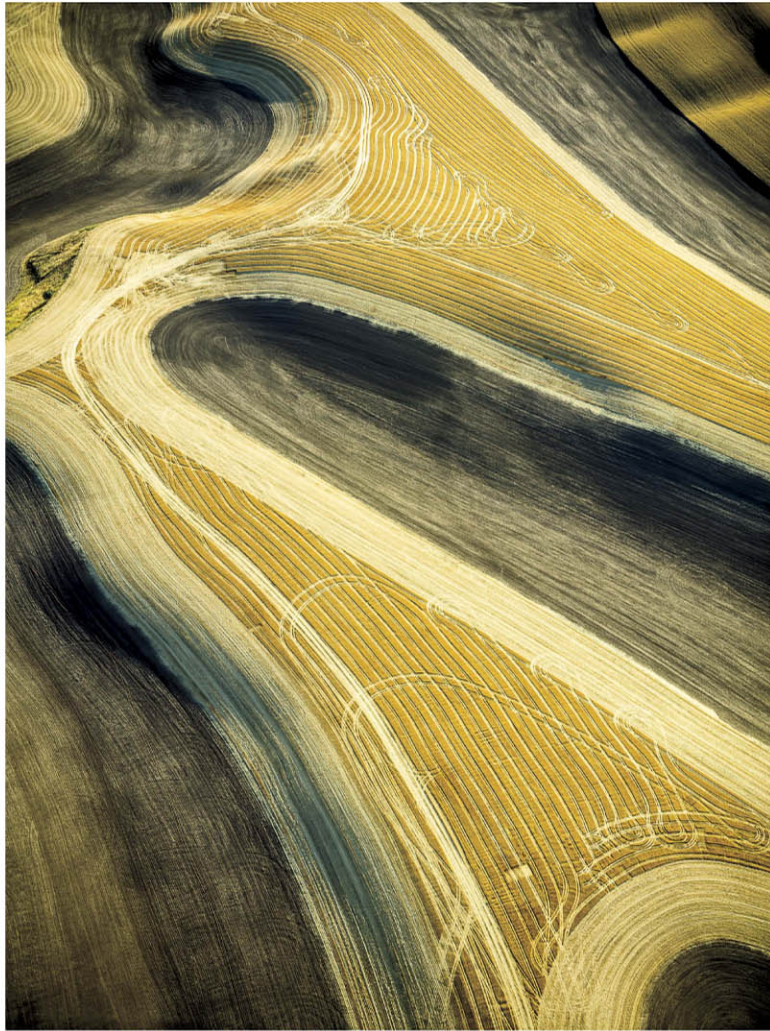


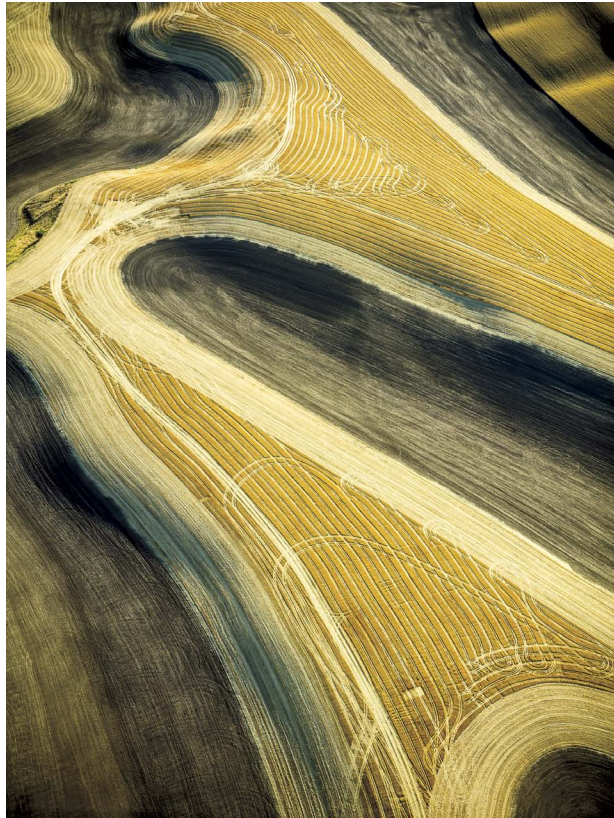
THE DIGITAL NEGATIVE



Raw Image Processing in Lightroom, Camera Raw, and Photoshop

JEFF SCHEWE

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Jeff Schewe

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*Dedicated to the lasting memory and substantial contributions of Bruce Fraser.
Thanks, Bruce, from all of us.*

TABLE OF CONTENTS

Introduction xi

■ CHAPTER 1

WHAT IS A DIGITAL NEGATIVE? 3

Dissecting a Digital Negative	4	Raw versus JPEG	27
Camera Sensor Types	5	Photographic Aspects of a	
Attributes of a Digital Negative	7	Digital Negative	29
Linear capture	7	Shutter speed	30
Digital exposure	11	Lens aperture	31
ETTR	14	Lens aberrations	32
Sensor noise and ISO speed	17	Sensor resolution	35
Colorimetric interpretation	21		
Metadata	24		
Bit depth	25		



■ CHAPTER 2

ADOBE RAW IMAGE PROCESSING: AN OVERVIEW 39

The Genesis of Camera Raw	40	The Relationship of Camera Raw and	
The Genesis of Lightroom	41	Lightroom Versions	54
The Bridge, Camera Raw, and		Color Management between Lightroom,	
Photoshop System	45	Camera Raw, and Photoshop	55
Bridge	45	DNG File Format and DNG Converter	58
Camera Raw	46	To DNG or not to DNG?	58
Photoshop	48	Adobe DNG Converter	59
The Lightroom Way	50		

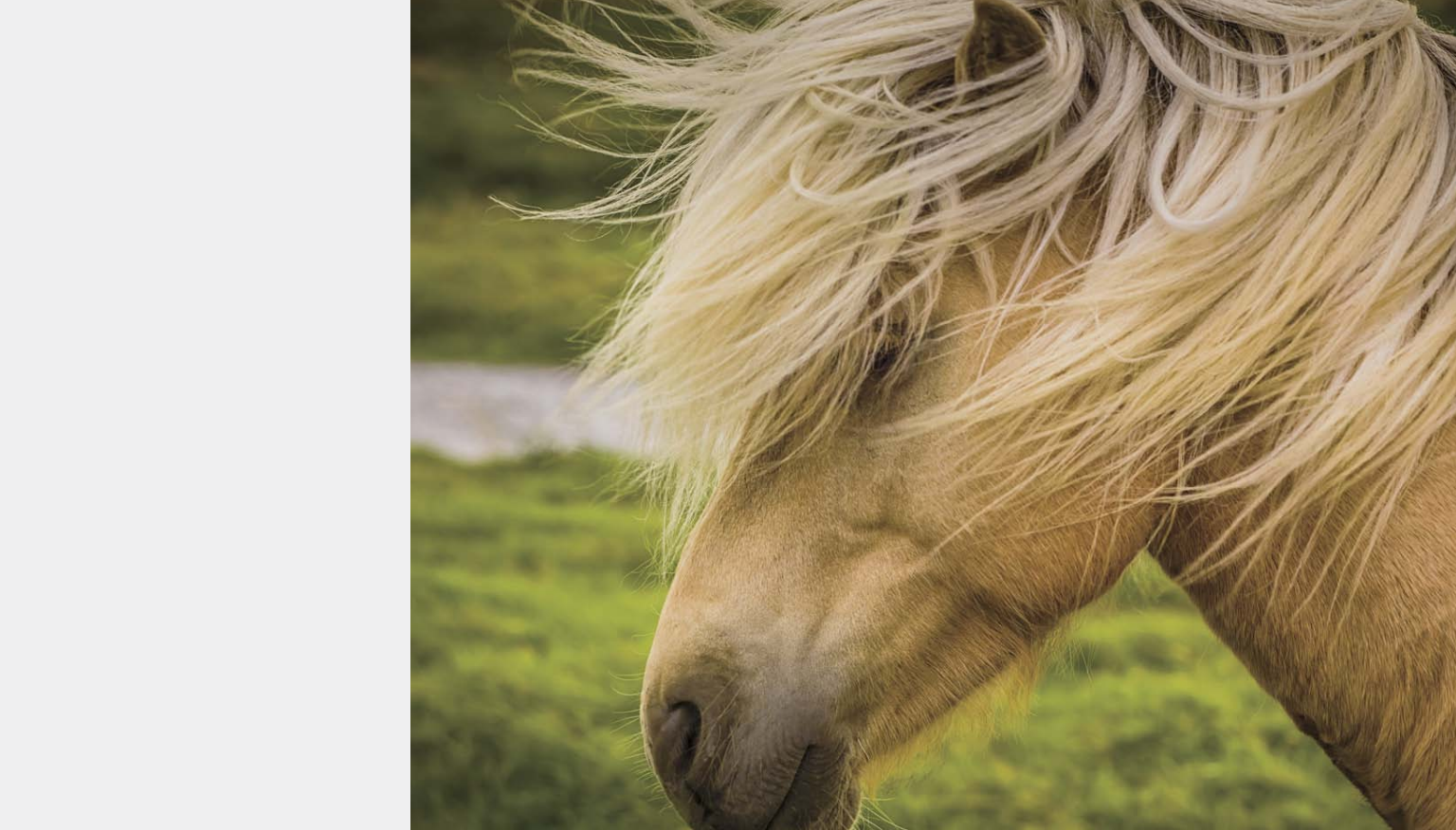




■ CHAPTER 3

FUNDAMENTALS OF LIGHTROOM AND CAMERA RAW 65

Lightroom and Camera Raw Defaults	66	Lightroom and Camera Raw Tools	109
Lightroom and Camera Raw		Lightroom and Camera Raw Crop tools	111
Functionality	69	Lightroom and Camera Raw Spot	
The Histogram	70	Removal tools	114
Lightroom and Camera Raw		Local adjustments in Lightroom and	
Adjustment Panels	71	Camera Raw	119
Basic panel	72		
Tone Curve panel	80		
HSL/Color/B&W panel	83		
Split Toning panel	86		
Detail panel	87		
Lens Corrections panel	95		
Effects panel	103		
Camera Calibration panel	106		



■ CHAPTER 4

ADVANCED RAW PROCESSING USING LIGHTROOM OR CAMERA RAW 133

Tone Mapping	134	Color to Black-and-White Conversion	171
Flat lighting	134	Adjusting the panchromatic response	172
High-contrast lighting	136	Warm toning	175
Blown skies	140	Split toning	178
Inclement weather	143	Cold toning and spot of color	180
Underexposure	146	Optimized black-and-white	
Backlit subjects	149	tone mapping	181
Color Correction	153	Color toning using color curves	183
White balance (global)	153	Maximizing Image Detail	186
White balance (local)	156	High-frequency edge sharpening	186
Color curves	158	Low-frequency edge sharpening	192
Color split toning	160	Mixed-frequency edge sharpening	196
Color gradients	163		
HSL color correction	166		
Lens colorcast correction	167		

■ CHAPTER 5

DEPLOYING PHOTOSHOP TO PERFECT YOUR DIGITAL NEGATIVES 203

Getting Images into Photoshop	204	Compositing Multiple Images	230
A Typical Edit in Photoshop	206	Creating the composite mask	231
Color Range selection tool	207	Compositing the sky	232
Creative progressive sharpening	208	Luminance-based masks	233
Midtone contrast	210	Color to Black and White	
Sculpting	213	in Photoshop	235
Saturation and Color layer modifications	214	Photomerge for Panoramic	
Blue edge fix	218	Stitching	240
Retouching	220	Merge to HDR Pro	244
Healing Brush and Clone Stamp tools	222	Focus Stacking	248
Copy-and-paste patching	224		
Retouching using painting	225		
Using paths to make selections	227		



■ CHAPTER 6

CREATING AN EFFICIENT WORKFLOW 253

Workflow Principles	254	My Personal Workflows	266
Do things once	254	Field workflow	266
Do things automatically	254	Studio workflow	275
Be methodical	255	How I Organize My Images	279
The Five Workflow Stages	255	My Digital Imaging Area	280
Stage 1: Image ingestion	255	Performance Tuning Your System	281
Stage 2: Image verification	257	Photoshop performance	281
Stage 3: Preproduction	259	Lightroom performance	284
Stage 4: Production	263		
Stage 5: Postproduction	264	Index	286



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INTRODUCTION

The Digital Negative is about raw image processing of digital camera captures. It details what makes for a really good digital negative and how to harness the massive power of Lightroom and Camera Raw to extract the best-possible raw rendering of that digital negative. It's also about when and how to deploy Photoshop to take your rendered digital negatives further using the power of Photoshop to perfect the images that need and deserve the attention.

I drill down on the Lightroom Develop module and the Camera Raw plug-in extensively—that's the meat of this book. While *parametric image editing* (editing the parameters instead of the image pixels in Lightroom and Camera Raw) has advanced considerably since Camera Raw was first introduced, there is still a use for that venerable old lady named Photoshop.

I wrote this book because there didn't seem to be an optimal source of information that suitably covered the main topic without being relegated to covering everything about a single application. The world doesn't need yet another Lightroom or Photoshop book. What I thought was needed, though, was a book about the essence of raw image processing, regardless of the imaging application. I set out to write a book about cross-application integration that addressed the needs of photographers who want to optimize their images for the best-possible image quality.

I called the book *The Digital Negative* for a reason. In my formative years as a young photographer, I read a series of books by Ansel Adams that formed the genesis of my infatuation with and addiction to photography. Ansel's books—*The Camera*, *The Negative*, and *The Print*—had a huge impact and greatly helped advance my knowledge of photography. Time will tell if I can have even a minute fraction of the impact on others that his books had on me.

Who am I and why should I write this book? Well, I'm a graduate of Rochester Institute of Technology (RIT), with two degrees in photography. I was a commercial

advertising photographer in Chicago for over 25 years (yeah, I won a few awards). I was an early adopter of digital imaging—my first photo assignment that was manipulated on a computer was in 1984 (the year the first Macintosh computer shipped). No, I didn't do the digital imaging—a pioneering company called Digital Transparencies, Inc., in Houston, Texas, did it.

I started doing my own Photoshop digital imaging in 1992 using Photoshop 2.0. I was one of the first off-site Photoshop alpha testers (*alpha* meaning way before any sort of final coding is done and before it's really usable). I got to know and work with many of the Photoshop engineers because of this testing. When I mention names like Thomas Knoll (the co-author of Photoshop) or Mark Hamburg (the No. 2 Photoshop engineer and founding engineer of Lightroom), I do so not to drop names, but because these guys are friends of mine. I've worked with them a lot over the years. I want people to know their names and give them the respect they deserve.

I was significantly involved in the early development of both Camera Raw and Lightroom—not because Adobe was paying me tons of money (alpha testers work for free), but for the selfish motive of advancing and improving the tools I personally wanted to use.

I've also had the good fortune to meet a lot of the leading experts in the field, and I want to express my sincere appreciation of one dearly departed friend, Bruce Fraser, noted author and educator, for taking me under his wing. I had the singular honor of joining Bruce and some other friends in forming a company named Pixel Genius, which developed Photoshop plug-ins. I also fulfilled Bruce's wish that I take over and act as co-author of two of the books he authored, *Real World Camera Raw* and *Real World Image Sharpening*. I've also co-authored a book with another good friend and colleague, Martin Evening, titled *Photoshop for Photographers: The Ultimate Workshop*. So, now, with this new book, I'm a full-fledged author!

By way of disclosure, let me just say that I am not and never have been an employee of Adobe (even though, over the years, I've worked with Adobe on software development). I don't have any contracts or testimonials with any camera companies. In the book, I frequently mention specific cameras and lenses I used for image captures. I do so to provide a provenance of how and with what gear an image was captured, not to promote any specific camera. I used those cameras because, well, those are the cameras I bought and paid for (although I've been known for getting some really good deals). My opinions are my own, and anybody who knows me knows that no company could influence me. So, when I write something, you can be assured my motives are pure (even if my tone can be a bit, uh, verbally aggressive).

I owe a large debt of gratitude to many people, and since it's my book, I'll take the time to mention them. First, we all owe a huge debt of gratitude to two guys, John Knoll, and his brother, Thomas, who really started this whole digital image revolution

by co-authoring Photoshop. I also send sincere thanks to Mark Hamburg, for his willingness to put up with my quirky ways and sometimes actually listen to me when I told him what he should do. There are a ton of people at Adobe to thank: Russell Preston Brown for being a co-conspirator, Chris Cox for a lot of sneaky things he put into Photoshop, Russell Williams for striving for Photoshop excellence, and John Nack (and most recently Bryan Hughes) for being Photoshop product managers who really care about the end-user. On the Camera Raw team, special thanks go to Eric Chan, who will always listen and do the right thing (even if it's a pain), and the gone but not forgotten Zalman Stern (he didn't die—he just went to work for Facebook).

I also thank my good friends and partners at Pixel Genius—Martin Evening, Mac Holbert, Mike Keppel, Seth Resnick, and Andrew Rodney—and our gone but not forgotten members, Mike Skurski and Bruce Fraser. We all miss them and so does the industry. I'll also give a shout-out to the Pixel Mafia—you know who you are....

I want to thank the Peachpit “Dream Team” (that's what Bruce used to call them, and I wholeheartedly agree): Rebecca Gulick, who was the acquisitions and project editor (which means she had to put up with my foolishness and tardy submissions); my production editor, Lisa Brazieal, who conspired with me to allow me to do what I thought was best; and my development and copy editor, Elizabeth Kuball, who had the unenviable job of reading and rereading all my terrible writing and correcting me to make me sound like I have half a clue. Thanks also to the book compositor, Kim Scott of Bumpy Design, who did an excellent job of laying out the book and making my figures work. Thanks to my proofreader, Patricia Pane, for catching all the small stuff, and indexer, Emily Glossbrenner, for making stuff easy to find. Big thanks also go to Mimi Heft, for the cover and interior design excellence (and for putting up with my histrionics)—seriously, I never would've picked *that* image for the cover, but it really works!

I also owe a huge debt of gratitude and massive appreciation to my long-suffering wife, Rebecca (Becky), who is always the first person to read the drivel I write (and tell me how to make it sound intelligible, which always makes me look good to my copy editor). She stoically puts up with all my inattention and bad habits when I'm writing and seems to genuinely love me in spite of myself. Thanks also to my loving daughter, Erica, who suffers the loss of her dad while I'm under deadline. She gets back at me by being one my harshest critics, which, I think, makes us even.

My thanks also go to you, the reader, for taking the time to at least get this far. I hope you'll find this book beneficial in advancing your image-processing excellence. You can find additional information on the book's companion website at www.thedigitalnegativebook.com.

—Jeff Schewe, August 2012



View from the ship while sailing through the Lemaire Channel in the Antarctic Peninsula. Captured with a Canon EOS 1Ds M II camera with a 24–70mm f/2.8 lens at ISO 400.



■ CHAPTER 4

ADVANCED RAW PROCESSING USING LIGHTROOM OR CAMERA RAW

The previous chapter was about how the individual adjustments and tools work. This chapter is about combining the various image adjustments and tools capable of being deployed in Lightroom or Camera Raw to arrive at an optimized “master digital negative.” The final images shown in this chapter are the result of just raw processing. I used Photoshop only to size, output sharpen, and make final CMYK separations for reproduction. (Sorry, Photoshop, I only needed you for the grunt work.) Some of the images needed more help than others and some of the original captures were, uh, less-than-ideal exposures or photographic conditions. But that’s why I’m here—to teach you how to make a silk purse out of a sow’s ear.

Yeah, I know, it would be ideal if photographers could just point the camera and magically end up with perfectly cropped, well-exposed images with the proper tone and color. Sometimes that happens—although I’m often shocked when it does, because I’m so used to the raw capture being less than ideal straight from the camera. The following examples will guide you through correcting typical problem images due either to the photographic conditions or poor technique by yours truly. I’ve never said I was perfect, but I am pretty darn good at fixing things.

tone mapping

NOTE Don't get too wrapped up in the exact numbers I use in these examples. Image adjustments need to be made on an image-by-image basis—the numbers I use for my images won't be all that useful to you on your images. Pay more attention to how and why I made the moves rather than the actual numbers. I've included them only to provide documentation of the settings.

When shooting conditions are suboptimal, the best you can do is make sure you get the shot and then massage the image in post-production. The images in this section are generally the result of poor lighting conditions, although I threw a few “mistakes” in the bunch for good measure. These solutions rely on adjusting the tone mapping by adjusting how the sensor captured the scene.

FLAT LIGHTING

The image for this example was shot through the window of a Cessna 172 four-seat high-wing aircraft flying over the Palouse region of southeastern Washington State. It was shot with a Phase One 645DF camera with a P65+ camera back and 75–150mm lens. Yes, I stuck a \$45,000 camera out the window of a small plane while making absolutely sure the camera strap was secure around my neck. Because this image was chosen for the cover of this book, I thought it would be appropriate as the first example. It combines two problems really: flat lighting and trying to shoot out of an airplane.

As you can see from the “before” histogram in **Figure 4.1**, the image was well exposed and gently to the right with no clipping. The primary adjustments made to the image were to adjust the white balance, increase Contrast, and adjust the Whites and Blacks sliders. Those adjustments really modified the overall Tone Curve and added a lot of contrast to the image but with the advantage of controlling the ¼ and ¾ toning asymmetrically. A simple Contrast adjustment alone wouldn’t have provided the strength in the shadows, and reducing the Shadows slider was too gentle—it really needed the Blacks adjustment to push down the deep tones.

In the Presence adjustments, I really got heavy-handed. I set Clarity and Vibrance and added a touch of Saturation. The strong Clarity setting also had a major impact on the tone mapping, substantially reduced the flat lighting, and enhanced the midtones contrast.

