Introduction

Photoshop CS4 is the latest and greatest version of a program that has set the standard for image manipulation since 1987. Photoshop CS4 comes in two versions: Standard and Extended. Photoshop CS4 Standard is the image-editing powerhouse photographers and artists have always loved, with new features such as previews that show how your images will look to people who are color-blind, auto-alignment and auto-blending of image content on separate layers, a new Masks panel that puts sophisticated controls for both pixel and vector masks in a single location, an Adjustments panel for applying and managing editable image corrections, and more. Meanwhile, for users in specialized industries such as research science, Photoshop CS4 Extended has complex features that most people don’t need, including 3D image creation, video layers, tools for image analysis, measurement and counting abilities, rotoscoping (painting on film or video), 32-bit painting, and database connectivity. If you’re interested in learning more about the powerful capabilities in Photoshop CS4 Extended, turn to Appendix B, “A Quick Walk on the Extended Side,” for a rundown on its features.

In this book, we look primarily at what Photoshop CS4 Standard has to offer. If you’ve used an earlier version of Photoshop, you’ll be amazed by the new features you’ll find in this version. On the other hand, if this is your first experience with Photoshop, you’ll be amazed to find that it’s really not as difficult to work with as it looks. The Photoshop interface will be immediately familiar if you’ve used other Adobe software.

This book was written using beta versions of the software, so some of the figures might be slightly different from what you see on your screen when you’re using the final release version of Photoshop CS4. We’ve done our best to keep the book as accurate as possible, and my editors and I hope that any differences you do run across will be minor.

If this is your first foray into working with digital images, I recommend that you work on the hours of this book one at a time, without skipping the activities or exercises. There’s really no way to become an overnight expert, in Photoshop or in anything else, but Sams Teach Yourself Adobe Photoshop CS4 in 24 Hours will definitely get you up and running in 24 hours or less. The book is divided into 24 one-hour lessons, rather than chapters, and each lesson should take you about an hour to complete. Some lessons might take more time, some less. Just don’t try to work through all 24 lessons in one 24-hour day, even if you can manage to stay awake that long. The best way to retain what you’ve learned is to take a little time between the lesson sessions to try things out. Be sure to spend time simply messing around in Photoshop, learning what’s on the menus and what happens when you click here and there.
Here’s one for you to start with: At the far right end of Photoshop CS4’s new Application bar, you’ll see a pop-up menu of workspaces—different combinations of visible panels, keyboard shortcuts, and selected menu commands designed for working in particular ways. From the pop-up menu, choose What’s New in CS4, and then click Yes in the resulting dialog. Now each menu command that’s new or modified in Photoshop CS4 appears highlighted in blue so you can pick it out. Take some time to check out what’s new before you switch back to the Essentials workspace, where you started. Now you’re ready to get started—let’s go!

**Downloading the Book’s Source Images**

I’ve provided a few of the source images for the book’s exercises on the publisher’s website. To download the images, go to http://informit.com/register.

Please be aware that all images are protected by copyright and cannot be used for any purpose other than to work on the exercises.

**Conventions Used in This Book**

This book uses the following conventions:

- Menu choices are shown with the name of the menu followed by a comma and then the name of the submenu: File, New.
- Shortcut key combinations are shown like this:
  - For Mac OS, hold down the Command key and press the indicated letter: Command-X.
  - For Windows, hold down the Control key and press the indicated letter: Ctrl+X.
- Text that you should type is shown in bold monospaced type: *myfilename*.
- Filenames and URLs are shown in monospaced type: *mypicture.jpg*.

This book also presents information in the following sidebars:

<table>
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<tr>
<th>NOTE</th>
<th>TIP</th>
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<tr>
<td>Notes offer interesting information related to the current topic.</td>
<td>Tips offer advice or show you an easier way to perform a task.</td>
<td>Cautions alert you to a possible problem and suggest ways to avoid it.</td>
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Messing around with color—and I do use the term “messing around” advisedly—is a little bit science, a little bit art. You can make some adjustments “by the numbers,” such as darkening an image’s darkest points so they’re true white, but others have to be made by eye. When it comes right down to it, color is really all in your head—and that’s a good thing. In this hour, we look mostly at ways to “fix” the color in your pictures, making it more lifelike and true to the original. Of course, you can use the same methods for more nefarious purposes; if you want to make the sky green and the grass purple, that’s well within your reach using Photoshop.

Photoshop includes a full set of tools for making color adjustments, located on the Image, Adjustments submenu (see Figure 5.1). Some of these terms, such as Brightness/Contrast, might be familiar to you; others might not. Don’t worry; you’ll learn about them all in this hour.

WHAT YOU’LL LEARN IN THIS HOUR:

- Evaluating Your Color Adjustment Needs
- Adjusting by Eye with Variations
- Making Other Adjustments
- Preserving the Original with Adjustment Layers
- Understanding Channels
- Making Spot Fixes
- Converting Color to Black and White
Evaluating Your Color Adjustment Needs

Before you start to adjust color, you need to make sure the image uses the right color mode; to do that, you have to evaluate what kind of color the picture contains and how you’ll eventually use the image. You learned about color models and color modes in the last hour, so you know that RGB mode is the way color is displayed on computer screens, and CMYK mode is the way color is printed. Because image colors can shift when you switch from one mode to another, it makes sense to adjust the color in a picture according to the way it will be displayed. For a picture that’s going on a web page, you should work in RGB mode. If your picture will be printed on a four-color process commercial press, work in RGB to start with, but make your final adjustments (if any are needed) after you convert the image to CMYK mode. If you’ll be printing on a home/office inkjet printer, stick with RGB, even though your printer uses CMYK inks. The software drivers for desktop inkjet printers are designed to convert from RGB to CMYK internally. Other kinds of color printers, such as color lasers, work fine with CMYK mode. On the other hand, if the picture is destined to be output or displayed in grayscale, forget about trying to make the sky a perfect blue; change the color mode to Grayscale and make the brightness and contrast perfect instead. Just keep these few rules in mind, and you won’t go wrong. Table 5.1 helps you keep your options sorted out.

