EXPERT PHOTOGRAPHY

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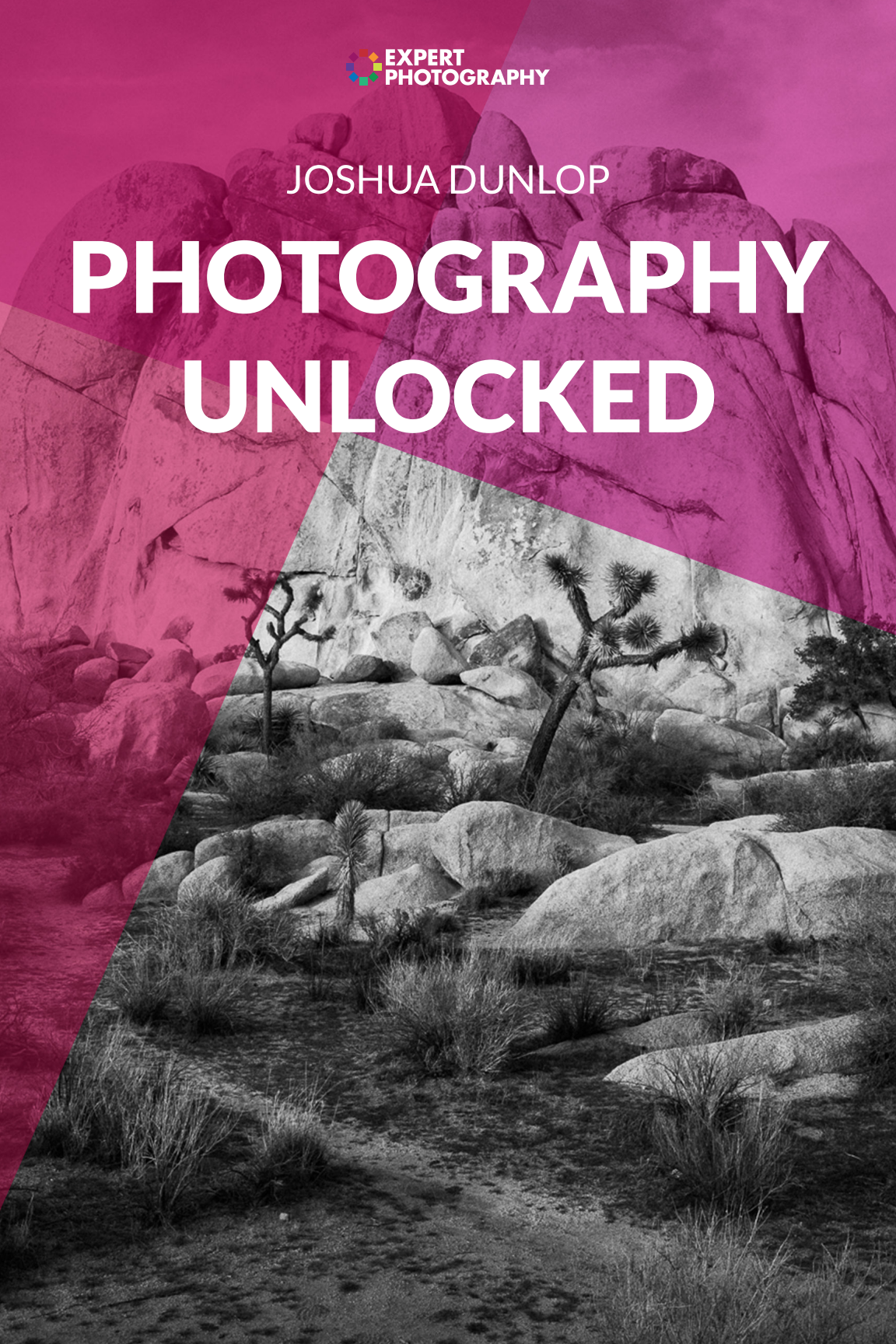
PHOTOGRAPHY UNLOCKED



Photography Unlocked

Unlock The Secrets Hidden Inside Your Camera

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Introduction

Welcome to our Photography Unlocked E-book. We are excited to have you here, as I'm sure you are eager to find the delights within.

This treasure trove of information is designed to help you progress as a photographer. Whether completely new to the photography field, or a seasoned shooter looking to brush up on some skills - there is something for everybody.

We all have digital cameras. From point and shoot cameras, across DSLRs all the way to mirrorless systems. They may differ in areas, but they all capture images using a lens and a digital sensor.

What you will find here suits all camera types and all models. We have limited our scope to the settings that are more commonly found. This helps ensure that we are all on the same page.

You'll find Photography Unlocked is split into four parts. This is where you'll understand exposure, learn camera basics, delve into the rules of composition and then look at what comes next.

Part I is where you'll learn everything you need to know about exposure. Using the model of the exposure triangle, we cover the three main aspects: aperture, shutter speed, and ISO.

The exposure of a scene is paramount in capturing impressive shots. Here, you'll see how each setting works together in bringing the best possible light to your scenes.

You'll also find out how to freeze moving subjects in your shots or add motion blur if that's what you're looking for. All with great visual examples to get your images light perfect.

The last area of this section gives you examples of how you can tie all these different settings together. Moving one may need a subsequent tweaking of a different setting, based on your scene and subject.

Part II is the biggest area of our guide - Camera Basics. We run through all the elements that ensure you get the best from any given scene.

Here, you'll not only learn what shooting modes are possible but how to use them and for which scenario. The shooting modes are also important, as an aperture or shutter speed priority can help harness a dynamic scene easily.

We cover histograms, and what you need to spot to ensure your scene isn't over- or underexposed.

As focus modes, such as AI SERVO, can be confusing, we added those and when they may be the thing that brings out the best of your preferred scene.

Next, we have a look at what depth of field is and how it relates to focal length. These are both very important to help you understand what your lenses do to your scene. This is very helpful, even if you feel you have a good grasp on lenses in general.

Understanding the white balance setting on your camera will ensure that you capture the light correctly in each image. This helps keep the realism of the scene and cuts down on any post-production.

If you're still a little confused about crop factors and full-frame cameras, we have an area for that too. It will be the last thing you'll read on the matter.

Polarising filters with great examples are the next thing you'll find. These are great for removing reflections and distracting glares from scenes.

We finish this section off with ten tips on how to gain sharper images. This might be the list you've been searching for a long time.

Part III revolves around the rules of composition. This is how you arrange the elements in your scene to create the most interesting images possible.

First, we run through the well-known rule of thirds. You'll find out when to use it and when it is possible to break this guide, leading to dynamic photography.

Next, you'll learn about visual weight. This refers to sizes, shapes, and colors in your scenes. Balance comes shortly after, showing you how you can add or remove tension from scenes with a few examples.

We have also included areas on eye lines, single point compositions,

as well as triangles. All three of these help to make your scene more compelling.

Part IV is what comes next after you learned the basic ideas in the first three parts. We provide a lens buying guide, ensuring that you get the glass that you need, not what you want.

After that, we look at nine ways you can make money from your photography. And then you're all set. This book provides the foundation to which you base yourself, and hone your skills from practice, patience, and perseverance.

PART I

UNDERSTANDING EXPOSURE

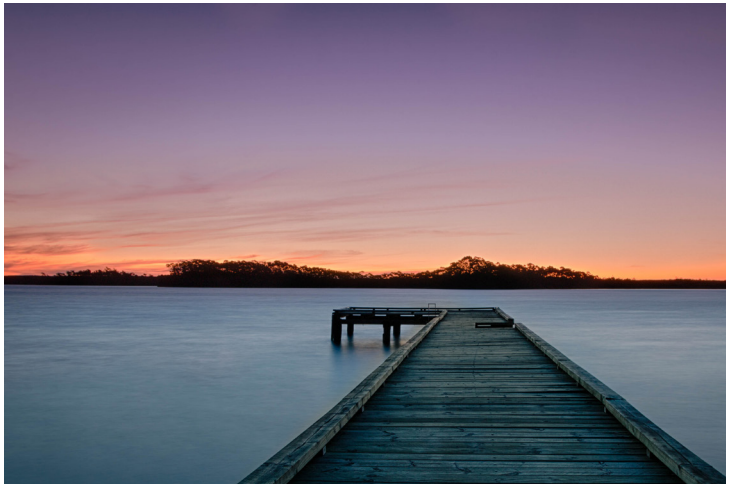
Perhaps the most confusing thing about your camera is learning how to capture a perfect exposure. Shutter speed, aperture, and ISO combine to produce an exposure. This chapter will walk you through how to do that expertly and effortlessly.

Chapter 1

Intro to Exposure

EXPOSURE IN 3 STEPS

1. Light passes through the aperture of the lens into the camera.
2. The shutter speed decides how much of that light is going to be recorded onto the camera's sensor.
3. The ISO determines how much the exposure is increased.



Every photo has an exposure. The more you understand about exposure, the better your photos will be.

Once you start to grasp the effects of each aperture, shutter speed and ISO on a photo, you'll be able to use them correctly and creatively.

This section covers how to create the right exposure for any situation. We'll also take you through the negative consequences of each exposure factor.

As well as affecting the exposure...

The aperture affects the depth of field.

The shutter speed determines whether there's motion blur or freezing.

ISO produces digital noise/grain. This, in turn, affects the quality of the image.

All of this combines to produce an exposure like the one below.

The aperture is f/10 resulting in a medium depth of field and the sharp feel of this photo.

The shutter speed is 1/100 of a second, meaning that I could take the photo comfortably without motion blur.

The ISO is only 100 which has resulted in very little noise.

Getting the Correct Exposure Using Different Shooting Modes

Every modern camera will have an exposure meter built into it. This will be displayed on the screen similarly to the image above.

Different modes use this meter to automatically create the correct exposure. When the 'needle' is in the centre, the photo will be exposed correctly.

Priority Modes

Aperture Priority will hold the needle in the centre (unless you've moved it manually). As the aperture changes to allow more light in, the shutter speed will also change. It will allow less light in, maintaining an even exposure.

The shutter priority mode will do the same thing, only the other

way around. If the shutter speed is changed, the aperture changes accordingly and automatically.

Manual Mode

Manual mode allows you to change both the aperture and shutter speed at the same time without conforming to a certain point on the exposure meter.

This mode tends to be used by more experienced photographers because it gives them more control over the photo.

The light meter will still move to indicate how well exposed a photo will be.

Working With Different Exposure Conditions

Daylight

The photo on the next page has excellent lighting conditions so you can use fast settings on your camera. The photo below was taken at 1/60 of a second, at an aperture of f/4 and ISO 200.

Night

Photos of scenes at night are best taken using a tripod. This way you can create long exposures and play with the light without producing blur. The photo below was taken using a 6 second exposure, a narrow aperture of f/13 and an ISO of 100.

Indoors

I regularly use a flash indoors, bouncing it off a wall or a ceiling to create a more natural effect. The settings used below were 1/200 of a second, f/2.8 and ISO 200, with a flash bouncing off the ceiling.

Event

Due to the lighting conditions at events, and the fact that you're not often allowed to use flash, you'll often have to boost the ISO.

Additionally, artists on stage tend to move around quite fast; a fast shutter speed will also be required.

This results in a wide aperture with a narrow depth of field, a high ISO, and some pretty cool lighting conditions like the photo on the right.

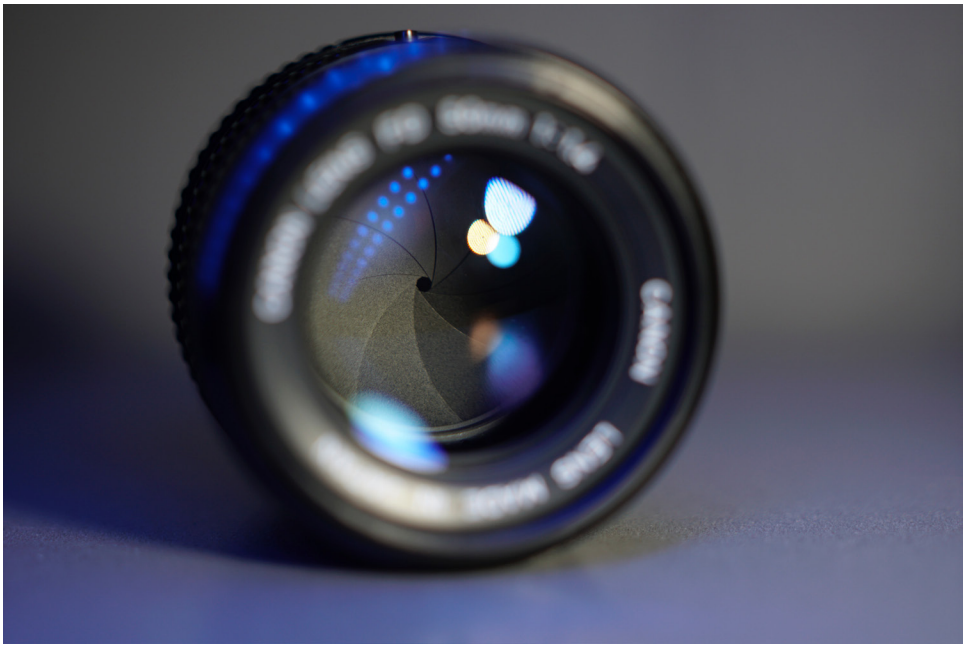
Image taken at 1/125, f/4 and ISO 6400.

Chapter 2
Aperture

Aperture is the first of three combining factors which create an exposure. Understanding aperture is a good way of getting to grips with taking a well exposed photo.

There are also negative and creative effects of different apertures. This section will teach you what they are and how to use them to your advantage.

What Is the Aperture?



The best way to understand aperture is to think of the way in which the pupil of your eye changes size to let in different amounts of light.

The wider it gets, the more light it lets in.

Together, the aperture, shutter speed and ISO produce an exposure. The diameter of the aperture changes to allow more or less light onto the sensor, depending on the situation.

Aperture can also be used for creative effects.

How Is Aperture Measured and Changed?

Aperture is measured using something called the f-stop scale. On your camera, you'll see 'f/' followed by a number.

The number denotes how wide the aperture is.

This, in turn, affects the exposure and depth of field (we'll tackle this later in this section). The lower the number, the wider the aperture.

This may seem confusing. Why a low number for a high aperture? The answer is simple and mathematical, but first you need to know the f-stop scale.

The scale is as follows:

f/1.4, f/2, f/2.8, f/4, f/5.6, f/8, f/11, f/16, f/ 22.

The most important thing to know is this:

From each number to the next, the aperture decreases to half its size allowing 50% less light through the lens.

This is because the numbers come from the equation used to work out the size of the aperture from the focal length.

You'll notice that, on more modern cameras, apertures exist between those listed above. These are third stops. Between f/2.8 and f/4 for example, you'll also get f/3.2 and f/3.5. They are there to increase the control that you have over your settings.

Things are about to get a little harder - if you get confused, skip this. We've already covered the most important part.

Say for example, you have a 50mm lens with the aperture of f/2. To find the width of the aperture you divide the 50 by the 2, giving you

a diameter of 25mm.

You then have to take the radius (half the diameter), times it by itself to create the radius squared and times that by pi. The whole equation looks something like this: Area = pi * r^2.

Here are a couple of examples:

A 50mm lens with an aperture of f/2 is a lens opening 25mm wide. Half of this is 12.5mm. Using the equation above (pi * 12.5mm^2) we get an area of 490mm^2.

A 50mm lens with an aperture of f/2.8 is a lens opening 17.9mm wide. Half of this is 8.95mm. Using the equation above (pi * 8.95mm^2) we get an area of 251.6mm^2.

It doesn't take a genius to work out that half of 490 is less than 251. This is due to rounding error. The area of f/2.8 will still be exactly half of f/2.

This is what the aperture scale looks like in reality:

It's a little confusing. But, like I said, as long as you remember the f/ stop scale and know that every time the f/number changes by one stop, you're either halving or doubling the exposure, you'll be fine!

How Does Aperture Affect Exposure?

The way in which aperture changes correlates with the exposure. The larger the aperture, the more exposed the photo will be. The best way to demonstrate this is by taking a series of photos, keeping everything constant except the aperture.

All the images below were taken at ISO 200, 1/400 of a second and without flash. Only aperture changes throughout, starting at f/1.4, all the way through to f/22.

The main creative effect of aperture isn't exposure however, but depth of field. We will tackle DoF later in this e-book.

What Are the Uses for Different Apertures?

The first thing to note is that there are no rules when it comes to choosing an aperture. It depends on whether you are going for artistic effect or accurately reproducing a scene in a photo.

To best make these decisions, it helps to have a good knowledge of traditional uses for the apertures listed below.

f/1.4: This is great for shooting in low light, but be careful of the shallow DoF. Best used on shallow subjects or for a soft focus effect.

f/2: This range has much the same uses as f/1.4, but an f/2 can be picked up for a third of the price of an f/1.4.

f/2.8: Still good for low light situations, but allows for more

definition in facial features as it has a deeper DoF. Good zoom lenses usually have this as their widest aperture.

f/4: This is really the minimum aperture you'd use when taking a photo of a person where there is decent lighting. Autofocus can be temperamental, so you are risking the face going out of focus in wider apertures.

f/5.6: Good for photos of 2 people. Not very good in low light conditions though, so best to use a bounce flash.

f/8: This is a good aperture for large groups. It will ensure that everyone in the frame remains in focus.

f/11: This is often where your lens will be at its sharpest. It's great for portraits.

f/16: Shooting in the sun requires a small aperture and this is a good 'go to' point.

f/22: Best for landscapes where noticeable detail in the foreground is required.

