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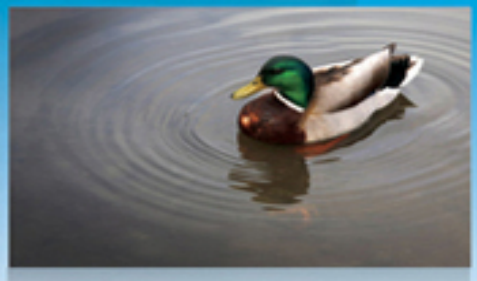
Brian McLernon

Lighting

Digital Field Guide



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About the Author

Brian McLernon is a commercial freelance photographer, educator, and writer based in Portland, Oregon. Originally from New Jersey and educated in Arizona, Philadelphia, and New York City, he shoots primarily for editorial, commercial, corporate, and lifestyle clients. He is the author of three previous Digital Field Guides, the Canon EOS 5D Mark II Digital Field Guide, the Canon Speedlite System Digital Field Guide, and the Canon PowerShot G11 Digital Field Guide.

To share his passion for photography, Brian conducts workshops in photography and lighting for Portland Community College's adult education series. He is often honored to be a guest speaker for several artistic associations, communication groups, and business organizations and enjoys speaking to student groups as well. When he's not photographing in the studio or on location, Brian spends time with his wife and daughter, family, and friends, camping, travelling, white-water rafting, cross-country and downhill skiing, and, of course, photographing nature and all kinds of motorsports.

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For Dean Collins, who started me out on the light path.

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Introduction

Light. You can't make a photograph without it in some form or another. Although light has the ability to give your photographs power and definition, do you consistently consider the quality of light before pressing the shutter button? Sure, you're attracted to your subjects for who they are or to sunset and sunrise photos for the colors of the sky, but what about the quality of the light that defines these situations? Is there some other object or subject you could put into that light that would yield another great photo? That is the road you will be traveling with this book.

Welcome to the new Lighting Digital Field Guide. This book will put you on a new path of understanding and appreciation of the power of light in photography. Light comes in thousands of flavors and each one can be used to give your photographs more power when used correctly in the proper situations. By developing an awareness and sensitivity to light, you can begin to come up with picture-taking scenarios that make the best use of the light at hand or to take advantage of that light by quickly making camera exposure adjustments. This book is for those beginning photographers who are comfortable with their cameras but looking to take their photography further by searching out beautiful light.

Seeing Light

Many years ago during an eight-hour photo workshop in New York City, the other attendees and I were challenged by the presenter to "see the light before taking the photo." By the sound of the audience's reaction, it appeared that many of us were confused, not really knowing what we were supposed to be looking for. As the many different qualities of light were explained and the numerous examples shown, it dawned on our group just how powerful a medium light can be and how important

developing an understanding of it is. I realized that most of my previous thoughts about photography focused too much on camera and lighting gear (that which I did not own especially) and not really on light and its qualities. Almost overnight, I began to think of photography in a profoundly different way.

What began that evening and continued for many months afterward was a paradigm shift in my approach to photography. I began to really work hard to "see" light and all the subtle variations in natural light and also how to mimic those subtleties with studio flash equipment. Camera controls and settings were still very important, but now there was reasoning behind those decisions based on the quality of light I either had or wanted to create. All it took was noticing the quality of the light, where it was coming from, which way the shadows fell, and various other nuances. I contemplated lighting before considering what lens, ISO setting, aperture, or shutter speed to use.

What You'll Learn from This Book

Light from sun has the power to oxidize paint, blacken silverware, or burn your skin. Yet this same light can be used for beautiful purposes as well, such as creating dynamic three-dimensional effects in your photos. This book begins by describing the many qualities of natural light, what they are called, and where to find them. You learn how the direction and color of light affects your photos. Then you move on to determining which camera controls best complement the light's qualities. Full chapters are devoted to shutter speed and aperture, explaining how the light on your subject will often tell you which to choose first in order to get the effects you want.

After you learn about natural lighting and ways to get the quality of light you want from the sun outdoors, it's time to move into the studio to get acquainted with many of the types of equipment, tools, and light modifiers found there, and how and when to use them. The popularity of the small external flash units has risen enormously in the past several years, and this book extensively covers the exploding world of small

flashes, referred to hereafter as speedlights. (Canon calls them Speedlites and Nikon calls them Speedlights, but in all my research I have found the speedlights label to be the most generic.)

As you begin to understand just how important and powerful light in your photography can be, look to later chapters that cover the most popular situations photographers find themselves in, namely shooting sports, concerts, landscapes, night scenes, portraits, products, weddings, wildlife, and pets. These chapters discuss specific considerations and practical pro advice for each genre.