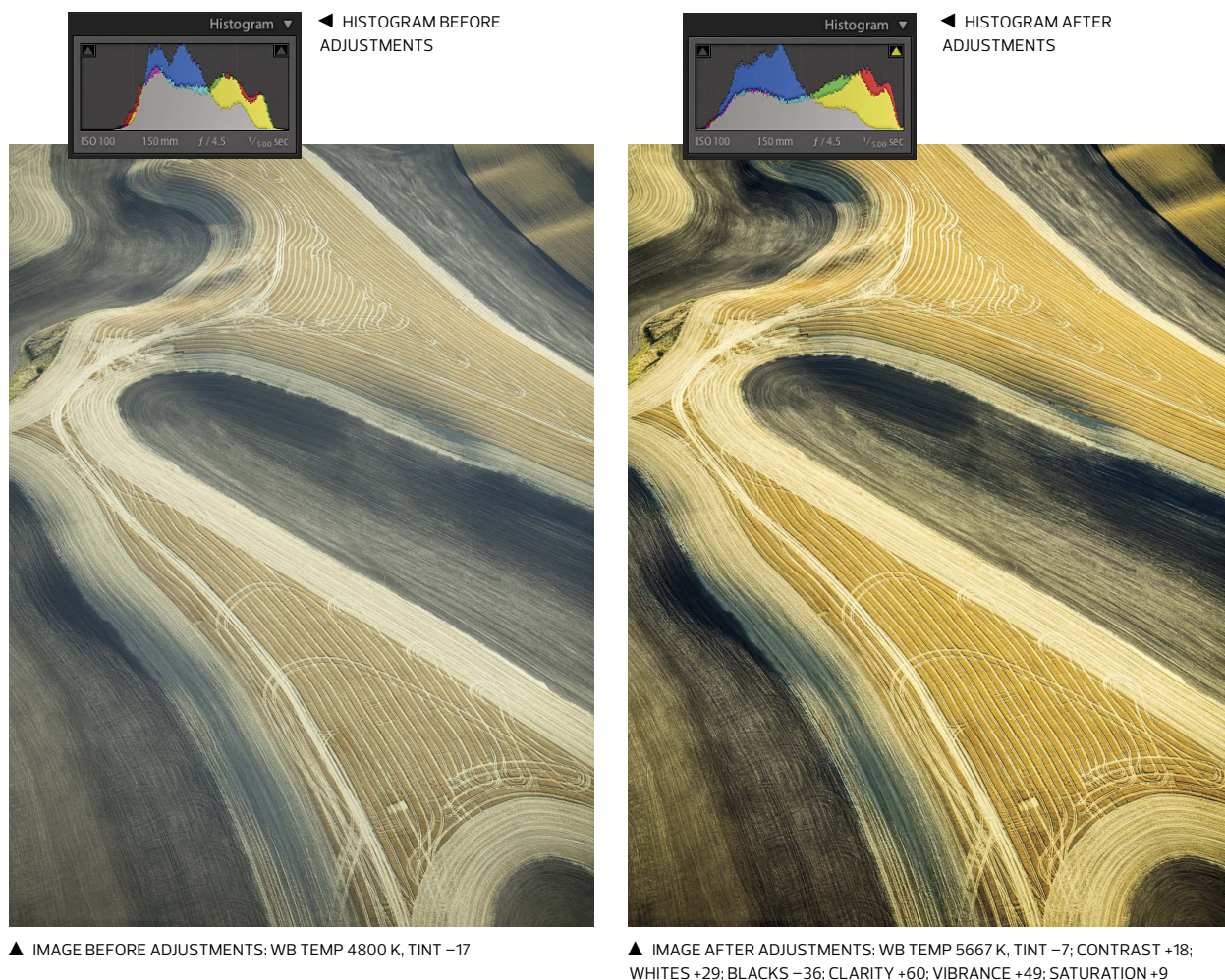
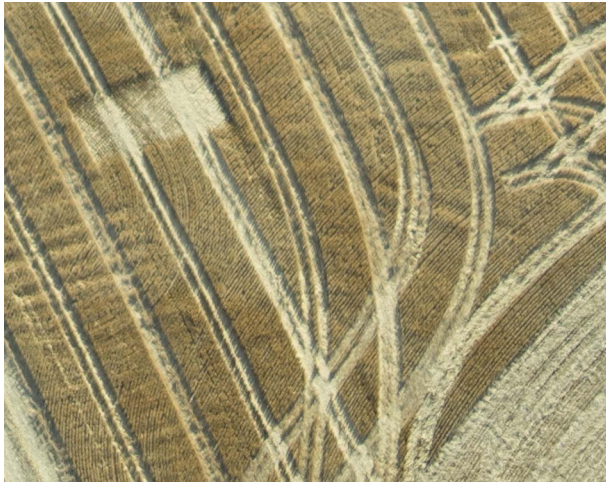
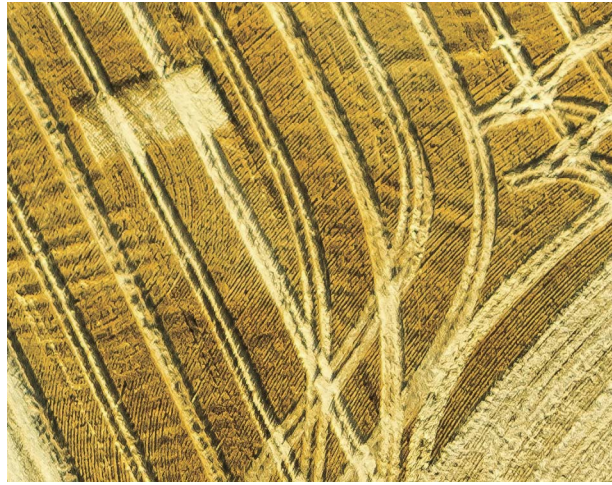


FIGURE 4.1 Cover image and histograms before and after adjustments.

The other issue I had to deal with was image sharpness. In preparing for the shoot, I had decided not to bother with autofocus and taped the lens at just shy of infinity. I also preset the f-stop to 4.5 (just down a bit from wide open) and set the shutter speed to 1/500 second, thinking (hoping) that would be fast enough to freeze the shaking effect of being in an airplane with the camera halfway out the window. I was close, but 1/1000 second would've been better, even if I'd had to raise the ISO from 100 to 200. I didn't have an issue with shots at the wider 75mm focal length, but this



▲ IMAGE BEFORE ADJUSTMENTS



▲ IMAGE AFTER ADJUSTMENTS: SHARPENING AMOUNT 47, RADIUS 0.8, DETAIL 100, MASKING +20; NOISE REDUCTION LUMINANCE +30

FIGURE 4.2 Before and after comparison at 1:1 zoom.

shot was at 150mm and camera shake shows when zoomed to 1:1. **Figure 4.2** shows the “before” image with default tone, color, and sharpening and after substantial adjustments in the Detail panel.

You can see that the “before” image is flat and lacks detail. The tone mapping has helped the apparent sharpening, but the Detail panel settings I used were rather aggressive. The Detail slider was set all the way to 100 to maximize the deconvolution aspect of the sharpening. I also adjusted the Luminance Noise Reduction, which helped dampen down the really aggressive Detail slider adjustment. I don’t think the final image detail is great at 1:1 (there’s still a softness and lack of texture in places), but the final cropped image size was 6722 x 8714 pixels. A print could be made at about 22.5 x 29 inches at 300 PPI (although I suspect I could see the lack of detail in a print that size). In Chapter 5, I’ll show an example of a sharpening routine called *progressive sharpening*, which can get even more texture from this image.

HIGH-CONTRAST LIGHTING

When you find yourself in a midday lighting situation and the primary subject is in a cave, you kind of know the lighting is going to suck. This example shows how you can adjust for it.

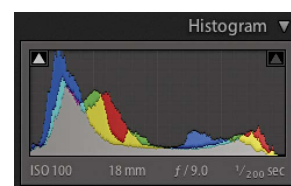
This image of the Cliff Palace in Mesa Verde National Park in southwestern Colorado was shot with a Canon EOS Digital Rebel camera with the 18–55mm kit lens. The



FIGURE 4.3 Cliff Palace before image adjustments.

◀ IMAGE BEFORE ADJUSTMENTS

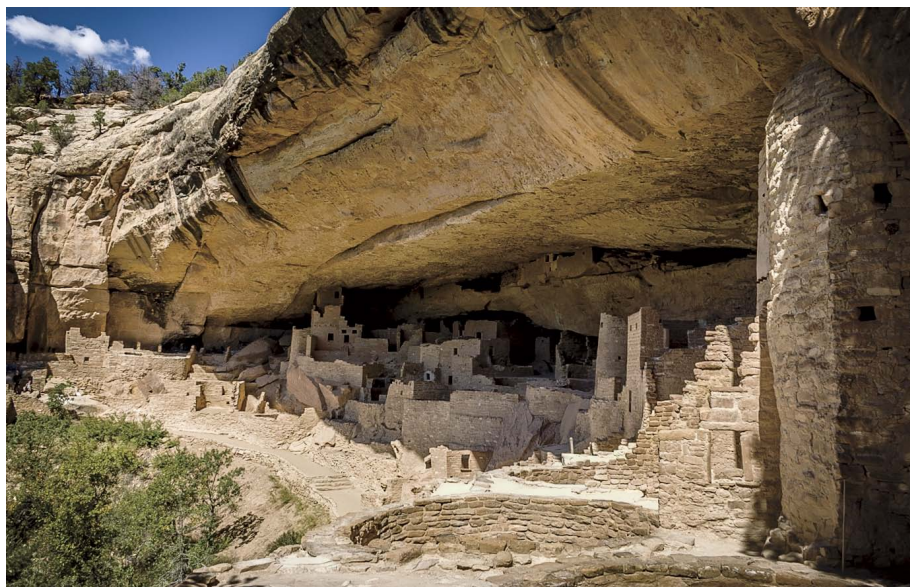
▼ HISTOGRAM AT DEFAULT



time was early afternoon. Because I was on a motorcycle trip and planning on staying the night in Gunnison, Colorado, which was still over four hours down the road, I couldn't wait around for the light to get better. **Figure 4.3** shows the “before” image.

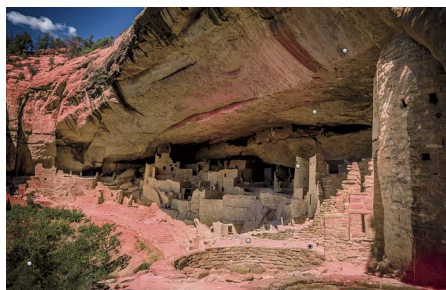
The exposure was about as good as I could get without any clipping. You can see a lot of levels in the $\frac{1}{4}$ and $\frac{3}{4}$ tones but not a lot in the middle. The sunlit portions of the image are very bright, and the shadows under the cliff are rather dark. The primary global image adjustments were made in the Basic panel. I didn't touch the white balance, but I did a lot of substantial tone mapping in the Tone section. I increased Exposure and reduced Contrast to open up the whole image and reduce the current heavy contrast. I reduced Highlights all the way down and increased Shadows. This modified the Tone Curve, but the image still needed some additional work. I increased the Whites to fine-tune the upper-white detail and reduced the Blacks to clamp down on the deepest areas after substantial lightening in the Shadows and overall Exposure. I set Clarity rather high and increased Vibrance. The increased saturation in the blues didn't look right, so I did an adjustment of saturation in the HSL/Color/B&W panel for a -3 Aqua and -15 Blue. I adjusted the Detail panel settings to taste at a screen zoom of 1:1 but didn't need to go wild. I also applied a Lens Corrections adjustment for the EF-S 18–55mm lens, which has barrel distortion and

FIGURE 4.4 Image after all global image adjustments.



▲ BASIC PANEL ADJUSTMENTS: EXPOSURE +0.20, CONTRAST -24, HIGHLIGHTS -100, SHADOWS +71, WHITES +41, BLACKS -41, CLARITY +84, VIBRANCE +41

FIGURE 4.5 The highlight and shadow areas that the Adjustment Brush masks.



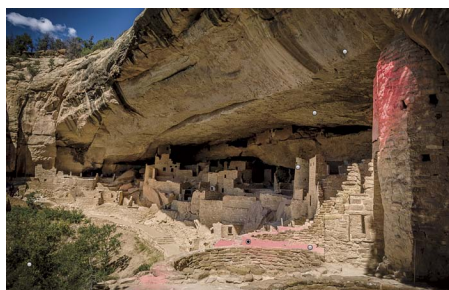
▲ MASK SHOWING THE HIGHLIGHT AREAS ADJUSTED: EXPOSURE -0.60, HIGHLIGHTS -39



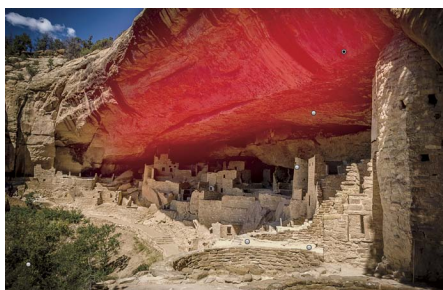
▲ MASK SHOWING THE SHADOW AREAS ADJUSTED: EXPOSURE -0.42, CONTRAST -74, HIGHLIGHTS +13, SHADOWS +34, CLARITY +86

turned on the chromatic aberration (CA) removal. **Figure 4.4** shows the result of the global image adjustments.

Compared with the “before” image, you can see that the overall tone mapping has improved with the reduction in highlights and opening up of the shadows. A few areas still needed additional work. I added a slight Graduated Filter on the left third of the image that reduced Exposure and Highlights. That darkened down the left side of the image a touch. But the remaining adjustments would need to be made using



▲ ADJUSTING THE LIGHTEST PORTION OF THE WALKWAY: HIGHLIGHTS -44



▲ ADJUSTING THE AREA UNDER THE CLIFF: EXPOSURE -0.52, CONTRAST -25, HIGHLIGHTS -20, CONTRAST -20

FIGURE 4.6 Additional Adjustment Brush masks.

the Adjustment Brush. The goal was to locally darken the areas that were still too bright, particularly along the path, and then adjust the tone and color under the cliff face. **Figure 4.5** shows the two main Adjustment Brush pins with the masks visible.

The areas in the highlights mask were created using Auto Mask to concentrate the adjustments in the area of the cliff side and walkway. Some areas were painted without Auto Mask. I also added a slight taupe color with a Hue of 27 and a Saturation of 30. You can see the results in the shadow areas figure. For the shadow areas, I used the Adjustment Brush with Auto Mask on along the edges but painted without Auto Mask in the center. Ironically, some areas were too bright, so I used a minus Exposure setting and reduced the Contrast. The Highlights and Shadows were increased and Clarity was increased a lot. Why these numbers? I really don't go by the numbers—I prefer to look at the image on-screen and twiddle the areas to arrive at what I want.

I also added a darker color tint with a higher saturation. The Hue was 39 and Saturation was 70. The single highlight area adjustment wasn't sufficient, and the area under the cliff also needed further adjustments. **Figure 4.6** shows two additional image adjustment area masks.

The brightest portion of the walkway looked too “white,” so I applied an additional mask using Auto Mask, reduced the Highlights further, and added a stronger Color tint with a Hue of 29 and a Saturation of 37. This gave the walkway a more rock-colored look instead of a gravel-covered look. For the area under the cliff, I wanted to darken the area and desaturate the rock color. I used a minus Exposure setting while reducing Contrast, Highlights, and Saturation. The second pin under the highest pin was an additional area to add further desaturation; the last pin on the far left was just to darken the tree a bit further. **Figure 4.7** shows the final adjusted image and resulting histogram. You can see that the lack of midtones has been fixed and the histogram peaks have been rounded over.

TIP Exposure is overall brightness (more or less), Highlights and Shadows are modifications altering contrast, and Clarity is a midtones contrast adjustment. As you adjust one parameter, you'll typically see that a different parameter ends up needing to be tweaked.



FIGURE 4.7 The final processed Cliff Palace image.

▲ THE FINAL IMAGE
◀ THE FINAL HISTOGRAM

BLOWN SKIES

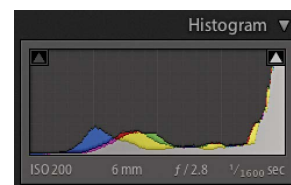
When you go to an exotic location far, far away and you're faced with overcast skies, fret not and keep shooting—you may just end up with something “interesting” (although, truth be told, I didn't really expect to get anything out of this location). This shot is of the Glenfinnan Monument, situated at the head of Loch Shiel in the Highlands of Scotland. It was erected in 1815 to mark the place where Prince Charles Edward Stuart (“Bonnie Prince Charlie,” also known as “The Young Pretender”) raised his standard at the beginning of the 1745 Jacobite Rising, which ended in failure with Charlie fleeing to France, making a dramatic if humiliating escape disguised as a “lady's maid” to Flora MacDonald. Did I mention that Scotland has a lot of weather like



FIGURE 4.8 The blown skies in Scotland and histogram.

◀ THE IMAGE BEFORE
ADJUSTMENTS: WB TEMP 5000 K,
TINT -2

▼ HISTOGRAM AT DEFAULT



this that results in wide expanses of blown-out skies? **Figure 4.8** shows the original capture and histogram showing a lot of blown skies that look like they're clipped.

I cooled the white balance down a tad from the original As Shot setting. I reduced the overall Exposure and didn't touch the Contrast setting. I reduced the Highlights setting and increased the Shadows setting. No changes to Whites or Blacks. I added Clarity and increased Vibrance. (Are you seeing a trend here?) The other main adjustment was to turn on the Lens Corrections using the lens profile for a Canon Powershot S90 and enable the auto CA corrections. I adjusted the Saturation in the HSL panel to increase the Yellow +12 and Green +19. The capture sharpening was done to taste, leaving everything at default except raising Amount to 50 and adding a +17 Luminance Noise Reduction. The global adjustments helped but weren't enough, so I used a Graduated Filter for further fine-tuning, as shown in **Figure 4.9**.

The global adjustments weren't enough to bring back the detail in the sky, and the histogram still showed clipping. I used a Graduated Filter to further darken the sky and bring out additional detail. The gradient had a minus Exposure along with a minus Highlight. I added Clarity and increased Saturation. One additional adjustment was made: I increased the Noise Reduction setting to cut down on some of the noise that showed up during the gradient adjustment. Where possible, I like to adjust multiple parameters in a single Graduated Filter instead of spawning off a bunch of single-parameter local adjustments. The final image in **Figure 4.10** shows

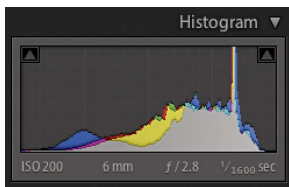


▲ IMAGE AFTER GLOBAL ADJUSTMENTS: WB TEMP 4778 K, EXPOSURE -0.90, HIGHLIGHTS -67, SHADOWS +58, CLARITY +27, VIBRANCE +40



▲ IMAGE AFTER GRADUATED FILTER: EXPOSURE -1.27, HIGHLIGHTS -76, CLARITY +20, SATURATION +20, NOISE +20

FIGURE 4.9 Image after global and Graduated Filter adjustments.



◀ FINAL ADJUSTED HISTOGRAM

▼ FINAL ADJUSTED IMAGE



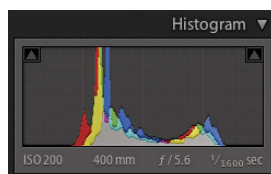
FIGURE 4.10 The final adjusted image and histogram showing no blown skies.

no clipping in the histogram and an interesting cloud arrangement above Charlie's monument—a testament to how much detail can be extracted from what might seem to be a blown sky. I hope that Charlie would approve (although from what I've read, he was a bit of a putz, so who cares?).

INCLEMENT WEATHER

When you've spent about 24 hours in airports and two and half days in really rough seas crossing the Drake Passage to Antarctica, you're not going to let a little "inclement weather" stop you from shooting (as long as the cameras keep firing). Such was the case with this shot. I'm not 100 percent sure where we were, but I think it was shortly after a shore cruise near Prince Olav Harbor in South Georgia Island in the Scotia Sea, just a bit north of the Antarctica Peninsula. We were on our way to Grytviken, where Ernest Shackleton was buried.

The shore cruise was pretty wet, sodden, and miserable. I had lost a lens and a camera LCD due to rain on the cruise, but I returned to the deck of the ship to keep shooting, even though it was still raining and very foggy. It was either shoot or take a nap (or hang out in the bar), so I kept shooting. We saw a "blue ice" iceberg off in the distance and I framed it with a 400mm lens, even though everything was very flatly lit. **Figure 4.11** shows the image before adjustments and the histogram.



▲ HISTOGRAM AT DEFAULT

◀ THE IMAGE BEFORE ADJUSTMENTS

FIGURE 4.11 The iceberg in inclement weather and the histogram at default.

NOTE Blue ice occurs when snow falls on a glacier, is compressed, and becomes part of a glacier that winds its way toward a body of water. During its travels, air bubbles that are trapped in the ice are squeezed out, and the size of the ice crystals increases, making it clear. The blue color is often wrongly attributed to light scattering. Instead, ice is blue for the same reason water is blue: H_2O absorbs light at the red end of the visible spectrum, resulting in a strong blue color. The purer the ice is with no air trapped in, the bluer the ice will appear.

I suppose I could've done a bit more ETTR for this image, but as it turns out, it wasn't really necessary because the image was pretty easy to tone-map into something useful. The major global adjustments were in the Basic panel, where I increased Exposure and Contrast. This started the tone mapping that continued with a minus Highlights adjustment and a plus Whites adjustment to extract more highlight textual detail. The biggest adjustment was a strong minus Blacks to spread out the shadows and get a decent black. This did a decent job of expanding the image levels but needed a bit of tweaking using the Parametric Tone Curve. The Highlights were set to +32 and the Darks to +38. This had the effect of lightening the brighter portions of the image, as well as retaining some of the shadow detail that had been crunched by the strong minus Blacks adjustment. I added Clarity and a small amount of Vibrance. I didn't change the As Shot WB Temp of 6000 K and Tint of +5.

I also decided to throw in a minus Exposure with the Adjustment Brush to knock down the coast visible beyond the iceberg. **Figure 4.12** shows the global adjustments and the brush mask.

For the final image I did do a bit of spotting to eliminate some distracting items and, of course, the sensor dust spots (typical of being down there—lots of dust to spot!). Because I was shooting with a long lens, little rain actually showed up in the

FIGURE 4.12 The image with global adjustments and the local adjustment mask.



▲ IMAGE WITH GLOBAL ADJUSTMENTS: EXPOSURE +0.55, CONTRAST +56, HIGHLIGHTS -64, WHITES +13, BLACKS -71, CLARITY +49, VIBRANCE +13



▲ IMAGE WITH ADJUSTMENT BRUSH MASK: EXPOSURE -0.42

final capture, so I didn't have to spot out hardly any raindrops. I did add some Noise Reduction (+40), set the Amount for Sharpening to +68, and set the Radius to 1.4. With a shutter speed of 1/1600 second and using an image-stabilized lens, the image ended up very crisp. **Figure 4.13** shows the final adjusted image and the histogram. You can see the histogram shows the levels of the image redistributed. Even though it's showing some Red channel shadow clipping, I really don't care about that. I go for the way the image looks instead of avoiding clipping.

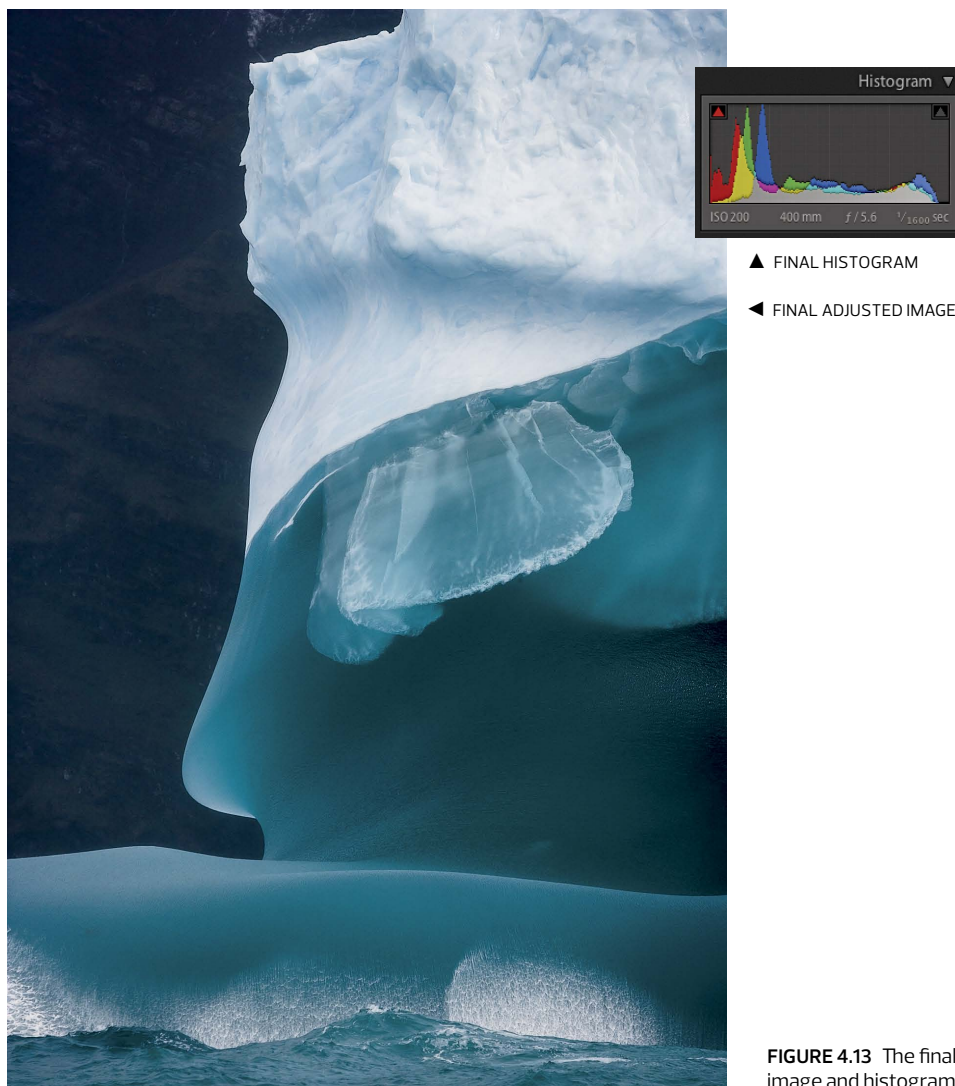


FIGURE 4.13 The final iceberg image and histogram.