As I said before, these are only guidelines. Now that you know exactly how the aperture will change a photo, you can experiment and have fun with it!

Chapter 3
Shutter Speed

What Is Shutter Speed?

Without going into unnecessary detail as to how shutter speed works, it can be summarized as the exact amount of time that your camera records an image for.

More often than not you will be taking a photo within a fraction of a second. Any longer results in a blurred image in most situations.

Shutter speed uses 'stops' in the same way as aperture, but is a lot more straightforward. Working out half of an exposure is a lot simpler with shutter speed than aperture. You just take the current speed e.g. 1/200, and halve it, which, for this example, would give 1/400.

All that you need to remember is that the second number has to 'double' to halve the value as these are fractions e.g. for 1/200, the '200' is doubled to give half the value.

Using Motion Blur and Freezing

Provided you're not doing it for creative effect, you will want to choose a shutter speed fast enough to prevent motion blur.

Motion blur is also affected heavily by the focal length of a lens.

Telephoto lenses require a fast shutter speed to capture an image without blur. Even the slightest movement of the camera will be magnified by the lens.

A wide angle lens requires a slower shutter speed. The details in the image are a lot smaller.

As a rule of thumb, the average person can take a sharp, blur-free image by setting the speed to a fraction of a focal length. For example, to take a photo at 30mm, you would set the shutter speed to 1/30 of a second. Any slower and motion blur is likely to occur.

It's worth noting, however, that this rule is only relevant to full frame cameras. For a crop sensor, due its magnifying effect, you would be better off choosing a speed of 1/45 of a second.

There are always exceptions to the rule, such as image stabilization in your lens which allows use of a slower shutter speed.

As you become more experienced, you'll gradually improve on vital skills such as holding your camera in the way that suits you best, increasing (among other things) your stability.

Here is an example of creative motion blur:

Freezing is much less of a worry when taking photos. It occurs when a photo is taken at such a high shutter speed (1/500 and above) that the exact moment at which the photo is taken is captured, without any movement blur.

I personally don't like shooting at these speeds as the images produced tend to look flat. Instead, when shooting a fast moving

object, I like to include a small amount of motion (it may as well have been sitting still otherwise). This can work, as demonstrated in the photo on this page, where the subject is moving through the frame.

The Right Speed for the Right Situation

Fast speeds to capture a telephoto image

Because the image below was taken using a telephoto lens, it was important to have a fast shutter speed (1/640). I avoided camera shake by using a tripod and remote release for the camera. This means that I can let the camera sit still without moving when taking a photo.

Capturing a fast moving object in a low light situation

When doing event photography, the artist you're shooting is likely to be moving around on stage. This leads to both low light and a fast shutter problems.

This can be counteracted by a wide aperture and high ISO. It's a compromise really, but does allow you to capture the image without any unsightly blur.

Creative Uses for Different Shutter Speeds

Creative Blur

With a remote trigger for the camera and a tripod to hold it steady, you can play around with speeds. You can create interesting images with blur being the main point of interest.

Creative Blur With Flash

Adding a flash to a photo with blur results in the subject being frozen in the frame. You can then move the camera around to capture the light and blur for artistic effects.

Panning

Panning is where you move your camera to complement the movements of the subject, resulting in an image where the background is blurred, but the subject is not.

This shot was taken from the side of the road, aimed at the tuk-tuk moving from right to left.

Light Painting

For light painting, all you need is a long exposure and a light source. The photo below was taken on a 30-second shutter, during which time the model moved around in the scene.

This allows the light to move exactly where you want it and is great for creative shooting at night.

Light Graffti

A long exposure coupled with a moving, constant light source allows you to add 'graffiti' to the image.

Long Exposures for Low Light Situations

Because this photo was taken in the evening, a slow shutter speed was used to gain an even exposure. This can only be made possible with a tripod or somewhere flat to lay the camera.

The second photo requires a long shutter, but for a different reason. I had to wait for a passing car to come into the frame and the timing can be very difficult.

Chapter 4
ISO

ISO is the last of the three factors which determine the exposure of a photo, along with aperture and shutter speed.

What Is ISO?

The ISO (International Standards Organization) determines the sensitivity of the sensor in your camera, which in turn affects the exposure of your photos.

The ISO scale typically starts at 100. It continues to double from this point to the boundary of your camera's capabilities: 100, 200, 400, 800, 1600...

The starting and ending points of this range and how well the camera handles the ISO depend solely on the camera that you're using. Most modern cameras have many more points at which you can set the ISO. These fall in between those I've mentioned, in the same way you will find third stops in the aperture and shutter speed.

The International Standards Organization are responsible for setting this widely used standard.

All you need to know is included in the information that follows.

How Does ISO Affect Exposure?

ISO is one of three determining factors of a photo's exposure, along with aperture and shutter speed. These two affect the lens and exposure time respectively, with ISO directly affecting the sensor (or film).

To be more specific, the ISO determines how well exposed a photo will be by changing the sensitivity.

The ISO scale is similar to shutter speed in the sense that, when doubled, the exposure is also doubled. They are proportional to one another e.g. a low ISO number would give a low exposure and a high ISO would give a high exposure. It's much simpler then aperture.

This is much easier to demonstrate using actual photos. The aperture and shutter speed remain constant throughout these photos with only the ISO changing allowing a clear view of its effect.

100

200

400

800

1600

3200

As you may have noticed by now, nothing affects the exposure in one single way. There are consequences to using different ISOs.

How Does ISO Affect the Quality of Photos?

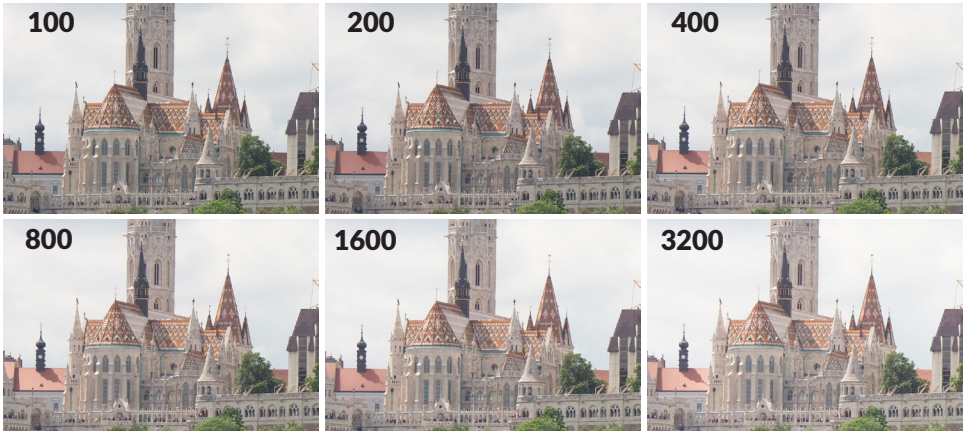
As a general rule, the lower the ISO value, the better the quality of the photo. Doubling ISO effectively doubles the exposure which, in turn, doubles the digital noise.

This noise reduces the detail of a photo, giving the image a grainy, uneven appearance.

Lower number = Lover sensitivity = Finer quality photos

To best demonstrate how the ISO affects the image quality, I've taken another series of photos, displayed below. For the purpose of this experiment, I have altered the shutter speed and aperture between photos, rather than simply changing the ISO.

I did this to give the pictures an even exposure, allowing for easier comparison of the difference in quality.



As you can see, the higher the number, the stronger the unsightly noise becomes.

You can use noise reduction software to correct this. But it only

really smooths out the noise, which can result in an airbrushed effect on faces.

This reduces the detail in a photo, like the one below (cropped to 1% of actual image).

It has its uses but apply it with a light hand and after considering the photo's purpose. Cameras with larger sensors handle noise better since they allow more light into a photo.

As technology continues to improve, the difference between sensor size and noise is reducing. What used to be a big problem is much less of a one in high quality cameras.

All cameras are different so I suggest taking yours into low light conditions in order to discover the maximum ISO that you're able to use effectively.

Enhancing the exposure in post production has the same effect as increasing your ISO. Make sure you get the exposure right in the camera the first time around to avoid this.

Now that you know what the ISO does, let's take a look at situations where it might be used.

Which ISO to Use and When?

ISO 100-200

Your photos will have the most detail and the best quality. This is great for shooting in daylight as there is no need to boost the ISO any higher. Shooting at 1600 in bright conditions would be a waste, resulting in easily avoidable grain.

ISO 200-400

For slightly darker conditions, such as in the shade or indoors where it is brightly lit.

ISO 400-800

I like to use this range when shooting indoors as it helps to produce a slightly darker tone. The exposure is well lit and retains its detailed background.

ISO 800-1600

Event photographers frequently have no choice but to use this range. Live events often happen in low light conditions where flash is not allowed.

ISO 1600-3200

Again, event photographers will use this range for live gigs. It's also used in extreme low light conditions where using a tripod is not an option. ISO 3200 is the highest I tend to push my camera to as I'm not a fan of digital noise (grain).

ISO 3200+

This range is reserved for extra low light conditions and artistic effect. With most cameras, it's impossible to avoid a grainy result in this range.

Chapter 5

Understand F/Stops & Stops in Exposure

In photography, a 'stop' is the measurement of exposure, depending on the shutter speed, ISO, or aperture.

Increasing the exposure by one stop doubles the exposure.

For example, your aperture is f/4, shutter speed is 1/100 and ISO is 100. If you keep the aperture at f/4, the shutter speed at 1/100, but increase the ISO to 200, you will increase the exposure by one stop.

Doubling the ISO makes the exposure twice as sensitive, hence the jump in single stops.

It can get a little bit confusing, but it's really important that you learn this. As your skills as a photographer improve and you start to shoot in manual more often, you're in charge of looking after how the camera exposes. Knowing what a stop is for the shutter speed, ISO, and most importantly, aperture, will affect how you change each one.

Let me make this simple for you. You're shooting at f/2.8, at 1/100 of a second, with an ISO of 200, but you want a shallower depth of field. You know that widening your aperture to f/2 will produce a shallower depth of field, but it will also double the amount of light that's entering your lens.

You have jumped one stop with your aperture, and made the exposure too bright. You have to **counteract** this with shutter speed or ISO. To do this, you can halve the ISO to 100, or double the shutter speed to 1/200 of a second.

To briefly summarize, increasing the exposure by a stop will double the exposure, and decreasing the exposure by a stop will halve it.

If only it were that simple though...

ISO Stops

Let's start with the easiest to understand, which is ISO. One stop up from ISO 100 is 200, but one stop up from that is 400.

The intervals aren't equal, but they all have one thing in common. They're doubled from the stop before.

Shutter Speed Stops

The majority of the time when using your camera, you will be shooting at a fraction of a second. If you shoot at a speed of 1 second or longer, the same principles as above apply. Simply double the time from 1 second to 2, then from 2 seconds to 4.

To achieve the same effect when shooting at a fraction of a second, such as 1/200, halve the number after the fraction (200 in this case).

If you're new to photography, don't worry, this will soon become second nature. 1/100 is twice as long as 1/200, so that's one stop, and the exposure is doubled. 1/50 is twice as long as 1/100, and so on.

Aperture

I'm afraid this is where things get a little bit complicated, and somewhat mathematical. If you use the logic that I've explained above, then you would probably assume that f/2 is half the exposure of f/4, but sadly this is not so.

f/2 actually allows in four times as much light as f/4. You may be scratching your head at this, but it will all become clear if you can just stick with it.

The aperture scale does not take on the same principles as shutter speed or ISO because of how the measurement is taken.

If you've read the section on Aperture, you should be familiar with how this works. If not, head back over there for a quick recap before reading on.

Wait! There's More!

You will have noticed with your aperture, shutter speed, and ISO, that there are more intervals than just doubling and halving exposures.

These are third stops, which give you more control over your exposure. For example, between f/2.8 and f/4, you will also find f/3.2 and f/3.5.

This doesn't have to be complicated at all, and you shouldn't think too much of it. Just knowing what it does will help you work it out in time.

PART II

CAMERA BASICS

There's so many dials, buttons, joysticks and switches on a camera, it's hard to know what to do with them all. And then there's all the information that's displayed on your screen.

What do you do? Well, this chapter covers all of that and more so you can start understanding your camera today. Throw out your camera manual!

Chapter 1
Metering Modes

All digital cameras (with the inclusion of a few analog models) can tell how much light is found in your scene. This is done by an onboard light meter.

This allows you to 'meter' your scene, giving you advice on what your exposure should be.

Through the automatic setting, the camera will choose the best settings based on the metering mode you choose.

This is also the same when using aperture or shutter priority. Only manual mode gives you full control, allowing you to disregard the advice.

There are four metering modes you can set your camera to. Each one has its specific uses.

What Each Mode Does

Evaluative / Matrix / Pattern / Multi-zone Metering Modes

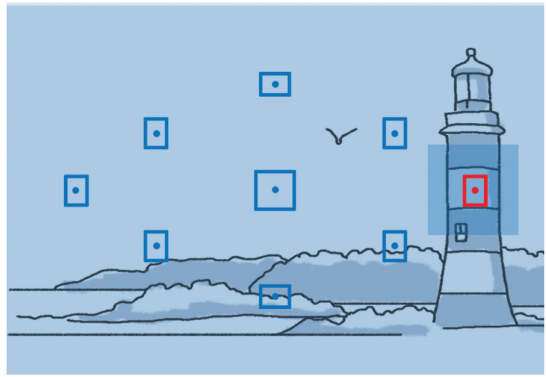
This mode is usually the default setting that your camera chooses. It is complex and the most modern metering system.

Here, the mode collects data from several points in your scene. It combines the results to find the best settings for the correct exposure.

The points this light meter uses range from several to over a thousand. All areas, bright and dark, are taken into account.

To show an entire scene with an overall exposure, choose this mode. However, it will reduce the contrast in your image.

This is best used for sweeping landscapes or interesting interiors. It isn't something you can use for capturing silhouettes.



Average Metering

This metering mode is similar to the Evaluative metering mode only less complex.

The camera's light meter gives no weight over any areas in your scene. It takes a 'blanket' reading rather than pin-pointed readings.

This isn't a favorite of many photographers as it isn't as intelligent as other modes. It can lead to incorrect exposures due to misreadings of what is in your scene.

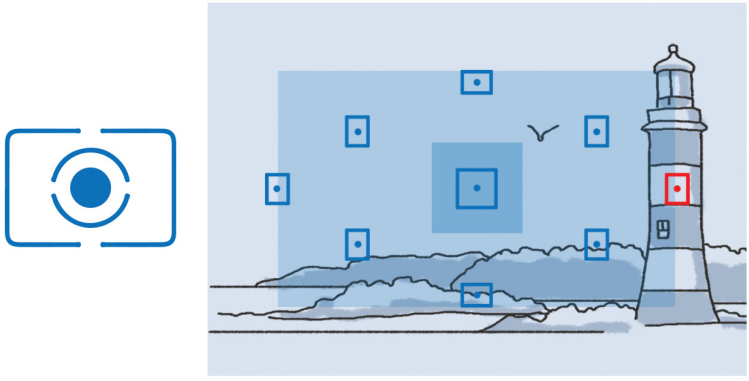
For example, a bright sun is overlooked, ensuring it will be captured in an overexposed manner.

Center-Weighted Average

In this system, the meter looks at 60-80% of the frame. It is best suited for subjects that sit in the center of the frame.

Originally, this mode came from a consequence of focusing screens used in early SLRs.

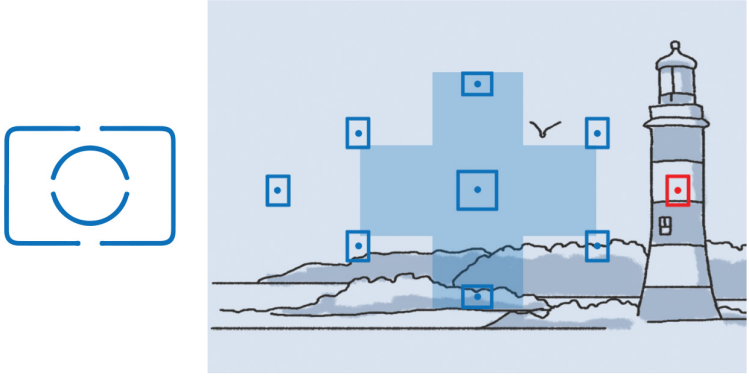
It is often seen as a larger partial metering mode. It is best used for subjects captured in the center, that take up over 60% of the frame.



Partial Metering Mode

This particular mode collects data from a small, circular region at the center of the frame. It covers roughly 10-15% of any given scene.

Partial metering is a great choice for headshots and portraits. As long as the subject is in the center of the frame, as this is the priority area.



Spot Metering Mode

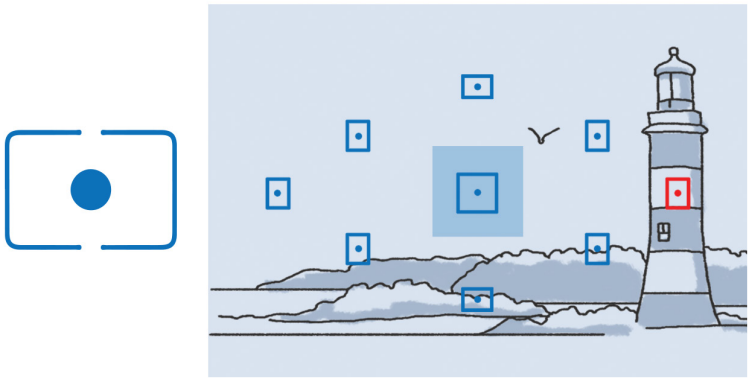
This mode looks at approximately 5% of the entire frame. It pinpoints a very small object or subject for the best exposure.

