t you think?)

With that clarification out of the way, the following sections describe only the customization options related to basic camera operations. Turn to the index for help locating information about other Custom Setting options.

Adjusting automatic monitor shutdown

To help save battery power, your camera automatically shuts off the monitor after a period of inactivity. You can specify how long you want the camera to wait before taking that step. Open the Custom Setting menu, choose Timers/AE Lock, and press OK. Then highlight Monitor Off Delay, as shown on the left in Figure 1-24, and press OK to display the second screen in the figure, where you can specify the auto-off timing for picture playback, menu displays, and the Shooting Information display. Additionally, you can adjust the length of time the camera displays a picture immediately after you press the shutter button, known as the Image Review period. Chapter 4 talks more about viewing your photos.



Figure 1-24: Visit the Timers/AE Lock submenu to adjust the timing of automatic monitor shut-off.

Customizing shooting and display options

Visit the Shooting/Display submenu (refer to Figure 1-23) to tweak various aspects of how the camera communicates with you, as well as to control a couple of basic shooting functions. Check out the following options:

- ✓ **Beep:** By default, your camera beeps at you after certain operations, such as after it sets focus when you shoot in autofocus mode. If you're doing top-secret surveillance work and need the camera to hush up, set this option to Off. On the Shooting Info and Control panel displays, a little musical note icon appears when the beep is enabled. Turn the beep off, and the icon appears in a circle with a slash through it.
- ✓ **Viewfinder grid display:** You can display tiny gridlines in the viewfinder by setting this option to On. The gridlines are a great help when you need to ensure the alignment of objects in your photo — for example, to make sure that the horizon is level in a landscape.

✓ **ISO Display and Adjustment:** Normally, the frame count area of the Control panel and viewfinder indicate how many shots will fit in the remaining space on your memory card. But if you prefer, you can use this display space to instead show the current ISO setting. See Chapter 5 for the complete story on this option.

✓ **Viewfinder warning display:** You can ask the camera to display the following extra symbols in the viewfinder, as illustrated in Figure 1-25:

- **Black-and-white:** Turn this option on to display a B/W symbol when you enable the Monochrome (black-and-white) Picture Control. You can read about Picture Controls and other color options in Chapter 6.
- **Low battery:** If you turn on this option, a picture of a nearly empty battery appears when your camera battery is about to poop out.
- **No memory card:** This warning, when enabled, lets you know that you forgot to put a memory card in the camera. (You can also simply take a quick look at frames-remaining area of the viewfinder or Control panel; it displays the symbol [-E-] when the memory card slot is empty.)

✓ **Screen Tips:** If you don't want to see the little help labels that appear when you select certain options in the Shooting Information display, turn this option off. For a look at what I'm talking about, revisit Figure 1-17.

✓ **File Number Sequence:** This option controls how the camera names your picture files. When the option is set to Off, as it is by default, the camera restarts file numbering at 0001 every time you format your memory card or insert a new memory card. Numbering is also restarted if you create custom folders (an advanced option covered in Chapter 11).

Needless to say, this setup can cause problems over time, creating a scenario where you wind up with multiple images that have the same filename — not on the current memory card, but when you download images to your computer. So I strongly encourage you to set the option to On. Note that when you get to picture number 9999, file numbering is still reset to 0001, however. The camera automatically creates a new folder to hold for your next 9999 images.

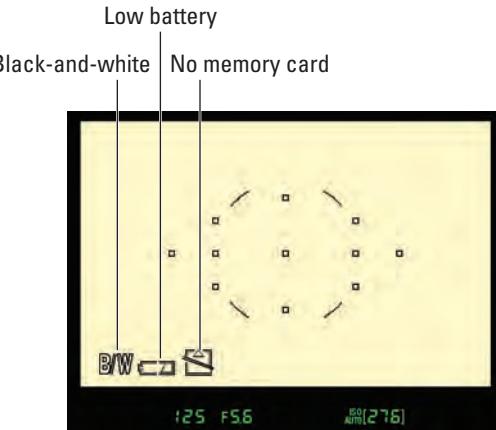


Figure 1-25: You can display a low-battery warning in the viewfinder.



As for the Reset option, it enables you to assign the first file number (which ends in 0001) to the next picture you shoot. Then the camera behaves as if you selected the On setting.

Should you be a really, really prolific shooter and snap enough pictures to reach image 9999 in folder 999, the camera will refuse to take another photo until you choose that Reset option and either format the memory card or insert a brand new one.

- ✓ **Shooting Information Display:** Normally, the camera tries to make the data on the display easier to read by automatically shifting from black text on a light background to light text on a black background, depending on the ambient light. If you prefer one display style over the other, visit this menu item and highlight Manual, as shown on the left in Figure 1-26. Press OK to display the screen shown on the right, and then select either Dark on Light (for dark lettering on a light background) or Light on Dark (for light lettering on a dark background). Press OK again to make the change. If you want to go back to the default setting, select Auto from the first screen (shown on the left in the figure).

In this book, I show the Shooting Information screen using the Dark on Light display because it reproduces better in print.

- ✓ **LCD Illumination:** This setting affects a backlight that can be turned on to illuminate the Control panel. When the option is set to Off, as it is by default, you can illuminate the panel briefly by rotating the On/Off switch past the On setting, to the little light bulb marking. The backlight turns off automatically a few seconds after you release the switch.

If you instead set the LCD Illumination option to On, the backlight comes on automatically anytime the exposure meters are activated (which happens when you press the shutter button halfway). See Chapter 5 for more about the exposure meters. Be aware that this option consumes more battery power than simply using the On/Off switch to light up the panel when you really need it.

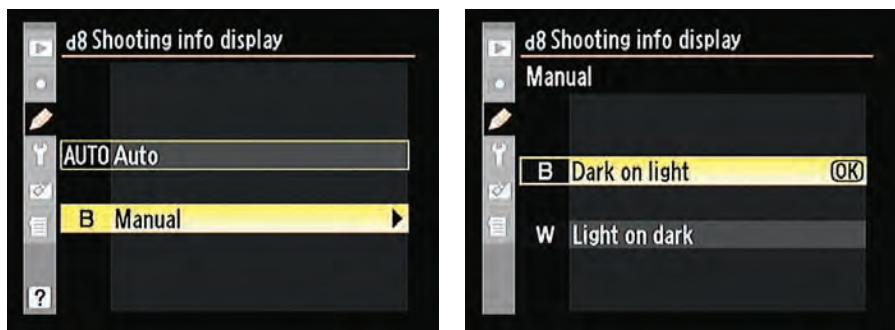


Figure 1-26: This book uses the Dark on Light option when showing the Shooting Information display.

- ☛ **Exposure Delay Mode:** If you turn this option on, the camera waits to record your picture until about one second after you press and release the shutter button. What's the point? Well, a tiny mirror inside the camera moves every time you press the shutter button to take a picture. For shots that require a long exposure time, there is a slight chance that the vibration caused by that mirror movement will blur the picture. So by delaying the actual image capture a little, the odds of that mirror-related blur are lessened. For normal shooting, leave this one at its default setting, Off. And check out Chapter 2 for information on using the camera's self-timer function as an alternative option when you want to delay the shutter release.
- ☛ **Flash warning:** When you shoot in the advanced exposure modes (P, S, A, and M), the camera displays a blinking flash symbol (a little lightning bolt) in the viewfinder if it thinks you need to use the flash. If this warning annoys you, set this option to Off.
- ☛ **MB-D80 Battery Type:** You don't need to worry about this control unless you buy the optional MB-D80 battery adapter that enables you to power your camera with AA batteries. If you go that route, select this option to specify which type of AAs you're using. And be sure to read the manual for a list of what AA batteries are acceptable, as well as some other details about using them.

Preventing shooting without a memory card

If you explore the Controls submenu of the Custom Setting menu, you find an option called No Memory Card. Keep this one set at the default (Release Locked), which disables the shutter button when no memory card is in the camera. If you set it to Enable Release, you can take a temporary picture, which appears in the monitor with the word "Demo" but isn't recorded anywhere. (The feature is provided mainly for use in camera stores, enabling salespeople to demonstrate the camera without having to keep a memory card installed.)

The other options on this menu enable you to change the function of various buttons as well as the command and sub-command dials. Chapter 11 provides details, but while you're working with this book, leave all these options at their default settings so that things operate as I describe.

Restoring default settings

You can quickly reset all the Custom Setting menu options to their original, factory default settings by choosing the Reset command at the top of the menu. (Refer to Figure 1-22). Press OK to display a confirmation screen that asks whether you really want to go forward with the reset; highlight Yes and press OK again.



To restore critical picture-taking settings *without* affecting options on the Custom Setting menu, you can instead use the so-called *two-button reset* method: Press and hold the Exposure Compensation button and the AF button simultaneously for longer than two seconds. (The little green dots near the buttons are a reminder of this function.)



One fly in the ointment to remember — and it's a pretty big, ugly, hairy fly: After you restore the camera defaults, be sure that you also revisit the File Number Sequence option on the Shooting/Display submenu of the Custom Settings menu. The default setting, Off, is Not a Good Thing; turn the option On to avoid file-number confusion. See the earlier section “Customizing shooting and display options” for details. (You don’t have to take this step if you use the two-button reset method of restoring defaults.)

Taking Great Pictures, Automatically

In This Chapter

- ▶ Shooting your first pictures
- ▶ Setting focus and exposure automatically
- ▶ Using flash in automatic exposure modes
- ▶ Getting creative by using Digital Vari-Program modes
- ▶ Changing from single-frame to continuous shooting
- ▶ Exploring self-timer and remote-control photography

Are you old enough to remember the Certs television commercials from the 1960s and '70s? "It's a candy mint!" declared one actor. "It's a breath mint!" argued another. Then a narrator declared the debate a tie and spoke the famous catchphrase: "It's two, two, two mints in one!"

Well, that's sort of how I see the Nikon D90. On one hand, it provides a full range of powerful controls, offering just about every feature a serious photographer could want. On the other, it offers automated photography modes that enable people with absolutely no experience to capture beautiful images. "It's a sophisticated photographic tool!" "It's as easy as 'point and shoot'!" "It's two, two, two cameras in one!"

Now, my guess is that you bought this book for help with your camera's advanced side, so that's what other chapters cover. This chapter, however, is devoted to your camera's simpler side. Because even when you shoot in automatic exposure and focus modes, following a few basic guidelines can help you get better results. For example, your camera offers a variety of automatic exposure modes, some of which may be new to you. The mode affects the look of your pictures, so this chapter explains those options.



In addition, this chapter reviews flash options available to you in automatic modes and covers techniques that enable you to get the best performance from your camera's autofocus and autoexposure systems.

Note that this chapter covers normal, through-the-viewfinder still photography. For help with shooting in Live View mode, where you compose pictures using the monitor instead of the viewfinder, or shooting movies, visit the end of Chapter 4.

Getting Good Point-and-Shoot Results

Your D90 offers several automatic photography modes, all of which I explain later in this chapter. But in any of those modes, the key to good photos is to follow a specific picture-taking technique.



To try it out, set the Mode dial on top of the camera to Auto, as shown in the left image in Figure 2-1. Then set the focusing switch on the lens to the A (autofocus) position, as shown in the right image in Figure 2-1. The figure and these instructions assume that you're using the *kit lens* — the Nikkor 18–105mm AF-S lens bundled with the D90. For an AF lens, also set the body switch to the AF position, as shown in the figure. If you use some other lens, see Chapter 1 for information about autofocusing and manual focusing.



Figure 2-1: Choose these settings for fully automatic exposure and focus.



Unless you are using a tripod, also set the VR (vibration reduction) switch to the On setting, as shown in Figure 2-1. This feature is designed to produce sharper images by compensating for camera movement that can occur when you handhold the camera. Again, Figure 2-1 features a Nikon VR lens; for other lenses, check your lens manual for details about using its vibration reduction feature, if provided.

Your camera is now set up to work in the most automatic of automatic modes. Follow these steps to take the picture:

- 1. Looking through the viewfinder, frame the image so that your subject appears under one of the 11 focusing points, as shown in Figure 2-2.**

The focusing points are those tiny rectangles you see clustered near the center of viewfinder. I labeled one of the little guys in the figure.

- 2. Press and hold the shutter button halfway down.**

The camera's autofocus system begins to do its thing. In dim light, a little lamp located on the front of the camera, just to the left of the shutter button, may shoot out a beam of light. That lamp, called the *autofocus-assist illuminator*, helps the camera measure the distance between your subject and the lens so that it can better establish focus.

At the same time, the autoexposure meter analyzes the light and selects initial aperture (f-stop) and shutter speed settings, which are two critical exposure controls. These two settings appear in the viewfinder; in Figure 2-2, the shutter speed is 1/320 second, and the f-stop is f/5.6. (Chapter 5 explains these two options in detail.) The built-in flash may pop up if the camera thinks additional light is needed.

When the camera has established focus, all the focus points briefly blink red, and one or more of the points appears red and surrounded by red brackets, as shown in Figure 2-3. The focusing points that are hugged by those rectangles represent the areas of the frame that are now in focus.



Figure 2-2: The small rectangles in the viewfinder indicate autofocus points.



In the display at the bottom of the viewfinder, the green focus lamp, labeled in the figure, lights to give you further notice that focus has been achieved.

The autoexposure meter continues monitoring the light up to the time you take the picture, so the f-stop and shutter speed values in the viewfinder may change if the light shifts.

3. Press the shutter button the rest of the way down to record the image.



While the camera sends the image data to the camera memory card, the memory card access lamp lights, as shown in Figure 2-4. Don't turn off the camera or remove the memory card while the lamp is lit, or you may damage both camera and card.

When the recording process is finished, the picture appears briefly on the camera monitor. If the picture doesn't appear or you want to take a longer look at the image, see Chapter 4 for help.



I need to add a few important points about working in the Auto mode and the other point-and-shoot modes covered in this chapter:

- ✓ **Release mode options:** The steps here assume that you are using the default Release mode, in which the camera records a single image with each press of the shutter button. For a look at other options — continuous (burst mode) shooting, self-timer shooting, and remote-control shooting — see the section, “Changing the (Shutter Button) Release Mode,” later in this chapter.
- ✓ **Flash options:** Whether you can use flash and which flash modes are available depends on the automatic exposure mode you use. See the next section for details.

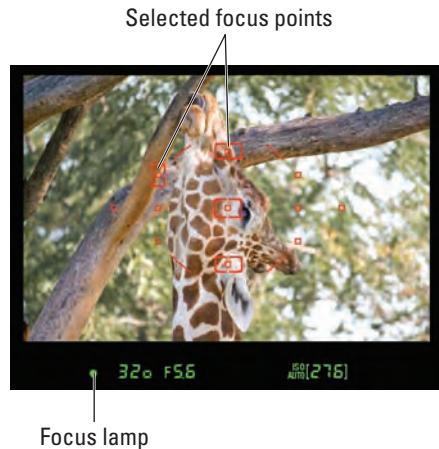


Figure 2-3: The green light indicates that the camera has locked focus on the objects under the bracketed focusing points.



Figure 2-4: The memory card access lamp lights while the camera sends the picture data to the card.

☛ **Autofocus options:** You can choose to focus manually or take advantage of autofocusing in any exposure mode. If you go the autofocus route, you can customize the behavior of the autofocus system through options discussed in Chapter 6. Instructions in this chapter assume that you stick with the default autofocus options.

But understand that in some cases, no amount of fiddling with the autofocus settings will help your camera lock focus where you intend. Some subjects just give autofocus systems fits: Highly reflective objects, subjects behind fence bars, and scenes in which little contrast exists between the subject and the background are just a few potential problem areas.

My advice? If the autofocus mechanism can't lock on to your subject after a few seconds, just switch to manual focusing and be done with it. See Chapter 1 for a primer in manual focusing.



More focus factors to consider

When you focus the lens, either in autofocus or manual focus mode, you determine only the point of sharpest focus. The distance to which that sharp-focus zone extends from that point—what photographers call the *depth of field*—depends in part on the *aperture setting*, or *f-stop*, which is an exposure control. Some of the D90's Digital Vari-Program autoexposure modes are designed to choose aperture settings that deliver a certain depth of field.

The Portrait setting, for example, uses an aperture setting that shortens the depth of field so that background objects are softly focused—an artistic choice that most people prefer for portraits. On the flip side of the coin, the Landscape setting selects an aperture that produces a large depth of field so that both foreground and background objects appear sharp.

Another exposure-related control, *shutter speed*, plays a focus role when you photograph moving objects. Moving objects appear blurry at slow shutter speeds; at fast shutter speeds, they appear sharply focused. On your D90, the camera chooses a fast shutter speed in Sports shooting mode.

A fast shutter speed can also help safeguard against allover blurring that results when the camera is moved during the exposure. The faster the shutter speed, the shorter the exposure time, which reduces the time that you need to keep the camera absolutely still. If you're using the Nikon D90 kit lens, you can also improve your odds of shake-free shots by enabling the vibration reduction (VR) feature. (Set the switch on the lens to the On position.) For a very slow shutter speed, using a tripod is the best way to avoid camera shake; be sure to turn the VR off when you do so.

Keep in mind, too, that the range of f-stops and shutter speeds the camera can select in any of the automatic exposure modes depends on the lighting conditions. When you're shooting at night, for example, the camera may not be able to select a shutter speed fast enough to stop action even in Sports mode.

If you want to manipulate focus and depth of field to a greater extent than the automated exposure modes allow, visit Chapter 6. For an explanation of the role of shutter speed and aperture in exposure, check out Chapter 5.

Using Flash in Automatic Exposure Modes

The built-in flash on your D90 offers a variety of different modes. Table 2-1 offers a quick-reference guide to the six basic modes. In addition to these basic modes, the camera also offers some combo modes, such as Auto with Red-Eye Reduction, Slow Sync with Red-Eye Reduction, and the like.

Table 2-1

Flash Mode Quick-Reference Guide

Symbol	Flash Mode	What It Does
	Auto	Fires the flash automatically if the camera thinks the ambient light is insufficient
	Fill	Fires the flash regardless of the ambient light
	Off	Disables the flash
	Red-Eye Reduction	AF-assist lamp lights briefly before the flash goes off to help reduce red-eye reflections
	Slow Sync	Results in a longer-than-normal exposure time so that the background is illuminated by ambient light and the foreground is lit by the flash
	Rear-Curtain Sync	Causes illuminated, moving objects (such as car head lamps) to appear as long, trailing fingers of light

You can check the current flash mode in the control panel and the Shooting Information display, as shown in Figure 2-5. (To display the Shooting Information screen, press the Info button.) The viewfinder display doesn't advise you of the specific flash mode but instead just shows the universal lightning bolt icon when the flash is enabled, as shown in the figure, and turns off the icon when the flash is disabled.



The letters *TTL* that appear with the flash mode icon in the Shooting Information display stand for *Through the Lens*, which relates to the fact that at the default flash settings, the camera determines how much flash power is needed by metering the light coming through the lens. Nikon's version of this flash-metering system is officially named *i-TTL*, with the *i* standing for *intelligent*.



- To change the flash mode, press and hold the Flash button on the side of the camera as you rotate the main command dial. (That's the one on the back of the camera.)

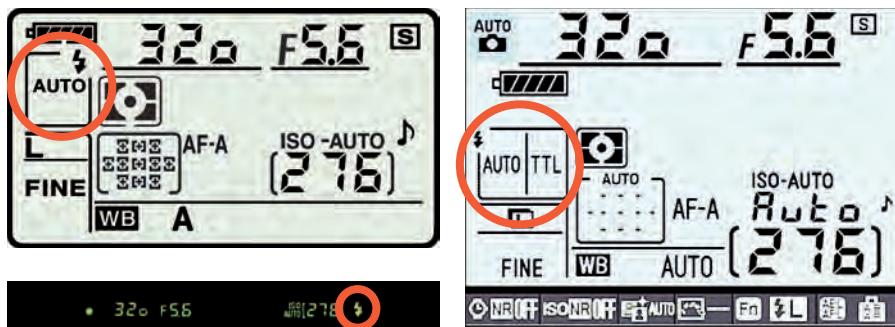


Figure 2-5: Look in these spots to check flash status.



Now for the bad news: When you do try to change the flash mode, you'll quickly discover that you have access to only a couple of flash modes when you shoot in the automatic exposure modes covered in this chapter. Additionally, you don't have access to flash compensation, which enables you to diminish or strengthen the burst of light the flash produces, as well as a few other flash features your camera offers. Bummer, as the youngsters say.

The upcoming sections tell you which flash modes are available in each of the fully automatic exposure modes. For more details about flash photography, see Chapter 5.

Exploring Your Automatic Exposure Options

You can choose from seven fully automatic exposure modes, all of which you access via the Mode dial on the top of the camera, shown in Figure 2-6.

The next sections provide details on each of these options. For information about the four other settings on the Mode dial — P (programmed autoexposure), S (shutter-priority autoexposure), A (aperture-priority autoexposure), and M (manual exposure) — see Chapter 5.

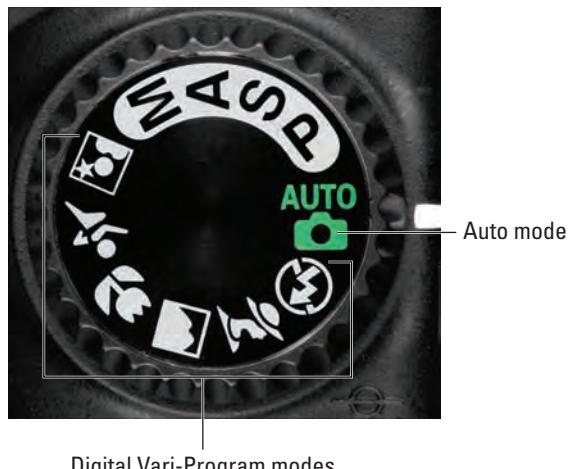


Figure 2-6: You can select from seven fully automatic, point-and-shoot photography modes.



Remember that in any of these exposure modes, you have the option to focus manually or take advantage of autofocusing.

Auto mode



In Auto mode, represented on the Mode dial by the icon you see in the margin here, the camera selects all settings based on the scene that it detects in front of the lens. Your only job is to lock in focus, either by using the autofocus technique that I outline at the beginning of the chapter or by using the manual-focusing method explained in Chapter 1.

Auto mode is great for casual, quick snapshooting. But keep these details in mind:



✓ **Autofocusing:** At the default settings, autofocusing works like so:

- The camera analyzes the scene and then selects which of the 11 autofocus points to use when establishing focus.
- If the subject isn't moving, focus remains locked as long as you hold the shutter button halfway down. But if the camera detects motion, it continually adjusts focus up to the time you press the button fully to record the picture. To ensure that focus is correct, you must keep your subject within the area of the viewfinder covered by the focusing points.

Chapter 6 explains how to modify these autofocusing characteristics. (Look for the sections related to the AF-area mode and Autofocus mode options.) But you may find it easier to simply switch to manual focusing if you have trouble getting the camera to autofocus on your subject.

✓ **Flash:** You have only three flash mode choices: Auto, Auto with Red-Eye Reduction, and Off. (See Table 2-1 for a reminder of what these modes do.) You can't enable the flash if the camera's autoexposure meter doesn't sense that additional light is needed.

✓ **Color:** You can't adjust color. If the image displays a color cast, you must switch to a mode that enables you to adjust the White Balance setting, covered in Chapter 6.

✓ **Exposure:** You have access to only one exposure-adjustment option, ISO Sensitivity. This setting determines the light sensitivity of the camera — or, to put it another way, how much light is needed to properly expose the image. By default, this option is set to Auto, and the camera adjusts the ISO Sensitivity as needed. For more information about how ISO affects your pictures — and why you may want to select a specific ISO setting — visit Chapter 5.



What does [r 12] in the viewfinder mean?

When you look in your viewfinder to frame a shot, the initial value shown in brackets at the right end of the viewfinder display indicates the number of additional pictures that can fit on your memory card at the currently selected Image Size and Image Quality settings. (Chapter 3 explains those settings.) For example, in the left viewfinder image below, the value shows that the card can hold 612 more images.

As soon as you press the shutter button half-way, which kicks the autofocus and exposure mechanisms into action, that value changes to instead show you how many pictures can fit in the camera's *memory buffer*. In the right image here, for example, the r 12 value tells you that 12 pictures can fit in the buffer. This number also varies depending on the size and quality settings you use. (The dot at the left end of the display is the focus lamp, which lights when focus is achieved.)

So what's the *buffer*? It's a temporary storage tank where the camera stores picture data until it has time to fully record that data onto the camera memory card. This system exists so that you can take a continuous series of pictures without having to wait between shots until each image is fully written to the memory card.

When the buffer is full, the camera automatically disables the shutter button until it catches up on its recording work. Chances are, though, that you'll very rarely, if ever, encounter this situation; the camera is usually more than capable of keeping up with your shooting rate.

For more information about rapid-fire photography, see the section on action photography in Chapter 7. And for help translating all the other viewfinder information, check out Chapters 5 and 6.



I purposely didn't include an example of a photo taken in Auto mode because, frankly, the results that this setting creates vary widely depending on how well the camera detects whether you're trying to shoot a portrait, landscape, action shot, or whatever, as well as on lighting conditions. But the bottom line is that full auto is a one-size-fits-all approach that may or may not take best advantage of your camera's capabilities. So if you want to more consistently take great pictures instead of merely good ones, I encourage you to explore the exposure, focus, and color information found in Part II so that you can abandon this mode in favor of modes that put more photographic decisions in your hands.



Digital Vari-Program modes

In Auto mode, the camera tries to figure out what type of picture you want to take by assessing what it sees through the lens. If you don't want to rely on the camera to make that judgment, your D90 offers six *Digital Vari-Program modes*, which are designed to automatically capture specific scenes in ways that are traditionally considered best from a creative standpoint. For example, most people prefer portraits that have softly focused backgrounds. So in Portrait mode, the camera selects settings that can produce that type of background.

All the Digital Vari-Program modes share a few limitations:

- ✓ **Exposure:** As with Auto mode, the camera takes complete control of exposure, with the exception of the ISO Sensitivity setting, introduced in the preceding section and detailed in Chapter 5.
- ✓ **Color:** You can't tweak color, either. Some modes manipulate colors in ways that you may or may not appreciate, and you're stuck if you have a color cast problem.
- ✓ **Flash:** Available flash options vary depending on the Digital Vari-Program mode you select, but none of the modes offers complete flash flexibility.

In the next sections, you can read about the unique features of each of the Digital Vari-Program modes. To see whether you approve of how your camera approaches the different scenes, take some test shots. If you aren't happy with the results, you can switch to one of the advanced exposure modes (P, S, A, or M) and then check out Chapters 5–7 to find out how to manipulate whatever aspect of the picture isn't to your liking.



Auto Flash Off mode

The Auto Flash Off mode delivers the same results as Auto mode but ensures that the flash doesn't fire. In other words, think of this mode as a faster alternative to selecting Auto mode and then changing the flash setting to Off. From a practical standpoint, this mode provides an easy way to ensure that you don't break the rules when shooting in locations that don't permit flash: museums, churches, and so on.



Portrait mode

As its name suggests, this mode is designed for shooting portraits. It affects your photos in a couple of ways:



✓ **Depth of field:** This mode is designed to produce a short depth of field (zone of sharp focus) so that your subject is sharp but the background is blurry, as illustrated in Figure 2-7. However, the camera achieves the shorter depth of field by opening the aperture to a wide setting (low f-stop number). In very bright lighting, the camera may be forced to “stop down” the aperture to a higher f-stop number, which reduces the amount of background blurring. (Chapter 5 explains aperture and f-stops, if those terms are new to you.)

You can maximize the blurring by moving your subject as far as possible from the background and by using a lens with a long focal length, better known as a *telephoto* lens. For example, if you own the 18–105mm kit lens, zoom all the way to the 105mm focal length to maximize background blurring. See Chapter 6 for an explanation of focal length and the complete scoop on how to manipulate depth of field.

- ✓ **Skin tones:** In this mode, the camera tweaks color, sharpness, contrast, and a few other picture characteristics in a way designed to produce natural skin tones. If you don’t like the results, you must switch to P, S, A, or M exposure mode, all of which enable you to fine-tune these aspects of your picture. See Chapters 5 and 6 for details.
- ✓ **Autofocusing:** Autofocusing works as in Auto mode, described earlier in this chapter.
- ✓ **Flash:** You can choose from Auto, Auto with Red-Eye Reduction flash, or Off. You can’t access Fill Flash mode, which means that you can’t add flash if the camera doesn’t think extra lighting is needed. This restriction can be problematic when shooting outdoor portraits, which often benefit from a small pop of flash light even in bright sunlight. See Chapter 7 for an example as well as some other tips on shooting portraits by flash light.

Portrait mode

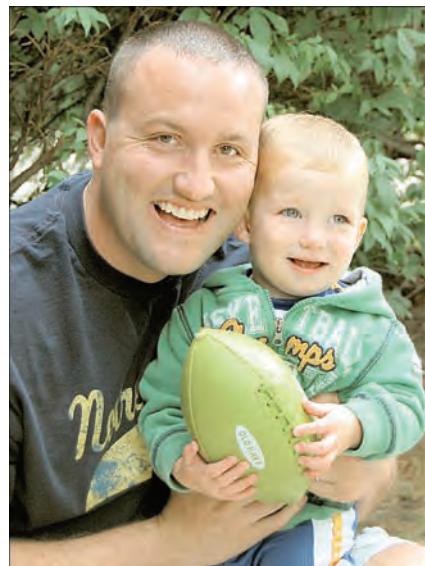


Figure 2-7: Portrait mode produces a softly focused background.

Landscape mode



Whereas Portrait mode aims for a very shallow depth of field (small zone of sharp focus), Landscape mode, which is designed for capturing scenic vistas, city skylines, and other large-scale subjects, goes the other route, selecting an aperture setting (f-stop) that produces a large depth of field. As a result, objects both close to the camera and at a distance appear sharply focused. Figure 2-8 offers an example. For this picture, I set focus on the tree on the far right side of the frame. Notice that the tree on the far left appears nearly as sharp, despite its distance from my established focus point.

Note these other factoids about Landscape mode:

- ✓ **Depth of field:** As with Portrait mode, the camera manipulates depth of field by adjusting the aperture setting (f-stop). To produce the larger depth of field, the camera tries to use a high f-stop value, which means a very small aperture. But in dim lighting, the camera may be forced to open the aperture to allow enough light into the camera to properly expose the photo, so the depth of field may not be enough to keep the entire landscape in sharp focus. (Again, Chapter 5 offers a primer on aperture; Chapter 6 fully explains depth of field.)
- ✓ **Color and contrast:** This mode boosts color saturation and contrast slightly to produce the kind of bold, rich hues that most people prefer in landscape pictures. In addition, greens and blues are emphasized. If you want more control, switch to an advanced exposure mode (P, S, A, or M) and see Chapter 6 for details.
- ✓ **Autofocusing:** Autofocusing works just as for Auto mode, described earlier in this chapter.
- ✓ **Flash:** The built-in flash is disabled, which is typically no big deal: Because of its limited range, a built-in flash is of little use when shooting most landscapes anyway. However, if you attach an external flash unit, you can use it in this mode. (Chapter 5 discusses external flash units.)

Landscape mode



Figure 2-8: Landscape mode produces a large zone of sharp focus and also boosts color intensity slightly.

Sports mode



Sports mode activates a number of settings that can help you photograph a moving object, whether it's an athlete, a race car, or a romping dog like the one in Figure 2-9. Here's what you need to know:

- ✓ **Shutter speed:** In order to catch a moving subject without blur, you need a fast shutter speed. So in Sports mode, the camera automatically chooses that fast shutter speed for you.



Understand, though, that in dim lighting, the camera may not be able to select a very fast shutter speed and still deliver a good exposure. And because getting a good exposure trumps all, the shutter speed the camera uses may not be fast enough to “freeze” action, especially if your subject is moving very quickly.

In Figure 2-9, the camera selected a shutter speed that did, in fact, catch my furkid in mid-romp, although if you look very closely, you can see some slight blurring of his beard. Because of the very bright light, the camera also selected a small aperture setting, which produces a large depth of field — so the grass in the background is as sharply focused as that in the foreground. To fully understand these issues, explore Chapters 5 and 6.

- ✓ **Autofocusing:** In Sports mode, the autofocus system works as it does when you shoot in Auto mode and the camera detects motion: That is, it automatically selects the focus point, but focus isn't locked when you press the shutter button halfway, as it is in Portrait and Landscape mode. Instead, the camera continually adjusts focus up to the time you fully depress the shutter button and take the shot.



If your subject moves after you press the shutter button halfway, be sure that you adjust the framing so that the subject remains under one of the focus points. Otherwise, the camera may not lock focus on the subject correctly.

Sports mode



Figure 2-9: To capture moving subjects without blur, try Sports mode.

 **Flash:** The built-in flash is disabled. That can be a problem in low-light situations, but it also enables you to shoot successive images more quickly because the flash needs a brief period to recycle between shots. If you own an external flash unit, however, you can use it in Sports mode if you like; just be aware that you may sacrifice in the speed-shooting department because of the necessary flash-recycle time. Additionally, you may be limited to a maximum shutter speed of 1/200 second, depending on the flash; Chapter 5 has tips on this subject.



Sometimes, allowing a moving object to blur can actually create a heightened sense of motion — an artistic choice that you can't make in Sports mode. For more control over shutter speed, try out S mode (shutter-priority autoexposure), explained in Chapter 5.

Close Up mode



Switching to Close Up mode doesn't enable you to focus at a closer distance to your subject than normal as it does on some non-SLR cameras. The close-focusing capabilities of your camera depend entirely on the lens you bought, so check your lens manual for details.

Close Up mode does affect your pictures in a couple of ways, however:

- 
-  **Depth of field:** Close Up mode, like Portrait mode, selects an aperture setting designed to produce short depth of field, which helps keep background objects from competing for attention with your main subject. As with Portrait mode, though, how much the background blurs varies depending on the available light (which determines the aperture setting the camera can use), the distance between your subject and the background, as well as the lens focal length, explained in Chapter 6.
 -  **Autofocusing:** At the default autofocusing settings, focus is automatically locked on the object at the center of the frame when you press the shutter button halfway.
 -  **Flash:** You can set the Flash mode to Auto, Auto with Red-Eye Reduction, and Off. (I urge you, though, to be very careful about using the built-in flash when you're shooting a person or animal at close range — that strong burst of light isn't healthy for the eyes.)

Chapter 7 offers additional tips on close-up photography.

Night Portrait mode



This mode is designed to deliver a better-looking flash portrait at night (or in any dimly lit environment). It does so by constraining you to using Auto Slow Sync, Auto Slow Sync with Red-Eye Reduction, or Off flash modes. In all three flash modes, the camera selects a shutter speed that results in a long exposure time. That slow shutter speed enables the camera to rely more on ambient light and less on the flash to expose the picture, which produces softer, more even lighting.



I cover the issue of long-exposure and slow-sync flash photography in detail in Chapter 5. For now, the critical thing to know is that the slower shutter speed means that you probably need a tripod. If you try to handhold the camera, you run the risk of moving the camera during the long exposure, resulting in a blurry image. Enabling the vibration reduction (VR) feature of your lens, if available, can help, but for nighttime shooting, even that may not permit successful handheld shooting. Your subjects also must stay perfectly still during the exposure, which can add to the challenge.

Autofocusing in this mode works the same way as in Auto mode, described earlier in this chapter.

Changing the (Shutter Button) Release Mode



In addition to all its other mode settings — exposure modes, focus modes, flash modes, and the like — your D90 offers a generically named but critical setting called Release mode. This setting determines how you trigger the actual image capture and what happens after you take that step. You have the following options:



Single Frame: This setting, which is the default, records a single image each time you press the shutter button completely. In other words, this is normal-photography mode.



Continuous Low: Sometimes known as *burst mode*, this mode records a continuous series of images as long as you hold down the shutter button. At the default setting, Continuous Low mode can capture a maximum of three frames per second. But you can change the maximum capture number to 1, 2, or 4 frames per second. Just open the Custom Setting menu, select the Shooting Display submenu, and then select item d6, CL Mode Shooting Speed, as shown in Figure 2-10.

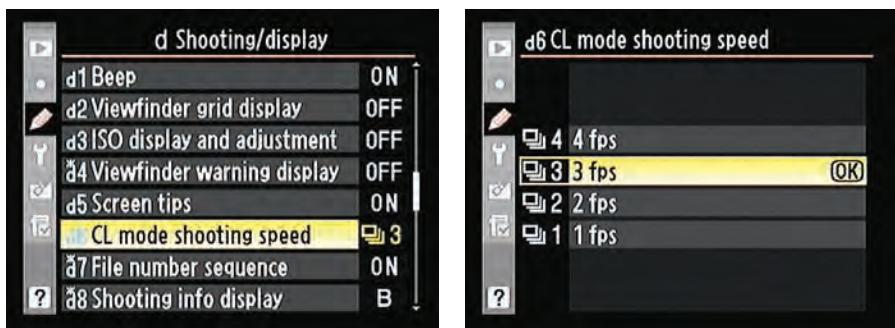


Figure 2-10: You can specify the maximum frames-per-second rate for Continuous Low Release mode.



- ✓ **Continuous High:** This mode works just like Continuous Low except that it has a maximum frames-per-second rate of four to five frames. You can't adjust the maximum rate for this mode.



Both of the Continuous modes are designed to make it easier for you to capture action. But keep in mind that the actual number of frames you can record per second depends in part on your shutter speed. At a slow shutter speed, the camera may not be able to reach the maximum frame rate. (See Chapter 5 for an explanation of shutter speed.)



- ✓ **Self-Timer:** Want to put yourself in the picture? Select this mode, press the shutter button, and run into the frame. As soon as you press the shutter button, the autofocus-assist illuminator on the front of the camera starts to blink, and the camera emits a series of beeps (assuming that you didn't disable its voice, a setting I cover in Chapter 1). A few seconds later, the camera captures the image.

At the default settings, the capture-delay time is 10 seconds, and the camera records one shot for each press of the shutter button. But you can adjust both the delay time and the number of images recorded by visiting the Custom Setting menu. After you pull up the menu, choose the Timers/AE Lock submenu and then select the Self Timer option, as shown on the left in Figure 2-11. Press OK to access the options, shown on the right in the figure.

You can select a capture-delay time of 2, 5, 10, or 20 seconds and set the number of images recorded between 1 and 9.



- ✓ **Delayed Remote and Quick Response Remote:** The final two Release mode settings relate to the optional Nikon wireless remote-control unit. If you select Delayed Remote, the camera snaps the picture two seconds after you press the shutter-release button on the remote unit. If you select Quick Response Remote, the image is captured immediately.

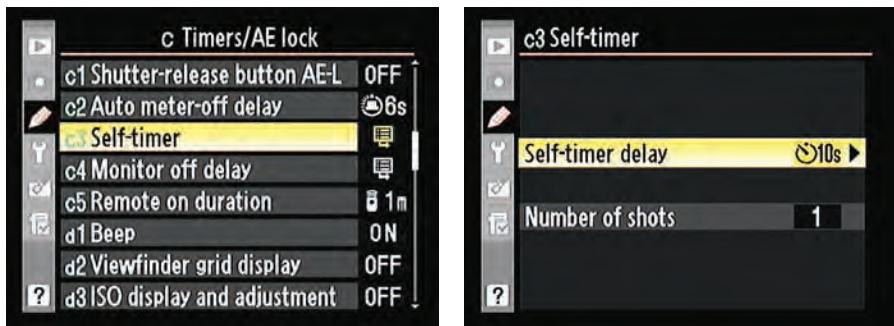


Figure 2-11: You can adjust the self-timer capture delay via the Custom Setting menu.



When you use Self-Timer or the remote control modes, you should remove the little rubber cup that surrounds the viewfinder and then insert the viewfinder cover that shipped with your camera. (Dig around in the accessories box — the cover is a tiny black piece of plastic, about the size of the viewfinder.) Otherwise, light may seep into the camera through the viewfinder and affect exposure. You can also simply use the camera strap or something else to cover the viewfinder in a pinch.

You can see which Release mode is currently selected by inspecting the Control panel or Shooting Information display; look for the Release mode symbol in the areas highlighted in Figure 2-12. (Remember that pressing the Info button brings up the Shooting Information display.)

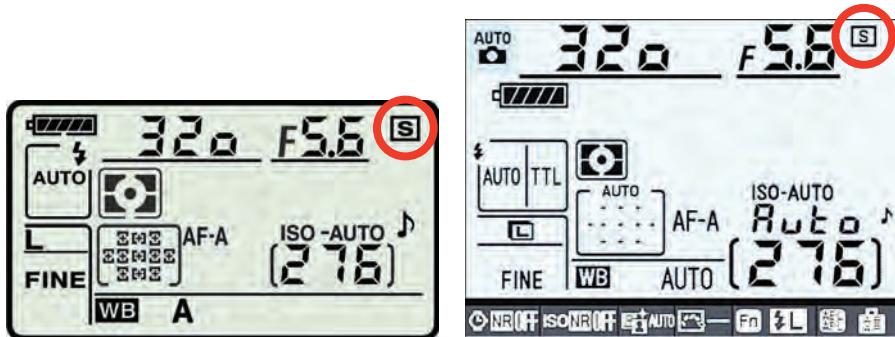


Figure 2-12: You can check the current Release mode in the Control panel and Shooting Information display.



To change the mode, press and hold the Release Mode button on top of the camera (shown in the margin here). As soon as you press the button, all settings except the Release mode disappear from the Control panel and are dimmed in the Shooting Information display. While continuing to press the button, rotate the main command dial (on the back of the camera) to cycle through the available Release mode settings.



Your selected Release mode stays in force until you change it. However, the camera cancels out of the remote control modes if it doesn't receive a signal from the remote after about one minute. You can adjust this timing through an option on the Timers/AE Lock submenu of the Custom Setting menu. Select the Remote On Duration option and press OK to reveal the available options. The maximum delay time is 15 minutes; keep in mind that a shorter delay time saves battery life. After the delay time expires, the camera resets itself to either Single or one of the continuous modes, depending on which mode you last used.

Controlling Picture Quality and Size

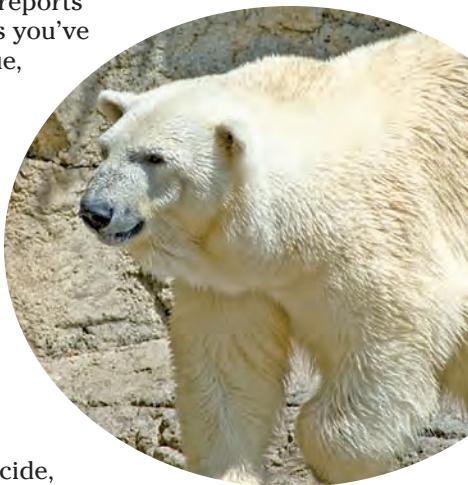
In This Chapter

- ▶ Reviewing factors that lead to poor photo quality
- ▶ Exploring resolution, pixels, and ppi
- ▶ Calculating the right resolution for traditional print sizes
- ▶ Deciding on the best file format: JPEG or NEF?
- ▶ Picking the right JPEG quality level
- ▶ Understanding the tradeoff between picture quality and file size

Almost every review of the D90 contains glowing reports about the camera's top-notch picture quality. As you've no doubt discovered for yourself, those claims are true, too: This baby can create large, beautiful images.

What you may *not* have discovered is that Nikon's default Image Quality setting isn't the highest that the D90 offers. Why, you ask, would Nikon do such a thing? Why not set up the camera to produce the best images right out of the box? The answer is that using the top setting has some downsides. Nikon's default choice represents a compromise between avoiding those disadvantages while still producing images that will please most photographers.

Whether that compromise is right for you, however, depends on your photographic needs. To help you decide, this chapter explains the Image Quality setting, along with the Image Size setting, which is also critical to the quality of images that you print. Just in case you're having quality problems related to other issues, though, the first section of the chapter provides a handy quality-defect diagnosis guide.



A word of warning before you dive in: This stuff may be a little confusing at first. In fact, I pretty much guarantee it. Some math is even involved, which is usually against my principles. On top of that, discussions of picture quality and size involve lots of technical terms, such as pixels, resolution, JPEG compression, and the like.

So take it slowly, and if your eyes start to glaze over, put the book down and come back later for another go-round. It may require a few reads of this chapter, but before long, you'll feel confident about controlling these important aspects of your pictures.

Diagnosing Quality Problems

When I use the term *picture quality*, I'm not talking about the composition, exposure, or other traditional characteristics of a photograph. Instead, I'm referring to how finely the image is rendered in the digital sense.

Figure 3-1 illustrates the concept: The first example is a high-quality image, with clear details and smooth color transitions. The other examples show five common digital-image defects.

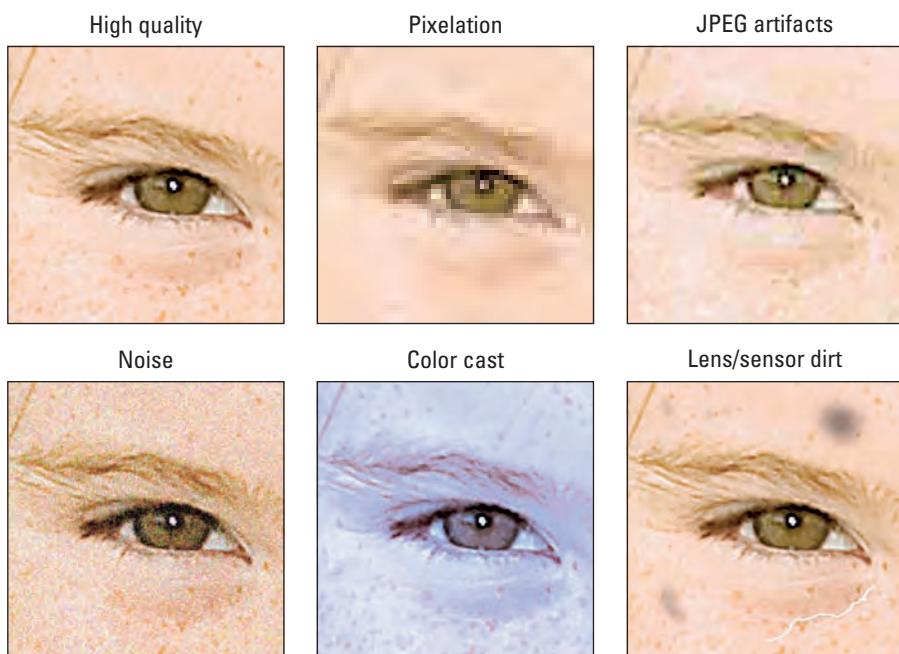


Figure 3-1: Refer to this symptom guide to determine the cause of poor image quality.

Each of these defects is related to a different issue, and only one is affected by the Image Quality setting on your D90. So if you aren't happy with your image quality, first compare your photos to those in the figure to properly diagnose the problem. Then try these remedies:

- ✓ **Pixelation:** When an image doesn't have enough *pixels* (the colored tiles used to create digital images), details aren't clear, and curved and diagonal lines appear jagged. The fix is to increase image resolution, which you do via the Image Size control. See the next section, "Considering Resolution (Image Size)," for details.
- ✓ **JPEG artifacts:** The "parquet tile" texture and random color defects that mar the third image in Figure 3-1 can occur in photos captured in the JPEG (*jay-peg*) file format, which is why these flaws are referred to as *JPEG artifacts*. This is the defect related to the Image Quality setting; see "Understanding the Image Quality Options" to find out more.
- ✓ **Noise:** This defect gives your image a speckled look, as shown in the lower-left example in Figure 3-1. Noise can occur with very long exposure times or when you choose a high ISO Sensitivity setting on your camera. You can explore both issues in Chapter 5.
- ✓ **Color cast:** If your colors are seriously out of whack, as shown in the lower-middle example in the figure, try adjusting the camera's White Balance setting. Chapter 6 covers this control and other color issues. Note, though, that you can control white balance only when you shoot in the advanced exposure modes (P, S, A, and M).
- ✓ **Lens/sensor dirt:** A dirty lens is the first possible cause of the kind of defects you see in the last example in the figure. If cleaning your lens doesn't solve the problem, dust or dirt may have made its way onto the camera's image sensor. See the sidebar "Maintaining a pristine view," elsewhere in this chapter, for information on safe lens and sensor cleaning.



When diagnosing image problems, you may want to open the photos in ViewNX or some other photo software and zoom in for a close-up inspection. Some defects, especially pixelation and JPEG artifacts, have a similar appearance until you see them at a magnified view. (See Part III for information about using ViewNX.)

I should also tell you that I used a little digital enhancement to exaggerate the flaws in my example images to make the symptoms easier to see. With the exception of an unwanted color cast or a big blob of lens or sensor dirt, these defects may not even be noticeable unless you print or view your image at a very large size. And the subject matter of your image may camouflage some flaws; most people probably wouldn't detect a little JPEG artifacting in a photograph of a densely wooded forest, for example.

In other words, don't consider Figure 3-1 as an indication that your D90 is suspect in the image quality department. First, *any* digital camera can produce these defects under the right circumstances. Second, by following the guidelines in this chapter and the others mentioned in the preceding list, you can resolve any quality issues that you may encounter.

Considering Resolution (Image Size)

Like other digital devices, your D90 creates pictures out of *pixels*, which is short for *picture elements*. You can see some pixels close up in the right example of Figure 3-2, which shows a greatly magnified view of the eye area in the left image.

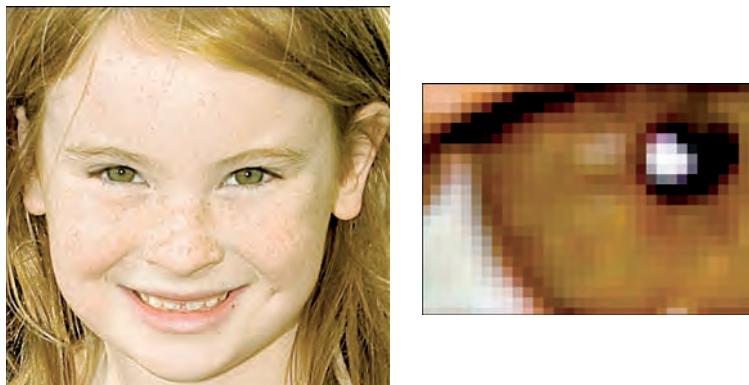


Figure 3-2: Pixels are the building blocks of digital photos.

You specify the pixel count of your images, also known as the *resolution*, via the Image Size control. The D90 offers three Image Size settings: Large, Medium, and Small; Table 3-1 lists the resulting resolution values for each setting.

Table 3-1

Image Size (Resolution) Options

<i>Setting</i>	<i>Resolution</i>
Large	4288 x 2848 pixels (12.2 MP)
Medium	3216 x 2136 pixels (6.9 MP)
Small	2144 x 1424 pixels (3 MP)

In the table, the first pair of numbers shown for each setting represents the image *pixel dimensions* — that is, the number of horizontal pixels and the number of vertical pixels. The values in parentheses indicate the total resolution, which you get by multiplying the horizontal and vertical pixel values. This number is usually stated in *megapixels*, abbreviated MP for short. One megapixel equals 1 million pixels. (I rounded off the MP values in the table.)



Note, however, that if you select Raw (NEF) as your file format, all images are captured at the Large setting. You can vary the resolution only if you select JPEG as the file format. The upcoming section “Understanding the Image Quality Options” explains file formats.

So how many pixels are enough? To make the call, you need to understand how resolution affects print quality, display size, and file size. The next sections explain these issues, as well as a few other resolution factoids.

If you’re already schooled on the subject and just want to know how to select a resolution setting on your D90, skip to “Setting Image Size and Quality,” near the end of this chapter, for specifics.

Pixels and print quality



When mulling over resolution options, your first consideration is how large you want to print your photos, because pixel count determines the size at which you can produce a high-quality print. If you don’t have enough pixels, your prints may exhibit the defects you see in the pixelation example in Figure 3-1, or worse, you may be able to see the individual pixels, as in the right example in Figure 3-2.

Depending on your photo printer, you typically need anywhere from 200 to 300 pixels per linear inch, or *ppi*, of the print. To produce an 8-x-10-inch print at 200 ppi, for example, you need 1600 horizontal pixels and 2000 vertical pixels (or vice versa, depending on the orientation of your print).

Table 3-2 lists the pixel counts needed to produce traditional print sizes at 200 ppi and 300 ppi. But again, the optimum ppi varies depending on the printer — some printers prefer even more than 300 ppi — so check your manual or ask the photo technician at the lab that makes your prints. (And note that ppi is *not* the same thing as *dpi*, which is a measurement of printer resolution. *Dpi* refers to how many dots of color the printer can lay down per inch; most printers use multiple dots to reproduce one pixel.)

Table 3-2 Pixel Requirements for Traditional Print Sizes

<i>Print Size</i>	<i>Pixels for 200 ppi</i>	<i>Pixels for 300 ppi</i>
4 x 6 inches	800 x 1200	1200 x 1800
5 x 7 inches	1000 x 1400	1500 x 2100
8 x 10 inches	1600 x 2000	2400 x 3000
11 x 14 inches	2200 x 2800	3300 x 4200



Even though many photo-editing programs enable you to add pixels to an existing image, doing so isn't a good idea. For reasons I won't bore you with, adding pixels — known as *resampling* — doesn't enable you to successfully enlarge your photo. In fact, resampling typically makes matters worse. The printing discussion at the start of Chapter 9 includes some example images that illustrate this issue.



Pixels and screen display size

Resolution doesn't affect the quality of images viewed on a monitor, television, or other screen device as it does printed photos. What resolution *does* determine is the *size* at which the image appears.

This issue is one of the most misunderstood aspects of digital photography, so I explain it thoroughly in Chapter 9. For now, just know that you need *way* fewer pixels for onscreen photos than you do for printed photos. For example, Figure 3-3 shows a 450-x-300-pixel image that I attached to an e-mail message.



For e-mail images, I recommend a maximum of 640 pixels for the picture's longest dimension. If your image is much larger, the recipient can't view the entire picture without scrolling the display.

In short, even if you use the smallest Image Size setting on your D90, you'll have more than enough pixels for onscreen use, whether you display the picture on a computer monitor, a digital projector, or television set — even one of the new, supersized high-definition TVs. Again, Chapter 9 details this issue and also shows you how to prepare your pictures for online sharing.

Pixels and file size

Every additional pixel increases the amount of data required to create a digital picture file. So a higher-resolution image has a larger file size than a low-resolution image.



Figure 3-3: The low resolution of this image (450 x 300 pixels) ensures that it can be viewed without scrolling when shared via e-mail.



Large files present several problems:

- You can store fewer images on your memory card, on your computer's hard drive, and on removable storage media such as a CD-ROM.
- The camera needs more time to process and store the image data on the memory card after you press the shutter button. This extra time can hamper fast-action shooting.
- When you share photos online, larger files take longer to upload and download.
- When you edit your photos in your photo software, your computer needs more resources and time to process large files.

To sum up, the tradeoff for a high-resolution image is a large file size. But note that the Image Quality setting also affects file size. See the upcoming section "Understanding the Image Quality Options" for more on that topic. The upcoming sidebar "How many pictures fit on my memory card?" provides additional thoughts about the whole file-storage issue.

How many pictures fit on my memory card?

That question is one of the first asked by new camera owners — and it's an important one because you don't want to run out of space on your memory card just as the perfect photographic subject presents itself.

As explained in the Image Size and Image Quality discussions in this chapter, image resolution (pixel count) and file format (JPEG or Raw) together help determine the size of the picture file which, in turn, determines how many photos fit in a given amount of camera memory. (The actual file size of any image also depends on a few other factors, including the level of detail and color in the subject.)

On the D90, file sizes range anywhere from 16.9MB (megabytes) to 0.4MB, depending on the combination of Image Size and Image Quality settings you select. That means the capacity of a 2GB (gigabyte) memory card ranges from 89 pictures to a whopping 3800 pictures, again, depending on your Size/Quality settings.

The table here shows the file sizes for just some Size/Quality combinations; you can find a table that lists all the possibilities in your camera manual if you're curious.

Image Quality + Image Size = File Size

<i>Image Quality</i>	<i>Large</i>	<i>Medium</i>	<i>Small</i>
JPEG Fine	6.0MB	3.4MB	1.6MB
JPEG Normal	3.0MB	1.7MB	0.8MB
JPEG Basic	1.5MB	0.9MB	0.4MB
NEF (Raw)	10.8MB	NA*	NA*
NEF + JPEG Fine	16.9MB	14.4MB	12.4MB

*NEF (Raw) images are always captured at the Large size; for NEF+JPEG, user can set size for the JPEG image.

Resolution recommendations

As you can see, resolution is a bit of a sticky wicket. What if you aren't sure how large you want to print your images? What if you want to print your photos *and* share them online?

Personally, I take the “better safe than sorry” route, which leads to the following recommendations about the Image Size setting:

- | **Always shoot at a resolution suitable for print.** You then can create a low-resolution copy of the image in your photo editor for use online. Chapter 9 shows you how.



Again, you *can't* go in the opposite direction, adding pixels to a low-resolution original in your photo editor to create a good, large print. Even with the very best software, adding pixels doesn't improve the print quality of a low-resolution image.



- ✓ **For everyday images, Medium (6.9 MP) is a good choice.** I find 12.2 MP, which you get at the Large setting, to be overkill for most casual shooting, which means that you're creating huge files for no good reason. Keep in mind that even at the Medium setting, your pixel count (3216 x 2136) exceeds what you need to produce an 8-x-10-inch print at 200 ppi.
- ✓ **Choose Large (12.2 MP) for an image that you plan to crop, print very large, or both.** The benefit of maxing out resolution is that you have the flexibility to crop your photo and still generate a decent-sized print of the remaining image. For example, I shot the left photo in Figure 3-4 at the zoo. (What, you think I can afford an arctic safari or something?) Even with a powerful zoom lens, I couldn't get close enough to fill the frame with the bear's head, which was my compositional goal. Shooting at the highest resolution enabled me to crop the photo and still have enough pixels left to produce a great print, as you see in the right image.
- ✓ **Reduce resolution if shooting speed is paramount.** If you're shooting action and the shot-to-shot capture time is slower than you'd like — that is, the camera takes too long after you take one shot before it lets you take another — dialing down the resolution may help. Also see Chapter 7 for other tips on action photography.

After you decide which resolution setting is right for your picture, visit the section “Setting Image Size and Quality,” later in this chapter.



Figure 3-4: Capture images that you plan to crop and enlarge at the highest possible Image Size setting.

Understanding the Image Quality Options

If I had my druthers, the Image Quality option on the D90 would instead be called File Type, because that's what the setting controls.

Here's the deal: The file type, more commonly known as a file *format*, determines how your picture data is recorded and stored. Your choice does impact picture quality, but so do other factors, as outlined at the beginning of this chapter. In addition, your choice of file type has ramifications beyond picture quality.

At any rate, your D90 offers the two file types common on most of today's digital cameras: JPEG and Camera Raw, or just Raw for short, which goes by the specific moniker NEF on Nikon cameras. The next sections explain the pros and cons of each format. If your mind is already made up, skip ahead to "Setting Image Size and Quality," near the end of this chapter, to find out how to make your selection.



Don't confuse *file format* with the Format Memory Card option on the Setup menu. That option erases all data on your memory card; see Chapter 1 for details.

JPEG: The imaging (and Web) standard

Pronounced *jay-peg*, this format is the default setting on your D90, as it is for most digital cameras. JPEG is popular for two main reasons:

- ✓ **Immediate usability:** All Web browsers and e-mail programs can display JPEG files, so you can share them online immediately after you shoot them. The same can't be said for NEF (Raw) files, which must be converted to JPEG files before you can share them online. And although you can view and print Raw files in Nikon ViewNX without converting them, many third-party photo programs don't enable you to do that. You can read more about the conversion process in the upcoming section "NEF (Raw): The purist's choice."
- ✓ **Small files:** JPEG files are smaller than NEF (Raw) files. And smaller files consume less room on your camera memory card and in your computer's storage tank.

The downside — you knew there had to be one — is that JPEG creates smaller files by applying *lossy compression*. This process actually throws away some image data. Too much compression leads to the defects you see in the JPEG Artifacts example in Figure 3-1.

Fortunately, your camera enables you to specify how much compression you're willing to accept. The Image Quality menu offers three JPEG settings, which produce the following results:

- ☛ **JPEG Fine:** At this setting, the compression ratio is 1:4 — that is, the file is four times smaller than it would otherwise be. In plain English, that means that very little compression is applied, so you shouldn't see many compression artifacts, if any.
- ☛ **JPEG Norm:** Switch to Norm (for Normal), and the compression ratio rises to 1:8. The chance of seeing some artifacting increases as well.
- ☛ **JPEG Basic:** Shift to this setting, and the compression ratio jumps to 1:16. That's a substantial amount of compression and brings with it a lot more risk of artifacting.

Note, though, that even the JPEG Basic setting on your D90 doesn't result in anywhere near the level of artifacting that you see in my example in Figure 3-1. Again, that example is exaggerated to help you to be able to recognize artifacting defects and understand how they differ from other image-quality issues.

In fact, if you keep your image print or display size small, you aren't likely to notice a great deal of quality difference between the Fine, Normal, and Basic compression levels, although details in the Fine version may appear slightly crisper than the Normal and Basic options. It's only when you greatly enlarge a photo that the differences become apparent.

