

# 3

ISO 250  
1/2000 sec.  
f/2.8  
70mm lens

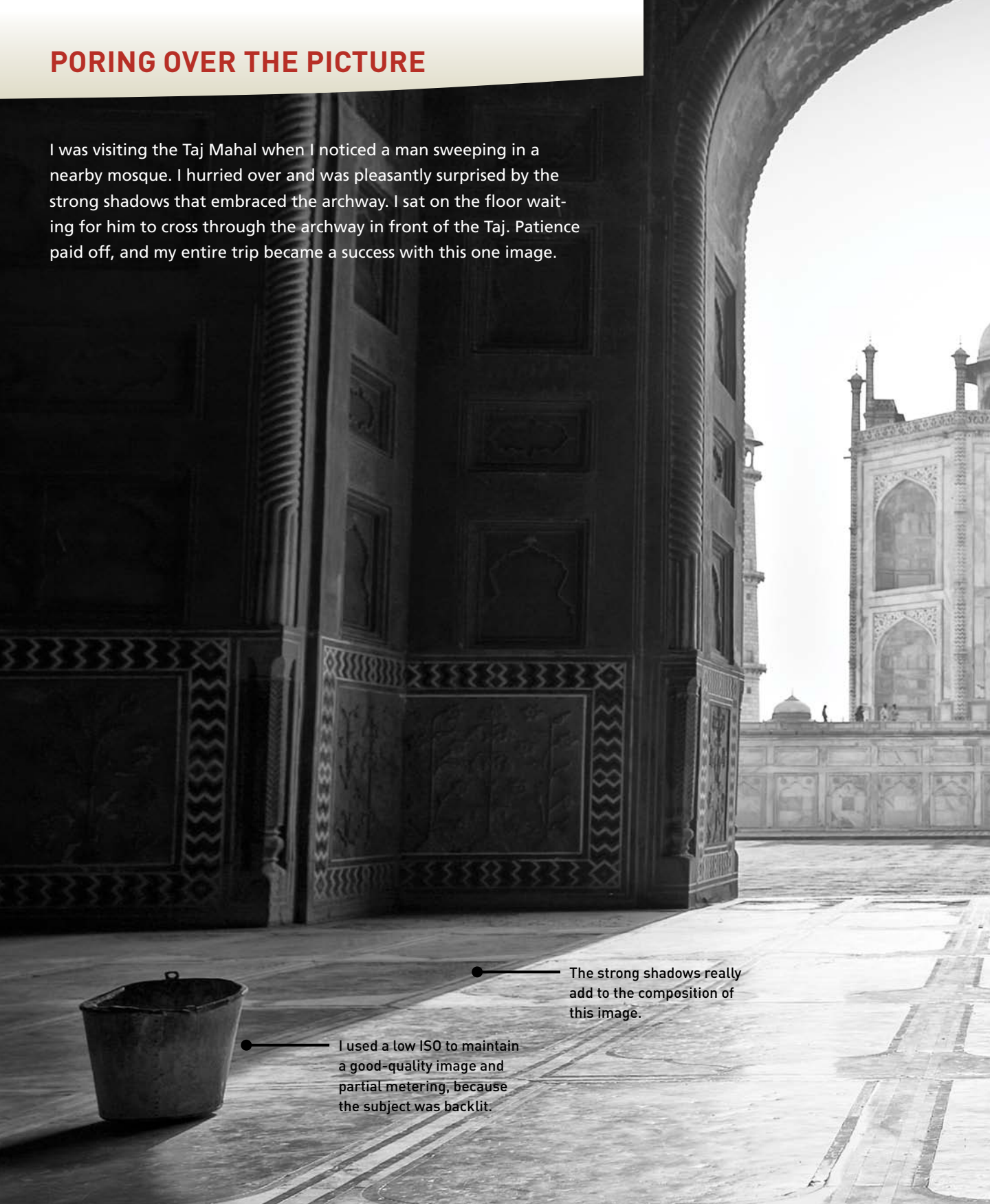
# Exposure

## GETTING THE SHOT

Understanding exposure and knowing how to influence your camera's interpretation of a scene are critical to creating your vision. My goal in this chapter is to give you enough confidence to take your camera off autopilot and start shaping your own exposures. At times this chapter will seem a bit technical, but don't feel bad—I also find the technical aspects challenging at times. I'm going to share with you some of my best tricks for understanding aperture, speed, and ISO and how they work together to create exposure. Then, once the heavy lifting is done, we will touch on some of my favorite subjects, like landscape, portrait, and studio photography. Keep in mind that whether you're shooting in a color or black-and-white world, many of the basics to capturing a great image remain the same.