As this mode has the smallest meter area, it is best used for smaller

subjects. You would use this to single out a solitary subject to draw focus to it.

Spot metering mode tends to be more of an advanced metering mode to use. The area is smaller, which demands practice.

In addition, this mode ignores the rest of the scene. Here, you might encounter an unattractive over- or underexposure.



Which Modes Should You Use and When

From having a clearer idea of what each mode does, you should start to imagine the situations they are best suited to.

For me, I bounce between Evaluative and Spot metering modes.

Evaluative / Matrix / Multi-zone Metering Modes

Evaluative is reliable when it comes to working out the settings for an entire scene. It is intelligent in its approach and works well for my street and landscape photography.

This image was taken when the sun was almost setting, in the height of summer. The light, as you can see, is harsh and strong on the sky, but not on the pier.

By using evaluative metering, the light is balanced. The highlighted

areas are not over-blown, and the shadows aren't too dark.

If I were to use a different metering mode, it would be because I want a different mood or feel than presented in this image. Perhaps to add more contrast, or add more details into the clouds.

However, this comes at a price. In this instance, the shadow would have no details as a result.

The next image shows a lighthouse in a state of twilight. The sky is much lighter than the water, so the evaluative mode is the best metering mode.

It keeps the sky dark and the water light, respectively. While doing so, it retains their details.

The lighthouse is the most important detail. As it is off center, both Partial and Center-weighted metering modes' would not work as well.

In the following image we see light rays burst through a forest setting. Evaluative works here by keeping some strength from the sun while retaining light in the rest of the scene.

Spot Metering Mode

Spot metering allows me to capture musicians and concert photography events well. With this, I don't need to worry about the rest of the scene. The solitary subject is the most important aspect.

This image of the seagull was captured using Spot Metering mode. Here, the bird is the most important aspect of the scene. Because of this, it needs to be exposed correctly.

The bird is a smallish object, which is acceptable for this type of metering.

You can see from the overcast and overexposed sky that it wasn't

taken into account. As it was lighter than the seagull, the Spot Metering mode pushed out the details.

The next image is of a musician playing guitar on stage. We see a silhouette of his head and hair from the one light beam behind him.

The Spot Metering mode allowed the metering of the hair, right in the center of the frame. This way, it retained the overall darkness of the scene.

It correctly exposed the tiny area the scene was metered for. Otherwise, the beam of light would have spread out over a wider area.

Chapter 2
Histograms

Camera LCD displays are pretty bad at accurately representing what the photo looks like. This is why you should be using Histograms.

Histograms give a mathematical representation of how well exposed a photo is. This helps you to get the best photo possible when out on a shoot.

What Is It and What Does It Tell You?

The histogram shows a scientific review of the exposure after you've taken the photo. It essentially tells you how evenly exposed a photo is.

LCD screens aren't very good at telling you this information. Their effectiveness tends to be largely based on the ambient lighting conditions you're in and the brightness of the screen itself.

You'll find an option to view the histogram in all cameras. Some compacts that don't rely on the viewfinder to compose a photo will also show you the histogram in real time.

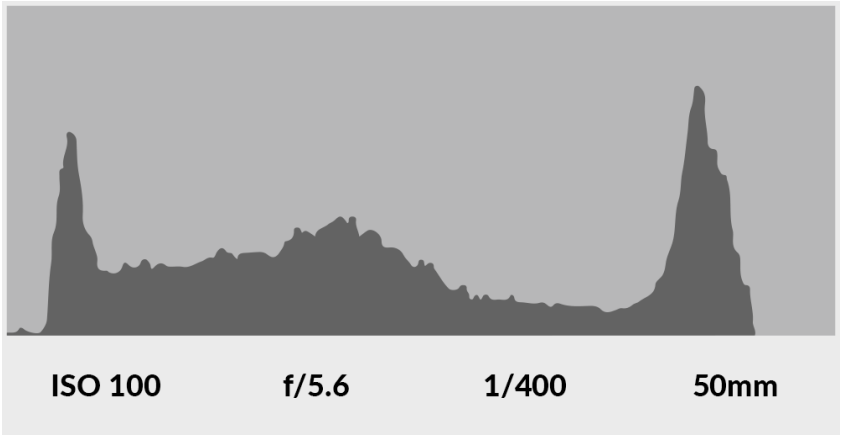
How Do I Read the Histogram?

A histogram is mapped out by brightness on a grayscale. Black is on the left, white is on the right and all the different shades of gray lie in between.

In a standard jpeg image there are 256 different recorded values of brightness. 0 is pure black and 255 is pure white.

These 256 values are mapped out in a histogram and each pixel from the image is assigned a value.

Let's have a look at what that looks like:



This image has been correctly exposed as the majority of pixels lie distant from the black and white values in the histogram.

What may appear to be black in the photo is actually just a very dark shade of grey.

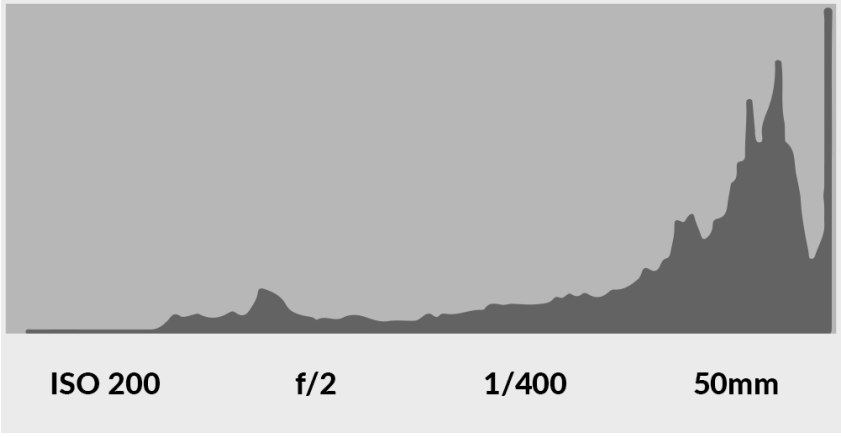
When taking a photo at night, your results may be very different. It's usually best to stay away from the pure black or pure white values.

Having pixels in these ranges means that your photo has either been over- or underexposed and needs to be retaken as there is detail missing.

These details can't be recovered in Photoshop. They are no longer a shade of a color, but pure black/white.

Have a look at an overexposed image and an underexposed image with their respective histograms.

Overexposed

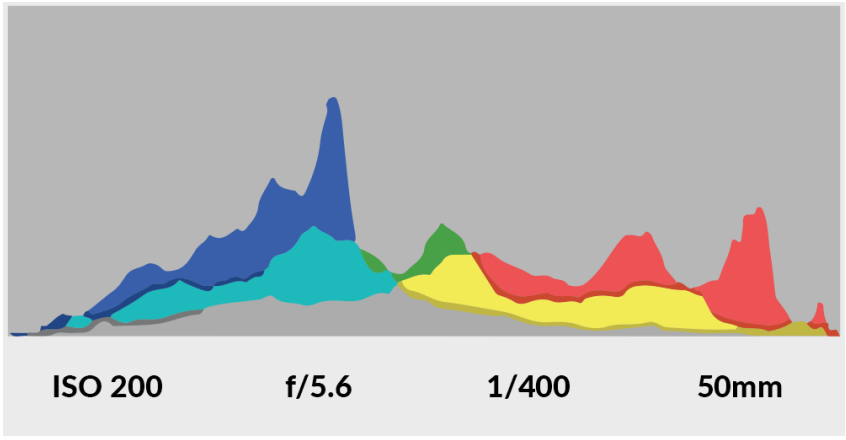


Underexposed

ISO 200 f/22 1/400 50mm

It's also possible to see your histograms in 3 channels of color – red, green and blue (also known as RGB).

For the correctly exposed image that I showed you first, the histogram looks like this:



Using this version of the histogram is most important when shooting brightly colored objects. It's possible to blow out (overexpose to the extent that information is lost) the corresponding channel of color without it appearing in the main histogram.

Now that you understand how histograms work, you'll find yourself using them more and more when taking photos.

They're a great way of making sure that you're getting it right in the camera, and decrease the level of dependence on a computer to finish off your photos.

Chapter 3
Shooting Modes

Shooting modes aren't often understood by camera users, particularly after the purchase of their first SLR, which can show in the quality of their work.

There are also a lot of misconceptions about which mode you should be using when, as well as a lot of bias towards not using manual mode. When you understand exactly what each mode does, it becomes a lot clearer which one to use.

What Does the Camera Control

This may seem like a silly point to talk about, because we all know that the camera covers exposure (namely aperture, shutter speed and ISO) but it also covers a lot more.

You have the ability to alter the way your camera looks at a scene using metering modes and focus points.

You can change how it takes a photo with the burst mode, focus points and focus mode; and how much light it lets in with the exposure compensation.

Different modes give you different options. It's up to you to decide how much control you want.

Full Auto Mode

What the camera controls:

- Shutter Speed
- Aperture
- ISO
- White Balance
- Focus Mode
- Exposure Compensation
- Focus Points
- Metering Mode
- Flash Exposure Compensation

What you control:

- Choose between RAW or JPEG
- Burst Fire Mode

This mode is most commonly used by people who don't know what they're doing but simply want to take a photo of a scene as they see it through the viewfinder.

I can understand the frustration, but unless you've just taken the camera out of the box, you have no excuse. You need to learn how to use your camera to produce the best possible results.

It's a common misconception that, because it's intelligent, your camera will automatically adjust itself to how you would anyway. This is far from true.

You'll end up taking bright photos, with harsh pop-up flash, that look like you used an old phone to take them.

Full Auto does a pretty lousy job of making your photos look as you'd like them to. It's still much better than using a pocket camera on full auto, but won't produce the best photos.

When you can't control the aperture, shutter speed and ISO, the camera has to 'guess' what you're doing, and often gets it wrong.

Exposure is one thing, but there's a lot more to it than that. Full Auto doesn't allow you to meter the photo, which can result in certain areas being darker or brighter than is desirable.

I quite often use spot metering. The extra direction for where my camera should expose can make a huge difference to the end result.

This is just one of the many negative factors – I strongly suggest avoiding this mode.

Program Mode

What the camera controls:

- Shutter Speed
- Aperture

What you control:

- ISO
- White Balance
- Focus Mode
- Exposure Compensation
- Focus Points
- Metering Mode
- Flash Exposure Compensation
- Choose between RAW or JPEG
- Burst Fire Mode

This is similar to Full Auto in that it takes control over the exposure (or most of it here), only it allows the user a lot more control at the same time.

This is typically used by people who know a little bit more about their cameras and want to be able to influence a lot more features, such as ISO and WB.

All of this extra control CAN make for much better photos, so long as you know what you're doing.

As this mode is really only one step away from using a priority mode, you'll often find people who know what they're doing with a camera using it, it's just that they can't operate it fast enough.

I may switch between aperture priority and shutter speed priority at a blink of an eye. The same goes for flash and no flash and other equivalent switches.

This is because I'm experienced with my camera. It's second nature to me, and I can choose my settings at speed.

The camera can only ever guess at the correct settings. You may find that your photos are coming out blurry or noisy because it doesn't know what to do.

To get the best results, you need to control the exposure yourself, and tell the camera what it should be doing. I used to use this mode when I first started.

It worked fine when I was taking photos of still life. As soon as I took photos of moving objects, or indoors without a flash, it wasn't so reliable and produced blurred results.

Shutter Speed Priority

What the camera controls:

- Aperture

What you control:

- Shutter Speed
- ISO
- White Balance
- Focus Mode
- Exposure Compensation
- Focus Points
- Metering Mode
- Flash Exposure Compensation
- Choose between RAW or JPEG
- Burst Fire Mode

I use this mode as much as I use aperture priority and manual mode because of the type and amount of photography I do. A lot of photographers will tell you that they only ever shoot in manual mode, but I personally disagree.

When shooting in good light on a priority mode, you're simply relieving yourself of the extra effort to set the other parameters (such as aperture when you're shooting on shutter speed priority) which are determined by exposure compensation.

You can fix an underexposed photo in post production, but there's nothing you can do about a blurry one. When I'm shooting a fast moving object, I switch to shutter speed priority.

However, when there's plenty of light and no fast moving objects, shutter speed becomes somewhat irrelevant. You're much better off

setting the camera to aperture priority and choosing a setting which would affect your depth of field or sharpness.

Shooting fast moving objects or long exposures are really the only real reason I use shutter speed priority.

Aperture Priority

What the camera controls:

- Shutter Speed

What you control:

- Aperture
- ISO
- White Balance
- Focus Mode
- Exposure Compensation
- Focus Points
- Metering Mode
- Flash Exposure Compensation
- Choose between RAW or JPEG
- Burst Fire Mode

When you have lots of available light you can choose an aperture which will allow you to affect the depth of field for creative purposes, and produce more interesting results.

You can also set your lens to its sweet spot, usually around f/8 to f/11, which is where it will be at its sharpest. If I've got lots of light available and I'm not trying to creatively control my DoF, I tend to set the aperture to around f/8.

I'll even increase the ISO if I have to, so long as it's not producing too much noise.

You wouldn't want to use this mode if the shutter speed priority mode appeals more to your shooting.

Also, if the lighting is dark or inconsistent, you'll want to use manual so that you can constantly adjust your exposure to best suit

what you're shooting and where.

Manual Mode

What the camera controls:

- Exposure Compensation

- Shutter Speed
- Aperture
- ISO
- White Balance
- Focus Mode
- Exposure Compensation
- Focus Points
- Metering Mode
- Flash Exposure Compensation
- Choose between RAW or JPEG
- Burst Fire Mode

Manual gives you all the control you could possibly want out of your camera as it leaves everything up to you. This is great... so long as you know what you're doing.

More often than not, if I'm using a flash, I'll set my camera to manual. I like to be able to control the amount of ambient light in my photos. Also, when it's dark out and I'm using longer exposures on a tripod, the added control on manual allows you to decide exactly how you want your photos to expose.

The same is true for when you're shooting landscapes and you've got plenty of time to take the photo exactly how you want it.

There are many uses for manual mode, perhaps more than any other mode. Once you master it, you'll be able to see how much it can improve your photos.

When Not to Use Manual Mode

There's not many reasons why you wouldn't want to use it, but there are reasons why other modes would work just as well.

If you're shooting in sunny daylight, you know that your aperture is going to take priority over your shutter speed and can set it accordingly. If you're using manual mode, you then set the shutter speed so that the exposure compensation meets in the middle.

This is basically doing exactly the same as aperture priority mode. You might as well use that instead.

Chapter 4
Focus Modes

Understanding focus modes is key to getting the photo that you want in a hurry. It's the difference between the photo being in and out of focus.

You've probably struggled to focus in the past and not been entirely sure why it just won't lock on exactly what you want it to.

This section will tell you everything you need to ensure you never lose focus again.

One Shot / AF-S

This is the simplest of all of the focus modes and does exactly what it says on the tin – it focuses for one shot.

You would typically shoot in this mode when capturing a subject that isn't moving. The camera will only focus once when you depress the shutter button halfway.

This is the mode that you would use if you wanted to use the focal lock of the camera to focus on the subject and then move the camera to recompose the frame.

The camera will not refocus in this mode until you lift up the shutter button and depress it again.

AI Servo / AF-C

This is often referred to as continuous focus. It will focus when you partially depress the shutter, but will monitor movement in the frame and make any necessary adjustments in focus between the shots.

There's no need for you to remove your finger from the shutter button.

This mode is useful when shooting a moving subject, at sporting events for example. You will not be able to use the camera's focal lock to recompose a shot in this mode.

You'll find that the camera will continually try to focus.

AI Focus / AF-A

This is probably the least understood mode and it's actually a mixture of the 2 modes previously described.

When the camera detects only slight movement it will act as though it's on One Shot / AF-S mode and will allow you to use the focal lock feature.

When the camera detects more movement, the focus mode will start acting like AI Servo / AF-C mode instead and track the subject.

This may sound like the best focus mode to use, but I typically like to set it to one of the other modes. I usually know what I'm shooting and therefore how much movement to expect.

This mode does come in handy when you're shooting still objects that are likely to move without much notice, such as a bird on a perch.

Chapter 5
Depth of Field

This section goes hand in hand with the section on Aperture. Depth of Field is controlled by the Aperture. Please read that section first.

Depth of Field has positive and negative effects on your photos. Knowing exactly what it does and how to control it is essential to taking the best possible photos.

This section teaches you all about how to use Depth of Field (DoF) to your advantage and how much is right for different situations.

What Is Depth of Field?

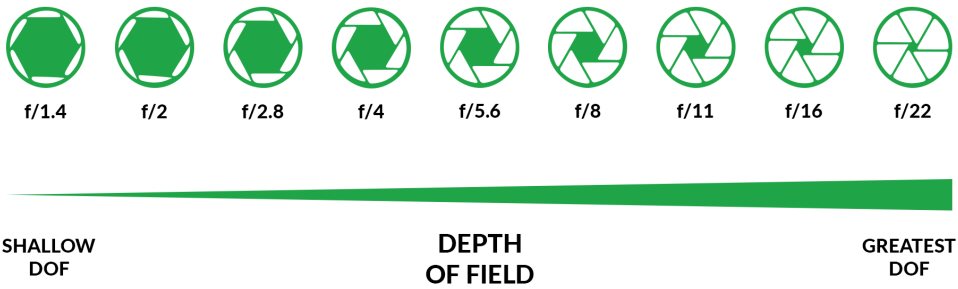
DoF is the distance between the closest objects in focus and the furthest point of focus. The distance can be increased or decreased by changing the aperture of the lens.

