CHAPTER

Understanding Light

Learn how to use light to create a mood or atmosphere, define a shape or a form, and bring out details in your photographs.

Learn About the Color of Light 26
Measure and Correct Light for Color 28
Photograph in Varied Lighting 30
Use a Flash 32

Learn About the Color of Light

You can use the qualities of light to set the mood and to influence a viewer's emotional response to the picture. You can also use light to reveal or partially hide the subject's shape, form, texture, and detail, or use light to show colors in the scene as vibrant or subdued.

Light and Color

All colors within the color spectrum are contained in visible light. The amount of any particular color within the light is determined by its source, and for outdoor light, the time of day. For example, more reddish orange color is seen at sunset when the sun's low angle causes light to pass through more of the heated earth's atmosphere. Midday light on an overcast day produces a bluish color, while indoor light, such as candlelight and tungsten light bulbs, produces a reddish quality. Knowing how these different light sources affect your photographs will help you make more appealing ones.

Sunrise

Cobalt and purple hues of the night sky predominate during early sunrise. Within minutes, the landscape begins to reflect the warm gold and red hues of the sunrise. Early morning light is produced by sunlight passing through the atmosphere at a low angle, which means that the light is going through much more of the earth's atmosphere than it would if the sun was directly overhead. (This same increase in atmospheric layers has a magnifying effect, which explains why the sun and the moon appear so much larger when they are close to the horizon.) Later in the morning as the sun gets higher in the sky, the light shifts to a rich blue. Most photographers agree that the best shooting light for clear skies is an hour after sunrise until around 10 AM and then again when the sun is within a few hours of setting.

Midday

During midday, the warm and cool colors of light equalize to create a white or neutral light. Bright midday light produces harsh shadows and a bluish color cast making it unsuitable for some types of photography, particularly portraiture. Midday light works well for photographing shadow patterns, flower petals and plant leaves made translucent against the sun, and for natural and manmade structures such as rock formations and buildings.

[illegible] before, during, and just [illegible], the warmest and most intense [illegible] light occurs. The predominantly red, [illegible] light creates vibrant colors, while [illegible] of the sun creates soft contrasts that [illegible] textures and shapes. Sunset [illegible] landscape, cityscape, and wildlife [illegible].

[illegible] or Candlelight

[illegible] household light. Tungsten light, like [illegible] and candlelight, appears warmer than [illegible] and produces a yellow/orange cast in [illegible] taken using a digital or a film camera. [illegible] this color cast can be corrected, in many [illegible] it is desirable, as shown in this interior photo [illegible] California mission.

Electronic Flash

Most on-camera electronic flashes are balanced for the neutral (white) color of midday light, while others are balanced toward the cool end of the color spectrum. Electronic flash light is neutral, and in the correct intensities, reproduces colors accurately. On the negative side, using a flash can bring out unwanted details, such as wrinkles, and a flash can produce hard shadows (called cast shadows) behind the subject, as shown here.

Fluorescent Light

Commonly found in office and public places, fluorescent light typically produces a green cast in photos taken using a digital camera that has the white balance set to daylight or auto. Typically this color cast is seldom seen in the photo because when the subject is lit by fluorescents, the light is low enough to cause the camera's automatic flash to fire. The flash produces sufficient light to overcome any color cast produced by the fluorescent lighting. In addition to fluorescent lighting, you need to be aware of high-pressure sodium lamps used to illuminate streets, large buildings, and arenas. To the human eye, the light they produce appears to have a slightly peach color cast but, the resulting digital photos usually have a greenish cast, as shown here.

Measure and Correct Light for Color

In film photography, the color composition of the light is controlled by attaching color filters in front of the lens to compensate for or enhance various ranges of color. This is because the color balance of the film is determined by its chemical composition and cannot be changed. Digital cameras allow you to control the color balance of the sensor by manually changing the White Balance (WB) setting.

How Light Color Is Measured

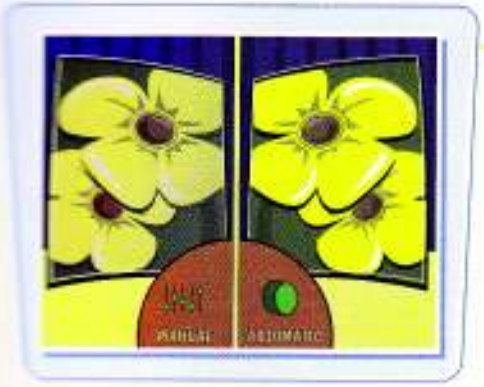
In photography, image color is measured as a temperature. Each color of light corresponds to a temperature measured on the Kelvin (K) scale in degrees. It works the opposite way that you would expect it to. The higher the temperature, the cooler (or more blue) the light. The lower the temperature, the warmer (or more yellow/red) the light. In short, subjects lit by higher temperature light appear cooler; when lit by cooler light, subjects appear warmer.

Light Meters

Not too long ago, all camera light meters assumed that everything you focused on was neutral gray, which reflects 18 percent of the light and absorbs the rest. Today, the 18 percent gray card is still used for calibrating the white balance setting of a digital camera. Some high-end digital cameras offer a white balance calibration feature. Unfortunately, calibrating the WB of a digital camera is only effective in a studio where the lighting does not change. When the light meter in a modern digital camera evaluates a scene, it reads hundreds of areas of light and dark in the image frame and adjusts the camera to capture the greatest amount of detail without over- or underexposing the image.