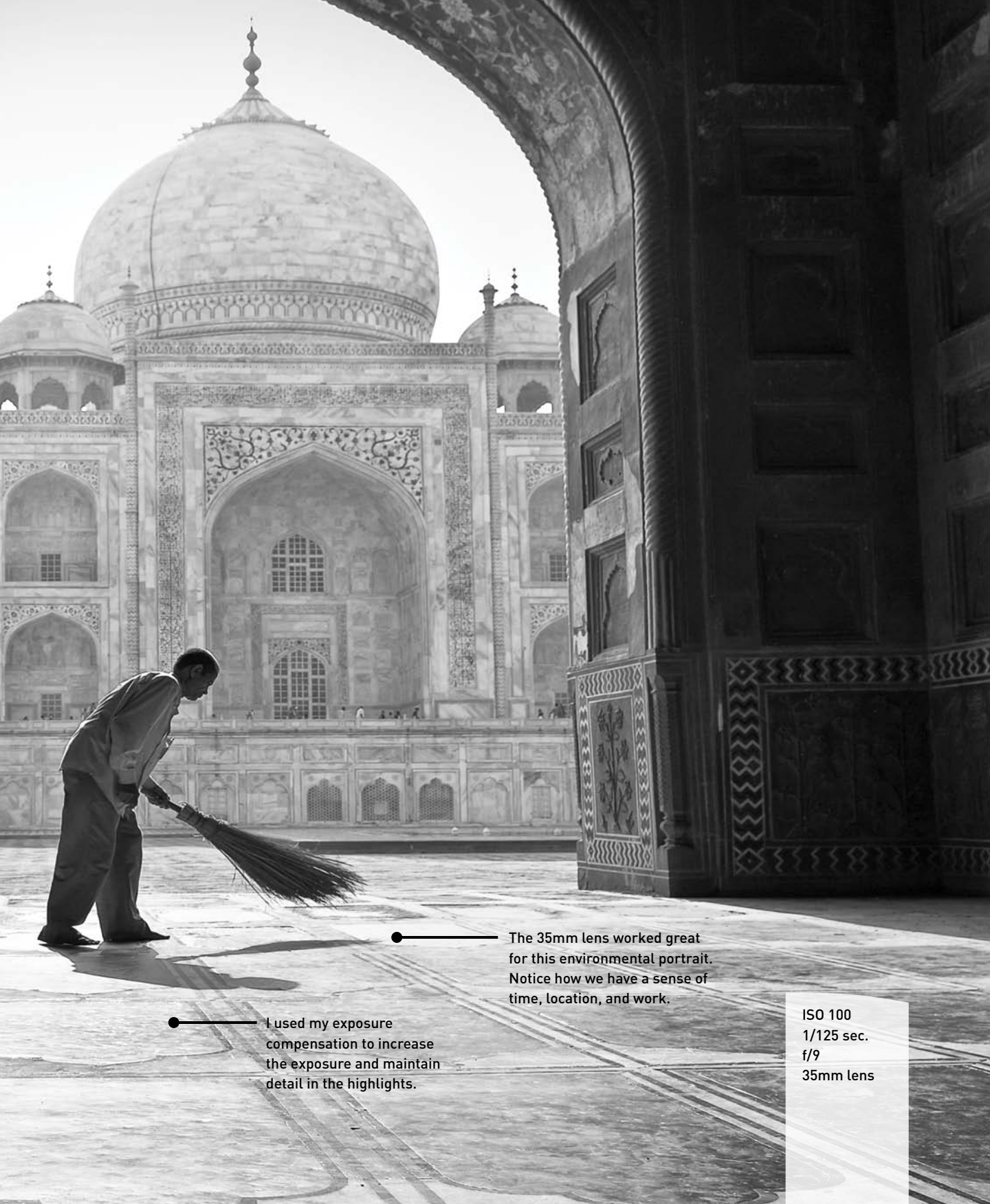
## PORING OVER THE PICTURE

I was visiting the Taj Mahal when I noticed a man sweeping in a nearby mosque. I hurried over and was pleasantly surprised by the strong shadows that embraced the archway. I sat on the floor waiting for him to cross through the archway in front of the Taj. Patience paid off, and my entire trip became a success with this one image.



I used a low ISO to maintain a good-quality image and partial metering, because the subject was backlit.

The strong shadows really add to the composition of this image.



● I used my exposure compensation to increase the exposure and maintain detail in the highlights.

● The 35mm lens worked great for this environmental portrait. Notice how we have a sense of time, location, and work.

ISO 100  
1/125 sec.  
f/9  
35mm lens

## PORING OVER THE PICTURE

I took the trip of a lifetime to Africa with my best friend, aka my father. We were out in the bush for three weeks straight, and while visiting the Amboseli National Park in Kenya, I was greeted by this single line of elephants working their way to the water. It was a magical moment and I was glad I could share it with my dad.

Elephants move quicker than you might think, so using a fast shutter speed of 1/640 allowed me to freeze motion and avoid camera shake.