<table>
<thead>
<tr>
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<tr>
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<td>Computer screen, the Web, or inkjet printer</td>
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<tr>
<td>RGB first, and then CMYK</td>
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<tr>
<td>Grayscale</td>
<td>Black-and-white printing</td>
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Adjusting by Eye with Variations

The most obvious way to make a color adjustment is to compare before and after views of an image, and Photoshop offers you a tool for doing just this—Variations. The Variations command combines several image-adjustment tools into one easy-to-use dialog, complete with thumbnail images that show you variations on the original image. You simply click the thumbnail that looks best to you, and Photoshop applies the corresponding
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adjustment. You can choose variations of hue and brightness and then see the result (which Photoshop calls **Current Pick**) side by side with the original.

Figure 5.2 shows the Variations dialog box. When you first open it, the Current Pick is the same as the original; as you click thumbnails to apply changes, the Current Pick updates to show your changes. The slider ranges from Fine to Coarse and determines how much effect each click has on the original image. Moving the slider one tick mark in either direction doubles or halves the previously specified amount, with the finest setting making changes that are so slight that they’re almost undetectable. Use the coarsest setting only if you’re looking for a really extreme effect. Normally, you’ll want to stick with a setting somewhere in the middle.

**TIP**

**Something Missing?**

If Variations doesn’t appear on the Adjustments submenu, check the Image, Mode submenu to make sure you’re in 8-bit color mode and that you’re not using Lab or Indexed Color mode. If those settings are OK, the Variations plug-in might not have been installed. Consult the Photoshop help system to learn more about using plug-ins.

**FIGURE 5.2**

The seven thumbnails at the lower left adjust hue, and the three on the right side adjust brightness.

**Adjusting Shadows, Midtones, Highlights, and Saturation**

With Variations, you can adjust a color image’s shadows, midtones, highlights, or overall color saturation. **Shadows**, **midtones**, and **highlights** are Photoshop’s terms for the darkest areas, the medium areas, and the lightest areas of the image, respectively; these are black, gray, and white in a grayscale picture. Depending on which you choose, your changes modify the color (hue) of the image’s shadows, midtones, or highlights. The Saturation setting affects all three brightness levels at once, increasing or decreasing the intensity of the color without changing it.
The advantage of restricting color changes to one part of the picture is that you can adjust the midtones one way and the highlights or shadows another way, if you want. Each setting is independent of the others, so you can, for example, set the midtones to be more blue, thus brightening the sky, yet still set the shadows to be more yellow to compensate for their inherent blue tinge.

If a highlight or shadow color is adjusted so much that it becomes pure white or pure black, that's called clipping. If you check the Show Clipping box in the Variations dialog, you’ll see a neon-colored preview of areas in the image that will be clipped by the adjustment; you can change your settings to minimize the amount of clipping that takes place. Clipping occurs only when you adjust highlights and shadows; it’s not a problem when you’re working solely with midtones.

Remember, as you learned in Hour 4, “Specifying Color Modes and Color Models,” hue refers to the color of an object or selection. The Brightness value measures how much white or black is mixed into the color.

If you click the Saturation radio button instead of Shadows, Midtones, or Highlights, your changes affect the intensity of the color in the image; the thumbnails offer you only two choices: Less Saturation or More Saturation. Figure 5.3 shows what Variations looks like when you’re adjusting saturation. Remember that you can apply the same correction more than once. For instance, if less saturation still leaves more color in the image than you want, click the Less Saturation thumbnail again to reduce the color intensity even more.
Adjusting by Eye with Variations

Working with the Variations dialog is an excellent way to experiment with how colors work.

1. Open any color image and choose Image, Adjustments, Variations.

2. Click the appropriate radio button according to what you want to adjust: Shadows, Midtones, Highlights, or Saturation.

3. Use the Fine/Coarse slider to determine how much each thumbnail click will change the image.

4. Watch the Original and Current Pick thumbnails as you click different thumbnails. Here are some tips for achieving just the effect you want:
   - To add more of a color, click the appropriate color thumbnail.
   - To reduce a color, click the thumbnail opposite it, which increases the color’s opposite on the color wheel. To reduce magenta, for example, click the More Green thumbnail.
   - To adjust the picture’s brightness, click the Lighter or Darker thumbnail on the right.
   - If you’re not sure exactly what you need to do, simply click the image that looks most correct to you.
   - If you think you might have overdone your corrections and want to go back to the original image, press Option (Mac) or Alt (Windows) to change the Cancel button to a Reset button. Click the Reset button to restore the settings to 0 and revert to the original image. (Note: This fix works in all the adjustment dialog boxes.)

5. Click OK when you’re done, or click Cancel to undo all your adjustments and leave the image untouched.

Saving and Loading Corrections

Two other buttons appear in this dialog box and in each of the other adjustment dialog boxes: the Load and Save buttons. If you have a whole series of pictures that need the same kind of corrections, you can save yourself a lot of time by applying the same settings to each image. Perhaps you used your digital camera to shoot several outdoor pictures with the same lousy light conditions, or maybe your scanner tends to make everything a little more yellow than you want. After you determine the settings that correct one picture perfectly, you can save your settings for the first image and then load them again to apply to each of the remaining images.
When you click the Save button, you’ll see a typical dialog asking you to supply a name for your settings, such as foggy day fix or scanner correction. When you need to apply the same settings to another picture, click the Load button, and then locate and open the appropriate setting file. All the dialog settings instantly return to the values you applied to the original image, and clicking OK applies the correction.