You'll often see shallow DoF used creatively in photos as it can force focus onto a certain part of the photo.

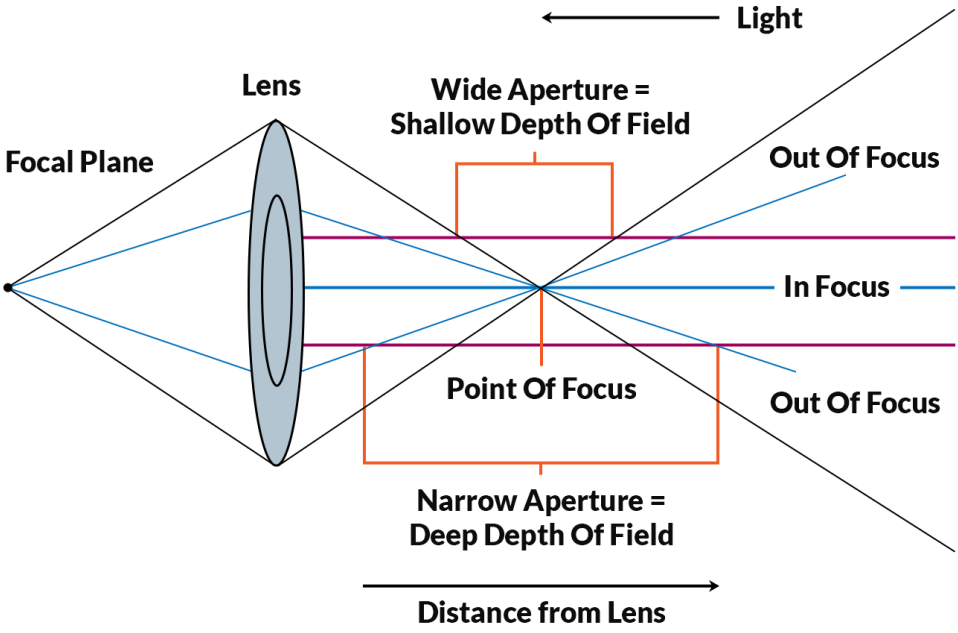
How Does DoF Work?

DoF is controlled by the width of the aperture in the lens. For those of you that don't understand aperture, I strongly suggest you go back and read that section first.

The wider the aperture is, the shallower the depth of field and vice versa. Have a look at the diagram that explains this.



To really get a strong sense of why this is, have a look at the diagram I made below. The wide aperture, which spans the full width of the lens, takes in light at a much wider angle, which in turn means that the light has less distance to travel before going out of focus.



A narrow aperture, on the other hand, stays in focus for much longer as the light has further to travel to go out of focus.

In this infographic, we can see how much of a scene falls into focus when choosing an aperture. A wide aperture will give you a shallow depth of field, whereas a narrow aperture gives you the opposite.

The depth of field is how much of your scene will have a sharp focus, as designated by the yellow lines. It is interesting to know that when you focus on any given subject the depth of field range falls equally in front of and behind the point of focus.

That's not all that affects DoF though, there's also the focal length and distance from subject.

Effect of Distance From Subject on DoF

The best way to demonstrate this is not with a diagram, but with your own hand. Take your arm and stretch it out in front of your face with your hand as far as you can reach.

Looking at your hand you'll notice that you can still work out a lot of detail behind it without moving your eyes away.

Now, gradually move your hand closer to your face all the time focusing on it and you'll notice that your peripheral vision will get more and more out of focus.

The same effect is present when using a camera lens.

Creative Uses of DoF

Shallow DoF is often used to create a point of focus on one single subject in a photo. This can be hugely effective and has become quite common with the increased availability of cheap wide aperture lenses.

I recommend playing around with shallow DoFs, but be careful not to overdo it as your photos will start to become boring and similar.

It's an easy effect to achieve. This means that a lot of people are using it. It can be very effective, but try to go further than this to put yourself above the rest.

Extremely Shallow DoF Shot at f/1.4

Using an aperture this wide creates really nice, soft photos. When shooting in the evening sun, it makes them look a lot warmer.

Notice how the water droplets are sharp, but the head and eyes are soft. It's also fun to play around with the focal plane when the DoF is this shallow. In this photo, the subject sits behind the point of

focus to create interest. I was able to achieve this easily as I wasn't too close to the subject, and the lens used was only about 50mm.

Medium DoF Shot at f/5.6

With an aperture of f/5.6, you can clearly make out the detail of the whole body, as well as some of the background.

In situations like this where there is depth to the photo, it's important to consider the aperture before shooting. You'll want to keep as much of the subject in focus as possible.

Deep DoF Shot at f/22

For many 'scene' shots, you're going to want to keep as much of the scene in focus as possible.

This means using a narrow aperture and a deep DoF, allowing the viewer to explore details throughout the entire photo.

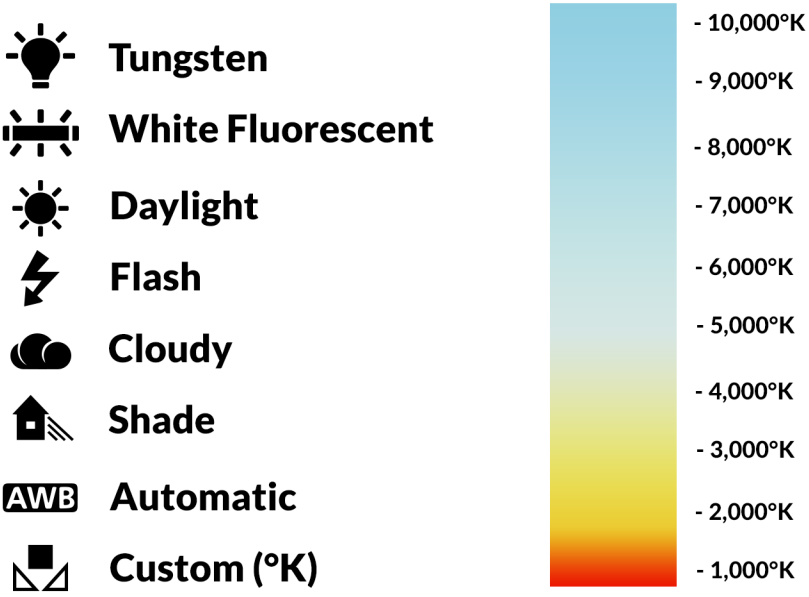
I chose this image as an example since you can clearly see that there's a lot of depth to it and plenty of aspects over which your eyes can wander.

Chapter 6
White Balance

If you've ever taken photos indoors without a flash, and wondered why everyone looks so orange, then this section will definitely help you.

White balance can be hard to master at first, but once you understand it a little more, it becomes intuitive.

What Is White Balance?



White Balance (WB) determines how accurately the colors in your photos come out. Specifically, it determines how 'hot' or 'cold' an image feels.

Setting your WB accurately will prevent nasty color cast which can give your image an unnatural appearance.

Different color casts come from 'white' not being a true white in different lighting situations.

This section will teach you how to deal with that.

How Do I Control the White Balance?

Modern digital cameras give you the option to change the WB manually as well as giving you an auto white balance (AWB).

AWB is often suitable for daylight situations, but in most others doesn't perform well. The most common example for this is when shooting indoors in tungsten light.

Canon in particular are notoriously bad at getting the color right on Auto mode, often resulting in the color coming out far too warm.

In a typical digital SLR (and some advanced compacts) you will have this kind of scale of white balance to choose from:

Auto

Good if you don't know what you're doing. Works well in sunlight, but not suitable in most situations.

Daylight

Auto mode can be good in daylight, but not perfect. I would

typically use this balance in daylight. Most people tend to stick to auto because they're worried about forgetting to change the WB when they go back indoors (we've all done it).

Shade

Auto mode makes photos look a little cold in the shade so using this preset will be a lot more accurate.

Cloudy

Again, this is pretty self explanatory as to when you'd use it.

Tungsten

This light comes from incandescent bulbs found in your home. If left on auto instead, your photos will come out very warm with an almost orange color cast.

Fluorescent

This comes from tube lighting found in offices and hospitals. It's a very cold light and can make your photos appear blue. This also explains why offices have that nasty sterile feel.

Flash

This compensates for the somewhat cool light of the camera's flash.

Custom

This is used for setting the white balance accurately using a grey card – more about this in a moment.

Temperature

This is for experienced professional photographers.

All of these modes simply define the extent and direction to which your camera adjusts the color of the photo it's taking.

To demonstrate how these modes affect the temperature of a photo,

I took a photo of the Hungarian Parliament with the sun setting behind it, with no sun shining directly onto its facade.

You'll see that the 'Shade' setting is most accurate for that situation.

Auto

Photo comes out quite cold.

Cloud

Very good, but still a little colder than the environment actually was.

Daylight

Not bad, but the camera was trying to compensate for a much brighter environment so it overcompensated.

Flash

Worked surprisingly well, it's a more accurate auto mode for this sort of lighting.

Fluorescent

Far too cold looking, this setting is intended for much warmer light and has cooled the photo accordingly.

Shade

Very accurate, it captures the spring evening perfectly.

Tungsten

Again, this setting is intended for much warmer light.

How to Get Perfect Color Reproduction

First things first, you need to learn about grey cards.

Grey cards are used to determine which white balance should be used by your camera as they are made from 18% grey which is a neutral hue.

They work by taking a photo of the card that fills the whole frame of your camera and then setting this as the white balance inside your camera. The camera sees a difference between the result and the neutral hue and determines the balance from that.

A grey card is used over white because, if you overexpose any color enough, it'll eventually come out as white and WB is all about color, not brightness.

As the grey photo was taken in the same lighting environment as the rest of your photos will be, the camera knows exactly how much to adjust the balance.

Custom

This is where you would take the photo of the grey card and set it as your white balance. This is the most accurate way possible to capture color on the cheap and I fully recommend it.

Color Temperature / Kelvin

This is for professional photographers who are used to using expensive color temperature meters in studio conditions and setting the WB value manually.

The value is set in kelvins – named after the man who created the scale. For example, sunlight is approximately 5200K and tungsten is approximately 3200K.

After extensive experience with WB, you'll be able to start judging it for yourself.

Which Setting Is Best for Me?

You basically have 5 options:

1. You can spend all your time shooting in auto mode and hope for the best. This is alright if you're still trying to get to grips with exposure, but after that I recommend you move on.
2. You can try and use the preset modes inside your camera to get accurate results. This is certainly a step in the right direction, but they're still just ballpark figures and won't always produce correct results.
3. You can shoot in custom mode. This is the most popular choice by professional photographers. It will take some time to get used to it and it requires carrying around a grey card.
4. You could use a light temperature meter. This is very accurate, but can cost a lot of money. It's not really an option for most.
5. You can shoot in RAW. For those of you who don't know, RAW is an uncompressed file format that allows you to change things on a computer after the photo has been taken. One of the changeable aspects is white balance.
6. With the information above you should be well on your way to capturing the perfect colors every time.

Chapter 7
Focal Length

Knowing what focal length means, especially in relation to your camera, is very important when it comes to buying lenses.

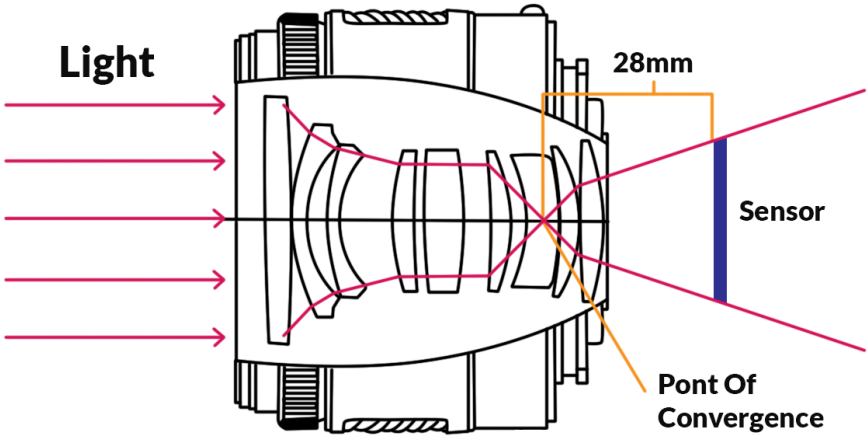
This section will leave you well informed as to what different lenses do, which ones are right for you, how to use them creatively, and all the technical speak you'll need.

What Does It Actually Mean?

The focal length of your lens essentially determines how 'zoomed in' your photos are. The higher the number, the more zoomed your lens will be.

It is often misunderstood that the focal length is measured from the front or rear of the lens. In reality it describes the distance between the point of convergence in your lens to the sensor or film in your camera.

Take a look at the diagram below that explains this.



Different Focal Ranges and What They're Used For

Ultra Wide Angle 14-24mm

These lenses are often considered specialty items and the range is

not often included as part of a kit lens. They create such a wide angle of view that they can look distorted as our eyes aren't used to seeing that sort of range.

They're often used in event and architectural photography for cramming a lot into a photo when shooting in a confined space. Wide and ultra wide lenses are about 'putting yourself in the middle of it all', not just about getting the whole of a scene in.

These lenses are not particularly suitable for portraits. They enhance the perspective so much that facial features are often given an unnatural appearance.

Wide Angle 24-35mm

This is where you'll find most kit lenses for full frame cameras will start. 24mm is roughly the point at which the distortion that appears to stretch the side of the image stops appearing unnatural.

They are widely used by photojournalists because they are wide enough to include a lot of the context, yet still look realistic.

Standard 35mm-70mm

It's in this range at about 45-50mm that the lens will reproduce what our eyes see (excluding peripheral vision). I personally like to use this range when shooting on the street or in situations with friends in a close setting such as at a dinner table or the pub.

A standard lens such as a 50mm f1.8 is an excellent, inexpensive addition for a camera and will provide excellent results.

Prime lenses (lenses with a fixed focal length – they can't zoom) will always provide better results than your kit lens as the lens is built with a single purpose in mind. It does one job well rather than multiple jobs poorly.

Mild Telephoto 70-105mm

This range is often where kit lenses will stop and you'll start to get into the range of telephoto lenses and portrait primes (around 85mm).

This is a good range for portrait lenses. The natural perspective of the lens will separate the face from the background without completely isolating it.

Telephoto 105-300mm

Lenses in this range are often used for distant scenes such as buildings or mountains. They're not suitable for landscapes because of the way they will flatten the perspective of a scene.

Lenses in higher ranges than this are used predominantly for sport and animal photography.

How Focal Length Affects Perspective

To give you a better idea of how the focal length affects the perspective of a photo, I've taken 4 photos of the same subject at different focal lengths and compared them below.

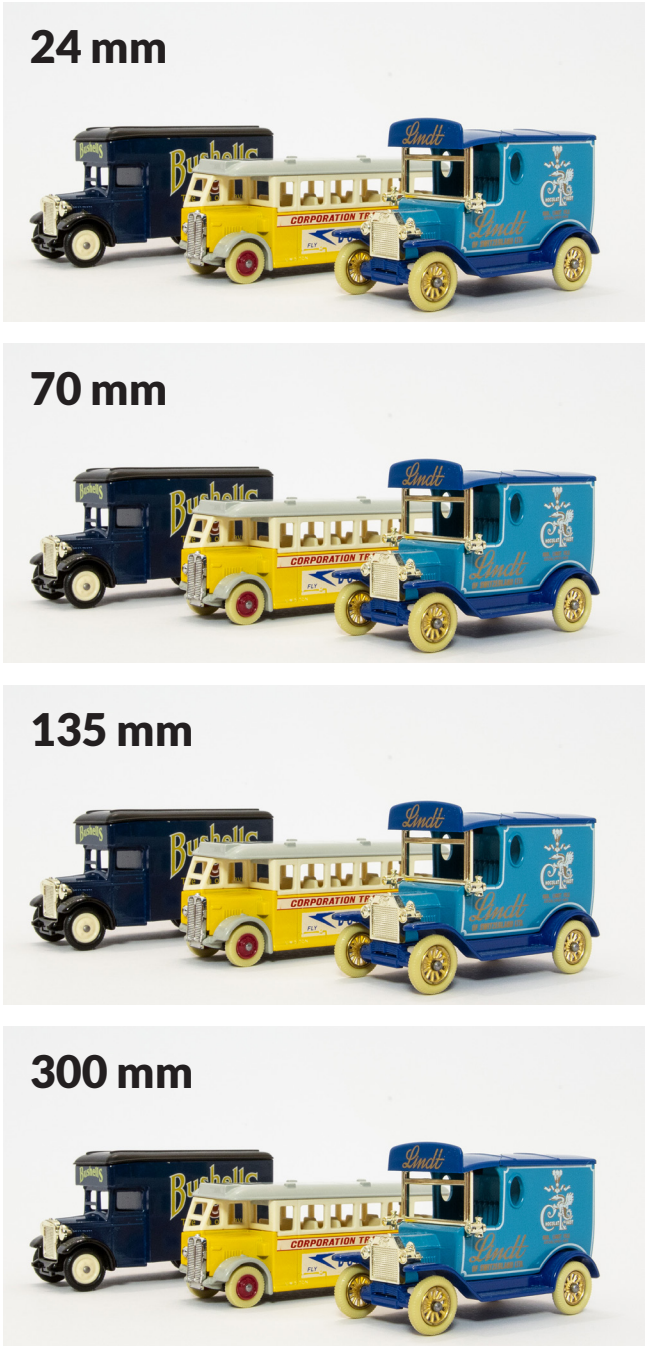
The subjects (3 soup cans) are kept in the same position (about 10 inches apart from one another) in every photo.

