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HOW TO

PHOTOGRAPH

ANYTHING

*like a pro!*



*for photographers!*

with Award Winning  
Professional Photographer,  
and Best Selling Author  
**STEVE RUTHERFORD**



# HOW TO PHOTOGRAPH ANYTHING LIKE A PRO

By Multi-Award Winning  
Professional Photographer  
and  
Best Selling Author

**STEVE RUTHERFORD**

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**RUTHERFORD**  
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## WHAT OUR READERS AND STUDENTS ARE SAYING...

Praise from our readers and photography students taught by Internationally Awarded and Accredited Australian Pro Photographer Steve Rutherford who has been teaching photography for over a decade.

**“As a photographer, in particular for landscape photography, it is a delight that a talented photographer like the author shares his knowledge and experience. Great hints, direction and tips.”**

*Adrianus Hendriks, “How to Photograph Landscapes like a Pro – Best Seller”  
Amazon review*

**“A great read with all the information to get you started in taking great shots without the “filling” or confusing information that some other books have. Great reference material.”**

*Paul B. “How to Photograph Landscapes like a Pro – Best Seller”  
Amazon review*

**“WOW, great training, so much content, wish I had done this earlier, thanks for your local advice too, Steve”**

*Heather Francini, Auckland NZ*

**“If you want to take your photography to the next level you have to discover photography with Steve Rutherford”**

*Dave Phillips, Mackay, Australia ([davephillips.com.au](http://davephillips.com.au))*

**“Hi Steve, Brilliant content....what a way to learn, now I know spending the \$\$ on my camera was worth it...thanks so much.”**

*Tracey Woolstock, Darwin, NT, Australia*

**“Hey Steve, Thanks a million for your help I have over 400 images from my holiday to work on, I’m on it, Cheers”**

*Sandra Marks, Brisbane, QLD, Australia*

**“I haven’t come across a better way to learn how to capture images in any situation, than this training”**

*Michael Pollock, Atherton, QLD, Australia*

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As a very special **BONUS OFFER** to you as a reader of this book, we have granted you **COMPLIMENTARY ACCESS** to Australia's favorite online photography publication, Photographic Fanatic Magazine. Photographic Fanatic Magazine is delivered bi-monthly to your inbox and is packed full of tips, reviews, tutorials and interviews to take your photography to the next level and best of all for you it's FREE.

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**Steve Rutherford**

**Author "How to Photograph Anything" Book Series**

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# ACKNOWLEDGEMENTS

Ah... books. What a wonderful resource at the end of our fingertips. Often it takes many people to bring a single book together, and often a seriously large team to bring a series of books together. A wise man once said, *“the heights of success are not climbed by oneself, but rather with others holding the ladder with you”*, implying a team of mentors and helpers is what drives you towards success, not the efforts of the “lone ranger”. There are a few people that have helped bring this set of books in the “How to Photograph Anything Like a Pro” Series together, and they are to be acknowledged for their support, ideas, tenacious critique and selfless assistance and love.

Firstly, to my wife and intimate personal mentor, Tanya, thank you for your fervor and persistence, in pushing to have this project completed. You are my personal mentor in every day life and I love you very dearly. I’d also like to thank my friend and best selling author and entrepreneur, Andrew Griffiths. You have well and truly aided me in many areas of business, marketing and the importance of personal relationships. I can’t thank you enough for your friendship. To the contributors and editors, who assisted in the compilation, checking and re-checking of content in this series of books, thank you also.

Finally I am deeply thankful to the multitudes of attendees at my photography training seminars, in Australia, and those readers of our magazine, Photographic Fanatic Magazine, for your continued support. Without each of you there would be no point in teaching people the passion of photography.

## ABOUT THE AUTHOR

# STEVE RUTHERFORD



Award winning Australian Photographer, Best Selling Author and Editor of Photographic Fanatic Magazine, Steve Rutherford is regarded as a reputable name in the international photographic world. With a multitude of International awards, high demand for his creative vision in advertising and fine art, and hundreds seeking his training courses and seminars, he is clearly a photographer on the move.

Previously a high level manager within the Australian Federal Police and a Prison Officer with the notorious Long Bay Prison's Riot and Emergency Response Squad in Sydney, Australia, Steve Rutherford's background has been as diverse as the images he captures. There is no doubt that any person with this past has seen both the best and the worst that humanity can be. Steve uses this experience when adding his own unique perspective to the world. Such a perspective can expose the story of a single floating leaf on a tropical island paradise, or the grandeur of midnight in New York.

Steve Rutherford is accredited and registered as an award winning professional photographer by the AIPP (Australian Institute of Professional Photography), and the PPA (Professional Photographers of America) having accumulated over 50 International and National awards in a short span of years. Steve is also qualified as an Associate of Photography with the AIPP and NZIPP (New Zealand Institute of Professional Photography), and was past President of the N. QLD Chapter of the AIPP.

Steve Rutherford travels extensively, both for commercial clients and to collect images for his own fine art and stock library. He has photographed extensively around Australia, NZ, Vanuatu, New Caledonia, Indonesia, Hawaii, mainland USA, Alaska and Canada. He is also represented by In Transit Images in Montreal, Canada. Visit –

[www.steverutherford.com](http://www.steverutherford.com)





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## **GLOSSARY**

# INTRODUCTION TO THIS BOOK

This book, “How to Photograph Anything like a Pro” will take you on a journey of discovery of the many secrets that professional photographers, use to capture stunning award winning shots. Here is what you will discover;

- **The SECRETS pro photographers use to get the WOW factor every time.**
- **The tricks and techniques pro photographers use for every shot.**
- **What equipment will help turn your shots from boring to amazing.**
- **How to save time and money using the right photography tools.**
- **How to turn your photography passion and creativity into a BIG \$ income.**

This book assumes that the student has limited knowledge in practical photography and the use of their own camera equipment. The information provided in this book is a compilation based on the experiences, trials and tests undertaken by Steve Rutherford, along with other photographic industry professionals, agencies and organizations. “Live website links” have been written into the text. Books in the “How to Photograph Anything like a Pro” series use the following visual cues and icons.



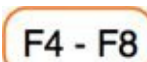
The lens icons indicate a technical area that you should take note of for future reference.



The “flaming book” icons indicate “hot tips” that should be noted and used to get the best from your photography, during exercises in the book.



The “eyeball” icons indicate “visual examples” that should be used as a guide or example that goes with the text in the section you are reading.



The “red boxes” indicate “ideal or specific settings” to use for the scenario being explained.

This book often refers to “film”. Although the advent of digital has well and truly taken over film for the most part, the applications still apply in the same way, whether digital or film, when considering the basics of photography. Photography is meant to be fun, so try to enjoy the process of creating photos, it doesn’t matter whether they are wrong, right or anywhere in between. So long as you continue to enjoy taking photographs, you’ll remain passionate and driven to improve your photography.

Please enjoy this book, and remember only your imagination limits your photography.

Regards, **Steve Rutherford**

A handwritten signature in orange ink, likely reading “Steve Rutherford”.