Making Other Adjustments

Variations is a quick and intuitive way to adjust color, but sometimes it doesn’t give you enough control. Other times you just want to experiment. These are the times when you’ll want to work with individual adjustment settings.

Consulting the Histogram

Photoshop’s Histogram panel was once a dialog box; now it’s even easier to get to, and you can have it open on your screen all the time. As with the Info panel, the Histogram panel doesn’t actually do anything, but if you learn how to use it, you can really improve the quality of your pictures.

If you ever studied statistics, you already know that a histogram is a type of graph. In Photoshop, it’s a graph of the image that can show you the image’s brightness levels overall or broken down by color. The height of the graph indicates the number of pixels at each brightness level from 0 to 255.

You might wonder why this is important. Mainly, you can tell by looking at the histogram whether there’s enough contrast in the image to allow you to apply corrections successfully. If you’re working with a photo that looks pretty bad at first glance, studying the histogram will tell you whether it’s worth working on or whether you should trash the image and start fresh. If all the higher levels of the graph are bunched up at one end of the graph, and the image isn’t supposed to be very dark or very light, you probably can’t save the picture by adjusting it. On the other hand, if you have a reasonably well-spread-out histogram, there’s a wide enough range of values to suggest that the picture can be saved. Watch out for gaps in the middle of the graph and for ends that cut off suddenly instead of tapering gently down to 0. Figure 5.4 shows the histogram for a reasonably well-exposed photo alongside the graph of a problematic image.
Making Other Adjustments

Adjusting Levels

The Levels command gives you a method of adjusting the brightness of an image based on a version of the picture’s histogram (see Figure 5.5). Setting the black point (the slider at the left of the histogram that represents absolutely saturated black) to match the concentration of darkest levels in the image, and setting the white point (the slider on the right, indicating completely unsaturated white) to match the concentration of the lightest levels in the image forces the rest of the levels to spread out more evenly across the graph. If you want to experiment with the photo I’m using in these examples, it’s available on the book’s website; the file is called pathway.jpg.

FIGURE 5.4
Can you tell which picture is probably beyond help from looking at these histograms? Answer: It’s the one with the big spike in the middle of a flat graph.

FIGURE 5.5
Be sure to check the Preview box so that you can see the effect of your changes.
When the colors are fine but the photo seems too dull or dark, adjusting the brightness can help. Follow these steps to make that adjustment using the Levels command:

1. Choose Image, Adjustments, Levels, or press Command-L (Mac) or Ctrl+L (Windows).
2. Check the Preview box so that you can see your changes in the image window.
3. Adjust the levels to improve the picture by moving each of the three sliders below the histogram to the left or right. Here are a few tips for getting the effect you’re looking for:
   - To set the black point (the darkest black) in the image, move the slider at the left side of the Input Levels histogram to the point at which the graph heads sharply upward.
   - Set the white point (the whitest tone) by moving the right Input Levels slider to the point where the light pixels begin to rise.
   - Adjust the midrange by watching the picture while you move the Input Levels middle slider left (to lighten midtones) or right (to darken midtones). Figure 5.6 shows the settings for this picture.

FIGURE 5.6
Adjusting the darks helps bring out shadow detail.
4. To reduce the contrast in the image, use the sliders on the Output Levels bar. The black slider controls the dark tones; moving it toward the center excludes all the dark levels to the left of the slider from the picture. The white slider controls the light tones; moving it toward the center darkens the lightest areas of the image by preventing them from being any darker than the shade shown on the slider at that point.

5. Click OK when you’re done.

You can also use the Levels dialog’s special Eyedropper tools to adjust the levels. Click the white Eyedropper (on the right) and click the lightest part of your image. Then switch to the dark-tipped Eyedropper (on the left) and click the darkest point on the image. To adjust the midtones, you can use the gray midrange Eyedropper (in the middle) to locate an area in the image that should be right in the middle of the brightness spectrum. Avoid using the midrange Eyedropper in a color image—stick to grayscale images—unless it has an area that’s supposed to be a neutral gray—neither reddish (warm) nor bluish (cool); if you click in a colored area, Photoshop adjusts all the image’s colors so that the area you clicked in doesn’t have any color.

Adjusting Curves

Adjusting curves is much like adjusting levels, with a bit more control. You can use the Curves dialog box instead of the Levels dialog box to adjust the brightness. The big difference between using Levels and using Curves is that, with Curves, instead of adjusting at only three points (black, middle, and white), you can adjust at any point (see Figure 5.7).

Despite the name, the Curves dialog box doesn’t display a curve when you first open it. Instead, you see a graph containing a grid overlaid with a diagonal line. The horizontal axis of the grid represents the original brightness values (input levels) of the image or selection, whereas the vertical axis represents the new brightness values (output levels). When you open the Curves dialog, the graph starts out as a straight diagonal line because no new values have been mapped; the input and output values are identical for all the pixels in the image. As always, be sure to check the Preview box before doing anything else so that you can see the effects of your changes in the image window.

NOTE

Channeling Colors

In a color image, you can adjust the composite RGB or CMYK color image (choose RGB or CMYK in the Channel pop-up menu), or you can work with the picture’s individual color components by choosing a color channel from the Channel menu. For now, keep working with the composite. (You’ll learn more about channels later in this hour.)

