

Painting with - Light: The Art and Science of Photography - Photography is all about light. Without light there is no photograph. The question is how to use light correctly. Your picture will tell you what you did wrong, but not how to fix it. Here are some thoughts that may help you understand how light works in a photograph and how to fix your mistakes.

Light attracts your eye:

Your eye will always go to the lightest part of your image, so a pale or milky sky can spoil an otherwise lovely scene. I always try to avoid this by not including the sky unless it actually enhances the image with its cloud formations or other intriguing light, such as rainbows, sun in clouds, or what they call God light where a beam of sunlight streaks through clouds.. In the first image, my eye keeps going up to the milky pale sky. I needed either to crop the shot to get rid of the sky (which would eliminate those wonderful rocks in the distance), , or recompose the shot, or wait for better light and some good clouds.



Under exposed vs over exposed:

If too little light reaches the sensor, then the image will be dark and the details in the darker areas (under exposed) will not be visible. ¹ If too much light hits your sensor, then no details will show in the lighter areas of your picture, (over exposed) (burned out).

Here are two images of a palm. In the first, there is not enough light reaching the sensor. We cannot see the details in its fan. It is under exposed. The second image has the correct exposure. We can now see both the color and pattern in the fan.



¹On the camera, to reduce the light you select a larger f stop number(f11,f16,f22,f32), to reduce the size of the aperture. On the smart phone you tap the screen and either a square or a circle appears (focal point)and on the iphones there is a line/slider with a sun icon to the right. That is your exposure slider, so move the sun icon up or down to add or subtract the amount of light. A good explanation about the mechanics of f stops: <https://photographylife.com/what-is-aperture-in-photography>

Here is an example of a photo where too much light is reaching the sensor so that the colors on the butterfly's wings are "washed out"



In the second image, the aperture was smaller allowing less light to reach the sensor so the colors on the wings are more evident.



In these two images of *Hydrangea* 'Twist n' Shout', taken with my phone,



you can see that there is a lack of detail in the white parts of the inflorescence in the first image because it is over exposed –too much light came into the sensor.

In the second image more detail is evident, as I reduced the exposure - decreasing the light going to the sensor.



Fixing "Hot Spots": If you didn't get the exposure corrected as you took the picture, you can adjust it and get rid of those washed out parts of your image in post processing. I use the app. Snapseed on my phone .



On my desktop, I use Lightroom or Photoshop. In this picture of *Daphne x transatlantica*, I made a mistake with my exposure. The color details in the blossoms of the first image, have "blown out". I corrected my mistake using Lightroom - reducing both the exposure and the highlights – and now the soft rosy pink tones have returned to the petals.



² Tiger Swallowtail

Letting the light in: As James Thurber says “Light can illuminate or obscure.”

I prefer to decide for myself what I want to illuminate and what I want to obscure in my photos and this involves selecting the appropriate aperture/ f stop³ on my camera to either allow more or less light to reach the sensor. My camera’s largest opening is f 2.8 and the smallest is f 32. The smaller openings (higher number) only allow a pinprick of light to reach the sensor. With these smaller openings, my image will have all the details throughout the image crisply in focus.

With the larger openings (smaller number), only part of the image will be crisply focused and the distant details will disappear into soft forms.

Here we have a landscape that is clear from front to back. It has an f stop which is a high number/small opening.



The tiger photo has a low f stop number/large opening and the background is no longer in focus.

Getting it right can be frustrating!

Sometimes even when I have my camera set to the correct exposure, parts of the image are still either too light or too dark for my taste so I must make adjustments using post-processing software, such as Lightroom or Photoshop, or one of the apps on my phone such as Snapseed.

Often I use the tools on both my phone and my laptop to fix my mistakes.

³ Here is a good video on fstop and aperture <https://www.youtube.com/watch?v=dmn3K-06YTg>

Here is a plant⁴ I saw while in Barbados last February. I loved the patterns of the veins and the



contrasting colors - the soft white gray of the newer leaves against the greens, and the subtle shadows glancing over them.

However, in my picture, my eye keeps going to those white spots in the dark background at the top left. Furthermore, the pink flower buds are lost in the composition.