<http://www.steverutherfordtraining.com.au>

# PART 1 - WHAT IS PHOTOGRAPHY

## WHAT IS PHOTOGRAPHY?

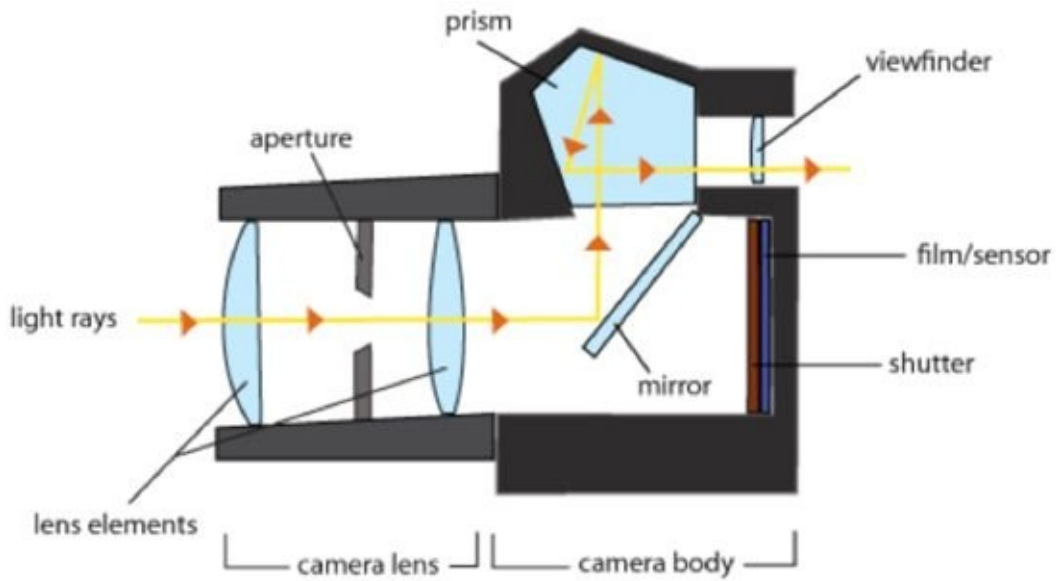


When you take a photograph, you are effectively recording light onto a sensitive surface. It is not just the recording of a picture or scene! Film absorbs light and chemical reactions alter the pigments in the chemical layers, called emulsion, providing an etched image in the film's surface. Digital sensors do the same by measuring light sources and “recording a color pixel”, based on the tone, or intensity and shade of the light being exposed, onto the sensor. Considering the first images are over 150 years old - there has been no change in the theory of photography... ever! LIGHT is still paramount to any capture. Without it, no matter how little, you have no picture.

Typically, a lens is used to focus the light reflected or emitted from objects into a real image on the light-sensitive surface inside a camera during a timed exposure. The result in an electronic image sensor is an electrical charge at each pixel, which is electronically processed and stored in a digital image file for subsequent display or processing. The result in a photographic emulsion (film) is an invisible latent image, which is later chemically developed into a visible image, either negative or positive depending on the purpose of the photographic material and the method of processing. A negative image on film is traditionally used to photographically create a positive image on a paper base, known as a print, either by using an enlarger or by contact printing. Most of the billions of photographs taken today are “snapshots”—casual records to document personal events such as vacations, birthdays, and weddings.

Many say photography is a science, more than an art, but I disagree, the science simply allows for the art to be produced, so in essence photography is an art, the science is simply the tool behind the art form. In its essence, a photograph is a type of visual communication aid. It delivers a message in visual form, and upon receipt by the viewer renders a response either in favor or against the message being shown. In layman's terms,

the old adage, “a picture tells a thousand words”, is so very true. Modern photography has become “an extremely powerful means of communication” in advertising and marketing as well, and a mode of visual expression that touches human life in many ways.



Visual diagram of light passing through a camera to you, the viewer, looking through the viewfinder. At capture, the mirror and shutter both raise to reveal the light onto the film/sensor for the period of time determined by your chosen shutter speed.

Most of the billions of photographs taken today are “snapshots”—casual records to document personal events such as vacations, birthdays, and weddings. Many say photography is a science, more than an art, but I disagree, the science simply allows for the art to be produced, so in essence photography is an art, the science is simply the tool behind the art form.



## PART 2 - CHOOSING A CAMERA

# CHOOSING YOUR CAMERA



With so many different models and brands to choose from, buying a camera can sometimes be harder than picking a subject to shoot. Your primary concern will probably be whether you want to use a digital or film camera. Each has distinct advantages and disadvantages. The prime advantage of digital cameras is convenience, being able to download your images straight away onto a computer without having to wait for any film to be developed. With film, the advantage in my opinion is authenticity, and the possession of a tangible artwork. A digital file is neither tangible nor real, rather, only viewable. There are literally thousands of models of digital cameras on the market today, and throughout this section we will provide you with a set of guidelines and tips to help you choose the most appropriate camera for your chosen type of photography.

If you decide you want to get serious about photography, you will at some stage have to buy a serious camera, possibly even a medium or large format camera, either digital or film. These cameras can provide a file or negative often 10 times larger than that of a standard 35mm file or negative.

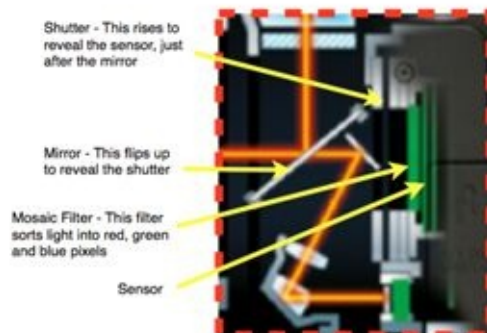
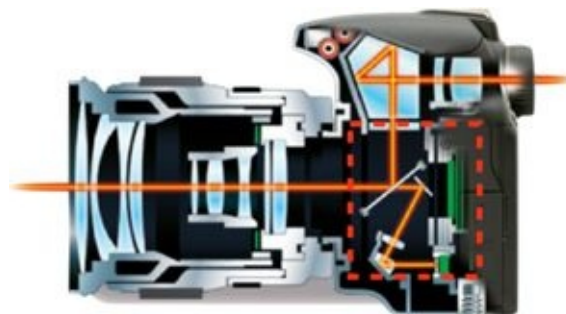
For serious photography, definitely consider using a DSLR (Digital Single Lens Reflex) camera, rather than a compact point and shoot camera. If all you want is an easy-to-use camera that offers a limited zoom range, then a point-and-shoot will do just fine to get you started.

On the following pages I have compiled comparisons and examples of every type of

camera. I've also compiled a "take to the camera shop" list of beneficial features you will need to look for in a camera, depending on what type of photography you like. Remember these are a guideline only, but use them to understand what the different types and formats of cameras can do for your photography. You may well find that the camera you had in mind may not necessarily provide the best features or aspect for what you want to achieve.