TIP

You “Auto” Try it

If you click Auto in the Levels dialog box or choose Auto Tone from the Image, Adjustments menu, Photoshop adjusts the levels based on its evaluation of the tonal range. Sometimes this works great; other times it produces an image that’s too bright and too contrasty. Try it, but be prepared to undo if you don’t like the results. You’ll find that the Presets pop-up menu at the top of the dialog has more specific options; pick the preset that’s closest to what you’re trying to do and modify its settings until you get what you want.
As with the Levels dialog box, you can click Auto to have Photoshop make the adjustment for you, you can choose an option from the Preset pop-up menu, or you can use the Eyedroppers to adjust the values. Because the Curves method of adjusting brightness gives you so much more control, however, it’s worth making your changes manually. Click and drag over a portion of the image that needs adjusting. You’ll see a circle on the graph at the point representing the brightness level of the pixel under the cursor. If you don’t want to change certain points on the curve, click them now to lock them down. For instance, if you want to adjust the picture’s midtones while leaving its dark and light areas alone, click the light and dark points on the curve to fix them in place. Then click to add a point in the middle of the curve and drag up or down until the image looks right to you. Dragging up lightens tones, whereas dragging down darkens them (see Figure 5.8). To remove a point, click and drag it off the grid.
In Photoshop CS4, Curves has a new feature: You can click the On-Canvas Adjustment button and then click and drag right in the picture to adjust the graph (see Figure 5.9). This way, when you click and drag in the image to locate the corresponding point on the graph, you can then go ahead and make the adjustment right there, without having to move your mouse over to the Curves dialog. One great application for this feature is fixing clipped areas: Click the Show Clipping box so that you can see where the clipped areas are; then click each area with the On-Canvas Adjustment tool and drag up or down to ameliorate the clipping.

If you’re comfortable drawing freehand, you can also adjust the Curves graph by clicking the Pencil tool in the upper-left corner of the dialog and then clicking and dragging in the graph. This is an especially effective way to work if you’re using a graphics tablet and stylus instead of a mouse, trackball, or trackpad; as you’ve probably noticed, it’s quite difficult to draw neat curves with a mouse.
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Click the disclosure triangle labeled Curve Display Options at the bottom of the Curves dialog to see a few choices you can make about how the graph is displayed. First, you can choose to display Light levels or Pigment/Ink levels; if dragging upward to darken the image and downward to lighten it makes more sense to you, then switch to the Pigment/Ink display. The four check boxes below enable you to hide or show channel overlays, the baseline (the graph's original line), the histogram (the graph of brightness levels), and the intersection line (the vertical and horizontal lines that appear when you move a point on the graph).

Adjusting Color Balance

To really understand color balance, you have to look at the color wheel (see Figure 5.10).

**TIP**

*It’s Simple*

To make the Curves dialog’s grid squares smaller, Option-click (Mac) or Alt-click (Windows) the grid. Repeat to return to the default larger grid squares. Or, if you prefer, click the Simple Grid or Detailed Grid button in the Curve Display Options area to switch modes. The Simple Grid option divides the graph into quarters each way, and the Detailed Grid option gives you gridlines at 10% increments.

Click the disclosure triangle labeled Curve Display Options at the bottom of the Curves dialog to see a few choices you can make about how the graph is displayed. First, you can choose to display Light levels or Pigment/Ink levels; if dragging upward to darken the image and downward to lighten it makes more sense to you, then switch to the Pigment/Ink display. The four check boxes below enable you to hide or show channel overlays, the baseline (the graph’s original line), the histogram (the graph of brightness levels), and the intersection line (the vertical and horizontal lines that appear when you move a point on the graph).
Making Other Adjustments

If you follow the line from any color on the color wheel through the center and over to the other side of the wheel, you reach that color’s opposite. Cyan is opposite red, green is opposite magenta, and yellow is opposite blue. With the Color Balance dialog, you reduce one color by adding more of its opposite. Increasing cyan reduces red. Increasing red reduces cyan, and so on, around the wheel.

Color Balance is intended to be used to adjust color throughout an image, although, of course, you can use it with just part of the image selected (see Figure 5.11). For example, if you’re dealing with a picture that has an overall color cast, such as an old, yellowed photograph, Color Balance makes it simple to remove the yellow without altering the rest of the colors in picture. Just use a light touch, and make sure you check the entire image before clicking OK, in case your changes have actually introduced a new color cast.

FIGURE 5.10
If the color wheel were a clock, red would be at 3 o’clock and cyan would be at 9 o’clock.

FIGURE 5.11
Drag the sliders in the direction of the color you want to add to the picture.
As with the Variations command described earlier, Color Balance requires you to indicate whether you want to work on an image’s shadows, midtones, or highlights. And because color changes can affect an image’s overall brightness, Color Balance provides you with a Preserve Luminosity check box; turn this on to make sure that your changes affect only the hue component of each color in the image, leaving the brightness as is.

**TRY IT YOURSELF**

**Apply Color Balance**

Color balance can rescue pictures that have faded, and it can turn red roses blue or blue ducks red. It’s fun to play with.

1. Open the image you want to work with; if you like, select the portion of the image to correct. Open the Color Balance dialog by choosing Image, Adjustments, Color Balance or pressing Command-B (Mac) or Ctrl+B (Windows).

2. Click a radio button for Shadows, Midtones, or Highlights. Generally, it’s reasonable to start with midtones because midtones comprise 90% of most images. But if you know that you want to work with only the image’s light or dark areas, click Highlights or Shadows, respectively.

3. Check the Preserve Luminosity box so that the color shifts you apply don’t change the brightness of the image. If maintaining the brightness isn’t important, don’t enable the check box. If you’re not sure, try checking and unchecking the box a few times after you make your changes, to see its effect. (Be sure to check the Preview box so that you can see your changes in the image window.)

4. Drag the sliders to adjust the image’s colors. The numbers in the boxes change to indicate how much of a change you are making. They range from 0 to +100 (toward red, green, and blue) and from 0 to –100 (toward cyan, magenta, and yellow).

5. When you’re happy with the midtones, adjust the shadows and then the highlights. You can keep modifying the corrections until the image looks correct to you; if you want to start over again, press Option/Alt and click Reset.