Take a look at Figures 3-5 and 3-6, for example. I captured the scene in Figure 3-5 four times, keeping the resolution the same for each shot but varying the Image Quality setting. For the photo you see in Figure 3-5, I used the JPEG Fine setting. I thought about printing the three other shots along with the JPEG Fine example, but frankly, you wouldn't be able to detect a nickel's worth of difference between the examples at the size that I could print them on this page. So Figure 3-6 shows just a portion of each shot at a greatly enlarged size. The first three images show the JPEG Fine, Normal, and Basic shots; for the fourth image, I used the NEF (Raw) setting, which applies no compression. (Note that during the process of converting the Raw image to a print-ready file, I tried to use settings that kept the Raw image as close as possible to its JPEG cousins in all aspects but quality. But any variations in exposure, color, and contrast are a result of the conversion process, not of the format per se.)

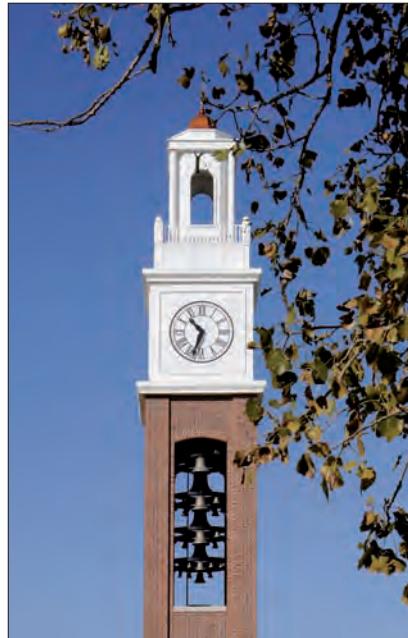


Figure 3-5: This subject offered a good test for comparing the Image Quality settings.

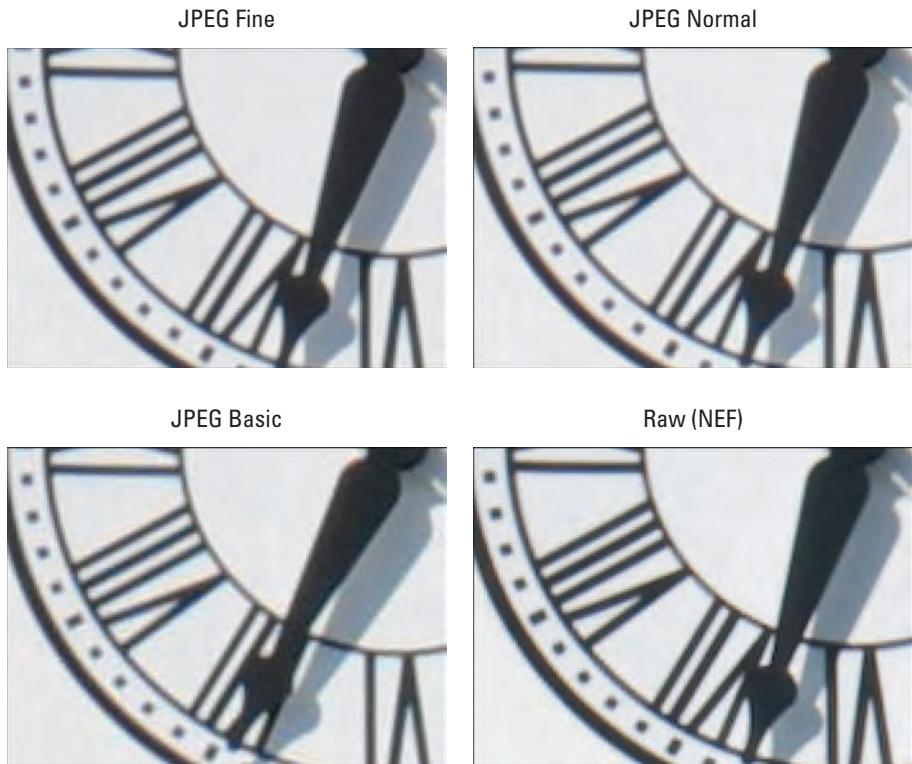


Figure 3-6: Here you see a portion of the tower at greatly enlarged views.

Even at the greatly magnified size, it takes a sharp eye to detect the quality differences between the Raw and Fine images. When you carefully inspect the Normal version, you can see some artifacting start to appear; jump to the Basic example, and compression artifacting becomes fairly obvious.



Nikon chose to use the Normal setting as the default on the D90. I suppose that's okay for everyday images that you don't plan to print or display very large. And because file size shrinks as you apply more compression, Normal enables you to fit more photos on your memory card than Fine or NEF (Raw).

For my money, though, the file-size benefit you gain when going from Fine to Normal isn't worth even a little quality loss, especially with the price of camera memory cards getting lower every day. You never know when a

casual snapshot is going to turn out to be so great that you want to print or display it large enough that even minor quality loss becomes a concern. And of all the defects that you can correct in a photo editor, artifacting is one of the hardest to remove. So if I shoot in the JPEG format, I stick with Fine.

I suggest that you do your own test shots, however, carefully inspect the results in your photo editor, and make your own judgment about what level of artifacting you can accept. Artifacting is often much easier to spot when you view images onscreen. It's difficult to reproduce artifacting here in print because the print process obscures some of the tiny defects caused by compression.

If you don't want *any* risk of artifacting, bypass JPEG altogether and change the file type to NEF (Raw). Or consider your other option, which is to record two versions of each file, one Raw and one JPEG. The next section offers details.



Whichever format you select, be aware of one more important rule for preserving the original image quality: If you retouch pictures in your photo software, don't save the altered images in the JPEG format. Every time you alter and save an image in the JPEG format, you apply another round of lossy compression. And with enough editing, saving, and compressing, you *can* eventually get to the level of image degradation shown in the JPEG example in Figure 3-1, at the start of this chapter. (Simply opening and closing the file does no harm.)

Always save your edited photos in a nondestructive format. TIFF, pronounced *tiff*, is a good choice and is a file-saving option available in most photo editing programs. Should you want to share the edited image online, create a JPEG copy of the TIFF file when you're finished making all your changes. That way, you always retain one copy of the photo at the original quality captured by the camera. You can read more about TIFF in Chapter 8, in the section related to processing Raw images. Chapter 9 explains how to create a JPEG copy of a photo for online sharing.

NEF (Raw): The purist's choice

The other picture file type you can create on your D90 is called *Camera Raw*, or just *Raw* (as in uncooked) for short.

Each manufacturer has its own flavor of Raw. Nikon's is called NEF, so you see the three-letter extension NEF at the end of Raw filenames.



Raw is popular with advanced, very demanding photographers, for these reasons:

- **Greater creative control:** With JPEG, internal camera software tweaks your images, making adjustments to color, exposure, and sharpness as needed to produce the results that Nikon believes its customers prefer. With Raw, the camera simply records the original, unprocessed image data. The photographer then copies the image file to the computer and uses special software known as a *raw converter* to produce the actual image, making decisions about color, exposure, and so on at that point. The upshot is that “shooting Raw” enables you, and not the camera, to have the final say on the visual characteristics of your image.
- **Higher bit depth:** *Bit depth* is a measure of how many distinct color values an image file can contain. JPEG files restrict you to 8 bits each for the red, blue, and green color components, or *channels*, that make up a digital image, for a total of 24 bits. That translates to roughly 16.7 million possible colors. On the D90, a Raw file delivers a higher bit count, collecting 12 bits per channel.

Although jumping from 8 to 12 bits sounds like a huge difference, you may not really ever notice any difference in your photos — that 8-bit palette of 16.7 million values is more than enough for superb images. Where having the extra bits can come in handy is if you really need to adjust exposure, contrast, or color after the shot in your photo editing program. In cases where you apply extreme adjustments, having the extra original bits sometimes helps avoid a problem known as *banding* or *posterization*, which creates abrupt color breaks where you should see smooth, seamless transitions. (A higher bit depth doesn’t always prevent the problem, however, so don’t expect miracles.)
- **Best picture quality:** Because Raw doesn’t apply the destructive compression associated with JPEG, you don’t run the risk of the artifacts that can occur with JPEG.

But of course, as with most things in life, Raw isn’t without its disadvantages. To wit:

- **You can’t do much with your pictures until you process them in a Raw converter.** You can’t share them online, for example, or put them into a text document or multimedia presentation. You can print them immediately if you use Nikon ViewNX, but most other photo programs require you to convert the Raw files to a standard format first. So when you shoot Raw, you add to the time you must spend in front of the computer instead of behind the camera lens.



➤ **To get the full benefit of Raw, you need software other than Nikon ViewNX.** The ViewNX software that ships free with your camera does have a command that enables you to convert Raw files to JPEG or to TIFF, introduced in the preceding section. However, this free tool gives you limited control over how your original data is translated in terms of color, exposure, and other characteristics — which defeats one of the primary purposes of shooting Raw.

Nikon Capture NX 2 offers a sophisticated Raw converter, but it costs about \$180. (Sadly, if you already own Capture NX, you need to upgrade to version 2 to open the Raw files from your D90.) If you own Adobe Photoshop or Photoshop Elements, however, you're set; both include the converter that most people consider one of the best in the industry. Watch the sale ads, and you can pick up Elements for well under \$100. You may need to download an update from the Adobe Web site (www.adobe.com) to get the converter to work with your D90 files.

Of course, the D90 also offers an in-camera Raw converter, found on the Retouch menu. But although it's convenient, this tool isn't the easiest to use because you must rely on the small camera monitor when making judgments about color, exposure, sharpness, and so on. The in-camera tool also doesn't offer the complete cadre of features available in Capture NX 2 and other converter software utilities.

Chapter 8 offers more information on the in-camera conversion process and also offers a look at the converter found in ViewNX.

➤ **Raw files are larger than JPEGs.** The type of file compression that Raw applies doesn't degrade image quality, but the tradeoff is a larger file. In addition, Nikon Raw files are always captured at the maximum resolution available on the camera, even if you don't really need all those pixels. For both reasons, Raw files are significantly larger than JPEGs, so they take up more room on your memory card and on your computer's hard drive or other picture-storage device.

Are the disadvantages worth the gain? Only you can decide. But before you make up your mind, refer to Figure 3-6 and compare the JPEG Fine example with its NEF (Raw) counterpart. You may be able to detect some subtle quality differences when you really study the two, but a casual viewer likely would not, especially if shown the entire example images at normal print sizes rather than the greatly magnified views shown in the figure. I took Figure 3-5, for example, using JPEG Fine.



That said, I *do* shoot in the Raw format when I'm dealing with tricky lighting because doing so gives me more control over the final image exposure. For example, if you use a capable Raw converter, you can specify how bright you want the brightest areas of your photo to appear and how dark you prefer

your deepest shadows. With JPEG, the camera makes those decisions, which can potentially limit your flexibility if you try to adjust exposure in your photo editor later. And the extra bits in a Raw file offer an additional safety net because I usually can push the exposure adjustments a little further in my photo editor if necessary without introducing banding.

I also go Raw if I know that I'm going to want huge prints of a subject. But keep in mind: I'm a photography geek, I have all the requisite software, and I don't really have much else to do with my time than process scads of Raw images. Oh, and I'm a bit of a perfectionist, too. (Although I'm more bothered by imperfections than I am motivated to remove them. A lazy perfectionist, if you will.)

If you do decide to try Raw shooting, you can select from four options on your D90's Image Quality menu:

- ✓ **NEF (RAW):** This setting produces a single Raw file. Again, you don't have a choice of Image Size settings; the camera always captures the file at the maximum resolution (12.2 MP).
- ✓ **NEF (RAW)+JPEG Fine, Normal, or Basic:** You also can choose to capture the image as both a NEF file and a JPEG file, and you can specify whether you want the JPEG version recorded at the Fine, Normal, or Basic setting. (You can also set the resolution of the JPEG file at Large, Medium, or Small.) Of course, with two files, you consume more space on your camera memory card.



I often choose the Raw+JPEG Fine option when I'm shooting pictures I want to share right away with people who don't have software for viewing Raw files. I upload the JPEGs to a photo-sharing site where everyone can view them, and then I process the Raw versions of my favorite images for my own use when I have time. Having the JPEG version also enables you to display your photos on a DVD player or TV that has a slot for an SD memory card — most can't display Raw files but can handle JPEGs. Ditto for portable media players and digital photo frames.

If you choose to create both files, note a couple of things:

- ✓ When you view your pictures on the camera, you see only the JPEG version.
- ✓ If you delete the JPEG version using the camera's Delete function, the NEF file is erased as well. (After you transfer the two files to your computer, deleting one doesn't affect the other.)

Chapter 4 explains more about viewing and deleting photos; see the upcoming section "Setting Image Size and Quality" to find out how to specify the size for your JPEG files.

My take: Choose JPEG Fine or NEF (Raw)

At this point, you may be finding all this technical goop a bit much — I recognize that panicked look in your eyes — so allow me to simplify things for you. Until you have time or energy to completely digest all the ramifications of JPEG versus Raw, here's a quick summary of my thoughts on the matter:

- ✓ If you require the absolute best image quality and have the time and interest to do the Raw conversion, shoot Raw. See Chapter 8 for more information on the conversion process.
- ✓ If great photo quality is good enough for you, you don't have wads of spare time, or you aren't that comfortable with the computer, stick with JPEG Fine.
- ✓ If you don't mind the added file-storage space requirement and want the flexibility of both formats, choose Raw+JPEG. If you need your JPEGs to exhibit the best quality, go with Raw+JPEG Fine.
- ✓ If you go with JPEG only, stay away from JPEG Normal and Basic. The tradeoff for smaller files isn't, in my opinion, worth the risk of compression artifacts. As with my recommendations on image size, this fits the "better safe than sorry" formula: You never know when you may capture a spectacular, enlargement-worthy subject, and it would be a shame to have the photo spoiled by compression defects. If you select Raw+JPEG, of course, this isn't as much of an issue because you always have the Raw version as backup if you aren't happy with the JPEG quality.

Setting Image Size and Quality



To sum up this chapter: The Image Size and Image Quality options together determine the quality of your pictures and also play a large role in image file size. Choose a high Image Quality setting (NEF or JPEG Fine) and the maximum Image Size setting (Large), and you get top-quality pictures and large file sizes. Combining the lowest Quality setting (JPEG Basic) with the lowest Size setting (Small) greatly shrinks files, enabling you to fit lots more pictures on your memory card, but it also increases the chances that you'll be disappointed with the quality of those pictures, especially if you make large prints.

You can monitor the Image Size and Image Quality settings in the Control panel and Shooting Information display (which you bring up by pressing the Info button). Figure 3-7 shows you where to look.

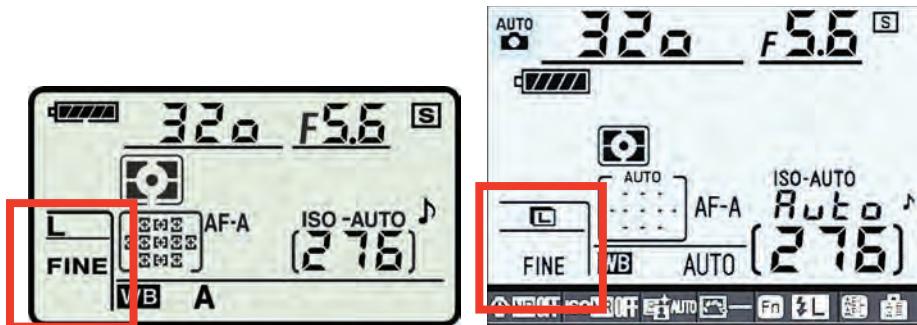


Figure 3-7: The current Image Size and Quality settings appear on the Control panel and Shooting Information display.

QUAL  The quickest way to adjust the settings is to press the Qual button, shown in the margin here. As soon as you press the button, all other settings disappear from the Control panel and are dimmed in the Shooting Information display. While continuing to press the button, rotate the main command dial (on the back of the camera) to cycle through the available combinations of Image Size and Image Quality settings — Raw, Large/Fine, Large/Normal, Raw+JPEG Fine, and so on.

As an alternative, you can adjust the settings via the Shooting menu, shown in Figure 3-8. Here, you set the Image Size and Image Quality options independently of each other. Remember that when you choose the Raw (NEF) format, you don't need to worry about the Image Size setting — the camera captures all Raw images at the Large resolution. If you go with one of the Raw+JPEG options, the Image Size setting affects the JPEG version only.



Again, adjusting the Image Size or Image Quality setting changes the picture file size, which changes the number of new shots you can fit on the current memory card. You can monitor the remaining card capacity in the Shots Remaining area of the Control panel and Shooting Information display. (It reads 276 in Figure 3-7.)



Figure 3-8: You also can set Image Size and Image Quality via the Shooting menu.



Maintaining a pristine view

Often lost in discussions of digital photo defects — compression artifacts, pixelation, and the like — is the impact of plain-old dust and dirt on picture quality. But no matter what camera settings you use, you aren't going to achieve great picture quality with a dirty lens. So make it a practice to clean your lens on a regular basis, using one of the specialized cloths and cleaning solutions made expressly for that purpose.

If you continue to notice random blobs or hair-like defects in your images (refer to the last example in Figure 3-1), you probably have a dirty *image sensor*. That's the part of your camera that does the actual image capture — the digital equivalent of a film negative, if you will.

Your D90 offers an automated, internal sensor-cleaning mechanism. By default, this automatic cleaning happens every time you turn the camera on or off. You also can request a cleaning session

at any time via the Clean Image Sensor command on the Setup menu. (Chapter 1 has details on this menu option.)

But if you frequently change lenses in a dirty environment, the internal cleaning mechanism may not be adequate, in which case a manual sensor cleaning is necessary. You can do this job yourself, but . . . I don't recommend it. Image sensors are pretty delicate beings, and you can easily damage them or other parts of your camera if you aren't careful. Instead, find a local camera store that offers this service. In my area (central Indiana), sensor cleaning costs from \$30–\$50.

One more cleaning tip: Never — and I mean *never* — try to clean any part of your camera using a can of compressed air. Doing so can not only damage the interior of your camera, blowing dust or dirt into areas where it can't be removed, but also crack the external monitor.

Monitor Matters: Picture Playback and Live View Shooting

In This Chapter

- ▶ Exploring picture playback functions
- ▶ Deciphering the picture information displays
- ▶ Understanding the exposure histogram
- ▶ Deleting bad pictures and protecting great ones
- ▶ Using the monitor as viewfinder in Live View mode
- ▶ Recording digital movies

Without question, my favorite thing about digital photography is being able to view my pictures on the camera monitor the instant after I shoot them. No more guessing whether I captured the image I wanted or I need to try again, as in the film era. And no more wasting money on developing and printing pictures that stink.

Of course, with the D90, you can use the monitor not only to review your photos, but also to *preview* them. That is, if you turn on Live View shooting, you can use the monitor instead of the viewfinder to compose your shots. And once in Live View mode, you also can record short digital movies — an exciting new option that the D90 brings to digital SLR photography.

Because all these functions involve some of the same buttons, bells, and whistles, I cover them together in this chapter. In addition, this chapter explains how to delete pictures that you don't like and protect the ones you love from accidental erasure. (Be sure to also visit Chapter 9, which covers some additional ways to view your images, including how to create slide shows and display your photos and movies on a television screen.)



Enabling Automatic Picture Rotation

When you take a picture, the camera can record the image *orientation* — whether you held the camera normally, creating a horizontally oriented image, or turned the camera on its side to shoot a vertically oriented photo. This bit of data is simply added into the picture file.

During playback, the camera reads the data and automatically rotates the image so that it appears in the upright position, as shown on the left in Figure 4-1. The image is also automatically rotated when you view it in Nikon ViewNX, Capture NX 2, and some other photo programs that can interpret the data.

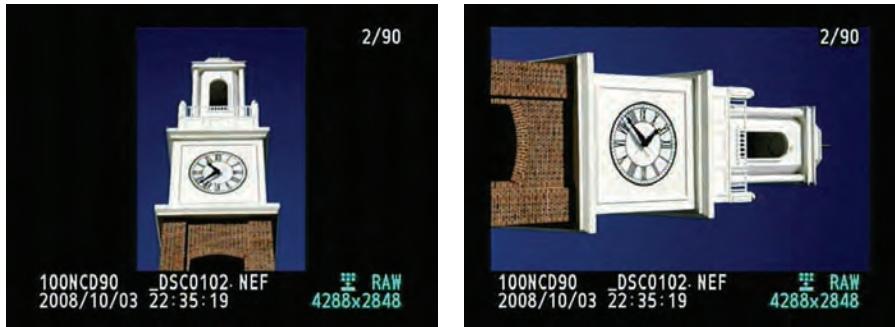


Figure 4-1: You can display vertically oriented pictures in their upright position (left) or sideways (right).



Official photo lingo uses the term *portrait orientation* to refer to vertically oriented pictures and *landscape orientation* to refer to horizontally oriented pictures.

Automatic rotation is turned on by default with the D90. But if you prefer to turn the feature off, you can. Your vertically oriented pictures then appear sideways, as shown on the right in Figure 4-1.

To check or adjust the status of automatic rotation, you need to visit two menus:

1. On the Setup menu, select Auto Image Rotation, as shown in the left image in Figure 4-2.

You need to scroll to the second screen of the menu to get to the Auto Image Rotation option. If you select On, the rotation data is added to the picture file. Select Off to leave the data out.

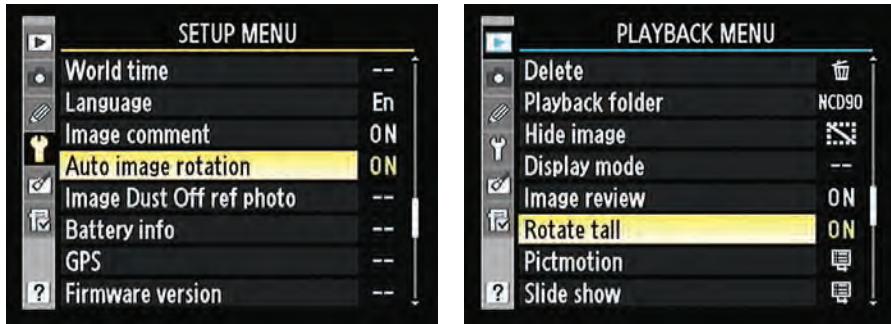


Figure 4-2: Visit the Setup and Playback menus to enable image rotation.

2. Display the Playback menu and select the Rotate Tall option, as shown on the right in Figure 4-2.

Select On if you want the camera to read the orientation data and rotate vertical pictures. Select Off if you prefer not to rotate the photos during playback. The images are still rotated automatically in photo programs that can read the orientation data in the file.



Shooting with the lens pointing directly up or down sometimes confuses the camera, causing it to record the wrong data in the file. If that issue bothers you, turn off Auto Image Rotation on the Setup menu before you shoot the pictures. The camera then won't record the orientation information as part of the picture file.

Disabling and Adjusting Instant Review

After you take a picture, it automatically appears briefly on the camera monitor. By default, this instant-review period lasts four seconds. But you can customize this behavior in two ways:

- ✓ **Adjust the length of the instant-review period:** Display the Custom Setting menu, highlight the Timers/AE Lock submenu, and then press OK to display the screen shown on the left in Figure 4-3. Highlight Monitor Off Delay and press OK again to get to the second screen in the figure. Highlight Playback and then press the Multi Selector right to access the timing options (not shown in the figure). You have six choices, ranging from four seconds to 10 minutes. Highlight the timing option you want to use and then press OK to lock in your choice.

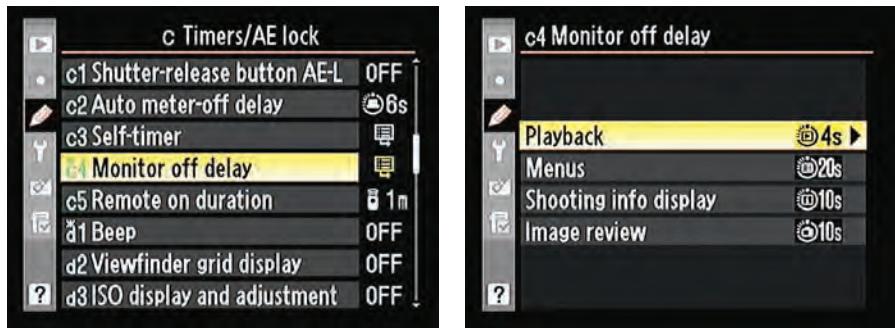


Figure 4-3: To adjust the length of the instant-review period, visit the Custom Setting menu.



Disable instant review: Because any monitor use is a strain on battery power, consider turning off instant review altogether if your battery is running low. You turn off the feature via the Image Review option on the Playback menu, shown in Figure 4-4. To turn off the feature, first display the Playback menu. Then highlight Image Review, as shown in Figure 4-4. Press OK, highlight Off, and press OK once more. You can still view your pictures by pressing the Playback button at any time.

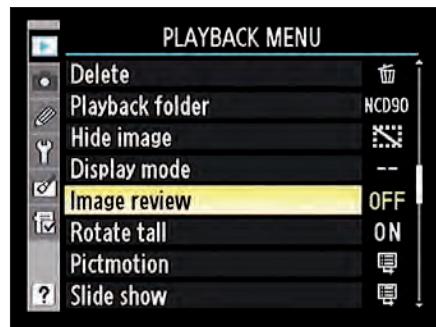


Figure 4-4: Head for the Playback menu to disable instant review altogether.

Viewing Images in Playback Mode

To take a look at the pictures on your camera memory card, take these steps:



1. If you created custom image folders, specify which ones you want to view. Otherwise, skip to Step 2.

Your D90 normally organizes pictures automatically into folders that are assigned generic names: 100NCD90, 101NCD90, and so on. You can see the name of the current folder by looking at the Active Folder option on the Shooting menu. (The default folder name appears as just NCD90 on the menu.)

Chapter 4: Monitor Matters: Picture Playback and Live View Shooting

You also can create custom folders through that same menu option. (See Chapter 11 for specifics.) If you do, you need to tell the camera whether you want to view only pictures in the current folder or in all folders. To do so, display the Playback menu and highlight Playback Folder, as shown on the left in Figure 4-5. Press OK to display the screen shown on the right in the figure. Select All to view all folders; select Current to view only the active folder. Press OK to exit the screen.



Figure 4-5: If you create custom folders, specify which folder you want to view.

Again, this step applies only if you create custom folders. If you let the camera handle all folder-creation duties, you can view all pictures on the card regardless of the Playback Folder setting.

2. Press the Playback button, labeled in Figure 4-6.



The monitor displays the last picture you took, along with some picture data, such as the frame number of the photo. To find out how to interpret the picture information and specify what data you want to see, see the upcoming section “Viewing Picture Data.”

3. To scroll through your pictures, rotate the main command dial or press the Multi Selector right or left.

I highlighted the dial and Multi Selector in Figure 4-6.

4. To return to picture-taking mode, press the shutter button halfway and then release it.

These steps assume that the camera is currently set to display a single photo at a time, as shown in Figure 4-6. You can also display multiple images at a time, as explained next.





Figure 4-6: Navigate and inspect your photos using these controls.

Viewing multiple images at a time

ISO



Along with viewing images one at a time, you can choose to display 4, 9, or 72 thumbnails, as shown in Figure 4-7. Just press the ISO button, shown in the margin here and labeled Zoom out/Thumbnail display in Figure 4-6. Press once to cycle from single-picture view to 4-thumbail view, press again to shift to 9-picture view, and press once more to bring up those itty-bitty thumbnails featured in 72-image view. Press yet again, and you shift to Calendar view, a nifty feature explained in the next section.



QUAL To reduce the number of thumbnails, press the Qual button, shown clinging to the margin here and labeled Zoom In in Figure 4-6. Or to jump immediately to single-frame view without having to cycle back through all the display modes, just press the OK button.



Figure 4-7: You can view 4, 9, or 72 thumbnails at once.

In any of the thumbnail display modes, use these techniques to navigate your photo collection:

- ✓ **Scroll through your pictures.** Rotate the main command dial or press the Multi Selector right or left.
- ✓ **Select an image.** As you scroll through your pictures, a yellow highlight box indicates the currently selected image. For example, in Figure 4-7, Image 52 is selected. To select a different image, use the main command dial or Multi Selector to scroll the display until the highlight box surrounds the image.
- ✓ **View the selected image at the full-frame size.** Press the OK button.

After you return to full-frame view, pressing OK displays the Retouch menu over your photo. See Chapter 10 for a look at some of the picture fixes you can apply to your photo from the Retouch menu.



Displaying photos in Calendar view

In Calendar display mode, you see a little calendar on the monitor, as shown on the left in Figure 4-8. By selecting a date on the calendar, you can quickly navigate to all pictures you shot on that day. (An empty date indicates that your memory card doesn't contain any photos from that day.)



Figure 4-8: Calendar view makes it easy to view all photos shot on a particular day.

The key to navigating Calendar view is the ISO button:



1. Press the ISO button as needed to cycle through the thumbnail display modes until you reach Calendar view.

If you're currently viewing images in full-frame view, for example, you need to press the button four times to get to Calendar view.

2. Using the Multi Selector or main command dial, move the yellow highlight box over a date that contains an image.

In Figure 4-8, for example, the 25th day of October is selected. (The number of the month appears in the top-left corner of the screen.) After you select a date, the right side of the monitor displays a vertical strip of thumbnails of pictures taken on that date.

3. To view all thumbnails from the selected date, press the ISO button again.

Now the vertical thumbnail strip becomes active, and you can scroll through the thumbnails by pressing the Multi Selector up and down. A second highlight box appears in the thumbnail strip to indicate the currently selected image.



- 4. To temporarily display a larger view of the selected thumbnail, hold down the Qual button.**

The image filename appears under the larger preview, as shown in Figure 4-9. When you release the button, the large preview disappears, and the calendar comes back into view.

- 5. To jump back to the calendar and select a different date, press the ISO button again.**

You can just keep pressing the button to jump between the calendar and the thumbnail strip as much as you want.

- 6. To exit Calendar view and return to single-image view, press OK.**



If you press OK while a date is selected, the camera displays the first picture taken on that day in single-image view. Pressing OK while the thumbnail strip is active displays the currently selected photo instead. Either way, if you want to return to Calendar view, you have to press the ISO button four times to cycle from full-frame view through the different thumbnail display modes.

Zooming in for a closer view

After displaying a photo in single-frame view, you can magnify it so that you can get a close-up look at important details, such as whether someone's eyes are closed in a portrait. Here's the scoop:



- Zoom in.** Press the Qual button, shown in the margin here. You can magnify the image to a maximum of 13 to 27 times its original display size, depending on the resolution (pixel count) of the photo. Just keep pressing the button until you reach the magnification you want.

Note the magnifying glass icon on the button face — the plus sign in the middle is your reminder that this button enlarges the image in playback mode. (In shooting mode, the button accesses the Image Quality and Size settings, thus its official text label.)

- View another part of the magnified picture.** When an image is magnified, a little navigation thumbnail showing the entire image appears briefly in the lower-right corner of the monitor, as shown in Figure 4-10.



Figure 4-9: Press and hold the Qual button to temporarily view the selected image at a larger size.

The yellow outline in this picture-in-picture image indicates the area that's currently consuming the rest of the monitor space. Use the Multi Selector to scroll the yellow box and display a different portion of the image. After a few seconds, the navigation thumbnail disappears; just press the Multi Selector in any direction to redisplay it.



- ☛ **Inspect faces.** See that little black rectangle labeled Face Detection symbol in Figure 4-10? It indicates that the camera thinks that the picture is a portrait and thus placed little white boxes over what it perceives to be faces in the picture-in-picture thumbnail. If you see this symbol, you can rotate the subcommand dial (on the front of the camera, underneath the shutter button) to automatically zoom the display to one of those faces, as shown in Figure 4-11. Keep rotating the dial to view other faces in the picture. Understand, though, that the camera isn't always successful in detecting faces, so on occasion you may need to zoom and scroll the display manually.
- ☛ **View more images at the same magnification.** Here's another neat trick: While the display is zoomed, you can rotate the main command dial to display the same area of the next photo at the same magnification. So if you shot the same subject several times, you can easily check how the same details appear in each one.
- ☛ **Zoom out.** To zoom out to a reduced magnification, press the ISO button, shown in the margin here. This button also sports the magnifying glass symbol, but this time with a minus sign to indicate that it reduces the display size. That little grid-like thingy next to the magnifying glass reminds you that the button also comes into play when you



Figure 4-10: Use the Multi Selector to move the yellow outline over the area you want to inspect.



Figure 4-11: If the camera detects faces, you can rotate the sub-command dial to automatically zoom the display to more closely inspect each subject.

want to go from full-frame view to one of the thumbnail views or Calendar view. (In shooting mode, the button accesses the ISO Sensitivity control, an exposure feature covered in Chapter 5.)

- ✓ **Return to full-frame view.** When you're ready to return to the normal magnification level, you don't need to keep pressing the ISO button until you're all the way zoomed out. Instead, just press the OK button, which quickly returns you to the standard, full-frame view.

Viewing Picture Data

In single-image picture view, you can choose from five Photo Information modes, each of which presents a different set of shooting data along with the image. To cycle between the different modes, press the Multi Selector up or down.



Note, though, that three of the five modes are disabled by default. To enable them, display the Playback menu and highlight Display Mode, as shown on the left in Figure 4-12. Press OK to display the second screen you see in the figure. To toggle a display mode on, highlight it and then press the Multi Selector right. A check mark then appears in the box for the selected option. After turning on the options you want to use, highlight Done and press OK again to return to the Playback menu. If you decide that you don't care for one of these three modes, just reverse the process.

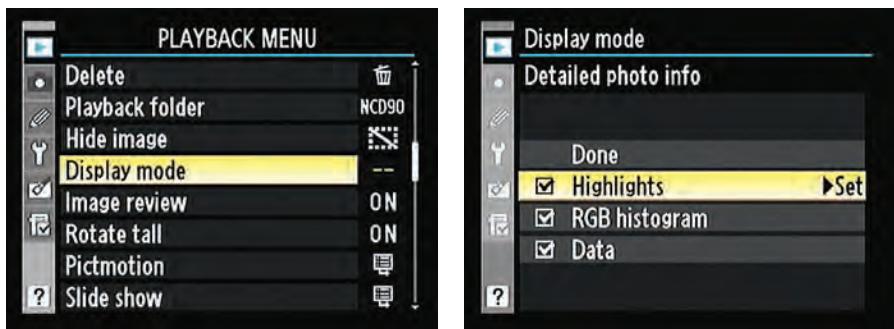


Figure 4-12: You must enable some of the information display modes via the Playback menu.

The next sections explain exactly what details you can glean from each display mode. I present them here in the order they appear if you cycle through the modes by pressing the Multi Selector down. You can spin through the modes in the other direction by pressing the Multi Selector up.

File Information mode

In this display mode, the monitor displays the data shown in Figure 4-13.

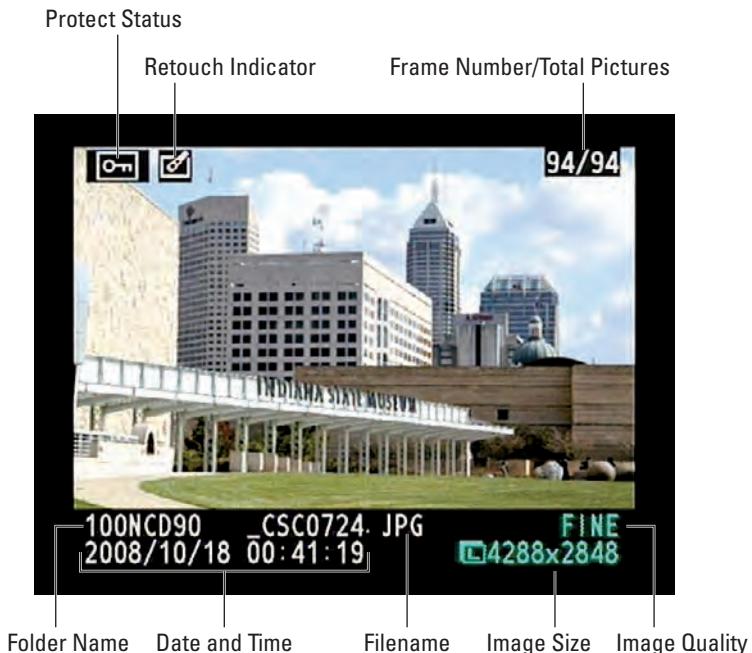


Figure 4-13: In File Information mode, you can view these bits of data.

The following bits of info appear at the top of the monitor:

- ✓ **Protect Status:** A little key icon indicates that you used the camera's file-protection feature to prevent the image from being erased when you use the camera's Delete function. See "Protecting Photos," later in this chapter, to find out more. (**Note:** Formatting your memory card, a topic discussed in Chapter 1, *does* erase even protected pictures.) This area appears empty if you didn't apply protection.
- ✓ **Retouch Indicator:** This icon appears if you used any of the Retouch menu options to alter the image. (I cover most Retouch features in Chapter 10.) Again, no icon means that you didn't retouch the photo.
- ✓ **Frame Number/Total Pictures:** The first value here indicates the frame number of the currently displayed photo; the second tells you the total number of pictures on the memory card. In Figure 4-13, for example, the image is number 94 out of 94.

Underneath the image, you can view these details:



- **Folder Name:** Folders are named automatically by the camera unless you create custom folders, an advanced trick you can explore in Chapter 11. The first camera-created folder is named 100NCD90. Each folder can contain up to 9999 images; when you exceed that limit, the camera creates a new folder and assigns the next folder number: 101NCD90, 102NCD90, and so on.
- **Filename:** The camera also automatically names your files. Filenames end with a three-letter code that represents the file format, which is either JPG (for JPEG) or NEF (for Camera Raw) for still photos. Chapter 3 discusses these two formats. If you record a movie (a project you can explore near the end of this chapter), the file extension is AVI, which represents a digital-movie file format. If you create a dust-off reference image file, an advanced feature designed for use with Nikon Capture NX 2, the camera instead uses the extension NDF. (Because this software must be purchased separately, I don't cover it or the dust-off function in this book.)

The first three letters of filenames also vary. Here's what the possible three-letter codes indicate:

- **DSC:** This code means normal, plain-old picture file.
- **SSC:** This trio appears at the beginning of files that you create with the Small Picture option on the Retouch menu. Chapter 9 discusses this feature.
- **CSC:** This code is used for images that you alter using other Retouch menu features. For example, I applied the D-Lighting correction feature to the image in Figure 4-13, so the filename begins with CSC, and the Retouch Indicator appears in the top-left corner of the monitor.
- **_ (underscore):** If you change the Color Space setting on the Shooting menu to the Adobe RGB color profile, a topic you can investigate in Chapter 6, an underscore character precedes the filename. (The exception is for dust-off reference photos, which don't use the underscore.) For photos taken in the default color profiles (sRGB), the underscore appears after the three-letter code, as in DSC_.

Each image is also assigned a four-digit file number, starting with 0001. When you reach image 9999, the file numbering restarts at 0001, and the new images go into a new folder to prevent any possibility of overwriting the existing image files. For more information about file numbering, see the Chapter 1 section that discusses the File Number Sequence option.

- **Date and Time:** Just below the folder and filename info, you see the date and time that you took the picture. Of course, the accuracy of this data depends on whether you set the camera's date and time values correctly, which you do via the Setup menu. Chapter 1 has details.

- ☛ **Image Quality:** Here you can see which Image Quality setting you used when taking the picture. Again, Chapter 3 has details, but the short story is this: Fine, Normal, and Basic are the three JPEG recording options, with Fine representing the highest JPEG quality. The word *Raw* indicates that the picture was recorded in the Nikon Camera Raw format, NEF.
- ☛ **Image Size:** This value tells you the image resolution, or pixel count. See Chapter 3 to find out about resolution.

RGB Histogram mode

Press the Multi Selector down to shift from File Information mode to this mode, which displays your image in the manner shown in Figure 4-14. (Remember: You can view your picture in this mode only if you enable it via the Display Mode option on the Playback menu. See “Viewing Picture Data,” earlier in this chapter, for help.)

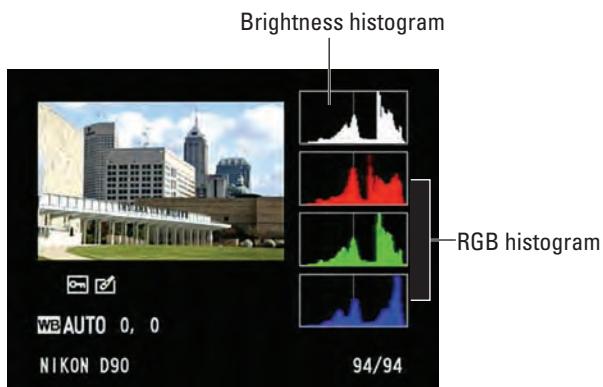


Figure 4-14: Histogram mode presents exposure and color information in chart-like fashion.

Underneath the image thumbnail, you see just a few pieces of data. As with File Information mode, you see the Protect Status and Retouch Indicator icons if you used those features. Beneath that, you see the White Balance settings used for the shot. (White balance is a color feature you can explore in Chapter 6.) Along the bottom row of the display, you see the camera name along with the Frame Number/Total Pictures data, also part of the standard File Information display data.

The core of this display mode, though, are those chart-like thingies, officially called *histograms*. You actually get two types of histograms: The top one is a Brightness histogram; the three others are collectively called an RGB histogram.

QUAL

 The next two sections explain what you can discern from the histograms. But first, here's a cool trick to remember: If you press the Qual button while in this display mode, you can zoom the thumbnail to a magnified view. The histograms then update to reflect only the magnified area of the photo. To return to the regular view and once again see the whole-image histogram, press OK.

Reading a Brightness histogram

You can get an idea of image exposure by viewing your photo on the camera monitor. But if you adjust the brightness of the monitor or the ambient light affects the display brightness, you may not get the real story. The Brightness histogram provides a way to gauge exposure that's a little more reliable.

Labeled in Figure 4-14 and shown enlarged in Figure 4-15, the Brightness histogram indicates the distribution of shadows, highlights, and midtones (areas of medium brightness) in your image.

The horizontal axis of the histogram represents the possible picture brightness values — the maximum *tonal range*, in photography-speak — from the darkest shadows on the left to the brightest highlights on the right. And the vertical axis shows you how many pixels fall at a particular brightness value. A spike indicates a heavy concentration of pixels. For example, in Figure 4-15, the histogram shows a large supply of pixels clustered in the range just above medium brightness, but very few in the deepest shadows.

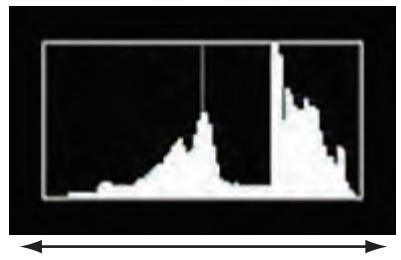


Figure 4-15: The Brightness histogram indicates tonal range, from shadows on the left to highlights on the right.



Keep in mind that there is no one “perfect” histogram that you should try to achieve. Instead, interpret the histogram with respect to the distribution of shadows, highlights, and midtones that comprise your subject. You wouldn’t expect to see lots of shadows, for example, in a photo of a polar bear walking on a snowy landscape. Pay attention, however, if you see a very high concentration of pixels at the far right or left end of the histogram, which can indicate a seriously overexposed or underexposed image, respectively. To find out how to resolve exposure problems, visit Chapter 5.

Understanding RGB histograms

When you view your images in RGB Histogram display mode, you see two histograms: the Brightness histogram, covered in the preceding section, and an RGB histogram, shown in close-up view in Figure 4-16.



To make sense of the RGB histogram, you first need to know that digital images are called *RGB images* because they are created out of three primary colors of light: red, green, and blue. The RGB histogram shows you the brightness values for each of those primary colors.

By checking the brightness levels of the individual color components, sometimes referred to as color *channels*, you can assess the picture's color saturation levels. If most of the pixels for one or more channels are clustered toward the right end of the histogram, colors may be oversaturated, which destroys detail. On the flip side, a heavy concentration of pixels at the left end of the histogram indicates an image that may be undersaturated.

A savvy RGB histogram reader also can spot color-balance issues by looking at the pixel values. But frankly, color-balance problems are fairly easy to notice just by looking at the image itself on the camera monitor. And understanding how to translate the histogram data for this purpose requires more knowledge about RGB color theory than I have room to present in this book.

For information about manipulating color, see Chapter 6.

Highlight display mode

One of the most difficult photo problems to correct in a photo editing program is known as *blown highlights* in some circles and *clipped highlights* in others. In plain English, both terms mean that *highlights* — the brightest areas of the image — are so overexposed that areas that should include

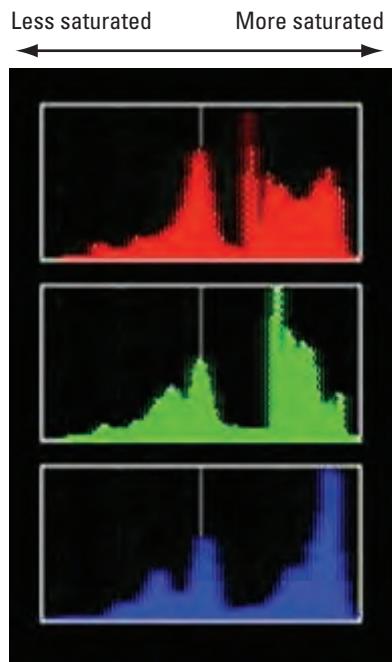


Figure 4-16: The RGB histogram can indicate problems with color saturation.

a variety of light shades are instead totally white. For example, in a cloud image, pixels that should be light to very light gray become white due to overexposure, resulting in a loss of detail in those clouds.

In Highlight display mode, areas that are totally white blink in the camera monitor. Like RGB Histogram mode, the Highlight mode is provided because simply viewing the image isn't always a reliable way to gauge exposure. To use it, however, you must follow the instructions laid out in the earlier section "Viewing Picture Data" to enable the mode.

Along with the blinking highlight warning, Highlight display mode presents the standard bits of information in this mode: the Protect Status, Retouch Indicator, and File Number/Total Pictures values, all explained in the earlier section "File Information mode." The label *Highlights* also appears to let you know the current display mode, as shown in Figure 4-17.



I suggest that you check both the Brightness histogram offered in RGB Histogram display mode and the Highlight display, though, when you're concerned about overexposure. If an image contains only a small area of blown highlights, the histogram may indicate a very small pixel population at the brightest end of the spectrum, leading you to assume that you're okay in the exposure department. But if those blown highlights happen to fall in an important part of your image — someone's face, for example — they can wreck your picture.



Figure 4-17: In Highlight mode, blinking areas indicate blown highlights.



Shooting Data display mode

Before you can access this mode, you must enable it via the Display Mode option on the Playback menu. See the earlier section, "Viewing Picture Data," for details. After turning on the option, press the Multi Selector down to shift from Highlights mode to Shooting Data mode.

In this mode, you can view three screens of information, which you toggle between by pressing the Multi Selector up and down. Figure 4-18 shows you the three screens, referred to in the Nikon manual as Shooting Data Page 1, 2, and 3.



Figure 4-18: You can view the camera settings used to capture the image in Shooting Data display mode.

Most of the data here won't make any sense to you until you explore Chapters 5 and 6, which explain the exposure, color, and other advanced settings available on your camera. But I do want to call your attention to a couple of factoids now:

- ☛ The top-left corner of the monitor shows the Protect Status and Retouch Indicator icons, if you used the protect or retouch features. Otherwise, the area is empty. (See the earlier section "File Information Mode" for details about these particular features.)
- ☛ The current frame number, followed by the total number of images on the memory card, appears in the lower-right corner of the display.
- ☛ The Comment item, which is the final item on the third screen, contains a value if you use the Image Comment feature on the Setup menu. I cover this option in Chapter 11.
- ☛ If the ISO value on Shooting Data Page 1 (the first screen in Figure 4-17) appears in red, the camera is letting you know that it overrode the ISO Sensitivity setting that you selected in order to produce a good exposure. This shift occurs only if you enable automatic ISO adjustment. See Chapter 5 for details.

GPS Data mode

This display mode is available only if the image you’re viewing was shot with the optional Nikon GPS (Global Positioning System) attached.

If you use the GPS unit, this display mode shows you the latitude, longitude, and altitude information recorded with the image file. You also see the date and time of the shot along with the standard Frame Number/Total Pictures numbers, the Protect Status icon, and the Retouch Indicator icon, all explained in the earlier section “File Information mode.” The data screen appears in the same fashion as in Shooting Data mode, superimposed over your image.

Overview Data mode

This mode is the second of the two default photo-information modes. (Meaning, you don’t have to enable it via the Display Mode option on the Playback menu to use it.) In this mode, the playback screen contains a small image thumbnail along with scads of shooting data — although not quite as much as Shooting Data mode — plus a Brightness histogram. Figure 4-19 offers a look.

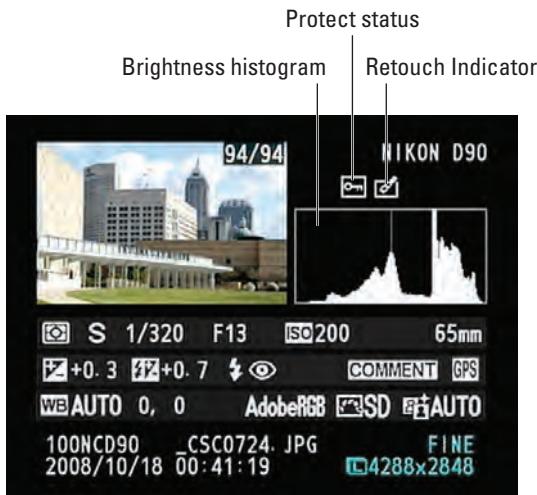


Figure 4-19: In Overview Data mode, you can view your picture along with the major camera settings you used to take the picture.

The earlier section “Reading a Brightness histogram” tells you what to make of that part of the screen. Just above the histogram, you see the Protect Status and Retouch Indicator, while the Frame Number/Total Pictures data appears in the upper right-corner of the image thumbnail. For details on that

data, see the earlier section “File Information mode.” (As always, the Protect status and Retouch Indicator icons appear only if you used those two features; otherwise, the area is empty.)

To sort out the maze of other information, the following list breaks things down into the five rows that appear under the image thumbnail and histogram. In the accompanying figures, I include all possible data simply for the purposes of illustration; if any of the items don’t appear on your screen, it simply means that the relevant feature wasn’t enabled when you captured the shot.

- ☛ **Row 1:** This row shows the exposure-related settings labeled in Figure 4-20, along with the focal length of the lens you used to take the shot. Chapter 5 details the exposure settings; Chapter 6 introduces you to focal length.
- ☛ **Row 2:** This row contains a few additional exposure settings, labeled in Figure 4-21. On the right end of the row, the Comment and GPS labels appear if you took advantage of those options when recording the shot. (You must switch to the Shooting Data mode or GPS mode, respectively, to view the actual comment and GPS data.)
- ☛ **Row 3:** The first three items on this row, labeled in Figure 4-22, relate to color options explored in Chapter 6. The last item indicates the Active D-Lighting setting, another exposure option discussed in Chapter 5.
- ☛ **Rows 4 and 5:** The final two rows of data (refer to Figure 4-19) show the same information you get in File Information mode, explained in the preceding section.

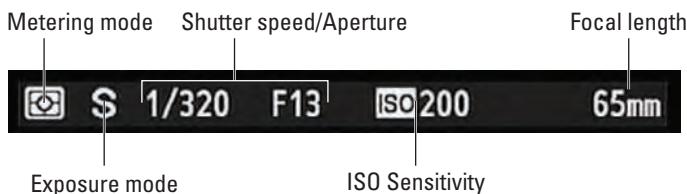


Figure 4-20: Here you can inspect major exposure settings along with the lens focal length.

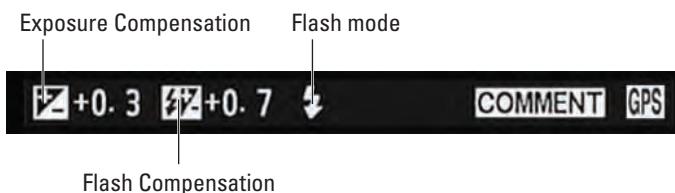


Figure 4-21: This row contains additional exposure information.



Figure 4-22: Look at this row for details about advanced color settings.

Hiding Photos during Playback

Let's say that your memory card contains 100 pictures. You shot about 50 at a meeting held during a business convention, and another 50 at the wild after-meeting party. You want to show your boss the ones where you and your co-workers look like responsible adults, but you'd rather not share the photos documenting your less-than-businesslike side. You could always delete the party photos; the next section shows you how. But if you want to keep them — you never know when a good blackmail picture will come in handy — you can simply hide those images during playback.

The key to this trick is the Hide Image option on the Playback menu. After highlighting the option, as shown on the left in Figure 4-23, press OK to display the right screen in the figure.



Figure 4-23: The Hide Image function lets you prevent photos from appearing during normal picture playback.

Now you have three choices — the first two let you select which photos to hide, and the third one brings them back from hiding:

☛ **Select individual images to hide.**

Highlight Select/Set and press the Multi Selector right to display thumbnails of your photos, as shown in Figure 4-24. Use the Multi Selector to move the yellow box over the photo you want to hide.



Next, press the ISO button, shown in the margin here, to tag the thumbnail with a little Hide Image icon, as shown in the figure. To remove the tag, just press the button again.



While you're inspecting thumbnails, you can press and hold the Qual button to temporarily display the selected image in full-frame view. When you release the button, the display returns to normal thumbnail view.

After you tag all the images you want to hide, press OK to return to the Playback menu.

☛ **Hide all photos shot on a specific date.**

If all the embarrassing images were taken on the same day, you can save time by using the Select Date option. (Refer to the right screen in Figure 4-23.) After you choose the option, you see a list of dates, as shown in Figure 4-25. Highlight a date and press the Multi Selector right to put a checkmark in the box next to the date. Now all images from that day are hidden. To remove the checkmark and redisplay the photos, press the Multi Selector right again.



You can view thumbnails of all the pictures taken on a date by highlighting the date and pressing the ISO button. You can then temporarily display a single image at full-size view by moving the yellow highlight box over the image thumbnail and pressing the Qual button. To return to the date list view, press OK. Press OK again to return to the Playback menu.

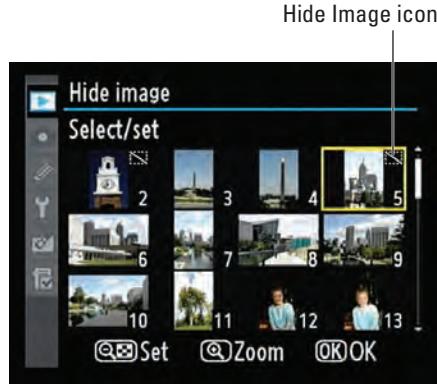


Figure 4-24: Press the ISO button to add the Hide Image tag to the selected photo.



Figure 4-25: You can quickly hide all photos taken on a certain date.



➤ **Redisplay all hidden images.** To redisplay all hidden pictures quickly, choose Deselect All from the Hide Image screen. Press the Multi Selector right to display a screen that asks you to confirm your decision. Highlight Yes and press OK to make it so.

A couple of fine points about this feature: First, your hidden images remain viewable from within the Hide Image screens. (So make sure your boss doesn't have time alone with your camera.) Second, if you want to delete hidden photos by using the Delete feature, explained next, you first need to remove the Hide Image tags. Or you can format your memory card, which wipes out all photos, hidden or not. See Chapter 1 for details on card formatting.

Deleting Photos

You can erase pictures from a memory card when it's in your camera in three ways. The next sections give you the lowdown. (Or is it the down low? I can't seem to keep up.)



If you hid an image by using the Hide Image feature or locked the file by using the Protect feature, you must remove the Hide Image or Protect tag from the file before you can delete the image. Details about hiding and protecting files are lurking elsewhere in this chapter.

Deleting images one at a time



The Delete button is key to erasing single images. But the process varies a little depending on which Playback display mode you're using, as follows:

- In single-image view, you can erase the current image by pressing the Delete button.
- In thumbnail view (displaying 4, 9, or 72 thumbnails), use the Multi Selector to highlight the picture you want to erase and then press the Delete button.
- In Calendar view, first highlight the date that contains the image. Then press the ISO button to jump to the scrolling list of thumbnails, highlight a specific image, and press Delete.

After you press Delete, you see a message asking whether you really want to erase the picture. If you do, press the Delete button again. Or, to cancel out of the process, press the Playback button.

See the earlier section, "Viewing Images in Playback Mode," for more details about the display modes.



If you accidentally erase a picture, don't panic — you *may* be able to restore it by using data-restoration software such as MediaRecover (\$30, www.mediarecover.com) or Lexar Image Rescue (also about \$30, www.lexar.com). But in order to have a chance, you must not take any more pictures or perform any other operations on your camera while the current memory card is in it. If you do, you may overwrite the erased picture data for good and eliminate the possibility of recovering the image.

Deleting all photos

To erase all pictures, display the Playback menu and highlight Delete, as shown in the first image in Figure 4-26. Press OK to display the options shown in the second image. Highlight All and press the Multi Selector right. You then see a screen that asks you to verify that you want to delete all of your images. Select Yes and press OK.

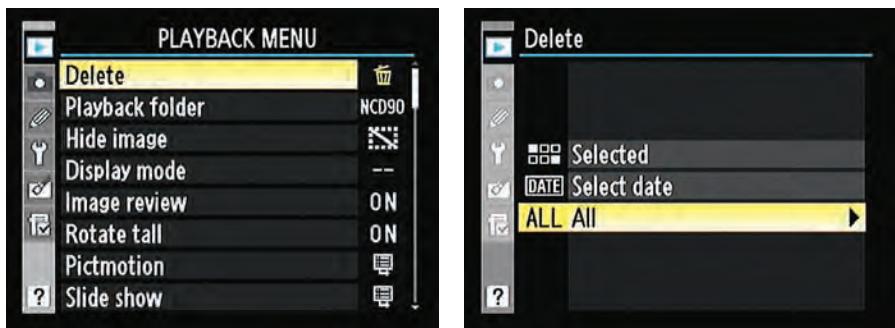


Figure 4-26: To delete all photos, use the Delete option on the Playback menu.



If you create custom image folders, a feature I cover in Chapter 11, be aware that this step deletes only pictures in the folder that is currently selected via the Playback Folder option on the Playback menu. See the section “Viewing Images in Playback Mode,” earlier in this chapter, for information.

Deleting a batch of selected photos

To erase multiple photos — but not all of them — display the Playback menu, highlight Delete, and press OK. You see the Delete screen shown in the second image in Figure 4-26.



You then have two options for specifying which photos to erase:

- ✓ **Select photos one-by-one.** To go this route, highlight Selected and press the Multi Selector right to display a screen of thumbnails, as shown in Figure 4-27. Use the Multi Selector to place the yellow highlight box over the first photo you want to delete and then press the ISO button, shown in the margin here. A little trash can icon, the universal symbol for delete, appears on the thumbnail, as shown in the figure. If you change your mind, press the ISO button again to remove the Delete tag from the image.



For a closer look at the selected image, press and hold the Qual button. When you release the button, the display returns to normal thumbnail view.

- ✓ **Erase all photos taken on a specific date.** This time, choose Select Date from the main Delete screen. Press the Multi Selector right to display a list of dates on which you took the pictures on the memory card. Highlight a date and press the Multi Selector right. A little checkmark appears in the box next to the date, tagging all images taken on that day for deletion. To remove the check mark and save the photos from the digital dumpster, press the Multi Selector right again.



Can't remember what photos are associated with the selected date? Press the ISO button to display thumbnails of all the images. You can then press the Qual button to temporarily view a selected thumbnail at full-size view. To return to the date list, press the ISO button again.

After selecting the photos or a shooting date, press OK to start the Delete process. You see a confirmation screen asking permission to destroy the images; select Yes and press OK. The camera trashes the photos and returns you to the Playback menu.



You have one alternative way to quickly erase all images taken on a specific date: In the Calendar display mode, you can highlight the date in question and then press the Delete button instead of going through the Playback menu. You get the standard confirmation screen asking you whether you want to go forward. Press the Delete button again to dump the files.



Figure 4-27: Use the ISO button to tag pictures you want to delete.



Deleting versus formatting: What's the diff?

In Chapter 1, I introduce you to the Format Memory Card command, which lives on the Setup menu and erases everything on your memory card. What's the difference between erasing photos by formatting and by choosing Delete from the Playback menu and then selecting the All option?

Well, first, if you happen to have stored other data on the card, such as, say, a music file or a picture taken on another type of camera, you need to format the card to erase everything on it. You can't view those files on the monitor, so you can't use Delete to get rid of them.

Also keep in mind that the Delete function affects only the currently selected folder of

camera images. As long as you use the default folder system that the camera creates for you, however, “currently selected folder” is the same as “all images.” The section “Viewing Images in Playback Mode,” earlier in this chapter, talks more about this issue; Chapter 11 explains how to create custom folders.

One final — and important — note: Although using the Protect feature (explained elsewhere in this chapter) prevents the Delete function from erasing a picture, formatting erases all pictures, protected or not. Formatting also wipes out any photos you hid by using the Hide Image feature.

Protecting Photos



You can safeguard pictures from accidental erasure by giving them *protected status*. After you take this step, the camera doesn’t allow you to erase a picture by using either the Delete button or the Delete option on the Playback menu.

Formatting your memory card, however, *does* erase even protected pictures. See the nearby sidebar for more about formatting.

The picture protection feature comes in especially handy if you share a camera with other people. You can protect pictures so that those other people know that they shouldn’t delete your super-great images to make room on the memory card for their stupid, badly photographed ones. (This step isn’t foolproof, though, because anyone can remove the protected status from an image.)