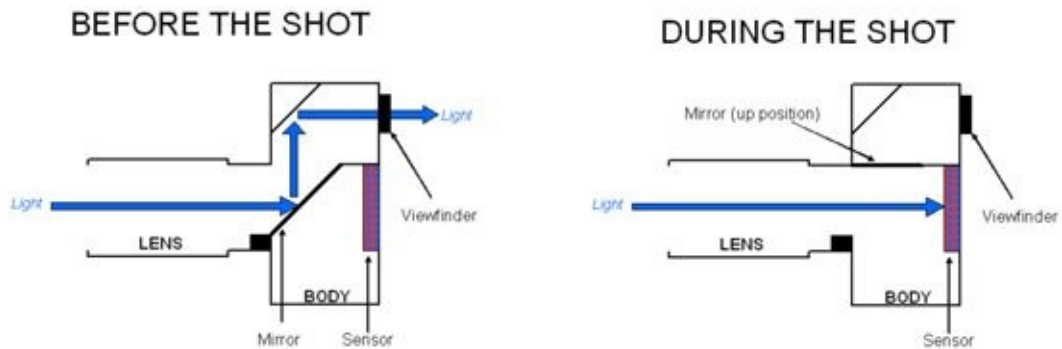
**FLAMING HOT TIP!** - When looking to purchase a camera, first decide what type of photography you like best, and then research which features and settings are required to maximize your potential in that style of photography. Then use that list of features to easily decide what camera you need. Never buy a camera first, and try to fit its features to your chosen style of photography. You will always run the risk of being limited and therefore let down by your investment.



## **HOW YOUR CAMERA WORKS**

1. Light passes into your lens
2. As you press the shutter, the mirror rises, the shutter rises, exposing the light allowed in by the lens to be recorded by the sensor
3. A mosaic filter separates the light into red, green and blue pixels and arranges them into an image to be recorded on the cameras sensor.
4. After the sensor has received the arranged pixels from the mosaic filter, the shutter and mirror drop back into position, cutting off the light let in by your lens, leaving the sensor to continue processing the image for you to see.
5. A second or so later you see the resulting image on your LCD screen

This all happens within your chosen shutter speed, i.e.; 1 second, 1/100<sup>th</sup> second, etc





# WHAT FEATURES TO LOOK FOR IN YOUR CAMERA



*FLAMING HOT TIP! - Our guide below, will help you find the right features you need for your chosen style of photography.*

Look for these features in a camera **AS A MUST** for the following types of photography:

## **THE BEGINNER TO PHOTOGRAPHY**

Flash Hotshoe - for attachment of an external flash;

An ISO setting greater than 1600

AV (Aperture Priority) TV (Shutter Priority) and M (Manual) Settings, along with several presets

## **PORTRAIT/PEOPLE PHOTOGRAPHY**

Flash Hotshoe - for attachment of an external flash;  
Full frame sensors - to avoid mismatches in lens focal lengths with differing sized lenses;  
High Megapixels - over 16MP to ensure detail;  
Manual (M) as well as shutter priority modes (TV) - for flash sync and fine exposure control;  
Quick access to your ISO and WB settings - to help match skin tones correctly and easily.

## **SPORTS PHOTOGRAPHY**

Shutter priority modes (TV) - to enable you always have control over catching fast action;  
Front and rear curtain sync settings - for controlled blur, and using flash (as you get better);  
Quick access to ISO settings - for fast increase in shutter speeds and exposure at once.

## **LANDSCAPE PHOTOGRAPHY**

Aperture Priority (AV) - for detailed control of your depth of field;  
Mirror Lock Up feature - to eliminate the tiniest of camera vibrations on capture;  
High megapixels - over 16MP for detail;  
Bulb setting - for manual control of shutter speeds over 30 seconds;  
Cable release socket - to enable “hands off” or remote capture.

## **WEDDING PHOTOGRAPHY**

Flash Hotshoe - for attachment of an external flash;  
Front and rear curtain sync settings - for controlled blur, and using flash;  
Manual (M) as well as shutter priority modes (TV) - for flash sync and fine exposure control;  
Quick access to ISO settings - for easy and fast increase in shutter speeds and exposure at once.

## **NIGHT PHOTOGRAPHY**

Flash Hotshoe - for attachment of an external flash (for special techniques);  
Very High ISO settings - over 25600, to allow for very dimly lit situations;  
Cable release socket - to enable “hands off” or remote capture.

## **WILDLIFE PHOTOGRAPHY**

Shutter priority modes (TV) - to enable you always have control over catching fast action;  
Quick access to ISO settings - for fast increase in shutter speeds and exposure at once;  
Very High ISO settings - over 25600, to allow for very dimly lit situations

## **Common Film Cameras - \$500 - \$3,000**



## **Common Digital Cameras - \$200 - \$7,000**



Digital - Point and Shoot



Digital - Semi Compact



Digital - SLR  
(Single Lens Reflex)

### **35mm Panoramic FILM Cameras - \$1000 - \$5,000**



*Kiev Horizon swing lens camera*



*Hasselblad Xpan*

### **Large Format Panoramic FILM Cameras - \$10,000 - \$15,000**



*Linhof Technorama 617*



*Horseman 617*

### **Digital Panoramic Cameras - \$30,000 +**



*Seitz Digital Panoramic Camera*



## Digital Large Format Cameras - \$30,000 +



Hasselblad H3D Digital Camera



Digital Back attachment (holds the sensor)  
Often up to 65MP - \$25,000 - \$50,000

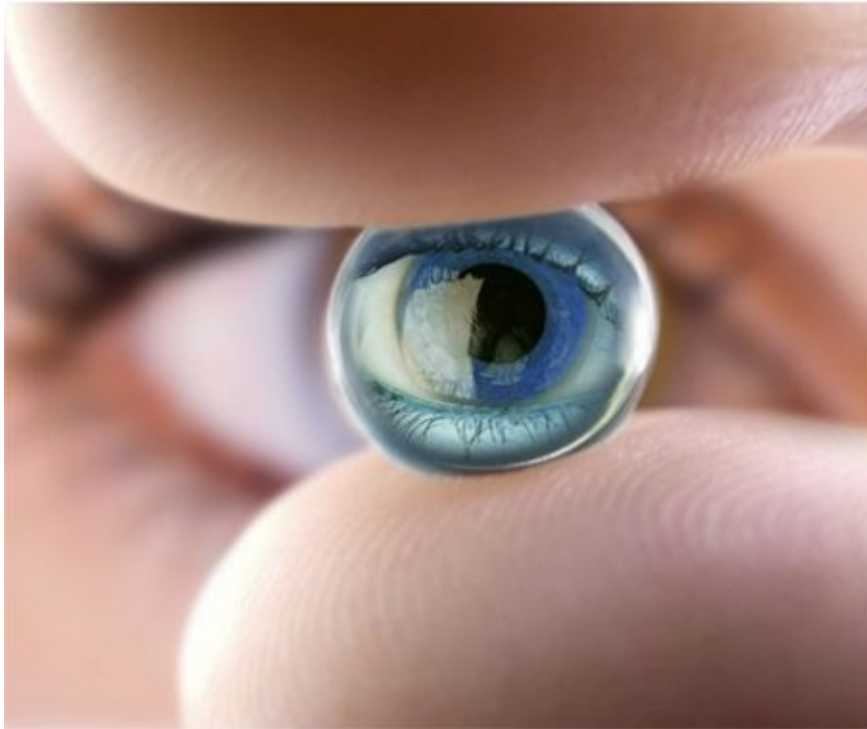
You should choose a camera that leaves you room to grow. Even though it might seem like the settings or possibilities are above your skill level, as you spend more time working with it, you will find these are exactly the features you need to take the shots you want.