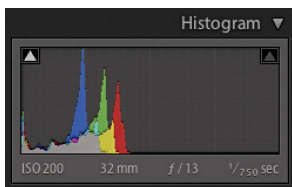
UNDEREXPOSURE

Did I mention I'm not perfect? We all make mistakes. The question then becomes, "What do you do about your mistakes?" I like to fix them if I think an image may be worthy of the effort. For this particular shot of a sign from a neighborhood restaurant, I thought it was worth the effort. The histogram tells the story, about two stops underexposed, which resulted in a pretty flat and ugly capture. **Figure 4.14** shows the image before adjustments and the sadly underexposed histogram.

Obviously, the Exposure setting needed a strong adjustment to fix the underexposed capture. I increased the Exposure a lot and raised the Contrast because underexposed images are rather flat. I also adjusted the white balance from the As Shot settings. Whether you adjust the white balance or exposure first is really a toss-up, but in this case, the image was so dark that it didn't make sense to even try to adjust the white balance first. The only other tone adjustment used was a plus Shadows setting to open up the darker areas and a plus Blacks setting. This was required because, with such a severe underexposure, the deep shadows were truncated and needed extending to extract the detail.

Once I had a basic global adjustment of tones, I cropped the image and applied a lens profile correction for the Canon EF 17–40mm lens. With the strong horizontal lines in the image, it was important to remove any obvious barrel distortion and use the Straighten tool to get the image level. I increased the green and blue saturation settings in the HSL panel, while also increasing the blue luminance to punch up the greens and blues and try to lighten the blue lamp, which only went partway. **Figure 4.15** shows the result of the global image adjustments.

FIGURE 4.14 The underexposed sign image and default histogram.



▲ HISTOGRAM AT DEFAULT



▲ THE IMAGE BEFORE ADJUSTMENTS: WB TEMP 5200 K, TINT +28



FIGURE 4.15 The global image adjustments result.

▲ GLOBAL ADJUSTMENTS: WB TEMP 6900 K, TINT +23; EXPOSURE +2.00; CONTRAST +96; SHADOWS +22; BLACKS +25

I added a Graduated Filter for the top bricks that decreased Exposure and increased Contrast. I also added a strong Clarity adjustment to increase the textural detail in the painted bricks. Then I moved to the Adjustment Brush and made five separate local adjustments using the Auto Mask option to locally brush in corrections. The most visually important of the adjustments was to lighten up the blue lamp. I increased the Adjustment Brush Exposure, Shadows, and Saturation. I also added Noise Reduction because the noise in the blue increased due to the high exposure increases. This helped pop the blue color and acted as a color counterpoint to the strong overall orange color of the scene.

Because of the increase in the overall image brightness, I also wanted to darken some of the areas. I painted in a minus Exposure adjustment to darken the trees, the beer bottle, and parts of the cowboy. I also lightly touched the shadow areas of the green hills. **Figure 4.16** shows the blue lamp and tree darkening masks.

You can see three additional Adjustment Brush pins in **Figure 4.16**. The pin to the far left was a color tint to add additional blue tone to the strip along the top of the sign. The pin on the bottle was an adjustment of +34 in the Highlights to lighten the lighter portions of the beer bottle. The pin just to the right of the bottle was a +0.80 Exposure adjustment on the highlight areas of the painted hills. This adjustment was very lightly painted in with Auto Mask but a very low flow to the brush. The results are very subtle.

FIGURE 4.16 The two main Adjustment Brush masks.

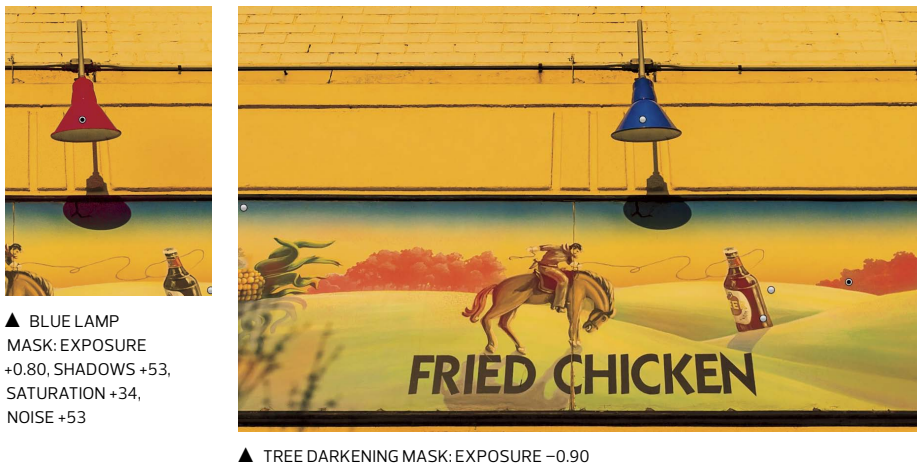
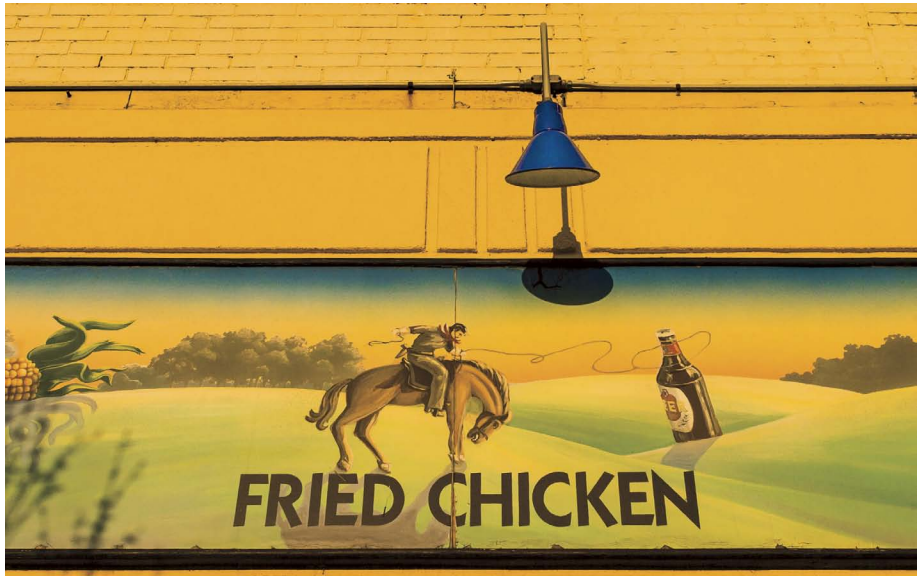
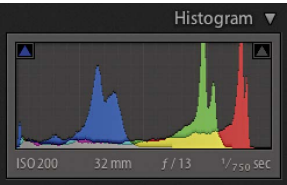


FIGURE 4.17 The final adjusted sign.

► FINAL ADJUSTED IMAGE

▼ FINAL HISTOGRAM



For the final image, I debated cropping into the strong dark line at the bottom of the sign to eliminate the small strip of orange at the bottom. In the end, I decided to keep it in. Without the small strip, the bottom of the image seemed too heavily dark weighted. If you want to see for yourself, take a small piece of white paper and cover the bottom orange line and see if you agree. **Figure 4.17** shows the final adjusted image and histogram showing the redistribution of the levels in the image upward.

BACKLIT SUBJECTS

When you're in the field and you can't control the lighting, about all you *can* do is take the shot and see if you can do something with it. I encountered this problem while shooting at Arches National Park just outside Moab, Utah. While waiting to shoot a sunset shot of the South Window arch, I set up this shot of Turret Arch with the Phase One 645FD camera with the P65+ back and 28mm lens. I tried to position the sun so it just barely showed through the arch. I had planned on (and did shoot) a full HDR bracket. But in several tests, there were problems with the rather fast-moving clouds and I couldn't get a natural-looking sun flare. Instead of trying to do a full-blown HDR, I worked on a single image to see how much shadow detail could be obtained with Process Version 2012. As it turns out, a lot! **Figure 4.18** shows the original capture and histogram before adjustments.

There was a big problem with the overall exposure, so I adjusted the Exposure up almost two stops and applied a minus Highlights and plus Shadows to modify the overall tone mapping. However, I needed to add a substantial minus Whites adjustment (to preserve the detail around the sun) and a plus Blacks adjustment to further open up the shadows. Working on an image like this is an iterative process. Clearly, a strong Exposure adjustment has an impact on highlights even though the adjustment rolls off the extreme brightest levels. The aim was to get a compromise of the conflicting needs of the image. I also added Clarity and Vibrance (don't I always?).

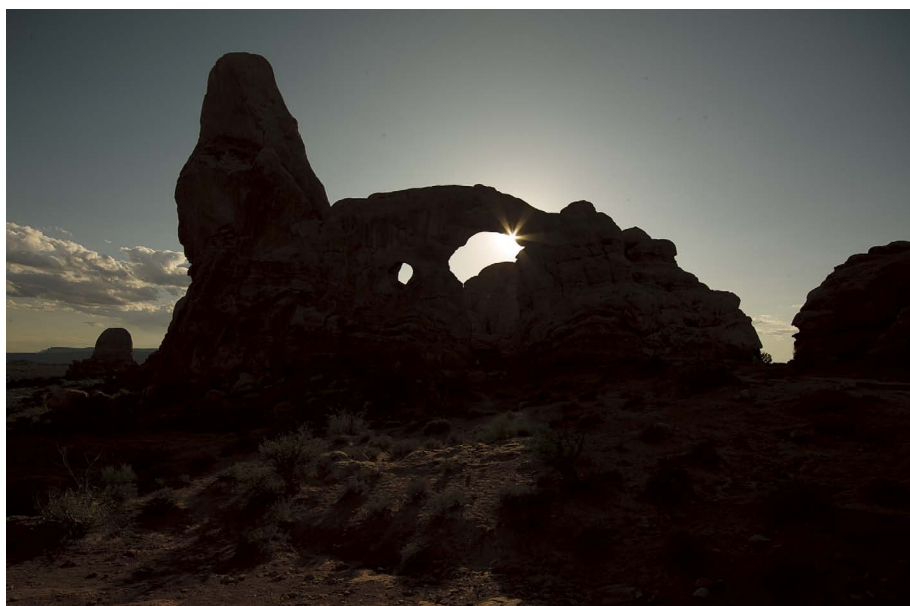


FIGURE 4.18 Turret Arch before adjustments and histogram.

◀ THE IMAGE BEFORE ADJUSTMENTS

▼ HISTOGRAM AT DEFAULT

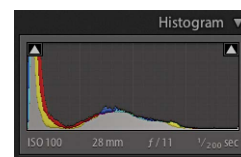
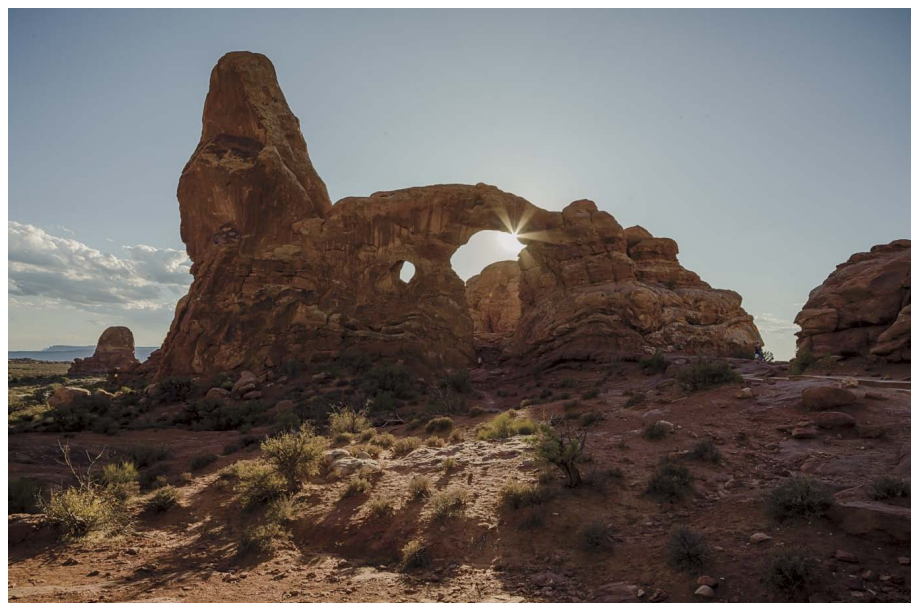


FIGURE 4.19 Results of the global tone-mapping adjustments.

► BASIC PANEL ADJUSTMENTS:
EXPOSURE +1.80, HIGHLIGHTS -49,
SHADOWS +69, WHITES -69, BLACKS
+16, CLARITY +38, VIBRANCE +18

► PARAMETRIC CURVE:
HIGHLIGHTS -58, LIGHTS 0,
DARKS +31, SHADOWS -23



In addition to the Basic panel adjustments, I also used the parametric curve portion of the Tone Curve panel. I adjusted the Highlights down, the Darks up, and the Shadows down to take down the overly lightened darkest portions of the image. **Figure 4.19** shows the results of the global tone-mapping adjustments.

Because of the severe underexposure in the front face of the arch in shadow, lightening the shadows made the noise much more visible and objectionable. I used a rather strong amount of Luminance Noise Reduction and made additional Detail panel settings to get the best image detail possible. **Figure 4.20** shows the default settings and the optimized settings as a screen zoom of 2:1.

The Sharpening settings are shown in Figure 4.20. I used a higher Radius and the default Detail settings to avoid oversharpening the noise. I increased the Luminance and the Detail sliders in the Noise Reduction settings to prevent too much of the image detail from being treated as noise. The result of the settings was the best compromise between squashing the noise and preserving useful image detail.

I decided to add three additional Adjustment Brush adjustments to further refine the tone mapping. **Figure 4.21** shows the mask used to lighten the arch itself. The adjustments lightened the whole area but tended to lighten the brighter portions more than the shadows. Also, adding the local Clarity strengthened the midtones contrast.

I needed two additional small fixes. One was to lighten the areas around the sun because the global highlight reductions made the sun too dark. The other area of



▲ DETAIL SETTINGS AT DEFAULT



▲ DETAIL SETTINGS OPTIMIZED: SHARPENING AMOUNT 70, RADIUS 12, DETAIL 25, MASKING 0; NOISE REDUCTION LUMINANCE 50, DETAIL 100, COLOR 50

FIGURE 4.20 Comparing default and optimized Detail panel settings at 2:1 zoom.



▲ ADJUSTMENT BRUSH SETTINGS: EXPOSURE +1.18, CONTRAST +36, SHADOWS +18, CLARITY +51, SATURATION +29

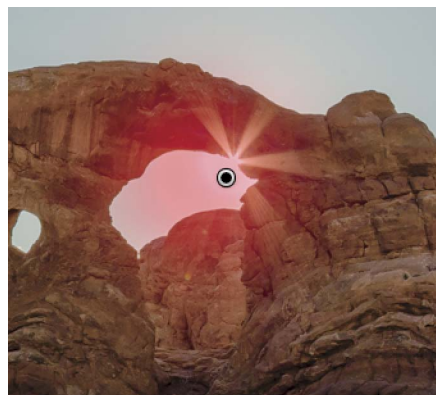
FIGURE 4.21 Adjustment Brush mask for the front of the arch.

NOTE I didn't notice the guy climbing the arch until I started working on the book. I left him in to give you a sense of scale, but for my use (outside the book) I would retouch him out in Photoshop. It's not so much the fact that somebody is there that bothers me—I just really hate his shirt.

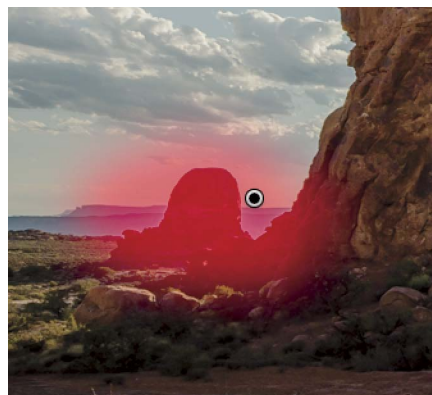
the distant hills suffered from too much global Clarity being applied. **Figure 4.22** shows the mask areas for the smaller tweaks.

For the sun area, I added a plus Highlights adjustment to lighten the area around the sun and a plus Saturation to bring back some color. For the hill area, I added a minus Clarity to overpower the global Clarity (+38) and to add an effective negative clarity. These two additional adjustments capped off the final image adjustments, shown in **Figure 4.23**.

FIGURE 4.22 Additional Adjustment Brush masked areas.



▲ MASK TO ADJUST SUN: HIGHLIGHTS +18, SATURATION +20

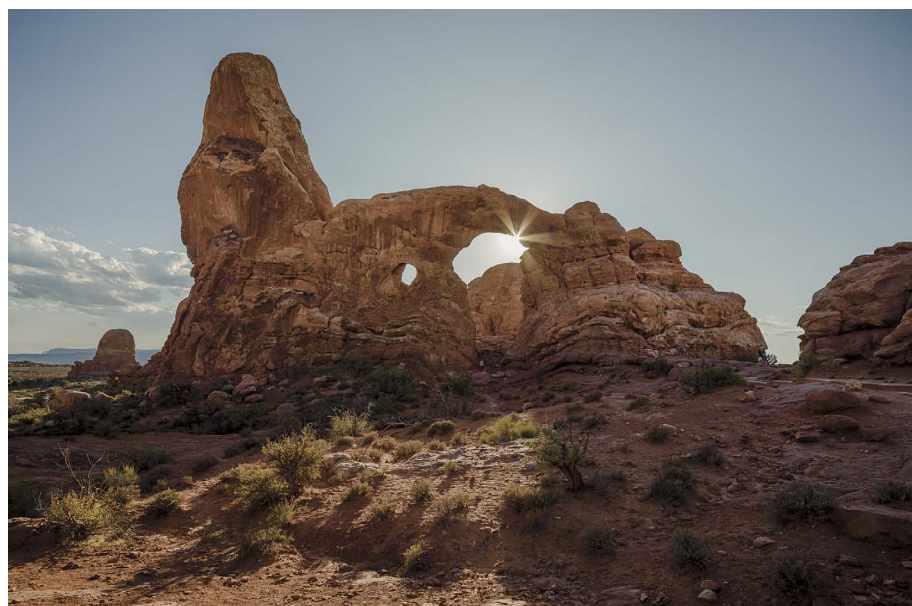
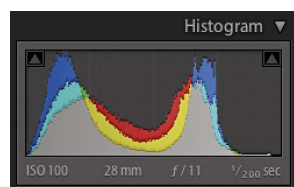


▲ MASK TO ADJUST HILLS: CLARITY -51

FIGURE 4.23 The final Turret Arch image and histogram.

► FINAL ADJUSTED IMAGE

▼ FINAL HISTOGRAM



COLOR CORRECTION

It can be pretty difficult to separate tone adjustments from color-correction techniques. The tone-mapping examples all resulted in changes to color, but instead of altering the color itself, they altered the tone of the color. The following color-correction examples dwell on substantial changes to the chromatic nature of the images. Yes, some tone mapping is involved, but it's the subtle or not-so-subtle changes in color that are emphasized.

WHITE BALANCE (GLOBAL)

Unless you want to run around with a color temperature meter to accurately measure the actual white balance, you'll just have to rely on your camera . . . which can sometimes be a bit of a problem. Most of my cameras record reasonable white balance information in the EXIF metadata that Lightroom and Camera Raw can make use of reasonably well. However, my Phase One 645DF camera and back are less good. I generally set WB to the standard Daylight on the camera back and just roll with it, knowing I'll be spending time adjusting after the fact. Yes, if accuracy is needed, I'll use the ColorChecker Passport to make the adjustments both more technically correct and easier to accomplish, but that's a bit of a pain in the field.

The example I'm showing here is of an Icelandic horse shot in, well, Iceland. I had the camera back set to Auto White Balance (my bad). The lighting was overcast with a touch of volcanic ash in the air from the eruption of the Eyjafjallajökull volcano. **Figure 4.24** shows the original As Shot WB and the Lightroom default Daylight WB.

From the Daylight preset, I felt more warmth was needed (which is often the case unless you're looking for a cold effect). I adjusted the WB to 6500 K and a +17 Tint,



▲ AS SHOT WB TEMP 4900 K, TINT -17



▲ DAYLIGHT WB TEMP 5500 K, TINT +10

FIGURE 4.24 The As Shot and Daylight WB settings.

FIGURE 4.25 Adjusting the white balance and global tone and color adjustments.



▲ WB ADJUSTED: TEMP 6500 K, TINT +17



▲ GLOBAL TONE ADJUSTMENTS: EXPOSURE +0.40, CONTRAST +40, HIGHLIGHTS -32, SHADOWS +10, WHITES -58, BLACKS -9, CLARITY +64, VIBRANCE +45

as shown in **Figure 4.25**. The results of the white balance were fine, but the overall tone mapping was off, so the second figure in Figure 4.25 shows the global tone and color corrections applied.

The tone mapping consisted of adjusting Exposure and Contrast higher, Highlights lower, Shadows up, and Whites and Blacks down. I also added a healthy dose of Clarity and Vibrance. In the HSL panel, I adjusted the Yellow Hue to +17 and adjusted the Orange and Yellow Saturation both to +9.

You might have noticed that I flipped the image horizontally. I decided I didn't really like the horse looking off to the right because I thought it drew the viewer's eyes off to the right and off the image. You can decide for yourself if you agree. (My wife and daughter disagree, but I'm the one who makes the final decisions—at least when it comes to my photographs!)

The image still needed some additional local adjustments. I used three Graduated Filters to darken the top and left edge of the image. The top gradient was a simple -0.50 Exposure adjustment. The second was an additional -0.75 Exposure adjustment. I used two separate gradients to vary the gradient slope. (It would be nice to be able to do that in a single gradient, but there's no way to edit the gradient slope in a single Graduated Filter.) The gradient on the left was a minus Exposure and a plus Highlights to flatten down and darken the left side of the image.

Because the overall Graduated Filters darkened down the mane of the horse too much, I came back with an Adjustment Brush to relighten areas of the mane. The mask in **Figure 4.26** shows the Graduated Filter and the Adjustment Brush mask.

I like this image in color a lot. However, later in this chapter, you'll see that I also experimented with the image in a toned black-and-white image (see the "Color to Black-and-White Conversion" section). The final color image is shown in **Figure 4.27**.



▲ GRADUATED FILTER ADJUSTMENTS



▲ ADJUSTMENT BRUSH ADJUSTMENT MASK:
EXPOSURE +50, HIGHLIGHTS +29

FIGURE 4.26 The local tone adjustments.



FIGURE 4.27 Final Icelandic horse adjusted image.