6. Click OK to apply the changes.

**Adjusting Hue and Saturation**

As you know, you can adjust the hue, saturation, and brightness of an individual color in the Color Picker. With the Hue/Saturation dialog, you can do the same to every color in the image (or in a selection) simultaneously. Don’t
be misled by the fact that “Brightness” isn’t part of the command’s name; it’s included in the dialog nonetheless in the form of a Lightness slider.

First, look at the controls in the Hue/Saturation dialog box (see Figure 5.12). As with the Levels and Curves dialogs, Hue/Saturation offers you several prefab combinations of settings in the Preset pop-up menu. These make good starting points for your own adjustments. The second pop-up menu lets you choose either a single color to adjust or the Master option, which adjusts all the colors in the image or selection at the same time. For now, choose Master from the menu. Check Preview so that you’ll be able to monitor the effects of your changes in the image window.

Now let’s take a look at the three sliders: Hue, Saturation, and Lightness:

- The Hue slider displays a flattened version of the color wheel. With Master selected, dragging the slider shifts all the image’s colors the corresponding distance around the wheel. Starting with red (in the middle of the slider), you can move all the way left—through purple to blue or blue-green—or right through orange to yellow and to green.

- The Saturation slider starts out at 0%, in the center, and you can drag it right to 100% saturated (pure color, with no gray), or left to −100%, or completely unsaturated (no color).

- The Lightness slider lets you increase or decrease the image’s brightness, from 0 in the center to +100 on the right or −100 on the left.

As you move each of the sliders, watch the two spectrum bars at the bottom of the dialog, as well as the image itself. The upper bar represents the current status of the image, and the lower one shows how each color in the
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image changes according to the slider(s) you move. If you drag the Hue slider to +60, for example, you can see by comparing the two spectrum bars that the reds in the picture will turn quite yellow and the blues will turn purple. In effect, you are skewing the entire color spectrum by 60°. If you move the Saturation slider to the left, you’ll see the lower spectrum bar become less saturated. If you move the Lightness slider, you’ll see its effects reflected in the lower spectrum bar as well.

If you choose an individual color from the pop-up menu, instead of leaving it set at Master, the Hue/Saturation dialog changes slightly, as you can see in Figure 5.13. The Eyedroppers are now active, enabling you to choose the colors you want to modify from the image, and adjustable range sliders are centered on the color you’ve chosen to adjust. You can move these back and forth to focus on as broad or narrow a range around that color as you want.

NOTE

Light Is Bright

Lightness is technically the same as brightness; in fact, you might run into the term HSL, which stands for hue, saturation, and lightness, and means the same thing as HSB. Less common, but still synonymous with HSB, are the terms HSI (hue, saturation, and intensity) and HSV (hue, saturation, and value).

TIP

One Color, Two Color

The Colorize option applies a monotone effect, using a single color. For a similar but more sophisticated effect, try choosing Image, Mode, Grayscale and then Image, Mode, Duotone. Choose Duotone from the pop-up menu, and then click the color swatches to choose “ink” colors. Most duotones use black for the first color and any color you like for the second color. Click the curve swatch next to each color swatch to change how much of that color is applied; most often, you’ll want to tone down the black (by dragging down on the curve’s middle) and bump up the other color (by dragging up).

You might have noticed the Colorize check box just above the Hue/Saturation dialog’s Preview check box. When you check this box, Photoshop doesn’t just shift the image’s colors along the color wheel; it applies shades of the chosen color to the entire image. Check the Colorize box and take a look: You’ll see that the Hue slider handle moves all the way to the left, with a value of 0; the Saturation value changes to 25, and the Lightness value stays put at 0, with its normal range of –100 to 100. Meanwhile, the lower spectrum bar, indicating changed colors, changes to a single color: the color that Photoshop is applying to the whole picture.
Adjusting Vibrance

New in Photoshop CS4, the Vibrance slider increases saturation in under-saturated areas of the image while leaving highly saturated areas alone. This differs from the Saturation slider in the Hue/Saturation dialog, which increases saturation uniformly throughout the image. Vibrance tends to leave skin tones alone, so you won’t end up with orange or hot pink faces when you try to bump up the saturation in an image that has people in it.

TRY IT YOURSELF ▼

Adjust an Image Using Hue/Saturation

When you’re using the Hue/Saturation dialog, be sure to check the entire image before clicking OK, instead of just focusing on the photo’s main subject, in case your changes have had unintended consequences elsewhere in the image.

1. To get started, choose Image, Adjustments, Hue/Saturation, or press Command-U (Mac) or Ctrl+U (Windows). Check the Preview box to see your changes in the image window as you make them.

2. Use the pop-up menu to choose the color range you want to adjust, or leave it set at Master (the default setting) to adjust all the colors.

3. Drag each of the three sliders to the left or right. Here are a few tips for getting the effect you want:
   - Drag the Hue slider left or right until the colors look the way you want. The numbers shown in the Hue entry field refer to the degree of rotation around the color wheel from the selected color’s original location.
   - Drag the Saturation slider left to decrease the saturation of the colors by moving them toward gray; drag the slider right to increase their saturation.
   - Drag the Lightness slider to increase or decrease the brightness of the image.

4. As with the Curves dialog, the Hue/Saturation dialog now has an On-Canvas Adjustment tool. Click its button, in the lower-left corner of the dialog just above the spectrum bars, to adjust colors by dragging directly on the picture. The adjustments are applied to the color on which you click, wherever it appears throughout the image; dragging left and right adjusts the Saturation value, and Command-clicking/Ctrl-clicking and dragging left and right modifies the Hue value.

5. Click OK when you’re done.
HOUR 5: Adjusting Brightness and Color

Vibrance is particularly useful for fixing blown-out areas (too-bright highlights) without overbrightening or oversaturating the rest of the picture.