## PART 3 - LENSES AND HOW THEY WORK

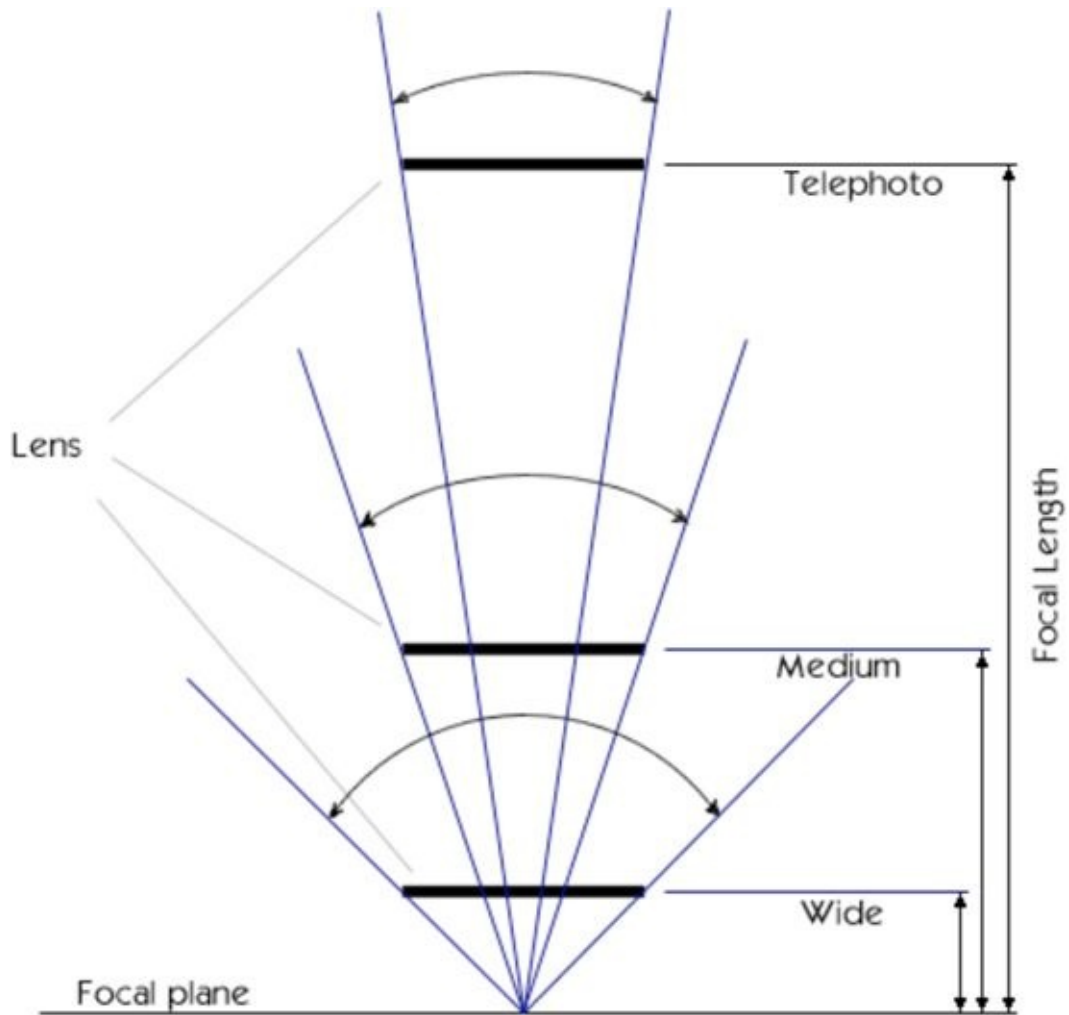
# LENSES

AND HOW THEY WORK

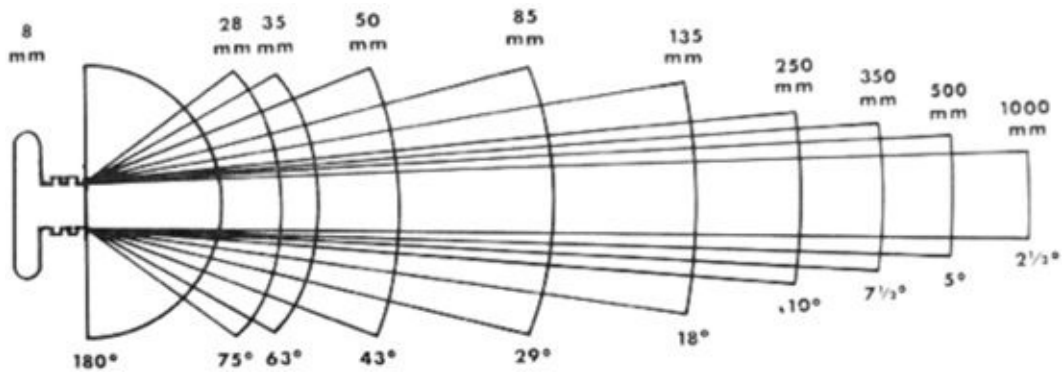


Lenses are the eyes through which your camera sees the world. Matching the right lens to the right subject is one of the ultimate keys to creative photography. Knowing how to do this is a matter of experience and understanding of the basic characteristics of different types of lenses. All lenses are described in two ways: by the focal length (as measured in millimeters i.e.; 28-200mm etc, and by the speed (jargon for their maximum aperture). A 300 mm f/2.8 lens has a focal length of 300 mm and a speed of f/2.8. The focal length of a lens is important, because it gives you an idea of how its angle-of-view and perspective relate to our own vision of the world. Lenses of about 50 mm, for example, are considered normal because they provide approximately the same angle-of-view and perspective that our eyes see. Lenses shorter than 50 mm are considered wide-angle lenses; those longer than normal are considered telephoto or long lenses.

A lens speed indicates how bright the image in the viewfinder will be. Lenses with larger maximum apertures, provide a brighter viewfinder image but are not necessarily sharper or better than slower lenses. Their main advantage is that they provide better viewing in dimly lit situations. For example, a 200 mm f/2.8 lens (considered very fast for that long a lens) would produce a brighter viewing image than a 200 mm f/4. As a rule, lenses with wider maximum apertures are more expensive.



A simple focal length chart indicating the three types of lenses and the varied angle of view. Wide Angle, Medium Length and Telephoto.



Focal Length in millimeters and comparison angle of view for a standard lens. For example, an 85mm lens, will have an angle of view of only 29°, compared with a 28mm lens, that has a 75° of view.



A sectional view inside a lens, showing each of the glass elements built into the lens to filter the differing types of light and to provide you with a tack sharp image

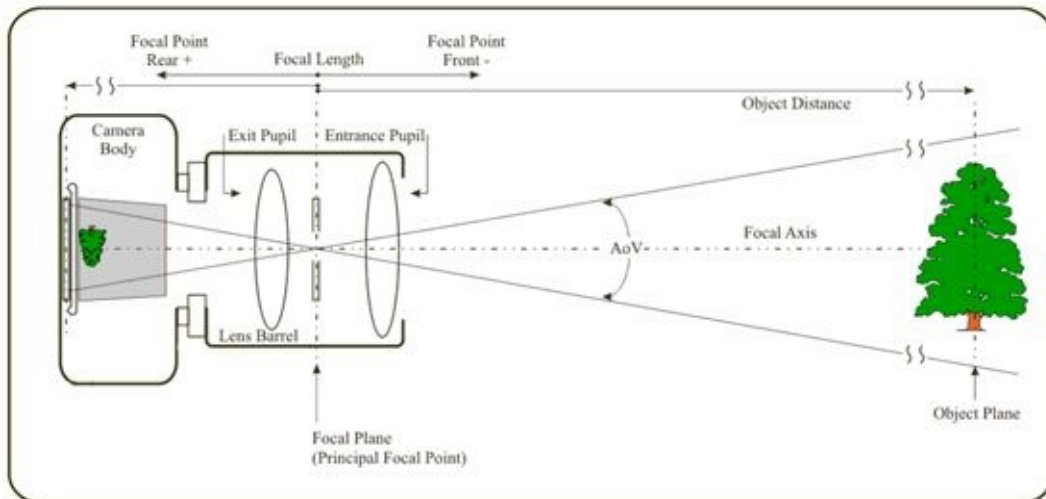


Diagram indicating the working processes that a lens uses to obtain a picture, including the focal length, inverting of an object or subject for recording, and the use of lens “pupils” to focus.