The elephants were walking toward the sun, so I decided to use my graduated neutral density filter to balance the exposure and darken the sky.





● — This shot was taken very early in the morning and with very little time. Having my camera's ISO and aperture set up in advance allowed me to focus on framing the shot.

● — Tilting the filter accentuated the tunnel of light the elephants appeared to be walking toward.

ISO 160  
1/640 sec.  
f/5.6  
24mm lens

## EXPOSURE

Getting my intended exposure is as rewarding for me as catching fish with my own hand-tied flies. It's about bringing science and art together in an effort to create your desired effect. Don't expect to learn everything about exposure overnight, but instead experiment with each variable separately in an effort to better understand how to control light.

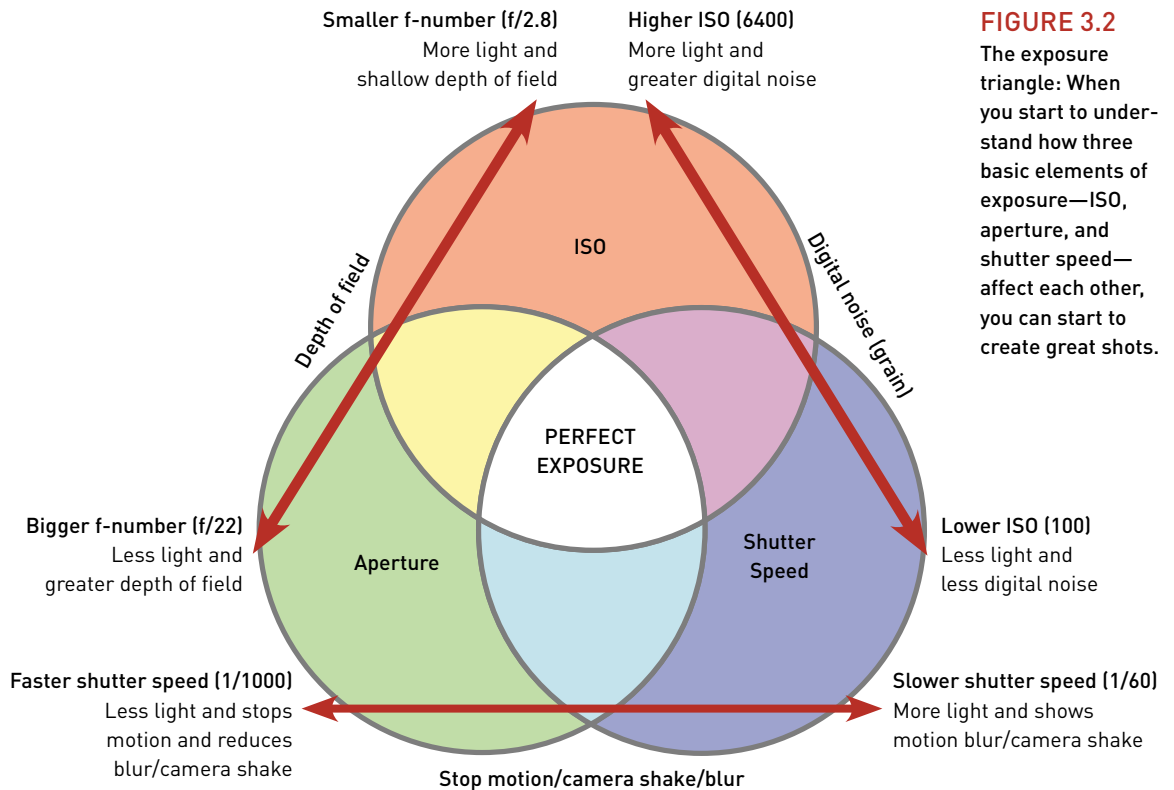
Many excellent books have been written on exposure. For an in-depth discussion, I highly recommend *Exposure: From Snapshots to Great Shots*, by Jeff Revell (Peachpit Press, 2010). For our purposes, I will cover some of the basics here to help you make educated decisions in determining how best to photograph a subject (**Figure 3.1**).