Perhaps more importantly, when you protect a picture, it shows up as a read-only file when you transfer it to your computer. Files that have that read-only status can’t be altered. Again, anyone with some computer savvy can remove the status, but this feature can keep casual users from messing around with your images after you’ve downloaded them to your system. Of course, you have to know how to remove the read-only status yourself if you plan on editing your photo in your photo software. (**Hint:** In Nikon ViewNX, you can do this by clicking the image thumbnail and then choosing File→Protect Files→Unprotect.)

Anyway, protecting a picture is easy:

1. Display or select the picture you want to protect.

- In single-image view, just display the photo.
- In 4/9/72 thumbnail mode, use the Multi Selector as needed to place the yellow highlight box over the photo.
- In Calendar view, highlight the date that contains the image and then press the ISO button to jump to the scrolling list of thumbnails. Then move the highlight box over the image.

WB



2. Press the WB button.

See the tiny key symbol that appears on the button? That's your reminder that you use the button to lock a picture. After you press the button, the same symbol appears on the image display, as shown in Figure 4-28.

3. To remove protection, display or select the image and press the WB button again.



One word of caution: If you apply the Hide Image tag to a photo as well as the Protect tag and you then remove the Hide Image tag, you also remove the Protect tag. See the earlier section “Hiding Photos during Playback” for an explanation of the Hide Image feature.

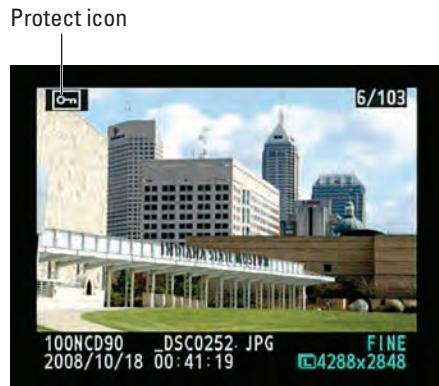


Figure 4-28: Press the WB button to prevent accidental deletion of the selected image.

Exploring Live View Shooting

If you've used a compact, point-and-shoot digital camera, you may be used to composing your pictures on the camera monitor rather than by looking through the viewfinder. In fact, many compact cameras no longer even offer a viewfinder, which is a real shame, in my opinion. Why? Because when you use the monitor to frame the image, you must hold the camera away from your body, a posture that increases the likelihood of blurry images caused by camera shake. When you use the viewfinder, you can brace the camera against your face, creating a steadier shooting stance.

Due to some design complexities that I won't bore you with, most digital SLR cameras do not enable you to preview shots on the monitor. Your D90, however, does offer that feature, known as *Live View* in dSLR nomenclature. The D90 also uses Live View when you record movies.

You need to know a few points about Live View as it's provided on your camera:

- ✓ **Manual focusing is recommended.** You can autofocus, but manual focusing usually offers faster, more precise results. And if you don't use a Nikon AF-S lens, the camera may have difficulty autofocusing at all in Live View mode. See Chapter 1 for an explanation of AF-S and other lens types.
- ✓ **Continuous autofocusing isn't possible.** In normal shooting, you can set the camera to continually adjust focus automatically up to the moment you fully depress the shutter button to record your picture. (See Chapter 6 for details.) This autofocus feature helps ensure that moving subjects remain sharply focused even after you initially establish focus by pressing the shutter button halfway.



When you use autofocus in Live View mode, focus is always locked when you press the shutter button halfway. For still photography, you can always release the button and reset focus if needed, assuming that your subject isn't moving so quickly that you don't have time to do so. But when you use autofocusing in movie mode, you can't adjust the focus point after recording begins. (Some lenses, however, do enable you to twist the manual focusing ring after setting focus initially with autofocus; check your lens manual to find out if you have that option.)

- ✓ **You can't access the Shooting Information display.** You can still view camera settings on the control panel, however, and a few settings are displayed with the image on the monitor.
- ✓ **You must establish the exposure metering mode before switching to Live View mode.** You can't change this exposure control, explained in Chapter 5, without shifting out of Live View mode.
- ✓ **You must be extra careful to keep the camera steady.** Just as with a point-and-shoot camera, holding the camera out in front of you to capture the image can cause camera shake that can blur your image. But with an SLR, the risk is greater because of the added weight of the camera and lens. And if you use a so-called *long lens* — a telephoto or zoom lens that extends to a long focal length — the potential for camera shake is compounded. So for best results, mount the camera on a tripod when you use Live View.
- ✓ **Using Live View for an extended period can harm your pictures and the camera.** When you work in Live View mode, the camera's innards heat up more than usual, and that extra heat can create the right electronic conditions for *noise*, a defect that gives your pictures a speckled look. (Chapter 5 offers more information.)



Perhaps more critically, the increased temperatures can damage the camera itself. For that reason, Live View is automatically disabled after one hour of shooting — or earlier, if a critical heat level is detected. In extremely warm environments, you may not be able to use Live View mode for very long before the system shuts down.



Aiming the lens at the sun or other bright lights also can damage the camera. Of course, you can cause problems doing this even during normal shooting, but the possibilities increase when you use Live View. You not only can harm the camera's internal components but also the monitor.

Live View also presents the two additional disadvantages which, in this case, are the same as for a point-and-shoot camera. First, any time you use the monitor, you put extra strain on the battery. So keep an eye on the battery status icon to avoid running out of juice at a critical moment. Second, the monitor can wash out in bright sunlight, making it difficult to compose outdoor shots.

This list of caveats doesn't mean that I'm telling you not to use Live View. But for normal photography — that is, still shooting rather than movie recording — you shouldn't envision Live View as a full-time alternative to using the viewfinder. Rather, think of it as a special-purpose tool that can help in situations where framing with the viewfinder is cumbersome.



I find Live View most helpful for still-life, tabletop photography, especially in cases that require a lot of careful arrangement of the scene. For example, I have a shooting table that's about waist high. Normally, I put my camera on a tripod, come up with an initial layout of the objects I want to photograph, set up my lights, and then check the scene through the viewfinder. Then there's a period of refining the object placement, the lighting, and so on. If I'm shooting from a high angle, requiring the camera to be positioned above the table and pointing downward, I have to stand on my tiptoes or get a stepladder to check things out through the viewfinder between each compositional or lighting change. At lower angles, where the camera is tabletop height or below, I have to either bend over or kneel to look through the viewfinder, causing no end of later aches and pains to back and knees. With Live View, I can alleviate much of that bothersome routine (and pain) because I can usually see how things look in the monitor no matter what the camera position.

With that lengthy preamble out of the way, the following section provides a primer in standard Live View shooting. Following that, you can find details about movie recording and discover a few ways to customize the Live View display.

Taking pictures in Live View mode

The following steps walk you through the process of Live View photography. For reasons explained in the preceding introduction to Live View shooting, manual focusing is recommended, so the steps assume that you stick with that focusing choice.

1. Open the Custom Setting menu, select the Autofocus submenu, and set the Live View Autofocus option to Normal Area or Wide Area.

Okay, I know I just said that these steps assume that you're going to focus manually. But for reasons I won't get into, setting the Live View Autofocus option to the third available choice, Face Priority, limits your

control when you check your focus later, in Step 7. So select either of the other two options.

2. Set the camera to manual focusing mode.

Chapter 1 details the process, which varies depending on the type of lens you use. For Nikkor AF-S lenses like the 18–105mm kit lens bundled with the D90, set the A/M switch on the lens to M.

3. If you're not using a tripod, turn on Vibration Reduction.

For the kit lens, set the VR switch on the lens to On.

4. Press the Lv button on the camera back.



You hear a clicking sound as the camera shifts to Live View. The scene in front of the lens appears on the monitor, as shown in Figure 4-29, and you no longer can see anything through the viewfinder.

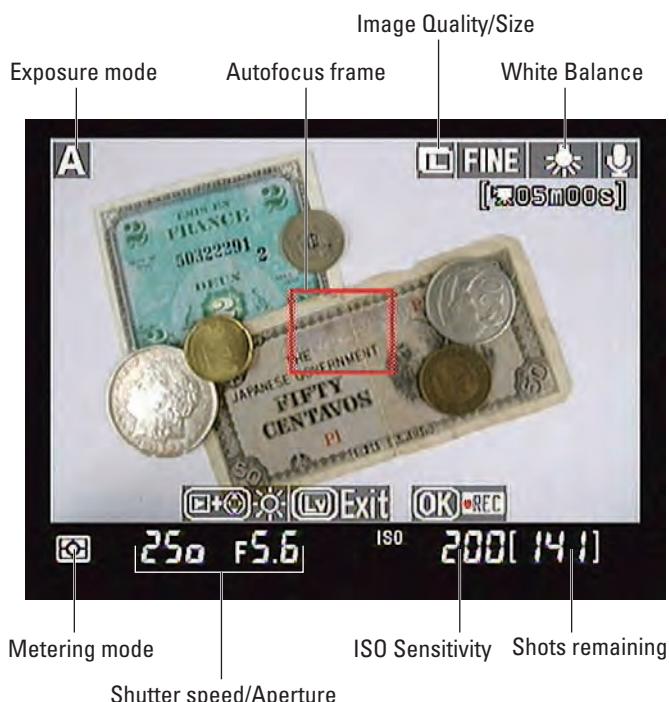


Figure 4-29: In Live View mode, you can compose your image on the monitor.

Along with your image, you see a bunch of shooting data. You can control what data is displayed by adjusting the settings explained in the last section of this chapter. But in the default view, shown in the figure, you see the following information:

- The bottom of the screen displays the metering mode, shutter speed, aperture, and ISO Sensitivity settings. (Chapter 5 details these settings.) The Shots Remaining value tells you how many more pictures will fit on the memory card.
- One row up, a few symbols appear to remind you what buttons to push to activate certain functions. For example, the first symbol indicates that you can adjust monitor brightness by pressing the Playback button, as described at the end of this chapter.
- The icon in the upper-left corner represents the exposure mode (Auto, P, A, Portrait, and so on).
- The upper-right corner displays the current Image Size, Image Quality, and White Balance settings. (Chapter 3 explains the first two; Chapter 6 explains White Balance.) The remaining two symbols, not labeled in Figure 4-29, relate to movie recording, explained in the next section.
- The red rectangle, labeled Autofocus frame in the figure appears as a result of choosing the Wide Area autofocusing option in Step 1. If you instead select Normal Area, you see a smaller rectangle. More on what you actually do with that rectangle in Step 7.



The figure shows the default monitor setup; you can adjust what data is displayed by using the options explained at the end of this chapter.

5. Frame the shot.

6. Turn the lens focusing ring to set initial focus.

7. Press the Qual button to magnify the view and refine focus, if needed.



Pressing the button zooms the display, with each press giving you a closer look at the shot. As when you magnify an image when you're viewing photos in Playback mode, a small thumbnail in the corner of the monitor appears, with the yellow highlight box indicating the area that's currently being magnified. To scroll the display and check another part of the image, press the Multi Selector to move the red focusing frame over the area you want to inspect. (Here's where that Live View Autofocus setting selected in Step 1 becomes important: If it's set to Face Priority, you can't scroll the display to view specific parts of the picture.)

To reduce the magnification, press the ISO button. When you're happy with the focus, press OK to return to full-frame view.

8. Press the shutter button halfway to initiate exposure metering.

If needed, you can adjust exposure in P, S, and A modes by using Exposure Compensation. In Manual (M) exposure mode, you can adjust shutter speed and f-stop as usual. (Chapter 5 spells out exposure details.) In the fully automatic exposure modes, you can't adjust exposure.

9. Depress the shutter button fully to take the shot.

You see your just-captured picture on the monitor for a few seconds, as usual. Then the Live View preview returns, and you're ready to take the next shot.

10. To exit the Live View preview, press the Lv button.



You can then return to framing your images through the viewfinder.

Recording movies

Your D90 offers a first-ever feature for digital SLR cameras: the ability to record digital movies. Although recording live action with a D90 involves a few limitations and difficulties that you don't experience with a real video camera, it's a fun option to have onboard nonetheless.

Before I give you the specifics, here's the broad overview of D90 movie making:

✓ **Movie quality:** Select this option from the Movie Setting option on the Shooting menu, as shown in Figure 4-30. The settings determine the frame size and aspect ratio of the movie: 320 x 216 pixels, for a 3:2 aspect ratio (the same aspect ratio as your D90 still images); 640 x 424, also a 3:2 aspect ratio; and 1280 x 720, which gives you a 16:9 aspect ratio, which is found on many new TV sets and computer monitors.

The higher the pixel count, the larger you can display the movie on a TV or monitor before you see the quality of the playback deteriorate. But a higher Quality setting also produces a larger file, eating up more of your memory card, and reduces the maximum length of the movie you can record, as outlined next.

✓ **Maximum movie length/file size:** If you select the highest movie resolution (1280 x 720 pixels), your movie can have a maximum length of five minutes and a maximum file size of 2GB. At the two lower-resolution settings, you're still restricted to 2GB file sizes, but the movies can run as long as 20 minutes. Of course, you must have 2GB of empty memory card space to store the movie.



Figure 4-30: Specify movie quality and sound recording options via the Shooting menu.

➤ **Frame rate:** The *frame rate* determines the smoothness of the playback. At all three Quality settings, the frame rate is 24 frames per second, or fps. By contrast, the standard frame rate for television-quality video is 30 frames per second, so expect your movies to play a little less smoothly than your favorite sitcoms.

➤ **Sound recording:** You can record sound or shoot a silent movie; make the call via the Movie Settings option on the Shooting menu (shown in Figure 4-30).



If you enable sound, note the position of the microphone: It's the little three-holed area just beneath the Mode dial, on the front of the camera. Make sure that you don't inadvertently cover up the microphone with your finger. And keep in mind that anything *you* say will be picked up by the mike along with any other audio present in the scene.

➤ **Video format:** Movies are created in the AVI format, which means you can play them on your computer using most movie-playback programs. If you want to view your movies on a TV, you can connect the camera to the TV, as explained in Chapter 9. Or if you have the necessary computer software, you can convert the AVI file to a format that a standard DVD player can recognize and then burn the converted file to a DVD disk. You also can edit your movie in a program that can work with AVI files.

So far, so good. None of the aforementioned details is terribly unusual or complicated. Where things get a little tricky for the would-be filmmaker are in the areas of focus and exposure:



➤ **Focusing:** As with regular Live View photography, you can use autofocus to establish initial focus on your subject before you begin recording. But after recording begins, the autofocus system lays down and plays dead. So unless you're recording a static subject — say, a guitar player sitting on a stool or a speaker at a lectern — opt for manual focusing. You can then adjust focus manually any time during the recording.

If you plan to also zoom in and out, give yourself some time to practice before the big event. It's a bit of a challenge to zoom and focus at the same time, especially while holding the camera in front of you so that you can see the monitor. (A tripod makes the maneuver slightly easier.)

➤ **Exposure:** The camera automatically sets exposure based on the light throughout the entire scene. You can't adjust exposure in any way, and any exposure options currently selected for regular photography don't apply. On a more positive note, the exposure settings used by the camera in movie mode tend to deliver a fairly large depth of field, or zone of sharp focus, which means that your subject can probably move at least a short distance from your original focusing point and not fall too badly out of focus. (Chapter 5 explains how exposure settings affect depth of field.)

To try out movie recording, first set your camera to manual focusing and, if you're not using a tripod, turn on Vibration Reduction (or whatever form of image stabilization your lens offers). Then take these steps:

1. Set your movie preferences through the Movie Settings option on the Shooting menu.

The first part of this section explains your options.



2. Press the Lv button to switch to Live View mode.

3. Compose your shot.

4. Set focus.

You can use the techniques outlined in the preceding section to magnify the display to check focus if needed.

5. Press OK to begin recording.

A red Rec symbol begins flashing at the top of the monitor, as shown in Figure 4-31. As recording progresses, the area labeled Time Remaining in the figure shows you how many more seconds of video you will be able to record. (The length is dependent on the movie-quality settings you choose and the amount of space on your memory card.) If you enabled sound, you also see the microphone symbol, as shown in the figure.



Figure 4-31: The red Rec symbol flashes while recording is in progress.

6. To stop recording, press OK.
7. Press the Lv button to exit Live View mode and return to normal shooting.



To play your movie, press the Playback button. In single-image playback mode, you can spot a movie file by looking for the little movie-camera icon in the top-left corner of the screen, as shown in Figure 4-32. You also can view the length of the movie in the area indicated in the figure. Press OK to start playback.

In the thumbnail and Calendar playback modes, you see little filmstrip dots along the edges of movie files, as shown in Figure 4-33. This time, press OK twice: once to shift to single-image view and again to start movie playback.

Chapter 9 explains how to connect your camera to a television so you can play your movies “on the big screen.”



Figure 4-32: The little movie camera symbol tells you you’re looking at a movie file.

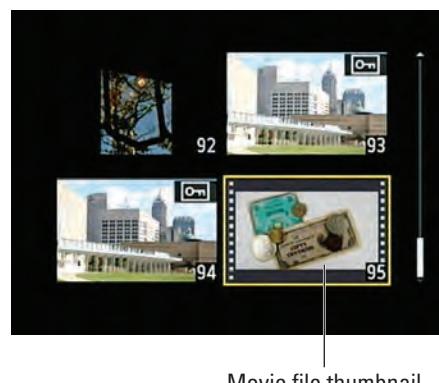


Figure 4-33: Thumbnails bordered by filmstrip dots are movie files.



Whether you are shooting movies or still photos, you can choose the following three Live View display styles.

Press the Info button to cycle between the different displays.

- ✓ **Display Shooting Information:** In this mode, which is the default, your monitor displays the data shown earlier, in Figure 4-29. (Some data disappears if you start recording a movie; refer to Figure 4-31.)
- ✓ **Hide Shooting Information:** Select this mode to hide everything that normally appears atop your image except the icon that represents your chosen exposure mode, as shown on the left in Figure 4-34. You also may see the red rectangle that represents the autofocusing frame; see the section “Taking pictures in Live View mode” for details.

Display Framing Guides: This mode displays a grid over the image, as shown on the right in the figure. The grid is helpful when you need to precisely align objects in your photo. But note that in this mode, you cannot zoom the display to check focusing.



Figure 4-34: Press the Info button to change the Live View display mode.



You also can adjust the brightness of the monitor. To do so, press and hold the Playback button to display a little brightness scale on the right side of the monitor, as shown in Figure 4-35. Press the Multi Selector up or down to move the brightness indicator on the scale. Release the Playback button to exit the monitor-adjustment mode and hide the brightness scale.



If you connect your camera to an HDMI (High-Definition Multimedia Interface) device, you no longer see the live scene on your camera monitor. Instead, the view is displayed on your video device. In that scenario, the arrangement of the shooting information on the screen is slightly different but contains the same basic data.



Figure 4-35: Press and hold the Playback button and then press the Multi Selector up or down to adjust the monitor brightness in Live View mode.

Part II

Taking Creative Control

The 5th Wave

By Rich Tennant

©RICH TENNANT



"Remember, when the subject comes into focus, the camera makes a beep. But that's annoying, so I set it on vibrate."



In this part . . .

As nice as it is to be able to set your D90 to automatic mode and let the camera handle most of the photographic decisions, I encourage you to also explore the advanced exposure modes (P, S, A, and M). In these modes, you can make your own decisions about the exposure, focus, and color characteristics of your photo, which are key to capturing an image as you see it in your mind's eye. And don't think that you have to be a genius or spend years to be successful — adding just a few simple techniques to your photographic repertoire can make a huge difference in how happy you are with the pictures you take.

The first two chapters in this part explain everything you need to know to do just that, providing both some necessary photography fundamentals as well as details about using the advanced exposure modes. Following that, Chapter 7 helps you draw together all the information presented earlier in the book, summarizing the best camera settings and other tactics to use when capturing portraits, action shots, landscapes, and close-up shots.



Getting Creative with Exposure and Lighting

In This Chapter

- ▶ Understanding the basics of exposure
- ▶ Exploring advanced exposure modes: P, S, A, or M?
- ▶ Choosing an exposure metering mode
- ▶ Tweaking autoexposure with Exposure Compensation
- ▶ Taking advantage of Active D-Lighting
- ▶ Using flash in the advanced exposure modes
- ▶ Creating a safety net with automatic bracketing

Understanding exposure is one of the most intimidating challenges for the new photographer. Discussions of the topic are loaded with unfamiliar, techy-sounding terms — *aperture*, *metering*, *shutter speed*, *ISO*, and the like. Add the fact that your D90 offers oodles of exposure controls, all sporting equally foreign names, and it's no wonder that most people throw up their hands and decide that their best option is to simply stick with the Auto exposure mode and let the camera take care of all exposure decisions.

You can, of course, turn out super shots in Auto mode. And I fully relate to the exposure confusion you may be feeling — I've been there. But from years of working with beginning photographers, I can promise that when you take things nice and slow, digesting just a piece of the exposure pie at a time, the topic is not nearly as complicated as it seems on the surface. And I guarantee that the payoff will be well worth your time and brain energy.



You'll not only gain the power to resolve just about any exposure problem, but also discover ways to use exposure to put your own creative stamp on a scene.

To that end, this chapter provides everything you need to know to really exploit your D90's exposure options, from a primer in exposure science (it's not as bad as it sounds) to explanations of all the camera's exposure controls. In addition, because some controls aren't accessible in the fully automatic exposure modes, this chapter also introduces you to the four advanced modes, P, S, A, and M.

Introducing the Exposure Trio: Aperture, Shutter Speed, and ISO

Any photograph, whether taken with a film or digital camera, is created by focusing light through a lens onto a light-sensitive recording medium. In a film camera, the film negative serves as that medium; in a digital camera, it's the image sensor, which is an array of light-responsive computer chips.

Between the lens and the sensor are two barriers, known as the *aperture* and *shutter*, which together control how much light makes its way to the sensor. The actual design and arrangement of the aperture, shutter, and sensor vary depending on the camera, but Figure 5-1 offers an illustration of the basic concept.

The aperture and shutter, along with a third feature known as *ISO*, determine *exposure* — what most of us would describe as the picture's overall brightness and contrast. This three-part exposure formula works as follows:

Aperture (controls amount of light)

The *aperture* is an adjustable hole in a diaphragm set just behind the lens. By changing the size of the aperture, you control the size of the light beam that can enter the camera. Aperture settings are stated as *fstop numbers*, or simply

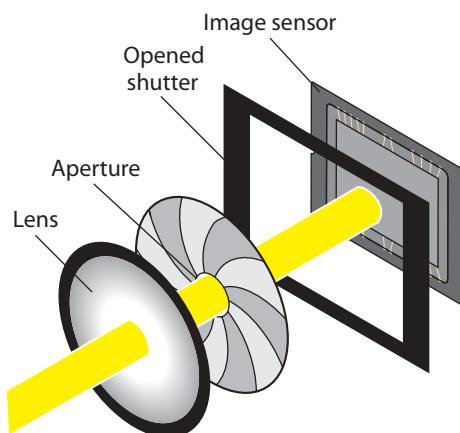


Figure 5-1: The aperture size and shutter speed determine how much light strikes the image sensor.



f-stops, and are expressed with the letter *f* followed by a number: f/2, f5.6, f/16, and so on. The lower the f-stop number, the larger the aperture, and the more light is permitted into the camera, as illustrated by Figure 5-2.

The range of possible f-stops depends on your lens and, if you use a zoom lens, on the zoom position (focal length) of the lens. When you use the 18–105mm lens that Nikon bundles in the D90 kit, you can select apertures from f/3.5–f/22 when zoomed all the way out to the shortest focal length, 18mm. When you zoom in to the maximum focal length, 105mm, the aperture range is f/5.6–f/36. (See Chapter 6 for a discussion of focal lengths.)

- ✓ **Shutter speed (controls duration of light):** Set behind the aperture, the shutter works something like, er, the shutters on a window. When you aren't taking pictures, the camera's shutter stays closed, preventing light from striking the image sensor, just as closed window shutters prevent sunlight from entering a room. When you press the shutter button, the shutter opens briefly to allow light that passes through the aperture to hit the image sensor.

The length of time that the shutter is open is called the *shutter speed* and is measured in seconds: 1/60 second, 1/250 second, 2 seconds, and so on. Shutter speeds on the D90 range from 30 seconds to 1/4000 second when you shoot without the built-in flash. If you do use the built-in flash, the range is more limited; some external flash heads permit a faster shutter speed, however. See the sidebar “In sync: Flash timing and shutter speed,” later in this chapter, for information.

Should you want a shutter speed longer than 30 seconds, manual (M) exposure mode also provides a feature called *bulb* exposure. At this setting, the shutter stays open indefinitely as long as you press the shutter button down.

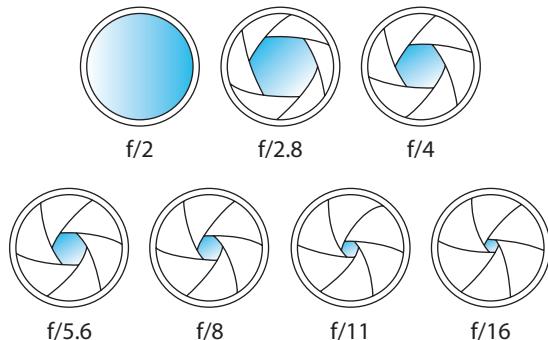


Figure 5-2: A lower f-stop number means a larger aperture, allowing more light into the camera.



ISO (**controls light sensitivity**): ISO, which is a digital function rather than a mechanical structure on the camera, enables you to adjust how responsive the image sensor is to light. The term ISO is a holdover from film days, when an international standards organization rated each film stock according to light sensitivity: ISO 200, ISO 400, ISO 800, and so on. Film or digital, a higher ISO rating means greater light sensitivity, which means that less light is needed to produce the image, enabling you to use a smaller aperture, faster shutter speed, or both.

On the D90, you can select ISO settings ranging from 100 to a whopping 6400. (The high and low ends of the scale are named Lo 1 and Hi 1, respectively.)

Distilled down to its essence, the image-exposure formula is just this simple:

- ✓ Aperture and shutter speed together determine the quantity of light that strikes the image sensor.
- ✓ ISO determines how much the sensor reacts to that light.

The tricky part of the equation is that aperture, shutter speed, and ISO settings affect your pictures in ways that go *beyond* exposure. You need to be aware of these side effects, explained in the next section, to determine which combination of the three exposure settings will work best for your picture.

Understanding exposure-setting side effects

You can create the same exposure with many combinations of aperture, shutter speed, and ISO. You're limited only by the aperture range allowed by the lens and the shutter speeds and ISO range offered by the camera.

But as I hinted in the preceding section, the settings you select impact your image beyond mere exposure, as follows:

- ✓ **Aperture affects depth of field.** The aperture setting, or f-stop, affects *depth of field*, which is the range of sharp focus in your image. I introduce this concept in Chapter 2, but here's a quick recap: With a shallow depth of field, your subject appears more sharply focused than faraway objects; with a large depth of field, the sharp-focus zone spreads over a greater distance.

As you reduce the aperture size — or *stop down the aperture*, in photo lingo — by choosing a higher f-stop number, you increase depth of field. As an example, take a look at the two images in Figure 5-3. For both shots, I established focus on the foreground grass. Notice that the



background in the first image, taken at an aperture setting of f/5.6, appears noticeably softer than in the right example, taken at f/13. Aperture is just one contributor to depth of field, however; see Chapter 6 for the complete story.

- ✓ **Shutter speed affects motion blur.** At a slow shutter speed, moving objects appear blurry, whereas a fast shutter speed captures motion cleanly. Compare the tall foreground grass in the images in Figure 5-3, for example. A brisk wind was blowing when I took these pictures, and as a result, the foreground grass is captured without blur only at the 1/160 second shutter speed used for the left image. How fast a shutter speed you need to freeze action depends on the speed of the subject, of course.

f/5.6, 1/160 second, ISO 200



f/13, 1/60 second, ISO 400



Figure 5-3: Stopping down the aperture (by choosing a higher f-stop number) increases depth of field, or the zone of sharp focus.



If your picture suffers from overall image blur, as in Figure 5-4, where even stationary objects appear out of focus, the camera itself moved during the exposure. As you increase the exposure time (by selecting a slower shutter speed), you increase the risk of this problem because you have to keep the camera still for a longer period of time. Most people enter the camera-shake zone at speeds slower than about 1/50 second, although some people have steadier hands than others. I'm not one of them, as my 1/20 second handheld example in Figure 5-4 shows.



Some Nikon lenses, including the 18–105mm kit lens, offer *vibration reduction*, which is designed to help compensate for small amounts of camera shake. If you're using a lens from another manufacturer, the feature may go by the name *image stabilization* or something similar. Whatever you call it, this option can enable you to capture sharp images at slightly slower shutter speeds than normal when handholding the camera. On the D90 kit lens, just set the VR switch on the side of the lens to the On position to enable vibration reduction.

See Chapter 6 for tips on solving other focus problems and Chapter 7 for more help with action photography.

- ✓ **ISO affects image noise.** As ISO increases, making the image sensor more reactive to light, you increase the risk of producing a defect called *noise*. This defect looks like sprinkles of sand and is similar in appearance to film *grain*, a defect that often mars pictures taken with high ISO film. Noise can also be caused by very long exposure times.

Ideally, then, you should always use the lowest ISO setting on your camera to ensure top image quality. But sometimes, the lighting conditions simply don't permit you to do so and still use the aperture and shutter speeds you need. Take the rose images in Figure 5-5, for example. Here again, a mild breeze was blowing, so I knew I needed a fast



Figure 5-4: Slow shutter speeds increase the risk of all-over blur caused by camera shake.

shutter to capture the flower without blur. I opened the aperture to f/6.3, which was the maximum on the lens I was using, to allow as much light as possible into the camera. Even so, I needed a shutter speed of 1/40 second to expose the picture at ISO 200 — and that shutter speed wasn't fast enough to catch the swaying flower without blur, as shown on the left in the figure. Using the lowest ISO (ISO 100) would have made the situation that much worse. By raising the ISO to 400, I was able to use a shutter speed of 1/80 second, which captured the flower cleanly.

Fortunately, you don't encounter serious noise on the D90 until you really crank up the ISO. In fact, you may even be able to get away with ISO 3200 if you keep your print or display size small. But as with other image defects, noise becomes more apparent as you enlarge the photo. To prove the point, Figure 5-6 shows you magnified views of a bit of the rose scene captured at ISO 200 through 3200. Noise also is easier to spot in areas of flat color than in areas of busy detail or rough texture, where it can hide a little more.

Long story short, understanding how aperture, shutter speed, and ISO affect your image enables you to have much more creative input over the look of your photographs — and, in the case of ISO, to also control the quality of your images. (Chapter 3 discusses other factors that affect image quality.)

ISO 200, f/6.3, 1/40 second



ISO 400, f/6.3, 1/80 second



Figure 5-5: A higher ISO enabled me to select a shutter speed fast enough to capture a blur-free flower shot on a windy day.

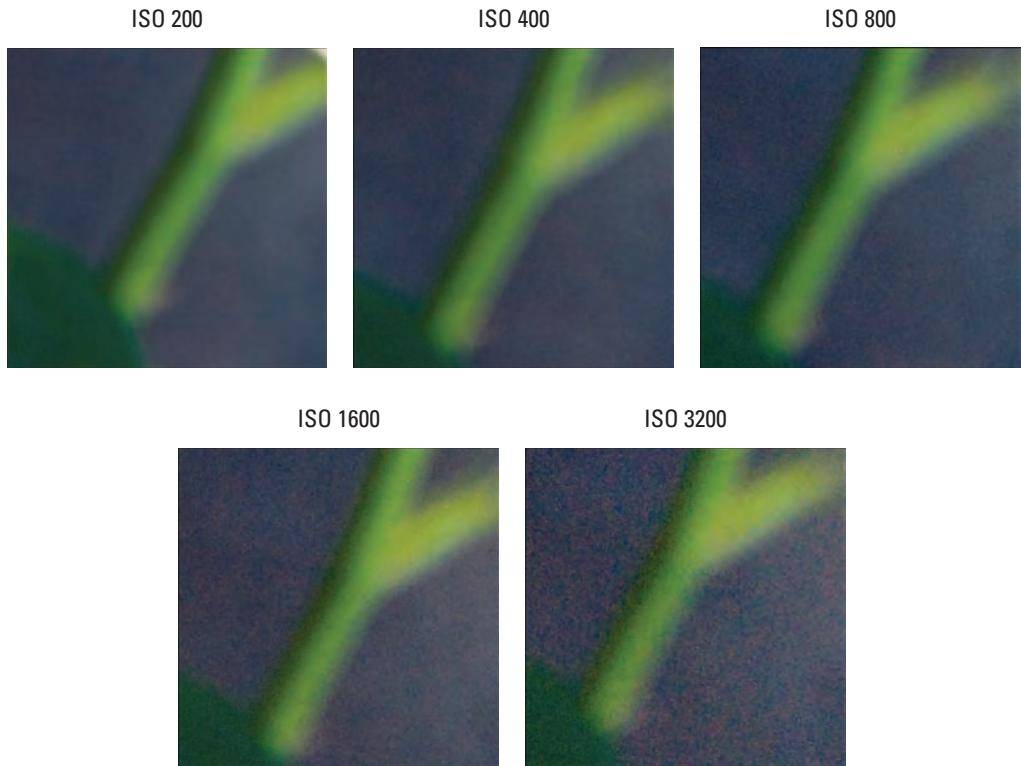


Figure 5-6: Noise becomes more visible as you enlarge your images.



Doing the exposure balancing act

As you change any of the three exposure settings — aperture, shutter speed, and ISO — one or both of the others must also shift in order to maintain the same image brightness. Say that you’re shooting a soccer game, for example, and you notice that although the overall exposure looks great, the players are appearing slightly blurry at your current shutter speed. If you raise the shutter speed, you have to compensate with either a larger aperture, to allow in more light during the shorter exposure, or a higher ISO setting, to make the camera more sensitive to the light — or both.

As the preceding section explains, changing these settings impacts your image in ways beyond exposure. As a quick reminder:

- ✓ Aperture affects depth of field, with a higher f-stop number producing a greater zone of sharp focus.
- ✓ Shutter speed affects whether motion of the subject or camera results in a blurry photo. A faster shutter “freezes” action and also helps safeguard

against allover blur that can result from camera shake when you're hand-holding the camera.

- ✓ ISO affects the camera's sensitivity to light. A higher ISO makes the camera more responsive to light but also increases the chance of image noise.

So when you boost that shutter speed to capture your soccer subjects, you have to decide whether you prefer the shorter depth of field that comes with a larger aperture or the increased risk of noise that accompanies a higher ISO.

Everyone has their own approach to finding the right combination of aperture, shutter speed, and ISO, and you'll no doubt develop your own system as you become more practiced at using the advanced exposure modes. In the meantime, here's how I handle things:

- ✓ I always use the lowest possible ISO setting unless the lighting conditions are so poor that I can't use the aperture and shutter speed I want without raising the ISO.
- ✓ If my subject is moving (or might move, as with a squiggly toddler or antsy pet), I give shutter speed the next highest priority in my exposure decision. I might choose a fast shutter speed to ensure a blur-free photo or, on the flip side, select a slow shutter to intentionally blur that moving object, an effect that can create a heightened sense of motion. (The waterfall photo in Chapter 7 offers an example of the latter technique.)
- ✓ For images of non-moving subjects, I make aperture a priority over shutter speed, setting the aperture according to the depth of field I have in mind. For portraits, for example, I use a wide-open aperture (low f-stop number) so that I get a short depth of field, creating a nice, soft background for my subject. For landscapes, I go the opposite direction, stopping down the aperture as much as possible to capture the subject at the greatest depth of field.



Putting the f (stop) in focus

One way to remember the relationship between f-stop and depth of field, or the range of distance over which objects remain in sharp focus, is simply to think of the *f* as standing for *focus*. A higher f-stop number produces a larger depth of field, so if you want to extend the zone of sharp focus to cover a greater distance from your subject, you set the aperture to a higher f-stop. Higher f-stop number, greater zone of sharp focus.

Please *don't* share this tip with photography elites, who will roll their eyes and inform you that the *f* in *f-stop* most certainly does *not* stand

for focus but for the ratio between the aperture size and lens focal length — as if *that's* helpful to know if you're not an optical engineer. (Chapter 6 explains focal length, which *is* helpful to know.)

As for the fact that you *increase* the f-stop number when you want a *smaller* aperture, well, I'm still working on the ideal mnemonic tip for that one. But try this in the meantime: **Lower f-stop, larger aperture.** Or maybe the opposite: **Raise the f-stop to reduce the aperture size and restrict the light.** (As I said, I'm working on it.)

I know that keeping all this straight is a little overwhelming at first, but the more you work with your camera, the more the whole exposure equation will make sense to you. You can find tips for choosing exposure settings for specific types of pictures in Chapter 7; keep moving through this chapter for details on how to actually monitor and adjust aperture, shutter speed, and ISO settings on the D90.

Exploring the Advanced Exposure Modes



You can control some aspects of exposure, including ISO, in the fully automatic exposure modes. But if you want access to all options, you need to set the Mode dial to one of the advanced modes highlighted in Figure 5-7: P, S, A, or M. You also need to shoot in these modes to use certain other features, such as manual white balancing, a color control that you can explore in Chapter 6.

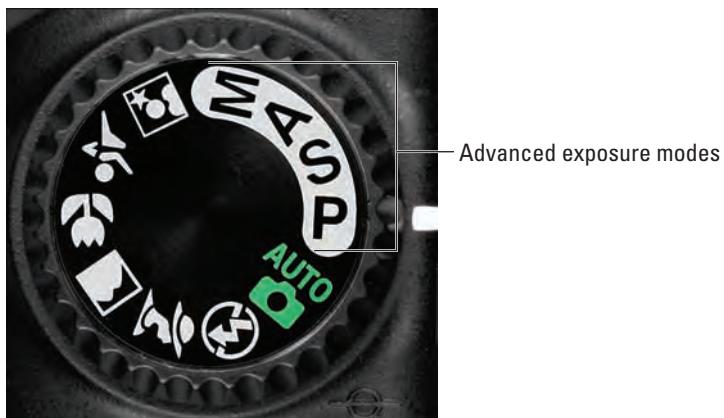


Figure 5-7: You can control exposure and certain other picture properties fully only in P, S, A, or M mode.

Each of the four modes offers a different way to control aperture and shutter speed:

- ✓ **P (programmed autoexposure):** In this mode, the camera selects both aperture and shutter speed. But you can choose from different combinations of the two, which gives you creative flexibility not possible in the fully automatic exposure modes discussed in Chapter 2.
- ✓ **S (shutter-priority autoexposure):** In this mode, you select a shutter speed, and the camera chooses the aperture setting that produces a good exposure at your selected ISO setting.



- ☛ **A (aperture-priority autoexposure):** The opposite of shutter-priority auto-exposure, this mode asks you to select the aperture setting. The camera then selects the appropriate shutter speed to properly expose the picture.
- ☛ **M (manual exposure):** In this mode, you specify both shutter speed and aperture.

To sum up, the first three modes are semi-automatic exposure modes that are designed to help you get a good exposure while still providing you with some photographic flexibility. Note one important difference between P and the other two semi-auto modes, however: Although you can select from different combinations of aperture and shutter speed in P mode, the choices presented to you are limited to those that will properly expose the picture. In A and S modes, you can dial in settings that will result in an under- or overexposed image. (The camera will warn you about the potential problem, however.) Manual mode puts all exposure control in your hands. But even in Manual mode, you're never really flying without a net — the camera assists you by displaying the exposure meter, explained next.

Reading the Meter

To help you determine whether your exposure settings are on cue in M (manual) exposure mode, the camera displays an *exposure meter* in the view-finder and Shooting Information screen. The meter is a little linear graphic that indicates whether your current settings will properly expose the image. Figure 5-8 gives you three examples.

The minus-sign end of the meter represents underexposure; the plus sign, overexposure. So if the little notches on the meter fall to the right of 0, the image will be underexposed. If the indicator moves to the left of 0, the image will be overexposed. The farther the indicator moves toward the plus or minus sign, the greater the potential problem. When the meter shows a balanced exposure, as in the third example in the figure, you're good to go.



Figure 5-8: The exposure meter indicates whether your exposure settings are on target.



In the S and A exposure modes, the meter appears when the camera thinks you're heading for an exposure problem. If your exposure settings are so far off that the exposure indicator bumps up against the limits of the meter, you get an extra warning: In S mode, the words *Hi* or *Lo* take the place of the f-stop value to warn you about overexposure and underexposure, respectively. In A mode, the warning message instead occupies the space normally reserved for the shutter speed.

If you're so inclined, you can customize the meter in the following ways:

- ✓ **Adjust the meter shutoff timing.** The meter turns off automatically if you don't press the shutter button for a period of time — 6 seconds, by default. You can adjust the shut-off timing through the Auto Meter-Off Delay option, found on the Timers/AE Lock submenu of the Custom Setting menu, as shown on the left in Figure 5-9. Keep in mind that shorter delay times conserve battery power.
- ✓ **Reverse the meter orientation.** You can flip the meter so that the positive (overexposure) side appears on the right and the negative (underexposure) side falls on the left. This option also lies on the Custom Setting menu, but on the Controls submenu. Look for the Reverse Indicators option, as shown on the right in the figure.



Keep in mind that the meter's suggestion on exposure may not always be the one you want to follow. For example, you may want to shoot a backlit subject in silhouette, in which case you *want* that subject to be underexposed. In other words, the meter is a guide, not a dictator. In addition, remember that the exposure information the meter reports is based on the *exposure metering mode*, which determines which part of the frame the camera considers when calculating exposure. At the default setting, exposure is based on the entire frame, but you can select two other metering modes. See the upcoming section "Choosing an Exposure Metering Mode" for details.

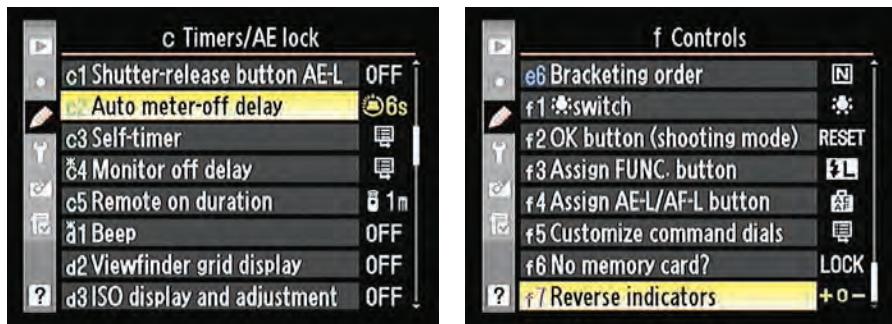


Figure 5-9: You can customize the behavior of the exposure meter.

Setting ISO, Aperture, and Shutter Speed

The next sections detail how to view and adjust these three critical exposure settings. Remember, you can adjust ISO in any exposure mode, but to control aperture (f-stop) or shutter speed, you must switch to one of the four advanced exposure modes (P, S, A, or M).

Adjusting aperture and shutter speed

You can view the current aperture (f-stop) and shutter speed in the Control panel, viewfinder, and Shooting Information display, as shown in Figure 5-10. (Press the Info button to display the Shooting Information screen.)

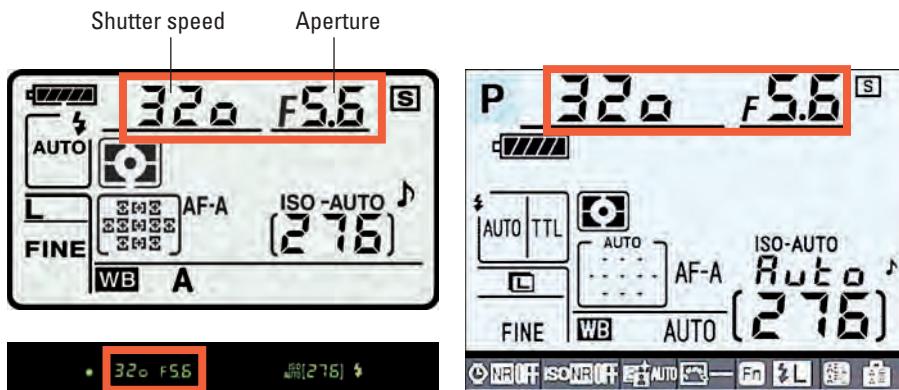


Figure 5-10: Look for the current f-stop, shutter speed, and ISO settings here.



Shutter speeds are presented as whole numbers, even if the shutter speed is set to a fraction of a second. For example, the number 125 indicates a shutter speed of 1/125 second. When the shutter speed slows to 1 second or more, quote marks appear after the number — 1" indicates a shutter speed of 1 second, 4" means 4 seconds, and so on.

To select aperture and shutter speed, start by pressing the shutter button halfway to kick the exposure system into gear. You can then release the button if you want. The next step depends on the exposure mode, as follows:

- | **P (programmed auto):** In this mode, the camera shows you its recommended f-stop and shutter speed when you press the shutter button halfway. But you can rotate the main command dial to select a different combination of settings. The number of possible combinations depends upon the aperture settings the camera can select, which in turn depend on the lighting conditions and your lens.

An asterisk (*) appears next to the P exposure mode symbol in the upper-left corner of the Shooting Information display after you rotate the main command dial to indicate that you adjusted the aperture/shutter speed settings from those the camera initially suggested. In the Control panel, a P* symbol appears right under the shutter speed to provide the same alert. To get back to the initial combo of shutter speed and aperture, rotate the main command dial until the asterisk disappears from the Shooting Information display and the P* disappears from the Control panel.

- ✓ **S (shutter-priority autoexposure):** In this mode, you select the shutter speed. Just rotate the main command dial to get the job done.



As you change the shutter speed, the camera automatically adjusts the aperture as needed to maintain what it considers the proper exposure. Remember that as the aperture shifts, so does depth of field — so even though you're working in shutter-priority mode, keep an eye on the f-stop, too, if depth of field is important to your photo. Also note that in extreme lighting conditions, the camera may not be able to adjust the aperture enough to produce a good exposure at your current shutter speed — again, possible aperture settings depend on your lens. So you may need to compromise on shutter speed (or in dim lighting, raise the ISO).

- ✓ **A (aperture-priority autoexposure):** In this mode, you control aperture, and the camera adjusts shutter speed automatically. To set the aperture (f-stop), rotate the sub-command dial.



When you stop down the aperture (raise the f-stop value), be careful that the shutter speed doesn't drop so low that you run the risk of camera shake if you handhold the camera — unless you have a tripod handy, of course. And if your scene contains moving objects, make sure that when you dial in your preferred f-stop, the shutter speed that the camera selects is fast enough to stop action (or slow enough to blur it, if that's your creative goal). These same warnings apply when you use P mode, by the way.

- ✓ **M (manual exposure):** In this mode, you select both aperture and shutter speed, like so:

- *To adjust shutter speed:* Rotate the main command dial.
- *To adjust aperture:* Rotate the sub-command dial.



Keep in mind that when you use P, S, or A modes, the settings that the camera selects are based on what it thinks is the proper exposure. If you don't agree with the camera, you have two options: You can switch to manual exposure mode and simply dial in the aperture and shutter speed that deliver the exposure you want; or if you want to stay in P, S, or A mode, you can tweak exposure using the Exposure Compensation feature, explained later in this chapter.

Controlling ISO

The ISO setting, introduced at the start of this chapter, adjusts the camera's sensitivity to light. At a higher ISO, you can use a faster shutter speed or

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a smaller aperture (higher f-stop number) because less light is needed to expose the image.

You can adjust ISO in any exposure mode. Moreover, you can specify how you want to display and adjust the ISO value. To make that call, open the Custom Setting menu, navigate to the Shooting/Display submenu, highlight ISO Display and Adjustment, and press OK to display the three options shown in Figure 5-11.

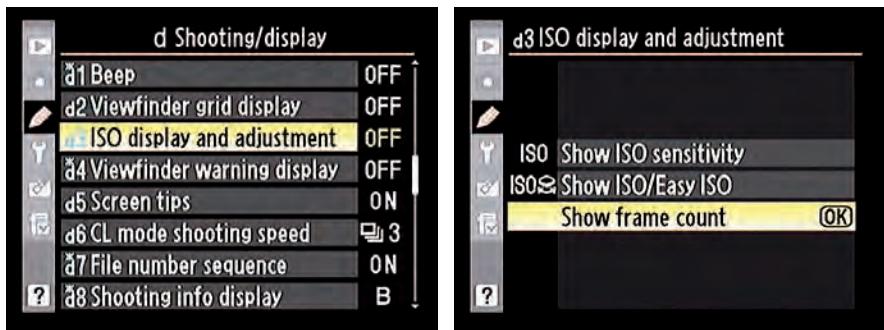


Figure 5-11: You can choose from three options for displaying and adjusting ISO.

Here are your choices:

- ✓ **Off (Show Frame Count):** In this mode, which is the default setting, the ISO value always appears in the Shooting Information display, as shown on the right in Figure 5-12. (Press the Info button to bring up the display.) If you set the ISO value to the Auto setting, an option discussed fully in the next section, you also see an Auto ISO label next to the frames-remaining value in the viewfinder and Control panel. (Refer to Figure 5-10, in the preceding section.)



Figure 5-12: At the default ISO display/adjustment setting, you press the ISO button and rotate the main command dial to change the ISO setting.



If you instead select a specific ISO setting, you must press the ISO button to see the setting in the viewfinder or Control panel. When you press the button, the ISO value temporarily replaces the frames-remaining value. In the Control panel, all other information disappears, but in the viewfinder, the f-stop and shutter speed remain visible, as shown on the left in Figure 5-12.

Not to complicate matters — well, okay, I guess I'm about to do just that — but if you're working in the P, S, A, or M exposure modes, you have the option of selecting a specific ISO value *and* enabling Auto ISO override as a backup. If you go this route, the Auto ISO label appears as usual, but pressing the ISO button shows the specific value you selected. Clear as mud? See the next bulleted list for information that may help.

Regardless, you adjust the setting by rotating the main command dial while pressing the ISO button.

- ✓ **Show ISO Sensitivity:** If you choose this option, the ISO value permanently replaces the frames-remaining value in the Control panel and viewfinder. Again, rotate the main command dial while pressing the ISO button to adjust the ISO value. You must visit the Shooting Information screen to see the frames-remaining value.
- ✓ **Show ISO/Easy ISO:** This setting also displays the ISO value instead of the frames-remaining number in the Control panel and viewfinder. But instead of pressing the ISO button to adjust the setting, you can just rotate the main command dial in the A exposure mode or the sub-command dial in the P and S modes. In all the other exposure modes, you press the ISO button and rotate the main command dial. I find all that a little complicated, but you be the judge.

Whichever display option you select, you also can adjust ISO via the ISO Sensitivity Settings option on the Shooting menu, as shown in Figure 5-13. I find that sticking with the default ISO display option — Off (Show Frame Count) — and then using the ISO button/main dial maneuver is faster, however.

Keep the following factoids in mind about the ISO settings themselves:

- ✓ **Auto ISO in Auto and Digital Vari-Program modes:** In these exposure modes, the list of ISO settings includes Auto ISO. Select this option if you want the camera to take the ISO reins entirely.



Figure 5-13: You also can adjust ISO via the Shooting menu.



✓ **Auto ISO in advanced exposure modes.** In the advanced exposure modes (P, S, A, and M), Auto ISO doesn't appear on the ISO settings list. However, you still can enable Auto ISO as sort of a safety net. Here's how it works: You dial in a specific ISO setting — say, ISO 200. If the camera decides that it can't properly expose the image at that ISO given your current aperture and shutter speed, it automatically adjusts ISO as necessary.

To get to this option, first select the ISO Sensitivity Settings on the Shooting menu. (Refer to Figure 5-13.) Then press OK to display the screen shown in Figure 5-14, and set ISO Sensitivity Auto Control to On.

Next, use the Maximum Sensitivity and Minimum Shutter Speed options, also shown in Figure 5-14, to tell the camera exactly when it should step in and offer ISO assistance. With the first option, you specify the highest ISO setting the camera may select when it does override your ISO decision. The second option sets the minimum shutter speed at which the ISO override engages. For example, you can specify that you want the camera to amp up ISO if the shutter speed drops to 1/40 second or below. This second option only affects shots you take in the P and A exposure modes, however.

If the camera is about to override your ISO setting, it alerts you by blinking the ISO Auto label in the viewfinder and Control panel. And in Playback mode, the ISO value appears in red if you view your photos in the Shooting Information display mode. (Chapter 4 has details.)

To disable Auto ISO override, just reset the ISO Sensitivity Auto Control to Off.

✓ **Hi/Lo settings:** The specific ISO values presented to you range from 200 to 3200. But if you scroll past those settings, you discover three more settings in each direction: Hi 0.3, Hi 0.7, and Hi 1.0; and Lo 0.3, Lo 0.7, and Lo 1.0. These settings, in order, translate to ISO values of about 160, 125, and 100 at the low end and 4000, 5000, and 6400 at the high end.



Choosing ISO 3200 pretty much ensures a noisy image (refer to Figure 5-6), and shifting into the Hi settings just makes things worse. If cranking up ISO is the only way to capture the image, and you'd rather have a noisy picture than no picture, go for it. Otherwise, adjust shutter speed and aperture to get the exposure you want instead.

Also check out the upcoming sidebar “Dampening Noise” for features that may help calm noise somewhat.

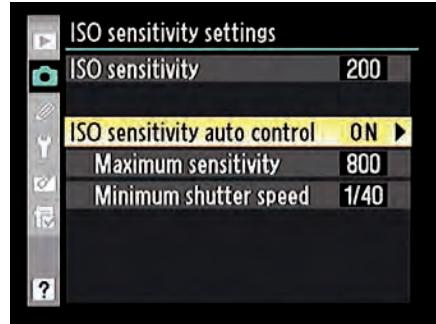


Figure 5-14: In advanced exposure modes, you can set limits for Auto ISO override.

Dampening noise

Noise, the digital defect that gives your pictures a speckled look (refer to Figure 5-6), can occur for two reasons: a high ISO speed and a long exposure time.

The D90 offers two noise-removal filters, one designed to help eradicate ISO-related noise and another to dampen the type of noise that occurs during long exposures. You can enable both filters through the Shooting menu, shown in the left image here. Or you can access the controls from the Shooting Information display. Press the Info button twice to shift the display into Quick Settings mode. The Long Exposure Noise Reduction option is the first setting on the left, as shown on the right in the figure here, the High ISO Noise Reduction option lives right next door. After highlighting the option, press OK; you're then taken to the menu screen that contains the relevant settings.

If you turn on Long Exposure Noise Reduction, the camera applies the filter to any pictures taken at shutter speeds of longer than 8 seconds. For High ISO Noise Reduction, choosing High, Normal, or Low applies the filter at ISO

settings of 800 or higher; the setting you choose determines the strength of the filter. If you choose Off, the camera actually still applies a tiny amount of noise removal, but only when you shift into the Hi ISO settings (Hi 0.3 or greater).

Before you enable noise reduction, be aware that doing so has a few disadvantages. First, the filters are applied after you take the picture, as the camera processes the image data. (While the filter is being applied, the message "Job nr" appears in the viewfinder and Control panel, in the area normally reserved for the shutter speed and aperture.) The time needed to apply the filter can slow down your shooting speed.

Second, noise-reduction filters work primarily by applying a slight blur to the image. Don't expect this process to totally eliminate noise, and do expect some resulting image softness. You may be able to get better results by using the blur tools or noise-removal filters found in many photo editors, because you can blur just the parts of the image where noise is most noticeable — usually in areas of flat color or little detail, such as skies.



Choosing an Exposure Metering Mode



To fully interpret what your exposure meter tells you, you need to know which *metering mode* is active. The metering mode determines which part of the frame the camera analyzes to calculate the proper exposure. The metering mode affects the exposure-meter reading as well as the exposure

settings that the camera chooses in the fully automatic shooting modes (Auto, Portrait, and so on) as well as in the semi-auto modes (P, S, and A).

Your D90 offers three metering modes, described in the following list and represented in the Control panel and Shooting Information display by the icons you see in the margins:



- ✓ **Matrix:** The camera analyzes the entire frame and then selects an exposure that's designed to produce a balanced exposure.

Your camera manual refers to this mode as 3D Color Matrix II, which is simply the label that Nikon created to describe the specific technology used in this mode.



- ✓ **Center-Weighted:** The camera bases exposure on the entire frame but puts extra emphasis — or *weight* — on the center of the frame.

Normally, the area that's given priority in this mode is about 8mm in diameter, which is represented by the circle in the viewfinder, labeled in Figure 5-15. However, in the P, S, A, and M exposure modes, you can alter the critical metering area to 6mm or 10mm. The option to do so is called Center-Weighted Area and lives on the Metering/Exposure street of the Custom Setting menu, as shown in Figure 5-16. Note that the size of the metering circle in the viewfinder does not change; it always reflects the default, 8mm area.



- ✓ **Spot:** In this mode, the camera bases exposure entirely on a circular area that's about 3.5mm in diameter. The exact location used for this pin-point metering depends on an autofocusing option called the AF-area mode. Detailed in Chapter 6, this option determines which of the camera's 11 focus points the autofocus system uses to establish focus. Here's how the setting affects exposure:

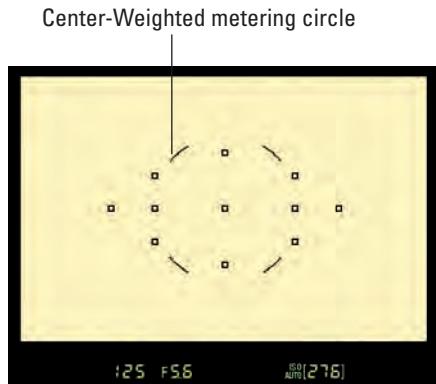


Figure 5-15: In center-weighted metering, the camera gives priority to objects that fall under the circle.

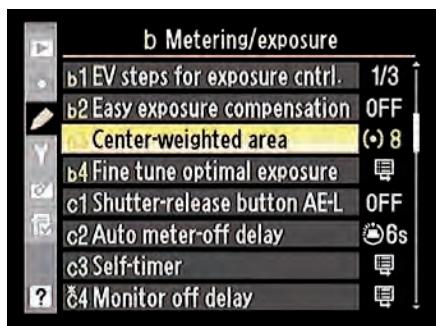


Figure 5-16: You can adjust the size of the area that's given extra weight when you use center-weighted metering.



- If you choose the Auto-area mode, in which the camera chooses the focus point for you, exposure is based on the center focus point.
- If you use any of the other AF-area modes, which enable you to select a specific focus point, the camera bases exposure on that point.

Because of this autofocus/autoexposure relationship, it's best to switch to one of the AF-area modes that allow focus-point selection when you want to use spot metering. In the Auto-area mode, exposure may be incorrect if you compose your shot so that the subject isn't at the center of the frame.

As an example of how metering mode affects exposure, Figure 5-17 shows the same image captured at each mode. In the Matrix example, the bright background caused the camera to select an exposure that left the statue quite dark. Switching to center-weighted metering helped somewhat, but didn't quite bring the statue out of the shadows. Spot metering produced the best result as far as the statue goes, although the resulting increase in exposure left the sky and background monument a little washed out.

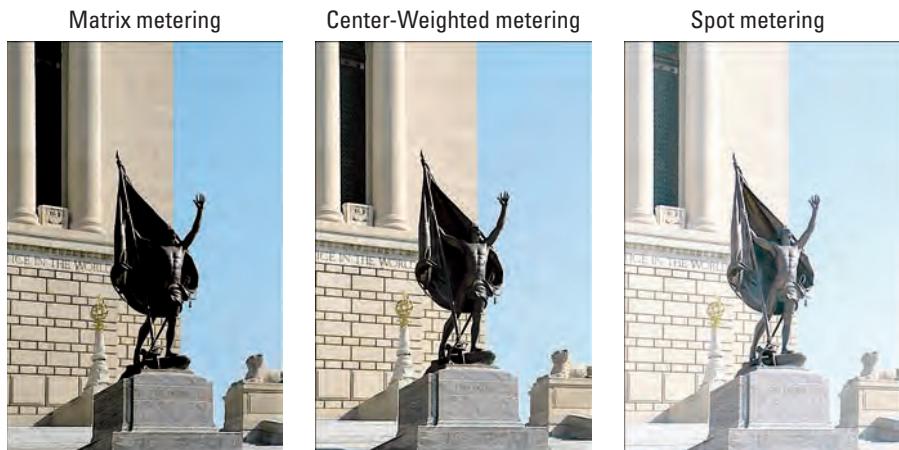


Figure 5-17: The metering mode determines which area of the frame the camera considers when calculating exposure.



You don't have a choice of metering modes in Auto mode or any of the Digital Vari-Program scene modes; the camera automatically uses matrix mode for all shots. But in P, A, S, or M modes, you can specify which metering mode you prefer. Just press and hold the Metering mode button as you rotate the main dial to cycle through the three options. The icon for the selected mode appears in the Control panel and Shooting Information display, as shown in Figure 5-18.

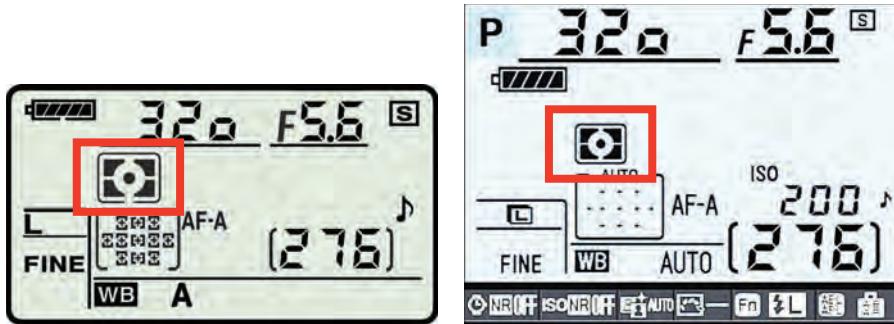


Figure 5-18: The metering mode icon appears in the Control panel and Shooting Information display.