## **TYPES OF LENSES**

### **PRIME –**

A prime lens has a fixed focal length and is meant specifically for that depth of field. Of course you can still adjust the speed and use it more creatively, but these lenses are designed specifically to deal with the focal length in order to produce the least amount of distortion via the glass for that distance. It also allows you to know exactly what kind of light you require to get the best image possible out of a prime lens. A few prime lenses are great and fairly easy to travel with. This is something that works well if you plan to do shots in various locations but you are going to have control over where you set up your tripod and how you get your shots. You will likely want at least two to choose from in order to fully experience the background/setting where you are taking the portraits



## TELEPHOTO and ZOOM –

A zoom lens will allow the focal length (and thus angle of view) to be varied, as opposed to a fixed focal length (FFL) lens (such as a prime lens). A true zoom lens, also called a “**parfocal**” lens, is one that maintains focus when its focal length changes. Most cinematic movie cameras use “parfocal lenses”. A lens that loses focus during zooming is more properly called a “**varifocal**” lens.

A normal telephoto zoom lens is great for distances and might be what you need when it comes to taking action shots out on the soccer field or while you are out on the lake. This gives you the chance to take photos up close and far away. The focal length is chosen by the lens and you will have a crisp center subject and much of the rest of the image will be in focus as well. This is not the best for portraits but works nicely when you are taking action shots, you can compare them to the sports pages of newspapers and magazines.

## WIDE ANGLE –

Wide-angle lenses often are thought of when it comes to sweeping landscapes, but it can be very helpful when it comes to portraits as well. People think of it as a way to get a massive area in the shot. What you may not realize is it is also good with big groups of people. From certain angles you can take in an entire room, which gives you a great sense of the setting. Another great thing about a wide-angle lens is you can add a sense of size to

the photo. This is a way to make a child look even smaller on a massive background or give an interesting fashion look to a portrait. This is the perfect marriage between portrait photography that everyone has seen and a unique shot that will pop out to viewers as truly one of a kind.

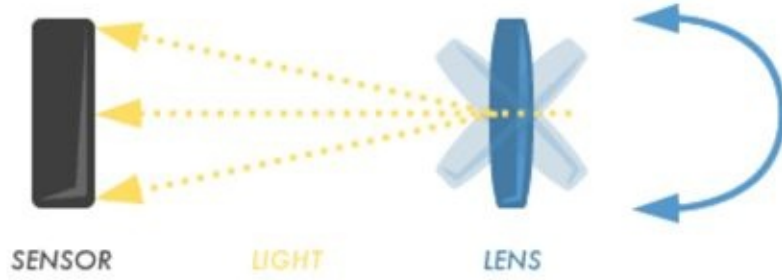


### **TILT SHIFT and PERSPECTIVE CONTROL LENSES –**

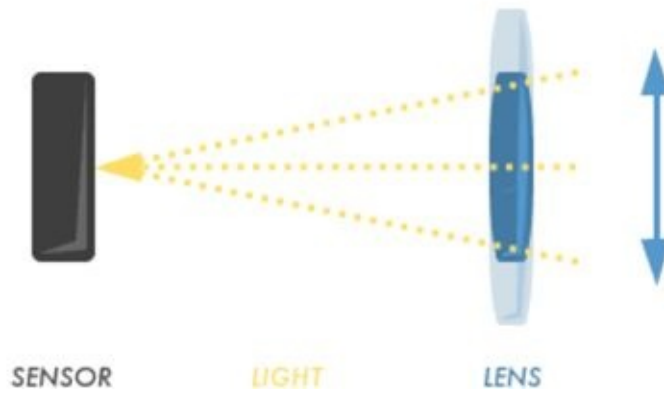
In photography, a **perspective control lens** allows the photographer to control the appearance of perspective in the image; the lens can be moved parallel to the film or sensor, providing the equivalent of corresponding view camera movements. This movement of the lens allows adjusting the position of the subject in the image area without moving the camera back; it is often used to avoid convergence of parallel lines, such as when photographing a tall building. Lenses that provide only shift are called **shift** lenses, while those that can also tilt are called **tilt-shift lenses**. The terms *PC* and *TS* are also used by some manufacturers to refer to this type of lens



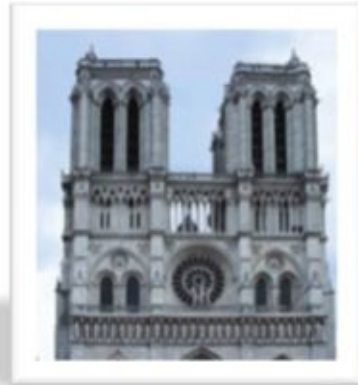
**Tilt**



**Shift**



How a Tilt-Shift Lens operates when attached to your camera. The lens can either tilt or shift to adjust the “perspective” of your image.



Visual example of the effect from a tilt shift lens, known as the “miniature look”. This is achieved by **tilting the lens** to provide a very limited focus plane through the image. The bottom image of the church, had had its perspective corrected by **shifting the lens** to maintain parallel lines but allow the camera to still look higher without actually tilting the camera up at all.