### FIGURE 3.1

This image was taken at dusk and the light was changing very quickly. I needed to adjust my ISO several times to get the proper exposure.



Exposure works the same way whether you're shooting with film or a digital camera. Light does a simple three-step dance; it first reflects off an object, then it bounces back toward your camera and heads through your lens to finally expose your sensor or film for a predetermined period of time until the shutter closes. The period of time your sensor is exposed to light is determined by aperture (size of the shutter opening), shutter speed, (time the shutter is open), and ISO (sensor sensitivity). These three factors are often referred to as the exposure triangle (**Figure 3.2**).



**FIGURE 3.2**  
The exposure triangle: When you start to understand how three basic elements of exposure—ISO, aperture, and shutter speed—affect each other, you can start to create great shots.

## DIGITAL NOISE

Digital noise is similar to the grain that we are used to seeing in old black and whites. Digital noise is a result of using a higher ISO in lower light conditions. The sensor heats up, which creates artifacts in the image that appear pixelated or grainy. If you do end up with more noise than you intended, try converting to black and white, because monochrome is slightly more forgiving to the eye.

## ISO

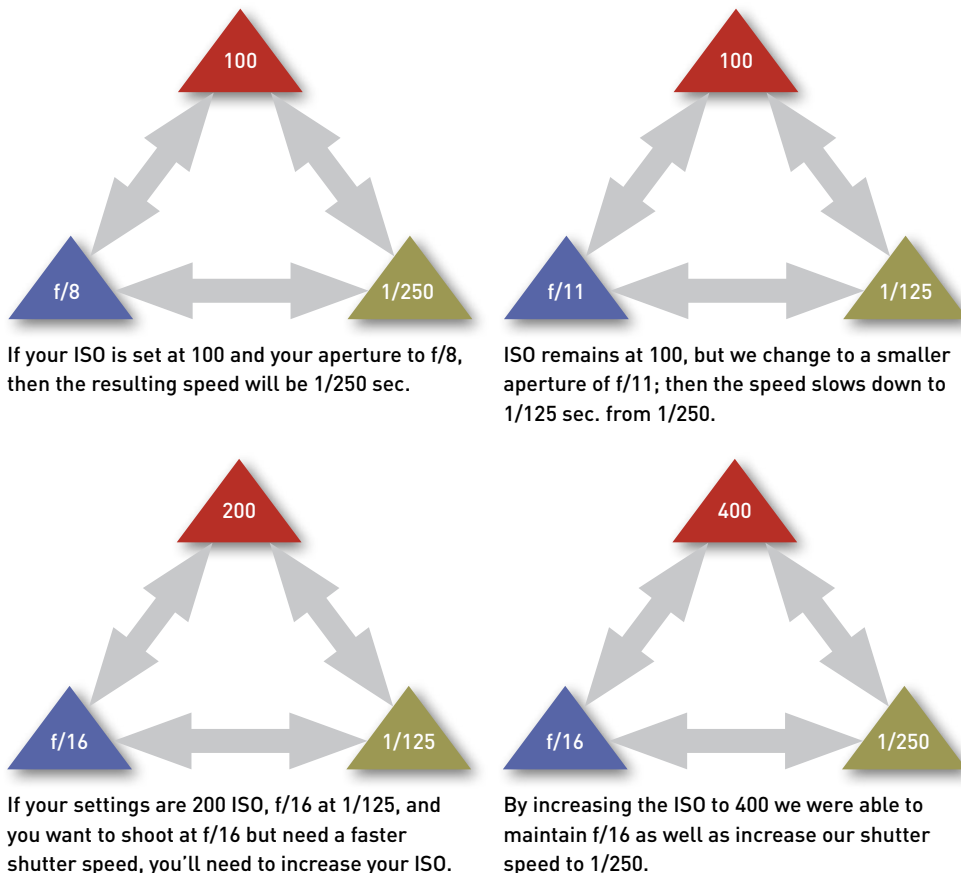
