

## CAMERA CONTROLS

### Introduction

This article is about the basics of camera control that will open up creative possibilities for you. If you have an SLR camera then it's likely that you will have a number of pre-programmed shooting modes available, often selected by a dial on top of the camera (although you may need to refer to your camera's manual). The simplest mode is often represented by a green square and when selected the camera becomes very simple to operate, allowing you to just point and shoot. Whilst point and shoot can be helpful for the grab shots and snaps, for a Photographer it does not give a great deal of control. By losing this control you are removing an important artistic element from your work and taking a great picture will become very much hit and miss.

In addition to the point and click mode SLR's will often provide a number of other pre-programmed modes to assist in picture taking. These are often represented by simple pictures such as mountains, runners and flowers, indicating the type of image they are best suited to. Whilst these give you control over and above the point and shoot mode, you are still relying on what the manufacturer has programmed into the camera. If you want to take real control over your camera and use it creatively to produce consistently good results you had better learn about the inter-relationship between aperture, shutter speed and film and how these affect your image.

### Shutter Speed

Most SLR cameras will allow you to select a shutter speed of between 1/2000 of a second and 30 seconds. This enables you to control the amount of light reaching either the film or the camera's digital sensor allowing control over the exposure of the picture. In addition to exposure the shutter speed will affect aspect of the image that allows you to become more creative.

If I am taking a picture of a car travelling at speed I have a choice as to how I want to represent the car. Assuming I can select a very fast shutter speed (e.g. 1/500 second) without affecting the exposure of the image then I can freeze the action and make the car appear sharp in the image. If I now slow down the shutter speed to perhaps 1/30 second then this is unlikely to be slow enough to freeze the motion of the car. The result is that the car would appear blurred whilst the other stationary elements of the image would appear sharp. Applied correctly, this blurring effect can be used to provide the image with a sense of motion and movement. This takes the image away from being a simple representation of a scene to something more artistic.

Once you understand the above principle you can start to apply it creatively to all sorts of images. A common example is the blurring of waterfalls. By selecting a shutter speed of between 1 and 10 seconds, moving water can appear almost misty and smooth. Another example is the light trails captured at night when the headlights from passing cars leave a trail across pictures.

In the preceding discussion we assumed that we could select whatever shutter speed we wanted without affecting the exposure of the image. When selecting a shutter speed you will also need to adjust the Aperture and film speed accordingly in order to correctly expose the image. One easy way to overcome this is to use the Speed Priority mode that most SLR's offer. This is often represented as a "Ts" setting on the camera but you may need to check your camera's manual. When you select the

shutter speed in this mode the camera will automatically determine the film speed and then select the required aperture to produce a correct exposure.

The shutter priority mode is very useful when you decide that you need to control the shutter speed but are not worried about the other factors such as Aperture. Typically this will be where you wish to control the degree of movement represented in your picture.

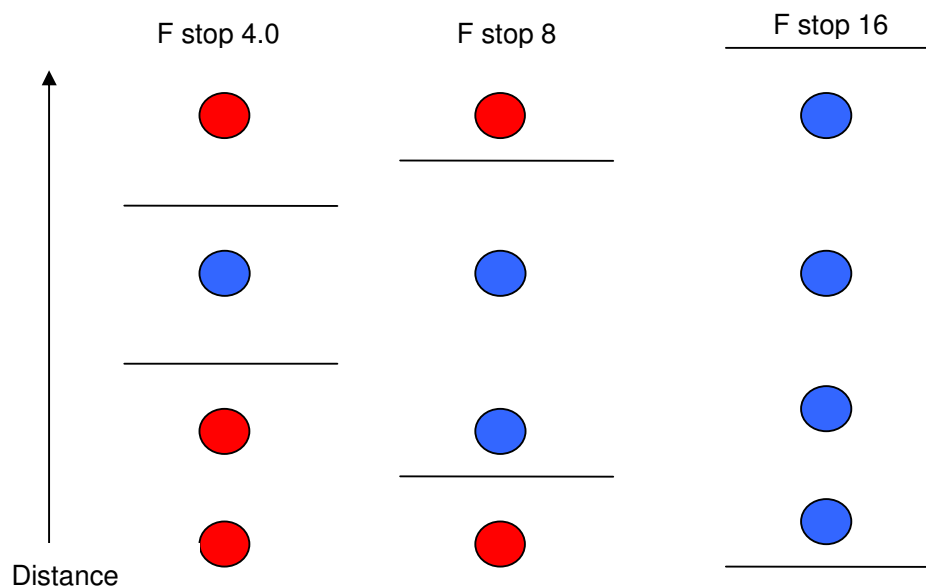
If your subject is stationary then you are unlikely to worry about the shutter speed. The exception to this is however where you are hand holding the camera rather than having it mounted on a tripod. What hand holding introduces is the risk of Camera Shake, however this can be reduced or even eliminated through selecting the correct shutter speed. A basic rule of thumb is to take the inverse of the focal length of the lens as the slowest shutter speed. If you are using a 50mm lens then the slowest shutter speed is 1/50 second whilst a 300mm lens would demand a shutter speed of at least 1/300 second.