In theory, the best practice is to check the metering mode before you shoot and choose the one that best matches your exposure goals. But in practice, that's a bit of a pain, not just in terms of having to adjust yet one more capture setting but in terms of having to *remember* to adjust one more capture setting. So here's my advice: Until you're really comfortable with all the other controls on your camera, just stick with the default setting, which is matrix metering. That mode produces good results in most situations, and, after all, you can see in the monitor whether you disagree with how the camera metered or exposed the image and simply reshoot after adjusting the exposure settings to your liking. This option, in my mind, makes the whole metering mode issue a lot less critical than it is when you shoot with film.

The one exception to this advice might be when you're shooting a series of images in which a significant contrast in lighting exists between subject and background, as in my examples here. Then, switching to center-weighted metering or spot metering may save you the time of having to adjust the exposure for each image. You may also want to investigate the section "Expanding Tonal Range with Active D-Lighting," which tells you about a camera feature that can help you record brighter shadows without losing highlights.



One final — and important — point about metering: An option called Fine-Tune Optimal Exposure, found on the Exposure/Metering submenu of the Custom Setting menu, enables you to fiddle with the metering system beyond just specifying the size of the center-weighted metering area. For each metering mode, you can specify that you always want a brighter or darker exposure than what Nikon's engineers determined to be optimal when developing the camera. In essence, you're recalibrating the meter. Although it's nice to have this level of control, making this change affects all shots you take in automatic exposure modes and semi-automatic modes (P, S, and A). In M

(manual) exposure mode, the change affects the reading that the exposure meter reports. I really discourage you from making this adjustment — it's too easy to forget that the shift is in place. You still can tweak the exposure results you get in the autoexposure modes; just use Exposure Compensation, explained next. In manual mode, just adjust the shutter speed, f-stop, or ISO to fine-tune exposure.

Applying Exposure Compensation

When you set your camera to the P, S, or A modes, you can enjoy autoexposure support but still retain some control over the final exposure. If you think that the image the camera produced is too dark or too light, you can use a feature known as *Exposure Compensation*.

This feature enables you to tell the camera to produce a darker or lighter exposure than what its autoexposure mechanism thinks is appropriate. Best of all, this feature is probably one of the easiest on the whole camera to understand. Here's all there is to it:



- ✓ Exposure compensation settings are stated in terms of EV values, as in +2.0 EV. Possible values range from +5.0 EV to -5.0 EV. (The *EV* stands for *exposure value*.)
Each full number on the EV scale represents an exposure shift of one *stop*. In plain English, that means that if you change the exposure compensation setting from EV 0.0 to EV -1.0, the resulting exposure is equivalent to adjusting the aperture or shutter speed to allow half as much light into the camera as at the current setting. If you instead raise the value to EV +1.0, the exposure is equivalent to adjusting the settings to allow twice the light.
- ✓ A setting of EV 0.0 results in no exposure adjustment.
- ✓ For a brighter image, raise the EV value. The higher you go, the brighter the image becomes.
- ✓ For a darker image, lower the EV value.

As an example, take a look at the first image in Figure 5-19. The initial exposure selected by the camera left the balloon a tad too dark for my taste. So I just amped the Exposure Compensation setting to EV +1.0, which produced the brighter exposure on the right.



Figure 5-19: For a brighter exposure, raise the EV value.



To apply Exposure Compensation, hold down the Exposure Compensation button, found near the shutter button. All data except the Exposure Compensation value then disappears from the Control panel and is dimmed in the Shooting Information display. In the viewfinder, the frames-remaining value is replaced by the Exposure Compensation value. While holding the button, rotate the main command dial to adjust the EV value. Note that the exposure meter in the viewfinder and Shooting Information display will appear to indicate that you're shifting away from the exposure the system thinks is optimal; ignore it. If you liked what the camera thought about the exposure, you wouldn't be using Exposure Compensation.

After you release the button, a little plus/minus symbol (the same one that decorates the button itself) appears in the Control panel, Shooting Information display, and viewfinder, as shown in Figure 5-20, to remind you that Exposure Compensation is in force. At any time, you can redisplay the selected value by pressing the Exposure Compensation button.

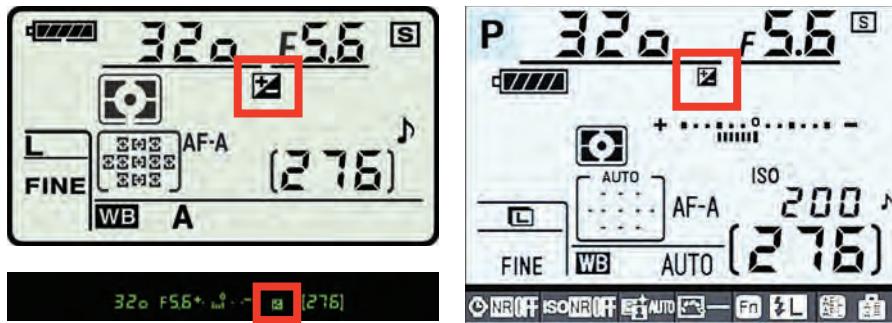


Figure 5-20: The plus/minus symbol tells you that Exposure Compensation is being applied.



Your Exposure Compensation setting remains in force until you change it, even if you power off the camera. So you may want to make a habit of checking the setting before each shoot or always setting the value back to EV 0.0 after taking the last shot for which you want to apply compensation.

Here are a few other tips about Exposure Compensation:

- ✓ How the camera arrives at the brighter or darker image you request through your Exposure Compensation setting depends on the exposure mode:
 - In A (aperture-priority autoexposure) mode, the camera adjusts the shutter speed but leaves your selected f-stop in force. Be sure to check the resulting shutter speed to make sure that it isn't so slow that camera shake or blur from moving objects is problematic.
 - In S (shutter-priority autoexposure) mode, the opposite occurs: The camera opens or stops down the aperture, leaving your selected shutter speed alone.
 - In P (programmed autoexposure) mode, the camera decides whether to adjust aperture, shutter speed, or both.
 - In all three modes, the camera may also adjust ISO if you have Auto ISO enabled.

Keep in mind that the camera can adjust f-stop only so much, according to the aperture range of your lens. And the range of shutter speeds, too, is limited by the camera itself. So if you reach the ends of those ranges, you either have to compromise on shutter speed or aperture or adjust ISO.

By default, Exposure Compensation settings are provided in increments of one-third of a stop. For example, you can shift from EV 0.0 to 0.3, 0.7, 1.0, and so on. If you want a more pronounced result from each step up or down the EV ladder, you can set the mechanism to increments of one-half stop instead. Then the settings become EV 0.0, 0.5, 1.0, and so on. Make the adjustment via the EV Steps for Exposure Control option on the Metering/Exposure submenu of the Custom Settings menu, shown in Figure 5-21.



- Right below that menu option, you see one called Easy Exposure Compensation. If you enable this feature, you can adjust the Exposure Compensation setting simply by rotating the subcommand dial. In aperture-priority exposure mode, you then use the main dial instead of the subcommand dial to change the f-stop. I advise against enabling this feature: You can easily rotate the dial by mistake and not realize that you adjusted the setting.
- Finally, if you don't want to fiddle with Exposure Compensation, just switch to Manual exposure mode — M, on the Mode dial — and select whatever aperture and shutter speed settings produce the exposure you're after. Exposure Compensation has no effect on manual exposures; again, that adjustment is made only in the P, S, and A modes.

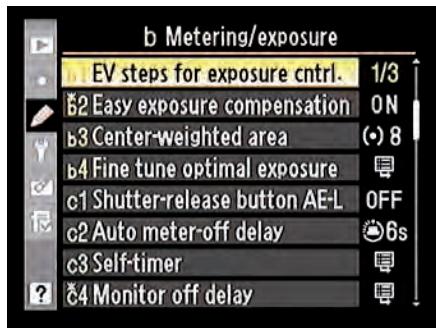


Figure 5-21: You can set the Exposure Compensation option to adjust exposure in one-half stops rather than one-third stops if you prefer.

Using Autoexposure Lock

To help ensure a proper exposure, your camera continually meters the light in a scene until the moment you depress the shutter button fully and capture the image. In autoexposure modes — that is, any mode but M — it also keeps adjusting exposure settings as needed to maintain a good exposure.

For example, say that you set your camera to shutter-priority autoexposure (S) mode and set the shutter speed to 1/125 second. The camera immediately reports the f-stop that it considers appropriate to expose the scene at that shutter speed. But if the light in the scene changes or you reframe your shot before snapping the picture, the camera may shift the f-stop automatically to make sure that the exposure remains correct.

For most situations, this approach works great, resulting in the right settings for the light that's striking your subject at the moment you capture the image. But on occasion, you may want to lock in a certain combination of exposure settings. Here's one such scenario: Suppose that you're shooting several images of a large landscape that you want to join together into a panorama in your photo editor. Unless the lighting is even across the entire landscape, the camera's autoexposure brain will select different exposure settings for each shot, depending on which part of the scene is currently in the frame. That can lead to weird breaks in the brightness and contrast of the image when you seam the image together. And if it's the f-stop that's adjusted, you may notice shifts in depth of field as well.

The easiest way to lock in exposure settings is to switch to M (manual) exposure mode and use the same f-stop, shutter speed, and ISO settings for each shot. But if you prefer to stay in P, S, or A mode, you can press the AE-L/AF-L button to lock exposure and focus simultaneously. Here's the technique I recommend:



1. Set the metering mode to center-weighted or spot metering.

Just press the button shown in the margin here while rotating the main command dial to select the metering mode. You can read more about metering modes earlier in this chapter.

2. Set the AF-area mode option to the Single Point setting and then use the Multi Selector to select your desired focus point.

This step tells the camera which part of the frame you want to use for establishing focus and, if you use spot metering, also determines which part of the frame the camera uses to calculate exposure.

The AF-area mode option is found on the Autofocus submenu of the Custom Setting menu; after choosing Single Point, you can use the Multi Selector to choose a focusing point. See Chapter 6 for more details.



3. Frame your shot so that the subject appears under the selected focus point and then press and hold the AE-L/AF-L button.

The button's just to the right of the viewfinder.

While the button is pressed, the letters AE-L appear at the left end of the viewfinder to remind you that exposure lock is applied.

4. Reframe the shot if desired and take the photo.

Be sure to keep holding the AE-L/AF-L button until you release the shutter button!



By default, this step locks both exposure and focus for as long as you press the button, even if you release the shutter button. (AE-L stands for autoexposure lock; AF-L, for autofocus lock.) But if you dig into the Custom Setting menu, you can change the button's function. You can set the button to lock only exposure, for example, or only focus, instead of locking both as it does by default. Chapter 11 offers details.

Expanding Tonal Range with Active D-Lighting

A scene like the one in Figure 5-22 presents the classic photographer's challenge: Choosing exposure settings that capture the darkest parts of the subject appropriately causes the brightest areas to be overexposed. And if you instead "expose for the highlights" — that is, set the exposure settings to capture the brightest regions properly — the darker areas are underexposed.

Active D-Lighting Off



Automatic Active D-Lighting On



Figure 5-22: Active D-Lighting enabled me to capture the shadows without blowing out the highlights.

In the past, you had to choose between favoring the highlights or the shadows. But thanks to a feature than Nikon calls Active D-Lighting, you have a better chance of keeping your highlights intact while better exposing the darkest areas. In my seal scene, turning on Active D-Lighting produced a brighter rendition of the darkest parts of the rocks and the seals, for example, and yet the color in the sky didn't get blown out as it did when I captured the image with Active D-Lighting turned off. The highlights in the seal and in the rocks on the lower-right corner of the image also are toned down a tad in the Active D-Lighting version.



Active D-Lighting actually does its thing in two stages. First, it selects exposure settings that result in a slightly darker exposure than normal. This half of the equation guarantees that you retain details in your highlights. Without that adjustment, the brightest areas of the image might be overexposed, leaving you with a batch of all-white pixels that really should contain a range of tones from light to lighter to white. So a cloud, for example, would appear as a big white blob, with no subtle tonal details to give it form. After you snap the photo, the second part of the process occurs. During this phase, the camera applies an internal software filter to brighten only the darkest areas of the image. This adjustment rescues shadow detail, so that you wind up with a range of dark tones instead of a big black blob.

You can turn Active D-Lighting on and off in two ways:

- Select Active D-Lighting from the Shooting menu, as shown on the left in Figure 5-23. Press OK to display the second screen in the figure, where you can specify the amount of D-Lighting adjustment. At the Auto setting, the camera determines how much adjustment is needed. If you prefer to take control, you can select from one of the other four settings (Extra High, High, Normal, and Low). Press OK to enable the adjustment for your next shot.



Figure 5-23: At the Auto setting, the camera automatically applies the amount of Active D-Lighting adjustment as it sees fit.

Press the Info button to bring up the Shooting Information display on the monitor. Then press the Info button again to activate the Quick Settings strip of options at the bottom of the screen, as shown in Figure 5-24. Use the Multi Selector to highlight the Active D-Lighting option, as shown in the figure, and then press OK. You’re then taken to the menu screen that contains the Active D-Lighting settings (the right screen in Figure 5-23).



If you’re not sure how much adjustment to apply, try out the Active D-Lighting *bracketing* feature. With this option, you take multiple shots of the subject, and the camera automatically selects a different Active D-Lighting adjustment for each shot. You then can decide which image you prefer. See the last section in this chapter for details about bracketing with the D90.

As helpful as it is, Active D-Lighting does have one drawback: The camera needs a few seconds to do its shadow-recovery work. And during that time, you can’t take another shot. Unfortunately, that makes Active D-Lighting a hindrance when you’re capturing action or otherwise need to fire off shots in rapid succession. If you decide you’re better off not using the feature, just set the option to Off via the Shooting menu or Shooting Information display.

Remember, too, that the camera’s Retouch menu offers a D-Lighting filter that applies a similar adjustment to existing pictures. (See Chapter 10 for help.) Some photo editing programs, such as Adobe Photoshop Elements and Photoshop, also have good shadow and highlight recovery filters. In either case, when you shoot with Active D-Lighting disabled, you’re better off setting the initial exposure settings to record the highlights as you want them. It’s very difficult to bring back lost highlight detail after the fact, but you typically can unearth at least a little bit of detail from the darkest areas of the image.



Figure 5-24: Press the Info button twice to access the D-Lighting option from the Shooting Information display.

Using Flash in P, S, A, and M modes

Sometimes, no amount of fiddling with aperture, shutter speed, and ISO produces a bright enough exposure — in which case, you simply have to add more light. The built-in flash on your D90 offers the most convenient solution.



When you shoot in the advanced exposure modes, you have much more control over your flash than when you use the fully automatic modes covered in Chapter 2. First, you gain access to flash modes not available in the full-auto modes. Even better, you can adjust the strength of the flash by using a feature called *Flash Compensation*.

The rest of this chapter explains how to use these flash functions and also offers some tips on getting better results in your flash pictures. Be sure to also visit Chapter 7, where you can find additional flash and lighting tips related to specific types of photographs.

Setting the flash mode



To raise the built-in flash in P, S, A, and M exposure modes, press the Flash button on the front-left side of the camera. You then can view the current flash mode in the Control panel and Shooting Information display, as labeled in Figure 5-25. In the viewfinder, you see a simple lightning-bolt icon when flash is enabled, as shown in the figure. To change the flash mode, hold the Flash button down as you rotate the main command dial. Again, you can see the specific modes only in the Control panel and Shooting Information display.



The TTL label you see in the flash area of the Shooting Information display stands for *through the lens* and reflects the default flash-control behavior, in which the camera sets the proper flash power for you. For a look at your other options, see the section “Changing to manual, repeating, or commander flash mode,” later in this chapter.

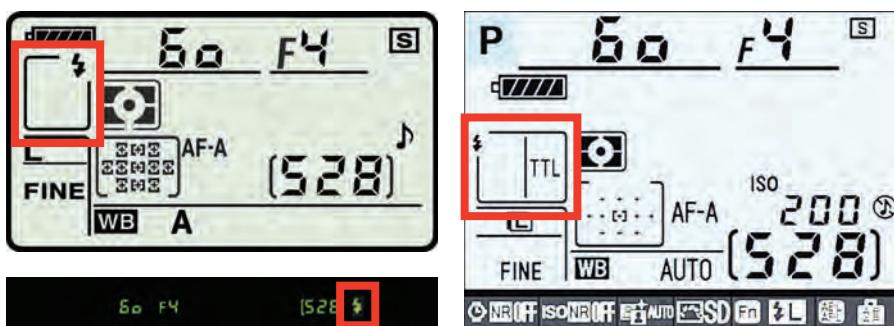


Figure 5-25: You can verify the flash mode in the Control panel and Shooting Information display.

Your flash mode choices break down into three basic categories, described in the next sections: fill flash; red-eye reduction flash; and the sync modes, slow-sync and rear-sync, which are special-purpose flash options. Note that

the list of available flash modes doesn't include two options available in the fully automatic exposure modes: Auto, in which the camera makes the decisions about when to fire the flash, and Off. Instead, if you don't want the flash to fire, simply keep the flash unit closed.

The camera does give you a little auto-flash input though: By default, the flash symbol in the viewfinder blinks in the P, S, and A modes if the camera thinks you need to use flash. If you prefer not to have that input, you can turn off the warning. Just visit the Custom Setting menu, navigate to the Shooting/Display submenu, and set the Flash Warning option to Off.

Fill flash

⚡ The fill flash setting is represented by plain-old lightning bolt symbol you see in the margin here. (Figure 5-25 shows you the symbol as it appears in the Control panel and Shooting Information display.) You can think of this setting as "normal flash" — at least in the way that most of us think of using a flash.

You may also hear this mode called *force* flash because the flash fires no matter what the available light, unlike in the auto flash mode provided for the fully automatic exposure modes, in which the camera decides when flash is needed. In fill flash mode, the flash fires even in the brightest daylight — which, by the way, is often an excellent idea.



Yep, you read me correctly: Adding a flash can really improve outdoor photos, even when the sun is at its sunniest. Just as an example, Figure 5-26 shows a floral image taken both with and without a flash. The small pop of light provided by the built-in flash is also extremely beneficial when shooting subjects that happen to be slightly shaded, such as the carousel horses featured in the next section. For outdoor portraits, a flash is even more important; Chapter 7 discusses that subject.

Using a flash in bright sunlight also produces a slight warming effect, as illustrated in Figure 5-26. This color shift occurs because when you enable the flash, the camera's white balancing mechanism warms color slightly to compensate for the bluish light of a flash. But because your scene is actually lit primarily by sunlight, which is *not* as cool as flash light, the white balance adjustment takes the image colors a step warmer than neutral. If you don't want this warming effect, see Chapter 6 to find out how to make a manual white balance adjustment.



Do note, however, that when you use the built-in flash, you're restricted to a top shutter speed of 1/200 second. That means that in very bright sun, you may need to stop down the aperture significantly or lower ISO, if possible, to avoid overexposing the image. See the sidebar "In Sync: Flash timing and shutter speed," later in this chapter, for details on shutter-speed ranges available for flash photography.

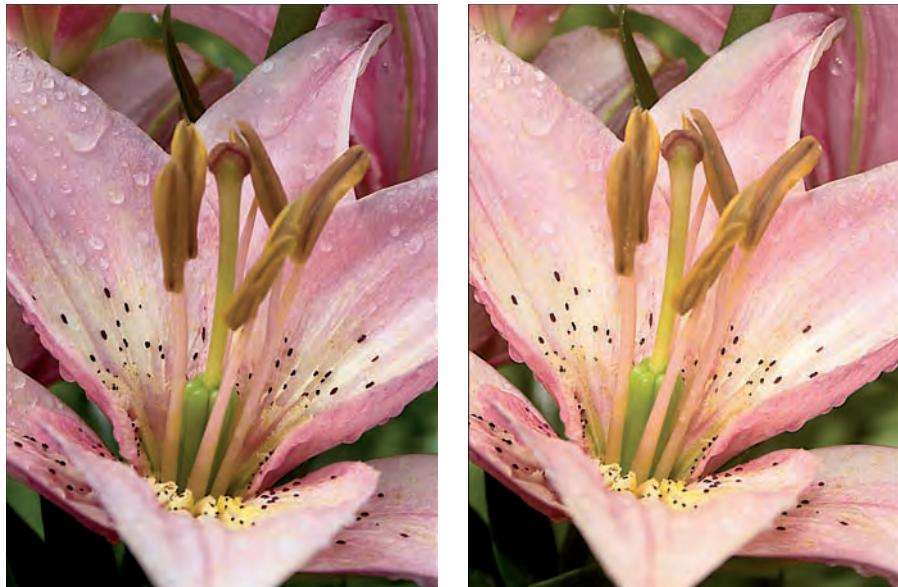


Figure 5-26: Adding flash resulted in better illumination and a slight warming effect.

Red-eye reduction flash

Red-eye is caused when flash light bounces off a subject's retinas and is reflected back to the camera lens. Red-eye is a human phenomena, though; with animals, the reflected light usually glows yellow, white, or green.

Man or beast, this issue isn't nearly the problem with the type of pop-up flash found on your D90 as it is on non-SLR cameras. The D90's flash is positioned in such a way that the flash light usually doesn't hit a subject's eyes straight on, which lessens the chances of red-eye. However, red-eye may still be an issue when you use a lens with a long focal length (a telephoto lens) or you shoot subjects from a distance.



If you do notice red-eye, you can try the red-eye reduction mode, represented by the icon shown in the margin here. In this mode, the AF-assist lamp on the front of the camera lights up briefly before the flash fires. The subject's pupils constrict in response to the light, allowing less flash light to enter the eye and cause that glowing red reflection. Be sure to warn your subjects to wait for the flash, or they may step out of the frame or stop posing after they see the light from the AF-assist lamp.

For an even better solution, try the flash-free portrait tips covered in Chapter 7. If you do a lot of portrait work that requires flash, you may also want to consider an external flash unit, which enables you to aim the flash light in ways that virtually eliminate red-eye.



In sync: Flash timing and shutter speed

In order to properly expose flash pictures, the camera has to synchronize the timing of the flash output with the opening and closing of the shutter. For this reason, the range of shutter speeds available to you is more limited when you use flash than when you go flash-free.

When you use the built-in flash, the maximum shutter speed is 1/200 second. The minimum shutter speed varies depending on your exposure mode, as follows:

- ✓ **P, A, Auto, Portrait, Child modes:** 1/60 second
- ✓ **Close Up mode:** 1/125 second
- ✓ **Nighttime Portrait mode:** 1 second
- ✓ **S mode:** 30 seconds
- ✓ **M mode:** 30 seconds (unless you use bulb mode, in which the shutter stays open as long as you hold the shutter button down)

In P and A exposure modes, you have the option of specifying the minimum shutter speed that the camera can select in the red-eye reduction mode and the special sync modes described in the section “Slow-sync and rear-sync flash.” The default setting is 1/60 second, but you can go as low as 30 seconds. To change the setting, go to the Custom Setting menu and look for the Flash Shutter Speed option, found on the Bracketing/Flash submenu.

If you use an external flash, you can increase the maximum shutter speed to as high as 1/4000 second. However, this option is available only with certain Nikon flash units; for details, see “Using an external flash,” later in this chapter.

If all else fails, check out Chapter 10, which shows you how to use the built-in red-eye removal tool on your camera’s Retouch menu. Sadly, though, this feature removes only red-eye, not the yellow/green/white eye that you get with animal portraits.

Slow-sync and rear-sync flash

In fill flash and red-eye reduction flash modes, the flash and shutter are synchronized so that the flash fires at the exact moment the shutter opens.

Technical types refer to this flash arrangement as *front-curtain sync*.

Your D90 also offers four special-sync modes, which work as follows:

- ✓ **Slow-sync flash:** This mode, available only in the P and A exposure modes, also uses front-curtain sync but allows a shutter speed slower than the 1/60 second minimum that is in force when you use fill flash and red-eye reduction flash.





The benefit of this longer exposure is that the camera has time to absorb more ambient light, which in turn has two effects: Background areas that are beyond the reach of the flash appear brighter; and less flash power is needed, resulting in softer lighting.

The downside of the slow shutter speed is, well, the slow shutter speed. As discussed earlier in this chapter, the longer the exposure time, the more you have to worry about blur caused by movement of your subject or your camera. A tripod is essential to a good outcome, as are subjects that can hold very, very still. I find that the best practical use for this mode is shooting nighttime still-life subjects such as the one you see in Figure 5-27.

Some photographers, though, turn the downside of slow-sync flash to an upside, using it to purposely blur their subjects, thereby emphasizing motion.



Figure 5-27: Slow-sync flash produces softer, more even lighting than normal flash in nighttime pictures.

☛ **Rear-curtain sync:** In this mode, available only in shutter-priority (S) and manual (M) exposure modes, the flash fires at the very end of the exposure, just before the shutter closes. The classic use of this mode is to combine the flash with a slow shutter speed to create trailing-light effects like the one you see in Figure 5-28. With rear-curtain sync, the light trails extend behind the moving object (my hand, and the match, in this case), which makes visual sense. If instead you use slow-sync flash, the light trails appear in front of the moving object.

☛ **Slow-sync with rear-curtain sync:** Hey, not confusing enough for you yet? This mode enables you to produce the same motion trail effects as with rear-curtain sync, but in the P and A exposure modes.

☛ **Slow-sync with red-eye reduction:** In P and A exposure modes, you can also combine a slow-sync flash with the red-eye reduction feature. Given the potential for blur that comes with a slow shutter, plus the potential for subjects to mistake the prelight from the AF-assist lamp for the real flash and walk out of the frame before the image is actually recorded, I vote this flash mode as the most difficult to pull off successfully.

Note that all of these modes are somewhat tricky to use successfully, however. So have fun playing around, but at the same time, don't feel too badly if you don't have time right now to master these modes plus all the other exposure options presented to you in this chapter. In the meantime, do a Web search for slow-sync and rear-sync image examples if you want to get a better idea of the effects that other photographers create with these flash modes.

Adjusting flash output



When you shoot with your built-in flash, the camera attempts to adjust the flash output as needed to produce a good exposure. But if shoot in the P, S, A, or M exposure modes and you want a little more or less flash light than the camera thinks is appropriate, you can adjust the flash output by using a feature called *Flash Compensation*.



Figure 5-28: I used rear-curtain flash to create this candle-lighting image.

This feature works just like Exposure Compensation, discussed earlier in the chapter, except that it enables you to override the camera's flash-power decision instead of its autoexposure decision. As with Exposure Compensation, the Flash Compensation settings are stated in terms of EV (*exposure value*) numbers. A setting of 0.0 indicates no flash adjustment; you can increase the flash power to EV +1.0 or decrease it to EV -3.0.

As an example of the benefit of this feature, look at the carousel images in Figure 5-29. The first image shows you a flash-free shot. Clearly, I needed a flash to compensate for the fact that the horses were shadowed by the roof of the carousel. But at normal flash power, as shown in the same image, the flash was too strong, creating glare in some spots and blowing out the highlights in the white mane, as shown in the middle image. By dialing the flash power down to EV -0.7, I got a softer flash that straddled the line perfectly between no flash and too much flash.



Figure 5-29: When normal flash output is too strong, dial in a lower Flash Compensation setting.

As for boosting the flash output, well, you may find it necessary on some occasions, but don't expect the built-in flash to work miracles even at a Flash Compensation of +1.0. Any built-in flash has a limited range, and you simply can't expect the flash light to reach faraway objects. In other words, don't even try taking flash pictures of a darkened recital hall from your seat in the balcony — all you'll wind up doing is annoying everyone.

-  With that preface in mind, you can enable Flash Compensation by first pressing the Flash button to pop up the built-in flash. Then press and hold the button as you rotate the subcommand dial. As long as you hold the button, the Flash Compensation setting appears in the Control panel and Shooting Information display, as shown in Figure 5-30. In the viewfinder, the current setting takes the place of the usual frames-remaining value, and a plus or minus sign also appears to indicate whether you're dialing in a positive or negative value.

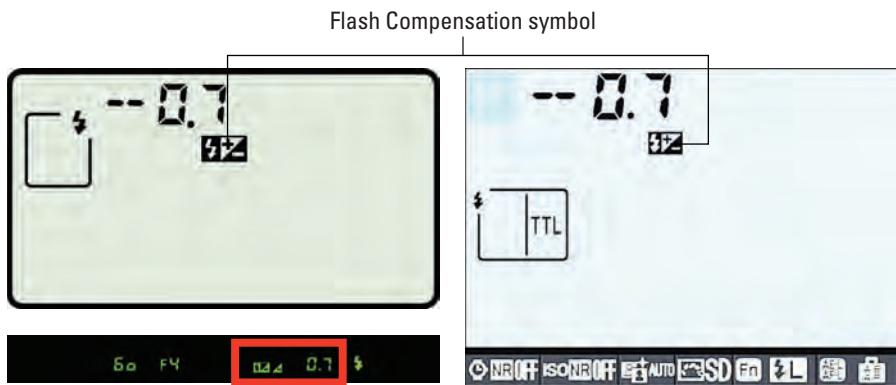


Figure 5-30: Rotate the sub-command dial while pressing the Flash button to adjust flash power.

After you release the Flash button, you see just the Flash Compensation icon in all three displays. To check the specific compensation value, press and hold the Flash button.



As with Exposure Compensation, any flash-power adjustment you make remains in force, even if you turn off the camera, until you reset the control. So be sure to check the setting before you next use your flash.

Locking flash exposure on your subject

At times, the composition of a scene can cause the camera's flash meter to set the flash power incorrectly for your subject. For example, if you're photographing someone with pale skin who's dressed in all black, the camera may "see" all that black and deliver a flash power that's too strong to properly light the face. Flash power can also be miscalculated if your main subject occupies a very small part of the frame, is off-center, or both.

To address this problem, you can use a feature called *flash value lock*, or Fv Lock in Nikon terminology. When you take advantage of this option, you can ensure that the flash power is set for the most important part of the scene.

By default, the Fn (function) button, located on the front-right side of the camera just under the AF-assist lamp, is assigned the task of locking the flash value. As spelled out in Chapter 11, however, you can assign a different operation to the button; if you've taken that step, revisit the chapter to find out how to reset the button to the flash-exposure lock setting. You alternatively can program the AE-L/AF-L button to perform this task if you want to use the Fn button for some other purpose; again, see Chapter 11 for details. Assuming that one of the buttons is geared to the flash locking function, take these steps to use it:

1. **Frame the shot so that your subject is in the center of the viewfinder.**

You can adjust composition after locking the flash power if you want.



2. **In P, S, A, or M mode, press the Flash button to pop up the built-in flash.**



In the Auto, Portrait, Close Up, and Night Portrait modes, the flash will pop up automatically when you take the next step, assuming that the ambient light is sufficiently dim. If it's not, the camera won't let you use flash. (Flash is never available in the other fully automatic modes.)

3. **Press and hold the shutter button halfway to engage the exposure meter and, in autofocus mode, to set focus.**

4. **Press the button that was assigned the Fv Lock function.**

The flash fires a little preflash to determine the correct flash power. When flash power is locked, the letter L appears next to the flash symbol in the viewfinder.

5. **Recompose the picture if desired and then take the shot.**

To release the flash value lock, just press the assigned button again.

Exploring a few additional flash options

For most people, the flash options covered to this point in the chapter are the most useful on a regular basis. But your D90 does offer a few other flash options that some photographers may appreciate on occasion, so the next three sections provide a quick look-see.

Changing to manual, repeating, or commander flash mode

If you dig into the Bracketing/Flash submenu of the Custom Setting menu, you come across a setting called Flash Cntrl (Control) for Built-In Flash, as shown in Figure 5-31. Normally, your flash operates in the TTL, or *Through the Lens*, mode, in which the camera automatically determines the right flash output for you.

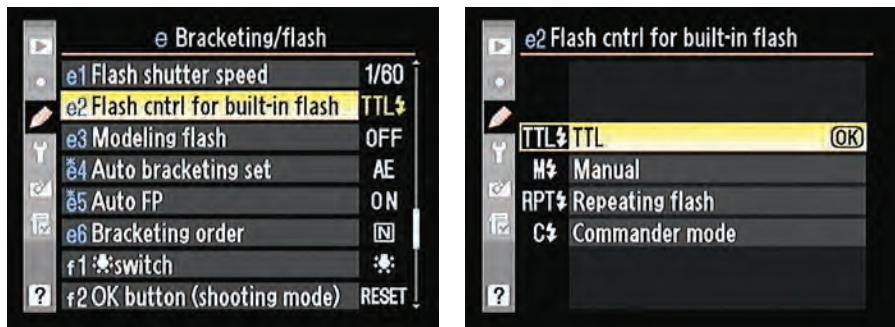


Figure 5-31: You can set flash power manually through this menu.

However, if you're an advanced flash user, you may want to explore the other options:

- ✓ **Manual:** In this mode, you can select a specific flash power, with settings ranging from full power to 1/128 power. (If you're hip to rating flash power by Guide Numbers, the manual spells out the ratings for the built-in flash.)
- ✓ **Repeating Flash:** If you select this mode, the camera fires the flash repeatedly as long as the shutter is open. The resulting picture looks as though it was shot with a strobe light. In other words, this is a special-effects function.
- ✓ **Commander Mode:** This mode is relevant only if you own external flash heads that you want to use as off-camera light sources. If you do, you can use the built-in flash to trigger (command) the firing of the external heads. The external heads must be designed to work in this way, of course.

Because these are advanced, special-purpose functions, I'll limit myself to making you aware of them here and referring you to the manual for specifics on the settings available in each mode.

Using the Fn button to disable flash for the next shot

In Chapter 11, you can find out how to assign different functions to the Fn (function) button, which it tucked away on the right-front side of the camera. One of your options is to set the button to temporarily prevent the flash from firing. You have to hold down the button while pressing the shutter button to make it work, though, and I find that maneuver difficult. So instead, I either select the Off flash setting when working in the fully automatic exposure modes or simply close the flash unit when working in P, S, A, or M modes. That leaves the Fn button free to handle some other operation, such as Flash Exposure lock, explained earlier.

Firing a modeling flash

Chapter 6 introduces you to your D90's Depth-of-Field Preview button, which enables you to preview through the viewfinder how your selected aperture setting will affect depth of field. You can set up the button to also emit a *modeling flash* when you check depth of field.

When you enable this feature, the flash emits a repeating, strobe-like series of flash light while you press the button. The idea is to enable you to preview how the light will fall on your subject. However, living subjects aren't likely to appreciate the feature — it's a bit blinding to have the flash going off repeatedly in your face. So I personally leave the feature off.

If you do want to enable it, you can do so through the Modeling Flash option, found on the Bracketing/Flash submenu of the Custom Setting menu.

Using an external flash head

In addition to its built-in flash, your camera has a *hot shoe*, which is photo-geek terminology for a connection that enables you to add an external flash head like the one shown in Figure 5-32. The figure features the Nikon Speedlight SB-600, which currently retails for about \$200. (The hot shoe is covered by a little cap when you first get the camera; you have to remove it to add your flash.)

Although not the cheapest of accessories, an external flash may be a worthwhile investment if you do a lot of flash photography. For one thing, an external flash offers greater power, enabling you to illuminate a larger area than you

can with a built-in flash. And with flash units like the one in Figure 5-32, you can rotate the flash head so that the flash light bounces off a wall or ceiling instead of hitting your subject directly. This results in softer lighting and can eliminate the harsh shadows often caused by the strong, narrowly focused light of a built-in flash. (Chapter 7 offers an example of the difference this lighting technique can make in portraits.)



You gain yet another benefit with Nikon flash heads that support the company's Creative Lighting System (CLS) features: By enabling an option called Auto FP, found on the Flash/Bracketing submenu of the Custom Setting menu (see Figure 5-33), you can use a shutter speed faster than the 1/200-second limit of the built-in flash. In fact, you can use shutter speeds as high as 1/4000 second! That flexibility gives you a great advantage when you want to use flash outside during bright sunshine. Say you're shooting a portrait, for example, and you want to use a low f-stop value to achieve a short depth of field and blur the background. At the 1/200-second limit, the open aperture is likely going to overexpose the photo, even if you select the lowest possible ISO. But with a top shutter speed of 1/4000 second, you should be able to open the aperture to a nice, wide, portrait-friendly setting. (Do note that if you want to use this feature, however, you must shoot in the P, S, A, or M exposure modes.)

If you do purchase an external flash, I highly recommend that you visit a good camera store, where the personnel can help you select the right unit for the kind of flash work you want to do. You may also want to dig into some of the many books that concentrate on flash photography and the Nikon Creative Lighting System. There's a lot more to that game than you may imagine, and you'll no doubt discover some great ideas about lighting your pictures with flash. You can start with Chapter 7, which provides some specific examples of how to get better flash results when you shoot portraits, whether you go with the built-in flash, an external flash, or, my favorite, no flash.



Figure 5-32: You can mount a flash head via the hot shoe on top of the camera.



Figure 5-33: For some Nikon flash units, enabling this option allows you to use shutter speeds faster than the standard 1/200-second maximum.

Bracketing Exposures

Many professional photographers use a strategy called *bracketing* to ensure that at least one shot of a subject is properly exposed. They shoot the same subject multiple times, slightly varying the exposure settings for each image.

To make bracketing easy, your D90 offers *automatic bracketing*. When you enable this feature, your only job is to press the shutter button to record the shots; the camera automatically adjusts the exposure settings between each image.

The D90, however, takes things one step further than most cameras that offer automatic bracketing. In addition to bracketing exposure, you can bracket flash power or the amount of Active D-Lighting that's applied. And when you're concerned about color, you can instead choose to bracket white balancing, an adjustment that you can explore fully in Chapter 6.



To try out bracketing, take these steps:

- 1. Set your camera to the P, S, A, or M exposure mode.**

You can't take advantage of the feature in the Auto or Digital Vari-Program modes.

- 2. Specify the Auto Bracketing Set option.**

This option tells the camera which exposure or color feature you want to adjust between shots. Display the Custom Setting menu, select Bracketing/Flash, and press OK. Then highlight Auto Bracketing Set, as shown on the left in Figure 5-34, and press OK again to display your choices, shown on the right in the figure.

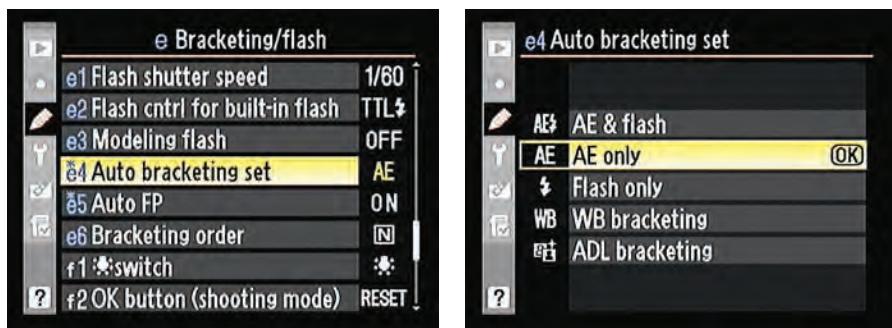


Figure 5-34: Before enabling auto bracketing, select the exposure or color feature you want the camera to adjust between shots.

You can adjust exposure (AE), flash, white balance (WB), or Active D-Lighting (ADL). Or you can bracket exposure and flash together by choosing the AE & Flash option.

Even though the exposure-related option is called AE (for autoexposure), it works in M (manual exposure) mode.

3. To turn on bracketing, press and hold the BKT button as you rotate the main command dial.

The BKT button's just below the Flash button, on the left-front side of the camera. The current bracketing settings appear in the Control panel and Shooting Information screen, as shown in Figure 5-35. After you rotate the main command dial, the little bracketing symbol shown in the figure appears to let you know that bracketing is enabled. The bracketing symbol also appears in the viewfinder, but the exact settings do not.

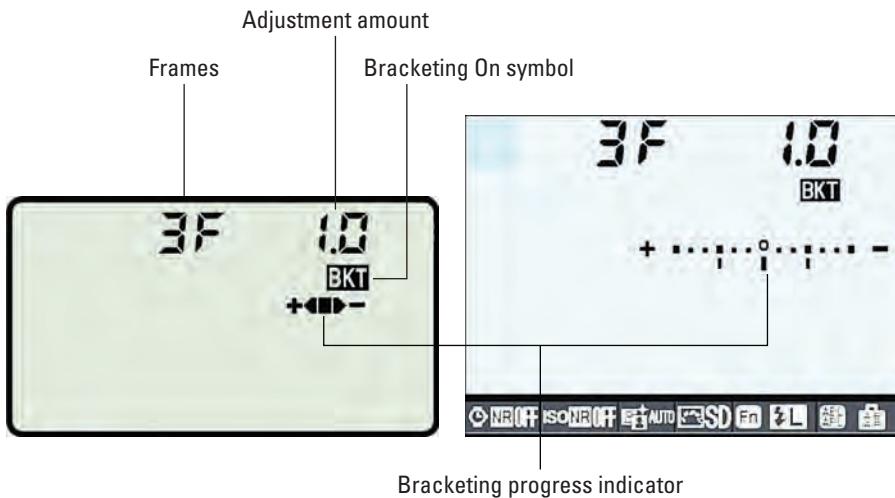


Figure 5-35: Rotate the main command dial while pressing the BKT button to turn auto bracketing on and off.

That little meter-like thing under the BKT symbol in the Control panel and the larger meter in the Shooting Information are the *bracketing progress indicators*. They're there to let you know which shot in your bracketed series you're about to take next. More on this issue in Step 7.

4. To change the number and type of frames recorded in each series of bracketed shots, keep pressing the BKT button and rotate the main command dial.

For exposure and flash bracketing, the options that appear when you rotate the dial are as follows:

- **3F:** Choose this option to take three frames: one without any adjustment, one at a slightly reduced setting, and one at an increased setting. For example, if you choose the AE bracketing option to adjust exposure between frames, the camera records the first shot at whatever aperture, shutter speed, and so on that you set before taking the shot. Then it creates a second image that's slightly brighter, and a third that's slightly darker.
- **+2F:** This option records just two frames per bracketed series: One uses your original settings, and one adjusts the selected option to the positive side of the scale. For the AE bracketing option, for example, the second frame produces a brighter exposure than the first.
- **-2F:** This one gives you the same thing as the +2F option, but the setting that's being bracketed is reduced for the second frame. So this time, bracketing exposure produces a darker photo for the second frame.

For Active D-Lighting bracketing, press the BKT button and rotate the command dial to display the letters ADL in the Control panel. For this type of bracketing, the camera always records two frames: One with the filter turned off and one with the filter applied at the current Active D-Lighting setting (which you control through the Shooting menu). For white balance bracketing, you can shift colors toward blue or toward amber; see the white-balance section of Chapter 6 for details.



The bracketing progress indicator changes depending on which of the frame options you choose. In the Control panel, the scale looks as shown in Figure 5-35 when you enable the three-frame bracketing option for exposure bracketing, for example. For the +2 option, the negative side of the scale disappears; for the -2 option, the positive side is hidden. In the Shooting Information display, the notches under the meter show you how many frames are enabled. For three frames, you see three notches, as shown in the figure. The notch at the zero point represents the neutral shot — the one that will be recorded with no adjustment.

All this assumes that you use the default setting for the Bracketing Order option on the Bracketing/Flash submenu, however. If you prefer, you can reverse the order in which the positive- and negative-value shots are recorded by choosing the second of the two Bracketing Order settings.

5. To adjust the amount of shift between each frame, rotate the subcommand dial while pressing the BKT button.

This step doesn't apply to Active D-Lighting bracketing; you can only record the shots with or without the filter enabled.



For exposure and flash bracketing, the adjustment increments are based on the current setting of the EV Steps for Exposure Control option, located on the Custom Setting menu. The earlier section, "Applying Exposure Compensation," introduces you to this menu. By default, the option is set to increments of one-third stop, but if you want a larger variation between each bracketed shot, you can change the menu setting to 1/2 stop (0.5). Just remember that the selected setting affects the amount of adjustment when you apply Exposure Compensation as well as Flash Compensation, also covered earlier in this chapter.

For white balance (WB) bracketing, you can shift the white balance in increments of 1, 2, or 3, with each step making the picture either progressively more amber or more blue. Again, see Chapter 6 for the details that will make that feature clear.

6. Release the BKT button to return to shooting mode.

The bracketing frame and increment settings then disappear from the Control panel and Shooting Information display; the bracketing indicator remains, along with the BKT icon.

7. Take your first shot.

After you take the picture, the bracketing progress indicator updates to show you how many more shots are left in the series. For example, if you are bracketing three frames, the notch at the 0 position disappears.

8. Take the remaining shots in the series.

When the series is done, the indicator scale returns to its original appearance, and you can then begin shooting the next series of bracketed shots.

9. To disable bracketing, press the BTK button and rotate the main command dial until the number of frames returns to 0.

Don't be put off by the length of these steps, by the way. Although describing the feature takes quite a few words, using bracketing really isn't all that complicated. It's just a matter of remembering to select which feature you want to bracket — and then keeping an eye on that bracketing progress indicator to see where you are in any particular bracketed series.

Manipulating Focus and Color

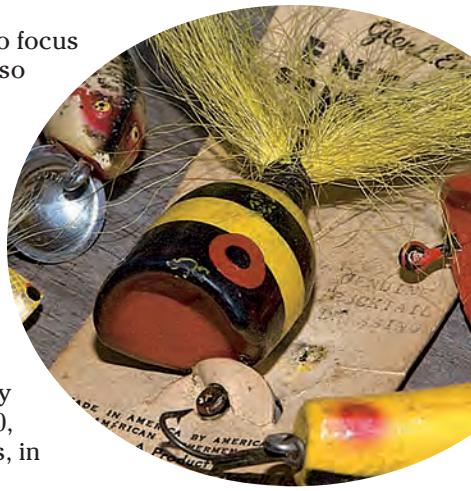
In This Chapter

- ▶ Controlling the camera's autofocus performance
- ▶ Using autofocus in Live View mode
- ▶ Understanding focal lengths, depth of field, and other focus factors
- ▶ Exploring white balance and its affect on color
- ▶ Investigating other advanced color options

To many people, the word *focus* has just one interpretation when applied to a photograph: Either the subject is in focus or it's blurry. And it's true — this characteristic of your photographs is an important one. There's not much to appreciate about an image that's so blurry that you can't make out whether you're looking at Peru or Peoria.

But an artful photographer knows that there's more to focus than simply getting a sharp image of a subject. You also need to consider *depth of field*, or the distance over which objects remain sharply focused. This chapter explains all the ways to control depth of field, how to use your D90's advanced autofocus options, and how to take advantage of autofocus in Live View mode.

In addition, this chapter dives into the topic of color, explaining your camera's white balance control, which compensates for the varying color casts created by different light sources. You also can get my take on the other advanced color options on your D90, including the Color Space option and Picture Controls, in this chapter.



Reviewing Focus Basics

I touch on various focus issues in Chapters 1, 2, and 5. But just in case you’re not reading this book from front to back, here’s a recap of the basic process of focusing with your D90.



These steps assume that Live View, introduced in Chapter 4, is not enabled. Focusing works a little differently in Live View mode; see the upcoming section “Autofocusing in Live View mode” for details.

- If you haven’t already done so, adjust the viewfinder focus to accommodate your eyesight.**

You accomplish this by using the diopter adjustment dial, located on the top-right edge of the little rubber eyepiece that covers the viewfinder. Chapter 1 details this step.

- Set the focusing switch(es) to manual or automatic focusing.**

Depending on the type of lens you’re using, you need to set a switch on the lens, on the camera body, or both. (Figure 6-1 highlights the body switch and the lens switch as it appears on some Nikon lenses, including the 18–105mm AF-S lens sold in the D90 kit.)

- **AF-S lenses:** AF-S refers to a specific type of autofocus lens sold by Nikon (the 18–105mm kit lens falls into this category). To focus manually, set the lens switch to the M position. For autofocusing, set the lens switch to A.
- **AF lenses:** Set both the lens and body switches to your desired focus mode.
- **Manual-focus lenses:** Set the switch on the camera body to M. (You can’t autofocus with these lenses.)

- For handheld shooting, turn on Vibration Reduction.**



For sharper handheld shots, set the VR switch on the kit lens to On, as shown in Figure 6-1. If you use another lens that offers image stabilization (it may go by a name other than Vibration Reduction), check the lens manual to find out how to turn the feature on.



Figure 6-1: Depending on your lens, you set the focus mode (manual or auto) on the lens, the camera body, or both.

4. Frame the picture so that your subject falls under one of the 11 autofocus points.

The autofocus points are represented by the little black rectangles in the viewfinder.

5. To set focus in autofocus mode, press and hold the shutter button halfway down.



Depending on the lighting conditions, the camera's AF-assist illuminator on the front of the camera may emit a beam to help the autofocus system find its target. (If the light becomes a distraction, you can disable it through the Built-in AF-assist illuminator option, found on the Autofocus submenu of the Custom Setting menu. But the camera may have trouble locking focus, so you may need to focus manually.)

When focus is established, the focus lamp in the viewfinder lights. The viewfinder indicators briefly turn red, and one or more of the focus points appears surrounded by brackets, as shown in Figure 6-2. Those brackets indicate the active focusing points; any objects that fall under those points are in focus.

The part of the frame the camera uses to establish focus depends on the current *AF-area mode*. To find out more about this issue, including how to select the focus point you want to use, check out the next section.

6. To set focus manually, twist the focusing ring on the lens.



Even in manual mode, you can get some focusing help from the camera. When turning the focusing ring, press the shutter button halfway. If the object in an active autofocus point comes into focus, the viewfinder's focus lamp lights up. For this feature to work, however, your lens must offer a maximum aperture of at least f/5.6.

7. Depress the shutter button fully to take the picture.

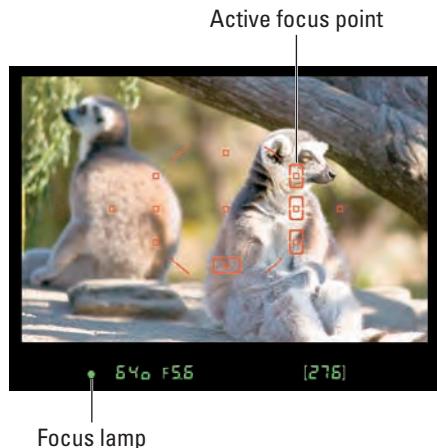


Figure 6-2: The brackets indicate the active focus points.



Shutter speed and blurry photos

A poorly focused photo isn't always related to the issues discussed in this chapter. Any movement of the camera or subject can also cause blur. Both of these problems are related to

shutter speed, an exposure control that I cover in Chapter 5. Be sure to also visit Chapter 7, which provides some additional tips for capturing moving objects without blur.

If for some reason you don't want the active focus points to turn red when you press the shutter button halfway, you can disable the feature. Display the Custom Setting menu, display the Autofocus submenu, and set the AF Point Illumination option to Off. To return to the original setup, set the option to Auto. (The third setting, On, also produces the red highlights, but they aren't adjusted to provide contrast with the background, as they are in Auto mode.)

Adjusting Autofocus Performance



You can adjust a number of aspects of your camera's autofocus system, but the two most important autofocusing decisions you need to make are:

- ✓ **How the active focus point is selected (AF-area mode):** You can select a single focus point or tell the camera to consider all 11 focusing points and then automatically choose the one it thinks is appropriate. You make this call through the AF-area mode option, which is tucked away on the Autofocus submenu of the Custom Setting menu.
- ✓ **Whether focus is locked when you press the shutter button halfway (Autofocus mode):** You can tell the camera to lock focus at that moment or continuously adjust focus as needed up to the time you actually take the picture. You control this option through the Autofocus mode setting.

The following sections fill in the details of these two options and also explain a few less critical autofocusing settings.

Understanding the AF-area mode setting



The AF-area mode option determines which of the 11 focusing points the camera uses to establish focus. (The *AF* in AF-area mode stands for *auto-focus*). You can view the current setting in the Control panel and Shooting Information display, as shown in Figure 6-3.

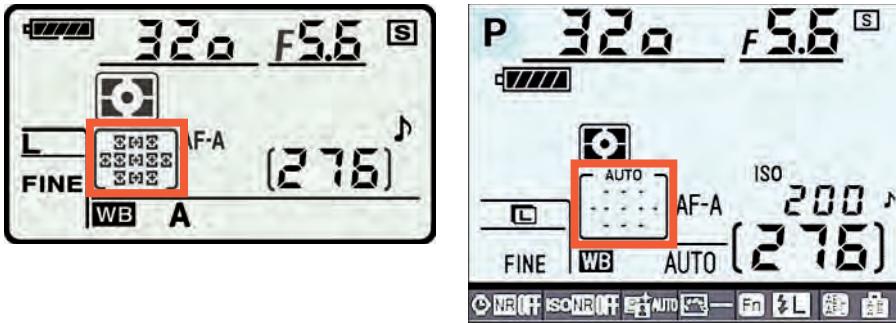


Figure 6-3: The symbol for the current AF-area mode appears here.

You can choose from four settings, which work as described in the following list and are represented in the displays by the accompanying icons. (Note that the icons look slightly different depending on where you view them. The ones in the margins here are shown as they appear in the Shooting Information display.)



✓ **Single Point:** This mode is designed for shooting still subjects. You select one of the 11 focus points, and the camera sets focus on the object that falls within that point. (See the upcoming section “Selecting a single focus point” for specifics on how to designate your chosen point.) The camera uses this mode by default when you shoot in the Close Up exposure mode.

In the Control panel and Shooting Information display, the little brackets in the AF-area mode icon show you which point is selected. For example, an icon like the one you see in the margin here tells you that the center point is selected.



✓ **Dynamic Area:** In this mode, designed for shooting moving subjects, you select an initial focus point, just as in Single Point mode. But if the subject within that focus point moves after you press the shutter button halfway to set focus, the camera looks for focus information from the other focus points. The idea is that the subject is likely to wind up within one of the 11 focus areas. It’s the default setting when you shoot in the Sports exposure mode.



However — and this is a biggie — in order for the automatic focus adjustment to occur, you also must set the Autofocus mode option (explained next) to either AF-A or AF-C. (AF-A is the default.) If you instead set that option to AF-S, which is designed for shooting still subjects, the camera sticks with the initial focus point you select, even if the subject moves before you take the picture.

In the displays, the icon for this mode looks similar to the one in the margin here. Your selected focus point is surrounded by brackets, but you also see little plus signs marking the other points. Note that

the brackets surrounding your selected focus point don't move if the camera shifts to a different point to focus, but the focus shift is happening just the same.



- ✓ **Auto Area:** The camera analyzes the objects under all 11 autofocus points and selects the one it deems most appropriate. This mode is the default setting for all exposure modes except the Close Up mode and Sports mode.

Note that in the Control panel, the icon for this mode shows all focus points surrounded by brackets, as shown on the left in Figure 6-3, reminding you that the camera may select any of the 11 points. In the Shooting Info display, you don't see the brackets, but the word Auto appears with the icon, as shown in the margin here and on the right in the figure.



- ✓ **3D Tracking:** This one is a variation of Dynamic Area autofocusing — well, sort of. As with Dynamic Area mode, you start by selecting a single focus point (surrounded by brackets in the displays) and then press the shutter button halfway to set focus. But the goal of this mode is to maintain focus on your subject if you recompose the shot after you press the shutter button halfway to lock focus. Again, you have to set the Autofocus mode to AF-A or AF-C for this focus adjustment to occur.

The only problem is that the way the camera detects your subject is by analyzing the colors of the object under your selected focus point. So if not much difference exists between the subject and other objects in the frame, the camera can get fooled. And if your subject moves out of the frame, you must release the shutter button and reset focus by pressing it halfway again.

The 3D Tracking display icon looks identical to the Dynamic Area icon in the Control panel. In the Shooting Information display, a 3D label appears, as shown in the margin here.



If you're feeling overwhelmed by all of your autofocus options (not to mention all the other D90 features), Auto-area produces good results for most subjects. Personally, however, I rely on the first two modes because if the Auto mode makes the wrong focus assumptions, there's no way to select a different focus point. So for still subjects, I stick with Single Point focus; for moving subjects, I go with Dynamic Area.

Whatever your conclusions on the subject, the next two sections show you how to adjust the AF-area mode and select a specific focus point.

Changing the AF-area mode setting

To set the AF-area mode, open the Custom Setting menu and then select the Autofocus submenu. Press OK, highlight AF-area mode, as shown on the left in Figure 6-4, and then press OK again to display the available options, as shown on the right. Highlight your choice and press OK.

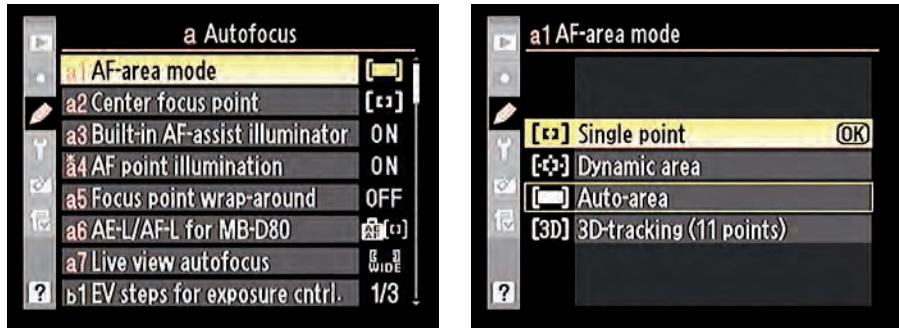


Figure 6-4: The AF-area mode setting lives on the Autofocus submenu of the Custom Setting menu.



If you find yourself changing the AF-area mode regularly, you can make it easier to access by setting the Fn (Function) button on the front of the camera to bring up the menu options. Or you can create a custom menu and put the option on the menu. Chapter 11 provides information about both features.

Selecting a single focus point

In any AF-area mode except Auto-area, take these steps to select a focus point:

1. Be sure that the Focus Selector Lock is set to the position shown on the left in Figure 6-5.

That is, align the switch with the white circle and not the L.

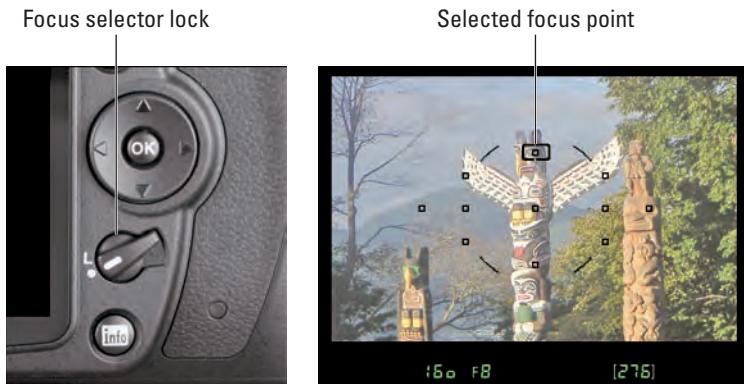


Figure 6-5: Set the Focus Selector Lock to this position if you want to select a specific focus point.

2. Press the shutter button halfway and release it to engage the exposure meters.

3. Use the Multi Selector to select a focus point.

The currently selected point is surrounded by brackets, as shown on the right in Figure 6-5.

A couple of tips about this process:



- ✓ **To lock the selected focus point:** If you want to ensure that an errant press of the Multi Selector doesn't select a different point, set the Focus Selector Lock to the L position. Just remember to return the switch to its other position if you want to select a different focus point.
- ✓ **To quickly select the center focus point:** Press OK. No need to cycle your way through all the other focus points to get to the center.
- ✓ **To change the focus-point wrapping style:** Okay, so here's an obscure customization option for you: Normally, when you select one of the outermost focus points, pressing the Multi Selector one more notch in the direction of that point has no effect. For example, if the top center point is selected, pressing the Multi Selector up accomplishes nothing. However, you can adjust this behavior so that the point selection "wraps around" the screen — so pressing the Multi Selector when that top center focus point is selected jumps you to bottom center focus point, and vice versa.

If you're into this level of control, you adjust the setting via the Custom Setting menu. Open the Autofocus submenu and then look for the Focus Point Wrap-Around option. Again, the default setting is No Wrap.

Changing the size of the center focus point

When you base autofocus on the center focus point, you can request that the camera does its thing based on a wider-than-normal area of the frame. Figure 6-6 shows you the difference between the normal and wide settings.

To make the adjustment, navigate to the Custom Setting menu and then to the Autofocus submenu. Press OK, highlight Center Focus point, and press OK again to access the two settings. The Normal Zone option is the default (smaller zone) setting.

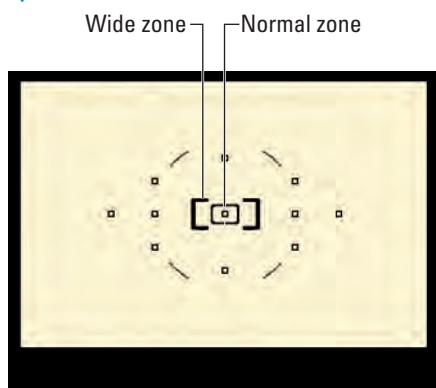


Figure 6-6: You can adjust the size of the center focus point.