## PART 4 - EXPOSURE

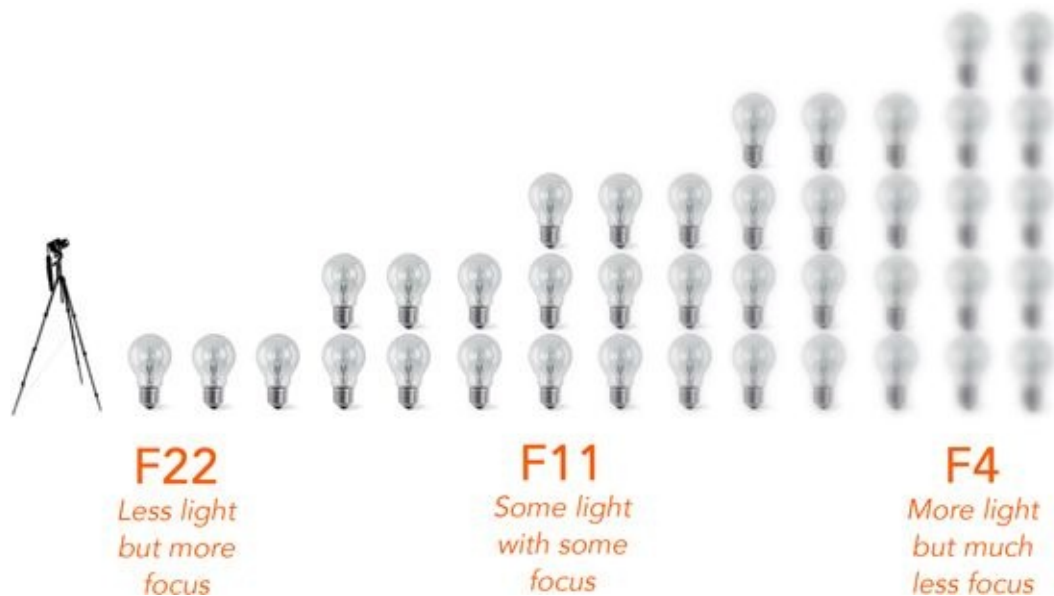
# EXPOSURE



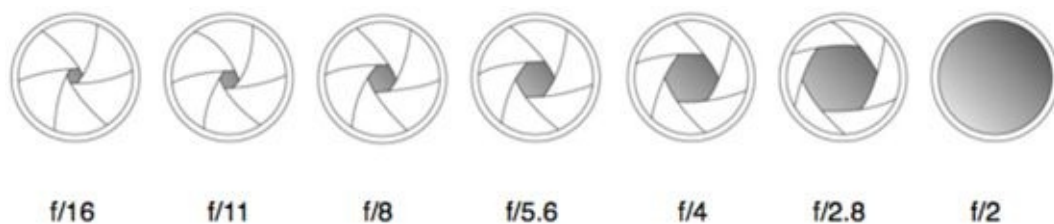
Exposure is the amount of light it takes to record a scene correctly on your camera's digital sensor or on film. Give the camera too much light and the picture will look washed out, too little light and it will be lost in murky darkness. Virtually all digital cameras employ tiny computer chips to set the exposure automatically, often without so much as a prayer from you. Still, having some idea of how the camera works it's magic will help you get a higher percentage of good exposures and often opens up additional creative options. To understand these exposure controls, first you need to understand three critical elements that make up any picture, Aperture, Shutter Speed and ISO sensitivity.

### **WHAT IS APERTURE?**

This is the amount of light passing through the lens at any one time, determined by the size of the opening in the lens, known as the "Aperture Blades" or "Iris Diaphragm". The two basic controls that all cameras use to set exposure are SHUTTER SPEED (the amount of time the camera's sensor or film is exposed to light) and APERTURE (the size of the lens opening that lets light into the camera). Apertures are described as numbered f/stops; lower-numbered stops (f/2.8, for example) let in the most light, and higher-numbered stops (f/22) provide the least. In combination, shutter speed and aperture are the gatekeepers that regulate the amount of light that gets to the film. Whatever camera you are using has this "Iris Diaphragm", which makes the aperture bigger or smaller to let more or less light in.



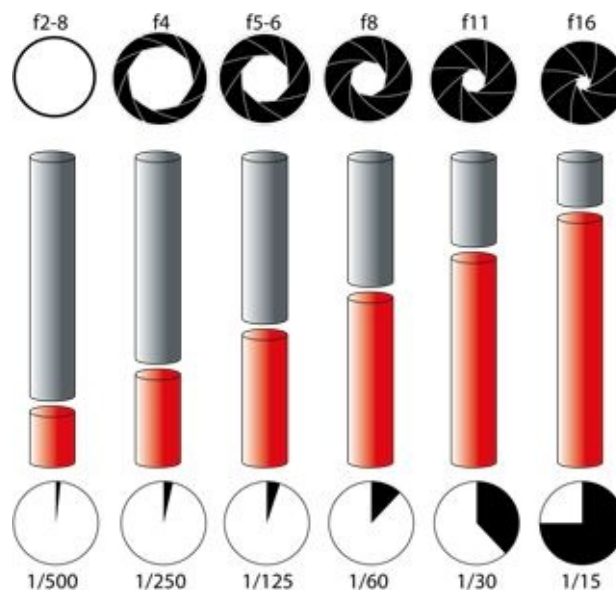
Your camera's aperture does two things. First, as we know, it controls the amount of light let into the camera. The second thing it does is control how much of your picture is in focus, known as "Depth of field". Your camera's lens will have settings called "f-stops" that look like this: F/1.4, f/2, f/2.8, f/4, f/5.6, f/8, f/11, f/16, f/22, f/32. What do those numbers mean? Those numbers tell you how large the opening of your aperture is. Each of these f-stops lets in twice the amount of light as the next f-stop. It looks something like this:



I know that it seems a little weird that the smaller number lets in more light than the larger number, but there's a reason for that. When you buy a camera lens (assuming it's not a zoom lens), it will have a number on it that says something like 200mm. That number, simply put, is the distance from the sensor or film in the camera to the lens when the camera is focused at "infinity". Infinity is the maximum distance from the camera symbolized by this icon ( $\infty$ ) on your camera's focus ring. That number in mm's is called your lens' focal length. The f-number is the ratio of that focal length divided by the diameter of the aperture (how wide the hole is). To put all of that gobbledygook in simple terms... when a 200mm lens (focal length) is at 50 mm wide, your f-stop will be f/4, because the ratio of 200 divided by 50 equals 4. If you "stop down" your aperture to half that size - 25 mm wide - your f-stop will be f/8. (200 divided by 25.) So the "f-number" gets larger as you let less light in. If you're feeling confused, here's what happens when I take a picture under the same lighting conditions, using the same shutter speed, just changing the camera's aperture one stop at a time.



Visual example of two differing apertures, which have differing effects on depth of field. The image on the left captured with an aperture of  $f/4$ , and the image on the right captured at  $f/13$ . The diagram below demonstrates that an aperture of  $F2.8$ , will allow for a faster shutter speed, say,  $1/500^{\text{th}}$  sec, but will give a shallow focus (red line), where as  $F16$  will allow for long focus, but shutter speeds will be much slower.



## **WHAT IS SHUTTER SPEED?**

Inside your camera, directly in front of the sensor, is a small flap called the shutter. When you take a photo, this opens and closes to let light reach the sensor, creating your image. Shutter speed describes how quickly or slowly the shutter opens and closes again. A fast shutter speed means that the shutter is only open for a short period of time; a slow shutter speed means the shutter is open for longer. Shutter speeds are described in fractions of seconds (typically ranging from one second to  $1/8,000$  second); the fastest speeds let in the least light, and the slowest let in the most light.

## **HOW IS SHUTTER SPEED MEASURED?**

Shutter speeds are measured in seconds, or fractions of a second. For example, a shutter speed of  $1/100$  means  $1/100^{\text{th}}$  of a second, or 0.01 seconds. This is also known as the “exposure time”, because it’s the amount of time the sensor is exposed to light. Most cameras offer a wide range of shutter speeds, starting at just a few thousandths of a second and going up to several seconds. SLRs also have a “Bulb” mode where you can hold the shutter open for as long as you want.