## Aperture

Once you have got to grips with the ideas around shutter speed selection and the implications, you can move on to consider the aperture and the effect this can have on your images. Like the shutter speed, aperture settings also control the amount of light reaching the film or digital sensor. Very simply you can think of the aperture as the size of the hole inside the lens that allows light through. A wide aperture will therefore allow more light through than a narrow aperture.

The aperture is measured in f stops which are represented by numbers such as 1.8, 5.0, 8.0 etc. The smaller the number then the more light allowed through by the aperture, so an aperture of 1.8 allows much more light through than an aperture of 8.0. Again, this is a method of controlling the exposure of the image being taken.

There is however an important feature of the aperture setting that allows it to be used creatively in photography and that is it controls something called depth of field. The depth of field is the range between which the objects in the picture will be in sharp focus. This can be seen in the simple illustration below.



In the diagram the blue discs are in focus and the red discs are out of focus. The horizontal lines indicate the zone beyond which the subject moves out of focus. The diagram illustrates that at lower f stops the wider aperture results in fewer of the discs being in sharp focus whilst a high f stop results in a greater zone of sharp focus so more discs are in focus.

There is a further twist on the above and that is the nearer the point in your image that you are focussing on the shallower the depth of field. For example you might select an aperture setting of f.22 assuming this will give your image sharp focus from the front to the rear. Whilst this might be true when the point you are focussing on is perhaps 15 feet away, if the point of focus is only 1 foot away it's doubtful. There is a way around this problem using a technique called "hyper focal focussing" but it is an advanced technique beyond the scope of this article.

Different lenses will also have different depth of field characteristics. A wide angle lens such as a 24mm will provide much more depth of field at f4.0 than will a telephoto lens such as a 200mm at the same aperture.

Depth of field can be a great tool to add impact to your images. With scenic views such as landscapes it's common to use a very small aperture to achieve the sharpest possible focus throughout the scene. This helps create the feeling of depth and add impact to this type of image. Portrait images however often benefit from using a wide aperture so that the person is in sharp focus but the background is thrown out of focus. This helps focus attention on the subject in the picture.

The final point is that as the aperture affects the volume of light hitting the film or camera's digital sensor, it will also affect the shutter speed. This means that you are likely to need to make some kind of trade off between aperture and shutter speed. For example if you want to capture a pin sharp scenic view you will need a very small aperture which will increase the shutter speed and could make it impossible to hand hold the shot. This could be made worst still if you are using a slow film or a low ISO setting on a digital camera.

## Film Speed

The final variable to consider is the selection of film speed. The film speed (indicated by an ISO value) determines how sensitive film or in the case of a digital camera the sensor is to light. The lower ISO values of 50 or 100 or much less sensitive to light than the higher values such as 1600 or 3200.

If you are using a slow film or ISO setting such as 100 then you will need to use a wider aperture to achieve the same shutter speed as you can with a faster film or setting. This can make slow film or low ISO settings impractical for fast moving subjects such as sports unless you are able to select a very wide aperture or introduce some form of artificial lighting.

Film speed carries with it another creative possibility which is the size of grain. As the film speed increases so too does the amount of grain that can be seen in the final picture. Grain can look particularly effective in Black & White images where you wish to create a moody scene. Fog and stormy conditions can take on a whole new appearance when there is a lot of grain present. If you want to experiment with grain try using an ISO 1600 or even 3200 film speed.

In the case of digital, grain is replaced with the problem of noise. Noise does share some of the characteristics of grain but it does not look quite right in images. That said, if you turn a colour image to black and white noise can add a creative

dimension to the image. It's also possible to add additional noise in software such as Photoshop.

If you find that other creative choices require you to use a higher ISO setting on your digital camera and that this is introducing unwanted noise, you can always use specialist software to remove most if not all of the noise. If you are shooting in RAW format you will find that the latest versions of Photoshop (CS onward) have support for RAW files and that there is an option to remove noise. Another alternative to investigate noise removal products such as "Neat Image", a link for which can be found on the Links page of the Lenscraft web site.

So there you have it, some basic camera control that you really should learn and master. Happy shooting.