When should you use the wide area? Well, it's designed for subjects that don't fit under the normal area marks or for subjects that are moving just slightly, and so might slip out of that normal area boundary. Think of a two-person portrait shot, for example, or perhaps a photo of someone delivering a speech from a lectern. Frankly, I don't dig this far into the autofocusing weeds, though. If the camera can't lock focus using the Normal Zone setting, I just switch to manual focusing — it's a much faster, and easier, solution. And if you forget that wide-area focusing is enabled, you may have trouble focusing on smaller, nonmoving subjects the next time you use center-point autofocus.

Changing the Autofocus mode setting



The Autofocus mode setting determines what happens after you press the shutter button halfway to establish initial focus. There are three mode settings, which work as follows:



- ✓ **AF-S (single-servo autofocus):** In this autofocus mode, which is geared to shooting stationary subjects, the camera locks focus when you depress the shutter button halfway.

Use this mode if you want to frame your subject so that it doesn't fall under an autofocus point: Compose the scene initially to put the subject under a focus point, press the shutter button halfway to lock focus, and then reframe to the composition you have in mind. As long as you keep the button pressed halfway, focus remains set on your subject.

- ✓ **AF-C (continuous-servo autofocus):** In this mode, which is designed for moving subjects, the camera focuses continuously for the entire time you hold the shutter button halfway down. Focus is adjusted as necessary up to the time you take the shot. If you want to lock focus at a certain distance, you must press the AE-L/AF-L button, as described in the section, "Using autofocus lock," later in this chapter.

- ✓ **AF-A (auto-servo autofocus):** This mode is the default setting. The camera analyzes the scene and, if it detects motion, automatically selects continuous-servo mode (AF-C). If the camera instead believes you're shooting a stationary object, it selects single-servo mode (AF-S). This mode works pretty well, but it can get confused sometimes. For example, if your subject is motionless but other people are moving in the background, the camera may mistakenly switch to continuous autofocus. By the same token, if the subject is moving only slightly, the camera may not make the switch.

In the Auto and Digital Vari-Program exposure modes, the Autofocus mode is reset to AF-A whenever you rotate the Mode dial to a different setting.





The current Autofocus mode setting appears in the Control panel and Shooting Information display, as shown in Figure 6-7. To adjust the setting, press and hold the AF button (on top of the camera) as you rotate the main command dial. While the button is pressed, all other setting data disappears from the Control panel and Shooting Information display. Release the AF button after you select the setting you want to use.

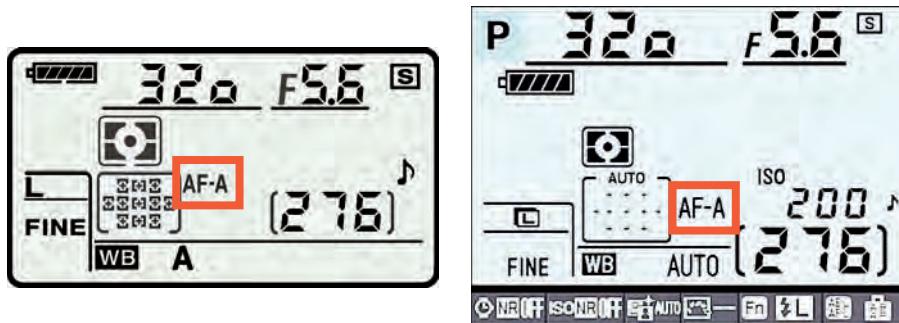


Figure 6-7: The Autofocus mode determines whether focus is locked when you press the shutter button halfway.



Choosing the right autofocus combo

You'll get the best autofocus results if you pair your chosen Autofocus mode with the most appropriate AF-area mode, because the two settings work in tandem. Here are the combinations that I suggest for the maximum autofocus control:

- ✓ **For still subjects, use Single Point as the AF-area mode and AF-S as the Autofocus mode.** You then select a specific focus point, and the camera locks focus on that point at the time you press the shutter button halfway. Focus remains locked on your subject even if you reframe the shot after you press the button halfway. (It helps to remember the s factor: For **still** subjects, **Single Point** and **AF-S**.)
- ✓ **For moving subjects, set the AF-area mode to Dynamic Area and the Autofocus mode to AF-C.** You still begin by selecting a focus point, but the camera adjusts focus as needed if your subject moves within the frame after you press the shutter button halfway to establish focus. (Think *motion, dynamic, continuous*.)

Again, though, if you're not ready to delve into the whole issue, the default settings work pretty well for most shooting situations. For Autofocus mode, the default is AF-A; for AF-area mode, the default settings are Single Point for Close Up mode; Dynamic Area for Sports mode; and Auto-area for all other modes.

Using autofocus lock

When you set your camera's Autofocus mode to AF-C (continuous-servo autofocus), pressing and holding the shutter button halfway initiates autofocus. But focusing is continually adjusted while you hold the shutter button halfway, so the focusing distance may change if the subject moves before you press the shutter button the rest of the way to take the picture. The same is true if you use AF-A mode (auto-servo autofocus) and the camera senses movement in front of the lens, in which case it shifts to AF-C mode and operates as I just described. Either way, the upshot is that you can't control the exact focusing distance the camera ultimately uses.

Should you want to lock focus at a specific distance, you have a couple of options:

- ☛ Focus manually.
- ☛ Change the Autofocus mode to AF-S (single-servo autofocus). In this mode, focus is locked when you press and hold the shutter button halfway.
- ☛ Use *autofocus lock*. First set focus by pressing the shutter button halfway. When the focus is established at the distance you want, press and hold the AE-L/AF-L button, located near the viewfinder. Focus remains set as long as you hold the button down, even if you release the shutter button.



Keep in mind, though, that by default, pressing the AE-L/AF-L button also locks in autoexposure if you're shooting in the P, S, or A autoexposure modes. (Chapter 5 explains.) You can change this behavior, however, setting the button to lock just one or the other. Chapter 11 explains this option as well as a couple other ways to customize the button's function.



For my money, manual focusing is by far the easiest solution. Yes, it may take you a little while to get comfortable with manual focusing, but in the long run, you really save yourself a lot of time fiddling with the various autofocus settings, remembering which button initiates the focus lock, and so on. Just be sure that you have adjusted the viewfinder diopter to your eyesight, as explained in Chapter 1, so that there's not a disconnect between what you see in the viewfinder and where the camera is actually focusing. After a little practice, focusing manually will become second nature to you.

Autofocusing in Live View mode

Chapter 4 covers the basics of shooting in Live View mode, which enables you to compose your shots by using the camera monitor instead of the viewfinder. You can opt for Live View shooting for taking still pictures, and you're required to use it to record movies.



As I mention in the Chapter 4 discussion, the simplest and most reliable focusing choice is to focus manually. That said, you can use autofocus in Live View mode if you prefer.

If you do try Live View autofocusing, first set aside all the autofocusing information presented heretofore in this chapter. All the settings related to normal autofocusing — AF-area mode, Autofocus mode, and the like — are irrelevant. Instead, you can choose from the following three autofocusing methods:



☛ **Face Priority:** Designed for portrait shooting, this mode attempts to hunt down and lock focus on faces when you press the shutter button halfway. This setting is chosen by default if you set the exposure Mode dial to the Portrait or Night Portrait setting.



☛ **Wide Area:** In this mode, you use the Multi Selector to move a little rectangular focusing frame around the screen to specify your desired focusing spot. When you press the shutter button halfway, the camera tries to lock focus on objects within the focusing frame. This mode is the default for all exposure modes except Portrait, Night Portrait, and Close Up modes.



☛ **Normal Area:** This mode works the same way as Wide Area autofocusing but uses a smaller focusing frame. The idea is to enable you to base focus on a very specific area. It's the default mode for pictures you take in the Close Up exposure mode.

With such a small focusing frame, however, you can easily miss your focus target when handholding the camera. If you move the camera slightly just as you're locking focus, and the focusing frame shifts off your subject as a result, focus will be incorrect. So for best results, use a tripod in this mode.

To use Live View autofocusing, first set the switch on your lens, the camera body, or both to the autofocus position. Remember, which switches you need to set depends on your lens; see the first section of this chapter for details. Then take these steps:



1. Press the Lv button (on the back of the camera, above the Multi Selector) to switch to Live View shooting.

The viewfinder turns off, and your subject appears on the monitor, as shown in Figure 6-8. Note the following focus-related doodads:

- In the upper-right corner, you see an icon representing your selected autofocus mode.
- For Wide Area and Normal Area autofocus, you see the rectangular focusing frame, labeled in the figure. (The figure shows the frame at the size it appears in Wide Area mode.)
- In Face Priority mode, a yellow highlight appears around the subject's face. (For scenes containing more than one person, focus is

set on the closest one.) If you don't see the highlight, the camera can't detect your subject's face, and it will set focus on the center of the frame.



Figure 6-8: You see the Live View focusing frame only in the Wide Area and Normal Area autofocusing modes.



2. Adjust the autofocus mode if necessary.

Just press the AF button while rotating the main command dial to cycle through your options. (You also can set the mode via the Live View Autofocus option, found on the Autofocus section of the Custom Setting menu. But that method requires exiting Live View mode.)

3. For Wide Area and Normal Area focusing, move the focusing frame over your subject.

First, make sure that the Focus Selector Lock (refer to Figure 6-5) is set to the unlock position — the white circle, rather than the L. Then press the Multi Selector to move the focusing frame.

4. Press the shutter button halfway to focus.

When focus is set, the focusing frame or face-highlight box turns green. If the camera can't establish focus, the focusing frame or face-highlight box blinks red.



5. (Optional) Magnify the display to check focus.

Press the Qual button to zoom in and get a close-up look at your subject. In Normal Area and Wide Area mode, you can press the Multi Selector to scroll the display if needed. In Face Priority mode, the camera automatically keeps the face in the highlight box centered on the monitor.



To zoom out, press the ISO button. Or press OK to return to normal magnification.

If focus is incorrect, release the shutter button and try again.

6. To record the picture, press the shutter button the rest of the way.

You can use these same steps to establish your initial focusing point when recording movies. Release the shutter button after focus is established and then press OK to start recording.



For both still and movie photography, though, be aware that there is no such thing as continuous autofocusing in Live View mode. After you press the shutter button halfway to set focus, focus is locked. In still photography mode, you must release the shutter button and then press it halfway again to adjust the focus point. In movie mode, you must stop recording, reset focus, and start the recording anew. For moving subjects, then, manual focusing makes life a lot easier.

Manipulating Depth of Field

Getting familiar with the concept of *depth of field* is one of the biggest steps you can take to becoming a more artful photographer. I introduce you to depth of field in Chapters 2 and 5, but here's a quick recap just to hammer home the lesson:

- ✓ *Depth of field* refers to the distance over which objects in a photograph appear sharply focused.
- ✓ With a shallow, or small, depth of field, distant objects appear more softly focused than the main subject (assuming that you set focus on the main subject, of course).
- ✓ With a large depth of field, the zone of sharp focus extends to include objects at a distance from your subject.

Which arrangement works best depends entirely on your creative vision and your subject. In portraits,

Aperture, f/5.6; Focal length, 300mm



Figure 6-9: A shallow depth of field blurs the background and draws added attention to the subject.

for example, a classic technique is to use a short depth of field, as I did for the photo in Figure 6-9. This approach increases emphasis on the subject while diminishing the impact of the background. But for the photo shown in Figure 6-10, I wanted to emphasize that the foreground figures were in St. Peter's Square, at the Vatican, so I used a large depth of field, which kept the background buildings sharply focused and gave them equal weight in the scene.

So exactly how do you adjust depth of field? You have three points of control: aperture, focal length, and camera-to-subject distance, as spelled out in the following list:

✓ **Aperture setting (f-stop):**

The aperture is one of three exposure settings, all explained fully in Chapter 5. Depth of field increases as you stop down the aperture (by choosing a higher f-stop number). For shallow depth of field, open the aperture

(by choosing a lower f-stop number). Figure 6-11 offers an example; in the f/22 version, focus is sharp all the way through the frame; in the f/13 version, focus softens as the distance from the center lure increases. I snapped both images using the same focal length and camera-to-subject distance, setting focus on the center lure.

✓ **Lens focal length:** In lay terms, *focal length* determines what the lens “sees.” As you increase focal length, measured in millimeters, the angle of view narrows, objects appear larger in the frame, and — the important point for this discussion — depth of field decreases. Additionally, the spatial relationship of objects changes as you adjust focal length. As an example, Figure 6-12 compares the same scene shot at a focal length of 127mm and 183mm. I used the same aperture, f/5.6, for both examples.

Whether you have any focal length flexibility depends on your lens: If you have a zoom lens, you can adjust the focal length — just zoom in or out. (The D90 kit lens, for example, offers a focal range of 18–105mm.) If you don’t have a zoom lens, the focal length is fixed, so scratch this means of manipulating depth of field.

Aperture, f/14; Focal length, 42mm



Figure 6-10: A large depth of field keeps both foreground and background subjects in focus.

Aperture, f/22; Focal length, 92mm



Aperture, f/13; Focal length, 92mm



Figure 6-11: A lower f-stop number (wider aperture) decreases depth of field.

For more technical details about focal length and your D90, see the sidebar “Fun facts about focal length.”

- ✓ **Camera-to-subject distance:** As you move the lens closer to your subject, depth of field decreases. This assumes that you don’t zoom in or out to reframe the picture, thereby changing the focal length. If you do, depth of field is affected by both the camera position and focal length.

Aperture, f/5.6; Focal length, 127mm



Aperture, f/5.6; Focal length, 183mm



Figure 6-12: Zooming to a longer focal length also reduces depth of field.



Together, these three factors determine the maximum and minimum depth of field that you can achieve, as illustrated by my clever artwork in Figure 6-13 and summed up in the following list:

- **To produce the shallowest depth of field:** Open the aperture as wide as possible (the lowest f-stop number), zoom in to the maximum focal length of your lens, and get as close as possible to your subject.
- **To produce maximum depth of field:** Stop down the aperture to the highest possible f-stop number, zoom out to the shortest focal length your lens offers, and move farther from your subject.

Fun facts about focal length

Every lens can be characterized by its *focal length*, or in the case of a zoom lens, the range of focal lengths it offers. Measured in millimeters, focal length determines the camera's angle of view, the apparent size and distance of objects in the scene, and depth of field. According to photography tradition, a focal length of 50mm is described as a "normal" lens. Most point-and-shoot cameras feature this focal length, which is a medium-range lens that works well for the type of snapshots that users of those kinds of cameras are likely to shoot.

A lens with a focal length under 35mm is characterized as a *wide-angle* lens because at that focal length, the camera has a wide angle of view and produces a large depth of field, making it good for landscape photography. A short focal length also has the effect of making objects seem smaller and farther away. At the other end of the spectrum, a lens with a focal length longer than 80mm is considered a *telephoto* lens and often referred to as a *long lens*. With a long lens, angle of view narrows, depth of field decreases, and faraway subjects appear closer and larger, which is ideal for wildlife and sports photographers.

Note, however, that the focal lengths stated here and elsewhere in the book are so-called *35mm*

equivalent focal lengths. Here's the deal: For reasons that aren't really important, when you put a standard lens on most digital cameras, including your D90, the available frame area is reduced, as if you took a picture on a camera that uses 35mm film negatives (the kind you've probably been using for years) and then cropped it.

This so-called *crop factor*, sometimes also called the *magnification factor*, varies depending on the digital camera, which is why the photo industry adopted the 35mm-equivalent measuring stick as a standard. With the D90, the cropping factor is roughly 1.5. So the 18–105mm kit lens, for example, actually captures the approximate area you would get from a 27–160mm lens on a 35mm film camera. In the figure here, for example, the red outline indicates the image area that results from the 1.5 crop factor.

Note that although the area the lens can capture changes when you move a lens from a 35mm film camera to a digital body, depth of field isn't affected, nor are the spatial relationships between objects in the frame. So when lens shopping, you gauge those two characteristics of the lens by looking at the stated focal length — no digital-to-film conversion math is required.

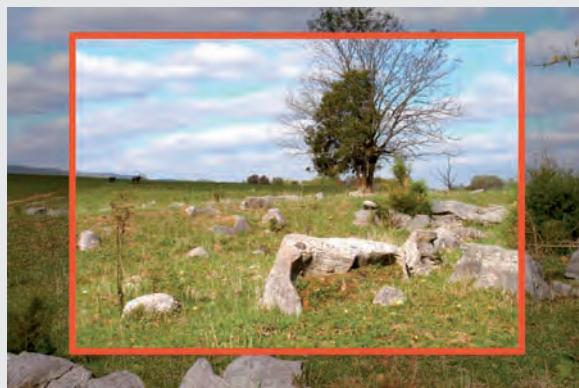


Photo courtesy Chuck Pace

Just to avoid a possible point of confusion that has arisen in some of the classes I teach: When I say *zoom in*, some students think that I mean to twist the zoom barrel *in* toward the camera body. But in fact, the phrase *zoom in* means to zoom to a longer focal length, which produces the visual effect of bringing your subject closer. This requires twisting the zoom barrel of the lens so that it extends further *out* from the camera. And the phrase *zoom out* refers to the opposite maneuver: I'm talking about widening your view of the subject by zooming to a shorter focal length, which requires moving the lens barrel *in* toward the camera body.

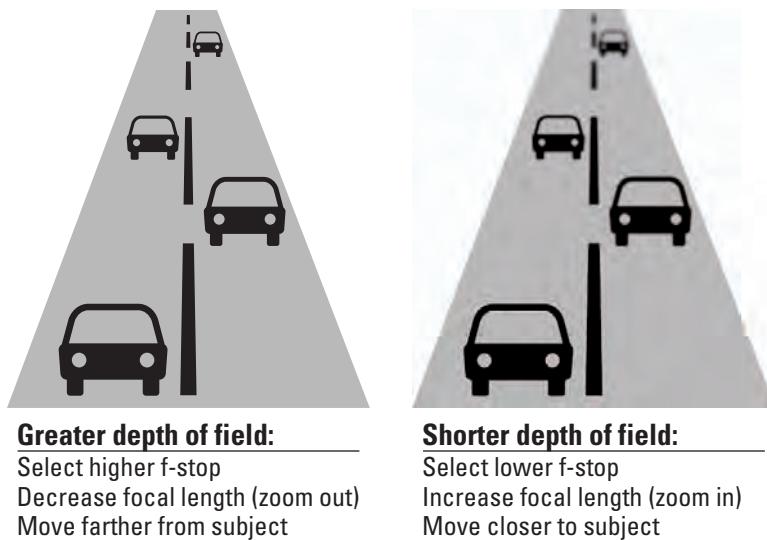


Figure 6-13: Your f-stop, focal length, and shooting distance determine depth of field.

Here are a few additional tips and tricks related to depth of field:

- ✓ **Aperture-priority autoexposure mode (A) enables you to easily control depth of field.** In this mode, detailed fully in Chapter 5, you set the f-stop, and the camera selects the appropriate shutter speed to produce a good exposure. The range of aperture settings you can access depends on your lens.

Even in aperture-priority mode, keep an eye on shutter speed as well. To maintain the same exposure, shutter speed must change in tandem with aperture, and you may encounter a situation where the shutter speed is too slow to permit hand-holding of the camera. Lenses that offer optical image stabilization, or vibration reduction (VR lenses, in the Nikon world), do enable most people to use a slower shutter speed than normal, but double-check your results just to be sure. Or use a tripod for extra security. Of course, all this assumes that you have dialed in a specific



ISO Sensitivity setting; if you instead are using Auto ISO adjustment, the camera may adjust the ISO setting instead of shutter speed. (Chapter 5 explores the whole aperture/shutter speed/ ISO relationship.)

- ✓ **Press the Depth-of-Field Preview button to get an idea of how your f-stop will affect depth of field.** When you look through your viewfinder and press the shutter button halfway, you can get only a partial indication of the depth of field that your current camera settings will produce. You can see the effect of focal length and the camera-to-subject distance, but because the aperture is always fully open until you actually take the picture, the viewfinder doesn't show you how your selected f-stop will affect depth of field.

By using the Depth-of-Field Preview button on your camera, however, you can preview the f-stop's impact. Almost hidden away on the front of your camera, the button is labeled in Figure 6-14. (I removed the lens for the picture to make the button easier to see.) When you press the button, the camera temporarily sets the aperture to your selected f-stop so that you can preview depth of field. At small apertures (high f-stop settings), the viewfinder display may become quite dark, but this doesn't indicate a problem with exposure — it's just a function of how the preview works.

In P, S, A, and M exposure modes, you can tell the camera to emit a so-called *modeling flash* when you preview depth-of-field and have flash enabled. By default, the modeling flash is turned off; if you want to experiment with this feature, visit the flash discussion in Chapter 5 for details.

- ✓ **Portrait and Close Up modes are designed to produce shallow depth of field; Landscape mode is designed for large depth of field.** You can't adjust aperture in these modes, however, so you're limited to the setting the camera chooses. In addition, the extent to which the camera can



Figure 6-14: Press this button to get a preview of the effect of aperture on depth of field.

select an appropriate f-stop depends on the lighting conditions. If you’re shooting in Landscape mode at dusk, for example, the camera may have to open the aperture to a wide setting to produce a good exposure.

- ✓ **For greater background blurring, move the subject farther from the background.** The extent to which background focus shifts as you adjust depth of field also is affected by the distance between the subject and the background. For increased background blurring, move the subject farther in front of the background.

Controlling Color

Compared with understanding some aspects of digital photography — resolution, aperture and shutter speed, depth of field, and so on — making sense of your camera’s color options is easy-breezy. First, color problems aren’t all that common, and when they are, they’re usually simple to fix with a quick shift of your D90’s white balance control. And getting a grip on color requires learning only a couple of new terms, an unusual state of affairs for an endeavor that often seems more like high-tech science than art.

The rest of this chapter explains the aforementioned white balance control, plus a couple of menu options that enable you to fine-tune the way your camera renders colors. For information on how to use the Retouch menu’s color options to alter colors of existing pictures, see Chapter 10.

Correcting colors with white balance

Every light source emits a particular color cast. The old-fashioned fluorescent lights found in most public restrooms, for example, put out a bluish-greenish light, which is why our reflections in the mirrors in those restrooms always look so sickly. And if you think that your beloved looks especially attractive by candlelight, you aren’t imagining things: Candlelight casts a warm, yellow-red glow that is flattering to the skin.

Science-y types measure the color of light, officially known as *color temperature*, on the Kelvin scale, which is named after its creator. You can see the Kelvin scale in Figure 6-15.

When photographers talk about “warm light” and “cool light,” though, they aren’t referring to the position on the Kelvin scale — or at least not in the way we usually think of temperatures,

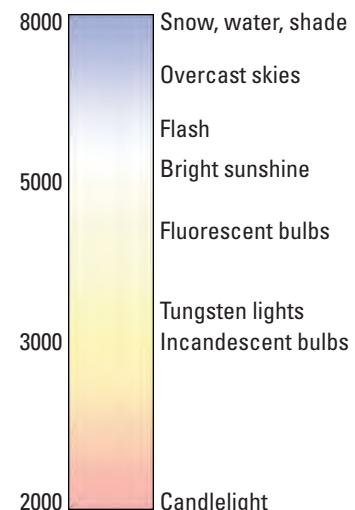


Figure 6-15: Each light source emits a specific color.



with a higher number meaning hotter. Instead, the terms describe the visual appearance of the light. Warm light, produced by candles and incandescent lights, falls in the red-yellow spectrum you see at the bottom of the Kelvin scale in Figure 6-15; cool light, in the blue-green spectrum, appears at the top of the Kelvin scale.

At any rate, most of us don't notice these fluctuating colors of light because our eyes automatically compensate for them. Except in very extreme lighting conditions, a white tablecloth appears white to us no matter whether we view it by candlelight, fluorescent light, or regular houselights.

Similarly, a digital camera compensates for different colors of light through a feature known as *white balancing*. Simply put, white balancing neutralizes light so that whites are always white, which in turn ensures that other colors are rendered accurately. If the camera senses warm light, it shifts colors slightly to the cool side of the color spectrum; in cool light, the camera shifts colors the opposite direction.

The good news is that, as with your eyes, your camera's Auto white balance setting tackles this process remarkably well in most situations, which means that you can usually ignore it and concentrate on other aspects of your picture. But if your scene is lit by two or more light sources that cast different colors, the white balance sensor can get confused, producing an unwanted color cast like the one you see in the left image in Figure 6-16.

I shot this product image in my home studio, which I light primarily with a couple of high-powered photo lights that use tungsten bulbs, which produce light with a color temperature similar to regular household incandescent bulbs. The problem is that the windows in that room also permit some pretty strong daylight to filter through. In Auto white balance mode, the camera reacted to that daylight — which has a cool color cast — and applied too much warming, giving my original image a yellow tint. No problem: I just switched the white balance mode from Auto to the Incandescent setting. The right image in Figure 6-16 shows the corrected colors.



There's one little problem with white balancing as it's implemented on your D90, though. You can't make this kind of manual white balance selection if you shoot in the Auto mode or the Digital Vari-Program scene modes. So if you spy color problems in your camera monitor, you need to switch to either P, S, A, or M exposure mode. (Chapter 5 details all four modes.)

The next section explains precisely how to make a simple white balance correction; following that, you can explore some advanced white balance options.



Figure 6-16: Multiple light sources resulted in a yellow color cast in Auto white balance mode (left); switching to the Incandescent setting solved the problem (right).

Changing the white balance setting

The current white balance setting appears in the Control panel and Shooting Information display, as shown in Figure 6-17. The settings are represented by the icons you see in Table 6-1.

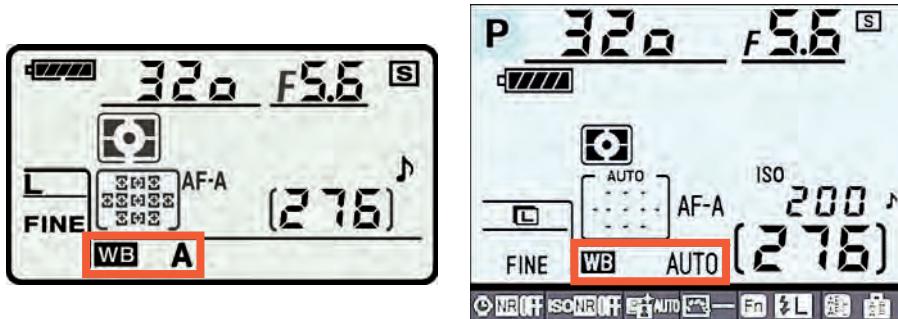


Figure 6-17: These icons represent the current white balance setting.

Table 6-1**Manual White Balance Settings**

<i>Symbol</i>	<i>Light Source</i>
	Incandescent
	Fluorescent
	Direct sunlight
	Flash
	Cloudy
	Shade
	Choose color temperature
PRE	Custom preset

WB The quickest way to change the setting is to press and hold the WB button as you rotate the main command dial. But note these factoids:



- ✓ **Adjusting white balance through the Shooting menu:** You also can change the white balance setting from the Shooting menu. After highlighting the White Balance setting, press OK to display the list of options. Highlight the one you want to use and press OK. For all settings except PRE (Preset Manual), K, and Fluorescent, you're taken to a screen where you can fine-tune the amount of adjustment the camera applies to colors. See the next section for details. If you don't want to make any adjustment, just press OK.
- ✓ **Specifying a color temperature through the K white-balance setting:** If you know the exact color temperature of your light source — perhaps you're using some special studio bulbs, for example — you can tell the camera to balance colors for that precise temperature. (Well, technically, you have to choose from a preset list of temperatures, but you should be able to get close to the temperature you have in mind.) First, select the K white balance setting. (K for *Kelvin*, get it?) Then, while pressing the WB button, rotate the subcommand dial to set the color temperature, which appears at the top of the Control panel and Shooting Information display, as shown in Figure 6-18.

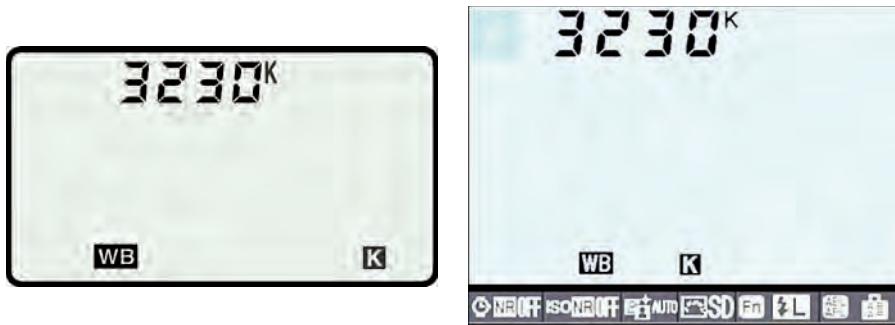


Figure 6-18: You can set white balance to a specific Kelvin temperature by using the K setting.

You also can set the temperature through the White Balance option on the Shooting menu. If you do, you see the fine-tuning screen after you select the temperature and press OK. Again, just press OK to exit the screen without making any adjustment.

- ✓ **Specifying a fluorescent bulb type:** For the Fluorescent setting, you can select from seven types of bulbs. To do so, you must go through the Shooting menu. Select Fluorescent as the White Balance setting and then press OK to display the list of bulbs, as shown in Figure 6-19. Select the option that most closely matches your bulbs and then press OK. Press OK again, and you're taken to the fine-tuning screen. If you don't want to make any further adjustment, just press OK once more to return to the Shooting menu.



After you select a fluorescent bulb type, that option is always used when you use the WB button to select the Fluorescent white balance setting. Again, you can change the bulb type only through the Shooting menu.

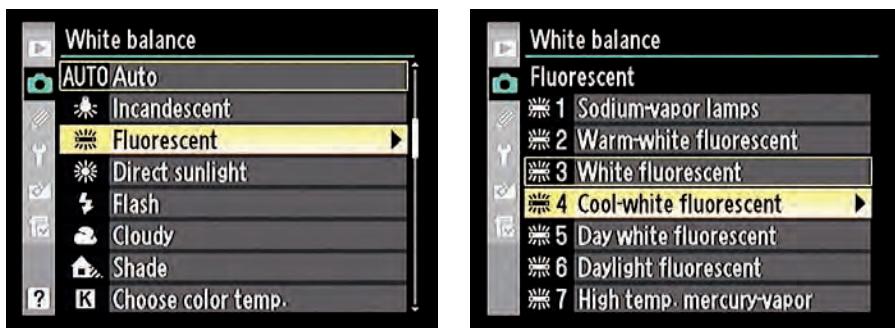


Figure 6-19: You can select a specific type of fluorescent bulb.

 **Creating a custom white balance preset:** The PRE (Preset Manual) option enables you to create and store a precise, customized white balance setting, as explained in the upcoming “Creating white balance presets” section. This setting is the fastest way to achieve accurate colors when your scene is lit by multiple light sources that have differing color temperatures.



Your selected white balance setting remains in force for the P, S, A, and M exposure modes until you change it. So you may want to get in the habit of resetting the option to the Auto setting after you finish shooting whatever subject it was that caused you to switch to manual white balance mode.

Fine-tuning white balance settings

You can fine-tune any white balance setting (Daylight, Cloudy, and so on). For the greatest amount of control, make the adjustment as spelled out in these steps:

1. Display the Shooting menu, highlight White Balance, and press OK.
2. Highlight the white balance setting you want to adjust, as shown on the left in Figure 6-20, and press OK.

Now you’re taken to a screen where you can do your fine-tuning, as shown on the right in Figure 6-20.



If you select Fluorescent or K (Choose Color Temperature), you first go to a screen where you select a specific type of bulb or Kelvin color temperature, as covered in the preceding section. After you highlight your choice, press OK to get to the fine-tuning screen. For custom presets that you create, you must select the preset you want to use and press OK. (See the next section for an explanation of presets.)

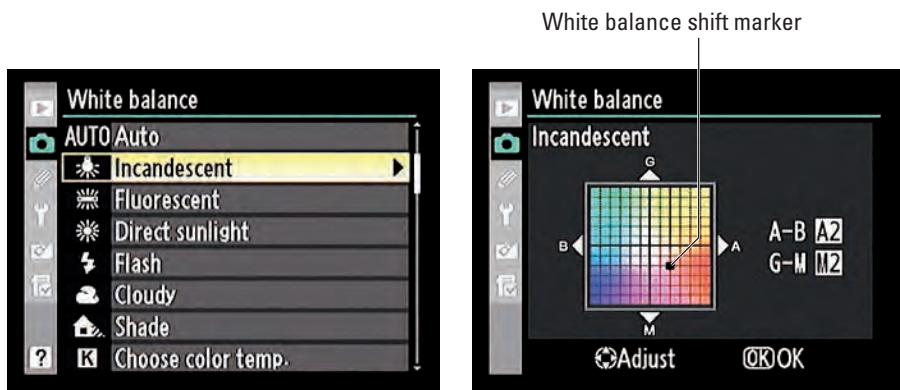


Figure 6-20: You can fine-tune the white balance settings via the Shooting menu.

3. Fine-tune the setting by using the Multi Selector to move the white balance shift marker in the color grid.

The grid is set up around two color pairs: Green and Magenta, represented by G and M; and Blue and Amber, represented by B and A. By pressing the Multi Selector, you can move the adjustment marker around the grid.

As you move the marker, the A-B and G-M boxes on the right side of the screen show you the current amount of color shift. A value of 0 indicates the default amount of color compensation applied by the selected white balance setting. In Figure 6-20, for example, I moved the marker two levels toward amber and two levels toward magenta to specify that I wanted colors to be a tad warmer.



If you're familiar with traditional colored lens filters, you may know that the density of a filter, which determines the degree of color correction it provides, is measured in *mireds* (pronounced *my-reds*). The white balance grid is designed around this system: Moving the marker one level is the equivalent of adding a filter with a density of 5 mireds.

4. Press OK to complete the adjustment.

After you adjust a white balance setting, an asterisk appears next to that setting in the White Balance menu. In the Control panel and Shooting Information display, you instead see a pair of triangles to indicate the adjustment.



If you want to apply a white balance shift on only the blue-to-amber axis, you don't have to go through the Shooting menu. Instead, press and hold the WB button and then rotate the subcommand dial. You see the amount of adjustment in the Control panel and Shooting Information display, as shown in Figure 6-21, while the button is pressed. An *a* value indicates a shift toward the amber direction; a *b* value, towards blue. For example, in the figure, the *b5* value shows that I shifted the setting five steps toward blue (*b*). The two-triangle symbol reminding you of the adjustment also appears.

Here's one other tip specifically related to shifting white balance along the blue-to-amber axis: By using a feature called white balance bracketing, you can automatically record your picture with and without that shift. You can even record one picture with no shift, one with an amber shift, and one with a blue shift. See the later section "Bracketing white balance" for details.

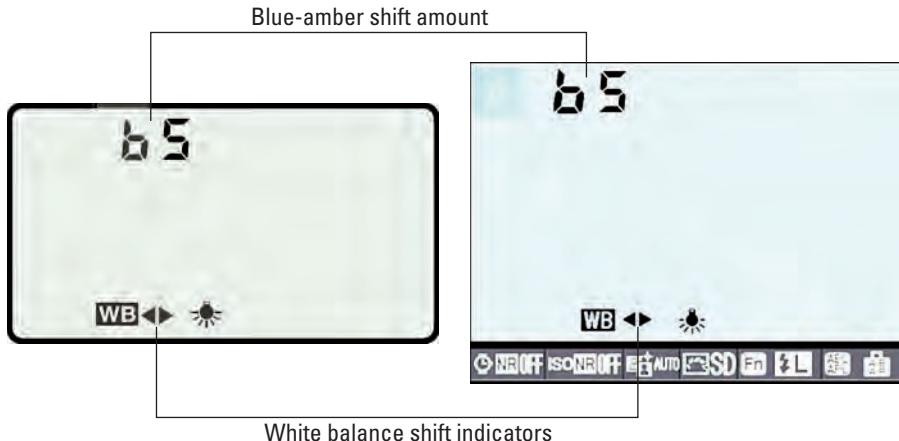


Figure 6-21: You can apply a shift along the blue/amber axis just by rotating the subcommand dial while pressing the WB button.



Creating white balance presets

If none of the standard white balance settings do the trick and you don't want to fool with fine-tuning them, take advantage of the PRE (Preset Manual) feature. This option enables you to do two things:

- ✓ Base white balance on a direct measurement of the actual lighting conditions.
- ✓ Match white balance to an existing photo.

You can create and store up to five custom white balance presets, which are assigned the names d-0 through d-4. The next two sections provide you with the step-by-step instructions; following that, you can find out how to select and manage your presets.

Setting white balance with direct measurement

To use this technique, you need a piece of card stock that's either neutral gray or absolute white — not eggshell white, sand white, or any other close-but-not-perfect white. (You can buy reference cards made just for this purpose in many camera stores for under \$20.)

Position the reference card so that it receives the same lighting you'll use for your photo. Then take these steps:

1. Set the camera to the P, S, A, or M exposure mode.

If the exposure meter reports that your image will be under- or overexposed at the current exposure settings, make the necessary adjustments now. (Chapter 5 tells you how.) Otherwise, the camera won't be able to create your custom white balance preset.

2. Frame your shot so that the reference card completely fills the viewfinder.



3. Press the WB button while rotating the main command dial to choose the PRE (Preset Manual) white balance setting.

You see the letters PRE in the white balance area of the Control panel, as shown in Figure 6-22, as well as in the Shooting Information display.

4. Release the button and then immediately press and hold it again until the letters PRE begin flashing in the Control panel.

You can also see the flashing letters in the viewfinder.

5. Release the WB button and take a picture of the gray card before the PRE warning stops flashing.

You've got about six seconds to snap the picture.

If the camera is successful at recording the white balance data, the letters *Gd* flash in the viewfinder. In the Control panel, the word *Good* flashes. If you instead see the message *No Gd*, try adjusting your lighting and then try again.



When you create a preset this way, the camera automatically stores your setting as Preset d-0. (The other presets are named d-1 through d-4.) So any time you want to select and use the preset, press the WB button and rotate the main command dial to select PRE, as in Step 3. Then rotate the subcommand dial while pressing the button to select d-0, as shown in Figure 6-22. (The Shooting Information display shows the same data when you press the WB button.) You also can select the preset through the White Balance option on the Shooting menu; see the upcoming section "Selecting a preset" for a few critical details on that method.

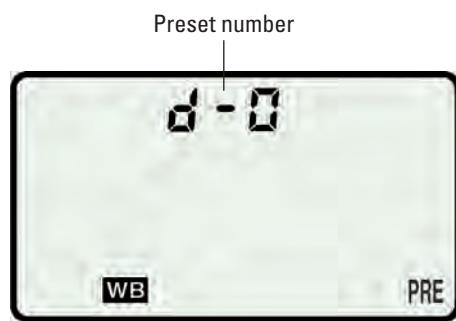


Figure 6-22: Preset d-0 is always used for the most recent direct-measurement preset.



Each time you go through these steps, your d-0 preset is replaced by the new white balance data you record. However, you can preserve your original preset by copying it to one of the other preset slots. See the upcoming section “Managing presets” for details on how to copy your preset as well as how to select it when you’re ready to shoot.

Matching white balance to an existing photo

Suppose that you’re the marketing manager for a small business, and one of your jobs is to shoot portraits of the company big-wigs for the annual report. You build a small studio just for that purpose, complete with a couple of photography lights and a nice, conservative beige backdrop.

Of course, the big-wigs can’t all come to get their pictures taken in the same month, let alone on the same day. But you have to make sure that the colors in that beige backdrop remain consistent for each shot, no matter how much time passes between photo sessions. This scenario is one possible use for an advanced white balance feature that enables you to base white balance on an existing photo.



Basing white balance on an existing photo works well only in strictly controlled lighting situations, where the color temperature of your lights is consistent from day to day. Otherwise, the white balance setting that produces color accuracy when you shoot Big Boss Number One may add an ugly color cast to the one you snap of Big Boss Number Two.

To give this option a try, follow these steps:

- 1. Copy the picture that you want to use as the reference photo to your camera memory card, if it isn’t already stored there.**

You can copy the picture to the card using a card reader and whatever method you usually use to transfer files from one drive to another.

Copy the file to the folder named DCIM, inside the main folder, named 100NCD90 by default. (See Chapter 8 for help with working with files and folders.)

- 2. Open the Shooting menu, highlight White Balance, and press OK.**

- 3. Select PRE (Preset Manual) and press the Multi Selector right.**

You must scroll to the second page of White Balance settings to uncover the PRE setting. After you press the Multi Selector right, the screen shown on the left in Figure 6-23 appears. The five thumbnails represent the five preset slots, d-0 through d-4.

- 4. Use the Multi Selector to highlight any preset except d-0.**

The d-0 preset is always used for white balance settings you create by taking a picture of a reference card, as described in the preceding section.



Figure 6-23: Select Preset d-1 through d-4; d-0 is reserved for direct-measurement presets.

ISO



5. Press the ISO button.

Now you see the menu shown on the right in Figure 6-23.

6. Highlight Select Image and press the Multi Selector right.

You see thumbnails of your photos.

7. Use the Multi Selector to move the yellow highlight box over the picture you want to use as your white balance photo.

8. Press OK.

You're returned to the screen showing your white balance preset thumbnails. The thumbnail for the photo you selected in Step 7 appears as the thumbnail for the preset slot you chose in Step 4.

9. Press Menu to return to the Shooting menu.

The white balance setting you just created is now selected.

If you press OK instead of the Menu button in Step 8, you can access the fine-tuning color grid, described in the earlier section “Fine-tuning white balance settings.”

Selecting a preset

After creating white balance presets, select the one you want to use in two ways:

WB



Use the WB button together with the command dials. First, select PRE as the white balance setting by pressing the WB button as you rotate the main command dial. Keep holding the button and rotate the subcommand dial to cycle through the available presets (d-0 through d-4). The number of the selected preset appears in the Control panel and Shooting Information display while the button is pressed.

- ☛ **Use the White Balance option on the Shooting menu.** Open the Shooting menu, select White Balance, press OK, highlight PRE (Preset Manual) and press the Multi Selector right. You then see the screen that contains thumbnails for all your presets. (Refer to the left screen in Figure 6-23.) Use the Multi Selector to place the yellow highlight box over the preset you want to use and then press OK. You're taken to the fine-tuning screen that appears any time you select a white balance setting from the menu; press OK to exit the screen without adjusting the setting.

Managing presets

Just to recap this whole white balance preset deal:

- ☛ You can create up to five presets, which take the names d-0 through d-4.
- ☛ Preset d-0 is always used for the most recent preset you created through the direct measurement method (where you take a photo of a reference card).
- ☛ Presets d-1 through d-4 can be assigned to presets based on photos.
- ☛ If you want to create more than one preset through direct measurement, you can copy the existing d-0 setting to one of the other four preset slots before doing another direct measurement. This feature is very handy if you regularly use different studio or lighting setups, by the way. You can create one direct-measurement preset for a home studio, for example, and another for a work studio.



To copy Preset d-0 to another slot, take these steps:

- 1. Select the White Balance option on the Shooting menu and press OK.**
- 2. Select PRE (Preset Manual), and press the Multi Selector right.**

You see the thumbnails representing the five presets. For example, the left image in Figure 6-24 shows the d-0 position held by an existing direct-measurement preset and d-1 held by a preset based on a photo.

- 3. Highlight the slot where you want to copy your d-0 preset.**

Use the Multi Selector to place the yellow highlight box around the slot. In the figure, I selected an empty slot (d-2), but you can also copy over an existing preset. (The preset that has the yellow label — d-1 in the figure — represents your current white balance setting; it doesn't relate to this operation.)



Figure 6-24: To create an additional direct-measurement preset, first copy the existing one from d-0 to another slot (d-1–d-4).

4. Press the ISO button to display the menu shown on the right in the figure.
5. Highlight **Copy d-0** and press **OK**.

You're returned to the preset thumbnails screen, and your original d-0 preset now occupies both d-0 and the slot you selected in Step 3. You can now create your second direct-measurement preset, which will take over the d-0 position.



Finally, you also can add a brief text comment to describe each preset. For example, you might add the label "home studio" to one preset and "work studio" to another to help you remember which is which. The label then appears with the preset thumbnail, as shown in Figure 6-25.

To enter a comment, take the exact same steps as you do to copy a preset, but instead of choosing Copy d-0 in Step 5, select Edit Comment and press the Multi Selector right. You then see a screen where you can enter your text. The specific text-entry steps are the same as you use for entering image comments, which I detail in Chapter 11, so I won't repeat them here.



Figure 6-25: Enter text labels that describe each preset.

I detail in Chapter 11, so I



Bracketing white balance

Chapter 5 introduces you to your camera's automatic bracketing feature, which enables you to easily record the same image at several different exposure settings. In addition to being able to bracket autoexposure, flash, and Active D-Lighting settings, you can use the feature to bracket white balance.

Note a couple of things about this feature:

- ✓ **You can bracket JPEG shots only.** You can't use white balance bracketing if you set the camera's Image Quality setting to either Raw (NEF) or Raw+Fine. And frankly, there isn't any need to do so because you can precisely tune colors of Raw files when you process them in your Raw converter. Chapter 8 has details on Raw processing.
- ✓ **You can apply white balance bracketing only along the blue-to-amber axis of the fine-tuning color grid.** You can't shift colors along the green-to-magenta axis, as you can when tweaking a specific white balance setting. (For a reminder of this feature, refer to the earlier section "Fine-Tuning white balance settings".)
- ✓ **You can shift colors a maximum of three steps in either direction.** This gives you half the level of adjustment as when you fine-tune white balance. (For those familiar with traditional lens filters, each step on the axis is equivalent to a filter density of five mireds.)

When you use white-balance bracketing, you can request that the camera record the bracketed images so that they are progressively more blue or more amber. Or you can record one image that's pushed toward blue and another that leans toward amber. Regardless, you also get one shot that's "neutral"—that is, recorded at the current white balance setting, without any adjustment.

I used white balance bracketing to record the three candle photos in Figure 6-26. For the blue and amber versions, I set the bracketing to shift colors the maximum three steps. As you can see, even at that maximum setting, the color differences between the shots are subtle. In this photo, I find the differences most noticeable in the color of the backdrop.

To apply white balance bracketing, you first need to take these steps:

1. **Set your camera to the P, S, A, or M exposure mode.**
White balance options are available only in these modes.
2. **Set the Image Quality setting to one of the JPEG options (Fine, Normal, or Basic).**
You can adjust the setting through the Shooting menu. (See Chapter 3 for a full explanation of the JPEG options.)
3. **Display the Custom Setting menu, select the Bracketing/Flash sub-menu, and press OK.**

- 4. Select Auto Bracketing Set, as shown on the left in Figure 6-27, and press OK.**

You see the screen shown on the right in the figure.

- 5. Select WB Bracketing and press OK.**

The bracketing feature is now set up to adjust white balance between your bracketed shots. (Exposure, flash, and Active D-Lighting are not bracketed.)



Figure 6-26: I used white balance bracketing to record three variations on the subject.

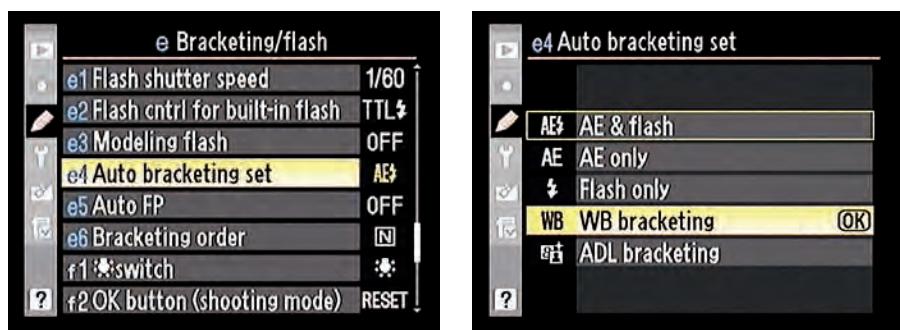


Figure 6-27: Your first step is to set the Auto Bracketing Set option to WB Bracketing.

From here on, bracketing works as detailed in the steps at the end of Chapter 5. Rather than repeating everything here, I'll save some page space and provide just a quick summary of how to establish the bracketing settings.

✓ **To set the number of frames and direction of the bracketing adjustment:**

Press and hold the BKT button (left-front side of the camera) while rotating the main command dial. For white balance bracketing, the options are as follows:

- **b2F:** This setting records two frames, one without any adjustment and one shifted toward blue.
- **a2F:** Again, you get two frames, but the second is shifted toward amber.
- **3F:** This setting records three frames, with one neutral, one pushed toward amber, and one shifted toward blue. I used this option to create the candle variations in Figure 6-27.
- **0F:** Select this setting to turn off bracketing.

✓ **To set the amount of white-balance adjustment:** Press the BKT button and rotate the subcommand dial. Again, you can set the bracketing amount to 1, 2, or 3.

While the BKT button is pressed, you can view both settings in the Control panel and Shooting Info display. When you release the button, you see the same BKT symbol and progress indicator that appears when you bracket exposure settings. (Again, check out Chapter 5 for details.)

After establishing the bracketing parameters, just shoot your bracketed frames. Bracketing remains in force until you disable it (by setting the frame number to 0F).

Choosing a Color Space: sRGB vs. Adobe RGB

By default, your camera captures images using the *sRGB color mode*, which simply refers to an industry-standard spectrum of colors. (The *s* is for *standard*, and the RGB is for red-green-blue, which are the primary colors in the digital color world.) The sRGB color mode was created to help ensure color consistency as an image moves from camera (or scanner) to monitor and printer; the idea was to create a spectrum of colors that all of these devices can reproduce.

However, the sRGB color spectrum leaves out some colors that *can* be reproduced in print and onscreen, at least by some devices. So as an alternative, your camera also enables you to shoot in the *Adobe RGB* color mode, which includes a larger spectrum (or *gamut*) of colors. Figure 6-28 offers an illustration of the two spectrums.

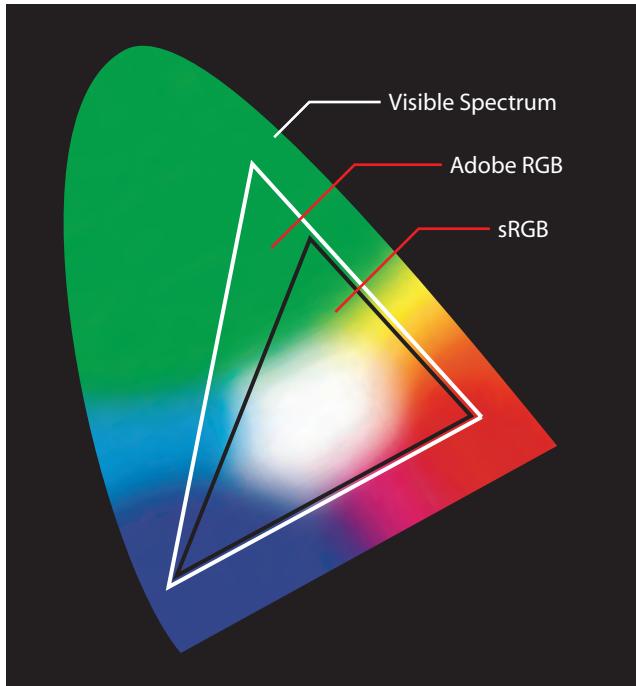


Figure 6-28: Adobe RGB includes some colors not found in the sRGB spectrum.

Some colors in the Adobe RGB spectrum cannot be reproduced in print. (The printer just substitutes the closest printable color, if necessary.) Still, I usually shoot in Adobe RGB mode because I see no reason to limit myself to a smaller spectrum from the get-go.

However, just because I use Adobe RGB doesn't mean that it's right for you. First, if you plan to print and share your photos without making any adjustments in your photo editor, you're usually better off sticking with sRGB, because most printers and Web browsers are designed around that color space. Second, know that in order to retain all your original Adobe RGB colors when you work with your photos, your editing software must support that color space — not all programs do. You also must be willing to study the whole topic of digital color a little bit because you need to use some specific settings to avoid really mucking up the color works.

If you want to go with Adobe RGB instead of sRGB, visit the Shooting menu and highlight the Color Space option, as shown on the left in Figure 6-29. Press OK to display the screen shown on the right in the figure. Select Adobe RGB and press OK again.



Figure 6-29: Choose Adobe RGB for a broader color spectrum.



You can tell whether you captured an image in the Adobe RGB format by looking at its filename: Adobe RGB images start with an underscore, as in _DSC0627.jpg. For pictures captured in the sRGB color space, the underscore appears in the middle of the filename, as in DSC_0627.jpg. See Chapter 4 for more tips on decoding picture filenames.

Taking a Quick Look at Picture Controls

Perched at the top of the Shooting menu, an option called Set Picture Control, shown in Figure 6-30, offers one more way to tweak image sharpening, color, and contrast when you shoot in the P, S, A, and M exposure modes and choose one of the JPEG options or the Image Quality setting, also found on the Shooting Menu.

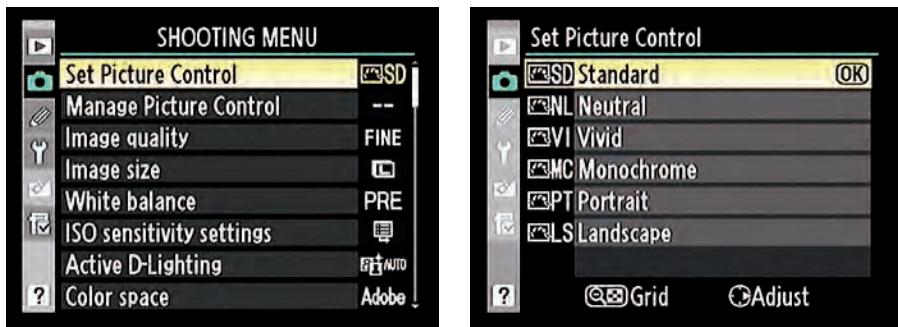


Figure 6-30: Picture Controls apply preset adjustments to color, sharpening, and other photo characteristics to images you shoot in the JPEG file format.



Sharpening, in case you’re new to the digital meaning of the term, refers to a software process that adjusts contrast in a way that creates the illusion of slightly sharper focus. I emphasize, “slightly sharper focus.” Sharpening produces a subtle *tweak*, and it’s not a fix for poor focus.

You can select a Picture Control from the Shooting menu, as shown in Figure 6-30, or through the Shooting Information display. To go the second route, press the Info button twice: once to bring up the display and once to activate the Quick Settings strip at the bottom of the screen. Use the Multi Selector to scroll over to the Picture Control option, as shown in Figure 6-31. Press OK to get to the same menu options you see on the right in Figure 6-30.

Either way, you can choose from six Picture Controls, which produce the following results:

- ✓ **Standard:** The default setting for the P, S, A, and M exposure modes, this option captures the image normally — that is, using the characteristics that Nikon offers up as suitable for the majority of subjects. You also are assigned this mode if you shoot in the Auto, No Flash, Sports, and Close Up exposure modes.
- ✓ **Neutral:** At this setting, the camera doesn’t enhance color, contrast, and sharpening as much as in the other modes. The setting is designed for people who want to precisely manipulate these picture characteristics in a photo editor. By not overworking colors, sharpening, and so on when producing your original file, the camera delivers an original that gives you more latitude in the digital darkroom.
- ✓ **Vivid:** In this mode, the camera amps up color saturation, contrast, and sharpening.
- ✓ **Monochrome:** This setting produces black-and-white photos. Only in the digital world, they’re called *grayscale images* because a true black-and-white image contains only black and white, with no shades of gray.



I’m not keen on creating grayscale images this way. I prefer to shoot in full color and then do my own grayscale conversion in my photo editor. That technique just gives you more control over the look of your black-and-white photos. Assuming that you work with a decent photo editor, you can control what original tones are emphasized in your grayscale version,

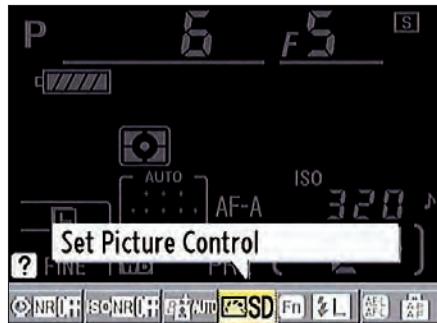


Figure 6-31: You can access the Picture Control options through the Quick Settings display, too.

for example. Additionally, keep in mind that you can always convert a color image to grayscale, but you can't go the other direction. You can create a black-and-white copy of your color image right in the camera, in fact; Chapter 10 shows you how.

- ✓ **Portrait:** This mode tweaks colors and sharpening in a way that is designed to produce nice skin texture and pleasing skin tones. (If you shoot in the Portrait or Night Portrait automatic exposure modes, the camera selects this Picture Control for you.)
- ✓ **Landscape:** This mode emphasizes blues and greens. As you might expect, it's the mode used by the Landscape Digital Vari-Program mode.

The extent to which Picture Controls affect your image depends on the subject as well as the exposure settings you choose and the lighting conditions. But Figure 6-32 gives you a general idea of what to expect. As you can see, the differences between the various Picture Controls are pretty subtle, with the exception of the Monochrome option, of course.

Personally, I think that the Standard Picture Control is just ducky, and I rarely use the others. And frankly, I suggest that you do the same. First off, you've got way more important camera settings to worry about — aperture, shutter speed, autofocus, and all the rest. Why add one more setting to your list, especially when the impact of changing it is minimal?

Second, if you really want to mess with the characteristics that the Picture Control options affect, you're much better off shooting in the Raw (NEF) format and then making those adjustments on a picture-by-picture basis in your Raw converter. In Nikon ViewNX, you can even assign any of the existing Picture Controls to your Raw files and then compare how each one affects the image. The camera does tag your Raw file with whatever Picture Control is active at the time you take the shot, but the image adjustments are in no way set in stone, or even in sand — you can tweak your photo at will. (The selected Picture Control does affect the JPEG preview that's used to display the Raw image thumbnails in ViewNX and other browsers.)

For these reasons, I'm opting in this book to present you with just this brief introduction to Picture Controls so that I can go into more detail about functions that I see as more useful (such as the white balance customization options presented earlier). But if you're intrigued, know that you also can create your very own, customized Picture Controls. The camera manual walks you step by step through the process.

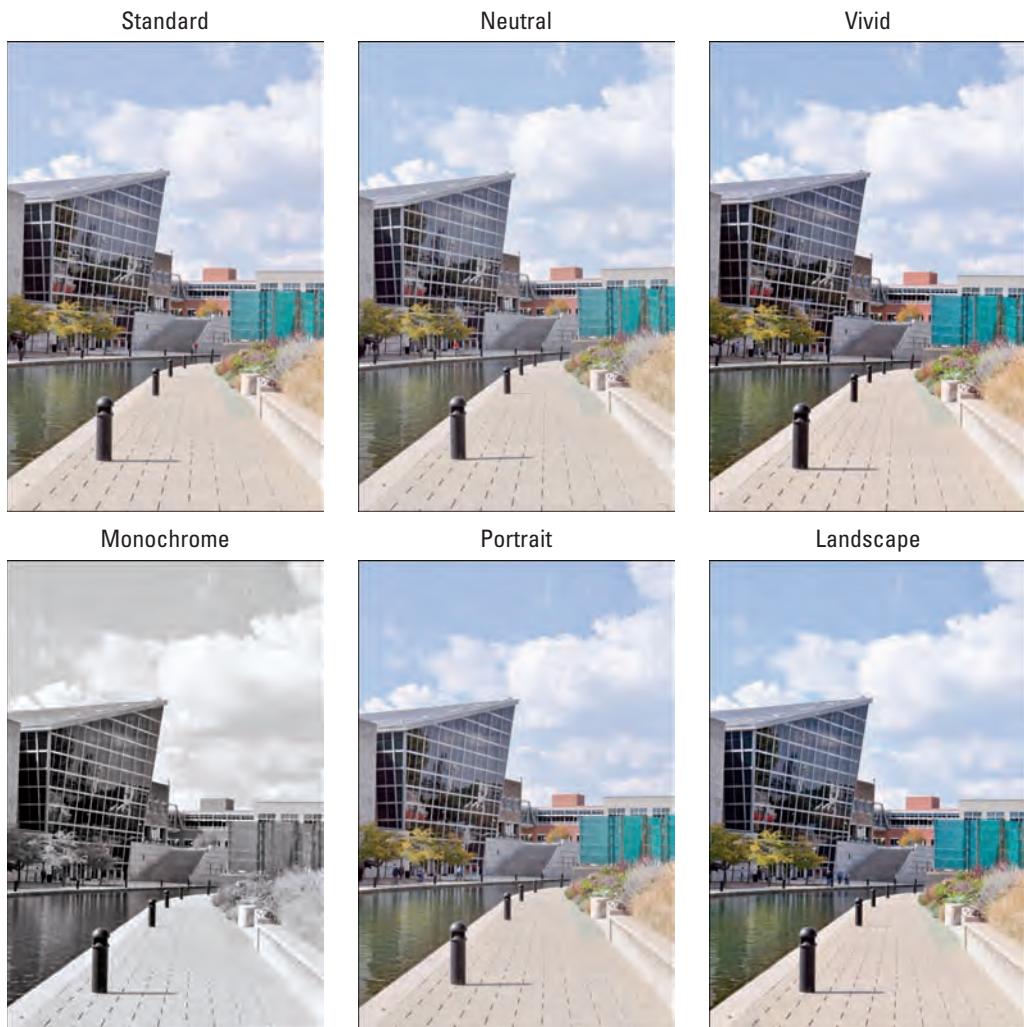


Figure 6-32: Each Picture Control produces a slightly different take on the scene.