The first setting I adjust on my camera before I begin to shoot is my ISO, even if I'm guessing. ISO determines your camera sensor's sensitivity to light. A typical ISO range on modern dSLR cameras is from 100 to 3200. As we learned in Chapter 1, the lower the ISO, the better the quality of the image because less digital noise is introduced.



I try to use the lowest possible ISO after assessing the available light. This is where experience and time will play a big role in improving your photography: Being able to judge the current lighting situation and picking an ISO that still allows you the proper shutter speed and aperture are critical.

Let's review how changing either ISO, aperture, or shutter speed affects exposure (Figure 3.3).

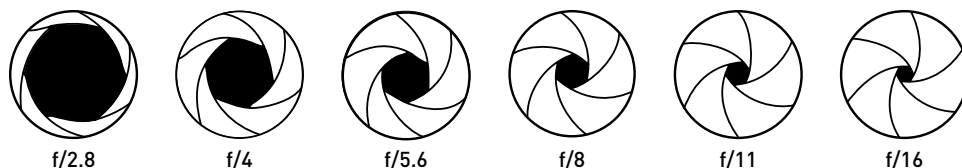
FIGURE 3.3



## APERTURE

The aperture is the size of the opening in your lens. A fast lens will have a very large aperture, or wide opening. This allows you to shoot in very low light conditions because more light is allowed in to expose the sensor.

Trying to understand aperture can be confusing, but I'm going to give you a few visual cues to help you along. The reason it can be hard to grasp is that  $f/2.8$  is considered a large aperture while  $f/16$  is a small aperture. A smaller number indicates a larger diameter in aperture. Let's look at the graph below (Figure 3.4). Think of the lens as a pie dish and f-stops as pieces of pie. If I had to divide my pie by 2.8, I would have about three large pieces of pie. If I had to divide that same pie by 16, I would have much smaller pieces. When you get confused, simply replace the letter f with a 1 and ask yourself which fraction is larger: 1 divided by 2.8 or 1 divided by 16?