WHITE BALANCE (LOCAL)

A global white balance correction may be fine most of the time, but sometimes you may need to modify the white balance locally. There are several ways, but I find the most direct way is to paint in a local adjustment with the Adjustment Brush. For this image of a man walking with his burros in San Miguel de Allende, Mexico, the default white balance was too cool. I wanted a very warm look. **Figure 4.28** shows the default white balance and the adjusted result. The image was captured with a Panasonic LUMIX HG2 camera with a 14–140mm lens at ISO 400.

In the default white balance, you can see the street in shadows looks cool. Making a strong warm adjustment had a global impact on the street that I didn't like. I made two Adjustment Brush adjustments aimed at cooling down the shadows and lightening the reflections in the wet part of the street. The adjustments cooled down the street color, and I added a plus Shadows adjustment to lighten the areas a touch. Since I used a strong lightening effect on the Shadows, I also included a plus Noise Reduction. To lighten the wet area, I added a strong plus Exposure and a milder plus Shadows and a plus Clarity adjustment. **Figure 4.29** shows the two Adjustment Brush masks.

The result of the local white balance cooled the shadows on the street a bit more than the original As Shot WB, but it gave me the warm/cool lighting I was looking for. For the final image, I added some additional Adjustment Brush adjustments. I added a mask to darken the white top of the building in the background primarily using a minus Highlights adjustment. I also painted in a pretty substantial tone adjustment on the front of the walking man. I also added a +51 Noise Reduction Luminance. I had already dialed in a +38 Noise Reduction Luminance globally, so the local adjustments added additional Noise Reduction strength. **Figure 4.30** shows the final result.

FIGURE 4.28 Comparing the default As Shot and adjusted WB.



▲ DEFAULT AS SHOT WB: TEMP 5750 K, TINT +7



▲ WB ADJUSTED: TEMP 7000 K, TINT +9

▲ GLOBAL TONE ADJUSTMENTS: EXPOSURE +0.10, HIGHLIGHTS -42, SHADOWS +62, WHITES -20, BLACKS -20, CLARITY +60, VIBRANCE +40



▲ MASK FOR THE SHADOW COOLING: WB TEMP -70, TINT -11; SHADOWS +46; NOISE REDUCTION LUMINANCE +29



▲ MASK FOR THE WET AREA LIGHTENING: EXPOSURE +2.49, SHADOWS +20, CLARITY +39

FIGURE 4.29 Local adjustments for white balance cooling and lightening.



FIGURE 4.30 The final image of a man walking his burros.

NOTE The length of the sunset shooting times in the Lemaire Channel are what led my friend and colleague Seth Resnick to coin the term major gigage, because of the vast number of captures shot by everybody on the ship.

COLOR CURVES

The new addition to the Tone Curve panel provides the ability to use per-channel color curves for color correction. You can use it for cross-curve correction or creatively. I'll show you how I use it creatively. The image shown in **Figure 4.31** was captured with a Canon EOS 1Ds Mark II camera with a 24–70mm f/2.8 lens. It was shot during my first trip to Antarctica while sailing into the Lemaire Channel (which is often referred to by its nickname “Kodak Gap,” because it’s a frequently visited destination on cruises). I took this photograph before sunset, which lasts about four hours that far south.

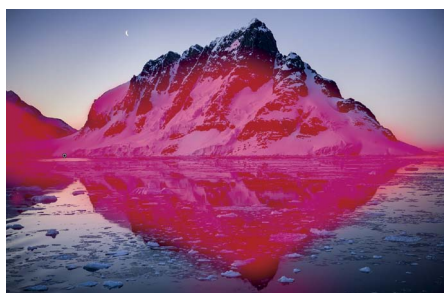
I adjusted the WB from the As Shot setting and increased the global Exposure, Contrast, Highlights, and Shadows to adjust the tone mapping. I added Clarity and Vibrance. Finally, I added an Adjustment Brush mask with adjustments for the center of the island and increased Exposure, Contrast, Highlights, and Shadows to bring out the tonality of the hill. The strong Clarity was to really bring out the textural detail. **Figure 4.32** shows the mask and the locally adjusted results.

I wanted to warm up the highlights while cooling down the shadows. To do this, I used the channel curve in the Point Curve of the Tone Curve panel. Instead of trying to write down the curves I adjusted, I’ve resorted to showing you the channel curve adjustments that were made and the result of the changes to the image. **Figure 4.33** shows the four points I adjusted.

FIGURE 4.31 The default rendering of the Lemaire Channel at 12:28 a.m., just before sunset.



▲ DEFAULT AS SHOT WB TEMP 6100 K, TINT -1

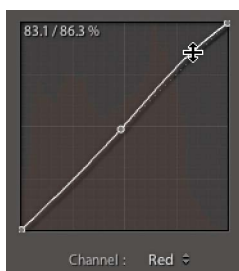


▲ ADJUSTMENT BRUSH MASK FOR LIGHTENING THE HILL: EXPOSURE +0.14, CONTRAST +13, HIGHLIGHTS +25, SHADOWS +25, CLARITY +60

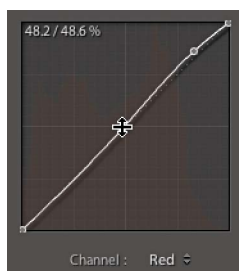


▲ RESULTS OF THE LOCAL AND GLOBAL ADJUSTMENTS: WB TEMP 5500 K, TINT +10; EXPOSURE +0.45; CONTRAST +20; HIGHLIGHTS +11; SHADOWS +16; CLARITY +30; VIBRANCE +20

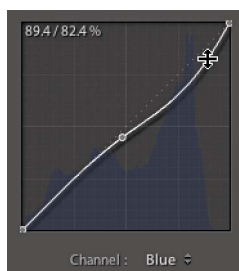
FIGURE 4.32 The adjustment mask with the global adjustments result.



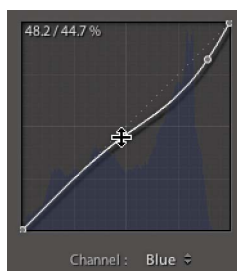
▲ RED CHANNEL HIGHLIGHT POINT



▲ RED CHANNEL MIDPOINT



▲ BLUE CHANNEL HIGHLIGHT POINT



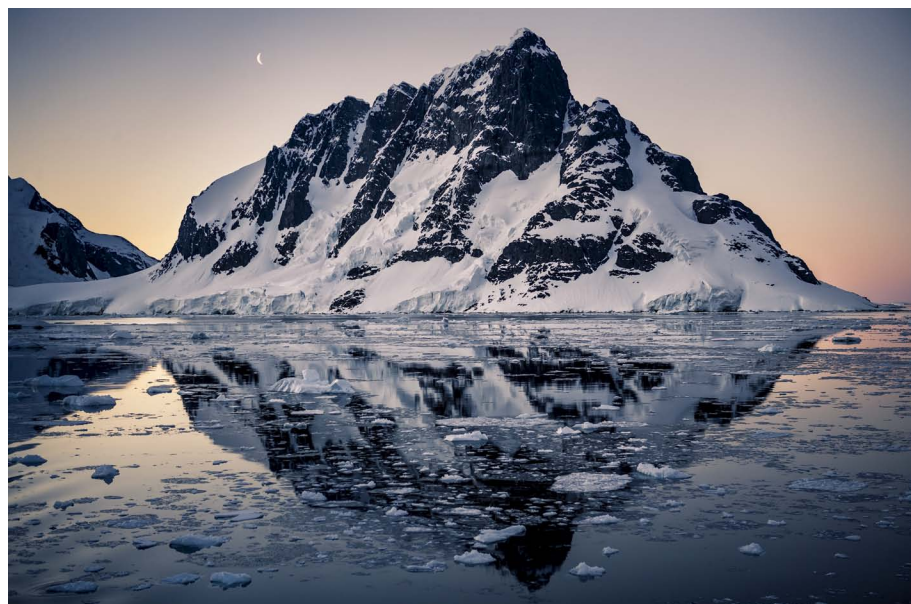
▲ BLUE CHANNEL MIDPOINT

FIGURE 4.33 The color channel points adjustments.

To achieve the results I wanted, I placed a point at about the $\frac{1}{4}$ position in the Red channel and raised it to make the highlight gain red. You can see the input/output levels in the figures. The midpoint in the Red channel wasn't so much to change the color but to hold it. You may need to add a "blocking point" to keep the Bézier curve behavior from impacting additional levels. I added $\frac{1}{4}$ tone and midpoints to the Blue channel as well. The addition of red and yellow made the highlights warmer. You'll note that in the blue midpoint, I did allow some yellow to extend down into the midtones.

The final results are actually more along the lines of what I *think* I remember from being there. This is one of my favorite images from all three of my Antarctic trips—in large part because of the light and the experience of getting to engage in the act of producing major gigage! **Figure 4.34** shows the final result.

FIGURE 4.34 Final image of the Lemaire Channel sunset, color corrected using color curves.



COLOR SPLIT TONING

Given my druthers, I would rather shoot a sunset than a sunrise. Why? Well, for one, you don't have to get up early to shoot a sunset. Plus, shooting a sunset allows you to set up in the light. A sunset also gives you plenty of warning regarding weather—if the light is going to suck, you know it in plenty of time to go to dinner.

However, if you fly to London and then drive to Edinburgh to do some shooting with a friend, you aren't going to be sleeping in late in your hotel room, are you? I didn't. I went to Scotland with my good friend and colleague Martin Evening. Martin wanted to do a dawn shot from Calton Hill in central Edinburgh. We woke up around dawn and found that the weather wasn't ideal. But in for a penny, in for a pound, we went to shoot.

We didn't really have a spectacular sunrise. Clouds to the east made sure of that. But there's an old saying in Scotland: if you don't like the weather, wait five minutes—it'll change. I later found that isn't *always* true, but the clouds did break and we got some shots. The image I'll be using to show color split toning is of the Dugald Stewart Monument, a memorial to the Scottish philosopher and mathematician Dugald Stewart. The capture shows that a tiny bit of sun was peaking out of the clouds and, although it was okay, I thought I could make it better in post. **Figure 4.35** shows the image at default and with global tone and white balance adjustments.

I adjusted the WB from the As Shot setting to warm the image. The main change in the tone was to increase Contrast and add a plus Shadows and minus Blacks to modify the tone mapping. Yeah, I added Clarity and Vibrance—big shock, huh? I also applied the Lens Correction to get rid of barrel distortion found on my Canon EF 28–135 lens. Because I had set up the camera level, I didn’t need to worry about keystone correction.

The image needed some local “enhancements.” I used the Graduated Filter to darken down the sky (a -0.89 Exposure) and the Adjustment Brush to lighten the center of the monument and darken some of the bright building in the background. I painted in a plus Exposure adjustment on the monument to lighten the columns and a minus Exposure and Highlights adjustment on the background using the Auto Mask to darken the bright buildings. **Figure 4.36** shows the two Adjustment Brush masks.

FIGURE 4.35 The default and global image adjustments.



▲ DEFAULT RENDERING WITH WB AS SHOT TEMP 5400 K, TINT -2



▲ GLOBAL IMAGE ADJUSTMENTS: CONTRAST $+35$, SHADOWS $+42$, BLACKS -13 , CLARITY $+32$, VIBRANCE $+33$



▲ MONUMENT LIGHTENING MASK: EXPOSURE $+0.99$



▲ BUILDING DARKENING MASK: EXPOSURE -0.89 , HIGHLIGHTS -48

FIGURE 4.36 Adjustment Brush masks.

To finish off the color adjustments, I used a Split Toning panel adjustment to warm up the highlights and cool down the shadows. I could have done this using color curves, but to be honest, split toning is easier and quicker if you don't need to have specific color adjustments (and it gives me a useful example of using split toning). I selected a warm color for the highlights and a cool color for the shadows. In this case, I didn't need to modify the Balance split point. **Figure 4.37** shows the separate highlights and shadows color adjustments.

When you combine the global and local tone corrections with the split-toning effect, the end result seems like a glowing sun was lighting up the Dugald Stewart Monument that morning in Edinburgh. It was ... I just sort of *helped* the shot along. **Figure 4.38** shows the final image.

FIGURE 4.37 Comparing the color effect of the highlights and shadows regions of the Split Toning panel.



▲ WARM COLOR FOR THE HIGHLIGHTS: HUE 48, SATURATION 48



▲ COOL COLOR FOR THE SHADOWS: HUE 228, SATURATION 30

FIGURE 4.38 Early morning light (enhanced) from Calton Hill overlooking Edinburgh.



COLOR GRADIENTS

The Graduated Filter is a useful correction tool, but not just for tone adjustments. You also can use it to alter and adjust the existing colors of an image. For this particular shot at Arches National Monument, taken well after sunset, I wanted to bring out the warmth of the glow on the horizon while deepening the blue color of the sky. I took this on the same day I shot the Turret Arch image. Martin and I had started driving back to the motel and came upon this scene. We grabbed our cameras and flashlights (it was really dark by then) and set up to shoot a few frames. This image was shot at ISO 50 with a shutter speed of 3 seconds with the P65+ camera back. Nice, but not what I remember seeing (or thought I saw). **Figure 4.39** shows the image before the color corrections. Oh, and if you're wondering, I didn't bother to use any Clarity—I tried, but it didn't do anything (although Vibrance was set to +28).

I decided to use two color gradients: a warming one to help the glow and a cooling one to cool down the sky. The gradients were applied as a color tint, but the saturation of the colors I used also strongly increased the overall saturation of the colors. **Figure 4.40** shows the two gradients applied individually to show the unblended adjustments. **Figure 4.41** shows the results of both gradients applied together.

Once the two gradients were combined as shown in Figure 4.41, the dark blue sky and golden horizon were more to my liking. But I've never been one to leave well



FIGURE 4.39 Moon setting in Arches with post-sunset glow.

FIGURE 4.40 Applying a warm and a cool Graduated Filter.

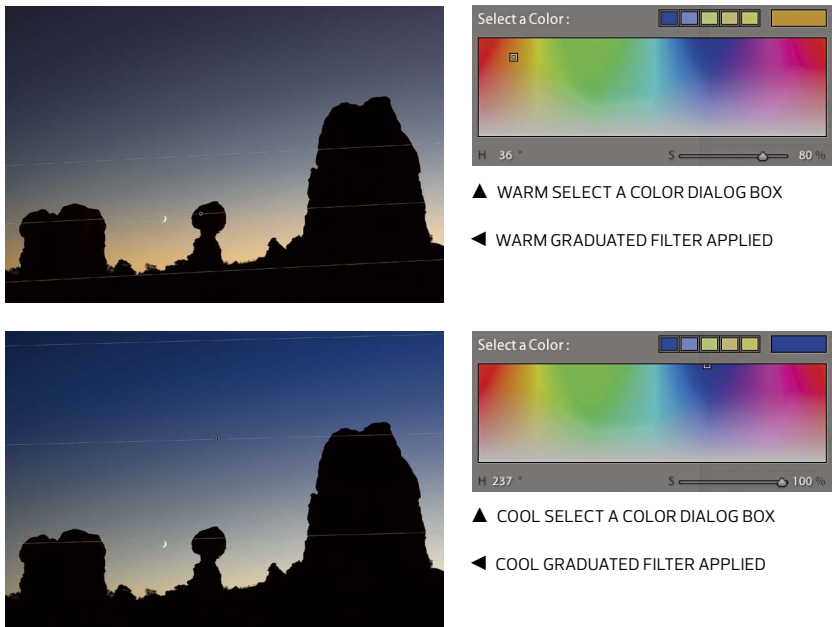
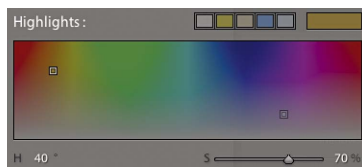


FIGURE 4.41 The combined warm and cool gradients applied.

enough alone, so I wanted to see what it would be like to combine a Split Toning panel adjustment on top of the Graduated Filter adjustments. **Figure 4.42** shows the separate warm and cool hues and saturations applied and the Split Toning Highlights and Shadows color pickers.

I'll admit that adding Split Toning on top of the Graduated Filters may be just a tiny bit over the top, but nobody has ever accused me of being subtle. **Figure 4.43** shows the results. You decide what you think, but I like it!



▲ HIGHLIGHTS COLOR PICKER

◀ HIGHLIGHTS WARM COLOR APPLIED



▲ SHADOWS COLOR PICKER

◀ SHADOWS COOL COLOR APPLIED



FIGURE 4.42 The Split Toning settings applied individually.

FIGURE 4.43 Final post-sunset glow using both Graduated Filters and Split Toning.

HSL COLOR CORRECTION

NOTE The reality is that most “greens” are actually more yellow than green. This was one of the reasons the engineers altered the normal additive and subtractive color primaries of red, green, blue, cyan, magenta, and yellow in lieu of the eight colors in the HSL panel.

As a general rule, I don’t recommend walking up to a wild American buffalo to photograph it. Although I shot this image with a 24mm lens, I didn’t actually walk up to the buffalo (I’m not that stupid). Instead, I sat down on the ground when it was much farther away and waited for it to come to me. Of course, once I was done photographing the buffalo, the situation was a bit dicey ... I slowly walked away and quickly got on my motorcycle and beat feet out of there. Truth be told, I doubt the buffalo was paying any attention to me—it was chowing down, and buffalo are pretty used to people in Yellowstone National Park. **Figure 4.44** shows the image before color correcting.

The primary color corrections I wanted to accomplish were to change the Hue of the green grass; punch up the Saturation of the oranges, yellows, and greens; reduce the blue-sky Saturation; and adjust the Luminance value of some of the colors. **Figure 4.45** shows the three sub-panels I used in the HSL/Color/B&W panel.

FIGURE 4.44 An American buffalo in Yellowstone before color correction.



FIGURE 4.45 The HSL color adjustments with the slider adjustments.

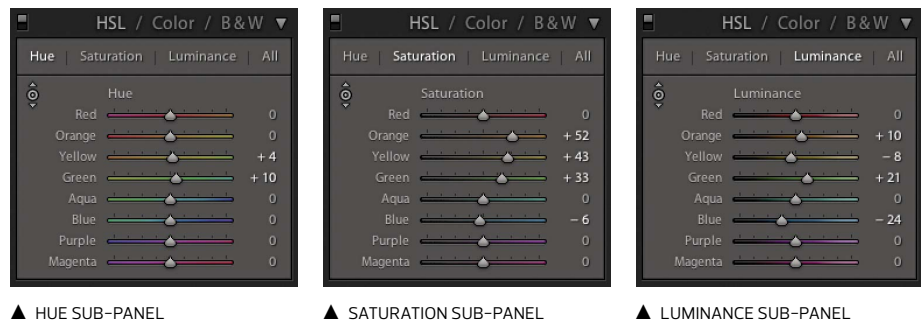




FIGURE 4.46 An American buffalo in Yellowstone after color correction.

In the Hue sub-panel, I wanted to move green from more yellow to less yellow. I moved green toward a more green color and moved yellow a bit more toward green. In the Saturation sub-panel, I wanted to punch up the color of the buffalo (orange), as well as yellow and green, but I wanted to desaturate the blue. In the Luminance sub-panel, I lightened the orange and green while slightly darkening the yellow and more strongly darkening the blue. The new result would be to have the green of the grass greener, the yellows more colorful, the buffalo more saturated and lighter, and the sky reduced in saturation and luminance.

Figure 4.46 shows the final result of the HSL color correction. Oh, if you're curious, I didn't use any Vibrance in this image (although I did add some Clarity).

LENS COLORCAST CORRECTION

The lens you shoot with can cause a lens colorcast that can be very difficult to correct in Lightroom. When the light passing through the lens strikes the sensor at a more oblique angle, you can get uneven colorcasts generally of a green or magenta color. A single WB adjustment will fail to correct this problem. If you balance for the green,

TIP In my experience, if you pump up Vibrance too much and then try to use HSL, the precision of the adjustments suffers (in other words, it becomes harder to use HSL after a really strong Vibrance adjustment). If you want better precision when making HSL adjustments, don't adjust the Vibrance or Saturation in the Basic panel.

TIP Lens colorcast is particularly noticeable when using a wide-angle lens that isn't a full retro-focus lens (designed to move the rear elements of the lens away from the sensor). Non-retro-focus lenses often are used on tech or view cameras.

the neutral becomes magenta. If you correct the magenta, the cast becomes green. Then there are uneven light falloffs. If you're using a tilt/shift lens even on a DSLR, you may encounter asymmetrical lens falloff (vignetting) that, when combined with the colorcast, can become an even more difficult problem to address because the lens corrections can't deal with asymmetrical lens falloff.

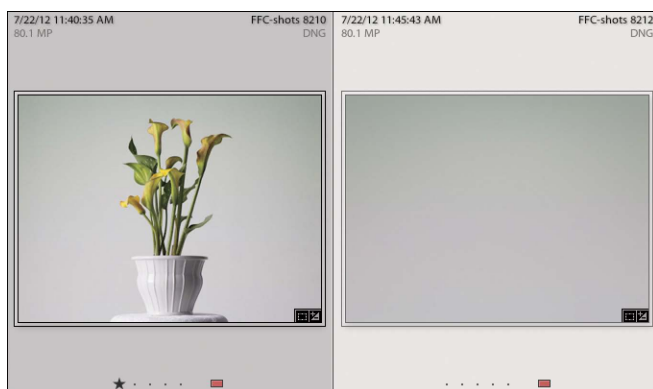
To really fix this problem, you need to shoot a sample image as a calibration image with the lens in the exact position regarding tilt/shift, f-stop, and focus distance of your normal shot. Use the calibration image as a basis to correct for colorcast and falloff. To shoot this, place a diffuser disk (often translucent Plexiglas) over the lens and shoot essentially just the colorcast and falloff caused by the lens.

Up to now, you couldn't do this in Lightroom—even though the DNG specification allows for making the corrections. So, even though the DNG *can* do it, there was no way of selecting the calibration image, extracting the colorcast and falloff data, and applying it to other images in Lightroom. That's about to change. Starting in late 2012, Adobe will be releasing a DNG Flat Field plug-in for Lightroom. The plug-in will be provided as a free download from the DNG product page (www.adobe.com/dng). As of this writing, I'm using a beta version of the plug-in, so it's subject to change when the release is final. **Figure 4.47** shows an image shot with the Phase One IQ 180 camera back on a Sinar 4x5 camera with a 120mm lens with a forward standard tilt to alter the focus plane and a front standard shift up for composition. The colorcast and light falloff aren't terrible, but they're noticeable at the top of this high key shot (which is why I shot it).

The plug-in can identify a calibration image, calculate the required corrections, and apply the corrections to real images. The only catch: you must convert the raw

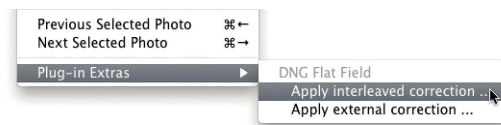
FIGURE 4.47 Image before flat field corrections.





▲ STEP 1: IN THE LIGHTROOM LIBRARY, SELECT THE IMAGE AND THE COLORCAST CALIBRATION IMAGE.

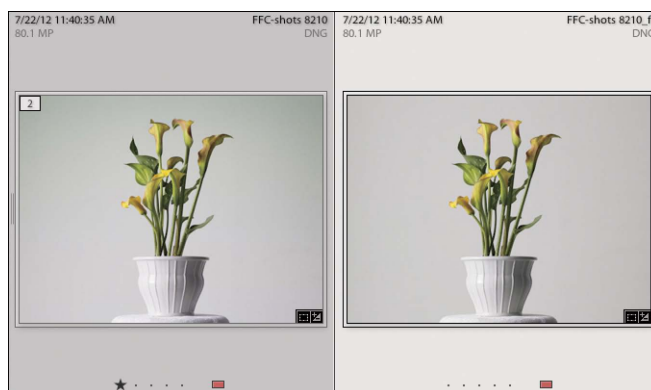
FIGURE 4.48 Steps to correct colorcast and light falloff using the DNG Flat-Field plug-in.