Putting It All Together

In This Chapter

- ▶ Reviewing the best all-around picture-taking settings
- ▶ Adjusting the camera for portrait photography
- ▶ Discovering the keys to super action shots
- ▶ Dialing in the right settings to capture landscapes and other scenic vistas
- ▶ Capturing close-up views of your subject
- ▶ Shooting through glass, capturing fireworks, and conquering other special challenges

Earlier chapters of this book break down each and every picture-taking feature on your D90, describing in detail how the various controls affect exposure, picture quality, focus, color, and the like. This chapter pulls all that information together to help you set up your camera for specific types of photography.

The first section offers a quick summary of critical picture-taking settings that should serve you well no matter what your subject. Following that, I offer my advice on which settings to use for portraits, action shots, landscapes, and close-ups. To wrap things up, the end of the chapter includes some miscellaneous tips for dealing with special shooting situations and subjects.

Keep in mind that although I present specific recommendations here, there are no hard and fast rules as to the “right way” to shoot a portrait, a landscape, or whatever. So don’t be afraid to wander off on your own, tweaking this exposure setting or adjusting that focus control, to discover your own creative vision. Experimentation is part of the fun of photography, after all — and thanks to your camera monitor and the Delete button, it’s an easy, completely free proposition.



Recapping Basic Picture Settings

Your subject, creative goals, and lighting conditions determine which settings you should use for some picture-taking options, such as aperture and shutter speed. I offer my take on those options throughout this chapter. But for many basic options, I recommend the same settings for almost every shooting scenario. Table 7-1 shows you those recommendations and also lists the chapter where you can find details about each setting.

Table 7-1**All-Purpose Picture-Taking Settings**

<i>Option</i>	<i>Recommended Setting</i>	<i>Chapter</i>
Image Quality	JPEG Fine or NEF (Raw)	3
Image Size	Large or medium	3
White Balance*	Auto	6
ISO Sensitivity	200	5
Autofocus Mode	AF-A (Auto-servo)	6
AF-Area Mode	Action photos: Dynamic area; all others, Single Point	6
Release Mode	Action photos: Continuous; all others: Single	2
Metering*	Matrix	5
Active D-Lighting*	Auto	5

*Adjustable only in P, S, A, and M exposure modes.

Setting Up for Specific Scenes

For the most part, the settings detailed in the preceding section fall into the “set ‘em and forget ‘em” category. That leaves you free to concentrate on a handful of other camera options, such as aperture and shutter speed, that you can manipulate to achieve a specific photographic goal.

The next four sections explain which of these additional options typically produce the best results when you’re shooting portraits, action shots, landscapes, and close-ups. I offer a few compositional and creative tips along the way — but again, remember that beauty is in the eye of the beholder, and for every so-called rule, there are plenty of great images that prove the exception.

Shooting still portraits

By *still portrait*, I mean that your subject isn’t moving. For subjects who aren’t keen on sitting still long enough to have their picture taken — children, pets,

and even some teenagers I know — skip ahead to the next section and use the techniques given for action photography instead.

Assuming that you do have a subject willing to pose, the classic portraiture approach is to keep the subject sharply focused while throwing the background into soft focus. This artistic choice emphasizes the subject and helps diminish the impact of any distracting background objects in cases where you can't control the setting. The following steps show you how to achieve this look:

- 1. Set the Mode dial to A (aperture-priority autoexposure) and select the lowest f-stop value possible.**

As Chapter 5 explains, a low f-stop setting opens the aperture, which not only allows more light to enter the camera but also shortens depth of field, or the range of sharp focus. So dialing in a low f-stop value is the first step in softening your portrait background. (The f-stop range available to you depends on your lens.) Also keep in mind that the farther your subject is from the background, the more blurring you can achieve.



I recommend aperture-priority mode when depth of field is a primary concern because you can control the f-stop while relying on the camera to select the shutter speed that will properly expose the image. Just rotate the subcommand dial to select your desired f-stop. (You do need to pay attention to shutter speed also, however, to make sure that it's not so slow that any movement of the subject or camera will blur the image.)

If you aren't comfortable with this advanced exposure mode, Portrait mode also results in a more open aperture, although the exact f-stop setting is out of your control. Chapter 2 details this mode.

Whichever mode you choose, you can monitor the current f-stop and shutter speed in the Control panel, viewfinder, and Shooting Information display, as shown in Figure 7-1.

- 2. To further soften the background, zoom in, get closer, or both.**

As covered in Chapter 6, zooming in to a longer focal length also reduces depth of field, as does moving physically closer to your subject.

Avoid using a lens with a short focal length (a wide-angle lens) for portraits. They can cause features to appear distorted — sort of like how people look when you view them through a security peephole in a door.

- 3. For indoor portraits, shoot flash-free if possible.**

Shooting by available light rather than flash produces softer illumination and avoids the problem of red-eye. To get enough light to go flash-free, turn on room lights or, during daylight, pose your subject next to a sunny window, as I did for the image in Figure 7-2.

In the A exposure mode, simply keeping the built-in flash unit closed disables the flash. In Portrait mode, the camera automatically pops up the



flash unit in dim lighting. To disable the flash, hold the Flash button down as you rotate the main command dial to select the Off setting.

If flash is unavoidable, see my list of flash tips at the end of the steps to get better results.

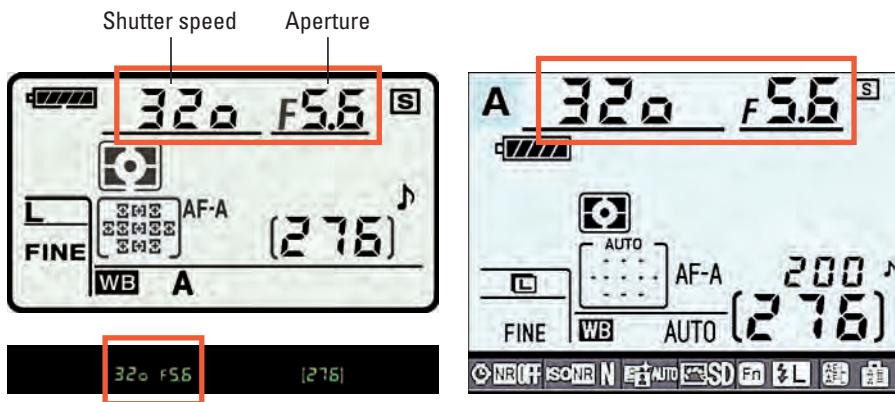


Figure 7-1: You can monitor aperture and shutter speed settings in three places.

4. For outdoor portraits, use a flash if possible.

Even in daylight, a flash adds a beneficial pop of light to subjects' faces, as illustrated in Figure 7-3.

In the A exposure mode, you can just press the Flash button on the side of the camera to enable the flash. For daytime portraits, use the fill flash setting. (That's the regular, basic flash mode.) For nighttime images, try red-eye reduction or slow-sync mode; again, see the flash tips at the end of these steps to use either mode most effectively.

Unfortunately, Portrait mode uses Auto flash, and if the ambient light is very bright, the flash may not fire. Switch to an advanced exposure mode (P, S, A, or M) to regain flash control. But do note that whatever exposure mode you use, the top



Figure 7-2: For more pleasing indoor portraits, shoot by available light instead of using flash.

shutter speed available when you use the built-in flash is 1/200 second, so in extremely bright light, you may need to stop down the aperture to avoid overexposing the photo. Doing so, of course, brings the background into sharper focus. So try to move the subject into a shaded area instead.



Figure 7-3: To properly illuminate the face in outdoor portraits, use fill flash.

5. Press and hold the shutter button halfway to initiate exposure metering and autofocusing.

Make sure that an active autofocus point falls over your subject. Chapter 6 explains more about autofocus, but if you have trouble, simply set your lens to manual focus mode and then twist the focusing ring to set focus. See Chapter 1 for help with manual focusing.

6. Press the shutter button the rest of the way to capture the image.

Again, these steps just give you a starting point for taking better portraits. A few other tips can also improve your people pics:

- ✓ **Pay attention to the background.** Scan the entire frame looking for intrusive objects that may distract the eye from the subject. If necessary, reposition the subject against a more flattering backdrop. Inside, a softly textured wall works well; outdoors, trees and shrubs can provide nice backdrops as long as they aren't so ornate or colorful that they diminish the subject (for example, a magnolia tree laden with blooms).

☛ **Pay attention to white balance if your subject is lit by both flash and ambient light.** If you set the white balance setting to Auto, as I recommend in Table 7-1, enabling flash tells the camera to warm colors to compensate for the cool light of a flash. If your subject is also lit by room lights or sunlight, the result may be colors that are slightly warmer than neutral. This warming effect typically looks nice in portraits, giving the skin a subtle glow. But if you aren't happy with the result or want even more warming, see Chapter 6 to find out how to fine-tune white balance. Again, you can make this adjustment only in P, S, A, or M exposure modes.

☛ **When flash is unavoidable, try these tricks to produce better results.** The following techniques can help solve flash-related issues:

- *Indoors, turn on as many room lights as possible.* With more ambient light, you reduce the flash power that's needed to expose the picture. This step also causes the pupils to constrict, further reducing the chances of red-eye. (Pay heed to my white balance warning, however.) As an added benefit, the smaller pupil allows more of the subject's iris to be visible in the portrait, so you see more eye color.
- *Try setting the flash to red-eye reduction or slow-sync mode.* If you choose the first option, warn your subject to expect both a preliminary pop of light from the AF-assist lamp, which constricts pupils, and the actual flash. And remember that Slow-Sync flash uses a slower-than-normal shutter speed, which produces softer lighting and brighter backgrounds than normal flash. (Chapter 5 has an example.) This mode is available in P and A exposure modes and is also the default setting in Night Portrait mode.

Remember that the slow shutter speed of slow-sync mode means that you should use a tripod and ask your subject to stay very still to avoid blurring.

- *For professional results, use an external flash with a rotating flash head.* Then aim the flash head upward so that the flash light bounces off the ceiling and falls softly down onto the subject. An external flash isn't cheap, but the results make the purchase worthwhile if you shoot lots of portraits. Compare the two portraits in Figure 7-4 for an illustration. In the first example, the built-in flash resulted in strong shadowing behind the subject and harsh, concentrated light. To produce the better result on the right, I used the Nikon Speedlight SB-600 and bounced the light off the ceiling.
- *To reduce shadowing from the flash, move your subject farther from the background.* I took this extra step for the right image in Figure 7-4. The increased distance not only reduced shadowing but also softened the focus of the wall a bit (because of the short depth of field resulting from my f-stop and focal length).





A good general rule is to position your subjects far enough from the background that they can't touch it. If that isn't possible, though, try going the other direction: If the person's head is smack up against the background, any shadow will be smaller and less noticeable. For example, you get less shadowing when a subject's head is resting against a sofa cushion than if that person is sitting upright, with the head a foot or so away from the cushion.

- ✓ **Frame the subject loosely to allow for later cropping to a variety of frame sizes.** Your D90 produces images that have an aspect ratio of 3:2. That means that your portrait perfectly fits a 4-x-6-inch print size but will require cropping to print at any other proportions, such as 5 x 7 or 8 x 10. Chapter 9 talks more about this issue.



Figure 7-4: To eliminate harsh lighting and strong shadows (left), I used bounce flash and moved the subject farther from the background (right).

Capturing action

A fast shutter speed is the key to capturing a blur-free shot of any moving subject, whether it's your tennis-playing teen, a spinning Ferris wheel, or, as in the case of Figure 7-5, a butterfly dancing from flower to flower. In the left image, a shutter speed of 1/125 second was too slow, resulting in some slight blurring of the butterfly. For the right image, I bumped the shutter speed up to 1/320 second, which "froze" the butterfly.



Figure 7-5: Raising the shutter speed produced the blur-free image on the right.

Along with the basic capture settings outlined in Table 7-1, try the techniques in the following steps to photograph a subject in motion:

1. Set the Mode dial to S (shutter-priority autoexposure).

In this mode, you control the shutter speed, and the camera takes care of choosing an aperture setting that will produce a good exposure.

If you aren't ready to step up to this advanced exposure mode, explained in Chapter 5, try using Sports mode, detailed in Chapter 2. But be aware that you have no control over many other aspects of your picture (such as white balance, flash, and so on) in that mode.

2. Rotate the main command dial to select the shutter speed.

(Refer to Figure 7-1 to locate shutter speed in the Control panel, view-finder, and Shooting Information display.) After you select the shutter speed, the camera selects an aperture (f-stop) to match.

What shutter speed do you need exactly? Well, it depends on the speed at which your subject is moving, so some experimentation is needed. But generally speaking, 1/500 second should be plenty for all but the fastest subjects (race cars, boats, and so on). For very slow subjects, you can even go as low as 1/250 or 1/125 second.

3. Raise the ISO setting or add flash to produce a brighter exposure, if needed.

In dim lighting, you may not be able to get a good exposure without taking this step; the camera simply may not be able to open the aperture wide enough to accommodate a fast shutter speed. Raising the ISO does increase the possibility of noise, but a noisy shot is better than a blurry shot.



Adding flash is a bit tricky for action shots, unfortunately. First, the flash needs time to recycle between shots, so try to go without if you want to capture images at a fast pace. Second, the built-in flash has limited range — so don't waste your time if your subject isn't close by. And third, remember that the fastest shutter speed you can use with the built-in flash is 1/200 second, which may not be high enough to capture a quickly moving subject without blur. If you want additional shutter-speed flexibility, you need to use an external flash head that supports the Nikon Creative Lighting System options. (See Chapter 5 for details.)

If you do decide to use flash, you must bail out of Sports mode; it doesn't permit you to use flash.

4. For rapid-fire shooting, set the Release mode to one of the Continuous settings.

In both modes — Continuous High and Continuous Low — you can capture multiple images with a single press of the shutter button. As long as you hold down the button, the camera continues to record images. The exact number of frames per second depends on settings you can read about at the end of Chapter 2.

5. For fastest shooting, switch to manual focusing.

Manual focusing eliminates the time the camera needs to lock focus in autofocus mode. Chapter 1 shows you how to focus manually, if you need help.

If you do use autofocus, try these two autofocus settings for best performance:

- Set the AF-area mode to Dynamic Area.
- Set the Autofocus mode to AF-C (continuous-servo autofocus).

Chapter 6 details these autofocus options.

6. Turn off Image Review and Active D-Lighting to speed up the camera even more.

You turn off Image Review via the Playback menu. Turning the option off can help speed up the time your camera needs to recover between shots. Active D-Lighting, introduced in Chapter 5, also increases the time the camera needs to record the image; you can turn off this feature via the Shooting menu or through the Quick Settings display. (To get to the Quick Settings display, press the Info button twice.)

7. Compose the subject to allow for movement across the frame.

In my example images, for instance, I zoomed out to a wide view so that my subject wouldn't fly out of the frame.



Using these techniques should give you a better chance of capturing any fast-moving subject. But action-shooting strategies also are helpful for shooting candid portraits of kids and pets. Even if they aren't currently running, leaping,

or otherwise cavorting, snapping a shot before they do move or change positions is often tough. So if an interaction or scene catches your eye, set your camera into action mode and then just fire off a series of shots as fast as you can.

For example, one recent afternoon, I spotted my furball and his equally fluffy new neighbor introducing themselves to each other through the fence that separates their yards. I ran and grabbed my camera, flipped it into shutter-priority mode, and just started shooting. Most of the images were throwaways; you can see some of them in Figure 7-6. But somewhere around the tenth frame, I captured the moment you see in Figure 7-7, which puts a whole new twist on the phrase “gossiping over the backyard fence.” Two seconds later, the dogs got bored with each other and scampered away into their respective yards, but thanks to a fast shutter, I got the shot that I wanted.

Capturing scenic vistas

Providing specific capture settings for landscape photography is tricky because there's no single best approach to capturing a beautiful stretch of countryside, a city skyline, or other vast subject. Take depth of field, for example: One person's idea of a super cityscape might be to keep all buildings in the scene sharply focused. But another photographer might prefer to shoot the same scene so that a foreground building is sharply focused while the others are less so, thus drawing the eye to that first building.



Figure 7-6: I used speed-shooting techniques to capture this interaction between a pair of pups.



Figure 7-7: Although most of the shots were deletable, this one was a keeper.

That said, I can offer a few tips to help you photograph a landscape the way you see it:

✓ **Shoot in aperture-priority autoexposure mode (A) so that you can control depth of field.** If you want extreme depth of field, so that both near and distant objects are sharply focused, as in Figure 7-8, select a high f-stop value. For short depth of field, use a low value.

You can also use Landscape mode to achieve the first objective. In this mode, the camera automatically selects a high f-stop number, but you have no control over the exact value (or certain other picture-taking settings). And in dim lighting, the camera may be forced to select a low f-stop setting.

✓ **If the exposure requires a slow shutter, use a tripod to avoid blurring.** The downside to a high f-stop

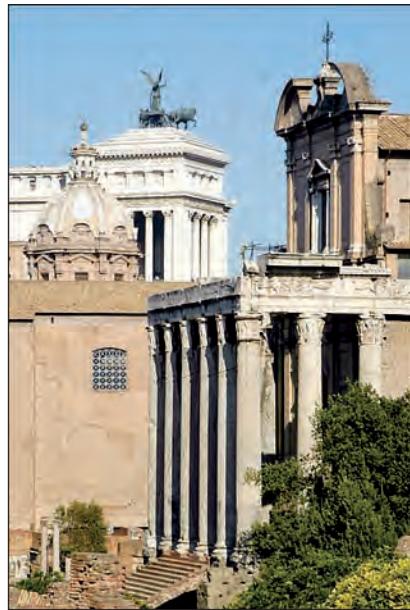


Figure 7-8: Use a high f-stop value (or Landscape mode) to keep foreground and background sharply focused.

is that you need a slower shutter speed to produce a good exposure. If the shutter speed drops below what you can comfortably hand-hold — for me, that's about 1/50 second — use a tripod to avoid picture-blurring camera shake.

No tripod handy? Look for any solid surface on which you can steady the camera. Of course, you can always increase the ISO Sensitivity setting to allow a faster shutter, too, but that option brings with it the chances of increased image noise. See Chapter 5 for details.

- ✓ **For dramatic waterfall shots, consider using a slow shutter to create that “misty” look.** The slow shutter blurs the water, giving it a soft, romantic appearance. Figure 7-9 shows you a close-up of this effect. Again, use a tripod to ensure that the rest of the scene doesn’t also blur due to camera shake.



In very bright light, you may overexpose the image at a very slow shutter, even if you stop the aperture all the way down and select the camera’s lowest ISO setting. As a solution, consider investing in a *neutral density filter* for your lens. This type of filter works something like sunglasses for your camera: It simply reduces the amount of light that passes through the lens so that you can use a slower shutter than would otherwise be possible.

- ✓ **At sunrise or sunset, base exposure on the sky.** The foreground will be dark, but you can usually brighten it in a photo editor if needed. If you base exposure on the foreground, on the other hand, the sky will become so bright that all the color will be washed out — a problem you usually can’t fix after the fact.

Also experiment with different levels of Active D-Lighting adjustment. Chapter 5 explains this feature, which brightens dark areas but doesn’t alter highlights, leaving your sky colors intact. You can adjust the setting only in the P, S, A, and M exposure modes, however.

- ✓ **For cool nighttime city pics, experiment with slow shutter.** Assuming that cars or other vehicles are moving through the scene, the result is neon trails of light like those you see in the foreground of the image in



Figure 7-9: For misty waterfalls, use a slow shutter speed (and tripod).



Figure 7-10, taken by my friend Jonathan Conrad. Shutter speed for this image was 5 seconds.

Instead of changing the shutter speed manually between each shot, try *bulb* mode. Available only in M (manual) exposure mode, this option records an image for as long as you hold down the shutter button. So just take a series of images, holding the button down for different lengths of time for each shot. In bulb mode, you also can exceed the standard maximum shutter speed of 30 seconds.

✓ **For the best lighting, shoot during the “magic hours.”** That’s the term photographers use for early morning and late afternoon, when the light cast by the sun is soft and warm, giving everything that beautiful, gently warmed look.

Can’t wait for the perfect light? Tweak your camera’s white balance setting, using the instructions laid out in Chapter 6, to simulate magic-hour light.

✓ **In tricky light, bracket exposures.** Bracketing simply means to take the same picture at several different exposures to increase the odds that at least one of them will capture the scene the way you envision. Bracketing is especially a good idea in difficult lighting situations such as sunrise and sunset.

In P, S, A, and M modes, you can take advantage of automatic bracketing. See the end of Chapter 5 for details.

Unfortunately, you really can’t bracket exposures in the fully automatic exposure modes because you have no way to adjust exposure in those modes.



Jonathan Conrad

Figure 7-10: A slow shutter also creates neon light trails in city-street scenes.

Capturing dynamic close-ups

For great close-up shots, try these techniques:

✓ **Check your owner’s manual to find out the minimum close-focusing distance of your lens.** How “up close and personal” you can get to your subject depends on your lens, not the camera body itself.

Take control over depth of field by setting the camera mode to A (aperture-priority autoexposure) mode. Whether you want a shallow, medium, or extreme depth of field depends on the point of your photo. In classic nature photography, for example, the artistic tradition is a very shallow depth of field, as shown in Figure 7-11, and requires an open aperture (low f-stop value). For this image, the f-stop was f/5.6. But if you want the viewer to be able to clearly see all details throughout the frame — for example, if you're shooting a product shot for your company's sales catalog — you need to go the other direction, stopping down the aperture as far as possible.

Not ready for the advanced exposure modes yet? Try Close Up mode instead. (It's the one marked with the little flower on your Mode dial.) In this mode, the camera automatically opens the aperture to achieve a short depth of field and bases focus on the center of the frame. As with all the other automatic exposure modes, though, the range of apertures available to the camera depends on the lighting conditions.

- ✓ Remember that zooming in and getting close to your subject both decrease depth of field. So back to that product shot: If you need depth of field beyond what you can achieve with the aperture setting, you may need to back away, zoom out, or both. (You can always crop your image to show just the parts of the subject that you want to feature.)
- ✓ When shooting flowers and other nature scenes outdoors, pay attention to shutter speed, too. Even a slight breeze may cause your subject to move, causing blurring at slow shutter speeds.
- ✓ Use flash for better outdoor lighting. Just as with portraits, a tiny bit of flash typically improves close-ups when the sun is your primary light source. Again, though, keep in mind that the maximum shutter speed possible when you use the built-in flash is 1/200 second. So in very bright light, you may need to use a high f-stop setting to avoid overexposing the picture. If you shoot in an advanced exposure mode (P, S, A, or M), you can also adjust the flash output via the Flash Compensation control. Chapter 5 offers details.



Figure 7-11: Shallow depth of field is a classic technique for close-up floral images.

- ✓ **When shooting indoors, try not to use flash as your primary light source.** Because you'll be shooting at close range, the light from your flash may be too harsh even at a low Flash Compensation setting. If flash is inevitable, turn on as many room lights as possible to reduce the flash power that's needed — even a hardware-store shop light can do in a pinch as a lighting source. (Remember that if you have multiple light sources, though, you may need to tweak the white balance setting.)
- ✓ **To really get close to your subject, invest in a macro lens or a set of diopters.** A true macro lens, which enables you to get really, really close to your subjects, is an expensive proposition; expect to pay around \$200 or more. But if you enjoy capturing the tiny details in life, it's worth the investment.

For a less expensive way to go, you can spend about \$40 for a set of *diopters*, which are sort of like reading glasses that you screw onto your existing lens. Diopters come in several strengths — +1, +2, +4, and so on — with a higher number indicating a greater magnifying power. I took this approach to capture the extreme close-up in Figure 7-12, attaching a +2 diopter to my lens. The downfall of diopters, sadly, is that they typically produce images that are very soft around the edges, as in Figure 7-13 — a problem that doesn't occur with a good macro lens.



Figure 7-12: To extend your lens' close-focus ability, you can add magnifying diopters.

Coping with Special Situations

A few subjects and shooting situations pose some additional challenges not already covered in earlier sections. So to wrap up this chapter, here's a quick list of ideas for tackling a variety of common “tough-shot” photos:

- ✓ **Shooting through glass:** To capture subjects that are behind glass, try putting your lens right flat against the glass. Then switch to manual focusing; the glass barrier can give the autofocus mechanism fits. Disable your flash to avoid creating any unwanted reflections, too. I used this

technique at the zoo to capture the snake image you see in Figure 7-13.

- ✓ **Shooting out a car window:** Set the camera to shutter-priority autoexposure or manual mode and dial in a fast shutter speed to compensate for the movement of the car. Oh, and keep a tight grip on your camera.
- ✓ **Shooting fireworks:** First off, use a tripod; fireworks require a long exposure, and trying to handhold your camera simply isn't going to work. If using a zoom lens, zoom out to the shortest focal length. Switch to manual focusing and set focus at infinity (the farthest focus point possible on your lens). Set the exposure mode to manual, choose a relatively high f-stop setting — say, f/16 or so — and start a shutter speed of 1 to 3 seconds. From there, it's simply a matter of experimenting with different shutter speeds.



Be especially gentle when you press the shutter button — with a very slow shutter, you can easily create enough camera movement to blur the image. If you purchased the accessory remote control for your camera, this is a good situation in which to use it.

You also may want to enable your camera's Long Exposure Noise Reduction feature because a long exposure also increases the chances of noise defects. See Chapter 5 for details. (Keep the ISO Sensitivity setting low to further dampen noise.)

- ✓ **Shooting reflective surfaces:** In outdoor shots taken in bright sun, you can reduce glare from reflective surfaces such as glass and metal by using a *circular polarizing filter*, which you can buy for about \$40. A polarizing filter can also help out when you're shooting through glass.

But know that in order for the filter to work, the sun, your subject, and your camera lens must be precisely positioned. Your lens must be at a 90-degree angle from the sun, for example, and the light source must also be reflecting off the surface at a certain angle and direction. In addition, a polarizing filter also intensifies blue skies in some scenarios, which may or may not be to your liking. In other words, a polarizing filter isn't a surefire cure-all.



Figure 7-13: He's watching you . . .

A more reliable option for shooting small reflective objects is to invest in a light cube or light tent such as the ones shown in Figure 7-14, from Cloud Dome (www.clouddome.com) and Lastolite (www.lastolite.com), respectively. You place the reflective object inside the tent or cube and then position your lights around the outside. The cube or tent acts as a light diffuser, reducing reflections. Prices range from about \$50 to \$200, depending on size and features.



Cloud Dome, Inc.



Lastolite Limited

Figure 7-14: Investing in a light cube or tent makes photographing reflective objects much easier.

Part III

Working with Picture Files

The 5th Wave By Rich Tennant

© RICATTENNANT

"Try putting a person in the photo with the product you're trying to sell. We generated a lot of interest in our eBay listing once Leo started modeling my hats and scarves."



In this part . . .

Iou've got a memory card full of pictures. Now what? Now you turn to the first chapter in this part, which explains how to get those pictures out of your camera and onto your computer and, just as important, how to safeguard them from future digital destruction. After downloading your files, head for Chapter 9, which offers step-by-step guidance on printing your pictures, sharing them online, and even viewing them on your television.



Downloading, Organizing, and Archiving Your Picture Files

In This Chapter

- ▶ Transferring pictures to your computer
- ▶ Using Nikon Transfer and ViewNX to download and organize photos
- ▶ Processing NEF (Raw) files
- ▶ Keeping your picture files safe from harm

For many novice digital photographers (and even some experienced ones), the task of moving pictures to the computer and then keeping track of all of those image files is one of the more confusing aspects of the art form. And frankly, writing about the download and organizing process isn't all that easy, either. (I know, poor me!) The problem is that providing you with detailed instructions is pretty much impossible because the steps you need to take vary widely depending on what software you have installed on your computer and whether you use the Windows or Macintosh operating system.

To give you as much help as I can, however, this chapter shows you how to transfer and organize pictures using the free Nikon software that came in your camera box. After exploring these discussions, you should be able to adapt the steps to any other photo program you may prefer. This chapter also covers a few other aspects of handling your picture files, including converting pictures taken in the NEF (Raw) format to a standard image format.





One note before you dig in: Most figures in this chapter and elsewhere feature the Windows Vista operating system. If you use some other version of Windows or own a Mac, what you see on your screen may look slightly different but should contain the same basic options unless I specify otherwise.

Sending Pictures to the Computer

You can take two approaches to moving pictures from your camera memory card to your computer:

- ✓ **Connect the camera directly to the computer.** For this option, you need to dig out the USB cable that came in your camera box. Your computer must also have a free USB slot, or *port*, in techie talk. If you're not sure what these gadgets look like, Figure 8-1 gives you a look. The little three-pronged icon, labeled in Figure 8-1, is the universal symbol for USB.
- ✓ **Transfer images using a memory card reader.** Many computers now also have slots that accept common types of memory cards. If so, you can simply pop the card out of your camera and into the card slot instead of hooking the camera up to the computer.

As another option, you can buy stand-alone card readers such as the SanDisk model shown in Figure 8-2. This particular model accepts a variety of memory cards, including the SD card used by your D90. Check your printer, too; many printers now have card slots that serve the purpose of a card reader.



Figure 8-1: You can connect the camera to the computer using the supplied USB cable.



Figure 8-2: A card reader offers a more convenient method of image transfer.



I prefer to use a card reader because when you transfer via the camera, the camera must be turned on during the process, wasting battery power. If you want to transfer directly from the camera, however, the next section explains some important steps you need to take to make that option work. For help using a card reader, skip ahead to “Starting the transfer process” to get an overview of what happens after you insert the card into the reader.



Connecting the camera and computer

You need to follow a specific set of steps when connecting the camera to your computer. Otherwise, you can damage the camera or the memory card.

Also note that in order for your camera to communicate with the computer, Nikon suggests that your computer be running one of the following operating systems:

- Windows Vista 32-bit Home Basic, Home Premium, Business, Enterprise, or Ultimate edition
- Windows XP with Service Pack 3, Home or Professional edition
- Mac OS X 10.3.9, 10.4.11, or 10.5.3

If you use another OS (operating system, for the non-geeks in the crowd), check the support pages on the Nikon Web site (www.nikon.com) for the latest news about any updates to system compatibility. You can always simply transfer images with a card reader, too.

With that preamble out of the way, here are the steps to link your computer and camera:

1. Check the level of the camera battery.

If the battery is low, charge it before continuing. Running out of battery power during the transfer process can cause problems, including lost picture data. Alternatively, if you purchased the optional AC adapter, use that to power the camera during picture transfers.

- 2. Turn on the computer and give it time to finish its normal startup routine.**
- 3. Turn the camera off.**



4. Insert the smaller of the two plugs on the USB cable into the USB port on the side of the camera.

The slot is hidden under a little rubber door on the left side of the camera, as shown in Figure 8-3.

5. Plug the other end of the cable into the computer's USB port.

If possible, plug the cable into a port that's built into the computer, as opposed to one that's on your keyboard or part of an external USB hub. Those accessory-type connections can sometimes foul up the transfer process.

6. Turn the camera on.

What happens now depends on whether you connected the camera to a Windows-based or Mac computer and what photo software you have installed on that system. The next section explains the possibilities and how to proceed with the image transfer process.

7. When the download is complete, turn off the camera and then disconnect it from the computer.

I repeat: Turn off the camera before severing its ties with the computer. Otherwise, you can damage the camera.



Starting the transfer process

After you connect the camera to the computer (be sure to carefully follow the steps in the preceding section) or insert a memory card into your card reader, your next step depends, again, on the software installed on your computer and the computer operating system.



Figure 8-3: The USB slot is hidden under the rubber door on the left side of the camera.

Here are the most common possibilities and how to move forward:

- ☛ **On a Windows-based computer, a Windows message box similar to the one in Figure 8-4 appears.** Again, the figure shows the dialog box as it appears on a computer running Windows Vista. Whatever its design, the dialog box suggests different programs that you can use to download your picture files. Which programs appear depend on what you have installed on your system; if you installed Nikon Transfer, for example, it should appear in the program list, as in the figure. In Windows Vista, just click the transfer program that you want to use. In other versions of Windows, the dialog box may sport an OK button; if so, click that button to proceed.



If you want to use the same program for all of your transfers, select the Always Do This for This Device check box, as shown in the figure. The next time you connect your camera or insert a memory card, Windows will automatically launch your program of choice instead of displaying the message box.

- ☛ **An installed photo program automatically displays a photo-download wizard.** For example, the Nikon Transfer downloader or a downloader associated with Adobe Photoshop Elements, Picasa, or some other photo software may leap to the forefront. On a Mac, the built-in iPhoto software may display its auto downloader. (Apple's Web site, www.apple.com, offers excellent video tutorials on using iPhoto, by the way.)

Usually, the downloader that appears is associated with the software that you most recently installed. Each new program that you add to your system tries to wrestle control over your image downloads away from the previous program.



If you don't want a program's auto downloader to launch whenever you insert a memory card or connect your camera, you should be able to turn that feature off. Check the software manual to find out how to disable the auto launch.



Figure 8-4: Windows may display this initial boxful of transfer options.



Nothing happens. Don't panic; assuming that your card reader or camera is properly connected, all is probably well. Someone simply may have disabled all the automatic downloaders on your system. Just launch your photo software and then transfer your pictures using whatever command starts that process. (I show you how to do it with Nikon Transfer later in the chapter; for other programs, consult the software manual.)

As another option, you can use Windows Explorer or the Mac Finder to drag and drop files from your memory card to your computer's hard drive. Whether you connect the card through a card reader or attach the camera directly, the computer sees the card or camera as just another drive on the system. So the process of transferring files is exactly the same as when you move any other file from a CD, DVD, or other storage device onto your hard drive.

In the next sections, I provide details on using Nikon Transfer to download your files and Nikon ViewNX to view and organize your pictures. Remember, if you use some other software, the concepts are the same, but check your program manual to get the small details. In most programs, you also can find lots of information by simply clicking open the Help menu.



Safeguarding your digital photo files

To make sure that your digital photos enjoy a long, healthy life, follow these storage guidelines:

- ✓ Don't rely on your computer's hard drive for long-term, archival storage. Hard drives occasionally fail, wiping out all files in the process. This warning applies to both internal and external hard drives.
- ✓ Camera memory cards, flash memory keys, and other portable storage devices are similarly risky. All are easily damaged if dropped or otherwise mishandled. And being of diminutive stature, these portable storage options also are easily lost.
- ✓ The best way to store important files is to copy them to nonrewritable CDs. (The label should say CD-R, not CD-RW.) Look for quality, brand-name CDs that have a gold coating, which offer a higher level of security than other coatings.
- ✓ Recordable DVDs offer the advantage of holding lots more data than a CD. However, be aware that the DVDs you create on one computer may not be playable on another because multiple recording formats and disc types exist: DVD minus, DVD plus, dual-layer DVD, and so on. If you do opt for DVD, look for the archival, gold-coated variety, just as for CDs.
- ✓ Online photo-sharing sites such as Shutterfly, Kodak Gallery, and the like aren't designed to be long-term storage tanks for your images. Consider them only a backup to your backup, and read the site terms carefully so that you understand how long the site will hold onto your files if you stop buying prints and other products. Also investigate whether the terms of membership give the site permission to use and distribute your photos without your say-so. In other words, the fine print is important.

Downloading and Organizing Photos with the Nikon Software

Remember unpacking your camera box when you first brought home your D90? Did you notice a CD-ROM called Nikon Software Suite? If you haven't already done so, dig out that CD and pop it into your computer's CD drive. Then install the following two programs:

- ✓ **Nikon Transfer:** This program assists you with the process of transferring pictures from your camera or memory card to the computer.
- ✓ **Nikon ViewNX:** After downloading your files, you can view and organize your picture files using this program. You also can print and e-mail your photos from ViewNX.



Note that this book features Nikon Transfer version 1.2 and Nikon ViewNX version 1.2, which were the most current at the time of publication. If you own an earlier version of these programs, visit the Nikon Web site to install the updates. (To find out what version you have installed, open the program. Then, in Windows, choose Help→About. On a Mac, choose the About command from the Nikon Transfer or Nikon ViewNX menu.)

The next several sections give you the most basic of introductions to using Nikon Transfer and ViewNX. If you want more details, just look in the Help system built into the programs. (Click the Help menu to access the system.)



Before you move on, though, I want to clear up one common point of confusion: You can use the Nikon software to download and organize your photos and still use any photo-editing software you prefer. And to do your editing, you don't need to re-download photos — after you transfer photos to your computer, you can access them from any program, just as you can any file that you put on your system. In fact, you can set things up so that you can select a photo in ViewNX and then open that picture in your chosen photo editor with a click or two. You can find details in the ViewNX Help system (open the program and then choose Help→ViewNX Help); look for the section called "Setting Up ViewNX."

Downloading with Nikon Transfer

The following steps explain how to download new pictures to your computer using Nikon Transfer:

1. **Attach your camera or insert a memory card into your card reader, as outlined in the first part of this chapter.**

Depending on what software you have installed on your system, you may see the initial Nikon Transfer window, as shown in Figure 8-5.

Or, in Windows, you may see a dialog box similar to the one shown in Figure 8-4. In that case, click the item that has the Nikon Transfer logo, as shown in Figure 8-4.

If nothing happens, start Nikon Transfer by using the same process you use to launch any program on your computer. (If some other photo software pops up, close it first.)

2. Display the Source tab to view thumbnails of your pictures, as shown in the figure.

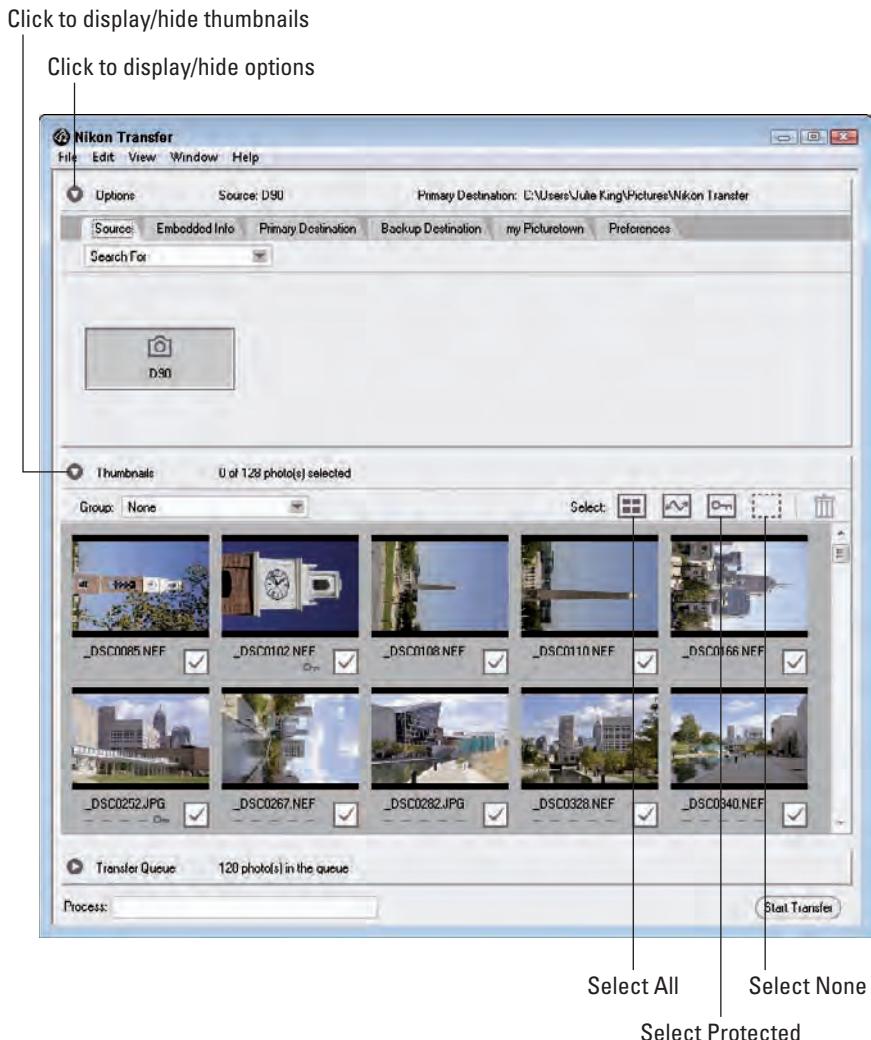


Figure 8-5: Select the check boxes of the images that you want to download.

Don't see any tabs? Click the little Options triangle, located near the top-left corner of the window, to display them. Then click the Source tab. The icon representing your camera or memory card should be selected, as shown in the figure. If not, click the icon. The dialog box then displays thumbnails of your images. (If you don't see the thumbnails, click the arrow labeled in Figure 8-5 to expand the dialog box and open the thumbnails area.)

3. Select the images that you want to download.

A check mark in the little box under a thumbnail tells the program that you want to download the image. Click the box to toggle the check mark on and off.

You also can select images quickly by using these tricks:

- *Select all images.* Click the little icon labeled Select All in Figure 8-5.
- *Select protected images.* If you used the in-camera functions to protect pictures (see Chapter 4), you can select just those images by clicking the Select Protected icon, also labeled in Figure 8-5.
- *Deselect all images.* Click the Select None icon, labeled in Figure 8-5.

4. Click the Primary Destination tab at the top of the window.

When you click the tab, the top of the transfer window offers options that enable you to specify where and how you want the images to be stored on your computer. Figure 8-6 offers a close-up look.

5. Choose the folder where you want to store the images from the Primary Destination Folder drop-down list.

If the folder you want to use isn't in the list, choose Browse from the bottom of the list and then track down the folder and select it.

By default, the program puts images in a folder titled Nikon Transfer, which is housed inside a folder named My Pictures in Windows XP and Pictures in Windows Vista and on a Mac. That My Pictures or Pictures folder is housed inside a folder that your system creates automatically for each registered user of the computer.

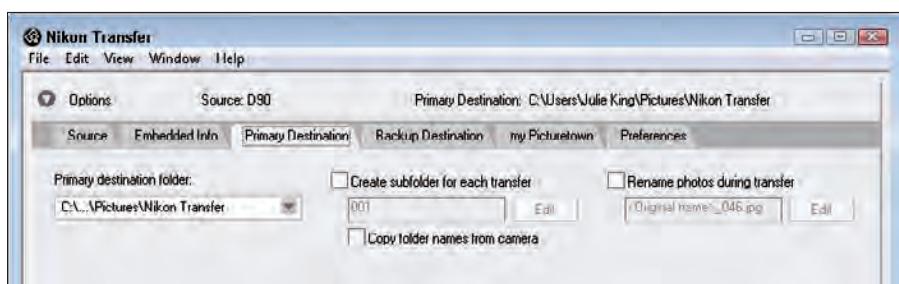


Figure 8-6: Specify the folder where you want to put the downloaded images.

You don't have to stick with this default location — you can put your pictures anywhere you please. But because most photo programs automatically look for pictures in these standard folders, putting your pictures there just simplifies things a little down the road. **Note:** You can always move your pictures into other folders after you download them if needed, too. The upcoming section "Organizing pictures" explains how to do so in Nikon ViewNX.

6. Specify whether you want the pictures to be placed inside a new subfolder.

If you select the Create Subfolder for Each Transfer option, the program creates a new folder inside the storage folder you selected in Step 5. Then it puts all the pictures from the current download session into that new subfolder. You can either use the numerical subfolder name the program suggests or click the Edit button to set up your own naming system. If you created custom folders on the camera memory card, an option you can explore in Chapter 11, select the Copy Folder Names from Camera check box to use those folder names instead.

7. Tell the program whether you want to rename the picture files during the download process.

If you do, select the Rename Photos During Transfer check box. Then click the Edit button to display a dialog box where you can set up your new filenaming scheme. Click OK after you do so to close the dialog box.

8. Click the Preferences tab to set the rest of the transfer options.

Now the tab shown in Figure 8-7 takes over the top of the program window. Here you find a number of options that enable you to control how the program operates. Most of the options are self-explanatory, but a couple warrant a few words of advice:

- *Launch automatically when device is attached.* Deselect this check box if you don't want Nikon Transfer to start every time you connect your camera to your computer or insert a memory card into your card reader.
- *Transfer new photos only.* This option, when selected, ensures that you don't waste time downloading images that you've already transferred but are still on the memory card.
- *Delete original files after transfer.* Turn this option off, as shown in Figure 8-7. Otherwise, your pictures are automatically erased from your memory card when the transfer is complete. You should always check to make sure the pictures really made it to the computer before you delete them from your memory card. (See Chapter 4 to find out how to use the Delete function on your camera.)
- *Open destination folder with other application after transfer.* By default, Nikon Transfer shuts itself down when the file download is complete, and Nikon ViewNX then starts automatically so that



you can view and organize your images. (That's assuming that you installed ViewNX, of course.) If you want to use a program other than ViewNX for that task, open the drop-down list, click Browse, and select the program from the dialog box that appears. Click OK after doing so. And if you don't want Nikon Transfer to close after downloading, uncheck the Quit Nikon Transfer Automatically After Transfer option.

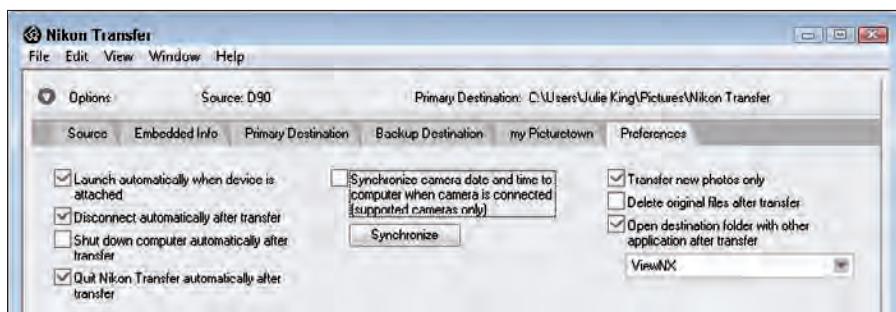


Figure 8-7: Control other aspects of the program's behavior via the Preferences tab.



Your choices remain in force for any subsequent download sessions, so you don't have to revisit this tab unless you want the program to behave differently.

9. When you're ready to start the download, click the Start Transfer button.

It's located in the lower-right corner of the program window. After you click the button, the Process bar in the lower-left corner indicates how the transfer is progressing. Again, what happens when the transfer completely depends on the choices you made in Step 8; by default, Nikon Transfer closes, and ViewNX opens, automatically displaying the folder that contains your just-downloaded images.

Browsing images in Nikon ViewNX

Nikon ViewNX is designed to do exactly what its name suggests: enable you to view and organize the pictures that you shoot with your D90. You also can view other photos — pictures you scanned, received from friends via e-mail, or took with a different camera, for example. The only requirement is that the file format is one that ViewNX can read; for still photos, that means JPEG, TIFF, or NEF, which is the Nikon flavor of Camera Raw. (Chapter 3 explains file formats.) The program also can play the AVI movie files that you create with your D90. For a complete rundown of supported file formats, check the Appendix section of the built-in program Help system.



Figure 8-8 offers a look at the ViewNX window as it appears by default in Windows Vista. The Mac version is nearly identical, although it features the usual Mac look and feel instead of the Microsoft Windows design.

On either type of system, you can customize a variety of aspects of the window layout by using the options on the View and Window menus.

To start viewing your pictures, first display the Folders panel along the left side of the program window, as shown in Figure 8-8. (Just click the tab, labeled in the figure.) Now open the folder that holds the photos you want to view. If you came to ViewNX directly after downloading pictures via Nikon Transfer, the folder that holds the new images should already be selected for you. Thumbnails of those images then appear on the right side of the program window. For a movie, you see a thumbnail representing the first shot in the recording.

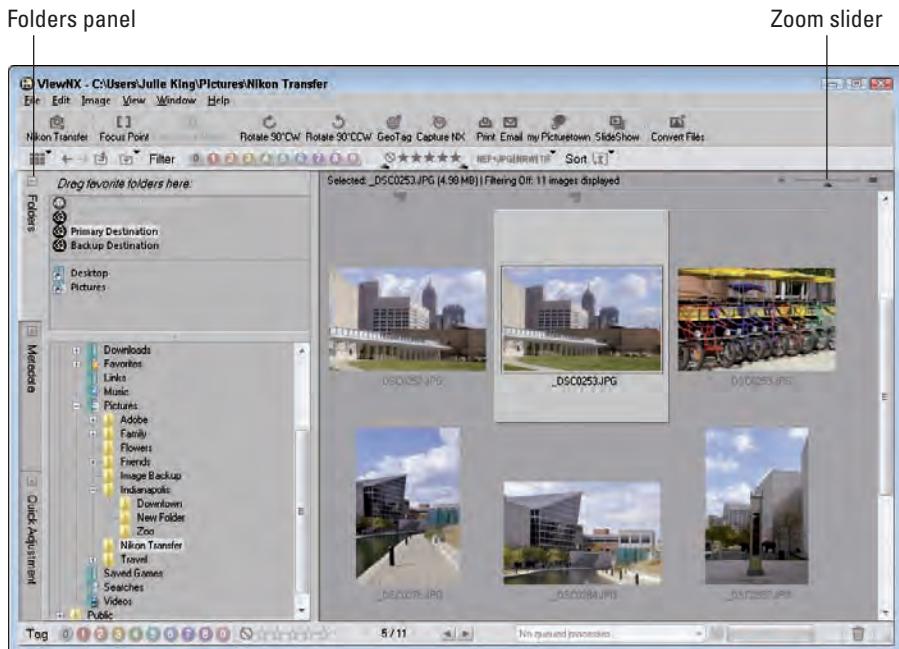


Figure 8-8: You can browse and organize your photos using Nikon ViewNX.



By opening the View menu, you can choose from three different viewing options, which work as follows:

- **Thumbnail Grid:** This is the default layout, shown in Figure 8-8. You can adjust the size of the thumbnails by dragging the Zoom slider, labeled in the figure.

Chapter 8: Downloading, Organizing, and Archiving Your Picture Files

Image Viewer: This option displays your files as shown in Figure 8-9. Small thumbnails appear along the top of the pane; the selected thumbnail appears in the larger preview area underneath. Use these maneuvers to inspect your images:

- To select an image or movie file, just click its thumbnail.
- Magnify or reduce the size of photo thumbnails and the preview by using the Zoom sliders labeled in Figure 8-10. For a movie file, the size of the preview automatically changes to fill the preview area as you adjust the thumbnail size.
- Drag in the large preview to scroll the display as needed to view hidden parts of a photo.
- To scroll through your files, click the little arrows under the large preview, labeled Previous and Next in the figure.

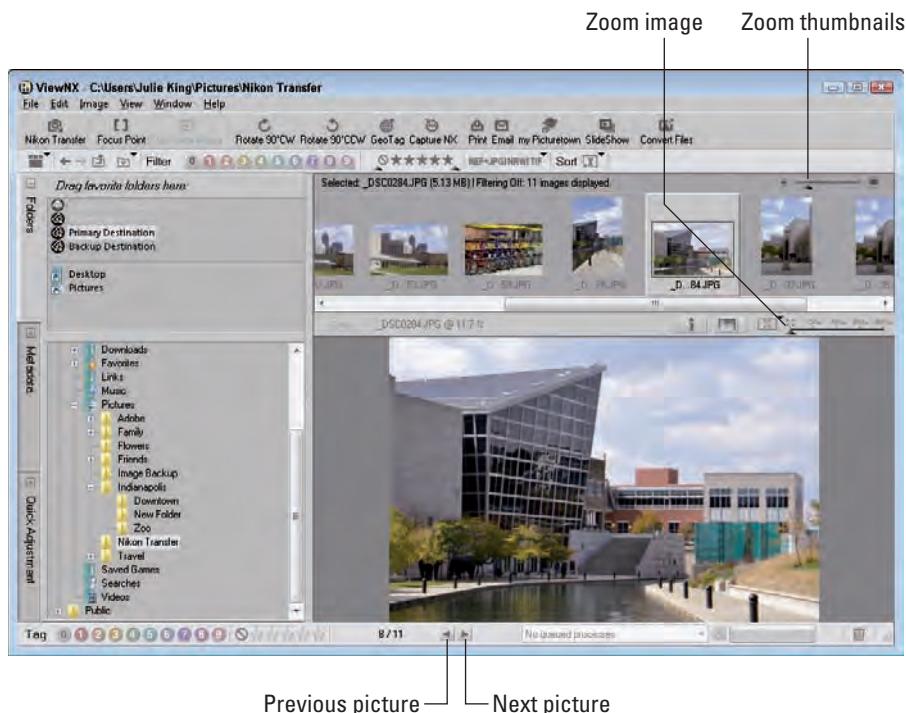


Figure 8-9: Change to Image Viewer display to see picture and movie files in filmstrip style.

Full Screen: Want to see a photo at full-screen size, as shown in Figure 8-10? If you’re working in Thumbnail Grid view, just double-click the picture thumbnail. In Image Viewer view, first click the thumbnail to display it in the large preview. Then double-click the large preview. Or, in either

view, click the thumbnail and then press the letter F. For movies, controls for starting the movie playback appear under the preview. (Click the little triangle to begin playback; click the neighboring square to stop it.)

In Full Screen view, as in the other views, you can magnify still photos by dragging the Zoom slider. To view additional photos at full-screen size, click the Previous and Next arrows under the image display. To return to the main browser window, just click the window's close button or choose a display option from the Display Options drop-down list, labeled in Figure 8-10.

Viewing picture metadata

When you snap a still photo with your D90, the camera includes in the picture file some extra data that records all the critical camera settings that were in force. This data, known by nerds as *metadata*, also includes the capture date and time. And, if you take advantage of the Image Comment feature that I cover in Chapter 11, you can even store a brief bit of custom text, such as the shooting location or subject.

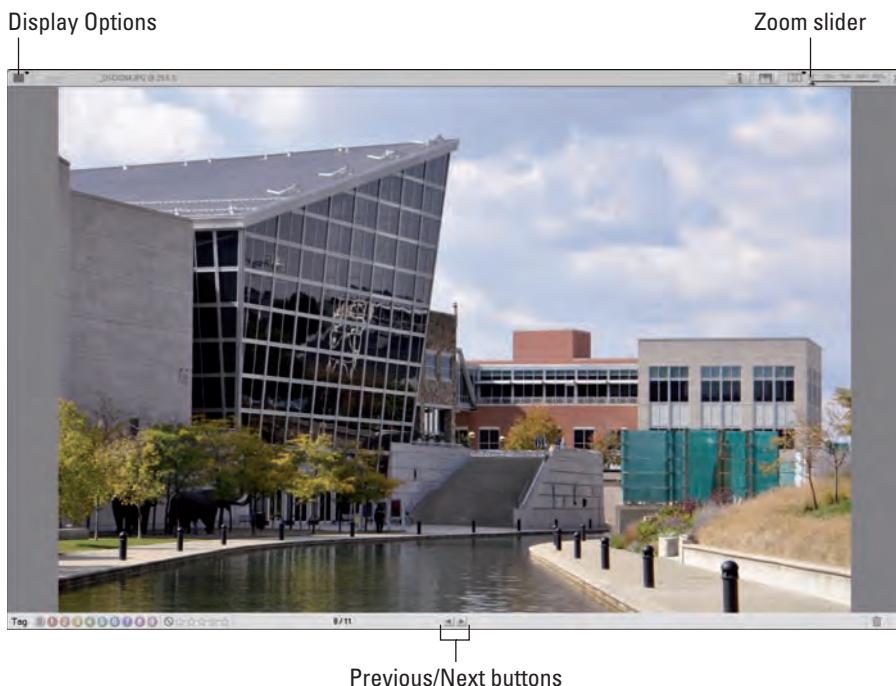


Figure 8-10: Click the arrows to scroll through your photos in full-screen view.



Reviewing this data is a great way to better understand what settings work best for different types of pictures, especially when you're just getting up to speed with aperture, shutter speed, white balance, and all the other digital photography basics. To get the full story on how each setting affects your pictures, see Chapters 5 and 6.

To view the metadata in ViewNX, first select an image by clicking its thumbnail in the ViewNX browser window. Then click the Metadata tab on the left side of the window or choose Window→Metadata. The metadata information then comes to the forefront, as shown in Figure 8-11.

The metadata is divided into several sections of related capture settings: File Info 1, File Info 2, Camera Info, Exposure, Flash, and so on. To hide or display a section, click the triangle next to it. You may need to use the scroll bar along the right side of the panel to view all the available information. Note that Nikon supplies ViewNX with cameras other than the D90, and some categories of data apply only to those other models.

Metadata tab

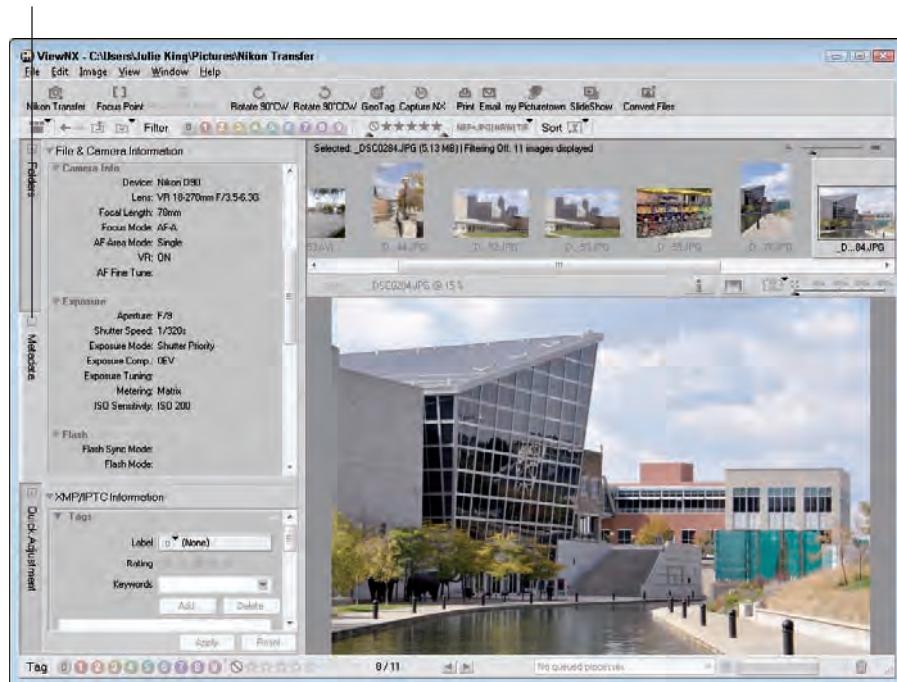


Figure 8-11: Inspecting metadata is a great way to see what settings work best for different subjects and lighting conditions.

The XMP/IPTC Information part of the Metadata panel gives you access to the ViewNX keywords, tags, and rating functions. These functions, along with the program's search feature, provide you with various tools that make locating specific pictures easier, including the option to search for pictures based on the shooting date.



In case you're curious, IPTC refers to text data that press photographers are often required to tag onto their picture files, such as captions and copyright information. XMP refers to a data format developed by Adobe to enable that kind of data to be added to the file. IPTC stands for International Press Telecommunication Council; XMP stands for Extensible Metadata Platform.

Organizing pictures

When you download files from your camera using Nikon Transfer, you can specify where on your computer's hard drive you want to store them. After you get the files on your system, you can further organize them in ViewNX. You can create new folders and subfolders, move images from one folder to another, rename and delete files, and more.

To begin organizing your files, first display the Folders panel by clicking its tab on the left side of the program window. In this panel, you can see and manage the contents of all the drives and folders on your computer. From here, you can set up and rearrange your storage closet as follows:

✓ **Hide/display the contents of a drive or folder.** See a little plus sign (Windows) or right-pointing triangle (Mac) next to a drive or folder? Click it to display the contents of that storage bin. A minus sign (Windows) or a down-pointing triangle (Mac) means that the drive or folder is open; click that minus sign or triangle to close the drive or folder.

✓ **Create a new folder.** First, click the drive or folder where you want to house the new folder. For example, if you want to create it inside your Pictures or My Pictures folder, click it. Icons representing all the folders and files currently found within that folder then appear in the thumbnail area.

Next, choose File→New Folder. An icon representing the new folder should then appear, with the name box activated, as shown in Figure 8-12. Type the folder name and press Enter.

You can create as many new folders and subfolders as you like. I prefer to organize my images according to subject matter — for example, in Figure 8-12, I created a folder called Indianapolis and then created several folders inside, each dedicated to different locations in the city.

✓ **Move a file from one folder to another.** First, display that file's thumbnail in the browser. Then drag the thumbnail to the destination folder in the Folder pane.



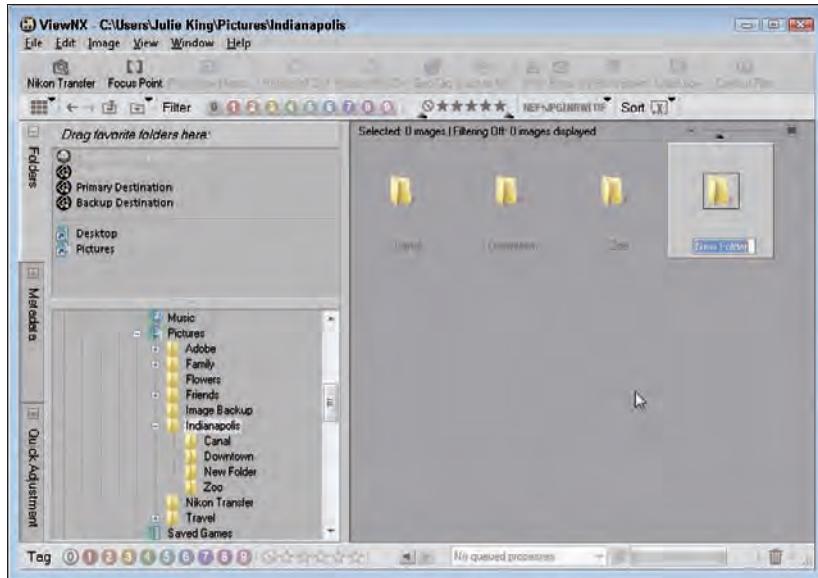


Figure 8-12: I prefer to sort my images into folders based on subject.

