2. Incident and Reflected Light

Light is your paintbrush, and only when the qualities of light are thoroughly understood can you control, manipulate, and sculpt a portrait to capture your subjects at their best. With regard to portrait photography, there are essentially two basic categories of light: incident and reflected light. Later in this chapter, we will look at how these two types of light can be measured to ensure an accurate exposure. First, however, we will consider the additional qualities of light that play a role in the look of your final image.

Incident Light

Incident light is the light that falls on a subject, either directly or indirectly. Direct sources of incident illumination are sources that emit light, like the sun or a strobe unit aimed at the subject. Indirect sources of incident illumination redirect light onto the subject. These could include a wall from which sunlight bounces back onto the subject or a reflector that redirects light from a strobe onto the subject. In both cases, the light is reaching the subject and can be metered and controlled.

Intensity. The intensity of the light refers to the amount of light illuminating or "falling on" the subject, whether directly from a light source or indirectly from secondary sources of reflected illumination. The intensity of the light can be measured objectively with a light meter and controlled with the use of light modifying techniques, which will be addressed in chapter 3.

Hard *vs.* Soft. Lighting is often described as being hard or soft. Hard light is light that creates a rapid shadow-edge transfer between highlight and shadow areas. This results in a sharp, more dramatic look that tends to accentuate form and texture. Soft light is light that creates a broad shadow-edge transfer between highlight and shadow areas. This results in a more gentle look that tends to smooth forms and texture. Although most traditional portraits are made with a soft light source, it is quite acceptable

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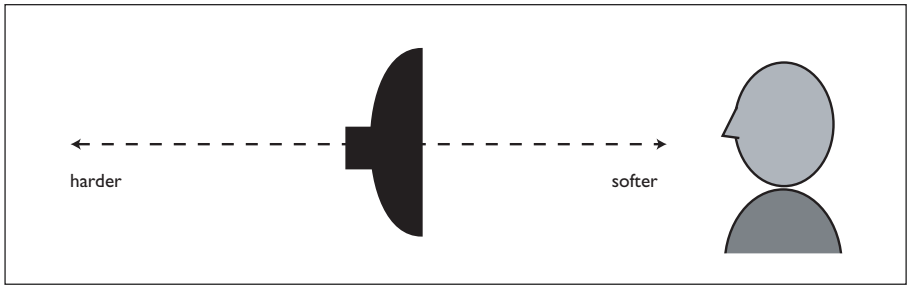

DIAGRAM 6—*The relative size of the light source in relation to the subject is a controlling factor in the quality of the light. This is controlled by both the physical size of the source and its distance to the subject*

to use a hard light source (or a combination of both) to produce images that reflect your personal style.

Size and Distance of the Light. The size of your light source and its relative distance to your subject are both controlling factors in the light quality that will be produced. The smaller your light source is in relation to your subject, the harder the light will be. The shadow-edge transfers will be sharper and the image will have more defined shadows. The larger your light source is in relation to your subject, the softer the light will be. The shadows will be less defined and the light will have more of a "wrap-around" quality.

The larger your light source is in relation to your subject, the softer the light will be.

Let's use the sun as an example. The sun is physically a huge source—870,000 miles in diameter. However, it is also extremely far from us here on earth. On a bright, cloudless day, the sun is quite small relative to a subject being photographed outdoors, thus the quality of light will be hard. On a cloudy day, the sun is still the same size and distance to the subject, but the clouds act as a massive diffusion panel that is much closer to the subject. This scatters the light in many directions and produces a softer quality of light.

To illustrate the harsh shadow effects of direct sunlight, Irena Murphy and Rita Serby were photographed on a sunny day with no fill (plate 1). An inci-

PLATE 1—*Hard light from direct sun. (ISO 100, $^1/_{60}$ second, f18.0)*

PLATE 2—*Light softened with a Sunbounce translucent white panel. (ISO 100, $^1/_{80}$ second, f14.5)*

dent-light exposure was measured and the camera was set accordingly. As you can see, the sun was behind a tree that cast harsh shadows throughout the portrait. To eliminate the shadows on the models, they could have been repositioned with the sun behind them; however, this would have compromised the desired composition.