It's worth noting that these photos are shot with a crop sensor so the actual focal length will be higher than listed – something I will explain further in a moment.

To say that the focal length changes the perspective is, however, quite misleading. You see, it's actually the distance from the subject. The focal length is an indicator of **the distance from the subject,** so they stay framed mostly the same.

The difference arises because the focal length is getting longer

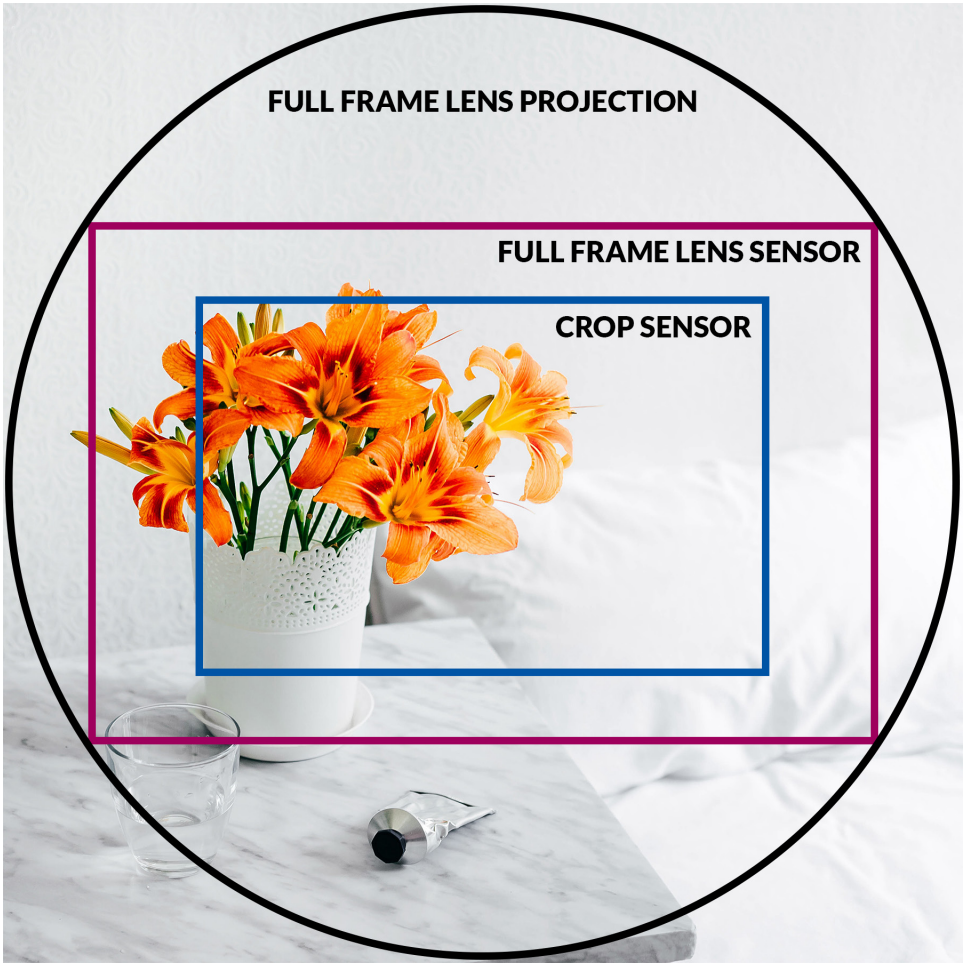
(zooming in), as the camera moves further away. Remember, it's the distance from the subject, and the focal length is just used to compensate for this.



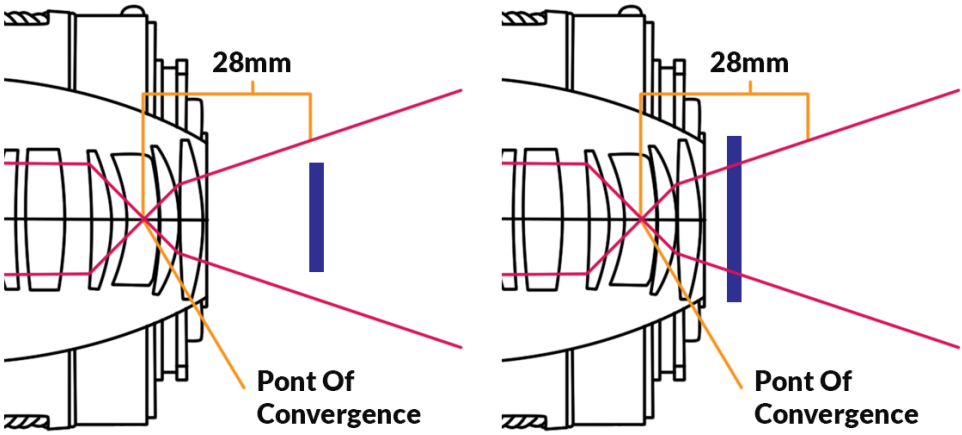
What About My Crop Sensor?

Shooting on a crop sensor has what's known as the 'crop factor'. This essentially means that any full frame lenses (EF, FX, etc.) that you put onto a crop sensor body will have a cropping effect.

The actual factor is approximately 1.6. In real terms, this means that if you shoot at 35mm, the actual result you'll get will be closer to a 50mm image.



The way this works is demonstrated in the diagrams on the next page.



What you're effectively doing is zooming in on an image, avoiding the widest part of the scene.

Even lenses built for crop cameras such as the EF-S and DX ranges will still give this effect because lenses are listed by their actual length, not their field of view.

These lenses will not work on a full frame body without a heavy vignetting effect. The image will not project onto the whole of the sensor.

That's it! Now, here are two example shots on the next page, taken at very different focal lengths.

The first is shot at 24mm and the second at 300mm (both on a crop sensor).

24 mm

300 mm

Chapter 8

Crop Factor

A friend of mine was asking me advice on which lens she should buy the other day.

My reply was 'get a 50mm 1.8, unless you're shooting on Nikon, in which case you should get a 35mm as the angle will work better on your crop sensor'.

She then asked me, 'What's a crop sensor?'

The lack of knowledge about the type of camera she was using surprised me, but looking back, I remember a time when I didn't know either.

This section is about setting it straight and helping you to make the right choice when it comes to buying a lens.

What Is the Crop Factor?

The crop factor is something which is common to most digital SLR cameras these days as they use smaller sensors than more expensive cameras.

Professional cameras have a sensor the same size as a 35mm piece of film. Any old lenses used on film bodies, using the same mount, still work on digital SLRs.

The problem with this is that the technology proved big and expensive and drove the price of cameras up. To fix this, camera manufacturers started building new cameras with smaller sensors, which would take the old lenses as well as new lenses, designed to mimic the same focal length.

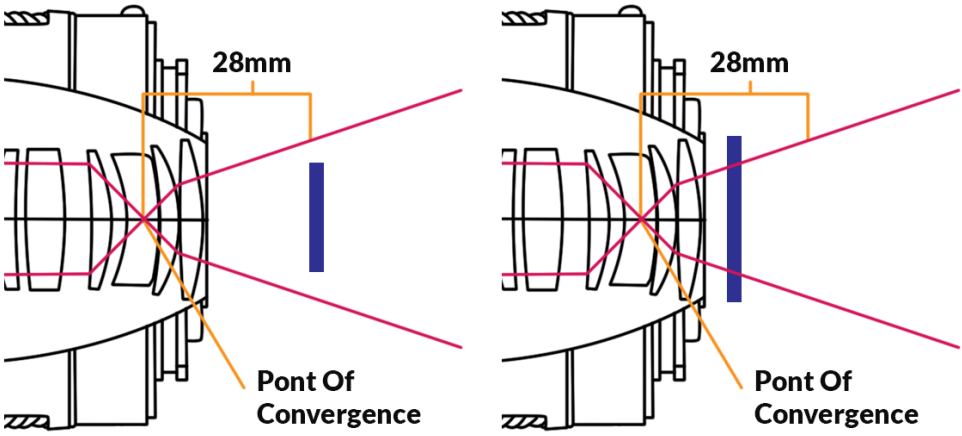
When you put a lens meant for a full frame camera onto a body with a crop sensor, the crop factor is produced.

It's called the crop factor because you're effectively cropping the image. Imagine you've printed out a photo, but suddenly the paper

is half the size, you have to cut parts out, which would crop the image.

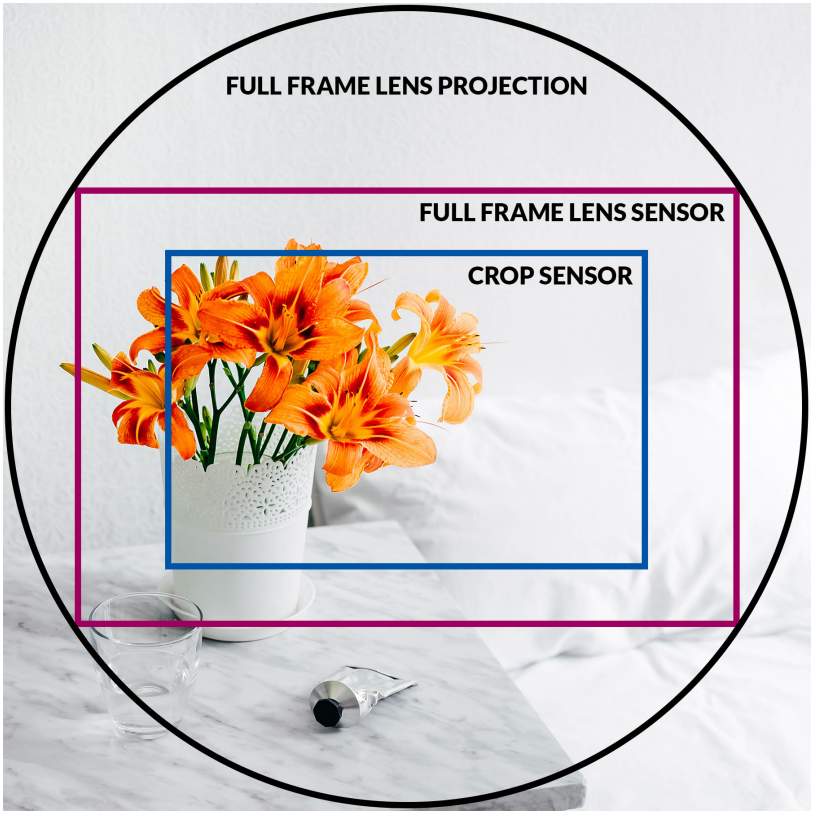
This isn't the best analogy, so have a look at the diagram below. In both images, the lens is meant for a full frame camera. On the left, you can see the projection of that image as if it falls onto a crop sensor – a lot of the image is missed at the sides.

The image on the right shows you what this is effectively doing – it's taking a regular full frame sensor and bringing it closer to the lens, cropping out part of the image.



As you can see, a lot of the image is lost when you use a full frame lens. Let's look at it from another angle. In the image above a circular lens produces a circular image, which the sensor crops in a size-dependent manner.

Full frame sensors are all the same size, whereas crop sensor sizes tend to vary between manufacturers, For the sake of this diagram, know that it's not to scale.



How Much Does It Crop?

There are two main sizes from crop (APS-C) sensors. Those used by Nikon, Sony and Pentax, and the one used by Canon.

The main difference is that Canon's is slightly smaller and magnifies the image by 1.6, rather than 1.5.

This means that, if you put a 50mm lens designed for full frame cameras onto a crop sensor body, the focal length would effectively be 80mm, whereas it would be 75mm on the other sensor.

These magnification differences don't make a big difference at this end of the scale, as the lenses are designed accordingly. All you need to know is which sensor you're using so that you can work out the crop factor when you want to buy a full frame lens.

How Do I Know if I'm Using a Crop Sensor?

This is pretty easy to answer – if you look for your camera body brand new at the moment, can you buy it for less that $2000? If so, the chances are you're using a crop sensor.

Full frame cameras are expensive and aren't that common in relation to the number of crop cameras. If you walked into a store and paid less than $2000 for it, then you're likely shooting on a crop sensor.

Another great way of telling is by looking at the kit lens that came with your camera. These lenses are designed to work with your camera body providing a smaller lens projection, resulting in a focal length shorter than a full frame camera – starting at 18mm, rather than 24mm.

There will also be your camera brand's marking on the camera to indicate which body it was made for. Here are the most popular markings for crop sensors:

- Canon — EF-S
- Nikon — DX
- Sony — DT
- Pentax — DA
- Sigma — DC
- Tamron — Di-II

If one day you decide to upgrade to a full frame camera, these lenses will no longer work, so buy carefully.

Why You Should Buy Full Frame Lenses

If you only ever bought a prime lens, you'll know why. Lenses made for professional, full frame cameras are usually much better quality.

You can still buy high quality lenses for crop sensor cameras, but if you want to be using the best lenses out there, full frame lenses are the way to go.

These lenses have been around since well before digital cameras were popular, providing the speed and accuracy you'd expect for the price.

Prime lenses in particular are only really made for full frame cameras. 50mm is a great focal length to use with a full frame camera, but doesn't work so well on a crop sensor because it's unnaturally zoomed.

If you're a Nikon user and want to buy an f/1.8 lens, I would recommend the 35mm over the 50mm. The resulting images will be much more natural.

You may have concerns about the perspective appearing compressed at longer focal lengths but this isn't something you need to worry about as it's not the lens that compresses the image, but the distance from the subject.

That being said, when you start using much wider angles, the barrel distortion at the edges becomes much more significant. Cropping this out won't change the perspective, but you will notice the difference initially.

Buying the Right Lens for You

The first thing that's worth mentioning here is a realistic warning. If you're going to replace your kit lens but you're not planning to upgrade your body for a few years, buy a crop sensor lens.

The field of view that you lose in the shorter focal lengths is quite big. Have a look at the photos on the following page for comparison.

The first photo was taken at 18mm and the second at 24mm, both on a crop sensor. If you shoot wide often, or even at all, you're going to want to keep the extra few millimeters.

Notice the position of the balconies on the left hand side of the image.

I would thoroughly recommend prime lenses, no matter which body you're using. They're sharper and better quality for the price than alternatives, such as an all-in-one wide angle to telephoto.

The best advice I could give is to carefully consider what you want to do with your photography, whether you're going to be upgrading the body soon, or shoot really wide angles, and then choose the lens that's right for you.

Chapter 9
Polarising Filters

Polarizing filters are great for shooting in direct sunlight as they remove glare from non-metallic objects, in turn creating more naturally saturated colors.

The effect created by a polarizing filter is one of the only effects that can't be replicated in post-production. This section teaches you how to use them properly.

What Do Polarizing Filters Do?

There are 2 types of polarizing filters; linear and circular. Linear are traditionally used in film photography, whereas circular is used in digital, as these are designed not to confuse the camera's autofocus.

When you attach the circular filter to the end of your lens, you'll find that you can still rotate the filter, which affects the direction in which the light is polarized. When shooting in direct sunlight, you'll often find that your images come out harsh and feel overexposed.

Think of it as being in the sun with no sunglasses on. It can be hard to see. Polarizers work by allowing in light from a certain direction only, removing glare from photos.

Have a look at these photos. The first one was taken without a filter and you can see the sun reflected strongly off the windows, overexposing the whites. This has made the finer details less clear, weakening the overall quality of the photo.

Now have a look at a similar photo below, taken with a polarizing filter. The glare from the windows has been removed and they become less distracting. The sky is softer and not as contrasted, as the polarising filter only affected the windows.

In the first image, it sat over the blue sky. Overall, the polarized

photo is much easier to look at.

Polarizing filters also remove haze from photos, which has the greatest effect when a photo is taken of a distant subject or scene. This makes the sky look much bluer. All the colors are more vibrant and saturated.

Have a look at the 2 photos below – the first image has the polarising element over the sky.

How to Use Polarising Filters

Polarizing filters produce their best results when they're orientated 90° away from the sun. This is a great way to get the best out of your filter. You'll need to be careful when taking a photo of a wide angle scene.

The sky's polarization isn't even and you'll start to see a change in the blue color as it gets further from the sun. The filter proves least effective when the sun is behind the lens. It's not always going to be useful on a bright, sunny day.

Polarizing filters are usually quite thick and darken your image, so when you're using them make sure your shutter speed is still high enough to take the photo handheld.

They work best in direct sunlight, so this shouldn't really be a problem. If it is, I recommend increasing your ISO from 100 to 200.

A polarising filter needs to fit the situation you are in. It's also important when using a circular filter to have it rotated correctly. Have a look at the 2 images below.

The first photo has been rotated incorrectly and you can see an obvious fade in the sky. The second photo has been rotated correctly and looks more natural.

This can create a pretty cool effect, but in some cases, it can be better not to use a filter. It's not always appropriate to use a polarizing filter.

Polarizing filters are very beneficial in removing reflections from glass and water. They are incredibly effective at this and are often used when taking photos of lakes. They allow you to see much further in.

Consider the images on this and the next page. The first photo is not polarized and the reflections from the surrounding actually add detail to the photo.

The second photo is polarized. You'll notice they are darker, and while cutting out the detail, lets you see more of the intended scene.