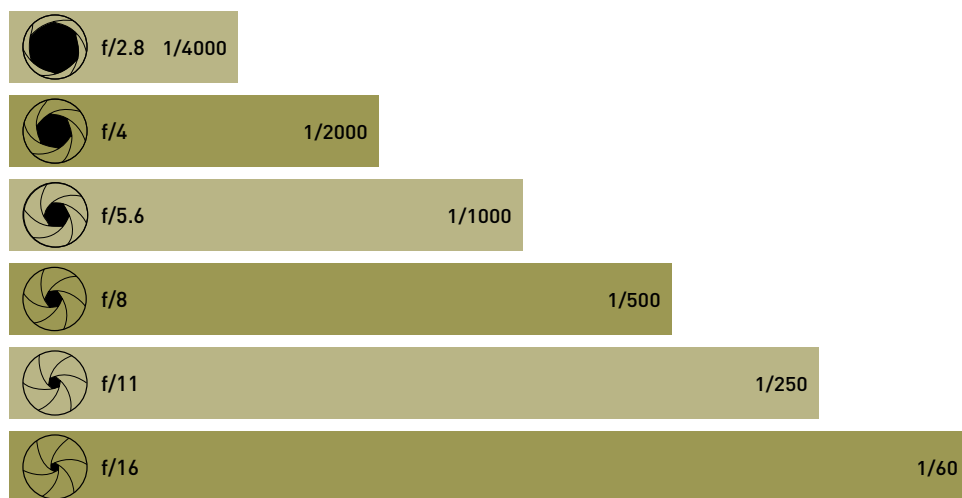


**FIGURE 3.4** This is a typical aperture range. Note that the smaller the number, the larger the aperture.

As mentioned in Chapter 1, I shoot mainly in Aperture Priority mode. The reason is that aperture is the major influence on depth of field and shutter speed. Because a large aperture ( $f/2.8$ , for instance) allows more light to hit the sensor, it requires less time to expose the image. That's why we get a faster shutter speed with a larger aperture.

## SHUTTER SPEED

Shutter speed is the duration of time your shutter is open, allowing light to expose your sensor. The duration of time is determined by a combination of ISO and aperture. Notice that as we increase the size of our aperture, it decreases our shutter speeds (Figure 3.5).



**FIGURE 3.5** Reciprocal exposures: When we increase our aperture size, it decreases our shutter speed.

I like to mention the famous water-bucket analogy to my students—imagine you’re in charge of filling a bucket full of water. You can only control the volume of water that comes out of the faucet and the duration for which the faucet is left open. Your goal is to fill the bucket without its overflowing (overexposing). Now, you can fill the bucket very slowly over a long period of time or you can fill it very quickly in a short period of time. Think of f-stop as being the measurement of the volume of water coming out of the faucet and shutter speed as being the duration of time before you turn the faucet off.

## EXPOSING FOR POSTPROCESSING

Two exposures are rarely identical, but generally I try to expose my images a tad on the light side in order to protect the shadows. When things are pushed too far to the left (dark) on the histogram you lose details in the shadows and your creative control in postprocessing becomes very limited. It’s much easier to add black to an image in postprocessing than to lighten an image. If you don’t have any details in the shadows you may lose your ability to define shape and form, as discussed in Chapter 2.

## HISTOGRAM DEFIANCE

Here’s where we need to pause and think about our objective, our creative goal. Traditionally we are taught to expose every image as perfectly as possible by making sure we have detail in our blacks and whites. If your goal is to have a perfect histogram with perfect exposure, then by all means adjust accordingly. However, some of us tend to like a darker image, some a lighter image, and might find ourselves creating exposures that push the histogram to the left (dark) or right (light). Some of your most compelling images will reside at extreme ends of a histogram.

As mentioned in Chapter 2, it's all about creating images with intent and fulfilling your vision. There are no histogram police or roadblocks ahead, so feel free to cross the centerline and hammer down. Just be aware that you could lose control of the image. If you underexpose it too much you'll sacrifice detail in your shadows . If you overexpose it too much you run the risk of losing detail in your highlights (light areas) (Figure 3.6).



**FIGURE 3.6** Blue represents detail lost in the shadows and red represents detail lost in the highlights. I was willing to sacrifice these areas in creating this image.

If exposure is still new to you, then play it safe and expose your image accordingly. If you're a little more seasoned and understand what it means to lose detail in the highlights, then feel free to push yourself a bit in camera and worry less about perfection and a little more about style. When you push it a little you'll be able to get some more high-contrast and stylized images.