To use Vibrance, choose Image, Adjustments, Vibrance (see Figure 5.14). You’ll notice that the dialog has two sliders: Vibrance and Saturation. Drag the Vibrance slider to add or reduce saturation without making colors garish; this control stays away from skin tones and concentrates on primary colors (both the RGB and the CMYK primaries). Use this more subtle version of the Saturation slider to increase saturation without risk of blowing out the image and turning it into pop art. It focuses only on colors that the Vibrance slider doesn’t affect.

FIGURE 5.14
Use the sliders to adjust saturation more realistically.

Adjusting Brightness and Contrast

Photoshop’s Brightness/Contrast function isn’t new, but it has definitely improved in the last couple of versions. If you need to make a simple adjustment to the tonal range of an image that’s too dark, the Brightness/Contrast dialog box (choose Image, Adjustments, Brightness/Contrast) seems like an
easy way to accomplish just that (see Figure 5.15), right? However, in older versions of Photoshop, Brightness/Contrast applied the same correction throughout the image, meaning that if you made the image brighter, you ended up with gray shadows and stark white highlights along with your nice, bright midtones. Since CS3, however, that’s all changed; Brightness/Contrast now separately corrects the dark, middle, and light values.

![Figure 5.15](image)

**FIGURE 5.15**
Here I’m using Brightness/Contrast to make it evening on the pathway.

Although the Brightness/Contrast dialog doesn’t give you the same fine control that you would have if you made the adjustments using Levels or Curves, or even Variations, it’s quick and easy. Sometimes it’s all you need. Many images can be wildly improved by just raising the brightness and contrast by a couple points. As always, be sure to check the Preview box so that you can see the effect of your changes in the image window. So how is it done? Pretty simple: Dragging the sliders to the right of the middle point increases brightness or contrast. Dragging them to the left decreases it.
If you want to make everything in your picture lighter or darker, you can revert temporarily to the old version of the Brightness/Contrast function by clicking the Legacy check box.

**Correcting Shadows and Highlights**

One of the coolest features in Photoshop is the Shadows/Highlights command; I use it on pretty much every photo. It enables you to control the lightness levels in highlight and shadow areas independently. If you apply it to the pathway photo, for example, you can bring out shadow detail without making the sunny areas washed out, or darken the highlights a bit without making the shadows muddy. Be sure to check the Show More Options box to open the full set of sliders, as shown in Figure 5.16. Photoshop starts you out with what it thinks is an appropriate amount of correction the second you open the dialog, so be prepared to back off on that a bit for a less startling change. I click the Preview box off and on repeatedly to compare before and after versions of the image on the fly.

**FIGURE 5.16**

Experiment with these sliders on both high-contrast and low-contrast images.
Applying Photo Filters

When traditional photographers want a special effect, they use colored filters over their camera lenses. With Photoshop’s Photo Filters command, you can do the same thing to any image, whether it came from a camera, was scanned, or was created from scratch. To open the Photo Filter dialog, choose Image, Adjustments, Photo Filter. In Figure 5.17, I have expanded the menu of filters so you can see the many options available. Serious photographers will recognize the numbers after the warming and cooling filters, because they’re the same as on the glass filters you can buy at a camera store. Use the Density slider to control the strength of the filter.

What Else Is on the Menu?

It’s almost time to wrap up your tour of the Adjustments submenu. Here’s a look at a few commands in and near the Adjustments submenu that we haven’t covered yet and that you might find useful.
You might recall the Auto Tone command from earlier in this hour; it applies Photoshop’s best guess at the perfect Levels correction. Its relative, Auto Contrast (choose Image, Adjustments, Auto Contrast), is occasionally quite helpful. It automatically maps the darkest and lightest pixels in the image to black and white, causing highlights to appear lighter and shadows darker. It might not be the best way to make the necessary adjustments, but if you’re in a hurry, it can save you some time.

Another Auto command, Auto Color, analyzes the color in an image and makes an educated guess of what it should be. If you’re easily satisfied, it might be all the correction you ever need. As for me, I like things perfect, and Photoshop’s sense of color is often different from mine. Still, if you want to give it a try (choose Image, Adjustments, Auto Color), often it can give you an idea of which direction to go in for a particular image. Then you can undo and work toward your own vision.

The Adjustment submenu’s Desaturate command removes all the color from an image without changing the color mode. If you want a quick look at how something will reproduce in black and white, this is the command to use. Then simply undo it to go back to the colored version. (For a more sophisticated method of converting an image to black and white, check out “Converting Color to Black and White,” later in this hour.

Preserving the Original with Adjustment Layers

When you apply a correction to the whole picture, it might improve some parts and make others worse, so you really need to look carefully at the end result and decide whether the good outweighs the bad. You might wish you’d applied the correction to only part of the image, or you might want to go back and try different settings. Fortunately, Photoshop provides you with an easy way to apply a correction and then change your mind as many times as you want.

As we’ve discussed, one of Photoshop’s best features is the capability to work in layers. (You’ll learn all about layers in Hour 11, “Creating Layered Images.”) For now, you can think of layers as sheets of transparency film that you place over your image and paint or paste on. If you like what you see, you can merge the layers so that the additions become part of the image. If not, you can throw them away and try again. In addition to the layers that you paint on, Photoshop lets you create several kinds of special
layers, including **adjustment layers**. These work like normal layers, except that instead of holding paint or pasted pictures, they hold the color adjustments that you make to the image.

You can add an adjustment layer to your image in a few different ways. First, and most logically, you can choose New Adjustment Layer from the Layer menu. You can also add an adjustment layer using the pop-up menu at the bottom of the Layers panel (look for the button with the half-black, half-white circle). Finally, Photoshop CS4 brings us the Adjustments panel, which enables you to add and modify all your adjustment layers in one place (see Figure 5.18).