Photo without the polarizing filter

Photo with the polarizing filter

Photo without the polarizing filter

Photo with the polarizing filter

What to Look For When Buying Polarising Filters

Make sure you have the right size – have a look at the end of your lens or on the inside of your lens cap. If you've got a digital camera, make sure it's circular polarizing. Go for the best quality you can afford.

There's no point buying a $1500 lens and then putting a cheap piece of glass in front of it, I personally use high-end Hoya filters.

And lastly, buy a case to put it in when you're not using it to save it from dust and scratches.

Chapter 10

Take Sharper Photos With These Ten Tips

Taking sharper photos is easy when you know how, and these ten timeless tips will help you in your efforts.

All very simple, and no Photoshop involved.

1. Fast Shutter Speed

When trying to take a sharp photo, the last thing you want is motion blur. This is the most important step, so make sure you get it right.

I mentioned previously about shutter speed; as a rule of thumb, a sharp, blur-free image can be taken by setting the speed to a fraction of a focal length. For example, if you want to take photo at 30mm, you would set the shutter speed to 1/30 of a second - any slower and you're likely to get motion blur.

It's worth noting that this rule is only relevant to full frame cameras. For a crop sensor, due to the magnification effect, you would be better off choosing a speed of 1/45 of a second.

If you're having trouble holding your camera steady and taking sharper photos, I suggest shooting in burst mode and picking an image from the middle with the least camera shake.

2. Use a Tripod

When a fast shutter speed isn't an option and your subject is stationary, it's best to use a tripod.

This holds the camera steady and the various spirit levels on a good tripod will ensure that your photo will still be level on uneven ground.

3. Focus Correctly

There are a few ways to fix dodgy focus; the first is to take the camera off auto selection and manually select the points at which you want to focus on.

Alternatively, you can use your camera's focal lock, which will also help when you want a shallow depth of field.

When taking a photo of a person, I recommend focusing on their eyes. That's where our eyes are naturally drawn to. In focus eyes will generally produce an acceptable photo like the one below.

This photo has an incredibly shallow DoF, with an aperture of f/1.4, but the photo appears to be in good focus.

When using a camera on a tripod, I like to switch my camera to live

view mode and digitally zoom in 10X to where I want to focus, then focus manually. This way I know that the focus will be exactly as I want it.

That's how I focused on the Milky Way below.

4. Use a Good Lens

Your image quality will only ever be as good as the lens it passes through.

When buying your first camera, I recommend upgrading to an inexpensive prime (can't zoom) lens as soon as you can.

You'll notice a vast improvement in quality, as prime lenses are designed with only one job in mind. They don't have to compromise to cover a range of focal lengths.

I recommend a 50mm or 35mm 1.8, which can be picked up for less than $150.

5. Keep Your Lens Clean

A good lens is no good if it's covered in dirt. Clean it at the beginning of every day that you use it and put a filter on to keep it safe.

Dirty lenses have a noticeable effect on your photos.

6. Image Stabilization

If you're lucky enough to have stabilization in your lens, turn it on. This will allow you to shoot at slower shutter speeds and narrower apertures.

If you use a tripod, remember to turn image stabilization back off as it will have a negative effect trying to stabilize when it doesn't need to.

7. Use Your Base ISO

Set your camera ISO to as low as it will go – usually between 100-200 – where you will get the sharpest photos.

As I mentioned in the ISO section, the higher the value, the more noise there will be. If you want really clear, crisp photos, you'll need as little noise as possible.

8. Find Your Lens' Sweet Spot

The sharpest point in your lens is likely to fall between f/8-f/11. If you don't understand aperture, I suggest you go back and read that section again.

Using a wide aperture gives you a shallow depth of field, which produces a lot of blur. When you get to about f/8, you'll find that your images are much crisper as the majority of what you're shooting will be clearly focused.

9. Use The Light

The more light the better really isn't true– you don't have to use it all. When I can't use daylight and still want a really sharp photo, I use an off camera flash and bounce it off a wall or ceiling to give the photo a feel of good natural lighting.

Lighting is key to taking a sharp photo. In the photo below, the sun was behind the berries, so I used a flash to fill in with light areas that would have otherwise been silhouettes.

10. Shoot in RAW

Shooting in RAW has many advantages. It still allows you to adjust a lot of settings after you've taken the photo, one of which is sharpness.

When done properly, this can add fantastic final detail to a photo. Just be careful not to overdo it, as photos that are too sharp are a strain to look at.

PART III

COMPOSITION 101

Once you understand exposure and your camera, it's time to move on to the art of taking great photos, and for that, we need to learn all about composition.

This is undoubtedly the most important section of this book, so I hope you enjoy it!

Chapter 1

The Rule of Thirds

This is one of the most common composition techniques, and for a reason; it works. Photos that are correctly composed using the rule of thirds have depth and interest. There's a good balance between your subject(s) and the background.

Once you start playing around with this rule, you'll start to see it more naturally and your photos will begin to improve.

What Is the Rule of Thirds

This basic composition rule is used by photographers, artists and designers to create better composition.

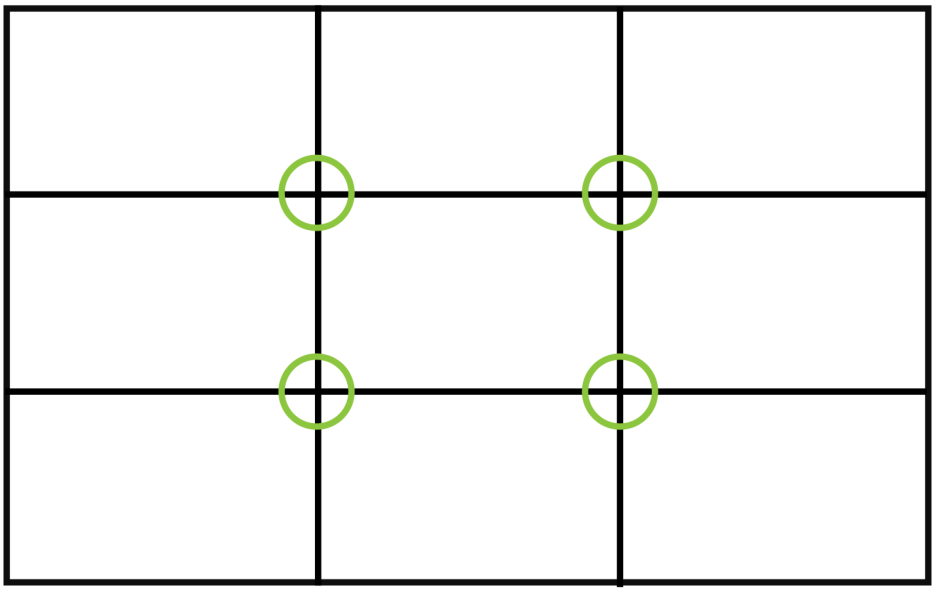
The rule basically dictates that photos should be split into 9 equal segments created by 2 equally-spaced horizontal lines and 2 equally-spaced vertical lines.

Important features within the frame should intersect with these lines at some point.

Now, before we go any further, I'd like to say that the term 'rule' in photography is used very loosely. You should never follow a rule if it doesn't work for your photo.

In photography, rules are made to be broken. But it's always best to know the rule you're going to break before breaking it.

This is what the rule of thirds looks like:



How to Use the Rule of Thirds

The rule of thirds is a great way to make your average day-to-day photos look a little more interesting.

Consider this comparison on the next page. By moving the subject off center, the image gains depth.

In the following photos, instead of merely taking a symmetrical photo, which would have been easy (and boring), I decided to intersect the horizon with the 'third line' in the frame.

This change in perspective again adds depth to the photo, grabbing your attention with an interesting foreground.

When you're taking a photo of someone and trying to follow the rule of thirds, I find it best to place the subject to the side of the frame so that they're facing into the photo, not out.

There are exceptions where the background might be particularly interesting with a nice bokeh or depth of field, but in general, it's best to have them looking into the frame.

I also tend to line up the eyes with one of the guide lines, as it creates good balance in the photo.

Finally, when you're framing a photo, look for natural lines in the frame and try to line these up with third lines. The photo below has the subject looking inwards, creating depth and interest, as well as vertical lines that line up with one third of the photo.

This helps to maintain a good balance in the photo and ensure that the space to the right of the subject is not wasted.

Chapter 2
Visual Weight

Visual weight incorporates a lot more than just the size of an object in a scene. Visual weight is determined by the way in which we look at the photo, specifically the aspect we see first and spend the most time looking at.

If you understand the visual weight of different objects in a scene, you'll be able to use your knowledge effectively to encourage the viewer to see your photo in a certain way.

Which Objects Provide the Most Weight?

Eyes

The single most effective way of adding visual weight to a photo is to include eyes. The first thing viewers will see in the photo is the eyes and then, if they're looking away from the camera, where the eyes are looking.

This is a great method of forcing the viewer to look at certain aspects of a photo in a desired order.

Consider the first photo on this page as an example; notice how your eyes briefly glance over the people before alternating between the drink in their hands'.

Now look at the photo again, only this time with the girls cropped out. The majority of your time spent looking at the photo is looking at what is in their hands at the bottom of the frame.

This is vitally important to remember when composing your shots as a subject can be completely changed by the addition of a few sets of eyes.

Without the eyes, there's a lot less to look at; the viewer spends less time looking at your photo.

Of course, that doesn't mean that you have to include eyes to make a photo interesting. It just works well in this example.

Size, Color & Contrast

Size and color play a large part in drawing your viewer's attention to a certain aspect of the frame, as they can be manipulated to stand out from a distance.

When an object occupies a large proportion of the frame, it becomes difficult to ignore, but is a lot less subtle than the addition of a pair of eyes. When this large object is also bright or contrasting in color, the tendency to stand out is greater as it can appear out of place.

Consider the next photo, for example, the complementary colors of the water and poolside work well together.

They contrast against each other which makes the image stand out greatly. Both sides weigh the same, so the balance actually weighs out to be roughly the same visual weight.

Writing

Writing in photos holds a great amount of weight as the viewer immediately becomes suspicious of what the photographer wants them to see. This can be very useful but, at the same time, a bit obvious.

If you were to use writing purely for its shape and colors, it's best to use a foreign language. The photo below is a good example of deeper meaning and how we interact with words. Here, the boy stares at the graffiti, hopefully foreshadowing a future mood.

I also recommend you don't caption your photos. Text in (or in this case, alongside) photos, conveys visual weight that encourages your viewer to think in a certain way. While this is useful in a photo, when you add a caption, you're taking away from the viewer's imagination.

The photo below is actually a lot stronger because the writing was included inside the photo rather than existing alongside it.

You'll also notice the shape and style of the text juxtaposes against the rigid, straight lines of the buildings.

Cuteness, Horror, Erotic, Novelty

We've covered what I consider to be the three top weighing objects to include in a photo but there's plenty more that will attract the viewer to certain parts of your photo.

Everyone loves looking at photos, and there are billions of them out there, each serving an individual purpose.Some good photography may have you engrossed for hours, spotting new parts that you'd missed before. Others are designed to produce a few seconds of entertainment, which is often where you'll find these sorts of weights.

That's not to say that the points covered in the subheading can't be used for other purposes. They can prove very effective when used properly but also happen to be found in the majority of image sites offering light-hearted entertainment.

Visual weight is a great way to add creativity to your images.

Consider the below image. It is a juxtaposition of movement at stillness.

The car is presumed still, while the background it moving. In fact, it is the opposite. This proves that the perspective of a scene can be altered to create a new meaning.

Multiple Points of Interest

Events provide many points of interest, which forces you to think of what is really the most important aspect of the scene.

This is where the focus needs to fall. In the scene, we see the archer, then the second female archer and further in the background, the crowd.

This is where the focus needs to fall. In the scene, we see the archer, then the second female archer and further in the background, the crowd.

Changing the focus to the 2nd archer giver her precedence. Focusing on the crowd makes their reaction more important than the act of the actual archer.

The first thing we notice is archer holding the arrow in his mouth. His eyesight brings you past the second archer, over the crowd and out of the scene.

He stands out as he is in focus, but it sets the meaning of the whole scene. On top of this, loosening the arrow from teeth is very unusual, and brings the viewer's attention to it.

A Note to Finish

What I mean to say is that the more subjects or objects you include in the photo, the more complicated the composition can become. This, in turn, can make the photo more interesting.

The biggest thing to take away from this section is that size doesn't matter, it's the actual content that makes the biggest difference.

The more subtle you make your photographic composition, the more interesting the results can become. I hope this has helped to clear things up for any of you who were wondering.

Chapter 3
Balance

Balance is at the base of every composition; it determines whether the photo is pleasing and harmonious to look at, or uncomfortable and unresolved. If you look at balance in a literal sense, the basic analogy of weighing scales comes to mind.

If you divide the photo in half, you can place objects in different parts of the scene to make the photo appear either **balanced** or **unbalanced**.

When a photo is largely **asymmetrical**, its balance becomes less stable. But an obvious balance such as **symmetrical** scenes tends to be somewhat boring.

I like the following photo. It is balanced and unbalanced at the same time. There is certainly a visual weight between the two sides of the frame.

There is also the touch of blue color in the painting, where the rest of the scene is more muted. You'll find the same colors in and out of the scene on the wall.

The size conflict draws the viewer's eyes back and forth between the couple and the painting, yet they never rest. A harmonious tension.

Along with placement, we have **size** and **visual weight**, which can balance the photo, depending on the positioning. You may have a small and a large object, which would be impossible to balance at equal distances from the center of the photo.

If you place the smaller object to the far edge of the frame and the larger object slightly off center, the balance becomes a lot better resolved. Just like it would be in real life with actual weights on a scale.

Negative space also plays a large part in balancing an image.

Balanced or unbalanced?

Balanced or unbalanced photos are determined by the eyes of the viewer. It's up to the photographer to decide how they want a viewer to perceive their photograph.

Simply put, deciding between balance and unbalance is the same as deciding between tension

and harmony. Each degree of choice has different effects and applications.

Let's have a look at some unbalanced photos and their uses.

If you're looking to add dynamic tension to your photos, you're going to immediately find that the tension itself acts as a technique for unbalancing a photo.

In the photo on the next page it would be hard to find the center of gravity as the image extends outwards from the frame of the photo in so many contrasting directions, with the small detail in the bottom left and corner providing a further distraction.

Horizons help with a sense of balance, which this photo is missing.

You may also want to unbalance a photo in order to direct the viewer's attention to a certain feature of the photo, but this should be approached with caution.

If you chose a position for your subject that proves too unusual, the unbalancing technique becomes too obvious and, consequentially, much less effective.

If you have a look at the photo below, you'll notice the balance leaning towards the right of the photo, which leads your eyes to wonder what's in the rest of the photo.

Your interest is drawn towards the balloon on the left and the mountain in the middle. These make the photo more interesting and increasing the time someone will spend looking at it.

Asymmetrical & Symmetrical

Symmetrical images are split down the middle, using either horizontal or vertical lines. They can add stability to your scene, or create a dynamic tension.

You will find that there are many ways lines are used in these compositions. Horizontal lines express stability and the balance comes from their association with the horizon.

These contrasting lines can separate two areas of different contrasts or exposures.

Vertical lines represent strength through objects that are subject to gravity. Or try to escape it.

You will find these in converging line scenes, that aim to lead your eye through an environment.

Diagonal lines are another great way to create balance through a feeling of action or movement.

These dynamic lines act as leading lines, pulling the viewer from one side to another.

I would consider the image on the next page mostly unbalanced, with the main visual weight of the subject at the bottom of the frame.

The horizontal line implies a solid base and the three cows add the tension. These act as a weight for the left, middle and right sides of the photo but not enough to make it feel completely balanced.

The second image is very stable due to its symmetry. The lines from the road, railings, trees, and road marking drag viewers to the center of the frame.

They are protected by the strength of the objects that surround that single focus point. As it is symmetrical, you can enter the scene from any direction and its the same process and endpoint.

Size & Visual Weight

Lastly, you should consider the positioning of your subjects in terms of height within the frame.

In the photo below, the person's face on the left balances out the weight of her hand on the right. Even though the hand is clearly bigger and in focus, the overall size of the hand coupled with horizontal life creates a force, pushing on the left side of the image.

Different composition techniques have different effects on the visual weighing of objects in your scene. The better you understand them, the better your balance will be.

Negative Space

What you choose not to include in your scene is just as important as what you incorporate. The negative space in your scene emphasizes the main subject of your scene.

By removing details or subjects from one part of the frame, the viewer's eyes search around for that focal point.

The more negative space you add, the force is greater. It offers you some breathing room and stops the scene from feeling too

cluttered.

Because of these, they can be used to balance or unbalance your scene. It depends on what you capture.

A Note To Finish

As photographers, we spend a great deal of time creating awesome images, using different compositional techniques that the viewer is unlikely to pick up on.

At times it can prove frustrating when a viewer doesn't appreciate the hard work you had to employ to produce your perfect image, but that's not what's important. The creation of a photo that you and your peers can identify as 'good' is the main thing.

The more aware you are of the potential effects of balance on your photos, the better your photography will be. It pays to think about how you want to portray your image before picking up your camera.

The degrees of balance is at the heart of every photo and can't be ignored. Use balance wisely and remember that any technique used to excess loses its worth.

Chapter 4
Eye Lines

When taking photos of people, you're taking photos with eye lines. It is of vital importance to understand the effect that these can have on the way your photo is viewed.

Eye lines have the capacity to focus our attention on another part of the photo, as well as produce tension alongside other photographic elements.

When we say 'eye-lines', we're talking about the implied lines produced when we follow a person's line of sight.