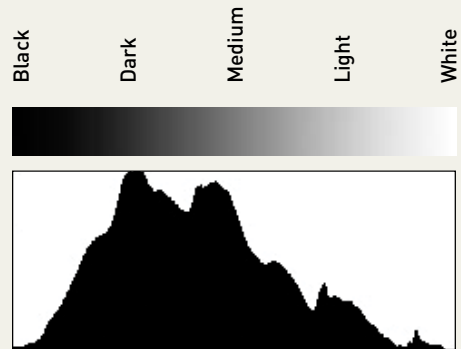
## HOW TO READ A HISTOGRAM

As mentioned previously, histograms are two-dimensional representations of your images in graph form. The histogram you need to be concerned with is the luminance histogram. Luminance is referred to as brightness and is most valuable when evaluating your exposures. In **Figure 3.7**, you see what looks like a mountain range. The graph represents the entire tonal range that your camera can capture, from the whitest whites to the blackest blacks. The left side represents black, and all the way to the right side represents white. The peaks represent the number of pixels that contain those luminance levels (a tall peak in the middle means your image contains a large amount of medium bright pixels).

When just looking at an image, it is hard to determine where all of the ranges of light and dark areas fall. However, if I look at the histogram I can see that the largest peak of the graph is in the middle and trails off as it reaches the edges. In most cases, you want images to have this type of histogram, indicating that you captured the entire range of tones, from dark to light, in your image.

Knowing that is fine, but here is where the information really gets useful. A histogram that has a spike or peak riding up the far left or right side of the graph means that you are clipping detail from your image. In essence, you are trying to record values that are either too dark or too light for your sensor to accurately record. This is usually an indication of over- or underexposing an image. It also means that you need to correct your exposure so that the important details will not record as solid black or white pixels (which is what happens when clipping occurs).

Occasionally, however, some clipping is acceptable. If you are photographing a scene where the sun will be in the frame, you can expect to get some clipping because the sun is just too bright to hold any detail. Likewise, if you are shooting something that has true blacks in it—think coal in a mine at midnight—there are going to be some true blacks with no detail in your shot. The main goal is to ensure that you aren't clipping any important visual information, and that is achieved by keeping an eye on your histogram.



**FIGURE 3.7**

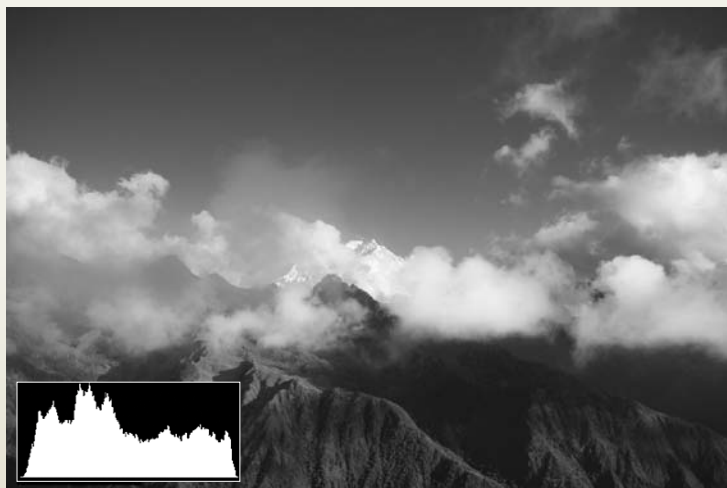
This is a typical histogram, where the dark to light tones run from left to right. (The black-to-white gradient above the graph would not appear on your camera histogram display.)

Take a look at **Figure 3.8**. The histogram displayed in the top image shows a heavy skew toward the left, with almost no part of the mountain touching the right side. This is a good example of what the histogram for an underexposed image looks like. Now look at the histogram in the correctly exposed image below it, and compare the two histograms. Notice that even though the graph in the bottom histogram has distinct peaks, there is a fairly even distribution across the entire histogram.



**FIGURE 3.8**

The image on the top is about two stops underexposed. Notice how its histogram is skewed to the left. The histogram in the bottom image reflects a correctly exposed image.