It is my sincere hope that this book develops awareness in you that while good quality equipment is necessary, your understanding of light and of the varied methods used to manipulate and shape it, will help make your images much stronger. By "seeing the light" before taking the photo you begin to make conscious decisions when using the camera exposure settings to control and harness that power.

A long time ago, I came to a fork in the road of photography between purchasing more photo equipment or becoming a student of light. Knowing full well that good equipment is still important, I chose the light path. It is my honest desire that by studying this new Lighting Digital Field Guide, you will, too.

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Chapter 1: Understanding Light

Capturing light is the essence of photography. In fact, the name used to describe the craft, photography, is a combination of the Greek words photo meaning light and graphi meaning writing, so photography is fundamentally light writing. You use lenses and cameras and storage devices to capture those images that tell your visual stories and for many photographers, that's what photography is all about — the gear. I know I was certainly that way when I started my photography career. I thought photography was more about the gadgets than actually capturing light in all its many forms. Fortunately, at some point I began to see light in a new way and that shift has profoundly affected my photographic work and made it more fun. I want to share that shift in thinking with you, along with various practical ways for you to manage, manipulate, and expose the light.

Crepuscular rays of sunlight fall on the Columbia River in late afternoon in the Columbia Gorge. Lighting conditions of this quality can change in a heartbeat, so being ready to quickly change exposure settings ensures you get the shot. Exposure: ISO 200, f/10, 1/640 second.

What Is Light?

Light and its effects in photography can more easily be understood by making an analogy to painting. In this analogy, your digital sensor is the artist's canvas, the camera and lens combinations are the brushes, and the light is your paint. With this light you can create bold colors or pastels, heavy or soft shadows, or no shadows at all. You can also use this light to define or diminish form with highlights and shadows. Light can be used to make the subject stand out from the background or it can be manipulated to provoke an emotional response from the viewer. The power of light is vast and by learning as much as you can about it, you begin to see it in all its many forms.

The problem with light for many photographers is that they are so familiar with it in everyday life, so used to its presence, that they don't really see it and take it for granted. They get excited when they see the subject or scene they want to photograph and see only that, without taking into account what the light is doing, where it's coming from, and where it's going. As a result, they might overlook a slight camera angle adjustment or lens change that could make a world of difference in the final outcome of the photo. I rarely come upon images wholly made, in the field or on location, and often I see something happening with the light that is different from my original intent. Learning to see the light before you trip the shutter takes time, but once you do it raises the quality of your work and makes you a much better visual communicator. In the next section, I discuss some of the types of light you're likely to find and share some of the nomenclature photographers use to discuss the many types of light.

Ambient light

Ambient light simply refers to any light you find when you are attempting to photograph and is also referred to as available light. All ambient light has color characteristics that can be described by the Kelvin scale, which is discussed in full later in this chapter. Ambient light can be any type of light at all and can range from fluorescent to tungsten to daylight and most certainly contributes some form of color to your scene or subject. Realizing what this ambient light consists of and having a good idea of its color temperature and the resulting effect it has on your photograph is critical to creating successful photography.

You also need to pay attention to the sources of ambient light and whether they conflict with one another. Mixed light sources can be a challenge but are much more easily handled once they are identified. It is common in flash photography that the light from the flash can look too blue or cool compared to the warmer light of the interior or setting. Later I discuss adding gels to strobes to match the lighting found on location. I also explain how the shutter speed controls the brightness value of the ambient lighting of the background when using flash.

Many times, ambient light is reflected back on to your subject. If this reflected light is a problem, it can most easily be corrected by changing the angle of the shot, the background, or both. When you photograph people, the color of the room they are in can have an effect on the outcome and can modify and filter the light to reflect warm, cool, or greenish light back on to the subject.

Hard light

Hard light is undiffused light that strikes a subject directly from its source such as the light from the sun on a cloudless day. Hard light can be identified by the strong highlights it creates on the scene or subject. It also increases the contrast in the image with extremely well-defined shadows and is generally avoided when photographing people. Hard light can accentuate texture and detail in the subject depending on the angle of lighting. It is often used in moderation to provide a hair light for portraits or an edge light for products to make them stand out from a

background. Mixed with soft light, a moderate amount of hard light can help define form, create separation, and increase a sense of dimensionality in the image.

1.1 My dog's rawhide chew toy casts a well-defined shadow on the floor, indicative of the hard light quality of the direct, late-afternoon sun. Do you see a shape in the shadow that reminds you of something? Seeing light is about seeing the absence of light also. Exposure: ISO 3200, f/3.2, 1/1000 second.