▲ STEP 2: IN THE LIBRARY MODULE, UNDER THE LIBRARY MENU, SELECT PLUG-IN EXTRAS AND THEN APPLY INTERLEAVED CORRECTION.



▲ STEP 3: WHEN THE DIALOG BOX APPEARS, SELECT YOUR CORRECTION OPTION.



▲ STEP 4: THE PLUG-IN RUNS AND CREATES A NEW DNG FILE STACKED WITH THE ORIGINAL WITH THE CORRECTIONS APPLIED.

files to DNG before using the plug-in. You can convert raw images to DNG directly in Lightroom by choosing Convert Photo to DNG from the Library menu. **Figure 4.48** shows the steps for applying the corrections.

Under the DNG Flat Field plug-in menu, there are two options: Apply interleaved correction and Apply external correction. I used the interleaved option because both the main image and the colorcast calibration image were interleaved in the same folder—as would happen when shooting in the field or studio. If you have a fixed shooting setup (as you might have for shooting copy shots of artwork), you may prefer to store your colorcast sample image in a different location. Note that the

NOTE A special note of thanks to Tom Hogarty, the Lightroom product manager, for letting me put the beta plug-in in the book. Also, an extra-special note of appreciation to Eric Chan, Camera Raw engineer, for writing the plug-in.

calibration image must use the exact same lens, f-stop, focus distance, and lighting as the images you want to correct. If you choose the external option, you'll be given a dialog box to navigate to and select the external sample.

When shooting the colorcast calibration images, it doesn't matter whether you shoot them before or after the real image. The plug-in is capable of finding the calibration image or images if you have multiple shots and calibration images. Shooting in the field with a tech camera, you may end up with a variety of different shots—just be sure you shoot a calibration image before making any lens changes. The plug-in is capable of determining which calibration images are intended for which real images. If you're doing an exposure bracket for HDR blending, odds are, you won't be changing your f-stop, so a single calibration image would work for all captures in a bracket. The same is true for shooting a panoramic series—as long as you don't change the lens settings, a single calibration image will suffice.

The DNG Flat Field plug-in works only in Lightroom. You can't use Camera Raw to select calibration images (although Camera Raw can process a DNG with the corrections already embedded in the DNG). **Figure 4.49** shows the final image after the colorcast and falloff corrections have been applied. You'll note the removal of the green colorcast and light falloff from the top of the image.

FIGURE 4.49 The result of removing the colorcast and light falloff from the image.



COLOR TO BLACK-AND-WHITE CONVERSION

I have a fond place in my heart for black-and-white photography. Processing film and making prints in the darkroom is how my love of photography took root. The first time I saw a print developing in the developer tray, I got so excited that I immediately turned on the white lights to look at it. Yes, of course, the print turned black before my eyes, because I skipped the stop bath and fixer. Silly me.

I mention this because my love of black and white is what got me into photography, and now shooting digital has breathed new life into that love. Just to be clear, except for a few raw sensors and cameras like the recently announced Leica M-Monochrom camera, all sensors capture color when shooting raw. Some cameras allow you to set the in-camera settings to shoot black-and-white JPEGs, but the raw files are in color (well, more or less, as I discussed in Chapter 1).

In the old black-and-white film days, you could control the exposure and processing to adjust the contrast of the negative. In the digital age, this is done in Lightroom and Camera Raw when converting color to black and white—and you don't need to mix any fixer!

It's important to understand that black and white is a monochromatic representation of colored light. How that color is converted to black and white is fundamental to getting optimal conversions. Ansel Adams could develop his early film by inspection, because the film was *orthochromatic* (sensitive only to blue light) and he could use a bright red light as a safelight to see what was happening in development. Modern black-and-white film and digital sensors are sensitive to all colors of visible light (and, in the case of digital, very sensitive to infrared). The term for that is *panchromatic* (across all colors).

In the old days, photographers generally shot film using color-contrast filters to alter the panchromatic response of the film. They used yellow to lightly darken blue skies, red to really darken blue skies, green to lighten foliage and darken skin, and orange to lighten skin. With digital cameras, we don't need to do that because we're capturing full-color images and we can modify the panchromatic response of the sensor in post-processing (which, to an old dog like me, is pretty cool). In this section, I'll talk about various methods of controlling the color contrast of the black-and-white conversions and also delve into the concept of color toning the monochromatic black-and-white conversion.

ADJUSTING THE PANCHROMATIC RESPONSE

When shooting digital, we end up with a digital negative that has color information: red, green, and blue color channels in the RGB image. If you look at an RGB file in Photoshop channel by channel, you'll see that each channel has a different tonality based on the color of the light passing through the tricolor RGB sensor filters. **Figure 4.50** shows the original color image and each of the color channels, as shown in Photoshop when selecting a single color channel. The dolls were shot at a flea market in Buenos Aires—I hope you don't find them too scary (my wife thinks they're really creepy).

The key to converting from RGB color to black and white lies in understanding the relationships of color to grayscale tone. In the Red channel figure, you see the doll's red bow tie is very light, while the same bow tie is darker in the Blue channel. Conversely, in the Blue channel, the blue hat is much lighter than the same color in the Red and Green channels. The Green channel, which contains the largest amount of luminance data (because of the RGGB Bayer pattern of the sensor; see Chapter 1), looks like a more general color to black-and-white conversion. As a result, when

NOTE When converting from color to black and white in Camera Raw, you can choose to process the resulting image as a grayscale image with a selected gamma instead of a monochromatic RGB image. You choose that option in the Camera Raw Workflow Options dialog box. In Lightroom, black-and-white images must be output as monochromatic RGB images. If you need a grayscale image, you'll need to use Photoshop to do the RGB to grayscale conversion.



▲ COLOR IMAGE



▲ RED CHANNEL



▲ GREEN CHANNEL



▲ BLUE CHANNEL

FIGURE 4.50 Color image and red, green, and blue channels.

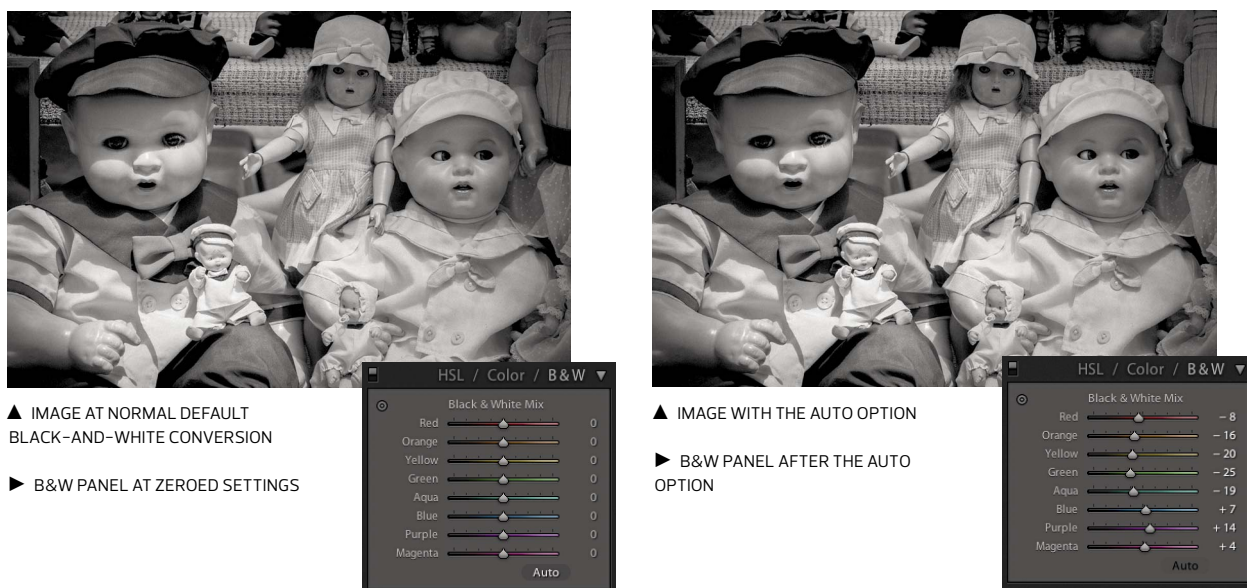


FIGURE 4.51 Comparing the default color to black-and-white conversion to the Auto option.

getting the optimal blend of the color-channel information to the single-channel grayscale image, you need to blend the various amounts of each channel to get a final result that maintains a good color contrast-to-grayscale conversion. It's not at all unusual to have two different colors whose RGB appearance show substantial differences converge and appear much closer to a single grayscale value. That's why we need to "twiddle" with the conversion. **Figure 4.51** shows the result of a default conversion from color to black and white in the HSL/Color/B&W panel of Lightroom or the HSL/Grayscale panel of Camera Raw.

The Auto option does a fairly good job of maintaining good color-contrast separation in the grayscale tonality. You can see it's pretty close to the Green channel in Figure 4.50. The Auto option is very image- and color-sensitive, but it's often a better starting point than the zeroed default. That's why I have my preferences set in the Lightroom and Camera Raw defaults to use Auto. Tuning the colors is an easy task if you click the Targeted Adjustment tool and use the cursor directly over the image to target specific colors to lighten or darken tonality. Increasing a color will lighten the tone, while numbers below zero darken the tone. Once you click the B&W button on the panel, you won't be able to see the color image, but you can click the HSL or Color button to bounce back to the color version of the image. Upon returning to

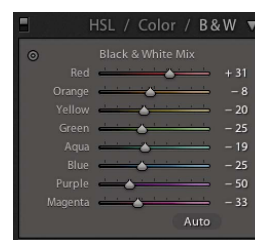
TIP When converting from color to black and white, don't overlook a useful additional tool for adjusting the black-and-white rendering of the color image: the WB adjustment in the Basic panel. By changing the WB setting, you can further alter the color to black-and-white conversion after tweaking the B&W panel adjustments.

the B&W panel, your last-used settings will be remembered. I wanted to darken the blue tonality of the hat and lighten the red bow tie. **Figure 4.52** shows the adjusted black-and-white color mix.

To finish off the image, I added some local adjustments to soften the corners of the image. The mask in **Figure 4.53** shows the areas I modified using the Adjustment Brush. I used two settings: Clarity was set to -100 to soften the contrast of the corners, and Sharpness was set to -100 to add a blur effect. **Figure 4.54** shows the final adjusted image.

NOTE If you've made local color-tinting adjustments in the Graduated Filter or Adjustment Brush, converting from color to black and white won't remove those adjustments. This is something to be aware of if the resulting black-and-white conversion still has some areas of color in the image. This is as designed and can be a useful creative tool.

FIGURE 4.52 The final color to black-and-white mix.



▲ FINAL B&W SLIDER
ADJUSTMENTS

FIGURE 4.53 A mask that was created to adjust the reduced contrast and blurring in the corners.





FIGURE 4.54 The final image of the scary dolls!

WARM TONING

There's black and white, and then there's black and white with a color tone. The concept goes back to the days of the darkroom, where a normal, neutral, black-and-white print would be processed in a chemical treatment bath after development and fixing—or simply printing on a warm-tone paper such as Agfa Portriga. When I was darkroom printing, the only time I didn't use a chem-tone was when delivering commercial prints for reproduction. Normally, I would tone the prints in a KODAK Brown Toner, a KODAK Sepia Toner, or a combination of KODAK Rapid Selenium Toner and any of the above. The intent was to add a subtle color tone to the image and enhance the maximum density of the print. If the previous sentence is just gobbledygook, let me condense it: photographers like to add a subtle (or not-so-subtle) color tint to neutral black-and-white prints.

This warm toning example is of a boring color image shot of the steam engine of the Swangage Railway, which is a heritage railway running between the town of Swangage in the English county of Dorset to the ruins of Corfe Castle. **Figure 4.55** shows the original color images.



FIGURE 4.55 The color image of the steam engine while facing south on the Corfe to Swangage leg of the trip.

FIGURE 4.56 The color to black-and-white conversion with adjustments and the initial warm toning results.



▲ COLOR TO BLACK-AND-WHITE CONVERSION WITH ORANGE, YELLOW, AND GREEN SET TO -25 AND BLUE SET TO -50.



▲ WARM TONING SET TO A HUE OF 50 AND SATURATION OF 25

I tried an Auto conversion to black and white in the HSL/Color/B&W panel and made some adjustments. The final settings were to darken the orange, yellow, and green colors and really darken the blue colors to enhance color contrast. I also added a Graduated Filter to darken the sky and Adjustment Brushes to lighten the steam. Local blurring was added to make the top and bottom of the frame softer. The initial warm toning was done with the Split Toning panel only adjusting the Highlights. **Figure 4.56** shows the grayscale conversion and the initial warm toning.

I liked the vintage look the warm toning gave the image, but I decided to back down the saturation a bit and modify the Split Toning panel's Balance to keep the warm tone from going too far into the shadows. For the final image (shown in **Figure 4.57**), I reduced the Saturation to 20 and moved the Balance slider to -50. This had the effect of not only reducing the overall warm tone but also making the shadows in the image more neutral. It's always a temptation to overdo effects. Although I liked the warmer tone, I think I prefer the reduced warm-toning result. What do you think?



FIGURE 4.57 The final warm-toning result.

SPLIT TONING

I mentioned that I used to do a kind of split toning in the darkroom. The typical toning would be a combination of sepia and selenium toning. The sepia toning was a bleach and redevelopment to warm up the highlights and midtones while not impacting the shadows, which remained neutral. After the sepia toning, I would run the print through selenium toning, which added a deepening of the blacks and a cool purplish tone. I used to do this in a chemical darkroom, but you're no longer constrained by chemicals, so you can use whatever split-toning colors and saturation you want in Lightroom or Camera Raw. This example is very close to the sepia/selenium-toned prints I used to produce. **Figure 4.58** shows the original color image of some trimmed flowers I photographed with a Phase One 645FD camera with a P65+ back and a 120mm macro lens. It was shot at the Reykjavík botanical gardens in Iceland in between rain showers. The black-and-white conversion is also shown in Figure 4.58.

I wanted to darken the yellows in the image a lot (remember, green is mostly yellow), as well as darken the actual green color. As a neutral black-and-white image, I like it, but I wanted to push it a bit by adding a warm color to the highlights and a cooler color to the shadows to achieve a split-toned effect. **Figure 4.59** shows the warm toning and the cool toning separately.

When the two color tints were combined, the result produced a split-toned image that looked a lot like a sepia/selenium-toned silver print. For the final image, I changed the Balance slider to -20 to keep some of the warm tint out of the deeper midtones. **Figure 4.60** shows the final split-toned effect.

FIGURE 4.58 The color image and black-and-white conversion with the custom B&W mix.



▲ THE COLOR IMAGE



▲ THE BLACK-AND-WHITE CONVERSION WITH THE FOLLOWING SETTINGS: -50 YELLOW AND -20 GREEN IN THE B&W PANEL MIX



▲ WARM TONING WITH A HUE OF 52 AND A SATURATION OF 25



▲ COOL TONING WITH A HUE OF 236 AND A SATURATION OF 25

FIGURE 4.59 The warm and cool Split Toning adjustments.



FIGURE 4.60 The final result from the Split Toning panel adjustment in Lightroom or Camera Raw.

COLD TONING AND SPOT OF COLOR

This example is actually a two-for-one deal; it shows not only cold toning the shadows but also locally converting to black and white while preserving a portion of the image as color. For this image of a matador before a bullfight in San Miguel de Allende, I decided to locally convert to black and white using the Adjustment Brush set to a -100 Saturation setting. This allowed me to keep the red door and convert everything else to grayscale. You don't have to convert to black and white in the HSL/Color/B&W panel—there are other ways to skin a cat. **Figure 4.61** shows the original color image and the Adjustment Brush mask created using the Auto Mask and the resulting conversion retaining the red door.

To bring up the detail in the horses, I used a plus Exposure ($+0.80$) and a plus Shadows ($+96$) adjustment, as well as a plus Clarity ($+60$) in the Basic panel to bring out the shadow detail missing on the original color image. I liked the red door in the black-and-white converted image but thought the heat of the red needed a colder color to offset it. For the final Split Toning settings, I used a Hue of 228 and a Saturation of 43 to get the cold look I wanted. **Figure 4.62** shows the final result.

FIGURE 4.61 The original color image, the mask showing the desaturated areas, and the final black-and-white conversion.



▲ THE COLOR IMAGE



▲ THE IMAGE WITH THE AUTO MASK CREATED



▲ THE IMAGE CONVERTED TO BLACK AND WHITE USING DESATURATE AS A LOCAL ADJUSTMENT



FIGURE 4.62 The final result of local black-and-white conversion and a cold tone for the shadows.

OPTIMIZED BLACK-AND-WHITE TONE MAPPING

Simply converting a color image to black and white and adjusting the black-and-white color mix won't always produce an optimized black-and-white conversion. Often, you'll need to optimize the tone mapping to get a dramatic black-and-white image. This example of some sand dollars shot at a roadside attraction in the Florida Keys is just such an image. **Figure 4.63** shows the original color image at defaults.



FIGURE 4.63 The original color image of sand dollars.



▲ THE COLOR IMAGE TONED WITH THE FOLLOWING BASIC PANEL ADJUSTMENTS: EXPOSURE -0.65, CONTRAST +67, HIGHLIGHTS -100, SHADOWS +18, WHITES +29, BLACKS -6, AND CLARITY +100



▲ THE DEFAULT ZEROED BLACK-AND-WHITE CONVERSION

FIGURE 4.64 The toned color image and the conversion to black and white.

The original color image was properly exposed—no clipping in Process Version 2012. I didn't like the variation in the color of certain tonal regions, so I decided to convert to black and white pretty early after a global tone-mapping adjustment. **Figure 4.64** shows the tone-mapped color image and the conversion to black and white with the default zeroed black-and-white conversion in the HSL/Color/B&W panel.

I wanted to darken the image, increase the contrast, and really darken the highlights, while lightening the Shadows a bit and the Whites a bit more. Reducing Blacks helped pin the deepest tones to black. Changing Clarity to +100 was a strong move, but I've found that such strong tonal moves can work very well when converting to black and white. The color version of the image suffers, but the black-and-white conversion is improved. The converted black-and-white image looks better after the Basic panel tone mapping, but the image still needs curves work to extract the proper amount of tonality (at least from my point of view). Instead of trying to finesse the Tone Curve using the Point Curve Editor, I resorted to the Parametric Curve Editor to massage the final Tone Curve.

Figure 4.65 shows the final image with the Parametric Curve Editor edits applied. You'll notice the nature of the curve—a sort of zigzag where Highlights are lightened while Lights are darkened. This is to more finely tune the $\frac{1}{4}$ tone areas and bring out the texture. The $\frac{3}{4}$ tone area also has been zigzagged by darkening the Darks a bit but substantially darkening the Shadows. All the adjustments were done by eye, based on what I wanted from the final Tone Curve.



FIGURE 4.65 The final tone-mapped black-and-white conversion.

COLOR TONING USING COLOR CURVES

The San Miguel Chapel in Santa Fe, New Mexico, is reputed to be the oldest church in the United States. It was reportedly built between 1610 and 1626, but rebuilt in 1710 because of damage. It's a U.S. National Historic Landmark that still has a Sunday Mass.

This example shows a nontraditional approach of color to black-and-white conversion and colorizing not by using the Split Toning panel but by using the per-channel color curves function of the Tone Curve panel. The original color image and the black-and-white conversion made by desaturating with a -100 Saturation adjustment in the Basic panel is shown in **Figure 4.66**. This black-and-white conversion also included an Adjustment Brush correction to substantially lighten the belfry to bring out the detail.

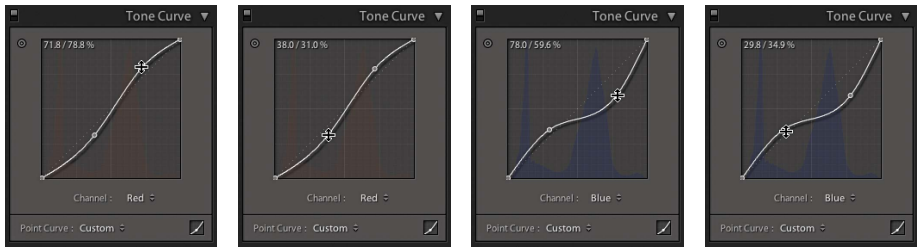
FIGURE 4.66 The original color image and the adjusted black-and-white conversion, including local tone corrections.



▲ THE ORIGINAL COLOR IMAGE

▲ THE BLACK-AND-WHITE CONVERSION USING A -100 SATURATION ADJUSTMENT IN THE BASIC PANEL AND THE LOCAL ADJUSTMENT BRUSH TO LIGHTEN THE BELFRY: EXPOSURE +1.84, CONTRAST 29, HIGHLIGHTS 55, SHADOWS 29, AND CLARITY 44

FIGURE 4.67 Adjusting the Red and Blue channels.



▲ RED CHANNEL $\frac{1}{4}$ TONE POINT

▲ RED CHANNEL $\frac{3}{4}$ TONE POINT

▲ BLUE CHANNEL $\frac{1}{4}$ TONE POINT

▲ BLUE CHANNEL $\frac{3}{4}$ TONE POINT

Instead of trying to adjust the color using the Split Toning panel, I used the per-channel adjustments in the Point Curve Editor of the Tone Curve panel. I added a plus Yellow and Red $\frac{1}{4}$ Tone Curve while adjusting the $\frac{3}{4}$ tones to be plus Blue and plus Cyan. **Figure 4.67** shows the Red and Blue channel adjustments.

The final image is a more graphic, nonrepresentational rendering of the church. Although it isn't suitable for a lot of images, in this case, the strong graphic color works (at least for me). You can adjust the color in a more precise manner using color curves rather than the Split Toning panel. **Figure 4.68** shows the final color curve-toned result.



FIGURE 4.68 The final color curve-toned black-and-white conversion.

MAXIMIZING IMAGE DETAIL

Getting the most detail from your images is a complicated subject—heck, somebody could write a whole book on it. Wait, somebody already has! I co-authored the revision to Bruce Fraser’s image-sharpening book: *Real World Image Sharpening with Adobe Photoshop, Camera Raw, and Lightroom* (Peachpit Press). I can’t stuff the 360 or so pages of that book in this section, but I’ll try to give you the most salient points when adjusting the Sharpening and Noise Reduction settings in Lightroom or Camera Raw.

You want to apply sharpening that enhances image detail but doesn’t do harm. Oversharpening is a bigger problem than undersharpening. You can always add additional sharpening down the road, but it’s very difficult to undo the undesirable effects of overly crunchy sharpening. Add the complications of sharpening to noise reduction, and you’re attempting a balancing act between getting the most image detail while reducing visible noise. Trying to arrive at optimal settings for both is difficult and requires experience and knowledge of the tools.

The reason for image sharpening in Lightroom and Camera Raw is to recover and improve the image detail lost when converting the continuous tone light of a scene into pixels captured by the sensor. The act of demosaicing introduces softness due to interpolation. The sensor itself can cause softness because of the use of aliasing filters. Lenses may have defects and can suffer from diffraction at small apertures. As a result, you’ll need to apply sharpening to improve the apparent sharpness or *acutance* (edge contrast). That edge part is important to understand. You want to sharpen the edges and not the non-edge surfaces in the image. Edge frequency is the determining factor of what Sharpening Radius you want to apply to your image—and arguably one of the more difficult things to determine. I’ll break down sharpening for three common edge type images: high-frequency, low-frequency, and mixed-frequency edges.

