

Beginners' Guide to

digital photography



[Part 3: Light]

Quality of Light

What's hard and soft light?

Shooting in Low Light

Tips and tricks for dark environments

part three



Part 3: Light

Light in Photography

Light in photography is extremely important. Without light, there is no photograph. Light can be gained naturally from the sun or from artificial sources such as light globes, candles, fireworks, street lamps etc, or from a combination of both natural and artificial sources. In all situations, lighting results are controlled by four key elements.

- Intensity, which is controlled by aperture and shutter speed
- The quality of light, harshness or softness of the light
- Colour of light, measured in degrees Kelvin
- The direction of light

The 'right' light is the light appropriate

to the subject you are photographing and the results you are trying to achieve. Sometimes the conditions may be unacceptable because the contrast, quality, direction or colour is unflattering to your subject.

Learning to 'see' light and its effects on objects around you is the first step. Once you understand the nature of light you can learn to use and manipulate it to your benefit. At the end of the day, getting the lighting right in photography means the difference between a good image and a stunning one.



Quality of Light

There are lots of factors that control the quality of light. It can be affected by the degree of diffusion such as clouds, trees, and reflective objects. Quality of light varies from country to country or from one hour to the next, from season to season. Even pollution and weather can be determining factors.

Light can be referred to as being hard, soft, contrasty, flat or any other number of descriptors. Soft light, such as that found on a cloudy day, is non directional with few shadows and often flat. On the other hand, hard, contrasty lighting such as that found in the middle of a hot sunny day, is directional with deep shadows and bright highlights.

Images taken using soft lighting are often not dramatic; however, the lack of extremes in the highlights and shadow enables the digital camera to more accurately expose the scene, reproducing detail in all areas of the frame. Soft lighting is used in portraiture as it is very flattering to the human face.

Hard lighting tends to be more dramatic, with subjects casting hard-edged shadows. Hard lighting often results in lack of detail captured in the highlights and shadows, and if it is very harsh it can 'wash out' colour. Hard lighting can provide good lighting when photographing subjects with texture and intricate detail, such as architecture.

Direction of Light

Light can strike a subject from any angle, but in photography we commonly refer to four main directions: top, side, front or back. Each achieves very different results.

- Top lighting is when light strikes a subject from above, such as midday on a sunny day. It produces short, dark shadows and is unflattering to most subjects.
- Side lighting is when the light source is at a 90 degree angle from subject and photographer and strikes from the side. It produces long shadows that adds a sense of depth and adds a definition to form that emphasises texture and contour. It is good for photographing architecture and can produce dramatic results in landscapes. It is also good for portraiture in soft light situations.
- Front lighting is when the light source is behind the photographer but directly in front of the subject. It results in harsh, flat light that generally casts the photographer's shadow into the image frame, as well as casting long shadows

behind the subject. It can also cause people to squint. A camera mounted flash is considered front lighting. Front lighting can sometimes be effective in landscapes or when the sun is low in the sky and producing a warm glow.

- Back lighting is when the sun is directly behind the subject and in front of the photographer. This lighting can cause lens flare, which occurs when light enters the lens and bounces around inside. Flare can be avoided with the use of a lens hood. The lack of front lighting also results in the subject becoming dark and losing detail. If a silhouette is what you are trying to achieve then this is not a problem, otherwise a bit of soft front lighting such as a fill flash can be used to correct this. Back lighting is also very good for capturing sunsets.



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Controlling Light

It is an extremely rare occasion when all elements of light are perfectly suited to your subject at the very moment you come across it. In most cases at least one element will be wrong. You can try waiting for conditions to improve or return to the scene at another time. You may be able to move your subject to a better location or even move your own position to achieve your desired results. However, when all else fails you can take control of the situation yourself with the use of filters.

Filters attach to the lens of the camera and come in a variety of sizes and uses. When using filters, you will need to increase exposure by a stop or two (depending on the filter) to compensate for the extra layers of glass and colour that the light needs to travel through.

Detailed below are a few of the more useful filters available to digital photography, and their uses:

UV

This filter absorbs the ultraviolet rays and cuts through haze in outdoor photography. It can be kept permanently on your lens and acts as a protector.

Skylight 1B

Skylight 1B reduces the excessive bluishness that frequently occurs in outdoor photography, especially in shade. It also keeps skin tones free of coloured reflections from nearby objects.

PL (Linear Polarising)/PL-CIR (Circular Polarising)

Polarising filters are used to remove or reduce reflections from non-metallic surfaces such as water and glass. They also help to reduce haze and increase colour saturation and contrast. Both filters have the same effect, but you will need to select the right filter for your camera. Check with your retailer before making a purchase.

ND (Neutral Density) x2 - x4 - x8

This filter is handy because the degree of

density requires several stops' increase in exposure. In so doing it allows the photographer to increase exposure in order to achieve otherwise unobtainable results. As discussed in section two of this course, achieving 'correct' exposure can be very limiting; there will be times, for instance, when you need a very slow shutter speed in order to achieve a desired effect but the conditions are such that it is impossible. By fixing a ND filter you are forced to increase exposure, and can now achieve the shutter speed you require.

Graduated Filters

These are extremely useful for reducing the subject contrast. They come in variety of colours ranging from grey to blue, purple, pink and red. Graduation filters are 'graduated' in density from clear to the colour of the filter. A landscape featuring extremes in the shadows and highlights poses severe contrast problems for digital cameras as explained in previous sections of this course. A graduation filter reduces the number of stops between the shadows and highlights because it is one or more stops (depending on the filter) denser at the top – or coloured section of the filter – than the bottom which is clear.