To create a new adjustment layer in your image, follow these steps:

1. Choose Window, Adjustments to open the Adjustments panel (see Figure 5.18).

2. Click a button to indicate the particular kind of adjustment that you want to make. The panel changes to show the same controls that you’d find in that adjustment’s regular dialog (see Figure 5.19).

3. Make whatever adjustments are necessary. Later, in the Layers panel, you can delete the layer if you’re not pleased with the changes, or change the layer’s Opacity setting to effectively change the strength of the corrections you’ve made.

4. To change the settings, either click the adjustment layer in the Layers palette and open the Adjustments panel, or double-click the adjustment layer’s swatch in the Layers panel. If you want to change the type of adjustment layer, click the back arrow at the bottom-left corner of the Adjustments panel to return to its initial view.
Understanding Color Channels

Photoshop’s Channels panel offers the capability to look at each of the individual color components of an image. Each image has one or more color channels; the number depends on the color mode chosen. A CMYK image has four separate channels. One in RGB mode has three, and grayscale images have only one channel apiece. Each channel holds information about a particular color element in the image. Think of individual channels as something like the plates in the printing process, with a separate plate supplying each layer of color. You can often create interesting textures or special effects by applying filters to just one channel. Figure 5.20 shows the Channels panel (twice) with RGB and CMYK channels.

You learned about other channels called alpha channels, and their several uses, in Hour 3, “Making Selections.” Alpha channels can define the placement of spot colors (Pantone, for example). They also contain the maps for selections you create and want to save with the image to which you have applied them, as well as adjustment-layer masks. Hour 12, “Using Masks,” talks more about alpha channels.

Making Spot Fixes

As you know, any of the adjustment commands can be applied to an entire image (or the active layer) or to a selected area. The latter is how you avoid adjusting areas that are already fine, making sure your fixes go only where you want them. But another way to do that is to use Photoshop’s retouching tools to apply fixes dab by dab, a bit at a time, just where they’re needed.
The Toning Tools

Photoshop is primarily a digital darkroom program, so it makes sense that some of its most useful tools mimic the darkroom techniques that photographers have used for decades to lighten and darken portions of an image or to brighten colors. The Toning tools include the Dodge, Burn, and Sponge tools, each of which can use any of the brush tips available to the painting tools. Dodge and Burn are opposites, like Sharpen and Blur, but instead of affecting the contrast between adjacent pixels, they either lighten or darken the area to which the tool is applied. Sponging changes the color saturation of the area to which you apply it.

Dodge and Burn Tools

Dodging, in the photographer’s darkroom, is accomplished by waving a dodge tool, usually a cardboard circle on a wire, between the projected image from the enlarger and the photographic paper. This blocks some of the light and makes the dodged area lighter when the print is developed. It’s also called “holding back” because you effectively hold back the light from reaching the paper. Photoshop’s Dodge tool, shown in Figure 5.21, looks just like the darkroom version.

Burning has the opposite effect of dodging—instead of lightening a small area, it darkens the area. In the darkroom, burning in is accomplished either by using a piece of cardboard with a hole punched out (the opposite of the Dodge tool) or by blocking the enlarger light with your hand so that the light reaches only the area on the print surface to be burned. Photoshop’s Burn tool icon is a hand shaped to pass a small beam of light.

Click the Dodge tool and look at the pop-up menu in the Tool Options bar. As you can see, it gives you three choices:

- Shadows
- Midtones
- Highlights

These options indicate the types of pixels that the tool will affect. If you want to adjust the shadows, such as making them lighter and leaving the lighter pixels untouched, select Shadows. The default option for the Dodge tool is Midtones. This is a good choice when you want to affect the midtone pixels or when you are unsure of how to proceed. Select Highlights when you want to lighten already light-colored areas, leaving the darker areas untouched. Figure 5.22 shows the effects of dodging and burning on a picture shot outdoors in shade on a sunny day.
Sponging

Surprisingly enough, sponging is also a darkroom trick. When a picture in the developing tray isn’t turning dark enough or looks underexposed or weak in color, the darkroom technician can often save it by sloshing some fresh, full-strength developing chemical on a sponge and rubbing it directly on the wet print in the tray. The combination of the slight warmth from the friction of the sponge and the infusion of fresh chemical can make the difference between a useless picture and an acceptable one. It’s no substitute for a proper exposure, of course.

Photoshop’s Sponge tool does much the same thing. On a color image, it increases (or reduces, versatile tool that it is) the color saturation in the area to which you apply it. On an image in Grayscale mode, it increases or decreases contrast by moving the grayscale level away from or toward middle gray. When you use the Sponge, you also need to adjust its setting in the Options bar to determine whether it intensifies color (saturates) or fades it (desaturates). The Vibrance check box prevents the Sponge from oversaturating the image by restricting its effects to primary colors that aren’t already highly saturated. Figures 5.23 and 5.24 show before and after views of a woodland scene with the Sponge applied.
The toning tools are great for fine-tuning images and creating shadows or highlights. Use them in small doses to enhance the appearance of your images.
The Color Replacement Tool

The Color Replacement tool is one of the most useful tools in Photoshop. It functions like any other paintbrush, except that when you paint over an existing scene, it replaces the predominant color with whatever happens to be the foreground color in the Tools panel. More important, it changes only the color, not the saturation or value. If you had a blue sky with lots of white, fleecy clouds and you wanted an orange sky with the same white clouds, no problem. Choose your shade of orange and apply the brush to the sky. Go ahead and paint right over the clouds. The orange won’t affect them except where they reflect blue from the sky; those areas will now be orange reflections.