Waiting for the sun to move behind a cloud would have softened the harsh shadows and retained the desired composition, but time was of the essence. The models were only available to shoot for one hour, so we simulated a cloudy day by placing a 4x6-foot white California Sunbounce translucent panel to camera left (plate 2; previous page). The panel diffused the harsh sunlight, producing a softer shadow-edge transfer. (Here's a good reminder: Always carry a few universal clamps in your camera bag. On this day, I forgot to pack the clamps. As there was no room for a light stand, the panel had to be placed in the trees for this shot—and when the wind came up, the panel kept falling out of the trees and onto the models.)

The mere attachment of a soft diffuser over a light source is no guarantee the light will be soft.

Things work just the same way inside the studio. A bare strobe head is very small, producing hard light. Attaching a softbox makes the light source larger, producing softer light. However, if you move even a large softbox too far back from the subject, it will become small in relation to the subject and record as a hard light source. The mere attachment of a soft diffuser over a light source is no guarantee the light will be soft; positioning the light correctly is also critical.

Direction. The placement of the main light source relative to the subject is another controlling factor in the quality of the light in your final portrait. Light travels in a straight line, but when it strikes a surface, its angle of incidence is equal to its angle of reflectance. For example, with front lighting, the light is directly at or behind the camera, producing a zero-degree angle of incidence and thus a zero-degree angle of reflectance. The result is flat lighting. If the light source is moved 45 degrees left or right of the lens axis, it will reflect back at the same 45-degree angle. This concept is important when positioning your light and modifiers to show shape and create depth on your subject.

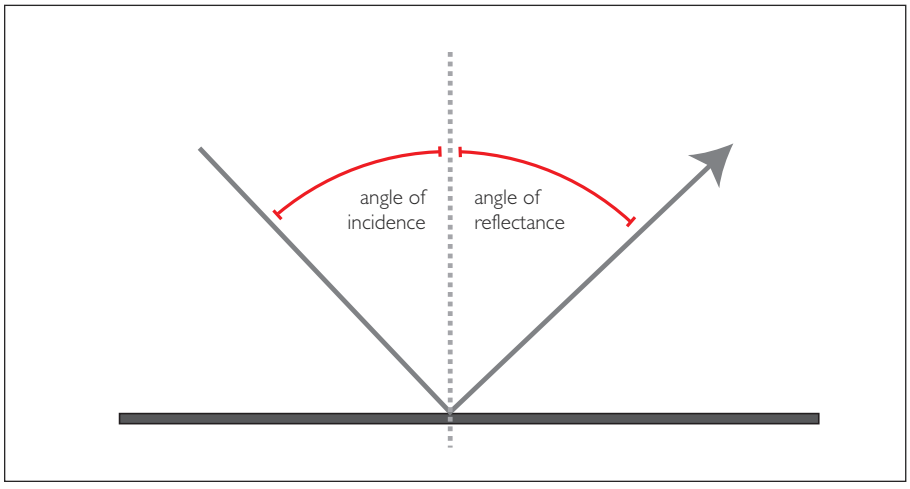

DIAGRAM 7—*The angle of incidence is equal to the angle of reflectance.*

Contrast. Contrast describes the difference in brightness between the highlight and shadow areas of a photograph. This can be controlled by subject placement, light placement, and the use of light modifying tools and techniques (see chapter 3). Just as the clouds in the sky control the relative contrast of the sun, you can actively control the contrast within an image. In portrait photography, contrast is often discussed in terms of lighting ratios, which are covered in chapter 4.

Reflected Light

Reflected light is the light that bounces off your subject and other elements in the scene. Like incident light, it can be measured in quality and quantity, enabling you to readily define the mood of the image.

In portrait photography, for example, subjects with dark skin tones reflect less light and absorb more light than subjects with lighter complexions. Therefore, subjects with dark skin will require more exposure or light (a minimum of one full stop or twice as much light as light-skinned subjects) to obtain an accurate rendition of their skin color in a final image. The reverse is true for subjects with light skin tones.

The light being reflected from the surrounding areas will also affect your image. For example, a white room will reflect more light than a room with dark walls, altering the actual subject brightness and contrast ratio.

Metering the Light

Whatever type of lighting you choose to create an image, it is imperative that you meter the scene to obtain the correct exposure and contrast (for more on this, see Lighting Ratios on page 48). There are essentially two metering techniques: reflected-light metering and incident-light metering.