Coloured Filters

There are also a large range of colour filters available. Most are designed to correct colour cast that occurs when shooting images under lighting that is wrong for the film being used.

Digital overcomes these colour casts by adjusting the white balance settings in the camera menu. You can however use these filters to achieve creative colour effects.

Flash

Using a camera flash can both broaden the scope and enhance the appearance of your photographic subjects. However, flash is also one of the most confusing and misused of all photographic tools.

Flash is not only used as a source of light in an image but can also be used to help stop motion when you can't achieve a fast enough shutter speed. We will discuss this further later in the course.

It is also important to know that flash has a colour temperature similar to that of daylight which means that similar results can be obtained using either one.

IN-CAMERA FLASH

All digital cameras today have a built-in flash. The main limitation of built-in flash units is their power. If you are within a couple of metres of the subject you will have no problems, but if you are photographing at a concert from the back row your flash will not be effective.

There may also be times when the flash will correctly expose your subject but the foreground will be overexposed and the background underexposed. Another limitation of the in-camera flash is that it

produces quite harsh light that eliminates any ambient light that may be present in the scene. This can be softened with the use of a bit of tissue paper over the front to diffuse the light.

The most common problem with in-camera flash, however, is 'red eye', which occurs when the flash is fired near to the lens. If a shot is taken of a person looking at the camera, the flash will bounce off their retina and produce a reddening in the eye. The solution is to move the flash away from the lens, which obviously is not possible with a built in flash system. Most cameras today offer a red eye reduction function which sets the flash off a couple of times in quick succession. This gives the subject's pupil time to contract so there is less of the retina from which the flash can be reflected.

In-camera flash can be a lifesaver in low light situations when there are no other options available. Generally speaking it is only really good for 'fill flash' in outdoor photography. The fill flash technique is used to expose backlit subjects that otherwise might reproduce too darkly, or to reduce unsightly shadows on a subject.





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On-Camera Flash

On-camera flash is a unit that attaches to the camera via the hot shoe (a metal slide on top of the camera). Apart from being much stronger than the in-camera version, many external flash unit heads can be angled so that light can be bounced off ceilings and walls. Bouncing flash reduces harsh shadowing both on and behind the subject, leaving a much softer appearance.

In order to avoid exposure issues when using on-camera flash units, it is important to understand how the camera shutter system works in relation to the flash unit. Most SLRs use a two blind or curtain system that consists of metal blades that are located near the image sensor inside the camera body. They are driven horizontally following each

other at a very high speed. At speeds of 1/60 or longer the flash will 'synchronise' with the shutter so that the entire frame is exposed. If you select a faster shutter speed the blind will cover half the frame when the flash is fired, leaving half the image unexposed. The timing of the burst is critical.

Every SLR camera has a 'sync' speed which is the fastest shutter speed you can use in order to avoid this problem. Although a much stronger source of light than that of the in-camera version, you still may experience light 'fall off' when shooting at greater distances. This is due to the inverse-square law, which dictates that when you double the distance from the flash only a quarter of the original light will reach the subject.

Low light

There will be many times when you find yourself photographing in low light situations. You could be photographing the blowing out of the candles at a birthday party, capturing a cityscape at night, doing macro work in dense bushland, or perhaps capturing fireworks or Christmas light displays. Shooting images in low light situations can produce some very dramatic and emotive images.

If you're using a compact camera without manual controls, switch the camera to the night photography mode. If it's not too dark, try switching off the flash as well in order to preserve some of the ambience.

If you have an SLR you can take control,

flick the camera over to manual and select a longer exposure time. This will also mean a slow shutter speed and as such you will need to mount your camera on a tripod to prevent blurring caused by camera shake.

It's not an easy task achieving good exposure in these kinds of conditions. It's very easy to overexpose your image, rendering your highlights as ugly bright blotches. Alternatively, if there is not enough exposure your image will be too dark. If you are photographing a stationary object you can simply bracket your exposure.

If you are photographing a fireworks display or lightning skies, you probably won't have

time to fire three consecutive shots before you lose the effect you're trying to capture. Instead, expose for the highlights. This will ensure that at least your main subject will be exposed nicely.

If you'd like to select a faster shutter speed than conditions allow, try increasing the ISO. Each ISO increase will give you an extra stop of exposure – but be aware that the image will also becoming gradually more 'grainy' (or noisy, as it is referred to in digital photography). Noise can be used to great effect in some instances, but can also become quite unflattering.

When shooting in low light and using slow shutter speeds with a film camera, you need

to take into consideration reciprocity. This basically refers to the relationship between the shutter speed and the aperture; for example, 1/125th of a second with an aperture of f8 gives the same exposure as that of 1/250th at f5.6. When using a film camera at shutter speeds of slower than one second, this relationship starts breaking down (known as reciprocity failure) and further adjustments need to be made. The good news is that this does not occur for digital users. The bad news is that it will increase noise in much the same way as it increases in ISO. As a result, it is important to be aware of this when selecting very long shutter speeds.

Put Your Best Image Forward

Send us a photograph that you've taken that shows nice lighting (approx 1MB) - email to photo@dailyexaminer.com.au. The best images will appear in the next instalment of *Beginners' Guide to Digital Photography*, published on Monday 28th February.

Prize for the best image each week will be a 7" Digital Photo Frame. All photographs appearing in the paper will win the photographer 50 free 6x4 prints in store at Harvey Norman Grafton. At the end of the course, the best image will win the photographer a Panasonic Digital SLR twin lens camera Kit (DMC-G10KTWIN) VALUED AT \$900.00. **ALL PRIZES COURTESY OF HARVEY NORMAN.**