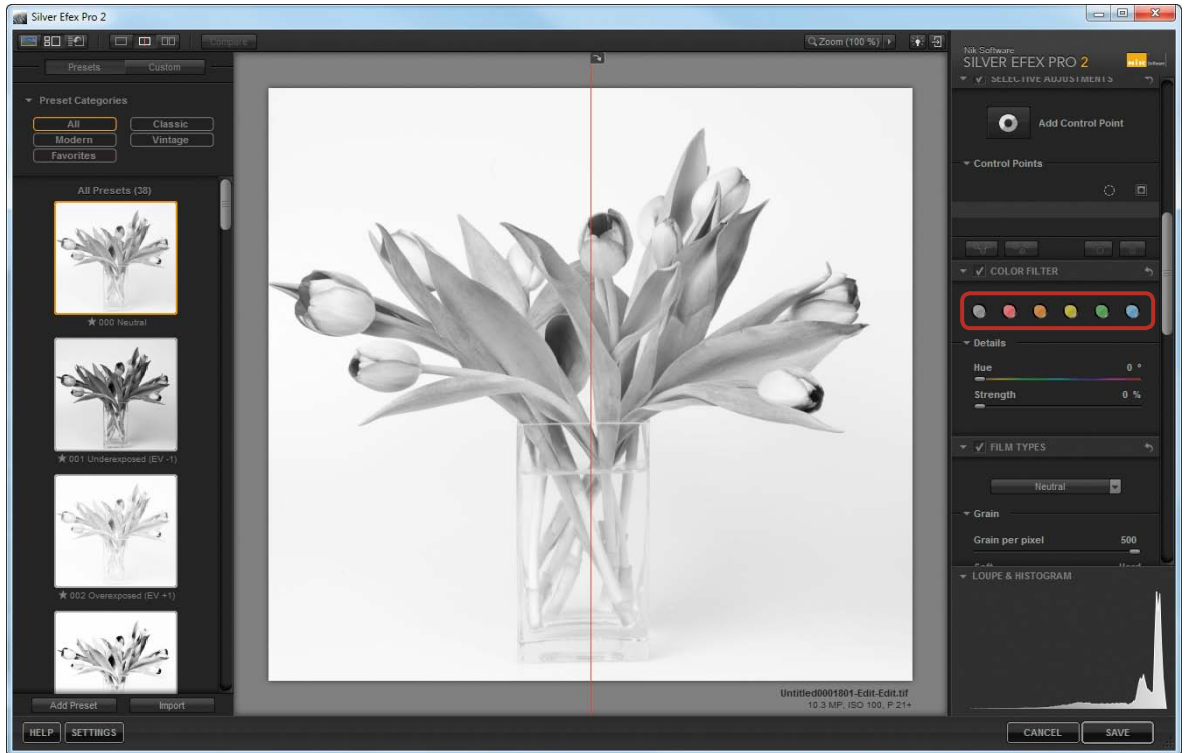


## USING FILTERS

Black-and-white photographers used color filters to control contrast well before the digital revolution. However, with today's digital cameras it is no longer necessary to use color filters at the time of capture. In Lightroom, users have the ability to simulate color filters by taking advantage of available presets (Figure 3.9). I find some of Lightroom's color filter presets to be a bit exaggerated. I get my best results by using Silver Efex Pro, which makes switching between color filters as simple as clicking a button (Figure 3.10).



**FIGURE 3.9**  
You can use Lightroom presets to create color filter effects.



**FIGURE 3.10**

Silver Efex Pro 2 gives me the best color filter control over my image. You can increase or decrease the effect of the filter with a simple slider.

So why bother with a filter at all? Although I rarely create a black-and-white image with a color filter on camera, occasionally I use a color filter to help guide me in creating an image. It is helpful when I have plenty of time to create a landscape image and I'm assessing the shot for contrast. If I place a red filter on the lens it gives me an idea of what the sky will look like when I decide to apply an effect in post-processing. I then remove the color filter and take the shot. This may seem like an unnecessary step, but at times it's an indispensable tool to visualize my final image. Some cameras allow you to apply filter effects in camera, so check your manual to see if this is an option for your model.