These lines are similar to horizontal, vertical and diagonal lines and can be used to make up other elements such as dynamic tension and triangles.

Our eyes are naturally drawn to faces, eyes in particular due to the equivalent way in which we interact with people in life.

A face is about the strongest visual weight that can be included in a photo.

Natural curiosity is the source of our desire to follow eye-lines because, as a viewer, we want to know whether we share the same interest in whatever has taken the subject's attention.

This allows us to relate to the subject, conveying a greater understanding of the photo.

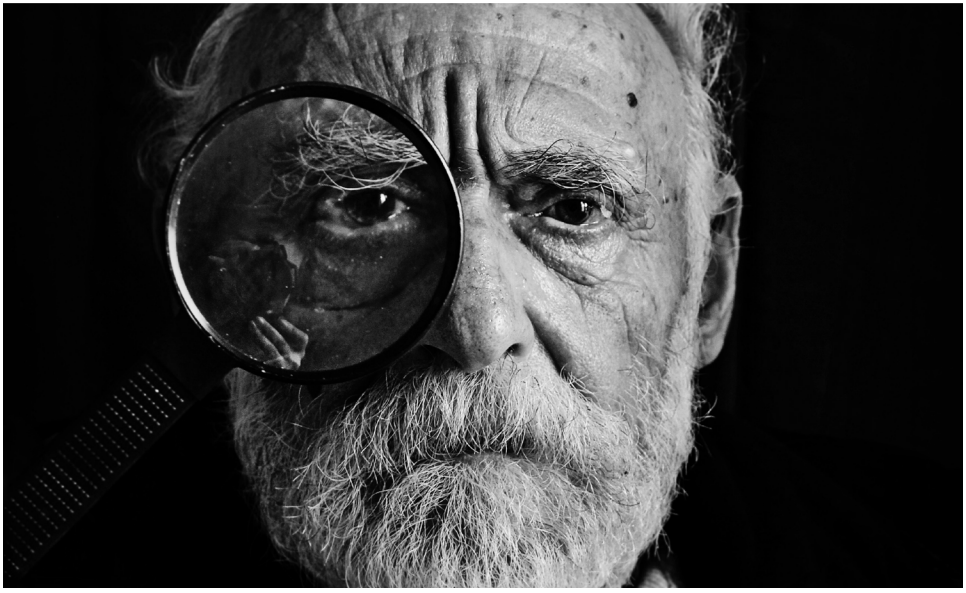
Eye-lines are an important element of the structure of an image. They can be used to great effect but, when used poorly or left unused, can prove detrimental to a photo.

The effects of eye-lines vary depending on where the eyes are looking, with one of the strongest being eyes that are looking straight into the camera.

When an image like this is viewed, we're forced to focus on the eyes, and we're not directed to explore the photo as much.

Have a look at the photo below where the man is looking straight into the lens of the camera.

His eyes look quite dramatic, and carry a great deal of emotion.



Human faces are very expressive with the eyes being one of the strongest ways of displaying emotion.

When the subject is looking elsewhere in the frame, you'll notice that you spend less time looking at them because they tell you less about the subject.

What's more important here is the point at which the subject is looking, directing us to explore that area too. It's up to you whether you want the model to be the subject, or where they're looking as the true point of interest.

The photo on the next page uses the eye-line to make up a photographic element. The woman's eyes point you towards the man on the left-hand side of the image.

Even though her eye line does reach something in the frame, it results in a feeling of unresolved tension and ambiguity, which is another great technique at your disposal.

I've mentioned it a few times already, but not actually shown you how to do it, and that's using the eye-lines as a photographic element.

In the photo below, the eye-line of the model allows our eyes to exit the frame of the scene. This creates tension, as she isn't looking towards the lead room in the scene.

The viewer's eyes catch her glance, and leave the frame on the right, alongside the model's.

The great thing about using an eye-line as one of the lines is that you can choose where you want your viewers to look first, and then to any secondary subjects.

You can use this to your advantage as you show them where to start and, in the same vein, you're choosing where you want it to end as well.

When there are conflicting eye-lines in a photo, you can use selective focus to choose its true subject. This works in two ways. You're making it clear who you want the attention to be on and you're encouraging the viewer to explore the areas they find less important.

Here, the eye-line and look of disapproval of the eagle on the left helps to focus the viewer's attention onto the eagle on the right.

When you have more than one set of eyes in a photo, and they're looking at one other, linear back and forth motion is created between the two subjects. The more interesting the facial expression is on each subject, the better this works, as seen in the photo on the next page.

This creates an equal balance of importance between the two subjects, and you can then use other elements to manipulate the focus of the viewers' attention.

The lighting and facial expression on the right lead me to spend more time looking at that subject.

In the photo on this page, you can still tell which direction the subject is looking in, but it's less important because it's out of the frame and covered up by the framing.

Where multiple eye-lines exist in a photo, and they're looking all over frame, we'll tend to look at this photo for longer in an attempt to decide what everyone is finding so important.

Neither of the women in the photo below is looking in the same direction, which is unusual for two people who aren't moving. Your eyes move around the frame, starting with the eyes that you can see best, on the woman on the right.

These lines extend in a different direction, introducing an element of dynamic tension alongside an unresolved appearance.

When it comes to taking good photos of people, a lot comes down to anticipation and knowing how you want the photos to come out.

In this last photo, the subject needed to be the main focus. This is because it was shot at a very wide aperture, blurring the background in the process.

At the same time, the photo appears to be posed, however it was much more candid. The camera raised and focused, which made the subject notice and turn towards the camera.

The end result was a very natural looking photo with the visual weight in all the right places. It's just a case of being prepared and having a rough idea of the end result you're looking for in your head.

Chapter 5
Single Point

Working with a single point of interest in a photo is one of the most basic forms of composition available, so quite a common occurrence and it pays to know how to approach it

A single point can provide interest to an otherwise plain photo; they're usually fairly small and contrasting to the rest of the photo.

A photo doesn't need to have any points of interest to be successful though, just have a look at the most expensive photo in the world as an example.

The decision you have to make when working with a single point is where you want it to lie within the frame, the justification it has to be there, and the effect it has on your photo.

When you place a single point in the center of a frame, such as a person's face, it needs no justification for being there but is by no means interesting.

Have a look at the following photo as an example. This is the reason that the rule of thirds is so popular when it comes to taking photos of people.

When the subject is slightly off center, you can experiment with what's in the rest of the frame, allowing you to make the photo as a

whole more interesting.

If you're going to have your single point of interest in the center, it helps to make sure that the surrounding area is still interesting to look at.

Positioning like this is often seen as 'boring', but it doesn't have to be. A strong sense of balance exists in the photo, with equal weight on either side.

Here's a similar photo, again of a person, but this time with surrounding detail to make the photo interesting.

Placing your point of interest slightly off center creates a more dynamic photo with varying degrees of interest that are dependent on what you do with the rest of the frame.

In an ideal world we'd be able to move the subject around the frame as we wish, allowing for the addition of more interesting elements, but often constraints are enforced by where we're shooting, preventing this.

Simply putting someone slightly off center is going to make a massive difference when you have justification for doing so, such as

a more interesting background.

The closer to the edge of the frame your single point lies, the more careful you'll need to be about the placement because the further out you go, the more unusual it will appear. It helps if the rest of the frame is interesting, but for different reasons.

These are generally much more powerful photos and can evoke thoughts and feelings better than centrally positioned photos but, again, are to be used with caution. Over-doing this effect will leave your photos feeling boring and uninspired - less is more.

Have a look at the next photo. To evoke the feeling of aloneness in a great expanse, there is a large amount of water and a single boat closer to the edge of the photo.

It conveys the feeling exactly as I desired, and turns a boring photo into an interesting one.

When you're trying to decide exactly where to place the point in a frame, you'll usually find that your natural instinct will tell you which position makes it feel the most natural; some areas will feel boring, others unbalanced.

You can use this feeling of unbalance to your advantage though - it's an additional feeling that can be evoked with photography. If this works for the sort of photo you're looking for, that's a good thing.

I find the photo below to be unbalanced. The bird's position at the left of the frame draws our eyes all the way to the side of the frame.

This photo is also ambiguous in being straight or not. There is no horizon to base the photo's level on.

For something to be considered a point of interest, it must contrast with the rest of the frame in some way, whether that's in size, color, tone or shape.

There is no greater contrast in color than that found between black

and white, displayed to be true in the next photo.

This photo hasn't been cropped or photoshopped to add a large amount of black area, but represents the true nature of the lighting in the club at that time.

The implied presence of a crowd gives the feeling of depth, and the lighting is dramatic. We're just as drawn to the blank space as we are to the white detail as our curiosity leads us to explore this region of the photo.

Where you choose to place a single point in a frame is entirely up to you but hopefully now you will be aware of the implications of such placement.

Just remember, there are no rules to photography, only guidelines, so take any education on composition with a pinch of salt.

Chapter 6
Triangles

Triangles are present in almost everything we see in one way or another. It's just a case of distinguishing them and knowing what to do with them.

They make great compositional tools as they're easy to make and manipulate and are remarkably common.

Triangles are a great way of combining different compositional techniques such as lines and paths, which can be used to create a more interesting photo.

The best part about triangles though, is their ability to make a photo feel stable or unstable (as desired).

Why Use Triangles

It's not so much a case of why you should be using triangles in your composition, as you'll come to realise that their inclusion is inevitable, but more about how to use them properly.

Triangles offer a reliable method of grouping together three points in a photograph and allow you to organise these to portray a certain feeling such as stability, aggression, instability, etc.

When you understand this, you can use them as 'invisible' features of a photo capable of evoking a strong feeling to the viewer.

How to Create a Triangle

So long as you have 3 points of vague interest in a photo that aren't on the same line, you can easily create a triangle.

It's not about having 3 clear lines that join up (that would be too obvious) but about grouping points of interest.

If you take a look back through some of your photos, you'll probably realise that a lot of the photos you've taken contain

triangles but whether you've used them to their maximum potential is another thing.

Implied Triangles

One of the most common types of triangle that you'll come across is the implied triangle. As you'll rarely see physical triangles in photography, the shape is almost always implied, which is usually incorporated without the viewer noticing.

The more you know about composition, the easier it is to start deconstructing what makes a photo good which you can use to make your own photos better.

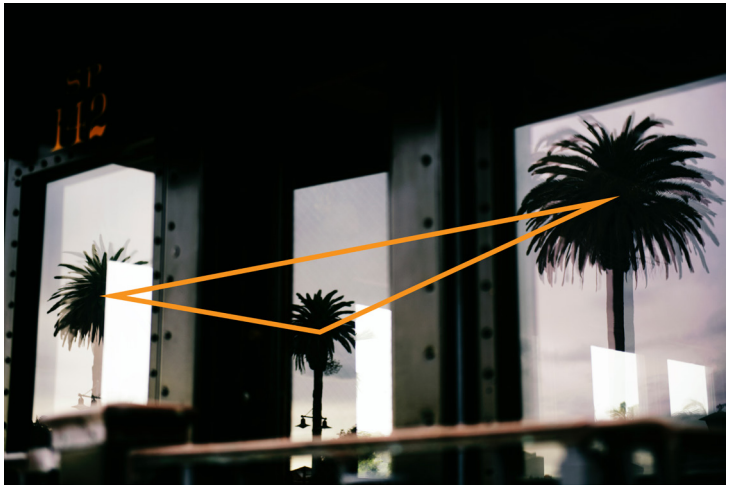
The photo below, for example, has only 1 physical line, but the shape of the roof and the angle of the building's sides make us see a full triangle.

Orientating a triangle so that its base lies at the bottom of the frame and the apex at the top makes the triangle appear very stable, much like a pyramid, which is often observed in architectural photography.

When you start to change the angles inside a triangle, as well as it's orientation, your photo will appear less stable. Extreme examples

will have the apex at the bottom of the photo but we'll get to that in a moment.

Have a look at the photo below as an example of a less stable triangle – notice how all three palm trees as the points of the triangle.



Converging Triangles

Whether they're straight or diagonal lines, when they go far enough into the distance, you'll start to notice convergence. This is where you'll begin to see a lot of triangles.

These triangles can appear in the frame or outside of the frame. It depends on the distance you have to work with. The wider the angle of the lens, the more likely you'll be to have the lines converge inside of the frame.

Photos often converge outside of the frame when you're shooting photos of buildings and their height makes the lines converge towards the top. It wouldn't make sense to include the space that the lines may have converged in if they had carried on.

When lines converge within the frame it's much easier to see and often you'll find this occurring more than once.

Notice how we were only working with 2 actual lines in the photo below? This is because you can use the frame of the photo as one of the sides of your triangle as I've demonstrated below.

Unstable Triangles

If you want to create an unstable feeling in a photograph, a quick and easy way to do this is to include an upside down triangle, or at least a triangle with a weird orientation.

Not only is there a triangle with its apex at the bottom of the photo, but the ground of the photo isn't level either. This adds to the feeling of instability as well as creates new triangles where they wouldn't otherwise have been present.

Triangles like this are excellent at drawing the attention to something seemingly insignificant or bland, making the photo more interesting.

3 Figure Shots

You'll often see triangles without even realising it in 3 figure shots containing multiple subjects.

Take the photo below for example. There are 3 subjects, each with the same visual weight, initially leading you to look at each subject for the same amount of time, before going back to whatever drew you in the most.

This sort of shot works well, but be careful about trying to force this effect. When you have 3 subjects who are the same height and heads appear in a line, for example, it won't work as well.

Focus Attention

Triangles act in a similar way to arrows when their apexes converge at a certain point; your eyes are drawn down their edges onto the subject in question.

This is arguably quite a similar effect to diagonal lines, only this

involves 2 or more physical lines and 1 implied line.

Have a look at the photo below and notice that your attention is drawn to the subject's eyes as that is where the apexes of the triangles converge.

Multiple triangles can be used to create this effect, you just need to be careful with where you point them.

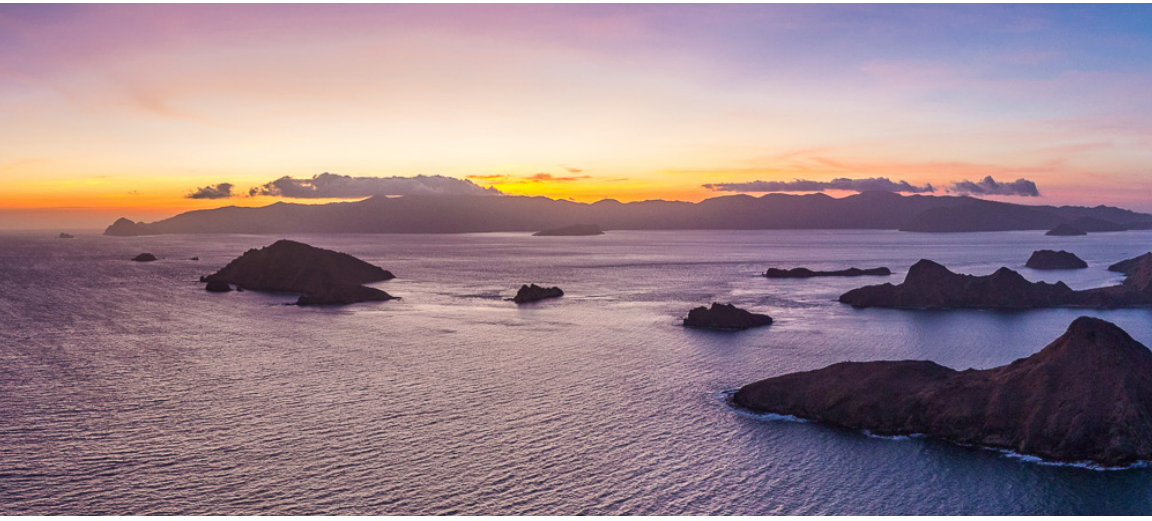
Here the triangular shape of the light adds interest to the background, but I feel that this ultimately takes away from her face.

Interesting Background

I wanted to include this extra little section at the bottom in an attempt to analyze what I like about the photo below. I really like this photo but it's hard to know exactly why without delving a little deeper.

The lighting is good, the color and grain is spectacular but, most importantly, I feel it was the inclusion of so many diagonal lines, creating a large number of triangles in the frame (in both the background and the foreground), that made it so good.

I count at least six triangles which kept me staring at the photo for ages. Subtle differences in angle and viewpoint can make a huge difference to your photos.



PART IV

WHAT'S NEXT

To finish up the book, we're going to have a look at some of my top advice for buying lenses for your camera, as well as a beginner's guide to making money from photography.

Chapter 1
Lens Buying Guide

Whether you shoot with Canon, Nikon or Sony, or use solely third party gear, this chapter is designed to give you the best available information to help guide your lens buying decisions.

To make sure you know what you're doing when the time comes to replace that old kit lens, I'm going to walk you through focal length, aperture and what all those little letters on your lens mean.

What Is Focal Length

Different focal lengths have different uses in different situations but it's all about choosing the right lens for you.

Ask yourself which lens you currently use the most and what you like to take photos of. This will give you a good idea of what sort of lens you'll want.

Below I have compiled a list of focal length ranges taken from my section on focal length.

Ultra Wide Angle 14-24mm

These lenses are often considered specialty items and the range is not often included as part of a kit lens.

They create such a wide angle of view that they tend to appear distorted due to our eyes' natural range being much less.

These lenses are often used in event and architectural photography to fit a lot into a photo when shooting in a confined space.

Wide and ultra wide lenses are about putting yourself in the middle of it all, not just about getting the whole of a scene in.