Soft light

Soft light is broadly defined as any light that is diffused or reflected by some material to scatter the light rays so that they strike the subject from various angles. This type of light fills in the shadows a bit and reduces the intensity of highlights. Soft lighting is the preferred choice for portrait photography because of its natural depiction of skin, hair, and clothing, moderate contrast, and overall pleasing visual effects. Soft light is most commonly found on a cloudy day where the light from the sun

passes through the clouds and scatters, producing less intense shadows, softer transfer edges to shadows, and more diffused highlights. Soft light from overcast days can look slightly cool in your images, so setting your camera to the cloudy white balance setting brings back some necessary warmth to the image. Soft light can also be created in the studio by using lighting modifiers to diffuse the hard light emitted from the direct flash, such as umbrellas, softboxes, and beauty dishes. Much like hard light, too much soft light can reduce shadows and have a detrimental effect on the image by reducing contrast and making the image look flat. In these situations, I try to find some color-contrasting elements to work into the image to give it some edge.

1.2 Dallas and Sarah on their wedding day photographed under some trees that shaded them and created soft light for my photograph. Just a kiss of on-camera flash perked up the colors and provided pleasing catchlights in their eyes. Exposure: ISO 800, f/6.3, 1/200 second.

Diffusion

To produce the desirable soft light for your subjects, you must use diffusion to spread out the light and make it more even. Diffusion involves passing hard light through some type of semitransparent material to scatter the light rays so that they strike the subject from various angles. In these instances, the diffuser effectively becomes the light source in place of the original source.

1.3 Soft, diffused light is produced in the studio by placing the strobe inside a softbox. Placing the light just outside the frame produces the largest highlights in the eyes, face, and hair and creates the softest light. Exposure: ISO 100, f/8, 1/100 second.

While the sun is extremely large in reality, it is very far away and thereby a very small light source that produces hard light on a cloudless day. When clouds come between you and the sun, they diffuse the light and also make the light source larger because of their closer proximity to the earth. A larger light source produces softer light in much the same way that any light source is softer the closer it is to the subject. You can make great macro shots of insects and flowers with a speedlight because of the relative sizes of the light source and subjects. Conversely, a light source produces harder light the farther it is from the subject. Understanding this relationship between the size of the light source and the size of the subject helps you produce hard or soft light in any photographic situation.

Diffraction

Photographers striving for the most depth of field for a particular image might assume that all they have to do to attain it is to use their smallest aperture. But using small apertures may introduce the undesirable phenomenon known as diffraction to your images. Diffraction occurs when light is squeezed through a small opening such as when you're using small apertures. As the light rays bend over the edge of the obstructing object, in this case your aperture blades, the light rays tend to vibrate and disperse the light and this can result in a softly focused image. The problem lies in the fact that when light passes through a large aperture, a very small percentage of light that strikes the sensor is diffracted, but the amount of diffracted light increases as you stop down the lens to the point where more of the diffracted light reaches the sensor.

This is often a problem for photographers who regularly need the maximum depth of field for their images that a smaller aperture affords.

Check images shot using your smallest aperture on the computer to see if they are affected by diffraction. You may need to open up a stop or so if you find the amount of diffraction unacceptable.

Lens flare

Lens flare is an optical effect that most photographers experience as unwanted colored objects that cause a degradation of image quality. You can avoid lens flare in your images by using a lens hood or blocking the light that falls on the face of your lens. When hard, direct light enters your camera lens from an angle, it bounces around inside the lens and reflects back and forth between the lens elements. These elements are often coated with special solutions that sometimes mingle with the stray light rays to form multicolored halos, hexagons, or octagons that mimic your aperture's shape. These can be avoided by using a lens hood, your hand, or a piece of cardboard to shade the front of your lens. By doing this, you bring back all the clarity, contrast, and color the shot needs to be successful.

Luminance and efficiency

The luminance value of a subject is the amount of light that is returned from a certain area of your subject. Luminance depends on the angle of light and also the angle of the viewer's eye when looking at the subject. Photographers speak of luminance in reference to the amount of light that returns to the camera from a subject and how bright in the image that subject appears. In an ideal world, the luminance of the subject would equal the luminance of the lighting source, but this is rarely the case. The luminance values of a subject can only be equal to and not greater than the brightness of the source. Taking into account the luminance of a subject, the photographer controls the subject's brightness in the image by managing the aperture and the shutter speed.

The efficiency of a subject refers to how much light is reflected back to the camera from its surface or color. When photographers speak of a subject's efficiency they also take into consideration how much light they need to expose it correctly in a photograph compared to the surrounding

tones and elements in the picture. A shiny white car is doubly efficient because of its color and also its surface shine. When exposing an image, you must be aware of the subject's surface finish and color and how large the subject appears in the photo. A black sweater or dog would exhibit low efficiency and would need lots of light or exposure to make up for the dark material's absorption of light.