

Qualities of Light

What does light do?

It reveals information through texture, form, shape, color, emotions, and moods.

How does it reveal this information?

- Through six qualities that are broken into two categories: Comparative and Formative.
- Comparative qualities can be changed after the shutter has been snapped. They include: Color, Brightness, and Contrast. These are the controls on your television and computer monitor. This category is hard to judge with the human eye but easy to scientifically measure.
- Formative qualities cannot be changed once the shutter has been released. They are: Specular, Diffuse, and Direction. They show shape, volume, texture, and form.
- Comparative qualities can be scientifically noted, researched and changed whereas formative qualities are more elusive and are based on visual observation and experience. Together they create dimension, space, volume, shape, and texture.

❖ **Brightness**

- Brightness is the intensity of light reflecting and/or radiating from the scene and is measured in lumens by a light meter. Your camera settings are responsible for properly recording the brightness of the scene.
- A predominance of dark tones is called a 'low-key' photo. After metering the scene, you will need to stop down one stop to properly expose the scene.
- A predominance of light tones is called a 'high-key' photo. After metering the scene, you will need to open up one stop to properly expose the scene.
- The intensity of light source illuminating your subject is not directly perceivable from a photograph, since the representation of the subject tones is controlled by the exposure. High intensity light can be represented in the photograph by printing for a lighter-than-normal tone and higher contrast.
- Literal brightness refers to the range of viewable light and is measured in Stops. The human eye can see a range of 20 stops. Film can see a range of 8-10 stops. Photographic paper can only see 4-5 stops. Photography merely interprets brightness.

❖ **Color**

- In Black & White photography, the color of the light illuminating a subject has little effect on the end result. In color photography the color of light can have a great impact on the end result.
- How light changes color:
 - The sun produces white light and is the standard that we measure color from.
 - The color of sunlight can easily be altered as it passes through the atmosphere. Late in the day the color of the sunlight can become more yellow or orange than at midday.
 - Weather can also affect change on the color of light. Cloudy days, foggy conditions and rain will usually create a cooler tone (bluer) to the color of light.
- Light contamination may produce unexpected changes to the color of light. When light reflects off a surface, it will take on the color of that surface.
- The color of light can be changed at the photographer's discretion. To change the color of light simply bounce it off a colored surface or shine it through an object that has color. Changing the color of light can be of great visual significance.
- Color really tends to be a more emotional quality of light. It can be used to invoke emotion in an image. Red can provoke emotions such as passion or rage. Blue can be cold. Yellow is a happy emotion, etc.

❖ **Contrast**

- Contrast is the difference between light (highlights) and dark (shadows) in a print or scene.
- This difference is known as the Contrast Ratio. Many things can affect the contrast ratio.
 - The amount of Ambient Light (environmentally reflected light) can greatly change the amount of contrast you have. The more ambient light there is, the lower the contrast as it fills in the shadows, lowering the ratio.

- The type of light also affects contrast.
 - Specular light is harsh (contrasty) by nature. Direct sunlight on a clear day can lead to high contrast when there is nothing to bounce light into the shadows.
 - Diffuse light, such as on a cloudy day, often results in low contrast since nearly all the shadows are filled in by scattered light from all areas of the cloudy sky.
- Scenes that have high contrast are called 'harsh.' Scenes that offer little or no contrast are called 'flat.'
- Contrast is measured by a light meter in stops. A 1 ½ stop difference (1 to 3 ratio) is the most commonly used ratio in portrait lighting.
- Lighting Ratios simply measure how much light there is on one side of the subject compared to the other side. We measure it in stops and then convert it to a ratio showing how much light that many stops actually represents.
 - 1:1 0 stops difference
 - 1:2 1 stop difference
 - 1:3 1 ½ stops difference
 - 1:4 2 stops difference
 - 1:8 3 stops difference
 - 1:16 4 stops difference
 - 1:32 5 stops difference
 - 1:64 6 stops difference
- 1:3 is normal portrait lighting
- 1:8 is the maximum range considered 'low-key' for studio lighting

❖ **Specular – Hard Light**

- Specular light is defined by a small light source relative to the size of the subject.
- Specular light creates hard-edged shadows and small, harsh specular highlights.
- Hard light is direct light. The light rays all travel in the same general direction.
- Texture is emphasized with specular light.
- Reflections of the light source itself may be seen on reflective surfaces of the subject. These reflections are called Specular Highlights.
- Hard light usually has more contrast than Soft light. To reduce the contrast, provide more light to the shadows by reflecting light on the shadow side of the subject.
- The sun is the most common specular light source.

❖ Diffuse – Soft Light

- Diffuse light is defined by a large light source relative to the subject.
- Diffuse light creates soft edged shadows and large, low-intensity specular highlights.
- Soft light is light that has been scattered so that it reaches the subject from many different locations. The scattering of the light is called diffusion. The more the light is scattered, the softer it becomes. Shadow edges will have increasingly softer edges the more diffuse the light becomes. Specular light can be diffused to produce softer light.
- Diffuse light usually has less contrast than a Specular light source, but the loss of contrast is not due directly to the nature of diffuse light. With Diffuse light you simply usually have more random light coming in at the subject from different sides, filling in the shadows and lowering contrast. If you blocked the stray light, high contrast can be achieved with diffuse light.
- Soft light is often used for specular (shiny) surfaces since the source of the light reflects in the subject (angle of incidence always equals angle of reflection). An overcast sky is the most common source of diffuse light.

❖ Direction

- Direction controls the shape and position of shadows on a subject. The perception of volume of the subject – its three-dimensional form – can also be changed by the direction of light.
- The texture of a surface can be accentuated by causing the light to cross the surface at a low angle relative to the subject. This is called cross lighting.
- Emotionally passive lighting has less direction and tends to make the subject more important. These tend to be higher key photographs.
- Emotionally active lighting has a great deal of direction and tends to make the emphasis more on the lighting than the subject. These photos often tend to be lower key.
- Ambient Light
 - Environmentally “reflected light” comes from everywhere and has no “direction”.
 - More ambient light will fill in shadows and reduce contrast.
 - Less ambient light will allow shadows to become deeper, increasing contrast.
- Direction of light can be described both horizontally and vertically.
- Horizontal movement is usually described as being: Front Light, 45 Degree Light, Side Light, or Back Light.
- Vertical movement is referred to as: High, Level or Low Lighting.