HIGH-FREQUENCY EDGE SHARPENING

To show an example of high-frequency edge sharpening, I chose this image from Bryce Point in Bryce Canyon National Park. It was shot with a Phase One P65+ camera back using a 45mm lens, which has excellent performance. At the final cropped size, the image is 29.6 x 18.8 inches at 300 PPI. **Figure 4.69** shows the entire image (only cropped top and bottom a bit). You see the tiny green rectangle? That’s the area of the image I’ll be showing zoomed to 4:1 in Lightroom.

I would normally use a screen zoom of 1:1 in Lightroom (100 percent in Camera Raw) while adjusting the sliders, but I’m showing you this portion at 4:1 so detail



FIGURE 4.69 The full Bryce Point image as cropped, showing the zoomed area.

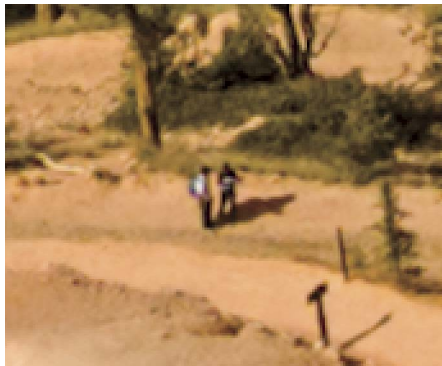
will show in the halftone reproduction of the book. The aim of the Sharpening and Noise Reduction is to extract as much usable detail in the image while avoiding any oversharpened artifacts. **Figure 4.70** shows the image with four sets of Sharpening and Noise Reduction settings.

Obviously, with Sharpening of 0 the image appears very soft at 4:1 zoom, but at the default settings there's little improvement in the apparent sharpness. Once the Sharpening settings have been optimized, you can clearly see the improvement in the image detail. Yes, there are visible halos—but remember, we're at 4:1 zoom so it's overenhanced; viewed at 1:1, those halos are invisible. The issue with the settings in the third optimized image is that increasing the Detail setting to 90 and Amount to 60 has done some undesirable work on the Luminance. The last image has a Noise Reduction Luminance setting of 25 to help mitigate that noise bloom.

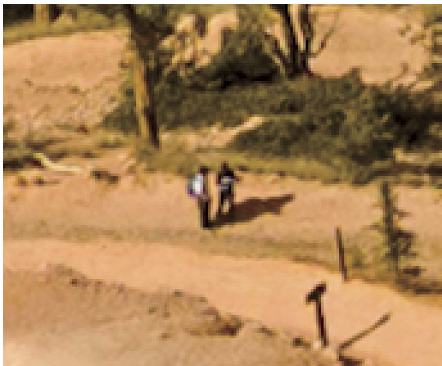
So, how did I arrive at those settings? I worked out of order. Yes, generally, you should work from the top down, but I think a case could be made that the first adjustment for Sharpening should be setting the Radius. This image obviously has a lot of small edges, and the Radius should be set to under the 1.0 default. **Figure 4.71** shows the default Radius of 1.0 and adjusted to 0.7 while previewing the settings holding the Option key (Mac) or Alt key (Windows).

Reducing the Radius setting reduced the width of the halos and tightened up the sharpening of the edges. You might be tempted to simply use the lowest Radius of

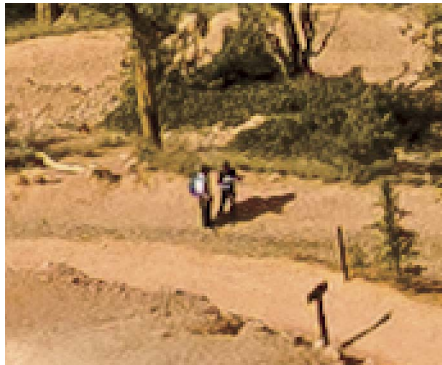
FIGURE 4.70 Comparing various Detail panel settings at a 4:1 screen zoom.



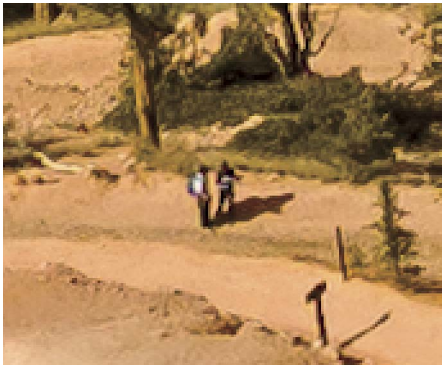
▲ IMAGE WITH SHARPENING AND NOISE REDUCTION TURNED OFF



▲ IMAGE WITH THE DEFAULT SETTINGS: SHARPENING AMOUNT 25, RADIUS 1.0, DETAIL 25, MASKING 0; NOISE REDUCTION LUMINANCE 0



▲ IMAGE WITH OPTIMIZED SETTINGS: SHARPENING AMOUNT 60, RADIUS 0.7, DETAIL 90, MASKING 20; NOISE REDUCTION LUMINANCE 0



▲ IMAGE WITH OPTIMIZED SETTINGS AND NOISE REDUCTION LUMINANCE 25

FIGURE 4.71 Adjusting the Radius setting.



▲ DEFAULT RADIUS SETTING OF 1.0



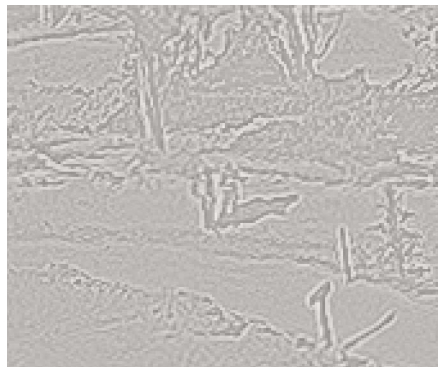
▲ ADJUSTED RADIUS SETTING OF 0.7

0.5 in a case such as this, but that isn't really optimal—it would undersharpen the edges because the Radius would be too small. There isn't a lot of difference between 0.5 and 0.7, but the impact will be visible when adjusting the Amount and the Detail sliders. This is the part of fine-tuning that requires experience. Setting the optimal Radius is critical. The next setting to adjust is the Detail slider, shown in **Figure 4.72**.

The default setting of 25 has very little deconvolution sharpening and a lot of halo suppression. For high-frequency images, I always increase the Detail slider to reduce the suppression and enhance the fine detail. The setting of 90 is pretty high, but this image could withstand the strong setting. You can see the inevitable increase in the sharpening of the noise, which will be addressed with the Noise Reduction Luminance setting (this preview is before the addition of the Noise Reduction). The next step will be to fine-tune the Amount and Masking settings, as shown in **Figure 4.73**.



▲ DETAIL SETTING AT DEFAULT OF 25



▲ DETAIL SETTING ADJUSTED TO 90

FIGURE 4.72 Adjusting the Detail slider.



▲ ADJUSTING THE AMOUNT TO 60



▲ ADJUSTING THE MASKING TO 20

FIGURE 4.73 Adjusting the Amount and Masking settings.

After setting the Radius and Detail sliders, I went back to the top to adjust the Amount. The Amount is a simple “volume” control, and it’s pretty easy to see how far you can go up to the point you’re doing harm by oversharpening. Also, remember that if the overall Amount setting is good for the majority of the image but produces some suboptimal areas of oversharpening, you can use the local minus Sharpening settings in the Graduated Filter or Adjustment Brush to locally reduce the global settings made in the Detail panel. This ability to mitigate oversharpening is an important consideration, because it can change your global sharpening strategy. The Masking was adjusted so that surface areas (non-edge) didn’t receive the full sharpening. Where the mask is white, the full sharpening is applied; where it’s black, the sharpening is substantially reduced. If you use a very high mask setting, the sharpening in the black areas is almost eliminated. Be careful not to use a really high Masking setting when applying strong sharpening to an image with a lot of noise. You can get an unfortunate rippling effect, where no sharpening is applied to the surfaces and high sharpening is applied to the edges.

The Detail panel adjustments would normally be judged at 1:1. **Figure 4.74** is a screen zoom at 1:1 (100 percent). However, due to the halftone screen, you won’t

FIGURE 4.74 The optimized Detail panel settings at a 1:1 screen zoom.



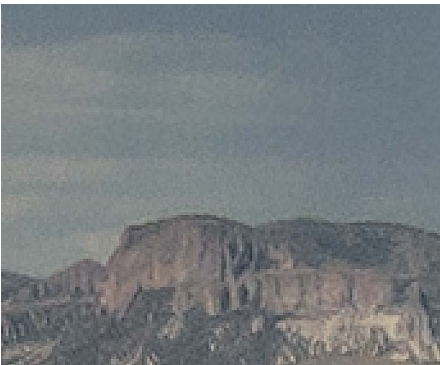
see what I saw in Lightroom when I made the adjustments. But it should give you an idea of what things should look like when optimally adjusted.

You might think that would wrap up this section, but no. I mentioned that optimal Detail panel settings might not be optimal for the entire image. In this case, the Sharpening and Noise Reduction were fine for most of the image but not for the sky. To adjust the global settings in the Detail panel, I used a local adjustment brushed in with the Adjustment Brush to modify the settings being applied in the sky. **Figure 4.75** shows the masked image area and “before” and “after” detail figures at a 4:1 screen zoom.

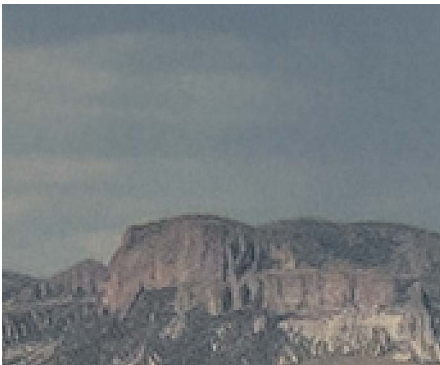


FIGURE 4.75 The masked area with local settings and a 4:1 zoomed view of the image before and after adjustment.

◀ THE ADJUSTMENT BRUSH MASK WITH SETTINGS: SHARPNESS -30, NOISE +50



▲ 4:1 ZOOMED VIEW BEFORE



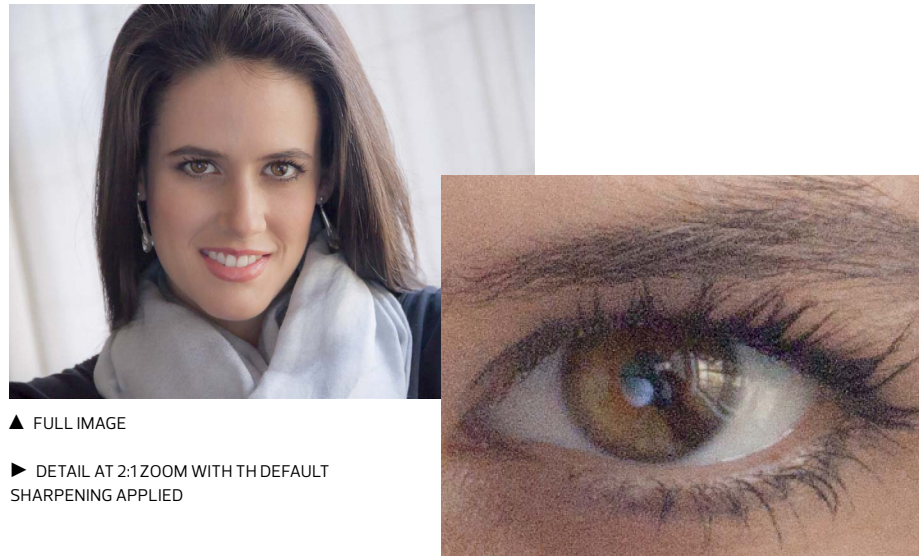
▲ 4:1 ZOOMED VIEW AFTER

The differences are subtle but relevant if the maximum image detail and image quality are the goal (which they always are for me). This sort of local modification doesn't need to be extreme precision with the creation of the mask. Unlike making tone and color adjustments, locally fine-tuning the Sharpening and Noise Reduction settings only requires moderate accuracy of the mask. Since the full-size image is way too large to be reproduced in the book without substantial downsampling (which would make the image detail adjustments invisible), go back and take a look at Figure 4.69 to see the entire image and Figure 4.74 to see the results of the Sharpening and Noise Reduction at 1:1.

LOW-FREQUENCY EDGE SHARPENING

When sharpening an image with low edge frequency, you want to increase the Radius so small areas of texture and noise don't get overly sharpened. For example, on a person's face, you want to sharpen the eyes and lips but avoid oversharpening the skin (unless you want to go for that "weathered" look). The image I'm using as an example is a shot of my friend Daniel Ortiz's wife, Roxana Cházaro, in San Miguel de Allende, Mexico. Daniel is an avid photographer, so I asked his permission to photograph his wife. **Figure 4.76** shows the full frame of the image and a 2:1 zoom detail image of Roxana's eye. The image was captured with a Canon EOS REBEL T1i with an 18–135mm zoom lens at 113mm zoom. The ISO was set to 800 to get a fast enough shutter speed (1/60 second with image stabilization) to avoid camera shake.

FIGURE 4.76 Low-frequency example image.



The Radius is again the first slider I adjusted. I knew I wanted to increase the Radius to avoid sharpening her skin and the sensor noise visible at ISO 800. I moved from the default 1.0 Radius setting to a setting of 2.0. **Figure 4.77** shows the preview of both Radius settings.

By increasing the Radius, I increased the sharpening on the strong edges in the eye while mitigating the noise and skin texture. The preview shows a slightly increased sharpening of the noise, but that will be adjusted later when adjusting the edge masking and adding noise reduction. The next adjustment was to adjust the Detail slider (**Figure 4.78**).



▲ PREVIEW OF RADIUS 1.0 SETTING AT 2:1 ZOOM



▲ PREVIEW OF RADIUS 2.0 SETTING AT 2:1 ZOOM

FIGURE 4.77 Adjusting the Radius setting.



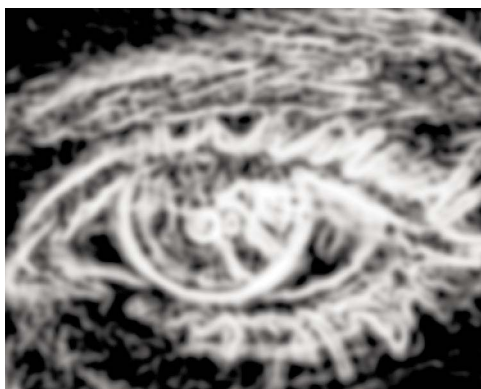
▲ PREVIEW OF DEFAULT DETAIL SETTING OF 25 AT 2:1 ZOOM



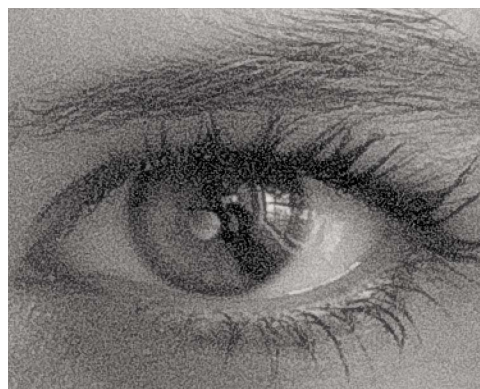
▲ PREVIEW OF ADJUSTED DETAIL SETTING OF 10 AT 2:1 ZOOM

FIGURE 4.78 Adjusting the Detail slider.

FIGURE 4.79 Adjusting Masking and Amount settings.



▲ PREVIEW SHOWING MASKING SET TO 68



▲ PREVIEW SHOWING AMOUNT SETTING TO 88

Adjusting the Detail slider is probably going to be difficult to see in the book's half-tone reproduction, but let me explain what you're looking at (even if it's hard to see). At the default Detail setting of 25, there is still a touch of deconvolution sharpening being blended in, which means the high-frequency texture of skin and noise is getting hit too hard. By reducing the Detail slider to 10, much less of the noise is getting sharpened. The next adjustment, Masking, will cut down on the surface sharpening even further. **Figure 4.79** shows adjusting the Masking and Amount adjustments.

The Amount of 88 may seem high, but consider that the Radius is 2.0 while Detail is down to 10 and the edge Masking is up to 68—all of which alters the overall impact of the Sharpening. The Sharpening amount needed to be pretty high, and I actually increased the Sharpening around the eyes and lips with a local adjustment. After adjusting the final Sharpening settings, I adjusted the Noise Reduction Luminance setting to +50 to smooth out the noise. **Figure 4.80** shows a less-cropped version, still at 2:1 zoom. Yes, it does look a bit crunchy, but remember that you're seeing the results at two times the actual pixel size; it *should* look a bit crunchy.

In addition to the global Sharpening and Noise Reduction settings, I also did a little light-duty retouching and local Sharpening and skin adjustments. The spotting was very minimal—Roxana has good skin, but a little negative clarity never hurt anybody! I also wanted to increase the local Sharpening around the eyes and lighten up a bit under the eyes. **Figure 4.81** shows four of the local Adjustment Brush masks doing the majority of the touchup.

Using a local brush with minus Clarity has the effect of reducing the midtone contrast in the texture of the skin, which is really useful without actually blurring (and destroying skin texture). By adding additional Sharpening just around the eyes and lips, I avoided adding any additional global Sharpening. The +43 Sharpness with the Adjustment Brush is added to the global Detail panel settings. Lightening up the skin

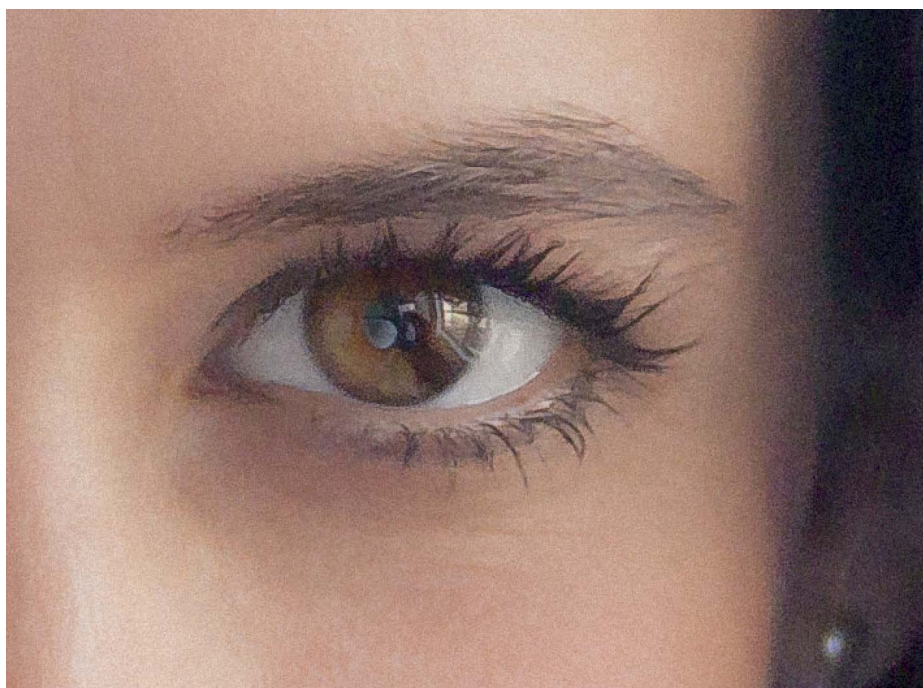


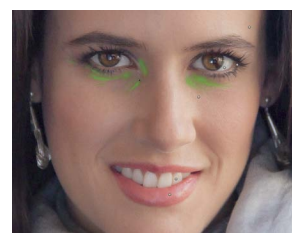
FIGURE 4.80 Final global Sharpening and Noise Reduction results.



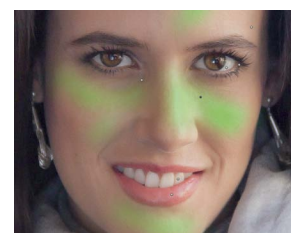
▲ MASK FOR REDUCING CLARITY
-36



▲ MASK FOR INCREASING
SHARPNESS +43



▲ MASK FOR EXPOSURE +0.39,
CONTRAST -31, SHADOWS +11, AND
NOISE +22



▲ MASK FOR CLARITY -15 AND
SHARPNESS -15

FIGURE 4.81 Local Adjustment Brush masks.

under the eyes and an additional touch of minus Sharpness and plus Noise with the Adjustment Brush finished things up. Well, okay, there were a couple more tweaks: I added a very gentle adjustment to lighten the whites of the eyes while darkening the round highlight over the pupils. I also lightened the teeth and added a touch of color and saturation to the lips. However, this isn't a heavy-duty fashion-magazine type of makeover. The goal was to maintain Roxana's good looks while keeping a natural appearance. **Figure 4.82** shows the final adjusted image at a screen zoom of 1:1 (100 percent).

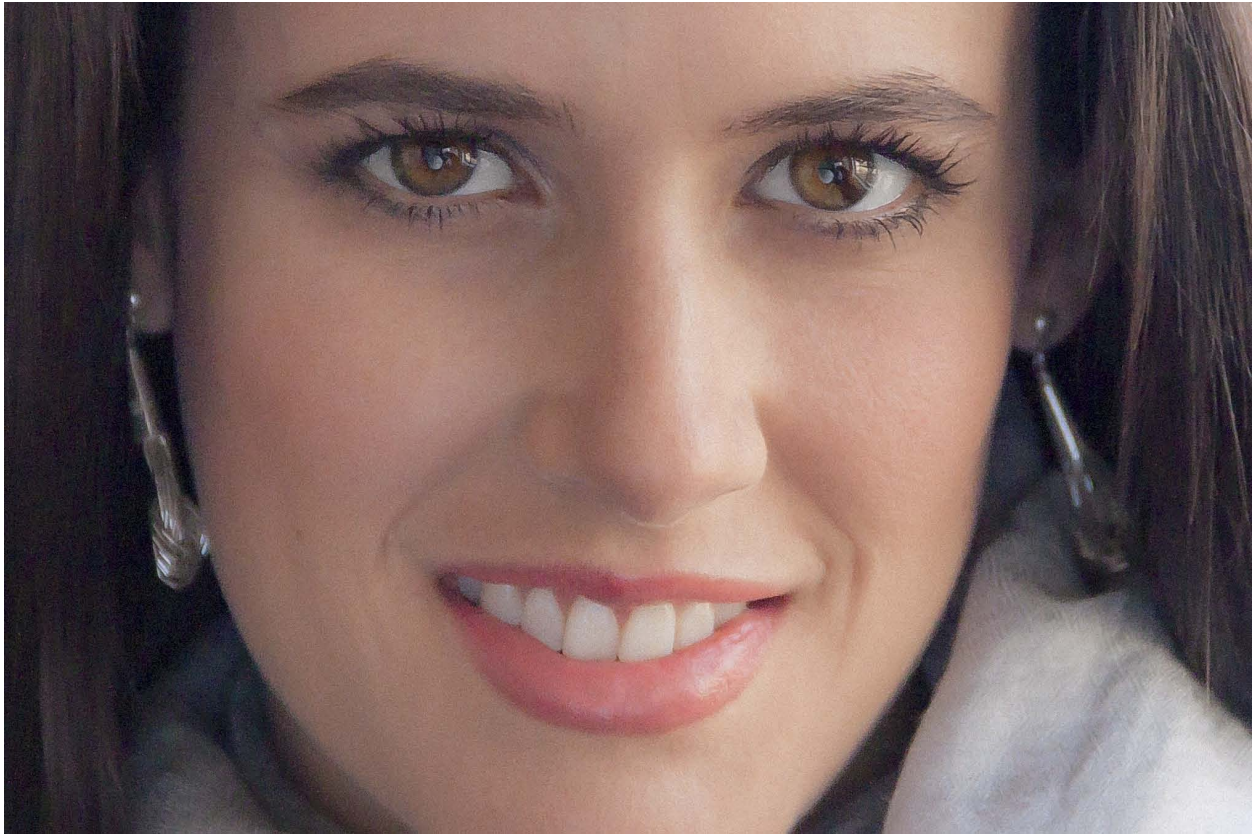


FIGURE 4.82 Final portrait of Roxana at 1:1 zoom.