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Reflected-Light Metering. Reflected-light meters are the type of meters built into cameras, but reflected-lighting metering is also available as a feature on many hand-held light meters. Reflected-light meters measure the amount of light that is reflected by your scene or subject. This is not the ideal metering technique because it takes a reading of the entire scene (highlight and shadow areas) and provides an averaged reading designed to record the scene or subject as 18-percent gray (also called middle gray). This gray is a standard value designed to provide a safe exposure for "average" subjects.

But what happens with subjects that are not average? For example, imagine you use your camera's reflected-light meter to evaluate the exposure of a bride in a white dress. The light meter would see a lot of light being reflected by the dress and, to balance it to middle gray, recommend a lower exposure than is needed. As a result, the image will be underexposed and the dress will look gray. Conversely, imagine taking a reflected-light meter reading of a groom in a black tuxedo. The light meter would see very little light being reflected by the tuxedo and, to balance it to middle gray, recommend a higher exposure than is needed. As a result, the image will be overexposed and the tuxedo will look muddy.

Both of these problems are the result of measuring reflected light from the subject rather than the actual light falling on the subject. As a result, this metering may be adequate for amateur picture-takers, but it is not an optimal metering practice for portrait photography. (*Note:* That is not to say that professionals never use reflected-light readings. Sometimes it is impractical to take a reading from the subject position or of a far-off background, as is required with incident-light metering [see below]. In these cases, using a reflected-light reading may be neccessary.)

Incident-Light Metering. A more accurate metering method is to use an incident-light meter. This type of hand-held light meter measures the amount of light falling on the subject. When you measure the light before it falls on the subject, you will achieve consistent results regardless of the color of the subject you are metering. Because your reading is independent of the subject, a white wedding dress will record as white and a black tuxedo will record as black.

PLATE 3—*Many types of light meters are available. Some meters record only flash exposure, others read only incident light. When investing in a light meter, it is wise to purchase one that records both flash and ambient exposure. The Sekonic L-588R is one such meter. Designed especially for digital, it is quite accurate.*

To obtain an accurate incident-light meter reading of your subject when shooting with continuous light, set the meter to the ambient metering mode. Then place the hand-held meter at your subject's position and point the dome back at the camera. Most meters have a 180-degree angle of view when using the white dome meter on the front. Other meters also come with a flat accessory (which is used in place of the dome) that meters light coming in from only one direction. This is ideal when you are determining the exposure-compensation value of a filter to be placed on your lens or when you need to

PLATE 4—*In this image of Brian Caplan, the light meter dome is pointed toward the main light source to read the amount of light illuminating the subject. The corresponding aperture or f-stop will appear on the meter's LED screen with the actual exposure of the main light source. You may need to increase or decrease the power of your strobe to obtain the desired f-stop. When working with strobes, your exposure is controlled only by your f-stop, not by your shutter speed. More on this later. (Manual mode; ISO 100; $^{1}/_{250}$ second; f19.0)*

PLATE 5—*Without repositioning Brian or the light source, an exposure of the shadow side of his face is recorded in the same manner as the highlight area. To add separation from the background, a small light source was placed behind the subject and to camera right. When using multiple lights, be sure to shield the excess light from reaching the meter, as this will interfere with your exposure. (Manual mode; ISO 100; $^{1}/_{250}$ second; f19.0)*

PLATE 6—*The exposure recorded on the light meter will be your final exposure. An exposure value of f15.6 was recorded and the aperture was set on the camera accordingly. When using a studio strobe, always set your camera to manual. This will allow you to properly set your exposure without any influence from the camera's built-in light meter. (Manual mode; ISO 100; $^{1}/_{100}$ second; f15.6$^{1}/_{2}$)*

PLATE 7—*Using a PocketWizard, strobes can be triggered remotely, allowing you to take an incident-light meter reading from the subject's position.*

take a reflected-light reading from a more concentrated area than is possible with the dome. (*Note:* For example, you might take a reflected-light reading of a background to determine its value relative to the subject.)

Once you have taken your reading, adjust your camera's shutter speed and f-stop to the setting indicated on by the meter. Should you want to produce an image with shallow depth of field (using a larger aperture), the meter will give you the corresponding shutter speed for your desired aperture.

If you want to shoot with flash, rather than a continuous light source, switch the meter's mode to flash. You can then use the same metering method—just trigger your flash remotely to determine the amount of light illuminating the subject. When using multiple strobes, be sure to meter each light separately with the dome facing the strobe that is being measured. This technique will help you to determine the amount of light on your subject(s) from each source.