My choices were : erase those spots; darken the edges of the picture; crop out the extraneous background; or some combination these options. In version 2 although the crop eliminated the original problem it created a new one.

in Version 2, I'm seeing a "blowout" Where the flower stem crosses the gray/white leaf. There is almost no detail in that white area and this white patch now has become **the main focal point** instead of the flower buds or those delicious chartreuse leaf veins.

So I tried again, sending my image to my phone via airdrop⁵ and, using Snapseed I changed the exposure etc.. making sure there is some detail in that white area. Although the results pleased me, (Version 3), I decided to convert the image to black & white and this black and white version,(Version 4) is quite fun, it is rather blah, lacking the intensity of the color versions. I tried again. This time I combined the black and white version with color version 3, using another smart phone app called ColorSplash. (Version 5). Which version do you prefer ?



⁴ This plant, *Calotropis procera* – Lavender Cotton - attracts butterflies especially the Monarch and although poisonous, is used in traditional medicine

⁵ [Airdrop](#)

Trying different light effects

Sometimes for artistic reasons you may wish to have your picture appear as a silhouette against the light.⁶ Here is an image where no details are visible in the dark areas so that the trees and the mountains become silhouettes, framing the sunset.



Capturing galloping horses, shooting into the sun was a fun challenge. Although these ghost-like horses are almost without color, light rims their bodies and they float above their shadows kicking up gold dust as they run.



Dark against light & light against dark:

Sometimes I specifically chose to either have a pale or white background or a dark or black background to get a particular contrast effect.

Snow is the perfect choice for a white background (picture of the dog sled race) and by selecting a specific AWB⁷ setting you can make your background go dark.



Temperature of Light:

The temperature of light affects the mood you achieve in your image. You have the option of selecting the temperature of the light (Kelvin Scale) ranging between degrees of cool to warmer degrees. On your camera these qualities show up as those little icons of a sun, a lightbulb, a building with a big shadow, a cloud, etc.

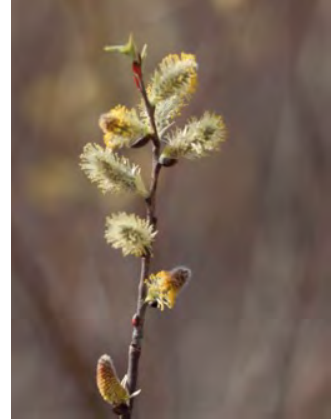
⁶ The light source is behind the subject

⁷ White balance settings: cloudy, tungsten, sun/shade, These camera settings are generally visible on a dial or as a function button on your camera, and as you change them, check to see the display feature on the back of your camera as this live view will show you how your choices are going to affect the scene.

The setting AWB – (auto white balance) works well most of the time, but I find that using the white balance setting “cloudy” gives me the look I prefer, because it is slightly warm, making the colors just a bit more vibrant.



Here we have some pussy willows first taken with a cooler white balance setting and then with a warmer setting. By selecting settings that change the light in your images, you may give clarity to the details in the light and dark areas of your photo and may change the mood.



Everything about the taking and the making of a photograph involves both artistic choices and an understanding of the technical implications of those choices. You are the artist! Make your camera/smart phone work for you!

In the dark? Can't take a picture? Try changing your ISO setting

ISO pertains to the sensitivity to light of your sensor's card. Most of the time I'm happy to leave my ISO set to automatic or to 200 or 400. ISO works somewhat like the numbers we referenced on the film canisters in the old days.

Sometimes when I find that there is just not enough light to take a picture at these ISO settings,



I raise up my ISO setting to a higher number, to allow the camera sensor to receive data in these low light situations. However, when I raise my ISO often I find that my picture is grainy, or that there are color aberrations in the solid darker colors, so I'm wary of raising my ISO number setting much higher than 800. But, saying that, this is one of my favorite low light photos taken with a point and shoot with a very high ISO⁸. Yes there are color aberrations on the bears, but what is not to like about two polar bears crossing the ice at a magic time of day bathed in the tints, tones and shades of dawn?



And here is a photo taken recently when it was late in the day overcast & raining. I wanted to capture the edges of the leaf. Even with the f stop set at f 3.5 (big opening/ small number) the camera wouldn't take the picture, so I raised the ISO up to max 6400 to see what would happen. Does the graininess bother you??

⁸ ISO the higher the ISO the more noise <https://www.youtube.com/watch?v=EYbTEB2mQX8>