MIXED-FREQUENCY EDGE SHARPENING

Not every image can be lumped into just high-frequency or low-frequency categories. Using the wrong sharpening can adversely impact the final image quality. So, what do you do if you have an image that is predominantly in the low-frequency camp but has important image detail that needs high-frequency sharpening? You have to get smart! You need to take a slightly sneaky way around the issue. Lightroom and Camera Raw can apply only one type of sharpening at a time, so when faced with this problem, I turn to Photoshop and open digital negatives as Smart Objects. Yes, the image must be sent to Photoshop, but when it's a Smart Object, you retain the capability of editing raw image-processing parameters. **Figure 4.83** shows an example of an image with lots of low-frequency areas and some high-frequency areas in the center of the image. The iceberg image was shot at the northern tip of the Antarctic Peninsula near the Weddell Sea using a Canon EOS 1Ds Mark II and a 24–70mm lens.



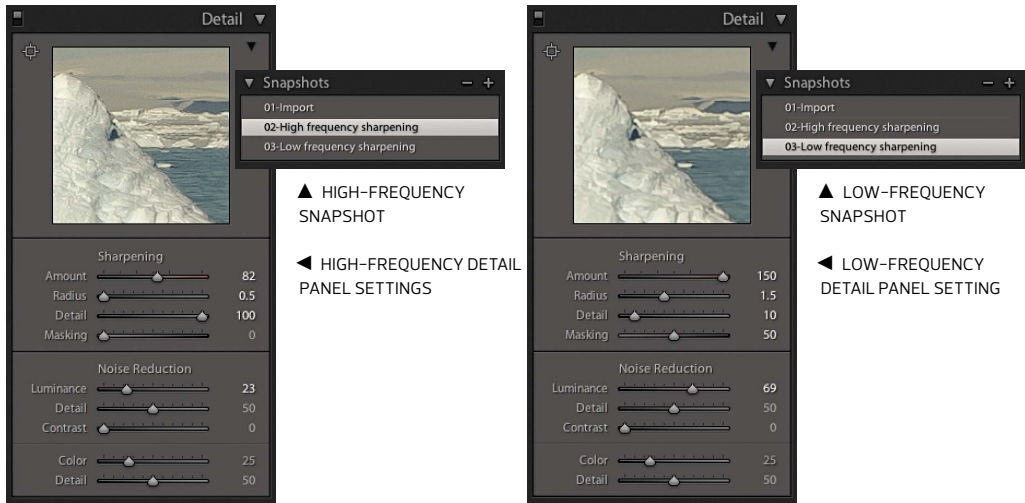
FIGURE 4.83 A mixed-frequency image.

The sky and the water are the low-frequency portions of the image, while the iceberg in the center really needs high-frequency sharpening. To apply a mixed-frequency edge sharpening while retaining the ability to edit raw parameters, I had to take a trip to Photoshop.

First, I'll point out a limitation of Smart Objects: once you take a raw image into Photoshop, you pretty much sever the relationship of the digital negative residing inside of Lightroom and the raw file that's embedded into a Photoshop file as a Smart Object. Any changes you make to the Smart Object using Camera Raw can't be easily changed back to your original negative inside of Lightroom. It's pretty much a one-way street from Lightroom to Photoshop. Yes, you can save the Photoshop file and import it into Lightroom, but then it's considered a rendered PSD or TIFF file. You can open the edited TIFF or PSD and re-edit the parameters from inside Camera Raw, but those settings aren't shared with Lightroom. Another slight hiccup regarding editing a Smart Object in Photoshop from Lightroom is that your Lightroom and Camera Raw versions need to be in sync (another good reason to keep Lightroom and Camera Raw up to date).

One way I work around the issue of severed settings from the digital neg and the Photoshop file is to make all the image adjustments in Lightroom and save Snapshots prior to editing the image as a Smart Object. Since Snapshots travel with the file, Snapshots made in Lightroom will show up in Camera Raw as well. **Figure 4.84** shows the two Snapshots I made and the sharpening settings I used for this image.

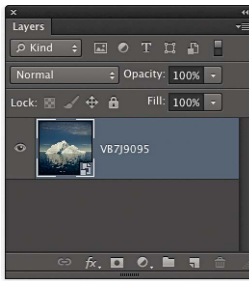
FIGURE 4.84 The Snapshots and the Detail panel settings.



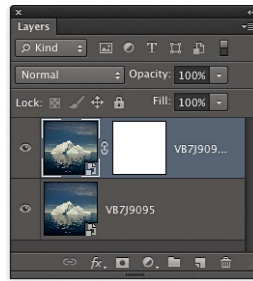
There are a couple things you'll notice about the different settings: For the high frequency, Detail is all the way up and the Radius is very small. I did this to really bite into the textural detail of the iceberg ice. For the low frequency, The Sharpening Amount slider is all the way up to 150 (that's rare, but it's sometimes useful), but the Detail slider is way down to +10 and the Masking slider is up to +50. I'll admit that I'm actually pushing this a little bit for the purposes of the example, but as you'll see, the results are very reasonable.

Once the settings are adjusted and the Snapshots are saved, it's time to open the digital negative as a Camera Raw Smart Object in Photoshop. From the Photo main menu in Lightroom, select Edit In and the Open as Smart Object in Photoshop option. This renders the image into Photoshop and the Smart Object is embedded into the Photoshop file and appears as a special Smart Object layer. **Figure 4.85** shows the single Camera Raw Smart Object layer, as well as the result of copying to a new layer and adding a Reveal All layer mask.

In order to copy the Smart Object layer, you need to do it in a special way: in Photoshop under the Layer menu is a flyout menu called Smart Objects. From the flyout menu, select New Smart Object via Copy. This creates a new Smart Object that can have different parametric adjustments from the original Smart Object layer. Simply duplicating the layer won't work; it needs to be a new Smart Object. Once the new Smart Object layer is in place, double-click the layer icon to open the Smart Object version of Camera Raw shown in **Figure 4.86**.

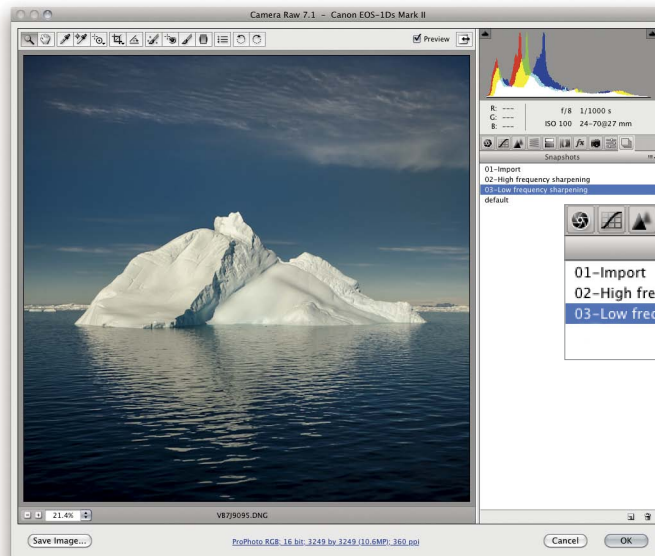


▲ THE SMART OBJECT LAYER IN PHOTOSHOP



▲ COPYING THE SMART OBJECT TO A NEW LAYER

FIGURE 4.85 The digital negative opened in Photoshop as a Smart Object.



◀ THE SMART OBJECT VERSION OF CAMERA RAW

▼ SELECTING THE LOW-FREQUENCY SHARPENING SNAPSHOT

FIGURE 4.86 Opening the Smart Object into Camera Raw.

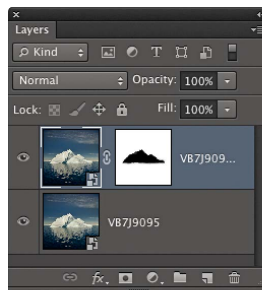
Since I already saved Snapshots, I didn't need to fiddle in the Detail panel. I simply selected the low-frequency Sharpening Snapshot and clicked OK. Camera Raw renders the changes back into the Smart Object layer.

To blend the two edge-frequency sharpened layers, you need to create a layer mask. In this case, since the low-frequency image was on the top of the stack, the layer mask needed to reveal the high-frequency layer on the bottom. **Figure 4.87** shows the layer mask painted in and the resulting layer. Where the image is red, the low-frequency image will be hidden.

The payoff for this mixed-edge frequency sharpening is that it allows you to mix and match the optimal Sharpening and Noise Reduction settings while still retaining the raw editing capabilities of Camera Raw. It's a true blending of the strengths of combining Lightroom, Camera Raw, and Photoshop to optimize your image detail. **Figure 4.88** shows the high-frequency layer and the blended layers.



▲ THE IMAGE WITH THE LAYER MASK TURNED VISIBLE



▲ THE LAYERS PANEL SHOWING THE LAYERS

FIGURE 4.87 The layer mask for hiding the low-frequency sharpening layer.



▲ THE HIGH-FREQUENCY SHARPENED IMAGE



▲ THE MIXED-FREQUENCY SHARPENED IMAGE

FIGURE 4.88 Comparing the high-frequency sharpening to the mixed-frequency sharpening.

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INDEX

16- vs. 32-bit channels, 57
32-bit images, 57, 244–247
80-20 rule, 53

A

ACR, 46, 107. *See also* Camera Raw
acutance, 186
Adams, Ansel, 171
Add to Stack command, 204
Adjustment Brush tool
 Camera Raw, 109, 119, 130–131
 Lightroom, 119, 125–130
adjustment panels, 71–72, 73, 83
Adobe
 Camera Raw (*See* Camera Raw)
 Creative Suite, 45
 Digital Media Lab, 41
 DNG Converter, 58–63
 DNG Flat Field plug-in, 168–170
 DNG Software Development Kit, 6
 Extensible Metadata Platform, 24 (*See also* XMP)
 Lens Profile Creator, 97
 Lens Profile Downloader, 97
 Lightroom (*See* Lightroom)
 Photoshop (*See* Photoshop)
 Standard profiles, 107–108
Adobe Photoshop CS5 for Photographers, 48
Adobe Photoshop Lightroom 4 Book, The, 53
Adobe RGB color space, 21, 22, 24
AFP, 265
AIT drives, 265
aliasing errors, 7
aliasing filters, 7
Alves, Sandy, 43
Amount control
 grain effect, 106
 post-crop vignetting, 104
 sharpening, 88, 90
Amount Hue slider, 100
analog negatives, 3

Aperture, 44
aperture values, 31–32, 76, 97, 99, 248, 275
Apple
 Aperture, 44
 Bootcamp, 280
 iPhone, 35–36
Apple File Protocol, 265
archiving images, 264–265
Aspect Ratio menu, 112
As Shot settings, 76, 141, 146, 158, 161
As Shot WB setting, 144, 153, 156, 158
astigmatism, 33
Auto-Align Layers dialog box, 248–249, 250
Auto Blend Layers tool, 249
Auto button, 85
Auto Import Settings options, 275, 276–277
Auto Mask option, 128–130, 139, 147, 161, 180
Auto option, Setup menu, 97–98
Auto White Balance, 76, 153
AWB setting, 76, 153

B

Background Eraser tool, 129
backlit subjects, 149–152
backups, 281, 284
Balance slider, 86
barrel distortion, 34
base colors, 216
Basic panel, 72–80
 Clarity control, 79
 purpose of, 72
 Saturation control, 80
 Tone controls, 76–79
 Treatment section, 73
 Vibrance control, 79
 vs. Tone Curve panels, 83
 White Balance tool, 73–76
Bayer, Bryce E., 8
Bayer arrays, 6, 8
Bézier curves, 81, 159, 227, 228
binary digits, 25

- bit depth, 23, 25–26, 27, 55, 204, 245
- bits, 25
- black-and-white images
 - with color tone, 175
 - color toning of, 86
 - converting to/from color, 73, 85, 171–185, 235–239
 - shooting, 85
- black-and-white photography, 84, 171
- Blacks control, 77
- blend colors, 216
- Blend If settings, 209–210, 212
- blending modes, 209–210, 214, 216–217
- blown skies, 140–143
- blue edge fix, 218–220
- blue ice, 143
- Bombich software, 281
- Bootcamp, 280
- bottlenecks, 281, 284
- Bridge
 - as file browser, 46
 - getting images into Photoshop from, 204
 - introduction of, 45
 - Photo Downloader, 257
 - purpose of, 45
 - rating images in, 259–260
 - sorting images in, 261
 - standard configuration of, 45
 - vs. Lightroom, 46, 50–51
 - ways of using, 46
- Brightness control, 77
- Brown Toner, 175
- Brush Flow settings, 127
- brushstrokes, 125, 127, 128
- burnable CDs/DVDs, 265, 266
- B&W subpanel, 84–86
- bytes, 25

C

- Cache Level settings, 282
- calibration images, 168, 169, 170
- calibration sliders, 108–109
- Camera Calibration panel, 106–109
- Camera & Imaging Product Association, 24
- camera lenses. *See* lenses
- camera makers, 61

Camera Raw

- Adjustment Brush tool, 109, 119, 130–131
- adjustment panels, 71–72, 83
- alternatives to, 39
- automation features, 254
- as backbone for Lightroom, 46
- Basic panel, 72–80
- Camera Calibration panel, 106–109
- Color Picker, 124–125, 130
- Color Sampler tool, 69, 109
- color space settings, 21, 55–58
- color to black-and-white conversions in, 172, 235
- correcting distortion in, 34
- creator of, 3
- cropping in, 69, 113–114
- default image settings, 47–48
- default renderings, 66–69
- and demosaicing, 8
- Detail panel, 87–95
- and DNG Converter, 58–63
- Effects panel, 103–106
- genesis of, 40–41
- getting images into Photoshop from, 204
- Graduated Filter, 124
- histograms, 70–71
- host decoder, 47
- Lens Corrections panel, 95–103
- and Lightroom versions, 54, 205
- local adjustments in, 119–131
- maximizing image detail in, 186–200
- noise-reduction algorithms, 20
- parametric editing in, 48
- previewing images in, 89–90
- processing controls, 14
- purpose of, 46
- selecting tools in, 109–110
- sharpening controls, 88–91
- sharpening images in, 186–200
- single-panel limitation, 53
- Spot Removal tool, 118
- Targeted Adjustment tool, 109
- Tone Curve panel, 80–83
- toolbar, 110
- vs. Lightroom, 53, 69–70
- workflow, 253, 256
- Workflow Options dialog box, 21, 56, 172, 204

- cameras. *See also* lenses
 - calibrating, 106, 108
 - controlling how colors are rendered by, 106
 - controlling in Lightroom, 275
 - creating custom profiles for, 107
 - opening images directly from, 256
 - sensors for, 5–7 (*See also* camera sensors)
 - and shutter speed, 30–31
 - using as card readers, 255
- camera sensors
 - determining dynamic range of, 11–12
 - and ISO speed, 7
 - and linear capture, 8
 - photosensitive part of, 4
 - types of, 5–7
- camera shake, 88
- Camera Standard DNG profile, 108
- captioning, 263
- Capture One, 39, 275–276
- capture resolution, 35
- capture sharpening, 87, 88
- Carbon Copy Cloner, 281
- card readers, 255, 258
- CAs, 98
- catalogs, Lightroom, 272–274, 284–285
- Catalog Settings dialog box, 285
- CCD sensors, 5–7
- CDs, 265, 266
- CF media, 255, 258
- Chan, Eric, 75, 87, 92, 170, 244
- Channels panel, 234, 235, 237
- charge-coupled device sensors, 5–7
- chemical darkrooms, 178, 212, 213
- chimping, 12
- chromatic lens aberrations, 34, 98
- chrominance-sensitive elements, 8
- CIPA, 24
- Clarity control, 79, 119, 139, 210
- Clone Stamp tool, 114, 218, 222–223
- CMOS sensors, 5–7
- cold toning, 180–181
- Collections, Lightroom, 272
- color-based noise, 20
- Color blending mode, 217
- Color Burn blending mode, 212
- colorcast calibration images, 168, 169, 170
- colorcast correction, 167–170, 275, 276
- color-channel curves, 82, 158
- ColorChecker Passport, 73, 107, 153
- color clipping, 21, 23
- Color control, 93, 120
- color correction, 153–170
 - color curves, 158–160
 - color gradients, 163–165
 - color split toning, 160–162
 - global white balance, 153–155
 - HSL, 166–167
 - lens colorcast, 167–170
 - local white balance, 156–157
 - in Photoshop, 214–215
 - vs.* tone mapping, 153
- color co-site sampling, 8
- color curves, 158–160, 183–185
- Color Detail control, 93
- Color Dodge blending mode, 212
- color fidelity, 24
- color filter arrays, 6
- color fringes, 98–102
- color gradients, 163–165. *See also* gradients
- color images
 - converting to/from black and white, 73, 85–86, 171–185, 235–239
 - shooting, 85
 - split toning, 86–87
- colorimetric interpretation, 21–24
- color management, 55–57
- Color Picker, 124–125, 130
- Color Priority option, 105
- Color Range Selection tool, 207, 231–232, 237, 238
- Color Sampler tool, 69, 87, 109
- color spaces
 - accidental, 22
 - advice on choosing, 55
 - artificially constraining, 22
 - Camera Raw, 21
 - Lightroom, 21
- color split toning, 160–162
- Color subpanel, 84, 95, 98–102
- color toning, 183–185
- Compact Flash media, 255, 258

- Compare mode, 270, 271
- compatibility testing, 280
- complementary colors, 218
- complementary metal-oxide semiconductor sensors, 5–7
- composite masks, 231–232
- compositing images, 230–234
- compression, 28, 62–63
- Constrain Crop check box, 102–103
- Constrain To Warp option, 112
- context menus, 71
- contrast, midtone, 210–212
- Contrast control, 77, 119
- contrast range, 11, 12, 15
- Contrast Tweak menu, 82
- conversions, color to black-and-white, 73, 85–86, 171–185, 235–239
- copy-and-paste patching, 224–225, 226
- copyright notices, 24, 254, 261
- corrupted images, 258
- Cox, Chris, 284
- CPU speed, 281–282
- creative sharpening, 87, 89
- Creative Suite, 45
- cropping
 - in Camera Raw, 69, 113–114
 - in Lightroom, 69, 111–113
 - in Photoshop, 111
- curvature of field, 33
- curves
 - Bézier, 81, 159, 227, 228
 - color, 158–160, 183–185
 - parametric, 80–81
 - point, 81–82
- curvilinear distortion, 34
- Custom Crop dialog box, 113–114

D

- Darken blending mode, 216
- dark noise, 18
- darkroom
 - dodging and burning in, 213
 - printing, 171, 175
 - split toning in, 178
 - and Unsharp Masking, 212
- data-recovery services, 258
- DAT drives, 265
- deconvolution sharpening, 89
- Default option, Setup menu, 97
- Defringe control, 120
- Defringe corrections, 101–102
- demosaiicing, 8, 20
- Density control, 127, 128
- depth of field, 15, 31, 32, 248
- destructive editing, 26
- detail loss, 26
- Detail panel, 87–95
 - noise-reduction controls, 91–95
 - purpose of, 87
 - sharpening controls, 88–91
- Detail sliders, 89, 91, 93, 189, 193–194
- Develop View Options dialog box, 112–113
- diffraction, 31
- diffuser disks, 168
- DIFP seminar, 40
- digital exposure, 11–14. *See also* exposure
- digital image preservation, 60–61
- digital imaging area, 280–281
- Digital Imaging For Photographers seminar, 40
- Digital Negative file format, 58. *See also* DNG file format
- digital negatives
 - applying metadata to, 254
 - archiving, 264–265
 - attributes of, 7–26
 - corrupted, 258
 - defined, 3
 - perfecting with Photoshop, 203 (*See also* Photoshop)
 - photographic aspects of, 29–36
 - role of metadata in, 24–25
 - visual renderings of, 4
 - vs. film negatives, 3
- digital photography, 60, 61, 171
- Digital Print, The*, 58
- digital storage, 264–265
- display luminance, 58
- displays, 57–58
- distortion, 34, 97, 241
- DNG Converter, 58–63
 - applying lossy compression with, 62–63
 - downsampling with, 63
 - purpose of, 58

- setting preferences for, 62
 - using, 59, 62
- DNG file format, 58–63
 - downsampling, 63
 - and Fast Load Data, 62, 63
 - file sizes, 63
 - for final delivery of images, 266
 - introduction of, 58
 - and lossy compression, 62, 63
 - meaning of acronym, 58
 - purpose of, 58
 - versions, 59
- DNG Flat Field plug-in, 168–170
- DNG Profile Editor, 107
- DNG profiles, 48, 107, 108
- DNG Software Development Kit, 6
- DNG_Validate processing, 4, 6
- DOF, 15, 31, 32, 248
- downsampling, 20, 63
- drag-and-drop behaviors, 226
- DSLRs
 - and aliasing filters, 7
 - and CMOS sensors, 5–7
- Duplicate command, 235
- dust, 114, 115
- DVDs, 265, 266
- DxO Labs, 11
- DxOMark, 11
- DxO Optics Pro, 11
- dynamic range, 11–12, 15, 26

E

- Eastman Kodak, 8. *See also* Kodak
- edge frequency, 89
- edge masks, 89
- edge sharpening, 186–200
 - and blue edge fix, 218–220
 - high-frequency, 186–192
 - low-frequency, 192–196
 - mixed-frequency, 196–200
- Edit In flyout menu, 205, 241, 248
- editing
 - destructive, 26
 - in field, 269–271
 - in Lightroom, 259
 - parametric, 48, 52
 - in Photoshop, 48, 206–220 (*See also* Photoshop)
 - pixel-level, 48
 - rough, 259
 - selection, 269–271
- Effects panel, 103–106
- embedded profiles, 57
- Enable Auto Import option, 276–278
- Enter Custom option, 112
- entrance pupil, 240
- EPIC robotic camera mount, 240
- Eraser tool, 227
- eSATA, 281
- ETTR, 14–17, 29, 71, 144
- Evening, Martin, 48, 53, 87
- Exchangeable image file format, 24
- EXIF metadata, 24, 96, 106, 248. *See also* metadata
- Export dialog box, Lightroom, 204
- “Expose (to the) Right” article, 14
- exposure
 - bracketing, 15
 - determining optimal, 11
 - and linear capture, 9
 - overexposed images, 12, 15, 16
 - underexposed images, 16, 146–148, 150
- Exposure control
 - adjusting overall brightness with, 76
 - for Adjustment Brush, 119, 139
 - and backlit subjects, 149
 - for Graduated Filter, 119, 123
 - and tone adjustments, 76
 - and underexposed images, 146
- Extensible Metadata Platform, 24. *See also* XMP
- External Editing tab, Lightroom, 205
- eyes, 73, 192, 194–195

F

- Fade dialog box, 208
- Fast Load Data, 62, 63
- Feather control, 104, 126
- field workflow, 266–274
- Fill Light control, 77
- film grain, 94, 105–106