Why Correct for Light?

The human eye automatically adjusts to changing light color and sees white as being white in different types of light. Unfortunately, digital cameras do not adjust to color temperature changes like the human eye does. As the color temperature of the light illuminating the subject changes, so does the color cast on the finished photo. To achieve the desired color in a photo, either the white balance of the camera must be adjusted or the color of the photo must be corrected using the computer.



Automatic White Balance

There are several ways to achieve desired color rendition using a digital camera. You can manually set the white balance or let the camera set it for you automatically. Early digital cameras were not very good at calculating white balance automatically, but most modern digital cameras now do a good job.

Set White Balance

On digital cameras, you adjust the white balance to tell the camera the temperature or type of light in the scene. White balance options, such as Bright Sun, Tungsten, and Fluorescent, are set using one of the camera's menus. Choose the setting that matches the predominant light in the scene. Some cameras allow you to adjust settings with a + or – to get more precise color. Newer cameras offer multiple scene selections, such as sunset, fireworks, and outdoor action. These scene mode settings not only control the white balance, but the exposure settings as well.

Photograph in Varied Lighting

Photographers describe light by many names. These names often describe the effect that the light has on the resulting photo. Harsh light creates shadows with well-defined edges. Soft light (also called diffused light) creates shadows with soft edges. Understanding the effect that each type of light produces helps you use both types of light, and variations in between, effectively. In addition to types of lighting, the direction that the light is coming from also affects how accurately the automatic light meter can read the scene and produce optimum exposure settings.

Hard Light

Hard bright light creates a concentrated spotlight effect. Hard light from the bright sun, a flash, or a bare light bulb creates shadows with sharp edges, and obliterates highlight and shadow details. Hard light (also called direct sunlight) is good for landscape and especially for fall color photography. But you should avoid photographing people in hard light, if you can. To prevent shadows on faces caused by hard light, use a fill flash, or if possible, move the subject to a shady area.

Soft Light

Soft light is diffused light that is spread over a larger area. Atmospheric conditions, such as clouds, diffuse natural light, creating shadow edges that transition gradually. Soft light works well for portraits and close-up photography. Even though an overcast day produces a bluish color cast, the diffused light it offers allows you to get photos of subjects without harsh shadows.

Front Lighting

Front lighting strikes the subject straight on. This type of lighting can produce a flat, one-dimensional effect. If shooting with a flash, make sure the background is far enough behind the subject to prevent a cast shadow on the wall or door behind them. If you have an external flash with an adjustable head, you should try bouncing the flash off the ceiling to create a softer light.

Side Lighting

Side lighting places the light to the side of and at the same height as the subject. This lighting shows one side of the subject brightly lit, and the other side in deep shadow. Side lighting works well for rugged, angular portraits of men, but many consider it too harsh for portraits of women.

Top Lighting

Top lighting illuminates the subject from overhead, such as what happens at noon on a sunny, cloudless day. This lighting produces strong, deep shadows, especially under the eyes, nose, and chin. Although this lighting direction works for some subjects, for other subjects, you can use fill flash to add light to the shadow areas, as shown.

Back Lighting

Light positioned behind the subject creates a condition called backlighting. This typically happens when someone is standing in a dark area with a brightly lit background. This type of light confuses light meters and the subject becomes a silhouette. Depending on the angle, it can also display a thin halo of light that outlines the shape of the subject. If you do not want the subject to be shown as a silhouette, you can use the fill flash option on your camera.

Use a Flash

The electronic flash is a powerful, automatic tool. When you need to add light in a low-light scene, the camera automatically fires the flash to provide enough light for a good exposure. When a light source is producing shadows on a subject's face, using the camera's built-in flash unit or an external unit removes the shadows and creates a well illuminated photograph.

Flash Distance

To get the best flash pictures, indoors or outdoors, it is important to know the distance that the flash travels, and then to stay within that distance when taking pictures. On most compact cameras, the flash range is 10 to 15 feet. Be sure to check your camera manual to find the exact range of your flash.

Flash Compensation

Some digital cameras and accessory flash units allow you to control the flash intensity. You can set the flash to different levels of power that are measured in Exposure Values (EV). To decrease the flash output and create a softer light, you can set it to a negative EV value. Today's digital cameras automatically sense when the flash has produced the optimum exposure and adjust the flash duration. Your camera does this by using a sensor on the camera body. Learn where your camera's flash sensor is from the manual and make sure that you do not accidentally cover it with your finger when taking flash photos.

Use Flash Outdoors

You can use your camera's built-in flash outdoors to add light to pictures of people and still life subjects that are at least 5 feet away. Using a flash in overcast and shady scenes often adds noticeable color and increased contrast to images. Here, fill flash increased the color and brightness of a crate of apples and brought out details of the apples in the shadows.

Without Fill Flash

Harsh overhead (top) lighting and backlighting create problems, such as unattractive shadows in portraits and silhouettes. In this picture, without a fill flash, deep shadows appear under the nose and chin of the subject.

With Fill Flash

Depending on the make of the camera, the name used for the fill flash setting might be called "manual." In most cameras today, just opening the flash or changing the flash mode to manual will produce the necessary flash exposure to work as an effective fill flash. Even though the flash mode may be called "manual," the automatic sensor still regulates the amount of power in the flash. In this picture, fill flash lightens the deep shadow areas by adding light to the front of the subject.