f/2.8  
1/125 Second



f/10  
1/10 Second



f/22  
1/2 Second

## **SHUTTER SPEED TECHNIQUES**

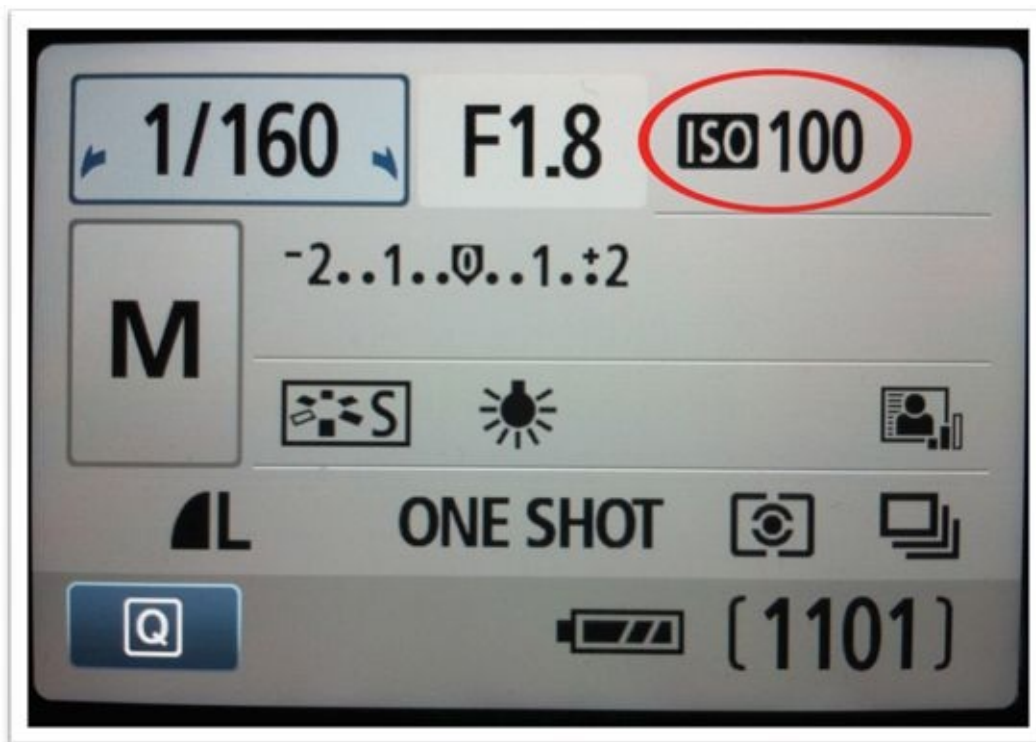
In automatic mode, your camera will try to guess the best shutter speed to capture your scene. Unfortunately it doesn't always get it right, and your photo can end up poorly exposed or blurred. A better option is to switch to manual mode and take control of the shutter speed yourself.



## **ISO SPEED AND SENSITIVITY**

Digital Cameras often “replicate” the ISO speed theory used in film. There is no difference in their application to shooting digital. The higher the ISO number, the more responsive or “faster” it is; thus, an ISO 400 speed setting is faster, or more sensitive than an ISO 100 film. With every change in ISO, from 100 to 200, to 400, to 800, to 1600, to 3200 etc, is an increase in light “seen” by the camera. This “seeing” is your camera's level of sensitivity. As an example, if you increase your ISO setting from 100 to 200, your camera will “see” twice the amount of light. If you increase the ISO setting from 100 to 1600, there will be a 4 x increase in the amount of light and sensitivity....even though the light may not exist!

Your ISO setting “goes looking” for that light, that may not be there, or that you cannot see. Try taking a shot at night on 100 ISO, 800 ISO and then on 3200 ISO. Compare the difference. If you plan to do most of your shooting in bright tropical sunlight, then ISO speed of 100 will suffice; indoors or in dim situations outdoors, you’ll need a faster sensitivity—typically ISO 400 or more. As pointed out earlier, each doubling (or halving) of the speed is equal to one stop of light; an ISO 400 setting, for instance, is twice as fast as an ISO 200 setting, or one stop more sensitive, and vice versa.



Always opt for the lowest ISO speed possible (ISO 50 or 100). These lower speeds absorb light a lot slower than fast ISO speeds (ISO 400 and 800 etc), and keep digital noise to an absolute minimum. This will allow you to use slower shutter speeds, capturing that perfect sunset in low light, or that magical misty water flow off a waterfall. Combine this with a tripod and your images will be awesome....and sharp!, no matter whether day or night. “Digital noise” is a side effect of increasing your ISO speed and will kill many shots unless you handle it correctly.



**FLAMING HOT TIP** - Here’s my QUICK thought process for any photograph, and it always revolves around considering my ISO speed for the environment I may encounter during a shoot, first:

**OUTDOORS (daylight)** - Start with ISO 100 or 200.

**OUTDOORS (at night)** - Start at ISO 1600.

**INDOORS (daylight)** - Start with ISO 400.

**INDOORS (at night)** - Start with ISO 800.

Appropriately set aperture and shutter speed as required.



ISO Button identified on your camera by the letters “ISO”, and again identifying your desired ISO setting in your cameras menu, on the rear LCD screen.

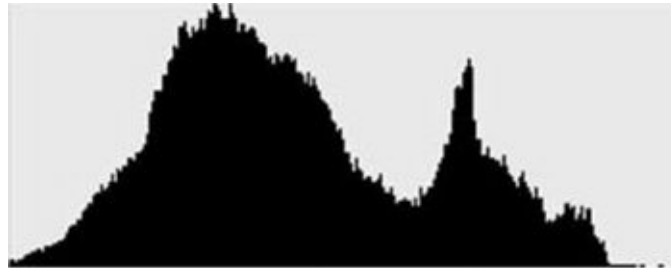
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## **THE HISTOGRAM**

The what? ....I hear you say. The Histogram. This one tool will greatly help you to improve your photography, in a single instant!

Every digital camera has one, except for the very early models, and every photographer who wants to improve, uses one. I personally use mine on nearly every shot, especially commercial and advertising work. Let me explain what your Histogram can do for you.

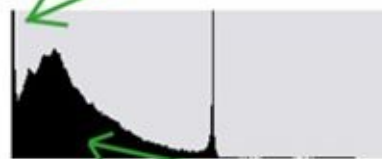
Your Histogram, is essentially the graphical representation of the light your camera has captured in your image. When understood, you can instantly see your mistakes, as many LCD screens on the back of digital cameras, do nothing to enhance the viewer experience, especially in bright light. When I teach my landscape and wildlife students, I am often asked why I always look at the LCD after taking a shot. The answer is that I'm barely even aware of the image on the LCD, it's the histogram that commands my attention. Developed to correctly represent the spread of light across a picture in a graphical chart



A Histogram demonstrating a good spread of light, from deep shadows on the left to near full brightness on the right. The higher peaks indicate areas of high contrast throughout the shot. DO NOT be confused that this representation and my comments mean the left side of your shot is too dark and the right side is too bright. This is not what it means. **It's simply your camera telling you how much is bright and how much is dark, and left and right edges tell you if you have problems in your exposure.**



These pixels are BLACK - you don't want pixels all the way to the left



Too many pixels bunched up near the dark end (the left).



Some of the area of the picture is well exposed...



...but many, many pixels are very bright. You don't want pixels bunched up against the right, either.



Here, almost all the pixels are near the middle, with only a few up against the end. (The ones against the bright end are probably the circle of white that is around the sun, behind the rock, and that's ok).





The above illustrations are an interpretation of the histogram viewed three ways. Overexposed, underexposed and well exposed, with explanations for each.



The Histogram on the first exposure, tells us that most of the light captured is too dark, indicated by our settings (1/320 sec at F14), and that the histogram's peaks lay to the left of the graph. These camera settings are way too dark for this type of scene.