- film negatives, 3
- film photography, 84, 171
- filmstrip mode, 47, 74, 118, 259
- fisheye lenses, 103
- flags, image, 259
- flat lighting, 134–136
- Flow controls, 127, 128
- focus-blending techniques, 32
- focus stacking, 248–251
- Fraser, Bruce, 55, 87, 186
- Fringe Color Selector tool, 99–101
- fringing, 98–99
- f-stop, 11, 15, 31–32, 135, 168, 170
- FTP, 265
- Fuzziness slider, 207

G

- gamma
 - and human vision, 9–10
 - and JPEG images, 28, 63
 - and laptop displays, 57–58
 - and lossy compression, 63
 - and ProPhoto RGB, 55, 236
 - and raw converters, 10–11
 - and RGB color spaces, 22
- gigabytes, 265
- gigage, major, 158, 159
- GigaPan, 240
- GIGO, 29
- global adjustments, 125
- global tone mapping, 65
- GPUs, 284
- gradients, 123, 163–165
- Graduated Filter
 - Camera Raw, 124
 - controls, 119–120
 - Lightroom, 120–123
- grain, 94, 105–106
- Grain controls, 105–106
- graphics processing unit, 284
- grayscale images, 73, 172. *See also* black-and-white images
- Green Hue slider, 100
- Grid overlay, 114
- grids, 102

H

- halos, 77, 79, 89, 187, 189
- Hamburg, Mark, 41–44, 83, 111
- Hard Light blending mode, 213
- hardware-profiled displays, 57
- HDR images, 12, 244–247
- Healing Brush tool, 114, 222–223
- Helicon Focus, 249
- Herasimchuk, Andrei, 43
- high-contrast lighting, 136–140
- high dynamic range images. *See* HDR images
- high-frequency edge sharpening, 186–192
- Highlight Priority option, 105
- Highlights control, 77, 104, 119, 139
- highlight warning, 14
- High Pass filter, 211
- histograms, 70–71
- History States setting, 283–284
- Hogarty, Tom, 170
- Holbert, Mac, 87, 212
- HSL/Color/B&W panel, 83–86
- HSL color correction, 166–167
- Hue blending mode, 217
- Hue sliders, 100, 109
- Hue subpanel, 83–84
- human vision, 9–10

I

- iLDisplay Pro, 57
- ice, blue, 143
- IIM metadata, 24
- image adjustment panels, 71–72, 83
- image editors, 205. *See also* Photoshop
- image exposure. *See* exposure
- image ingestion, 255–257, 261, 266
- image preservation, 60–61
- image quality
 - and lenses, 32–33
 - and sensor resolution, 35–36
 - and tripods, 30
- images
 - adding keywords to, 261–263
 - archiving, 264–265
 - assigning flags to, 259
 - backing up, 281

- calibration, 168, 169, 170
- compositing multiple, 230–234
- converting color to black-and-white, 73, 85–86, 171–185, 235–239
- copying, 256, 266, 271–272
- cropping, 69, 111–114
- deblurring, 89
- displaying histograms of, 70–71
- duplicating, 235
- editing in Photoshop, 206–220 (*See also* Photoshop)
- importing to Lightroom, 267–269, 276–278
- labeling, 259–260
- maximizing detail in, 186–200
- merging multiple, 240–243
- organizing, 271, 279
- perfecting with Photoshop, 203 (*See also* Photoshop)
- previewing on-screen, 89–90
- rating, 259–260
- renaming, 261
- retouching, 114, 220–229
- sharpening, 87–91, 135, 186–200
- sorting, 261
- storing, 255
- transmitting, 265–266
- verifying, 257–258
- image-sharpening controls, 88–91
- image verification, 257–258
- Import from Catalog dialog box, 272–274
- importing
 - to Lightroom, 267–269, 276–278
 - from Lightroom catalog, 272–274
- inclement weather, 143–145
- ingestion, image, 255–257, 261, 266
- International Press Telecommunications Council, 24. *See also* IPTC metadata
- iPhone, 35–36
- IPTC metadata, 24, 261–263, 266, 267, 268
- ISO-specific defaults, 69
- ISO speed
 - and camera sensors, 7, 19
 - and luminance noise reduction, 90
 - and noise, 19, 91, 94
- ISO standards, 58

J

- Japan Camera Industry Association, 24
- Japan Electronic Industries Development Association, 24
- JEIDA, 24
- Joint Photographic Experts Group, 28. *See also* JPEG
- JPEG
 - and Camera Raw, 47
 - color rendering, 108
 - color space considerations, 21
 - meaning of acronym, 28
 - vs. raw capture, 27–29

K

- keywording, 262
- keywords, 261–263
- Knoll, John, 40
- Knoll, Thomas
 - and Camera Raw rendering engine, 66
 - and color channels, 83
 - and creation of Camera Raw, 40
 - and creation of Lightroom, 43
 - and digital negatives, 3
 - and DNG format, 58
 - and ETTR, 14–15
 - and multipass sharpening, 87
 - and raw file formats, 58
- Kodak, 8, 55, 175
- Kodak Gap, 158

L

- labeling images, 259–260
- laptops
 - and color adjustments, 57–58, 267, 269
 - and field workflow, 71, 267, 269
 - hiding toolbars when working on, 110
 - and Solo Mode, 71
 - and studio workflow, 275
- lateral chromatic aberration, 34
- layer groups, 206
- layer masks
 - applying to sharpened layer, 209
 - and color to black-and-white conversions, 235, 237–239
 - and copy-and-paste patching, 225

- creating, 199, 207
- and focus stacking, 250
- modifying, 214
- unlinking layer from, 232
- layers
 - aligning, 248
 - and Camera Raw, 47
 - and Photoshop, 206
 - unlinking from layer masks, 232
- Layers panel, 200, 206, 208, 234, 238
- Layer Style dialog box, 209, 212, 213
- lens aberrations, 32–34
- lens aperture, 31–32, 76, 97, 99, 248, 275
- Lens Blur setting, 89
- lens colorcast correction, 167–170, 275, 276
- Lens Correction panel, 34, 95–103, 285
- lens diffraction, 31
- lens diffuser disks, 168
- lens distortion, 96, 97
- lenses
 - displaying profiles for, 96
 - fish-eye, 103
 - and image quality, 32–33
 - for panoramic photography, 240
 - testing, 32
 - wide-angle, 32, 98, 232, 240
 - zoom, 32, 33, 34, 97, 98, 192
- Lens Profile Creator, 97
- Lens Profile Downloader, 97
- lens profiles, 96–98
- Lexar, 258
- lighting conditions
 - backlit subjects, 149–152
 - and blending modes, 217
 - flat lighting, 134–136
 - high-contrast lighting, 136–139
- Lightroom
 - Adjustment Brush tool, 119, 125–130
 - adjustment panels, 71–72, 83
 - automation features, 254
 - backup function, 281
 - Basic panel, 52, 72–80
 - Camera Calibration panel, 106–109
 - Camera Raw as backbone for, 46
 - Catalog Settings dialog box, 285
 - code name for, 43
 - Collections, 272
 - Color Picker, 124–125
 - Color Sampler, 87
 - color space settings, 21, 55–58
 - color to black-and-white conversions in, 172, 235
 - compatibility of Camera Raw and, 54
 - context menus, 71
 - correcting distortion in, 34
 - cropping in, 111–113
 - default renderings, 66–69
 - and demosaicing, 8
 - Detail panel, 87–95
 - Develop module, 52, 53
 - and DNG Converter, 58–63
 - DNG Flat Field plug-in, 168–170
 - editing images in, 259
 - Effects panel, 103–106
 - Export dialog box, 204
 - External Editing tab, 205
 - genesis of, 41–44
 - getting images into Photoshop from, 204–205
 - Graduated Filter, 120–123
 - histograms, 70–71
 - how to use, 51
 - HSL/Color/B&W panel, 83–86
 - importing images to, 267–269, 276–278
 - integration between Photoshop and, 205
 - Lens Corrections panel, 95–103
 - local adjustments in, 119–131
 - main Library module, 50
 - maximizing image detail in, 186–200
 - noise-reduction algorithms, 20
 - organizing images in, 271, 279
 - and Pareto principle, 53
 - performance tuning, 284–285
 - previewing images in, 89–90
 - processing controls, 14
 - rating images in, 259–260
 - recommended book on, 53
 - release date for first version of, 44
 - renaming images in, 261
 - selecting tools in, 109–110
 - sharpening controls, 88–91
 - sharpening images in, 186–200

- single window interface, 50
- sorting images in, 261
- Split Toning panel, 86–87
- and tethered shooting, 275
- Tone Curve panel, 52, 80–83
- toolbar, 110
- vs. Bridge, 46, 50–51
- vs. Camera Raw, 53, 69–70
- vs. Photoshop, 49, 50, 53
- where images are stored by, 51
- workflow, 253, 257
- linear capture, 7–11
- Linear Light blending mode, 217
- Load Selection dialog box, 233
- local adjustments, 119–131
 - with Adjustment Brush, 125–131
 - controls for, 119–120
 - with Graduated Filter, 120–124
- Local Corrections Presets, 124
- local tone mapping, 65
- longitudinal chromatic aberration, 34
- lossy compression, 28, 62, 63
- low-frequency edge sharpening, 192–196
- luminance, display, 58
- luminance-based curves, 82
- luminance-based masks, 233–234
- luminance-based noise, 20
- Luminance Contrast control, 93
- Luminance control, 92
- Luminance Detail control, 92–93
- Luminance Noise Reduction slider, 90
- luminance-sensitive elements, 8
- Luminosity blending mode, 217
- Luminous Landscape, The, 14

M

- Macintosh
 - DNG Software Development Kit, 6
 - and Lightroom performance, 284
 - storage devices, 265
 - users folders, 281
- magnetic-tape storage, 264–265
- major gigage, 158, 159
- Manual subpanel, 95, 102–103
- marginal rays, 33
- Marquee tool, 224, 225
- Mask Color Picker dialog box, 131
- Masking control, 89
- masks
 - composite, 231–232
 - creating, 125, 126
 - edge, 89
 - erasing part of, 128–131
 - layer (*See* layer masks)
 - luminance-based, 233–234
- memory, 281. *See also* RAM
- Merge to HDR Pro feature, 244–247
- metadata
 - archiving, 264
 - and camera calibration, 106
 - and digital image preservation, 60, 61
 - displaying in Bridge, 46
 - editing, 262
 - EXIF (*See* EXIF metadata)
 - and focus distance, 248
 - and image cropping, 111
 - and image labels/ratings, 259
 - information contained in, 3
 - IPTC (*See* IPTC metadata)
 - key to being efficient with, 261
 - and Lightroom backups, 281
 - templates, 254, 261, 266, 275
 - types of, 24–25
 - and white balance, 153
 - and workflow principles, 254
 - XMP (*See* XMP metadata)
- Metadata panel, 45, 262
- Metadata tab, Catalog Settings, 284
- metallogging, 262
- micro-drives, 255
- Micro Four Thirds cameras, 96
- microns, 4
- Midpoint control, 104
- midtone contrast, 210–212
- mixed-frequency edge sharpening, 196–200
- moiré patterns, 7, 120
- monochromatic images, 86, 171. *See also* black-and-white images

monochromatic lens aberrations, 33–34
MOSFETs, 5
multipass sharpening, 87
Multiply blending mode, 216

N

Nack, John, 40
naming images, 261
NAS drives, 265, 281
National Digital Information Infrastructure and
Preservation Project, 60
ND filters, 14
NDIIPP, 60
NEC Display Solutions, 57
negatives. *See* digital negatives
Network Attached Storage, 265
neutral density filters, 14
neutral targets, 73
nodal point, 240
noise. *See also* sensor noise
causes of, 91
defined, 17
reducing, 90, 91–95
types of, 17–18
Noise control, 120
noise-reduction algorithms, 20, 94–95
Noise Reduction controls, 90, 91–95
Normal blending mode, 216

O

OpenEXR format, 245
optimizing catalogs, 284–285
organizing images, 271, 279
orthochromatic film, 171
OS X users folders, 281
output sharpening, 87
overcast skies, 140
overexposed images, 12, 15, 16
Overlay blending mode, 211, 212, 213

P

Paint Brush tool, 225–227
Paint Overlay option, 105
panchromatic response, 171, 172–175

Panorama Blend Method option, 249
panoramic photography, 240, 280
Parametric Curve Editor, 80–81
parametric curves, 109
parametric editing, 48, 52
paraxial rays, 33
Pareto principle, 53
patents, 61
paths, 227–229
pattern noise, 17
Pen tool, 226, 227, 228
performance tuning, 281–285
petabytes, 265
Phase One
camera, 7, 35
Capture One, 39, 275–276
Photo Downloader, 257
photography
black-and-white, 84, 171, 235
digital, 60, 61, 171
and edge-based sharpening, 218
film, 84, 171
impact of Photoshop on, 220
and keywords, 263
licensing stock, 263
panoramic, 240
workflows, 253–278 (*See also* workflow)
PhotoKit Sharpener, 87
Photomerge feature, 240–243, 249
photon noise, 18
Photoshop, 203–251
16-bit misnomer in, 57
applying midtone contrast in, 210–212
automation features, 254
Background Eraser tool, 129
blending modes in, 214, 216–217
and blue edge fix, 218–220
Bridge as front end for, 45
Clone Stamp tool, 114, 222–223
Color-based corrections in, 214–215
Color Range Selection tool, 207
color space settings, 55–58
color to black-and-white conversions in, 172, 235–239
compositing multiple images in, 230–234

- copy-and-paste patching in, 224–225
- cropping tool, 111
- and destructive edits, 26
- drag-and-drop behaviors in, 226
- duplicating images in, 235
- editing images in, 48, 206–220
- focus stacking in, 248–251
- getting images into, 204–205
- Healing Brush tool, 114, 222–223
- History feature, 41–42
- image-processing component, 45
- Merge to HDR Pro feature, 244–247
- merging multiple images in, 240–243
- opening image from Lightroom in, 54
- performance tuning, 281–284
- Photomerge feature, 240–243
- popularity of, 203
- processing raw files in, 40
- progressive sharpening in, 208–210
- recommended book on, 48
- retouching images in, 220–229
- Saturation-based adjustments in, 214–215
- and Sculpting layers, 213
- sharpening plug-in, 87
- Smart Sharpen filter, 89
- Spot Healing Brush, 114
- using paths to make selections in, 227–229
- vs. Lightroom, 49, 50, 53
- workflow, 256–257

photosites, 4, 5

pincushion distortion, 34

Pin Light blending mode, 217

PixelGenius, 87

pixel-level editing, 48

pixels per inch, 35

PixelToy, 41–42

point-and-shoot cameras, 7, 96

Point Curve Editor, 80, 81–82

Point Curve menu, 82

point curves, 82

point-spread function, 89

Post-Crop Vignetting feature, 103–105, 111

posterization, 26

postproduction, 264–266

PPI, 35

preproduction, 259–263

Presence controls, 79–80

preservation, digital image, 60–61

presets

- local correction, 124
- metadata, 267, 268, 276
- sharpening, 91

previewing images, 89–90

printer resolution, 20, 87

printing, darkroom, 175

processor speed, 281–282

Process Versions

- and Adjustment Brush, 125
- and Clarity control, 79
- and Contrast slider, 93
- defined, 74
- and Detail slider, 93
- and exposure setting, 13
- and Graduated Filter, 120, 121
- and HDR images, 244
- and image adjustments, 119
- and point curves, 82
- and tone controls, 75, 76–77
- updating, 74

production phase, 263

“profile missing” warnings, 57

Profile subpanel, 95, 96–98

progressive sharpening, 136, 208–210

ProPhoto RGB color space, 21, 22, 23, 24, 55–57

PSD files, 197, 245, 254

PSF, 89

Purple Hue slider, 100

Q–R

Quick Develop panel, 259

Radiance format, 245

Radius control, 89, 187–188, 192, 193, 209

RAID-01 drive, 276, 279, 281

RAID-02 drive, 281

RAID arrays, 265, 281

RAM, 281, 282, 284

random noise, 17

Rapid Selenium Toner, 175

rating images, 259–260

raw capture, 27–29

- raw file formats, 58, 60–61
- raw image processing
 - advanced, 133–134
 - applications, 39 (*See also* specific applications)
 - approaches to, 39
 - with Camera Raw, 65, 133–134 (*See also* Camera Raw)
 - color management for, 55–58
 - fundamentals, 65
 - with Lightroom, 65, 133–134 (*See also* Lightroom)
 - workflow, 49, 254–266
- raw mode, shooting in, 4
- read noise, 18
- read-only media, 266
- Real World Image Sharpening with Adobe Photoshop, Camera Raw, and Lightroom*, 186
- Recovery control, 77
- Reference Output Medium Metric RGB, 55
- Reichmann, Michael, 14
- Remove Chromatic Aberration feature, 98
- Resnick, Seth, 87, 158, 261
- resolution
 - capture, 8, 35, 36
 - and cropped images, 112
 - and downsampling, 63
 - and grain size, 106
 - and lens quality, 33
 - and output sharpening, 87
 - and panoramic images, 243
 - printer, 20, 87
 - sensor, 35–36
 - for zoomed images, 20
- result colors, 216
- retouching images
 - with Camera Raw, 114
 - with Lightroom, 114, 220
 - with Photoshop, 220–229
- RGB color spaces, 22, 23–24, 55–56, 69
- RGB-to-grayscale conversion, 172
- Riecks, David, 263
- Rodney, Andrew, 57, 87
- ROMM RGB, 55
- rough editing, 259
- Roughness control, 106
- Roundness control, 104
- Rubber Band option, 228

S

- SanDisk, 258
- SAS drives, 283
- Saturation-based adjustments, 214–215
- Saturation blending mode, 217
- Saturation sliders, 80, 83, 85, 109, 120
- Save New Camera Raw Defaults option, 68
- Scale command, 102
- scratch disks, 283–284
- Screen blending mode, 212
- Sculpting layers, 213
- SD media, 255, 267
- Secure Digital media, 255
- selection editing, 269–271
- selections, using paths to make, 227–229
- self-documentation, 60–61
- sensor noise, 17–20
 - causes of, 18
 - and ISO speed, 19
 - reducing, 20
- sensor resolution, 35–36
- sensor spots, 114, 117. *See also* sensor noise
- Sepia Toner, 175
- sepia toning, 86, 175, 178
- Set Default Develop Settings dialog box, 68
- Setup menu, 97, 98
- Shadowland, 43
- Shadows control, 77, 119, 139
- Shadows Tint control, 108
- Sharpen-Faces presets, 91
- sharpening
 - capture, 87, 88
 - controls, 88–91
 - creative, 87, 89
 - deconvolution, 89
 - edge, 186–200, 218–220
 - multipass, 87
 - output, 87
 - presets, 91
 - progressive, 136, 208–210
 - recommended book on, 186
- Sharpen-Scenic presets, 91
- Sharpness control, 120

- shooting
 - black-and-white *vs.* color, 85
 - conditions (*See* shooting conditions)
 - in field, 266–275
 - in raw mode, 4
 - in studio, 275–278
 - tethered, 275
 - workflow, 266–278
 - shooting conditions
 - backlit subjects, 149–152
 - blown skies, 140–143
 - flat lighting, 134–136
 - high-contrast lighting, 136–140
 - inclement weather, 143–145
 - sunsets, 149, 160
 - shot noise, 18
 - Show Selected Mask Overlay option, 128
 - shutter speed, 30–31
 - signal-to-noise ratio, 15. *See also* SNR
 - Size control
 - Adjustment Brush, 126
 - grain effect, 106
 - skies
 - compositing, 232–233
 - shooting in overcast, 140–143
 - Smart Objects, 196, 197, 198, 241–242
 - Smart Sharpen filter, 89
 - Snapshot feature, 72, 74, 197–199
 - SNR, 15, 17, 18
 - Soft Light blending mode, 213
 - solid-state drives, 283
 - Solo Mode, 71
 - sorting images, 261
 - SpectraView software, 57
 - spherical aberration, 33
 - Split Toning panel, 86–87, 162, 164, 176, 183–184
 - Spot Healing Brush, 109, 114
 - spot meters, 12
 - Spot Removal tool
 - Camera Raw, 118
 - Lightroom, 114–118
 - sRGB color space, 21, 22, 24
 - SSDs, 283
 - Stack Images option, 249
 - stacking, focus, 248–251
 - stacks, image, 204, 267, 269–271, 273
 - stairstepping, 7
 - standards
 - digital photography, 61
 - image preservation, 61
 - metadata, 24, 25
 - raw file format, 58
 - star ratings, 259–260
 - stitching, panoramic, 240–243, 280
 - stock photography, 263
 - Stokes, Michael, 22
 - storage media, 255, 258, 264–265
 - Straighten tool, 112, 114
 - studio workflow, 275–278
 - Style menu, 105
 - sunrises, 160, 206, 215
 - sunsets, 76, 149, 158, 160, 163
 - Survey mode, 270, 271
 - sustainability factors, digital content, 60–61
 - SWI, 50
 - Synchronize Settings dialog box, 117
 - system performance, 281–285
- ## T
- tagging images, 262
 - tape storage, 264–265
 - Targeted Adjustment tool, 80, 81–82, 85, 109
 - targets, white balance, 73
 - Temp control, 119
 - terabyte drives, 265
 - tethered shooting, 275
 - thermal noise, 18
 - thumbnails, 259
 - TIFF/EP, 58
 - TIFF files
 - and Camera Raw, 47
 - and digital image preservation, 61
 - and HDR images, 244, 245
 - and lens profiles, 97
 - and metadata, 24
 - and Smart Objects, 197
 - and Tint control, 119
 - TIFF Options dialog box, 245

- Tint control, 119
- Tone controls, 76–79
- Tone Curve panel, 80–83
- tone mapping, 134–152
 - in Basic panel, 83
 - examples
 - backlit subjects, 149–152
 - blown skies, 140–143
 - flat lighting, 134–136
 - high-contrast lighting, 136–140
 - inclement weather, 143–145
 - underexposed image, 146–148
 - global vs. local, 65
 - HDR-type, 246
 - from linear to gamma-encoded space, 10–11
 - optimized black-and-white, 181–183
 - in Tone Curve panel, 83
 - for under/overexposed images, 16
 - vs. color correction, 153
- toning
 - cold, 180–181
 - color, 183–185
 - sepia, 86, 175, 178
 - split, 178–179 (*See also* Split Toning panel)
 - warm, 175–177
- Treatment section, Basic panel, 73
- tripods, 30, 31, 240

U

- underexposed images, 16, 146–148, 150
- Unsharp Mask filter, 208, 209, 212
- Update Process Version dialog box, 74–75
- users folders, 281

V

- verification, image, 257–258
- Vibrance control, 79, 167
- vignetting, 96, 97, 103–105, 111
- vintage look, 176
- virtual copies, 271–272
- vision, human, 9–10
- Vivid Light blending mode, 213

W

- warm-tone paper, 175
- warm toning, 175–177
- Warp command, 241, 242
- WB menu, 73
- weather, shooting in inclement, 143–145
- white balance
 - global, 153–155
 - local, 156–157
- White Balance tool, 73–76
- Whites control, 77
- wide-angle lenses, 32, 98, 232, 240
- wide-gamut displays, 57
- Windows
 - and compatibility testing, 280
 - DNG Software Development Kit, 6
 - and Lightroom performance, 284
 - storage devices, 265
- workflow, 253–278
 - examples
 - field workflow, 266–275
 - studio workflow, 275–278
 - principles, 254–255
 - stages, 255–266
- Workflow Options dialog box, 21, 56, 172, 204

X–Z

- XMP files, 59
- XMP metadata, 24–25, 259, 267, 272, 281, 284
- XMP settings, 63
- X-Rite
 - ColorChecker, 107
 - ColorChecker Passport, 73, 107, 153
 - Photo, 73
- zoom lenses, 32, 33, 34, 97, 98, 192