- ✓ **Delete a file.** In Windows, click the thumbnail and then choose **Edit**→**Delete** or press the Delete key. On a Mac, choose **Edit**→**Move to Trash** or press **⌘+Delete**. You then see a message asking you to confirm that you really want to trash the file. Click **Yes** to move forward.
 - ✓ **Protect or unlock photos.** If you used the Protect feature on your camera's Playback menu to "lock" a file, a process you can explore in Chapter 4, you need to remove the protection if you want to edit the image in your photo software. To do so, choose **File**→**Protect Files**→**Unprotect**.
- You also can protect files in ViewNX; just choose **Protect** from the **File**→**Protect Files** submenu. A little key icon then appears on the thumbnail to remind you that the file is now protected from editing or erasing. If you later want to delete the file, you must first unprotect it.
- ✓ **Select multiple files for moving, deleting, or other actions.** Click the thumbnail of the first image and then **Ctrl+click** (Windows) or **⌘+click** (Mac) the rest. To select all images in the current folder, press **Ctrl+A** (Windows) or **⌘+A** (Mac).



Using your mouse as a shutter button

Nikon offers a piece of specialty software known as Nikon Camera Control Pro 2, which sells for about \$180. With this program, you can use your computer to operate your camera.

While your camera is connected to your computer, the software displays a window that contains clickable controls for adjusting all the standard camera settings, from aperture to white balance. When you get those options established, you click another button to record whatever scene is in front of your camera lens.

What's the point? Well, Camera Control Pro is great in scenarios that make having a live photographer close to the subject either difficult or dangerous — for example, trying to get a shot of a chemical reaction in a science lab or capture an image of an animal that's shy around humans. Additionally, the software enables easy time-lapse photography, enabling you to set the camera to take pictures automatically at specified intervals over a period of minutes, hours, or even days.

Processing Raw (NEF) Files

Chapter 3 introduces you to the Camera Raw file format, which enables you to capture images as raw data. The advantage of capturing Raw files, which are called NEF files on Nikon cameras, is that you make the decisions about how to translate the raw data into an actual photograph. You can specify attributes such as color intensity, image sharpening, contrast, and so on — all of which are handled automatically by the camera if you use its other file format, JPEG. You take these steps by using a software tool known as a *Raw converter*.



The bad news: Until you convert your NEF files into a standard file format, you can't share them online or print them from most programs other than Nikon ViewNX. You also can't get prints from most retail outlets or open them in many photo-editing programs.

To process your D90 NEF files, you have a couple of options:

- ✓ **Use the in-camera processing feature.** Through the Retouch menu, you can process your Raw images right in the camera. You can specify only limited image attributes (color, sharpness, and so on), and you can save the processed files only in the JPEG format, but still, having this option is a nice feature. See the next section for details.
- ✓ **Process and convert in ViewNX.** ViewNX also offers a Raw processing feature. Again, the controls for setting picture characteristics are a little limited, but you can save the adjusted files in either the JPEG or TIFF format. The last section of this chapter walks you through this option.



☛ **Use Nikon Capture NX 2 or a third-party Raw conversion tool.** For the most control over your Raw images, you need to open up your wallet and invest in a program that offers a truly capable converter. Nikon offers such a program, called Nikon Capture NX 2, which sells for about \$180. Figure 8-13 gives you a look at the Capture NX 2 Raw converter window.

Another (and less costly option) that I frequently recommend is Adobe Photoshop Elements, which sells for about \$90 (www.adobe.com). It includes the Adobe Camera Raw converter, known in the industry as ACR, which is widely considered one of the best available. (**Note:** The converter in Elements doesn't offer all the bells and whistles of the version of ACR provided with Photoshop, however.) In addition, Elements is designed for the novice photo editing enthusiast, so it includes lots of helpful onscreen guides, whereas Capture NX 2 is geared more to the advanced digital photographer.

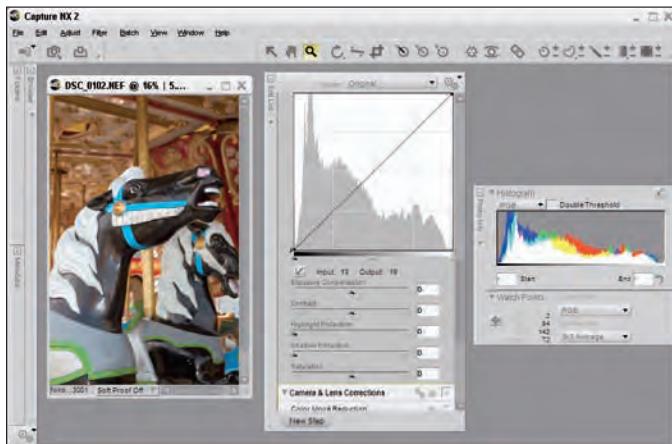


Figure 8-13: Nikon Capture NX 2 is one option for gaining more control over your Raw conversions.

If you do opt for a third-party conversion tool, check the program's Help system for details on how to use the various controls, which vary from program to program. The following general tips apply no matter what converter you use, however:

☛ Whenever possible, save your processed files in a nondestructive format such as TIFF. For top quality, don't save originals in the JPEG format, which applies *lossy compression*. You can read about the potential damage to image quality that lossy compression creates in Chapter 3. If you need a JPEG image to share online, Chapter 9 shows you how to create a duplicate of your original, converted image in that format.

- ☛ Some Raw converters give you the option of creating a 16-bit image file. (A *bit* is a unit of computer data; the more bits you have, the more colors your image can contain.) Although you can create 16-bit TIFF files, many photo editing programs either can't open them or limit you to a few editing tools, so I suggest you stick with the standard, 8-bit image option. Your image will contain more than enough colors, and you'll avoid potential conflicts caused by so-called *high-bit* images.
- ☛ Resist the temptation to crank up color saturation too much. Doing so can actually destroy image detail. Likewise, be careful about overdoing sharpening, or you can create noticeable image defects. Chapter 6 offers some additional information about sharpening and saturation to help you find the right amounts of each.

Processing Raw images in the camera

Scroll past the initial screen of options on the Retouch menu, and you come to a menu item called NEF (Raw) Processing. With this feature, you can process Raw files right in the camera — no computer or other software required.

I want to share two reservations about this option:

- ☛ First, you can save your processed files only in the JPEG format. As discussed in Chapter 3, that format results in some quality loss because of the file compression that JPEG applies. You can choose the level of JPEG compression you want to apply during Raw processing; you can create a JPEG Fine, Normal, or Basic file. Each of those settings produces the same quality that you get when you shoot new photos in the JPEG format and select Fine, Normal, or Basic from the Image Quality menu. Chapter 3 details the JPEG options, but, long story short, choose Fine for the best JPEG quality. And if you want to produce the absolute best quality from your Raw images, use a software solution and save your processed file in the TIFF format instead.
- ☛ You can make adjustments to exposure, color, and a few other options as part of the in-camera Raw conversion process. Evaluating the effects of your adjustments on the camera monitor can be difficult because of the size of the display, so for really tricky images, you may want to forgo in-camera conversion and do the job on your computer, where you can get a better view of things. If you do go the in-camera route, make sure that the monitor brightness is set to its default position so that you aren't misled by the display. (Chapter 1 shows you how to adjust monitor brightness.)



That said, in-camera Raw processing offers a quick and convenient solution when you need JPEG copies of your NEF images for immediate online sharing. (JPEG is the standard format for online use.) Follow these steps to get the job done:

1. Press the Playback button to switch to playback mode.
2. Display the picture you want to process in the single-image (full frame) view.

If necessary, you can shift from thumbnails view to single-image view by just pressing the OK button. Chapter 4 has more playback details.

3. Press the OK button.

The Retouch menu then appears atop your photo, as shown in Figure 8-14.

4. Use the Multi Selector to scroll to the NEF (RAW) Processing option, as shown in Figure 8-14.

The option is on the second screen of the Retouch menu.

5. Press OK to display your processing options, as shown in Figure 8-15.

This screen is command central for specifying what settings you want the camera to use when creating the JPEG version of your Raw image.

6. Set the conversion options.

Along the right side of the screen, you see a vertical column offering five conversion options, which I labeled in Figure 8-15. To establish the setting for an option, use the Multi Selector to highlight it and then press OK. You then see the available settings for the option. For example, if you highlight the first option, Image Quality, and press OK, you see the

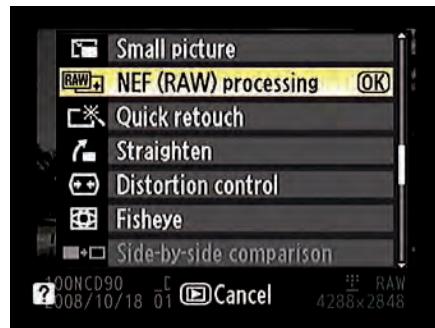


Figure 8-14: In single-image playback mode, press OK to display the Retouch menu over your photo.

NEF (RAW) processing



- NORM → Image Quality
- L → Image Size
- AUTO → White Balance
- +10 → Exposure Compensation
- ESD → Picture Control
- EXE → Execute and Save as a JPEG

Figure 8-15: Specify the conversion settings here.

screen shown in Figure 8-16. Use the Multi Selector to highlight the setting you want to use and press OK to return to the main Raw conversion screen.

Rather than detailing all the options here, the following list points you to the chapter where you can explore the settings available for each:

- *Image Quality*: See the Chapter 3 section related to the JPEG quality settings for details on this option.
- *Image Size*: The first part of Chapter 3 explains this one.
- *White Balance*: Check out Chapter 6 for details about White Balance options.
- *Exposure Compensation*: With this option, you can adjust image brightness by applying exposure compensation, a feature that I cover in Chapter 5.
- *Picture Control*: This option enables you to adjust color, contrast, and image sharpness. For a review of the available settings, see the last part of Chapter 6.

7. When you finish setting all the conversion options, highlight EXE on the main conversion screen. (Refer to Figure 8-15.) Then press OK.

The camera records a JPEG copy of your Raw file and displays the copy in the monitor. To remind you that the image was created with the help of the Retouch menu, the top-left corner of the display sports the little Retouch icon, and the filename of the image begins with CSC rather than the usual DSC, as shown in Figure 8-17. See Chapter 4 for details about filenames used by the D90.

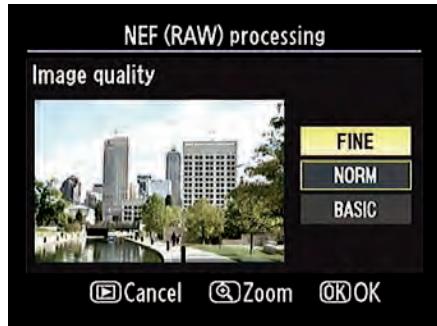


Figure 8-16: Select the setting you want to use and press OK.



Figure 8-17: Filenames of processed RAW images start with CSC.

Processing Raw files in ViewNX

In ViewNX, you can convert your Raw files to either the JPEG format or, for top picture quality, to the TIFF format. (See Chapter 3 if you're unsure about the whole concept of file format and how it relates to picture quality.)

Although the ViewNX converter isn't as full-featured as the ones in Nikon Capture NX 2, Adobe Photoshop Elements, and some other photo editing programs, it does enable you to make some adjustments to your Raw images. Follow these steps to try it out.

1. Click the thumbnail of the NEF (Raw) image to select it.



You may want to set the program to Image Viewer mode, as shown in Figure 8-18, so that you can see a larger preview of your image. Just choose View→Image Viewer to switch to this display mode.

2. Display the Quick Adjustment tab by clicking its tab on the left side of the program window.

I labeled the tab in Figure 8-18. The tab provides access to a few controls for fine-tuning your image. You can adjust exposure compensation, white balance, and assign a Picture Control, such as Landscape or Monochrome. Each time you adjust a setting, the preview updates to show you the results.

A couple of options may require some explanation:

- **Launch Utility button:** This button, located under the Picture Control option, opens the Picture Control Utility, where you can define your own Picture Controls. I don't get into this advanced function in this book, but if you're curious, open the utility and then click the Help button at the bottom of the window.
- **Highlight Protection/Shadow Protection/D-Lighting HS:** Try using these options to recover hidden shadow and highlight detail.
- **Color Booster:** This slider (at the bottom of the panel, not visible in Figure 8-18) enables you to increase saturation. But if you select the People button under the slider, skin tones are left alone. Choose Nature to adjust the saturation of all colors in the photo.



If you want more details about these or any other of the options, choose Help→ViewNX Help to open the Help system, and then display the Help pages related to the Quick Adjustment tab.

3. Click the Apply button at the bottom of the Quick Adjustment area.

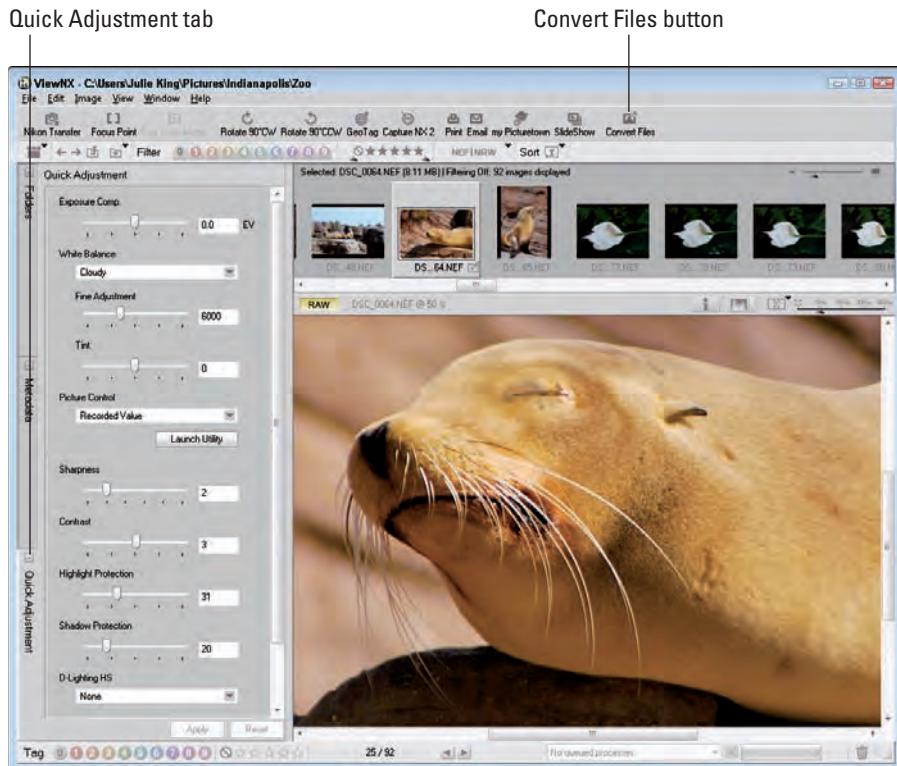


Figure 8-18: Display the Quick Adjustment panel to tweak Raw images before conversion.

4. To save the processed file, choose **File→**Convert Files**.**

Or just click the Convert Files button on the toolbar at the top of the program window. Either way, you see the Convert Files dialog box, shown in Figure 8-19.

5. Select **TIFF (8 Bit) from the **File Format** drop-down list.**

You also can opt for TIFF (16 Bit) or JPEG, but I don't recommend it. TIFF (16 Bit) can cause problems when you try to open the file in certain photo editing and organizing programs. And saving in the JPEG format applies *lossy compression*, thereby sacrificing some image quality. If you need a JPEG copy of your processed Raw image for online sharing, you can easily create one from your TIFF version by following the steps laid out in Chapter 9.

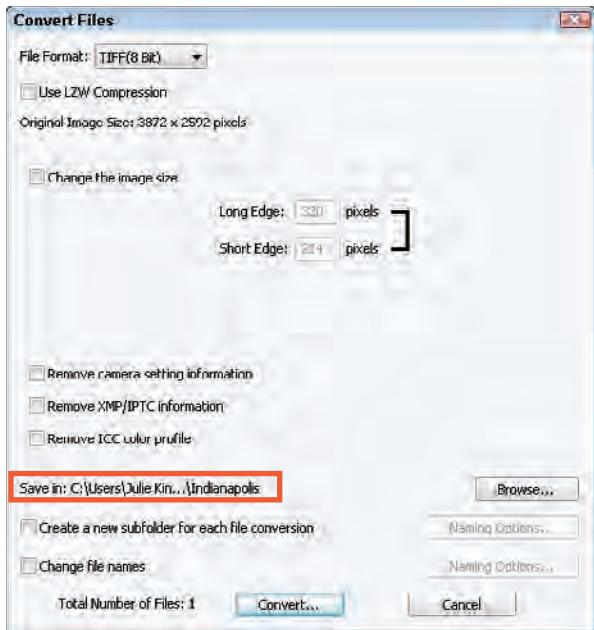


Figure 8-19: To retain the best image quality, save processed Raw files in the TIFF format.

6. Deselect the Use LZW Compression option, as shown in the figure.

Although LZW Compression reduces the file size somewhat and does not cause any quality loss, some programs can't open files that were saved with this option enabled. So turn it off.

7. Deselect the Change the Image Size check box.

This step ensures that you retain all the original pixels in your image, which gives you the most flexibility in terms of generating quality prints at large sizes. For details on this issue, check out Chapter 3.

8. Deselect each of the three Remove check boxes.

If you select the check boxes, you strip image metadata — the extra text data that's stored by the camera — from the file. Unless you have some specific reason to do so, clear all three check boxes so that you can continue to access the metadata when you view your processed image in programs that know how to display metadata.

The first two check boxes relate to data that you can view on the Metadata tab in ViewNX; earlier sections of this chapter give you the low-down. The ICC profile item refers to the image *color space*, which is either sRGB or Adobe RGB on your D90. Chapter 6 explains the difference.

9. Select a storage location for the processed TIFF file.

In Windows, the current drive and folder location appears in the area highlighted in Figure 8-19. On a Mac, the location is displayed inside a white box in the same general area of the dialog box. On either type of system, you can change the storage destination by clicking the Browse button and then selecting the drive and folder where you want to put the file.



By selecting the Create a New Subfolder for Each File Conversion check box, you can put your TIFF file into a separate folder within the destination folder. If you select the box, click the Naming Options button and then specify how you want to name the subfolder.

10. Specify whether you want to give the processed TIFF a different file-name from the original Raw image.

To do so, select the Change File Names check box and then click the Naming Options button and enter the name you want to use.

If you don't change the filename, ViewNX gives the file the same name as the original Raw file. But you don't overwrite that Raw file because you are storing the copy in a different file format (TIFF). In Windows, the filename of the processed TIFF image has the three-letter extension TIF.

11. Click the Convert button.

A window appears to show you the progress of the conversion process. When the window disappears, your TIFF image appears in the storage location you selected in Step 10.

Printing and Sharing Your Pictures

In This Chapter

- ▶ Setting the stage for great prints
- ▶ Looking at retail printing options
- ▶ Preparing a picture for the Web
- ▶ Creating a slide show
- ▶ Viewing images on a TV

When my first digital photography book was published, way back in the 1990s, consumer digital cameras didn't offer the resolution needed to produce good prints at anything more than postage-stamp size — and even then, the operative word was "good," not "great." And if you did want a print, it was a pretty much a do-it-yourself proposition unless you paid sky-high prices at a professional imaging lab. In those days, retail photo labs didn't offer digital printing, and online printing services hadn't arrived yet, either.

Well, time and technology march on, and, at least in the case of digital photo printing, to a very good outcome. Your D90 can produce dynamic prints even at large sizes, and getting those prints made is easy and economical, thanks to an abundance of digital printing services now in stores and online.

That said, getting the best output from your camera still requires a little bit of knowledge and prep work on your part. To that end, this chapter tells you exactly how to ensure that your picture files will look as good on paper as they do in your camera monitor.

In addition, this chapter explores ways to share your pictures electronically. First, I show you how to prepare your picture for e-mail — an important step if you don't want to annoy friends and family by cluttering their inboxes with ginormous, too-large-to-view photos. Following that, you can find out how to create digital slide shows and view your pictures and Live View movies on a television.



Printing Possibilities: Retail or Do-It-Yourself?

Normally, I'm a do-it-yourself type of gal. I mow my own lawn, check my own tire pressure, hang my own screen doors. I am woman; hear me roar. Unless, that is, I discover that I can have someone *else* do the job in less time and for less money than I can — which just happens to be the case for digital photo printing. Although I occasionally make my own prints for fine-art images that I plan to sell or exhibit, I have everyday snapshots made at my local retail photo lab.



Unless you're already very comfortable with computers and photo printing, I suggest that you do the same. Compare the cost of retail digital printing with the cost of using a home or office photo printer — remember to factor in the required ink, paper, and your precious time — and you'll no doubt come out ahead if you delegate the job.

You can choose from a variety of retail printing options, as follows:

- ✓ **Drop-off printing services:** Just as you used to leave a roll of film at the photo lab in your corner drug store or camera store, you can drop off your memory card, order prints, and then pick up your prints in as little as an hour.
- ✓ **Self-serve print kiosks:** Many photo labs, big-box stores, and other retail outlets also offer self-serve print kiosks. You insert your memory card into the appropriate slot, follow the onscreen directions, and wait for your prints to slide out of the print chute.
- ✓ **Online with mail-order delivery:** You can upload your photo files to online printing sites and have prints mailed directly to your house. Photo-sharing sites such as Shutterfly, Kodak Gallery, and Snapfish are well-known players in this market. But many national retail chains, such as Ritz Cameras, Wal-Mart, and others also offer this service.
- ✓ **Online with local pickup:** Here's my favorite option. Many national chains enable you to upload your picture files for easy ordering but pick up your prints at a local store. This service is a great way to share prints with faraway friends and family, by the way. I can upload and order prints from my desk in Indianapolis, for example, and have them printed at a store located a few miles from my parents' home in Texas.



For times when you do want to print your photos on your own printer, you can do so through Nikon ViewNX. However, I find the ViewNX printing options both more complex and more limited than those in other programs, which is why I opted not to cover them in this book. I suggest that you instead print from whatever photo editing program you use or from the software provided by your printer manufacturer.

Preventing Potential Printing Problems

Boy, I love a good alliteration, don't you? Oh, just me, then. Anyway, as I say in the introduction to this chapter, a few issues can cause hiccups in the printing process. So before you print your photos, whether you want to do it on your own printer or send them to a lab, read through the next three sections, which show you how to avoid the most common trouble spots.

Match resolution to print size

Resolution, or the number of pixels in your digital image, plays a huge role in how large you can print your photos and still maintain good picture quality. You can get the complete story on resolution in Chapter 3, but here's a quick recap as it relates to printing:



- ☛ On the D90, you set picture resolution via the Image Size option, which you can adjust either via the Shooting menu or by pressing the Qual button and rotating the main command dial. (Again, see Chapter 3 for specifics.) You must select this option *before* you capture an image, which means that you need some idea of your ultimate print size before you shoot. And if you crop your image, you eliminate some pixels, so take that factor into account when you do the resolution math.
- ☛ For good print quality, the *minimum* pixel count (in my experience, anyway) is 200 pixels per linear inch, or 200 ppi. That means that if you want a 4-x-6-inch print, you need at least 800 x 1200 pixels.
- ☛ Depending on your printer, you may get even better results at 200+ ppi. Some printers do their best work when fed 300 ppi, and a few (notably, some from Epson) request 360 ppi as the optimum resolution. However, going higher than that typically doesn't produce any better prints.

Unfortunately, because most printer manuals don't bother to tell you what image resolution produces the best results, finding the right resolution is a matter of experimentation. (Don't confuse the manual's statements related to the printer's *dpi* with *ppi*. DPI refers to how many dots of color the printer can lay down per inch; many printers use multiple dots to reproduce one image pixel.)

- ☛ If you're printing your photos at a retail kiosk or at an online site, the printing software that you use to order your prints should determine the resolution of your file and then guide you as to the suggested print size. But if you're printing on a home printer, you need to be the resolution cop. (Some programs, however, do alert you in the Print dialog box if the resolution is dangerously low.)

So what do you do if you find that you don't have enough pixels for the print size you have in mind? You just have to decide what's more important, print size or print quality.

If your print size does exceed your pixel supply, one of two things must happen:

- ☛ The pixel count remains constant, and pixels simply grow in size to fill the requested print size. And if pixels get too large, you get a defect known as *pixelation*. The picture starts to appear jagged, or stairstepped, along curved or digital lines. Or at worst, your eye can actually make out the individual pixels, and your photo begins to look more like a mosaic than, well, a photograph.
- ☛ The pixel size remains constant, and the printer software adds pixels to fill in the gaps. You can also add pixels, or *resample the image*, in your photo software. Wherever it's done, resampling doesn't solve the low resolution problem. You're asking the software to make up photo information out of thin air, and the result is usually an image that looks worse than it did before resampling. You don't get pixelation, but details turn muddy, giving the image a blurry, poorly rendered appearance.

Just to hammer home the point and remind you one more time of the impact of resolution picture quality, Figures 9-1 through 9-3 show you the same image as it appears at 300 ppi (the resolution required by the publisher of this book), at 50 ppi, and resampled from 50 ppi to 300 ppi. As you can see, there's just no way around the rule: If you want the best quality prints, you need the right pixel count.

300 ppi



Figure 9-1: A high-quality print depends on a high-resolution original.

50 ppi



Figure 9-2: At 50 ppi, the image has a jagged, pixelated look.

50 ppi resampled to 300 ppi



Figure 9-3: Adding pixels in a photo editor doesn't rescue a low-resolution original.

Allow for different print proportions

Unlike many digital cameras, your D90 produces photos that have an aspect ratio of 3:2. That is, pictures are 3 units wide by 2 units tall — just like a 35mm film negative — which means that they translate perfectly to the standard 4-x-6-inch print size. (Most digital cameras produce 4:3 images, which must be cropped to fit a 4-x-6-inch piece of paper.)



If you want to print your digital original at other standard sizes — 5 x 7, 8 x 10, 11 x 14, and so on — you need to crop the photo to match those proportions. Alternatively, you can reduce the photo size slightly and leave an empty margin along the edges of the print as needed.

As a point of reference, Figure 9-4 shows you a 3:2 original image. The red outlines indicate how much of the original can fit within a 5-x-7-inch frame and an 8-x-10-inch frame.

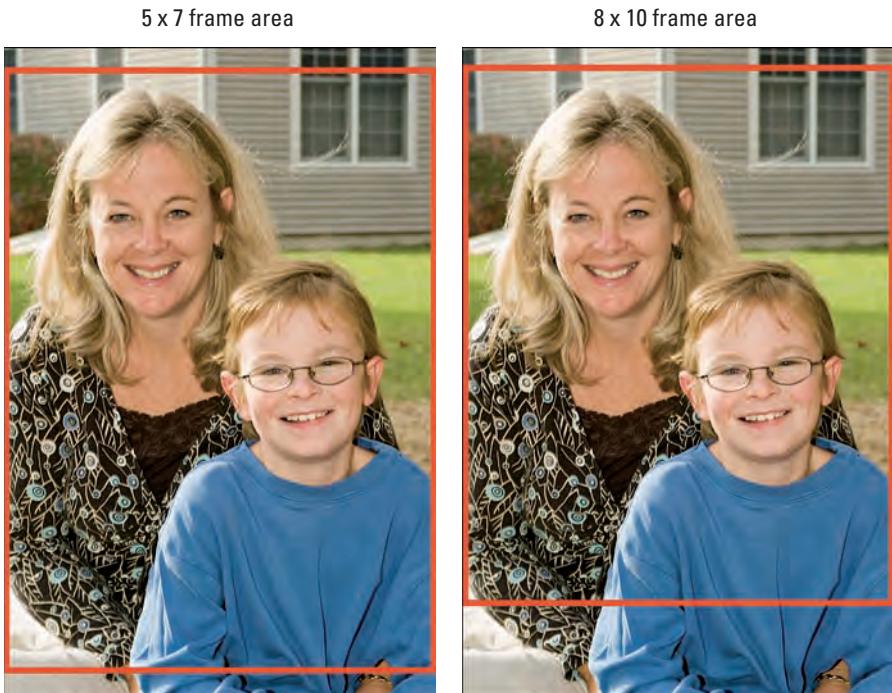


Figure 9-4: Composing your shots with a little head room enables you to crop to different frame sizes.



DPOF, PictBridge, and computerless printing

Your D90 offers two technologies, called DPOF (*dee-poff*) and PictBridge, that enable you to print images directly from your camera or memory card, without using the computer as middle-machine. In order to take advantage of direct printing, your printer must also support one of the two technologies, and you must capture the images in the JPEG file format, which I explain in Chapter 3. (You can also capture the photo in the Raw format and then use your D90's in-camera conversion tool to make a JPEG copy suitable for direct printing.)

DPOF stands for Digital Print Order Format. With this option, accessed via your camera's Playback menu, you select the pictures on your memory card that you want to print, and you specify how many copies you want of each image. Then, if your photo printer has an SD Card slot and supports DPOF, you just pop the memory card into that slot. The printer reads your "print order" and outputs just the requested copies of your selected images. (You use the printer's own controls to set paper size, print orientation, and other print settings.)

PictBridge works a little differently. If you have a PictBridge-enabled photo printer, you can

connect the camera to the printer using the USB cable supplied with your camera. A PictBridge interface appears on the camera monitor, and you use the camera controls to select the pictures you want to print. With PictBridge, you specify additional print options, such as page size and whether you want to print a border around the photo, from the camera as well.

Both DPOF and PictBridge are especially useful in scenarios where you need fast printing. For example, if you shoot pictures at a party and want to deliver prints to guests before they go home, DPOF offers a quicker option than firing up your computer, downloading pictures, and so on. And if you invest in one of the tiny portable photo printers on the market today, you can easily make prints away from your home or office — you can take both your portable printer and camera along to your regional sales meeting, for example.

For the record, I prefer DPOF to PictBridge because with PictBridge, you have to deal with cabling the printer and camera together. Also, the camera must be turned on for the whole printing process, wasting battery power. But if you're interested in exploring either printing feature, your camera manual provides complete details.

Your camera's Trim feature, found on the Retouch menu, enables you to crop your photo, but only to proportions of 3:2, 4:3, and 5:4. See Chapter 10 for information. For other proportions, most photo-editing programs offer very simple cropping tools. You also can usually crop your photo using the software provided at online printing sites and at retail print kiosks. But if you plan to drop off your memory card of original pictures at a lab, be aware that your pictures will be cropped if you select a print size other than 4 x 6.



To allow yourself printing flexibility, leave at least a little margin of background around your subject when you shoot, as I did for the example in Figure 9-4. Then you don't clip off the edges of the subject no matter what print size you choose. (Some people refer to this margin padding as *head room*, especially when describing portrait composition.)

Get print and monitor colors in sync

Your photo colors look perfect on your computer monitor. But when you print the picture, the image is too red, or too green, or has some other nasty color tint. This problem, which is probably the most prevalent printing issue, can occur because of any or all of the following factors:

- ✓ **Your monitor needs to be calibrated.** When print colors don't match what you see on your computer monitor, the most likely culprit is actually the monitor, not the printer. If the monitor isn't accurately calibrated, the colors it displays aren't a true reflection of your image colors.

To ensure that your monitor is displaying photos on a neutral canvas, you can start with a software-based calibration utility, which is just a small program that guides you through the process of adjusting your monitor. The program displays various color swatches and other graphics and then asks you to provide feedback about what you see on the screen.



If you use a Mac, the operating system offers a built-in calibration utility, called the Display Calibrator Assistant; Figure 9-5 shows the welcome screen that appears when you run the program. (Access it by opening the System Preferences dialog box, clicking the Displays icon, clicking the Color button, and then clicking the Calibrate button.) You also can find free calibration software for both Mac and Windows systems online; just enter the term *free monitor calibration software* into your favorite search engine.

Software-based calibration isn't ideal, however, because our eyes aren't that reliable in judging color accuracy. For a more accurate calibration, you may want to invest in a device known as a *colorimeter*, which you attach to or hang on your monitor, to accurately measure and calibrate your display. Companies such as Datacolor (www.datacolor.com), Pantone (www.pantone.com), and X-Rite (www.xrite.com) sell this type of product along with other tools for ensuring better color matching.



Whichever route you go, the calibration process produces a monitor *profile*, which is simply a data file that tells your computer how to adjust the display to compensate for any monitor color casts. Your Windows or Mac operating system loads this file automatically when you start your computer. Your only responsibility is to perform the calibration every month or so, because monitor colors drift over time.



Figure 9-5: Mac users can take advantage of the operating system's built-in calibration tool.

✓ **One of your printer cartridges is empty or clogged.** If your prints look great one day but are way off the next, the number-one suspect is an empty ink cartridge or a clogged print nozzle or head. Check your manual to find out how to perform the necessary maintenance to keep the nozzles or print heads in good shape.



If black-and-white prints have a color tint, a logical assumption is that your black ink cartridge is to blame, if your printer has one. But the problem is usually a color cartridge instead. Most printers use both color and black inks even for black-and-white prints, and if one color is missing, a tint results.

When you buy replacement ink, by the way, keep in mind that third-party brands, while they may save you money, may not deliver the performance you get from the cartridges made by your printer manufacturer. A lot of science goes into getting ink formulas to mesh with the printer's ink-delivery system, and the printer manufacturer obviously knows most about that delivery system.

✓ **You chose the wrong paper setting in your printer software.** When you set up your print job, be sure to select the right setting from the paper-type option — glossy, matte, and so on. This setting affects how the printer lays down ink on the paper.

- ☛ **Your photo paper is low quality.** Sad but true: The cheap, store-brand photo papers usually don't render colors as well as the higher-priced, name-brand papers. For best results, try papers from your printer manufacturer; again, those papers are engineered to provide top performance with the printer's specific inks and ink-delivery system.
- ☛ **Your printer and photo software are fighting over color-management duties.** Some photo programs offer features that enable the user to control how colors are handled as an image passes from camera to monitor to printer. Most printer software also offers color-management features. The problem is, if you enable color-management controls both in your photo software and your printer software, you can create conflicts that lead to wacky colors. So check your photo software and printer manuals to find out what color-management options are available to you and how to turn them on and off.



Even if all the aforementioned issues are resolved, however, don't expect perfect color matching between printer and monitor. Printers simply can't reproduce the entire spectrum of colors that a monitor can display. In addition, monitor colors always appear brighter because they are, after all, generated with light.

Finally, be sure to evaluate your print colors and monitor colors in the same ambient light — daylight, office light, whatever — because that light source has its own influence on the colors you see.

Preparing Pictures for E-Mail

How many times have you received an e-mail message that looks like the one in Figure 9-6? Some well-meaning friend or relative has sent you a digital photo that is so large that it's impossible to view the whole thing on your monitor.

The problem is that computer monitors can display only a limited number of pixels. The exact number depends on the monitor's resolution setting and the capabilities of the computer's video card, but suffice it to say that the average photo from one of today's digital cameras has a pixel count in excess of what the monitor can handle. Figure 9-6, for example, shows you how much of a 6-megapixel image is viewable when displayed in a typical e-mail program window.

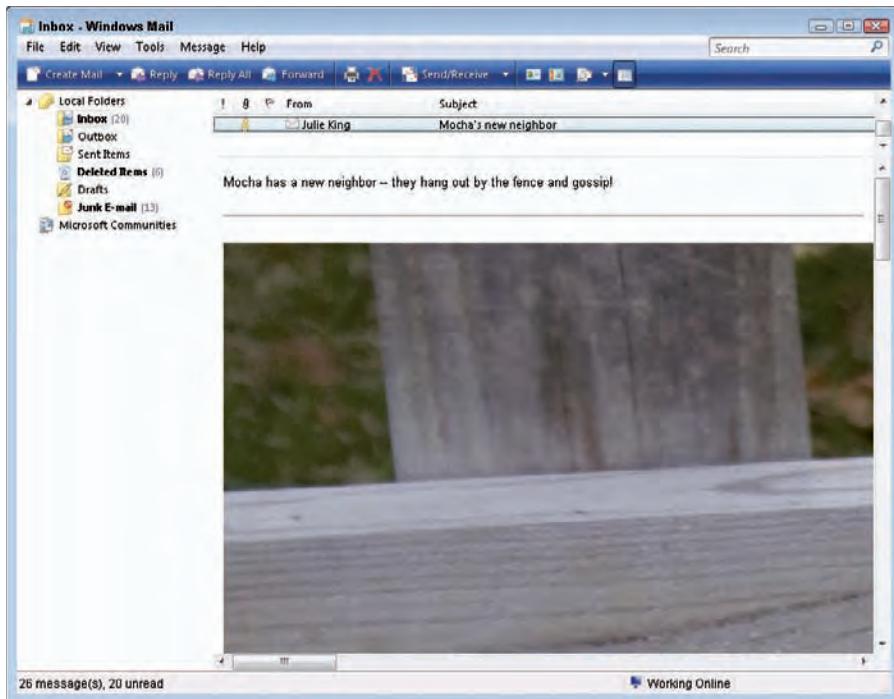


Figure 9-6: The attached image has too many pixels to be viewed without scrolling.

In general, a good rule is to limit a photo to no more than 640 pixels at its longest dimension. That ensures that people can view your entire picture without scrolling, as in Figure 9-7. This image measures 640 x 428 pixels. As you can see, it's plenty large enough to provide a decent photo-viewing experience. On a small monitor, it may even be *too* large.

This size recommendation means that even if you shoot at your D90's lowest Image Size setting (2144 x 1424 pixels), you need to dump pixels from your images before sending them to the cyber post office. You have a couple of options for creating an e-mail-sized image:

- ✓ Use the Small Picture feature on your camera's Retouch menu. This feature enables you to create your e-mail copy right in the camera.
- ✓ Downsample the image in your photo editor. *Downsampling* is geekspeak for dumping pixels. Most photo editors offer a feature that handles this process for you. Use this option if you want to crop or otherwise edit the photo before sharing it.

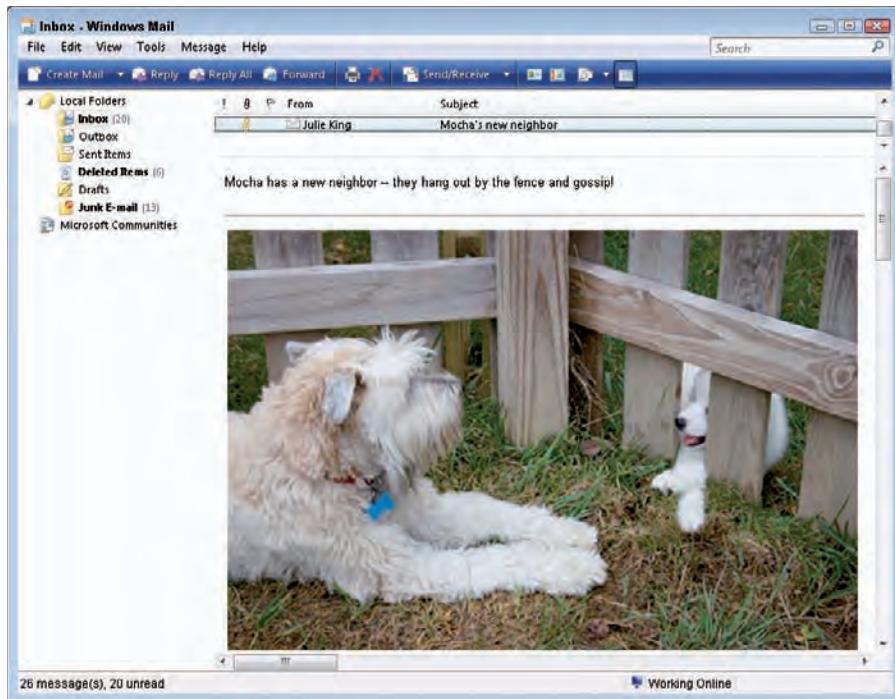


Figure 9-7: Keep e-mail pictures to no larger than 640 pixels wide or tall.

The next two sections walk you through the steps for both ways of creating your e-mail images. You can use the same steps, by the way, for sizing images for any onscreen use, whether it's for a Web page or multimedia presentation. You may want your copies to be larger or smaller than the recommended e-mail size for those uses, however.



One last point about onscreen images: Remember that pixel count has *absolutely no effect* on the quality of pictures displayed onscreen. Pixel count determines only the size at which your images are displayed.

Creating small copies using the camera

To create small, e-mailable copies of your images without using a computer, use your camera's Small Picture feature. Here's how:



- 1. Press the Playback button to set your camera to playback mode.**
- 2. Display the picture in single-image view.**

If the monitor currently displays multiple thumbnails, just press the OK button to switch to single-image view.

3. Press OK to display the Retouch menu over your image, as shown on the left in Figure 9-8.

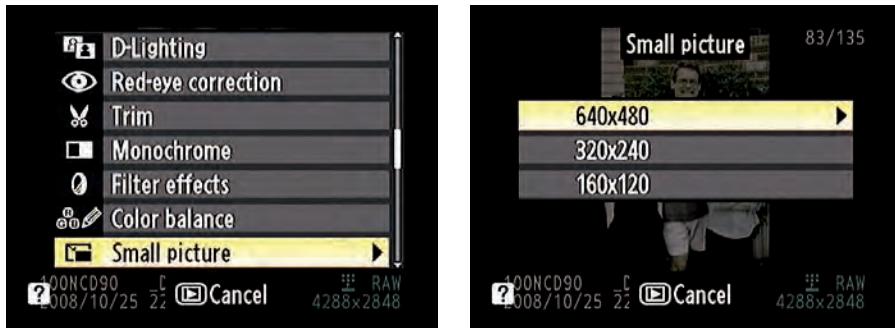


Figure 9-8: The Small Picture feature creates a low-resolution, e-mail-friendly copy of a photo.

4. Highlight Small Picture and press OK or press the Multi Selector right.

You see the screen shown on the right in the figure. You can choose from three size options (stated in pixels) for your small copy.

5. Highlight the size you want to use for your copy.

For pictures that you plan to send via e-mail, choose either 640 x 480 or 320 x 240 pixels unless the recipient is connected to the Internet via a very slow, dial-up modem connection. In that case, you may want to go one step down, to 160 x 120 pixels. (The display size of the picture may be quite small at that setting however, depending on the resolution of the monitor on which the picture is viewed.)



If you're a math lover, you may have noticed that all the size options create pictures that have an aspect ratio of 4:3, while your original images have an aspect ratio of 3:2. The camera trims the small-copy image as needed to fit the 4:3 proportions. Unfortunately, you don't have any input over what portion of the image is cropped away.

6. Press OK or press the Multi Selector right.

You see a screen asking you to confirm that you want to create a small copy.

7. Highlight Yes and press OK.

The camera duplicates the selected image and downsamples the copy (eliminates pixels) to achieve the size you specified in Step 5. Your original picture file remains untouched.



If you want to create small copies of several photos on your memory card, you can go another route: Take the camera out of Playback mode and then display the Retouch menu. Select the Small Copy option and press OK. You're then presented with a Choose Size option; choose that option to specify the pixel count for your small copies. After doing so, press OK, choose the Select Image option, and press OK again to display thumbnails of all your pictures. Move the yellow highlight box over a thumbnail and press the ISO button to "tag" the photo for copying. (You see a little icon in the top-right corner of the thumbnail; press the button again to remove the tag if you change your mind.) After selecting all your pictures, press OK to display the copy-confirmation screen; highlight Yes and press OK once more to wrap things up.

When you view your small-size copies on the camera monitor, they appear surrounded by a gray border, as shown in Figure 9-9. A tiny Retouch icon appears on the display as well, as labeled in the figure. Note that you can't zoom in to magnify the view of small-size copies as you can your original images.

Pictures that you create using the Small Picture feature are given filenames that start with the letters SSC. The camera automatically assigns a filenumber (the number is different from that of your original file, unfortunately).



Figure 9-9: The gray border indicates a small-size copy.

Online photo sharing: Read the fine print

If you want to share more than a couple of photos, consider posting your images at an online photo-album site instead of attaching them to e-mail messages. Photo-sharing sites such as Shutterfly, Kodak Gallery, and Picasa all enable you to create digital photo albums and then invite friends and family to view your pictures and order prints of their favorites.

At most sites, picture-sharing is free, but your albums and images are deleted if you don't order prints or make some other purchase

from the site within a specified amount of time. Additionally, many free sites enable you to upload high-resolution files for printing but then don't let you retrieve those files from the site. (In other words, don't think of album sites as archival storage solutions.) And here's another little bit of fine print to investigate: The membership agreement at some sites states that you agree to let the site use your photos, for free, for any purpose that it sees fit.

Downsizing images in Nikon ViewNX

You can also create a low-resolution, JPEG copy of your image in ViewNX. However, be aware that the program restricts you to a minimum size of 320 pixels along the photo's longest side. If you need a smaller version, use the in-camera Small Picture option to create the copy instead. Or, if you own a photo editing program, investigate its image-resizing capabilities; you likely can create the small copy at any dimensions you like.

Assuming that the 320-pixel restriction isn't a problem, the following steps show you how to create your small-size copy in ViewNX. You can use this process to create a small JPEG copy of both JPEG and NEF (Raw) originals.

1. Select the image thumbnail in the main ViewNX window.

Chapter 8 explains how to view your image thumbnails, if you need help. Just click a thumbnail to select it.

2. Choose File→Convert Files.

You see the dialog box shown in Figure 9-10. (As with other figures, this one shows the box as it appears in Windows Vista; it may appear slightly different on a Mac or in other versions of Windows, but the essentials are the same.)

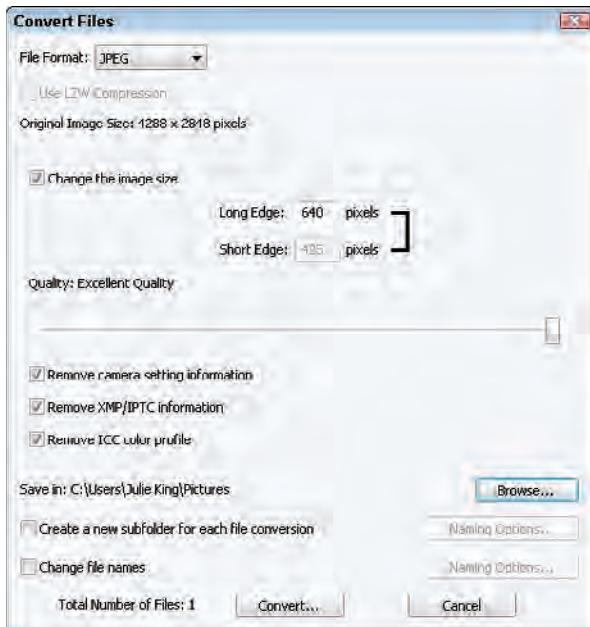


Figure 9-10: You also can use ViewNX to create a small-sized JPEG copy for e-mail sharing.



3. Select JPEG from the File Format drop-down list, as shown in the figure.

The other format option, TIFF, is a print format. Web browsers and e-mail programs can't display TIFF images, so be sure to use JPEG.

4. Select the Change the Image Size check box.

Now the Short Edge and Long Edge text boxes become available.

5. Type the desired pixel count of the longest side of your picture into the Long Edge box.

The program automatically adjusts the Short Edge value to keep the resized image proportional. (The image is not cropped to a 4:3 perspective as it is when you use the Small Copy feature on the camera's Retouch menu.)

Again, to ensure that the picture is viewable without scrolling when opened in the recipient's e-mail program, I suggest that you keep the Long Edge value at 640 pixels or less.

6. Adjust the Compression Ratio slider to set the amount of JPEG file compression.

As Chapter 3 explains, a greater degree of compression results in a smaller file, which takes less time to download over the Web, but it reduces image quality. Notice that as you move the slider to the right, the resulting quality level appears above the slider. For example, in Figure 9-10, the level is Excellent Quality.



Because the resolution of your image already results in a very small file, you can probably use the highest quality setting without worrying too much about download times. The exception is if you plan to attach multiple pictures to the same e-mail message, in which case you may want to set the slider a notch or two down from the highest quality setting.

7. Select the next three check boxes (Remove Camera Setting Information, Remove XMP/IPTC Information, and Remove ICC Color Profile), as shown in Figure 9-10.

When selected, the three options save the resized picture without the original image metadata, the extra text data that your camera stores with the image. (Chapter 8 explains.) Including this metadata adds to the file size, so for normal e-mail sharing, strip it out. The exception, of course, is when you want the recipient to be able to view the metadata in a photo program that can do so.

8. Set the file destination.

In layman's terms, that just means to tell the program the location of the folder or drive where you want to store your downsized image file. The current destination appears just to the left of the Browse button. To choose a different folder, click that Browse button.

By selecting the Create a New Subfolder for Each File Conversion check box, you can create a new subfolder within your selected storage folder.

If you do, the resized file goes into that subfolder, which you can name by clicking the Naming Options button.

9. (Optional) Specify a filename for the resized copy.

If you want to put the small copy in the same folder as the original, the program protects you from overwriting the original by automatically assigning a slightly different name to the copy. By default, the program uses the original filename plus a two-number sequential tag: If the original filename is DSC_0186.jpg, for example, the small-copy filename is DSC_0186_01.jpg. You can change a couple of aspects of this filenames routine by selecting the Change File Names check box and then clicking the Naming Options button and adjusting the settings in the resulting dialog box. After making your wishes known, click OK to return to the Convert Files dialog box.



If you *don't* store the copy in the same folder as the original, the program doesn't alter the filename of the copy automatically. That can lead to problems down the road because you will end up with two files, both with the same name but with different pixel counts, on your computer. In this scenario, be sure to input your own filenames for your copies.

10. Click the Convert button to finish the process.



ViewNX also offers an e-mail wizard that enables you to resize and send photos by e-mail in one step. If you use this feature, however, you don't create an actual small-size copy of your file; the program simply reduces the size of the file temporarily for e-mail transmission. Also, the wizard works only with certain e-mail programs. On the plus side, the wizard permits you to send a photo at a much smaller size than you can create with the Convert Files feature. For more details, check out the ViewNX Help system.

Creating a Digital Slide Show

Many photo editing and cataloging programs offer a tool for creating digital slide shows that can be viewed on a computer or, if copied to a DVD, on a DVD player. You can even add music, captions, graphics, special effects, and the like to jazz up your presentations.

But if you want to create a basic slide show in a hurry, your D90 actually offers you two different ways to create one. The first, called Pictmotion, enables you to add music and transition effects. You can also select specific photos on the memory card to include in the show. The other option simply displays all photos on the card, with no sound or transition effects. Either way, you can create and run the slide show right on your camera. And by connecting your camera to a television, as outlined in the last section of this chapter, you can present your show to a whole roomful of people.

The next two sections explain how to create and play both types of slide shows.

Setting up a simple slide show

Follow these steps to create a basic slide show that automatically displays all photos on the memory card, one by one, on your camera monitor.



One caveat before you start: If you hid any pictures using the Hide Image feature, they are not displayed during the show. See Chapter 4 for details on this feature and how to “unhide” any hidden photos.

1. Display the Playback menu and highlight Slide Show, as shown on the left in Figure 9-11.

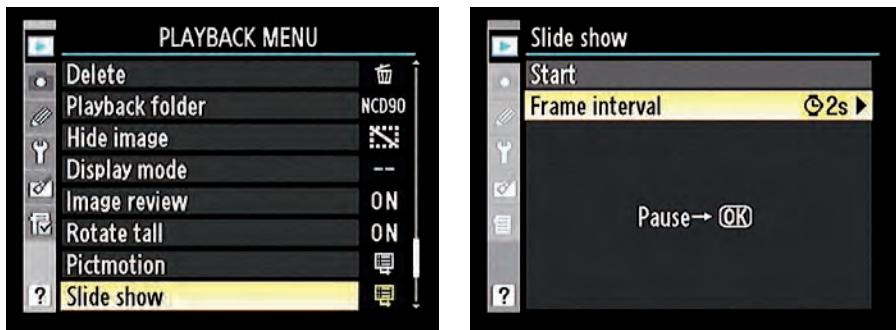


Figure 9-11: Choose Slide Show to set up automatic playback of all pictures on your memory card.

2. Press OK to display the Slide Show screen shown on the right in Figure 9-11.

3. Highlight Frame Interval and press the Multi Selector right.

On the next screen, you can specify how long you want each image to be displayed. You can set the interval to 2, 3, 5, or 10 seconds.

4. Highlight the frame interval you want to use and press OK.

You’re returned to the Slide Show screen.

5. To start the show, highlight Start and press OK.

The camera begins displaying your pictures on the camera monitor.

When the show ends, you see a screen offering three options: You can choose to restart the show, adjust the frame interval, or exit to the Playback menu. Highlight your choice and press OK.

During the show, you can control playback as follows:

- ☛ **Pause the show.** Press OK. Select Restart and press OK to begin displaying pictures again.
- ☛ **Exit the show.** You've got three options:
 - To return to full-frame, regular playback, press the Playback button.
 - To return to the Playback menu, press the Menu button.
 - To return to picture-taking mode, press the shutter button halfway.
- ☛ **Skip to the next/previous image manually.** Press the Multi Selector or rotate the main command dial.
- ☛ **Change the information displayed with the image.** Press the Multi Selector up or down to cycle through the info-display modes. (See Chapter 4 for details on what information is provided in each mode.)

Creating Pictmotion slide shows

Also found on the Playback menu, the Pictmotion option enables you to create a slide show that's a little fancier than the Slide Show option discussed in the preceding section. You can select specific photos to include, choose from a handful of instrumental songs to use as a musical background, and also select from a couple of different transition effects, which control how one photo disappears from the screen and the next one appears.

Take these steps to try it out:

1. Display the Playback menu and highlight Pictmotion, as shown on the left in Figure 9-12.

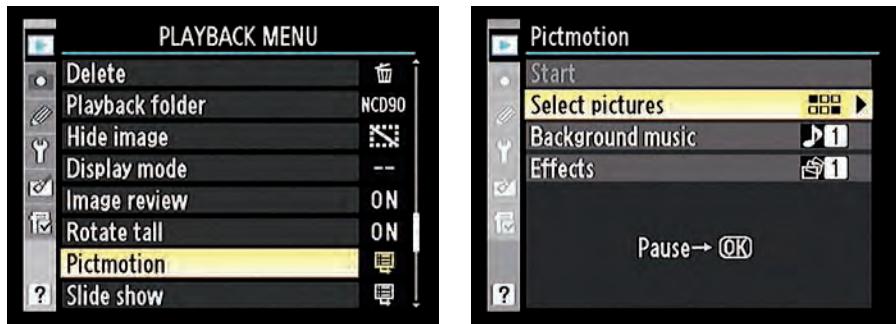


Figure 9-12: A Pictmotion slide show includes music and transition effects.

2. Press OK to display the second screen shown in the figure.
3. Highlight Select Pictures and press the Multi Selector right or press OK.

You then see the screen shown in Figure 9-13.

4. Select the photos you want to include.

You can go one of three ways here:

- *Selected*: Use this option to pick individual photos that you want to include in the show. Press the Multi Selector right to display thumbnails of your images, move the yellow highlight box over an image, and press the ISO button to tag it as slide-show worthy. A checkmark appears in the corner of the thumbnail of selected photos.

To temporarily view the selected photo at a larger size, press and hold the Qual button. Release the button to return to the normal display.

- *Select Date*: Use this option if you want to include all pictures that were taken on a specific date. After highlighting the option, press the Multi Selector right to display a list of dates. Highlight a date and press the Multi Selector right again to put a checkmark in the box next to the date.
- *All*: To include all photos, highlight the All option.

Whichever option you select, any pictures that you hid using the Hide Image feature aren't included in the show. And if you created custom image folders, only those in the currently active folder are available. For more on both issues, check out Chapter 4.

5. After selecting photos, press OK to return to the main Pictmotion options screen. (Refer to the right image in Figure 9-12.)

6. Choose your background music.

To do so, highlight the Background Music option and press the Multi Selector right or press OK. You can choose from five soundtrack options; highlight the one you want to use and press OK.

Unfortunately, there's no "sound off" option, but you can shut off the music during playback. (See the list following these steps.)

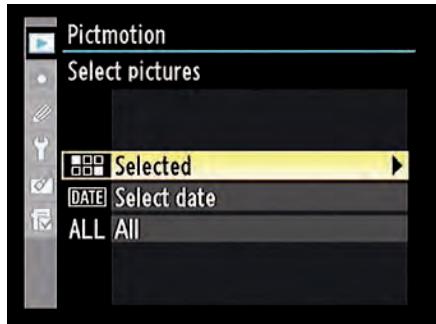


Figure 9-13: You can select which pictures you want to include in the show.

ISO



QUAL



7. Highlight Effects and press the Multi Selector right or press OK to display the transition options.

As with the soundtrack feature, you have five choices. There's no way to preview the effects, so just highlight the one that sounds the coolest to you and press OK.

8. To play the show, highlight Start and press OK.

After your show is rolling, use these techniques to control it:

- ✓ **Adjust music volume.** Press the Qual button to raise the volume, press the ISO button to lower it. At the lowest volume setting, sound is disabled altogether.
- ✓ **Pause/resume playback.** Press OK. The screen then gives you two options: Restart and Exit. Highlight Restart and press OK.
- ✓ **Exit playback.** You've got these options:
 - To return to full-frame, still-photo playback mode, press the Playback button.
 - To return to the Playback menu, press the Menu button. Or press OK, highlight Exit, and press OK again.
 - To return to picture-taking mode, press the shutter button halfway.

Viewing Your Photos on a Television

Tired of passing your camera around to show people your pictures or Live View movies on the monitor? Why not display them on a television instead? Your D90 is equipped with both an HDMI outlet, or port, for connecting the camera to a high-definition TV (or other video device), and an AV (audio/visual) port, for connecting the camera to a regular TV or video device. Both ports are tucked under the little rubber cover on the left-rear side of the camera and highlighted in Figure 9-14. A cable for making a regular video connection is included in the camera box. (It's the cable that has two plugs at one end, one white and one yellow.) For HDMI connections, you need to purchase a cable. You need something called a *Type C* cable.



Figure 9-14: You can connect your camera to a television for big-screen playback.

Before connecting your camera, double-check the following menu options, both on the Setup menu and shown in Figure 9-15:

- ✓ **Video Mode:** You get just two options here: NTSC and PAL. Select the video mode that is used by your part of the world. (In the United States, Canada, and Mexico, NTSC is the standard.)
- ✓ **HDMI:** Unless you have trouble, stick with the Auto setting; the camera then automatically selects the right format for the HD device you're using. You also can select from four different formats, if you feel comfortable doing so.



Whether you go high def or regular def — what the industry now wants us to call *standard definition* — turn the camera off before connecting the devices. For a regular video connection, note that the white plug carries the audio signal and the yellow one carries the video signal. With HDMI, everything goes through a single connector, and as soon as the two are linked, you can view your photos only on the HDMI screen.

When the two devices are connected, turn the camera and TV or video device on. At this point, you need to consult your TV manual to find out what channel to select for playback of signals from auxiliary input devices like your camera. After you sort that issue out, you can control playback using the same camera controls as you normally do to view pictures and movies on your camera monitor. You can also run slide shows by following the steps outlined in the two preceding sections in this book.

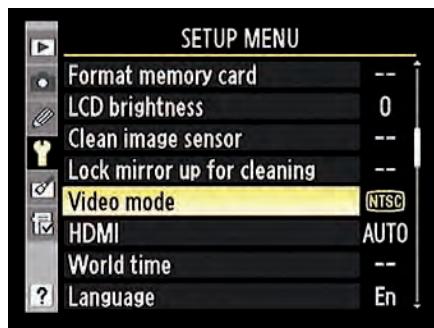


Figure 9-15: The options related to television playback live on the Setup menu.

Part IV

The Part of Tens

The 5th Wave By Rich Tennant

©RICHENNANT



"If I'm not gaining weight, then why does this digital image take up 3 MB more memory than a comparable one taken six months ago?"



In this part . . .

In time-honored *For Dummies* tradition, this part of the book contains additional tidbits of information presented in the always popular “Top Ten” list format. Chapter 10 shows you how to do some minor picture touchups, such as cropping and adjusting exposure, by using tools on your camera’s Retouch menu. Following that, Chapter 11 introduces you to ten camera functions that I consider specialty tools — bonus options that, while not at the top of the list of the features I suggest you study, are nonetheless interesting to explore when you have a free moment or two.



Ten (Or So) Fun and Practical Retouch Menu Features

In This Chapter

- ▶ Removing red-eye
- ▶ Straightening crooked horizon lines
- ▶ Tweaking exposure and color
- ▶ Fixing lens distortion
- ▶ Adding a starburst effect
- ▶ Cropping away excess background

Every photographer produces a clunker image now and then. When it happens to you, don't be too quick to reach for the Delete button, because many common problems are surprisingly easy to fix. In fact, you often can repair your photos right in the camera, thanks to tools found on the Retouch menu. You can even create some special effects with a couple of the menu options.

This chapter offers step-by-step recipes for using ten of these photo-repair and enhancement features. Additionally, I received special dispensation from the *For Dummies* folks to start things off with an additional section that summarizes tips that relate to all the Retouch menu options. In the words of Nigel Tufnel from the legendary rock band Spinal Tap, “This one goes to 11!”