These lenses are not particularly suitable for portraits as they enhance the perspective so much that the facial features can appear unnatural.

Wide Angle 24-35mm

This is where you'll find that most kit lenses for full frame cameras start. 24mm is roughly the point at which the distortion that appears to stretch the side of the image stops appearing unnatural.

They are widely used by photojournalists. They are wide enough to include a lot of the context but maintain a realistic 'look'.

Standard 35mm-70mm

It's in this range at about 45-50mm that a lens will reproduce what our eyes actually see (excluding peripheral vision). I personally like to use this range when shooting on the street or in situations with friends in a close setting such as at a dinner table or the pub.

A standard lens such as a 50mm f1.8 is an excellent, inexpensive addition to a camera which provides excellent results.

Prime lenses (lenses with a fixed focal length – they can't zoom) will always provide better results than your kit lens as the lens is built with a single purpose in mind. It does one job well rather than multiple jobs poorly.

Mild Telephoto 70-105mm

This range is often where kit lenses stop and you'll start to enter the range of telephoto lenses and portrait primes (around 85mm).

This is a good range for portrait lenses as the natural perspective of the lens will separate the face from the background without completely isolating the face.

Telephoto 105-300mm

Lenses in this range are often used for distant scenes such as buildings or mountains. They're not suitable for landscapes because of the way in which they flatten the perspective.

Lenses in ranges higher than this are used mainly for sport and

animal photography.

These lengths vary depending on what type of camera you're using and it's worth noting that the majority of camera users are using a crop sensor camera.

This decreases the size of the sensor, cropping the image. What this effectively means is that a photo you've taken on a crop sensor at 50mm is going to look more like 75mm (more zoomed).

Kit lenses typically range from around 18-55mm on a crop sensor lens - these won't fit on a full frame camera.

If you're looking to upgrade to professional quality gear, you'll still want to find a focal length as close to that as you can. If you step your lens up to 24mm, you're going to be losing a lot of the wider angles.

If it's unlikely that you're going to be upgrading to a full frame, professional camera in the near future, I would strongly suggest that you upgrade to a better quality crop sensor lens.

Using the Right Aperture

When buying a lens, you should try to find one with as wide an aperture as you can afford it to go without sacrificing the focal length that you want.

They're not cheap. For example, I spent over £1,000 on my 35mm f/1.4. The lens I use the most is my 24-70mm f/2.8 as it allows a good zoom range and a very wide maximum aperture.

I can let loads of light into the lens and achieve a shallow depth of field.

My lens is an f/2.8 meaning that, no matter where I'm focusing, I can still set my aperture to f/2.8. This isn't something that you can do with every lens.

A typical Canon kit lens will have the marking f/3.5-5.6, which means that the maximum aperture will change throughout the zoom range.

The aperture will stop at f/3.5 at 18mm, narrow to f/4 at 24mm, then f/5 at 39mm and finally f/5.6 at 47mm. These stops progressively allow less light into the lens, with a total difference of 1 1/3 stops.

This means that f/5.6 allows less than half the amount of light into the lens as f/3.5 does.

As you can see, this will really hold you back when shooting in low light. I recommend that the first upgrade you think about when looking for a new lens is one that allows a wider maximum aperture that doesn't change throughout the focal length.

	Full Frame	Crop Sensor	Image Stabilisation	Silent Wave Motor	Pro Lens	Low Dispersion Glass
Canon	EF	EF-S	IS	USM	L	ED
Nikon	FX	DX	VR	SWM / AF-S	-	ED
Sony	No extra writing	DT	Not in Lens	SSM	G	ED
Sigma	DG	DC	OS	HSM	EX	APO
Tamron	Di	Di-II	VC	USD	SP	LD

What Do the Letters on Your Lens Mean

Well they're acronyms and they vary between cameras, but they all essentially mean the same thing. The table above demonstrates what these letter mean by brand.

With the exception of the crop sensor marking, addition of letters tends to give a more expensive and better quality lens.

For those who don't understand what the terms above mean, here's some definitions, along with some extras that aren't listed above.

MF

Manual focus only. This is typically only found on very cheap l, or much older lenses. The acronym is the same throughout brands.

II

This is the version of the lens that you're using. Lenses that have been around for a long time and have become very popular aren't usually replaced completely.

The lens designer will take the lens and find ways to improve it, re-releasing it under the marking of II – version 2. The higher the number, the newer the lens.

Full Frame

These lenses will still fit crop sensor cameras, but you'll end up with the crop factor that I mentioned earlier on in this book.

These lenses are specifically designed for full frame cameras and project a larger image onto the larger sensor present inside the full frame camera.

Crop Sensor

These markings tell you that they're built for a smaller camera with a smaller sensor. You'll find that the focal length has also been adjusted accordingly.

It also means that the projection from the lens is much smaller and

will not work on a full frame camera. If you were to put it on a full frame camera, you'd get a very heavy vignetting effect.

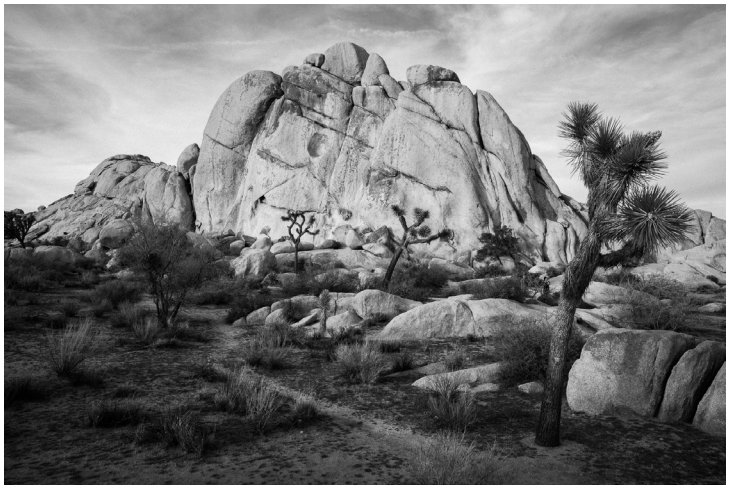


Image Stabilisation

We all know what this is, it's a way of stabilising the camera or lens so that you're able to take photos at slower shutter speeds.

Different cameras have different techniques and locations for this but they all do essentially the same thing.

Silent Wave Motor

This is a much faster focus motor with clear advantages. It's also fairly silent and the end of the lens doesn't tend to move when focusing.

This presents the added advantage of being able to put a filter on the end of your camera without having to worry about it rotating as you focus.

Pro Lens

Most lens manufacturers produce lenses to a price, so your kit lens won't usually be very good quality - I have found this to stand especially true in my experience of Canon kit lenses.

Stepping up to pro lenses, you'll find a difference in quality and, usually, a wider maximum aperture which is very useful for low light situations.

Low Dispersion Glass

This is used to reduce nasty chromatic aberration that is produced by cheap glass.

You've probably seen it before, but may not have known what exactly it was called, but here's an exaggerated example of it – notice the blue on the face.

A Note to Finish On

If you're looking to improve the physical quality of your images, the best way to do this is to replace your kit lens (or don't buy one to begin with) as soon as possible.

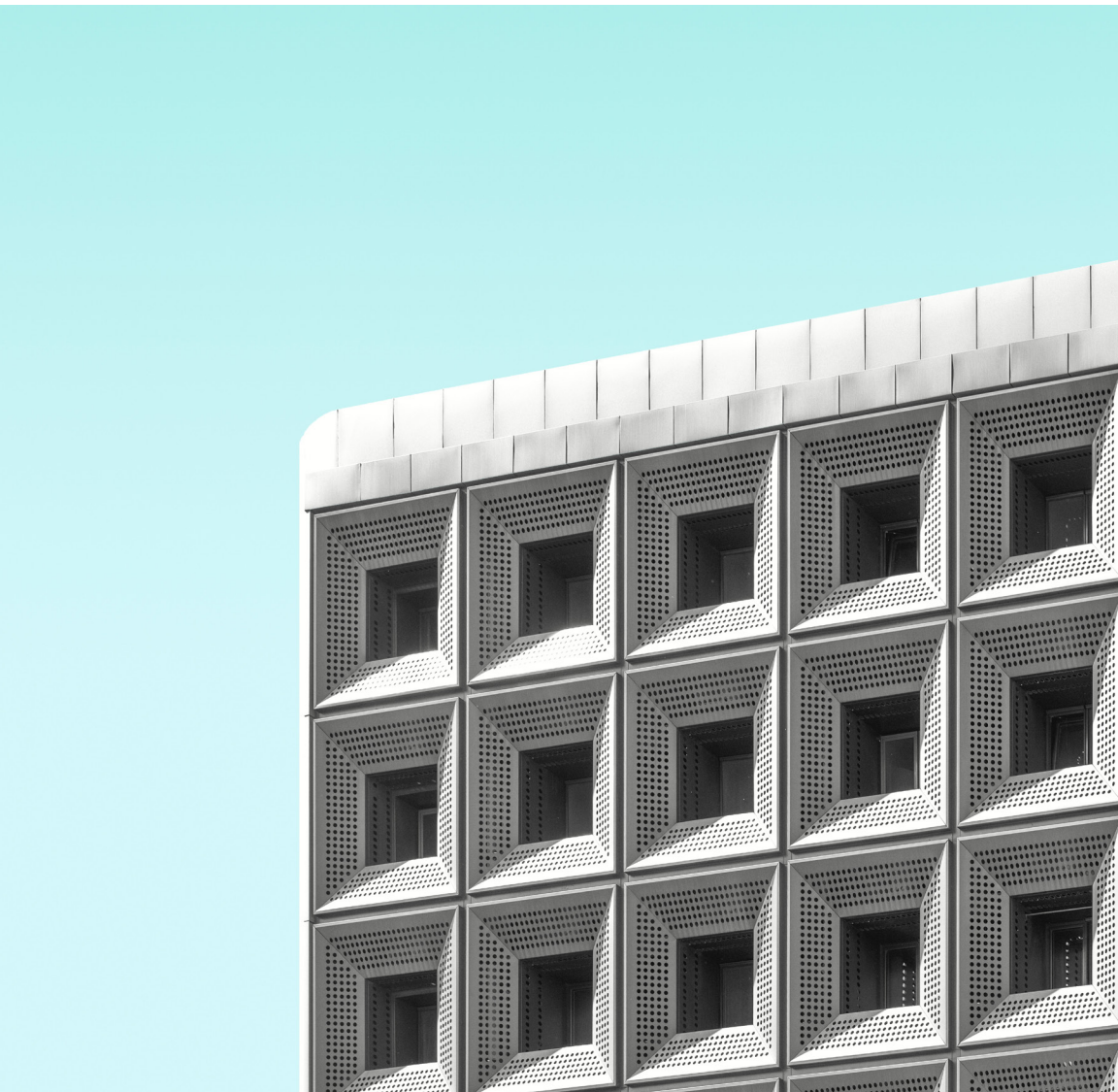
Prime lenses are always going to provide better quality images at low cost and are therefore excellent cheap alternatives to kit lenses.

Buy the best lens that you can afford for the focal length range that you use the most and you won't have too many complaints.

Don't worry if you're using a crop sensor camera and you're buying a full frame lens, just work with what you've got. If you're a good photographer, these obstacles won't be a hurdle in taking great photos.

Chapter 2

Make Money From Photography



With help from this post you should be able to start earning money from your photography as soon as today... if everything goes to plan.

I hope to reveal a few lesser known ways for a photographer to make money and find work.

Whether you're finally getting around to setting up a portfolio or struggling to find the work you're ready for, this post should help you out.

1. Sell Prints

If you're any good at photography (which I'm sure you are after following this book) and you take a lot of photos, there's a good chance that you've taken some really good ones by now - so good that people are going to want to buy them.

So why not sell them? This can be easy and inexpensive, or more difficult, depending on which method you choose.

Obviously, the easiest way for anyone to sell prints is to sell them online through a third-party seller who will do all of the legwork: processing the order, printing and sending out the photos and providing you with a commission.

There's no reason why you can't go through all your best photos right now and upload them to a site such as ImageKind and start earning money from the prints you sell.

Another way, which is a little harder, is to print them yourself and sell them through shops and restaurants.

If you've taken plenty of nice photos from your area, you can approach a cafe or a restaurant and come to an arrangement where they display and sell your photos.

All you have to do is print them and give them a commission. They get artwork, you get money.

At the very least, you will have your photos displayed for thousands of people to see.

The third option is to sell your own prints and digital files through your website.

2. License Through Flickr and Getty Images

A little while back, something very interesting happened on Flickr which has helped thousands of people to start earning money from their photos.

If you have a Flickr account, you can now license your photos through Getty images so that when people see them they can pay to use them, earning you money.

Flickr members can turn on a "Request to License" link on their photo pages. The link will show right next to the licensing information. When a request is made, Getty Images reviews the photographer's work.

If it's suitable for the program, they'll contact the Flickr member

and help handle details like permissions, releases and pricing.

I would recommend only showing your best photos on Flickr, rather than full albums, in order to impress the nice people at Getty Images.

This is something that everyone here should be doing, and you can learn more about how it's done here.

3. Work With Your Local Paper

I've had a few friends who have started out like this, contacting their local paper and working with them to earn money from their photography.

There are two main ways that you can go about this. Firstly, if you have a strong portfolio of images and an established relationship, you'll find yourself in a position where they will be contacting you when they need a photographer (and they will need one).

From here, so long as you have the aspiration, you can expand your portfolio and move onto bigger and better things.

The second way you can work with them is to go out yourself and capture local events or new stories.

You'd be surprised how easy it is to get a press pass for local events. I've done it before and people haven't even asked to see a portfolio or who I work for.

You can then take these photos to local papers and start to earn money (always charge them, they have a budget for this sort of thing) and get published.

Pick up the phone and call your local paper today. In my experience, a phone call is a lot harder to ignore than an email.

4. Sell Stock Photography

We've all heard of stock photography before, and it's similar to what Getty is doing with Flickr, only you go about it in a slightly different way.

Instead of waiting for your photos to be found, you can submit them to a whole variety of stock photography websites where you add keywords to ensure that people will find them.

If you have something that someone is looking for, they will buy it. When I say buy, I really mean license, because you can continue to

sell photos time and time again, making a good living if you have a large portfolio.

Commissions vary depending on the site you use but here are a few to consider: iStock, BigStock, and ShutterStock.

5. Take Club Photography

This is a very specific type of photography that's listed here for a reason rather than just a generic 'find work', and that reason is because it's easy to get into. Seriously.

If you ever go to a nightclub, and I mean a proper one, not some

bland chain club where they charge you an arm and a leg to get in. I'm talking about local clubs with well established promoters.

These promoters all want photos from their club nights and you can be the one to provide them. It's worth the promoter paying for a photographer to come along and take photos. These photos end up on Facebook and are used to promote their club.

If you go to many clubs you'll probably notice that the majority of the photographers are in their early 20s and living locally - students

perhaps. You don't have to have the greatest experience in the world to get work.

If you want to expand your photography before you start looking for work, go down to a club night with your camera anyway.

I have NEVER been stopped from going into a club with my camera because the bouncers just don't care, and neither do the promoters.

As a little added bonus if you enjoy this sort of thing, you can start going to gigs for free.

6. Sell Your Photography Gear

There's a bit of an ongoing joke with photographers that the best way to make money from photography is to sell your camera. And yes, earning money from photography can be hard, but I think I've shown you enough possibilities in this section that hopefully you don't do that.

That said, I'm sure there is plenty of photography gear you have lying around that you're don't use anymore.

I've got old film cameras that I don't use simply because I have so many and at least three lenses that haven't been using in the past six months (I've upgraded).

There's no point in having these lying around, collecting dust. You might as well sell them to make some money or, if you're feeling really generous, you could give them to a friend who's starting out.

Another great way to make money is to go to flea markets and look for old cameras. Then take these to shops or sites like eBay and earn a profit.

It helps to know what you're talking about to make money this way.

7. Assist a Photographer

Assisting a photographer is one of the best ways to find work and start making money fast.

You will need a strong portfolio if you're expecting to go and work at events like weddings with a camera. High-end work, such as fashion photography, might mean that you won't get behind the camera. But you'll still have the opportunity to gain experience and money.

Photographers often need assistants on jobs and you should expect to be compensated for your time. The biggest advantage of all is that you don't have to look for the work; it comes to you.

The hardest part about getting started in photography, is finding people who are willing to pay you the money you want for the work you're good at.

If you're assisting a photographer instead, they have all of this set up and you will start to learn how it's done. Take some time now and find local working photographers in your area.

Contact them, asking if they would like an assistant. Offer to do the

first time for free if you like. If you're any good they will want you back.

8. Teach and/or Blog

Starting a blog is a great way to get your photos seen. Not only that, but you can also make money from your website.

I would also suggest teaching. Not everyone can learn from the internet. If you have the ability to teach, you can reach out to those people and show them how it's done one-on-one.

A good teacher can make a good living, whether it's from group classes, or one-on-one sessions.

9. Participate in Photography Competitions

I think this is one that most people seem to forget about, probably because they think that they're not good enough - I assure you, you are.

I went to the house of one of my models and up on the wall was a pretty terrible photo of her when she was younger. It looked like it had been taken by a friend in a playground.

It turns out that some photographer won $2500 for it in Canada. My jaw dropped. I couldn't take my eyes off the thing, it was just so... average.

It doesn't take long to enter a competition at all and, if you're stuck for which to enter, I suggest this website.

At the very least, it will get your work out there and maybe even critiqued if you're lucky.

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