Red Eye Tool

Similar to the Color Replacement tool, this tool is designed exclusively for fixing the photo problem known as red eye. You’ve seen it—glowing red “devil” eyes in portraits of people, and blue or green “alien” eyes in pictures of animals. It’s caused by light reflecting off the back of the eye, and it usually happens only with flash photography or in a very bright light. To fix red eye with this brush, click right in the center of each red eye. We discuss this in greater detail in Hour 22, “Repairing Color Photos,” along with special techniques for fixing animals’ green eyes.

Converting Color to Black and White

It shouldn’t surprise you to learn that multiple methods are available for converting a color photo to black and white (which, as you know, is technically called grayscale). You can choose Image, Adjustments, Desaturate, or reduce the Saturation value to 0 in the Hue/Saturation dialog. Either of these ends up in the same place. Or, logically, you can convert the image to Grayscale mode (you’ll need to click OK when Photoshop asks if you’re really sure you want to discard all the image’s color data). This method gives you improved contrast over the Desaturate method. And there are other, more obscure techniques, involving converting an image to Lab Color mode and starting from the Lightness channel, or picking the best-looking of the red, green, and blue color channels.

All these conversion methods were rendered obsolete as of Photoshop CS3, when the Black & White command was introduced (choose Image,
Converting Color to Black and White

Adjustments, Black & White). Using a dialog crammed with sliders (see Figure 5.25), Black & White gives you the opportunity to take complete control over just how each of the colors in a color photo is converted to grayscale. You can even make adjustments directly in the image, as you can with the On-Canvas Adjustment tools in the Curves and Hue/Saturation dialogs. And if it’s too much bother to deal with all those sliders every time, you can take advantage of the comprehensive collection of presets Adobe has so thoughtfully included in the Black & White dialog.

As with Levels and Curves, Black & White has an Auto button; click this to use Photoshop’s recommended settings for your image. The Auto function works better in Black & White than in the other dialogs in which it appears; it makes an excellent starting point for your own adjustments. The provided presets tend to be rather extreme and are most useful for special effects such as simulating an infrared image.

Working with the Black & White dialog is easy. Just click and drag any of the color sliders to change how objects of that color are converted to gray. If a red T-shirt is too dark with the default settings, drag the Reds slider to the right to brighten it. Or, if you prefer, click the T-shirt in the image window and drag to the right for the same results. To undo your changes without leaving the dialog, you can Option-click (Mac) or Alt-click (Windows) the Cancel button to reset all of the color sliders. To reset just one slider, Option-click (Mac) or Alt-click (Windows) its color chip.
HOUR 5: Adjusting Brightness and Color

Summary

During this hour, we looked at a multitude of ways to adjust an image’s brightness and color, starting with Variations and ending up with a highly customizable way of converting a color photo to a black-and-white one. The Variations dialog is easy to use, enabling you to make seat-of-the pants corrections without worrying about numbers or channels or anything else technical. Other, more specific commands such as Curves and Color Balance give you precise control over every aspect of the brightness and color in your images. You can use the skills you’ve learned in this hour to make your pictures look more like the real world—or to make them look out of this world, with purple skies and orange grass.

The tools and commands covered in this hour will come in handy every time you use Photoshop. Some of them overlap in function; for example, most of the time you can use either Levels or Curves to achieve the same result. So practice, develop your own favorite techniques, and prepare yourself for a quantum leap in the quality of your photos.

TIP

Black & White and Color Too

If you plan to tint your newly minted grayscale image, you can save time by performing that function in the Black & White dialog as well. Click the Tint check box to turn on this option, then click the color swatch to open the Color Picker and choose a tint color. Drag the Hue and Saturation sliders to adjust the color.
Q&A

Q. If Levels and Curves are interchangeable, how do I decide which I want to use?

A. In theory, you can achieve pretty much the same results with Levels and Curves, although Curves is more powerful. In practice, I tend to use Levels when there’s a color cast in the image—to fix it, click with the appropriate Eyedropper tool in an area that should be white, gray, or black. I use Curves when I want to modify only a small range of colors.

Q. What’s the best way to add a sepia tint to an image?

A. You’re right in assuming that there’s more than one method—doesn’t Photoshop have multiple methods for everything? You could use Hue/Saturation or make a duotone, but my favorite method is to use a Black & White adjustment layer. That way, I can always restore the image’s color by just deleting the layer.

Q. Can I apply more than one adjustment layer to an image?

A. Sure, you can have as many as you want, and you can edit their layer masks so that the adjustments apply to the same parts of the image or to completely different areas. If you want to restrict the effects of an adjustment layer to the contents of one other layer, place the adjustment layer immediately above the other layer in the Layers panel and Option-click/Alt-click the line between the two.

Workshop

Quiz

1. How many channels does a CMYK image have?

   A. None; only RGB images have separate color channels.

   B. Two—one for the CMYK data and one containing RGB data, in case you want to convert the image to RGB mode.

   C. Four—one each for cyan, magenta, yellow, and black.

   D. Hundreds or even thousands, if it contains a lot of alpha channels.
HOUR 5: Adjusting Brightness and Color

2. True or false: The Burn tool lightens the image where it’s applied, and the Dodge tool darkens the image.

3. Which of the following is not a kind of adjustment layer you can create?
   A. Vibrance
   B. Shadows/Highlights
   C. Curves
   D. Photo Filter

Answers

1. C or D. All CMYK images start out with four channels, but you can add as many alpha channels as you want.

2. False. The tools work the other way around; the Dodge tool lightens the image and the Burn tool darkens it. Use the Dodge tool to lighten shadows on people’s faces, and use the Burn tool to bring out underexposed details.

3. B. It’s in the Adjustments submenu of the Image menu, but it’s not available as an adjustments layer.

Exercise

Download some of the photos in this book from the publisher’s website. Then see how much further you can go. Turn a cloudy day into a sunny one and then reverse the change. Experiment with all the different adjustment layer types. Try out some of the presets, and then see whether you can duplicate your efforts manually.
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