Applying the Retouch Menu Filters



When you apply a correction or enhancement from the Retouch menu, the camera creates a copy of your original photo and then makes the changes to the copy only. Your original is preserved untouched.

You can take advantage of most Retouch menu features in two ways:



- ✓ Display the menu, select the tool you want to use, and press OK. You're then presented with thumbnails of your photos. Use the Multi Selector to move the yellow highlight box over the photo you want to adjust and press OK. You next see options related to the selected tool.
- ✓ Switch the camera to Playback mode, display your photo in single-frame view, and press OK. (Remember, you can shift from thumbnail display to single-frame view simply by pressing the OK button.) The Retouch menu then appears superimposed over your photo. Select the tool you want to use and press OK again to access the tool options. I prefer the second method, so that's how I approach things in this chapter, but it's entirely a personal choice.



The one Retouch menu feature you can't access by using the first technique is the Side-by-side comparison option. This feature enables you to compare the original image and the retouched version side by side on the monitor. Here's how it works:

1. **Display either the original or edited picture in single-image view, as shown on the left in Figure 10-1.**

See Chapter 4 if you need help with picture playback.

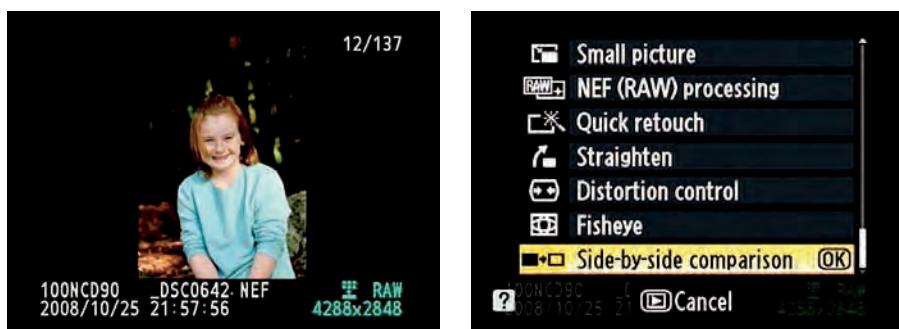


Figure 10-1: In single-image playback mode, press OK to superimpose the Retouch menu over the photo.

2. Press OK.

A variation of the Retouch menu appears superimposed on the image, as shown on the right in Figure 10-1.

3. Highlight Side-by-side and press OK.

Now you see the original image in the left half of the frame, with the retouched version on the right, as shown in Figure 10-2. At the top of the screen, you see labels that indicate the Retouch tools you applied to the photo (D-Lighting, in the figure).



If you created multiple retouched versions of the same original, you can compare all the versions.

First, press the Multi Selector right or left to surround the After image with the yellow highlight box. Now press the Multi Selector up and down to scroll through all the retouched versions.

**4. To temporarily view the original or retouched image at full-frame view, use the Multi Selector to highlight its thumbnail and then press and hold the Qual button.**

Release the button to return to Side-by-side view.

5. To exit Side-by-side view and return to single-image playback, press OK.

All retouched copies are saved in the JPEG file format and assigned a filename that begins with one of the following three-letter codes:

- **SSC:** Used for photos that you crop using the Trim function.
- **CSC:** Indicates that you applied one of the other Retouch menu corrections.

As a reminder, original photos have filenames that begin either with DSC or _DSC. (The underscore at the front of the filename tells you that you recorded the photo using the Adobe RGB color mode, an option you can explore in Chapter 6.)



The specific file numbers of retouched copies don't match those of the original, however, which can be a little confusing. Instead, the first retouched copy is assigned the file number 0001, the second, 0002, and so on.

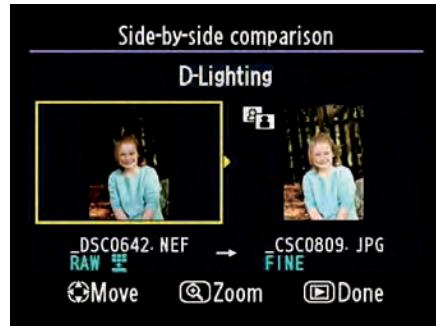


Figure 10-2: The original appears on the left; the retouched version, on the right.

Removing Red-Eye

From my experience, red-eye is not a major problem with the D90. Typically, the problem occurs only in very dark lighting, which makes sense: When little ambient light is available, the pupils of the subjects' eyes widen, creating more potential for the flash light to cause red-eye reflection.

If you spot a red-eye problem, however, give the Red-Eye Correction filter a try:

1. Display your photo in single-image view and press OK.

The Retouch menu appears over your photo.

2. Highlight Red-Eye Correction, as shown on the left in Figure 10-3, and press OK.

If the camera detects red-eye, it applies the removal filter and displays the results in the monitor. If the camera can't find any red-eye, it displays a message telling you so.

Note that the Red-Eye Correction option appears dimmed in the menu for photos taken without flash.

3. Carefully inspect the repair.



Press the Qual button to magnify the display so that you can check the camera's work, as shown on the right in Figure 10-3. To scroll the display, press the Multi Selector up, down, right, or left. The yellow box in the tiny navigation window in the lower-right corner of the screen indicates the area of the picture that you're currently viewing.

4. If you approve of the correction, press OK twice.

The first OK returns the display to normal magnification; the second creates the retouched copy.

5. If you're not happy with the results, press OK to return to normal magnification. Then press the Playback button to cancel the repair.

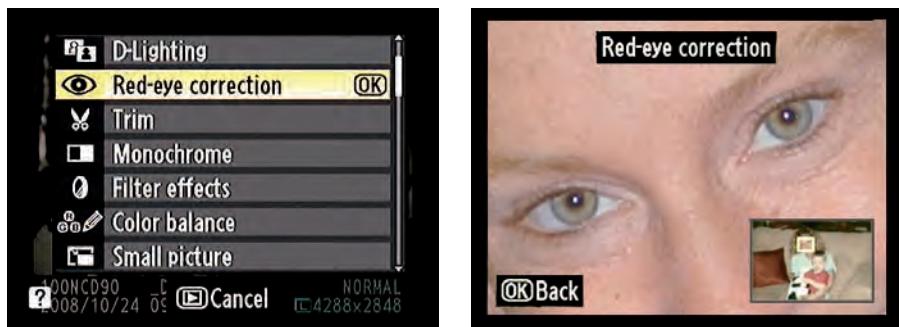


Figure 10-3: An automated red-eye remover is built right into your camera.



If the in-camera red-eye repair fails you, most photo editing programs have red-eye removal tools that should enable you to get the job done. Unfortunately, no red-eye remover works on animal eyes. Red-eye removal tools know how to detect and replace only red-eye pixels, and animal eyes typically turn yellow, white, or green in response to a flash. The easiest solution is to use the paint-brush tool found in most photo editors to paint in the proper eye colors.

Straightening Tilting Horizon Lines

I seem to have a knack for shooting with the camera slightly misaligned with respect to the horizon line, which means that photos like the one on the left in Figure 10-4 often wind up crooked — in this case, everything tilts down toward the right corner of the frame. Perhaps those who say I have a cock-eyed view of life are right? At any rate, my inability to “shoot straight” makes me especially fond of the Straighten tool on the Retouch menu. With this filter, you can rotate tilting horizons back to the proper angle, as shown in the right image in the figure.

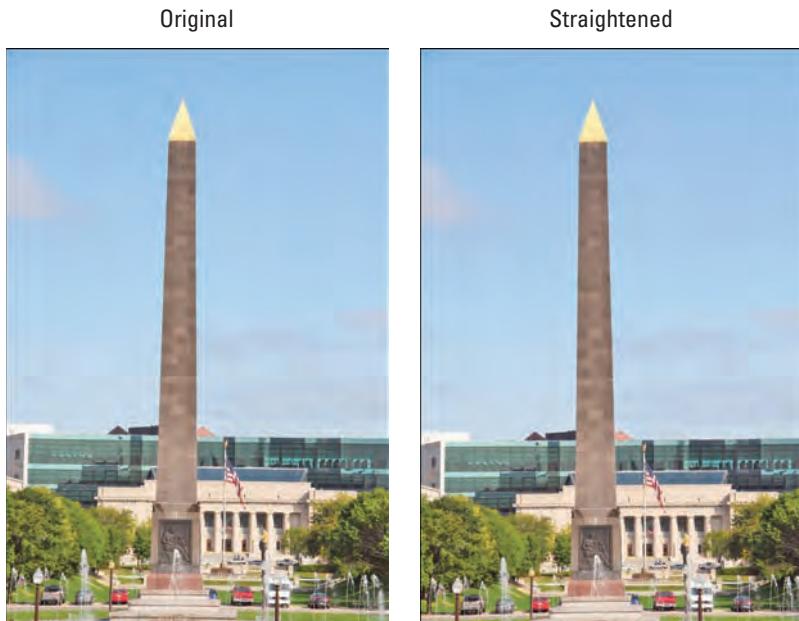


Figure 10-4: You can rotate crooked photos back to a level orientation with the Straighten tool.



In order to achieve this rotation magic, the camera must crop your image and then enlarge the remaining area — that's why the after photo in Figure 10-4 appears to contain slightly less subject matter than the original. (The same cropping occurs if you make this kind of change in a photo editor.) The camera updates the display as you rotate the photo so that you can get an idea of how much of the original scene may be lost.

Here's how to put the tool to work:

- 1. Display the photo in single-image playback mode and then press OK to get to the Retouch menu.**
- 2. Highlight Straighten, as shown on the left in Figure 10-5, and press OK.**

Now you see a screen similar to the one on the right in the figure, with a grid superimposed on your photo to serve as an alignment aid.



Figure 10-5: Press the Multi Selector right or left to rotate the image in increments of .25 degrees.

- 3. To rotate the picture clockwise, press the Multi Selector right.**

Each press spins the picture by about .25 degrees. You can achieve a maximum rotation of five degrees. The yellow pointer on the little scale under the photo shows you the current amount of rotation.

- 4. To rotate in a counter-clockwise direction, press the Multi Selector left.**
- 5. When things are no longer off-kilter, press OK to create your retouched copy.**

Shadow Recovery with D-Lighting

In Chapter 5, I introduce you to a feature called Active D-Lighting. If you turn on this option when you shoot a picture, the camera captures the image in a way that brightens the darkest parts of the image, bringing shadow detail into the light, while leaving highlight details intact. It's a great trick for dealing with high-contrast scenes or subjects that are backlit.

You also can apply a similar adjustment after you take a picture by choosing the D-Lighting option on the Retouch menu. I did just that for the photo in Figure 10-6, where strong backlighting left the balloon underexposed in the original image.

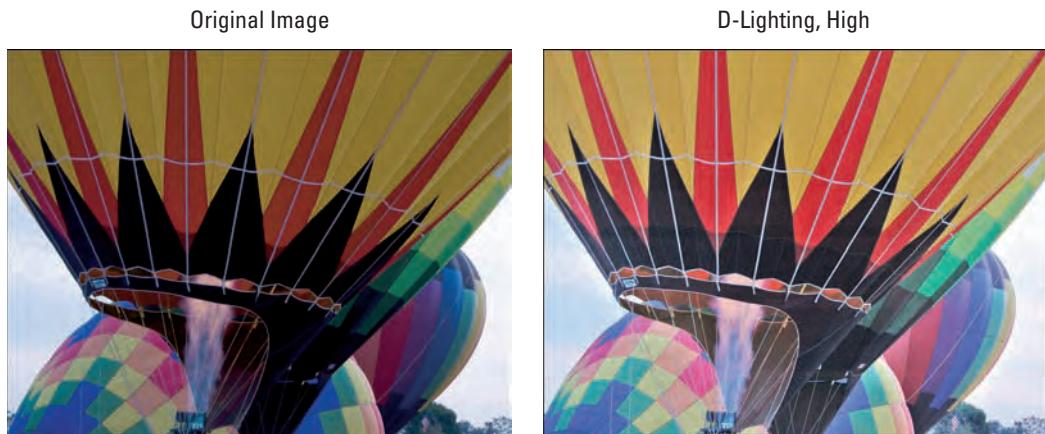


Figure 10-6: An underexposed photo (left) gets help from the D-Lighting filter (right).

Here's how to apply the filter:

1. Display your photo in single-image mode and then press OK to display the Retouch menu.
2. Highlight D-Lighting, as shown on the left in Figure 10-7, and press OK.

You see a thumbnail of your original image along with an after thumbnail, as shown in the second image in Figure 10-7.

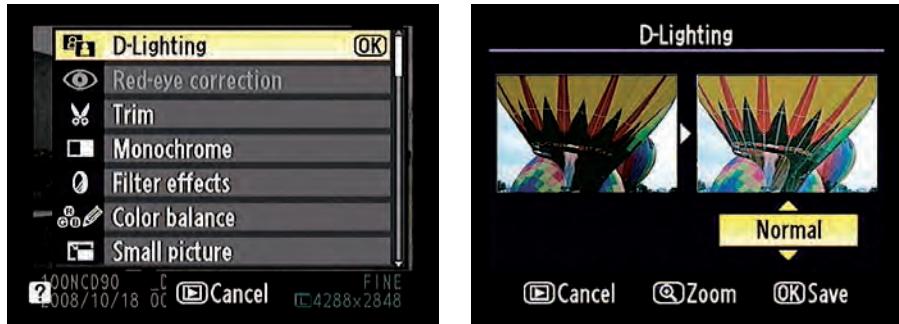


Figure 10-7: Apply the D-Lighting filter via the Retouch menu.

3. Select the level of adjustment by pressing the Multi Selector up or down.

You get three levels: Low, Normal, and High. I used High for the repair to my balloon image.



To get a closer view of the adjusted photo, press and hold the Qual button. Release the button to return to the two-thumbnail display.

4. To go forward with the correction, press OK.

The camera creates your retouched copy.



Note that you can't apply D-Lighting to an image if you captured the photo with the Picture Control feature set to Monochrome. (See Chapter 6 for details on Picture Controls.) Nor does D-Lighting work on any pictures to which you've applied the Quick Retouch filter, covered next, or the Monochrome filter, detailed a little later in this chapter.

Boosting Shadows, Contrast, and Saturation Together

The Quick Retouch filter increases contrast and saturation and, if your subject is backlit, also applies a D-Lighting adjustment to restore some shadow detail that otherwise might be lost. In other words, Quick Retouch is sort of like D-Lighting Plus. Well, kind of, anyway.

Figure 10-8 illustrates the difference between the two filters. The first example shows my original, a close-up shot of a tree bud about to emerge. I applied the D-Lighting filter to the second example, which brightened the darkest areas of the image. In the final example, I applied the Quick

Retouch filter. Again, shadows got a slight bump up the brightness scale. But the filter also increased color saturation and adjusted the overall image to expand the tonal range across the entire brightness spectrum, from very dark to very bright. In this photo, the saturation change is most noticeable in the yellows and reds of the tree bud. (The sky color may initially appear to be less saturated, but in fact, it's just a lighter hue than the original, thanks to the contrast adjustment.)

To try the filter out, display your photo in single-image playback mode and press OK to bring up the Retouch menu. Highlight Quick Retouch, as shown on the left in Figure 10-9, and press OK to display the second screen in the figure.

As with the D-Lighting filter, you can set the level of adjustment to Low, Normal, or High. Just press the Multi Selector up or down to change the setting. (For my example photos, I applied both the D-Lighting and Quick Retouch filters at the Normal level.) Press OK to finalize the job and create your retouched copy.



Note that the same issues related to D-Lighting, spelled out in the preceding section, apply here as well: You can't apply the Quick Retouch filter to monochrome images. Additionally, you can't apply the Quick Retouch filter to a retouched copy that you created by applying the D-Lighting filter, and vice versa. However, you can create two retouched copies of your original image, applying D-Lighting to one and Quick Retouch to the other. You then can use the Side-by-side comparison feature to compare the retouched versions to see which one you prefer.



Original



D-Lighting



Quick Retouch

Figure 10-8: Quick Retouch brightens shadows and also increases saturation and contrast, producing a slightly different result than D-Lighting.

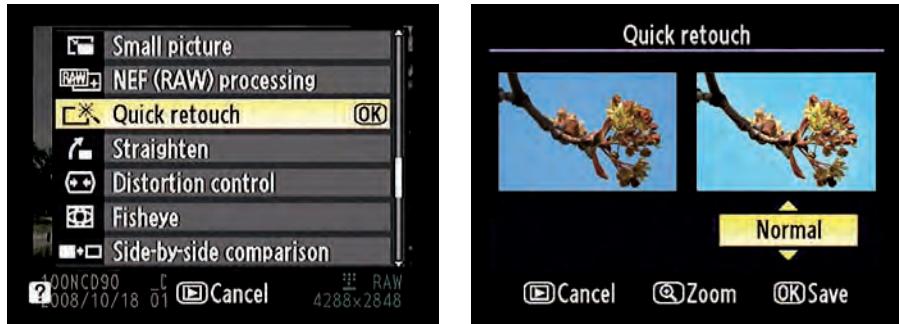


Figure 10-9: Press the Multi Selector up or down to adjust the amount of the correction.

Two Ways to Tweak Color

Chapter 6 explains how to use your camera’s White Balance and Picture Control features to manipulate photo colors. But even if you play with those settings all day, you may wind up with colors that you’d like to tweak just a tad.

You can boost color saturation with the Quick Retouch filter, explained in the preceding section. But that tool also adjusts contrast and, depending on the photo, also applies a D-Lighting correction. With the Filter Effects and Color Balance tools, however, you can manipulate color only. The next two sections tell all.

Applying digital lens filters

Shown in Figure 10-10, the Filter Effects option offers five color-manipulation filters that are designed to mimic the results produced by traditional lens filters. (The sixth filter on the menu, Cross Screen, is a special-effects filter that you can explore later in this chapter, in the section “Adding a Starburst Effect.”) These color-shifting filters work like so:

- ✓ **Skylight filter:** This filter reduces the amount of blue in an image. The result is a very subtle warming effect. That is, colors take on a bit of a reddish cast.
- ✓ **Warm filter:** This one produces a warming effect that’s just a bit stronger than the Skylight filter.
- ✓ **Color intensifiers:** You can boost the intensity of reds, greens, or blues individually by applying these filters.

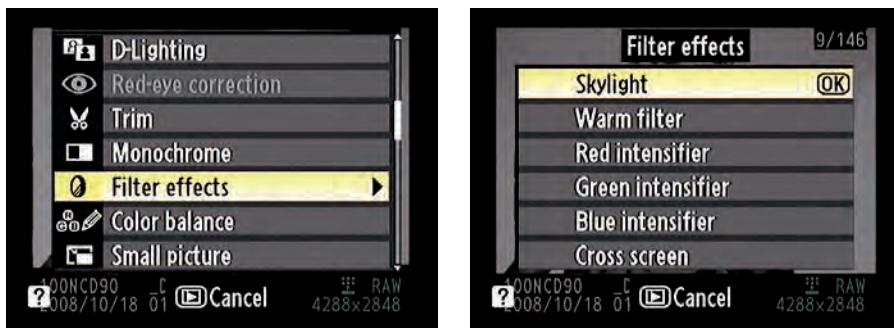


Figure 10-10: You can choose from six effects that mimic traditional lens filters.

As an example, Figure 10-11 shows you an original image and three adjusted versions. As you can see, the Skylight and Warm filters are both very subtle; in this image, the effects are most noticeable in the sky. The fourth example shows a variation that I created by using the Color Balance filter, explained in the next section. For that example, I shifted colors toward the cool (bluish) side of the color spectrum.

Follow these steps to apply the Filter Effects color tools:

1. **Display your photo in single-frame playback mode and press OK to display the Retouch menu.**

2. **Highlight Filter Effects and press OK.**

You see the list of available filters. (Refer to Figure 10-10.)

3. **Highlight the filter you want to use and press OK.**

The camera displays a preview of how your photo will look if you apply the filter.

4. **To apply the Skylight or Warm filter, press OK.**

Or press the Playback button if you want to cancel the filter application. You can't adjust the intensity of these two filters.

5. **For the color-intensifier filters, press the Multi Selector up or down to specify the amount of color shift. Then press OK.**

Manipulating color balance

The Color Balance tool enables you to adjust colors with more finesse than the Filter Effects options. With this filter, you can shift colors toward any part of the color spectrum. For example, you can make colors a little greener or a lot greener, a lot more yellow or less yellow, and so on. I used the filter to create the fourth image in Figure 10-11, creating a version of the scene that contains cooler — bluer — hues.

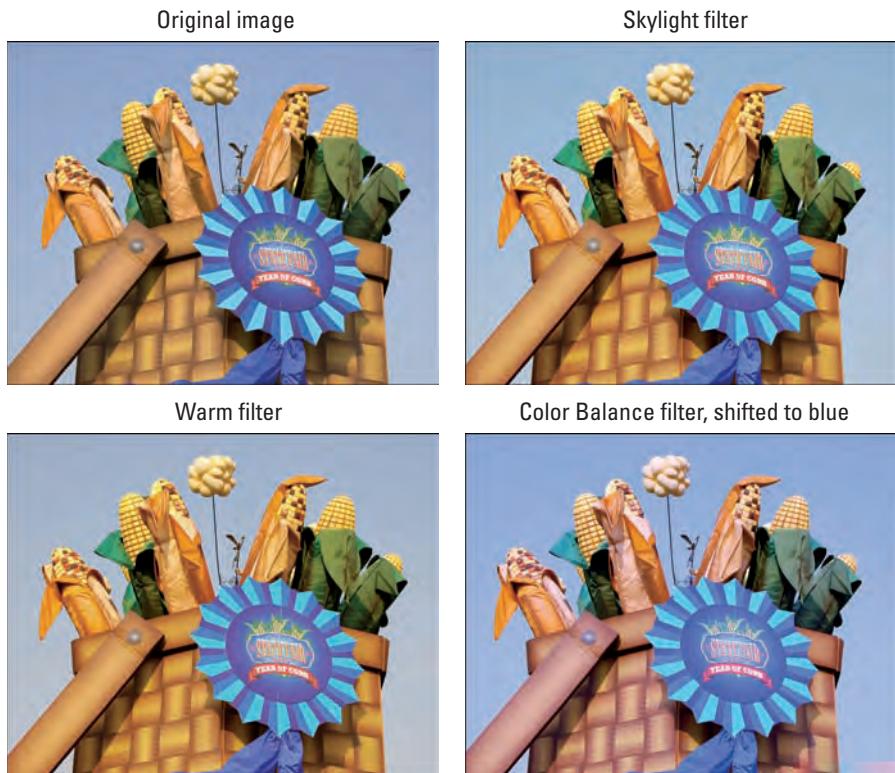


Figure 10-11: Here you see the results of applying two Filter Effects adjustments and a Color Balance shift.

Take these steps to give it a whirl:

1. **Display your photo in single-image playback mode and press OK.**
Up pops the Retouch menu.
2. **Highlight Color Balance, as shown on the left in Figure 10-12.**
3. **Press OK to display the screen shown on the right in the figure.**

The important control here is the color grid in the lower-left corner. When the little black box is in the center of the grid, as in the figure, no color-balance adjustment has been applied.

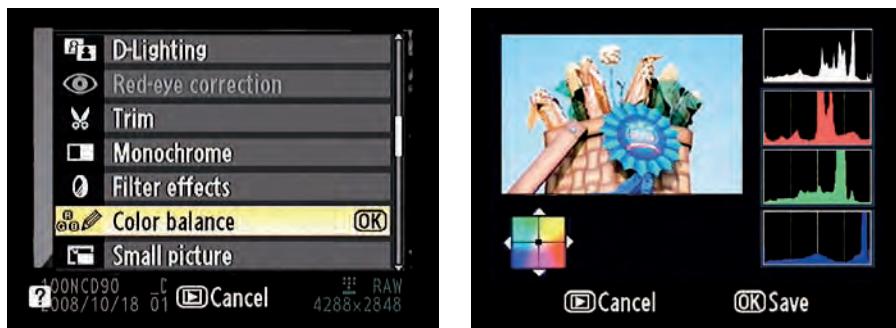


Figure 10-12: Press the Multi Selector to move the color-shift marker and adjust color balance.

4. Use the Multi Selector to move the black square in the direction of the color adjustment you want to make.

Press up to make the image more green, press right to make it more red, and so on. The histograms on the right side of the display show you the resulting impact on overall image brightness, as well as on the individual red, green, and blue brightness values — a bit of information that’s helpful if you’re an experienced student in the science of reading histograms. (Chapter 4 gives you an introduction.) If not, just check the image preview to monitor your results.

5. Press OK to create the color-adjusted copy of your photo.

Creating Monochrome Photos

With the Monochrome Picture Control feature covered in Chapter 6, you can shoot black-and-white photos. Technically, the camera takes a full-color picture and then strips it of color as it’s recording the image to the memory card, but the end result is the same.

As an alternative, you can create a black-and-white copy of an existing color photo by applying the Monochrome option on the Retouch menu. You can also create sepia and *cyanotype* (blue and white) images via the Monochrome option. Figure 10-13 shows you examples of all three effects.



Figure 10-13: You can create three monochrome effects through the Retouch menu.



I prefer to convert my color photos to monochrome images in my photo editor; going that route simply offers more control, not to mention the fact that it's easier to preview your results on a large computer monitor than on the camera monitor. Still, I know that not everyone's as much of a photo editing geek as I am, so I present to you here the steps involved in applying the Monochrome effects to a color original in your camera:

1. Display your photo in single-image view and press OK to bring the Retouch menu to life, as shown on the left in Figure 10-14.



Figure 10-14: Select a filter and press OK to start the process.

2. Highlight Monochrome and press OK to display the three effect options, as shown on the right in the figure.
3. Highlight the effect that you want to apply and press OK.
You then see a preview of the image with your selected photo filter applied.
4. To adjust the intensity of the sepia or cyanotype effect, press the Multi Selector up or down.
No adjustment is available for the black-and-white filter.
5. Press OK to create the monochrome copy.

Removing (or Creating) Lens Distortion

Certain types of lenses can produce a type of distortion that causes straight lines in a scene to appear curved. Wide-angle lenses, for example, often create *barrel distortion*, in which objects at the center appear to be magnified and pushed forward — as if you wrapped the photo around the outside of a sphere. The effect is perhaps easiest to spot in a rectangular subject like the oil painting in Figure 10-15. Notice that in the original image, on the left, the edges of the painting appear to bow slightly outward. *Pincushion distortion* affects the photo in the opposite way, making center objects appear smaller and farther away, as if you wrapped the photo around the inside of a sphere.



You can minimize the chances of distortion by researching your lens purchases carefully. Photography magazines and online photography sites regularly measure and report distortion performance in their lens reviews.



Figure 10-15: Barrel distortion makes straight lines appear to bow outward.

If you do notice a small amount of distortion, the Retouch menu offers a Distortion Control option that can help remove it. I applied the filter to create the second version of the subject in Figure 10-15, for example. Less helpful, in my opinion, is a related filter, the Fisheye filter, that actually creates distortion in an attempt to replicate the look of a photo taken with a fisheye lens.



The extent of the in-camera adjustment you can apply is fairly minimal. Additionally, I find it a little difficult to gauge my results on the camera monitor because you can't display any sort of alignment grid over the image to help you find the right degree of correction. For those reasons, I prefer to do this kind of work in my photo editor. Wherever you make the correction, understand that distortion correction filters crop away part of your existing scene as part of the alteration, just like the Straighten tool, covered earlier in this chapter.

All that said, the first step in applying either filter is to display your photo in single-image playback mode and then press OK to display the Retouch menu. Highlight the filter you want to use and press OK again. From that point, the process depends on which of the two filters you're using:

- ✓ **Distortion Control:** After you press OK to select the filter, you see the screen shown on the left in Figure 10-16. For some lenses, an Auto option is available; as its name implies, this option attempts to automatically apply the right degree of correction. If the Auto option is dimmed or you prefer to do the correction on your own, choose Manual and press OK to display the right screen in the figure. The little scale under the image represents the degree and direction of shift that you're applying. Press the Multi Selector right to reduce barrel distortion; press left to reduce pincushioning. Press OK when you're ready to make your corrected copy of the photo.



Figure 10-16: Use the Distortion Control filter to reduce barrel or pincushion distortion.

✓ **Fisheye:** After you highlight the filter name and press OK, you see a screen similar to the right one in Figure 10-16. This time, the scale at the bottom of the image indicates the strength of the distortion effect, however. Press the Multi Selector right or left to adjust the amount. Then press OK to create the fisheye copy.

Adding a Starburst Effect

Want to give your photo a little extra sparkle? Experiment with your D90's Cross Screen filter. This filter adds a starburst-like effect to the brightest areas of your image, as illustrated in Figure 10-17.



Figure 10-17: The Cross Screen filter adds a starburst effect.

Traditional photographers create this effect by placing a special filter over the camera lens; the filter is sometimes known as a Star filter instead of a Cross Screen filter. With your D90, you can apply a digital version of the filter via the Retouch menu, as follows:

1. **Display your photo in single-image playback mode and press OK to call up the Retouch menu.**
2. **Highlight Filter Effects and press OK.**
3. **Highlight Cross Screen and press OK.**

You see the screen shown in Figure 10-18. The preview shows you the results of the Cross Screen filter at the current filter settings.

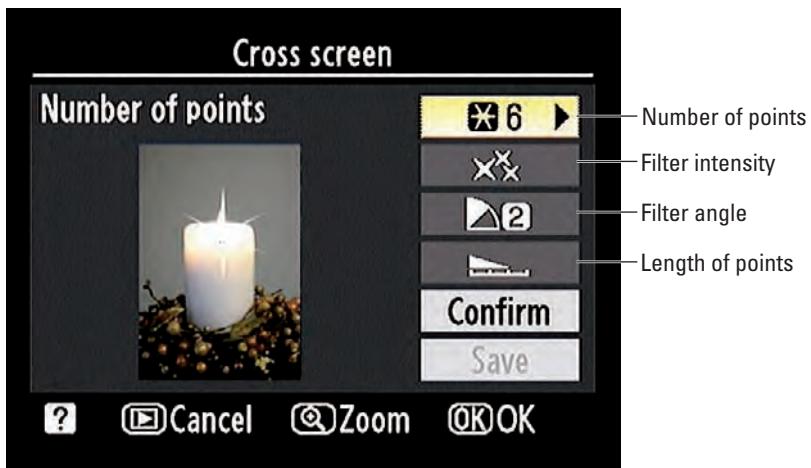


Figure 10-18: You can play with four filter settings to tweak the effect.

4. **Adjust the filter settings as needed.**

You can adjust the number of points on the star, the strength of the effect, the length of the star's rays, and the angle of the effect. Just use the Multi Selector to highlight an option and then press the Multi Selector right to display the available settings. Highlight your choice and press OK. I labeled the four options in Figure 10-18.

To update the preview, highlight Confirm and press OK.



You can also press and hold the Qual button to temporarily view your image in full-screen view. Release the button to return to the normal preview.

5. Highlight Save and press OK to create your star-crossed image.

Keep in mind that the number of starbursts the filter applies depends on your image. You can't change that number; the camera automatically adds the twinkle effect wherever it finds very bright objects. If you want to control the exact placement of the starbursts, you may want to forgo the in-camera filter and find out whether your photo software offers a more flexible star-filter effect. (You can also create the effect manually by painting the cross strokes onto the image in your photo editor.)

Cropping Your Photo

To *crop* a photo simply means to trim away some of its perimeter. Cropping away excess background can often improve an image, as illustrated by my original butterfly scene, shown in Figure 10-19, and its cropped cousin, shown in Figure 10-20. When shooting this photo, I couldn't get close enough to the butterfly to fill the frame with it, and as a result, the original composition suffers. Not only is there too much extraneous background, you can see the foot of another photographer in the upper-right corner. So I simply cropped the image to the composition you see in Figure 10-20.



Figure 10-19: The original contains too much extraneous background.



Figure 10-20: Cropping creates a better composition and eliminates background clutter.

With the Trim function on the Retouch menu, you can crop a photo right in the camera. Note a few things about this feature:

- ✓ You can crop your photo to three different aspect ratios: 3:2, which maintains the original proportions and matches that of a 4 x 6-inch print; 4:3, the proportions of a standard computer monitor or television (that is, not a wide-screen model); and 5:4, which gives you the same proportions as an 8 x 10-inch print. If your purpose for cropping is to prepare your image for a frame size that doesn't match any of these aspect ratios, crop in your photo software instead.
- ✓ For each aspect ratio, you can choose from six crop sizes. The sizes are stated in pixel terms — for example, if you select the 3:2 aspect ratio, you can crop the photo to measurements of 3424 x 2280 pixels, 2560 x 1704 pixels, 1920 x 1280 pixels, 1280 x 856 pixels, 960 x 640 pixels, and 640 x 424 pixels.
- ✓ After you apply the Trim function, you can't apply any other fixes from the Retouch menu. So make cropping the last of your retouching steps.



Keeping those caveats in mind, trim your image as follows:

1. Display your photo in single-image view and press OK to launch the Retouch menu.
2. Highlight Trim and press OK.

Chapter 10: Ten (Or So) Fun and Practical Retouch Menu Features

Now you see a screen similar to the one in Figure 10-21. The yellow highlight box indicates the current cropping frame. Anything outside the frame is set to be trimmed away.

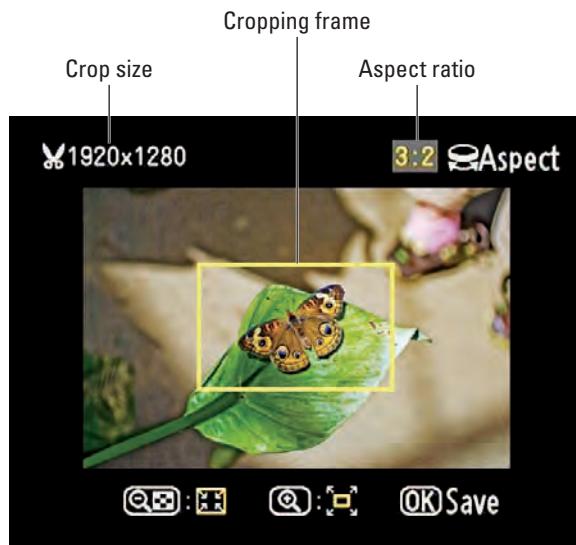


Figure 10-21: You can crop to three different aspect ratios: 3:2, 4:3, or 5:4.

3. Rotate the main command dial to change the crop aspect ratio.

The selected aspect ratio appears in the upper-right corner of the screen, as shown in Figure 10-21.

4. Adjust the cropping frame size and placement as needed.

The current crop size appears in the upper-left corner of the screen. (Refer to Figure 10-21.) You can adjust the size and placement of the cropping frame like so:



- *Reduce the size of the cropping frame.* Press and release the ISO button. Each press of the button further reduces the crop size.



- *Enlarge the cropping frame.* Press the Qual button to expand the crop boundary and leave more of your image intact.
- *Reposition the cropping frame.* Press the Multi Selector up, down, right, and left to shift the frame position.

5. Press OK to trim the image.

Ten Special-Purpose Features to Explore on a Rainy Day

In This Chapter

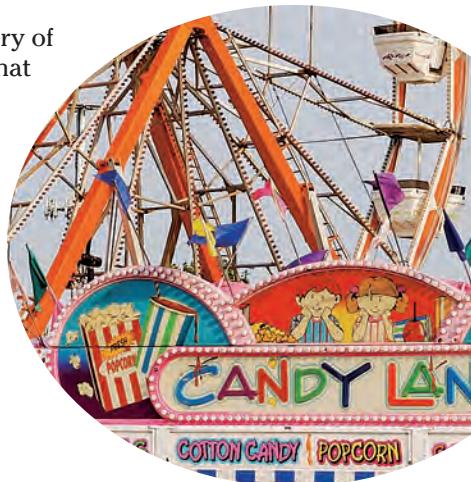
- ▶ Adding text comments to images
- ▶ Creating a custom menu and image-storage folder
- ▶ Changing the function of some controls
- ▶ Combining two (or three) photos into one

Consider this chapter the literary equivalent of the end of one of those late-night infomercial offers — the part where the host exclaims, “But wait! There’s more!”

The ten features covered in these pages fit the category of “interesting bonus.” They aren’t the sort of features that drive people to choose one camera over another, and they may come in handy only for certain users, on certain occasions. Still, they’re included at no extra charge with your camera purchase, so check ’em out when you have a few spare moments. Who knows; you may discover that one of these bonus features is actually a hidden gem that provides just the solution you need for one of your photography problems.

Annotate Your Images

Through the Image Comment feature on the Setup menu, you can add text comments to your picture files. Suppose, for example, that you’re traveling on vacation and visiting a different destination every day. You can annotate all the pictures you take on a particular outing with the name of the location or attraction. You can then view the comments either



in Nikon ViewNX, which ships free with your camera, or Capture NX 2, which you must buy separately. The comments also appear in some other photo programs that enable you to view metadata.

Here's how the Image Comment feature works:

- 1. Display the Setup menu and highlight Image Comment, as shown on the left in Figure 11-1.**



Figure 11-1: You can tag pictures with text comments that you can view in Nikon ViewNX.

- 2. Press OK to display the right screen in the figure.**

- 3. Highlight Input Comment and press the Multi Selector right.**

Now you see a keyboard-type screen like the one shown in Figure 11-2.

- 4. Use the Multi Selector to highlight the first letter of the text you want to add.**

- 5. Press the Qual button to enter that letter into the display box at the bottom of the screen.**

- 6. Keep highlighting letters and pressing the Qual button to continue entering your comment.**

Your comment can be up to 36 characters long.



Figure 11-2: Highlight a letter and press the Qual button to enter it into the comment box.

Chapter 11: Ten Special-Purpose Features to Explore on a Rainy Day



To delete a letter, move the cursor under the offending letter and then press the Delete button.

7. To save the comment, press OK.

You're returned to the Image Comment menu.

8. Highlight Attach Comment and press the Multi Selector right to put a check mark in the box.

The check mark turns the Image Comment feature on.

9. Highlight Done and press OK to wrap things up.

You're returned to the Setup menu. The Image Comment menu item should now be set to On.



The camera applies your comment to all pictures you take after turning on Image Comment. To disable the feature, revisit the Image Comment menu, highlight Attach Comment, and press the Multi Selector right to toggle the check mark off.

To view comments in Nikon ViewNX, display the Metadata tab. (Click the tab on the left side of the program window.) Select an image by clicking its thumbnail. The Image Comment text appears in the File Info 2 section of the tab, as shown in Figure 11-3. (If the panel is closed, click the little triangle next to File Info 2.) See Chapter 8 for more details about using ViewNX.

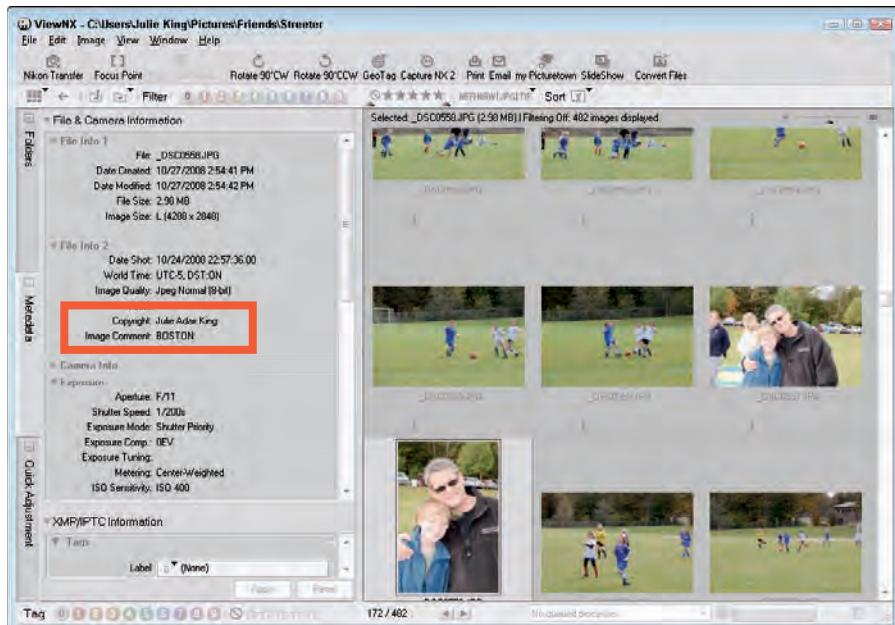


Figure 11-3: Comments appear with other metadata in Nikon ViewNX.

Creating Your Own Menu

Keeping track of how to access all of the D90's options can be a challenge, especially when it comes to those that you adjust through menus. To make things a little easier, you can build a custom menu that holds up to 20 of the options you use most frequently. Check it out:

1. Display the Recent Settings/My Menu menu, as shown on the left in Figure 11-4.

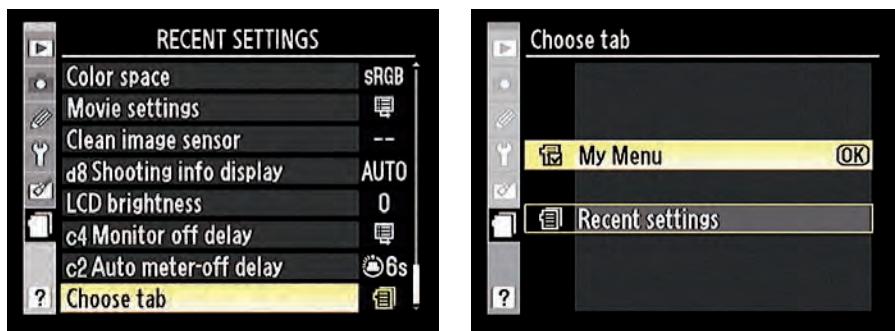


Figure 11-4: You can create a custom menu to hold up to 20 of the settings you access most often.

2. Scroll to the bottom of the menu, highlight Choose Tab, and press OK.

You see the second screen shown in Figure 11-4.

3. Highlight My Menu and press OK.

The main My Menu screen appears, as shown on the left in Figure 11-5.



Figure 11-5: Select Add Items to add options to your custom menu.

4. Highlight Add Items and press OK.

Now you see a list of the five main camera menus, as shown on the right in Figure 11-5.

5. Highlight a menu that contains an option you want to add to your custom menu and then press the Multi Selector right.

You see a list of all available options on that menu, as shown in Figure 11-6. (If you select the Custom Setting menu, you have to first select the submenu that contains the option you want to put on your menu.)



Figure 11-6: Highlight a menu item and press OK to add it to your custom menu.



A few items can't be added to a custom menu. A little box with a slash through it appears next to those items.

6. To add an item to your custom menu, highlight it and press OK.

Now you see the Choose Position screen, where you can change the order of your menu items. For now, just press OK to return to the My Menu screen; you can set up the order of your menu items later. (See the list following these steps.) The menu item you just added appears at the top of the My Menu screen.

7. Repeat Steps 4–6 to add more items to your menu.

When you get to Step 5, a check mark appears next to any item that's already on your menu.

After creating your custom menu, you can access it by pressing the Menu button and choosing the Recent Settings/My Menu screen. (If you want to switch to the Recent Settings menu, select Choose Tab to display the right screen shown in Figure 11-4 and then select Recent Settings.)

You can reorder the menu items and remove items as follows:

- ☛ **Change the order of menu options.** Display your custom menu and highlight Rank Items, as shown on the left in Figure 11-7. You then see a screen that lists all your menu items in their current order. Highlight a menu item, as shown on the right in the figure, press OK, and then use the Multi Selector to move it up or down the list. Press OK to lock in the new position of the menu item. When you’re happy with the order of the menu items, press the Multi Selector left to return to the My Menu screen.
- ☛ **Remove menu items.** Again, head for the My Menu screen. Select Remove Items and press the Multi Selector right. You see a list of all the current menu items, with an empty box next to each item. To remove an item, highlight it and press the Multi Selector right. A checkmark then appears in that item’s box. After tagging all the items you want to remove, highlight Done and press OK.

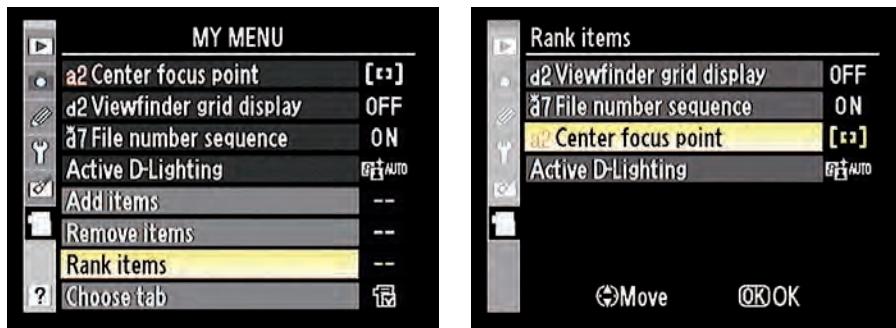


Figure 11-7: Choose Rank Items to change the order of menu items.

Creating Custom Image Folders

By default, your camera initially stores all your images in one folder, which it names 100NCD90. Folders have a storage limit of 999 images; when you exceed that number, the camera creates a new folder, assigning a name that indicates the folder number — 101NCD90, 102NCD90, and so on.

If you choose, however, you can create your own, custom-named folders. For example, perhaps you sometimes use your camera for business and sometimes for personal use. To keep your images separate, you can set up one folder named DULL and one named FUN — or perhaps something less incriminating, such as WORK and HOME.

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Whatever your folder-naming idea, you create custom folders like so:

1. **Display the Shooting menu and highlight Active Folder, as shown on the left in Figure 11-8.**



Figure 11-8: You can create custom folders to organize your images right on the camera.

2. **Press OK to display the screen shown on the right in Figure 11-8.**
3. **Highlight New and press the Multi Selector right.**

You see a keyboard-style screen similar to the one used to create image comments, as described at the start of the chapter. The folder-naming version appears on the left in Figure 11-9.



Figure 11-9: Folder names can contain up to five characters.

4. **Enter a folder name up to five characters long.**

Use these techniques:



- To enter a letter, highlight it by using the Multi Selector. Then press the Qual button.
- To move the text cursor, press and hold the ISO button and then press the Multi Selector in the direction you want to move the cursor.
- To delete a letter, place the cursor under it and press the Delete button.

5. After creating your folder name, press OK to complete the process and return to the Shooting menu.

The folder you just created is automatically selected as the active folder, as shown on the right in Figure 11-9.



If you take advantage of this option, remember to specify where you want your pictures stored each time you shoot: Select Active Folder from the Shooting menu and press OK to display the screen shown on the left in Figure 11-10. Highlight Select folder and press the Multi Selector right to display a list of all your folders, as shown on the right. Highlight the folder that you want to use and press OK. Your choice also affects which images you can view in Playback mode; see Chapter 4 to find out how to select the folder you want to view.

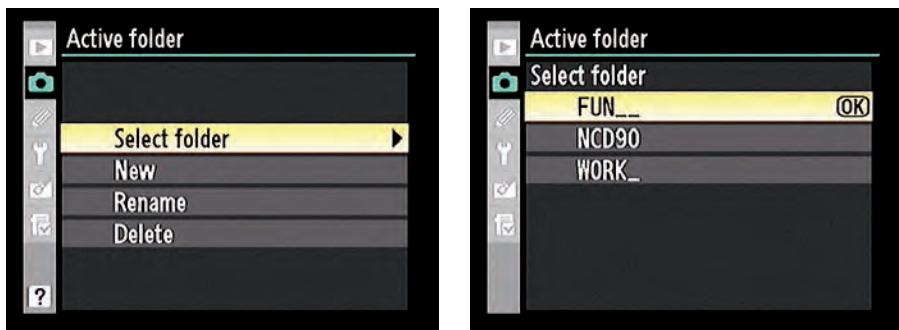


Figure 11-10: Remember to specify where you want to store new images.

If necessary, you can rename a custom folder by using the Rename option on the Active Folder screen. (Refer to the left screen in Figure 11-10.) The Delete option on the same screen enables you to get rid of all empty folders on the memory card.

Customizing External Controls

When your camera ships from the Nikon factory, the buttons and command dials are set up to work as described throughout this book. You can, however, assign different functions to three buttons, as well as to the two command dials. You can even alter the performance of the little switch on the On/Off button that lights up the control panel.

The next sections explore your options.

Adjusting the On/Off switch

Normally, rotating the power switch past On to the position marked by the little light bulb icon temporarily illuminates the control panel. But you also can use the switch to light up the control panel and bring up the Shooting Information display at the same time.

I personally don't see much benefit in making this change, seeing as how you can simply press the Info button to display the Shooting Information screen. But if you disagree, visit the Custom Setting menu, choose the Controls submenu, and press OK. Highlight the Switch option, as shown on the left in Figure 11-11, and press OK to display the second screen in the figure. Highlight the second option and press OK again.

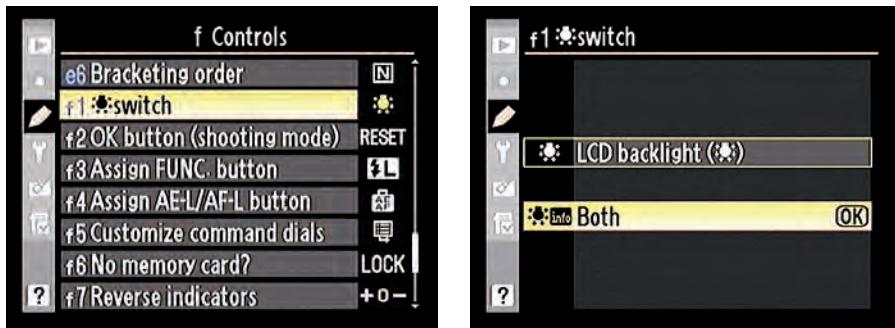


Figure 11-11: You can light up both the Control panel and Shooting Information screen with the On/Off switch.

Changing the function of the OK button

By default, pressing the OK button when you're in picture-taking mode automatically selects the center focus point. I think that's a fairly handy feature, but if you prefer, you can tell the camera that you instead want it to highlight the active focus point when you press the button. Or you can disable the button during shooting altogether. (It retains its normal function during picture playback and for choosing items from menus.)

Once again, you make the call via the Controls submenu of the Custom Setting menu. Highlight OK Button (Shooting Mode), as shown on the left in Figure 11-12, and press OK to display the three options shown on the right.

Highlight your choice and press OK to wrap things up.

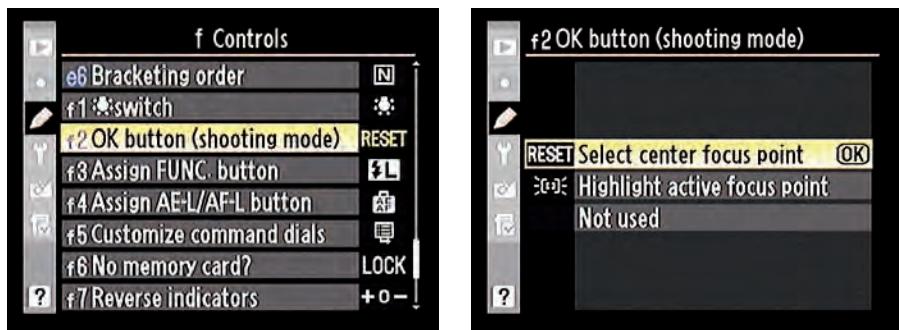


Figure 11-12: These options affect the result of pressing the OK button in shooting mode.

Assigning a duty to the Function button

Tucked away on the right-front side of the camera, just under the autofocus-assist lamp, the Function (Fn) button is set by default to activate the Fv Lock function (Flash Value Lock, detailed in Chapter 5). But if you don't use that function often, you may want to assign some other purpose to the button.

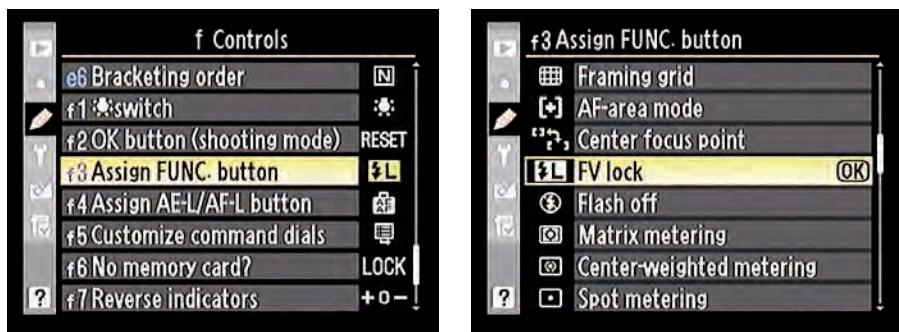


Figure 11-13: You can assign any number of jobs to the Function button.

You establish the button's behavior via the Assign Func. Button option, found on the Controls submenu of the Custom Setting menu and shown on the left in Figure 11-13. After highlighting the option, press OK to display the

screen shown on the right in the figure. Here's a quick description of the possible settings. (Scroll the display to uncover the options at the end of the list, not shown in the figure.)

- ✓ **Framing Grid:** If you select this option, pressing the Fn button while rotating the main command dial toggles the viewfinder grid on and off. See Chapter 1 for more about the grid.
- ✓ **AF-Area Mode:** At this setting, you can press the button and rotate the main dial to change the AF-Area mode. Chapter 6 explains that option, which is related to autofocus.
- ✓ **Center Focus Point:** Pressing the button while rotating the main command dial switches the center focus point option from the normal to wide area setting. Again, see Chapter 6 to find out more about that setting.
- ✓ **FV Lock:** This is the default setting; you press the button to lock the current flash exposure value. See Chapter 5 for more about flash.
- ✓ **Flash Off:** At this setting, you can temporarily disable the flash by pressing the Fn button as you press the shutter button. See Chapter 5 for more information about flash photography.
- ✓ **Matrix Metering/Center-Weighted Metering/Spot Metering:** These three options set the camera to the selected metering mode while the button is pressed. You can adjust the metering mode only in the P, S, A, and M exposure modes, so, naturally, the button relates only to those modes if you choose one of these settings. And the options are dimmed on the Assign Function Button list in any other modes. See Chapter 5 for an explanation of metering modes.
- ✓ **Access Top Item in My Menu:** If you create a custom menu, as explained earlier in this chapter, you can set the Fn button to display the menu and immediately highlight the first item on the menu.
- ✓ **+ NEF (RAW):** This setting relates to the Image Quality option, introduced in Chapter 3. If you set that option to JPEG Basic, Fine, or Normal and then press the Fn button, the camera records two copies of the next pictures you shoot: a JPEG version plus a second image in the NEF format. Press the button again or turn off the camera to stop recording the NEF version.

After selecting the function you want to assign, press OK to lock in your choice.

Changing the function of the AE-L/AE-L button

Set just to the right of the viewfinder, the AE-L/AE-L button enables you to lock focus and exposure settings when you shoot in autoexposure and autofocus modes, as explored in Chapters 5 and 6.

Normally, autofocus and autoexposure are locked when you press the button, and they remain locked as long as you keep your finger on the button. But you can change the button's behavior. To access the available options, open the Custom Setting menu, navigate to the Controls submenu, press OK, and then highlight Assign AE-L/AF-L Button, as shown on the left in Figure 11-14. Press OK to display the options shown on the right in the figure.

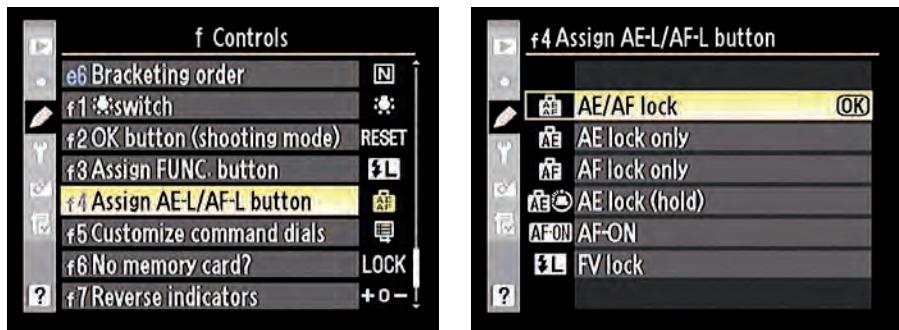


Figure 11-14: You can set the AE-L/AF-L button to lock autoexposure only if you prefer.

The options produce these results:

- ✓ **AE/AF Lock:** This is the default setting. Focus and exposure remain locked as long as you press the button.
- ✓ **AE Lock Only:** Autoexposure is locked as long as you press the button; autofocus isn't affected. (You can still lock focus by pressing the shutter button halfway.)
- ✓ **AF Lock Only:** Focus remains locked as long as you press the button. Exposure isn't affected.
- ✓ **AE Lock (Hold):** This one locks exposure only with a single press of the button. The exposure lock remains in force until you press the button again or the exposure meters turn off.
- ✓ **AF-ON:** Pressing the button activates the camera's autofocus mechanism. If you choose this option, you can't lock autofocus by pressing the shutter button halfway.
- ✓ **Fv Lock:** If you don't have any use for the autofocus/autoexposure locking options, this choice may come in handy. You can set the button to instead lock the flash value, a feature explored in Chapter 5. You then can set the Fn button, which normally handles that Fv Lock, to some other operation. See the preceding section for details.





After highlighting the option you want to use, press OK.

The information that I give in this book with regard to using autofocus and autoexposure assumes that you stick with the default setting. So if you change the button's function, remember to amend my instructions accordingly.

On a related note, my instructions also assume that the Shutter Release Button AE-L option, found on the Timers/AE Lock submenu of the Custom Setting menu, is set to its default, which is Off. At that setting, pressing the shutter button halfway locks focus but not exposure. If you turn the feature on, your half-press of the shutter button locks both focus and exposure.

Customizing the command dials

Okay, let me say up front that I present this option to you only in the interest of complete coverage of all your customization choices. But I really suggest that you do not take advantage of this particular feature, which enables you to change the function of the main command dial (on the back of the camera) and the subcommand dial (front of the camera). If you do, not only will the instructions in this book be off base, but so will all the instructions in the camera manual.

Not convinced? Well, you can explore the options by opening the Custom Setting menu, opening the Controls submenu, and then selecting the Customize Command Dials option. There, you find three settings, each of which controls a different aspect of how the command dials behave. Be sure to read about the many ramifications of each choice in the camera manual before you change any from their default settings, which are shown in Figure 11-15.

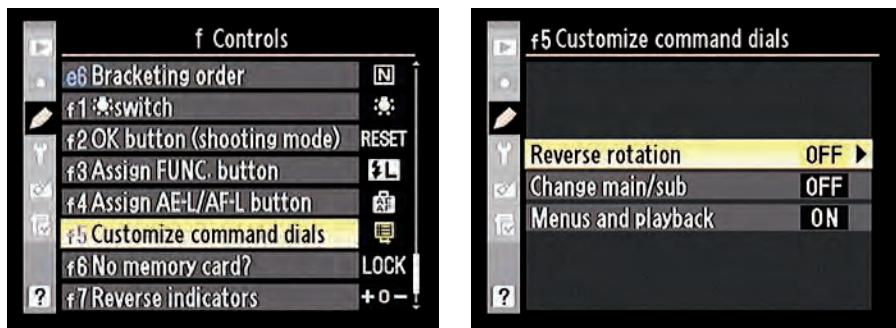


Figure 11-15: Just because you *can* customize the command dials doesn't mean you should.

Two Roads to a Multi-Image Exposure

The D90 offers two features that enable you to merge two photographs into one:

- ✓ **Multiple Exposure (Shooting menu):** With this option, you can combine your next two or three shots. After you enable the option and take your shots, the camera merges them into one NEF (Raw) file. The three shots used to create the composite aren't recorded and saved separately.
- ✓ **Image Overlay (Retouch menu):** This option enables you to accomplish the same thing, but with two Raw images that already exist on the memory card. I used this option to combine a photo of a werewolf friend, shown on the top left in Figure 11-16, with a nighttime garden scene, shown on the top right. The result is the ghostly image shown beneath the two originals. Oooh, scary!



Figure 11-16: Image Overlay merges two Raw (NEF) photos into one.

On the surface, both options sound kind of cool. The problem is that you can't control the opacity or positioning of the individual images in the combined photo. For example, you might assume that you could use this feature to create one of those old-fashioned "two views" portrait composites, with one area of the picture showing a frontal view of the subject and another showing a profile shot. But this really works well only if the background in both images is a solid color (black works well), and you compose your two shots so that the subjects don't overlap in the combined photo. Otherwise, you get the ghostly portrait effect like what you see in my example.

In the interest of reserving space in this book for features that I think you will find much more useful, I leave you to explore these two on your own. (The manual explains the steps involved in using each of them.) I think, however, that you'll find photo compositing much easier and much more flexible if you do the job in your photo editing software.

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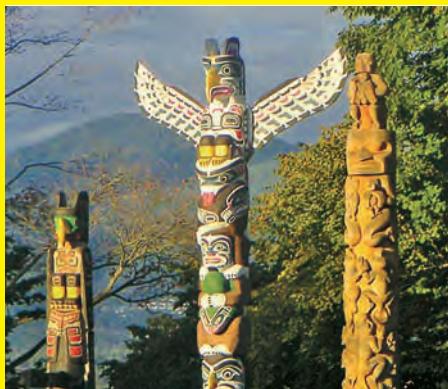
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Julie Adair King is the author of many digital photography books, including *Digital Photography For Dummies*, *Nikon D40/D40x For Dummies*, and *Nikon D60 For Dummies*. She also teaches digital photography workshops at such locations as the Palm Beach Photographic Centre.