The Histogram on the second exposure, tells us that our corrected settings (1/100 sec at F9), are a much better choice, and that the histogram's peaks lay to the ***middle of the graph***. The exposure is now a lot better balanced.



This is an illustration of the difference your histogram can make to your photography by learning how to read its data. All the data is presented from my Canon 5D Mk2, such as the Histogram itself, the date, the time of capture, the camera settings, the ISO speed, the “M” for fully manual settings, how many images I’ve taken on my card (4 and 6/238 respectively), the color space (RGB), the white balance (AWB), along with my RAW format. All this data is crucial to understanding your results.

Start using the histogram on your digital camera. Use your camera’s “display” or “info” button to show a combined thumbnail and histogram for 5-10 seconds after every shot. Get in the habit of looking at it. It’s the greatest invention ever put in a camera!



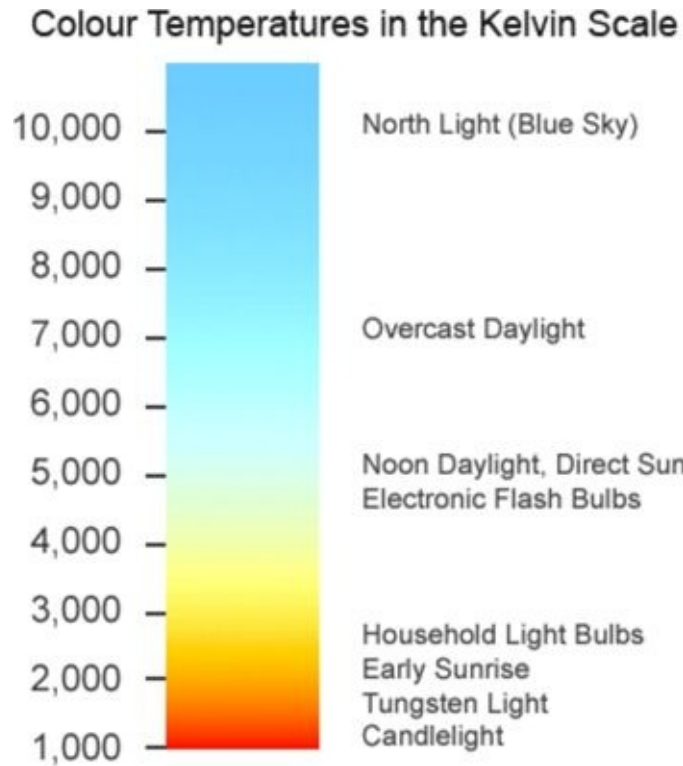
## PART 5 – LIGHTING

# LIGHTING



### ***COLOR OF LIGHT***

From the instant when the sun begins to tinge the eastern horizon with hues of pink and gold until it sets in a blazing crimson farewell in the west, daylight constantly shifts in color. While we may notice the particularly golden light of dawn or the inky blue light of twilight, our eyes and brain tend to neutralize most gradual changes in color, so daylight appears colorless. Cameras (and particularly their sensors), however, are entirely sensitive to these differences and record them faithfully. It's important, then, to learn to discern alterations in the color of daylight so you will see light the way your camera sees it. The color of daylight has a profound effect on the atmosphere of a photograph, and knowing how it affects the emotional content of an image enables you to control the mood of your travel photos. A castle bathed in the cool blues and greys of twilight may seem mysterious or gloomy, perhaps even foreboding. The same castle splashed in the yellow and amber waves of early morning light appears to be safe or beckoning, summoning the reassuring memories of a favorite childhood fairy tale. Changes in daylight's color occur most rapidly—and are most dramatic—at the beginning and end of the day, so work quickly at these times if you want to capture a particular mood.



The Kelvin scale identifies the temperature (or hue) of the light. This is directly controlled in camera via your “White Balance” settings.

## **WHITE BALANCE**

People are told to get their white balance correct in their photos, but rarely told to use the White Balance to get the wrong color... and the correct feeling. Photographers using film know this with their eyes closed: to get the best ambiance for a graveyard collection of pictures you just had to pick a film balanced for tungsten and use it in daylight. A nice blue cast would give the images the right feeling. Tungsten balanced film is/was also used in the motion picture industry to produce “day for night” or, as it is also called, “American night,” those bluish ambiances lit by the moon.

Today this effect is much easier to achieve: just turn your camera’s white balance to tungsten and go shoot outside. Now, you’ve been told that you should use tungsten balance to reduce the orange cast you usually get in pictures taken indoors, under common house lighting. But why should you not use it other ways and explore the box of filters you have hidden in your white balance settings.

Typical presets are: Tungsten, Fluorescent, Daylight, Flash, Cloudy and Shade. There is Auto, when the camera decides what is best (and works fine most times). The Kelvin or K setting lets you define with precision the Kelvin value to use (Kelvin is the name of the unit to measure the temperature or color of light). Each preset is to be used under the conditions mentioned, to get the right balance. That’s what we all learn and everybody tries to get done correctly.



































**FLAMING HOT TIP** - When I am out shooting with people, let's say a sunset, they always ask me how I get my sunset sky with a color different from theirs, as they did not see me using any filter. It's easy: when I have a sky that is too warm for my taste with auto, I change it to fluorescent. Fluorescent introduces magenta to cut the green tone usually present in many fluorescent lamps, and it works here as the image above shows. It's a way to get a different mood without having to carry more gear with you. Remember this next time you're out photographing a sunset.

The presets your camera offers you are to be taken with a pinch of salt. In fact, the cloudy setting does not necessarily mean you can only use it when clouds show up in the sky. If your pictures are cool (bluish) you can use Cloudy or even Shade to get a warmer tone. Or you can use the Kelvin directly and set the value that works best for you. It takes a little practice, but with digital it's easy: shoot and look at the LCD!

These notes should help to give you a jumpstart. Sit down with your camera at different hours of the day and try out the various white balance settings shooting the same subject to get a practical understanding of how the sensor reacts to light. That will help you to build a library of options to use afterwards, for different results at different situations and hours of the day.

**A GUIDE TO YOUR WHITE BALANCE –**

		Tone	+	Filter	=	Result	
	SHADE		+		=		Camera adds strong warm tones
	CLOUDY		+		=		Camera adds mild warm tones
	FLASH		+		=		Camera adds slight warm tones
	SUNLIGHT		+		=		Camera adds gentle warm tones
	FLUORO		+		=		Camera adds warm (red) tones
	TUNGSTEN		+		=		Camera adds mild cool tones
	AUTO		+		=		Camera sets the white balance
	CUSTOM		+		=		Kelvin Temp sets white balance

## MANUALLY SETTING YOUR KELVIN TEMPERATURE -

**1000-2000 K Candlelight** (Set this for candlelit shots)

**2500-3500 K Tungsten Bulb** (Set this for indoor shots with ceiling downlights)

**3000-4000 K Sunrise/Sunset** (Set this for sunrise and sunset)

**4000-5000 K Fluorescent Lamps** (Set this for indoor shots with fluoro lights)

**5000-5500 K Electronic Flash**

**5000-6500 K Daylight with Clear Sky** (Set this for a clear normal day)

**6500-8000 K Moderately Overcast Sky** (Set this for a cloudy day)

**9000-10000 K Shade or Heavily Overcast Sky** (Set this for a stormy day)

## **DIRECTION OF LIGHT**

The direction, from which light strikes a scene, relative to the camera position, has a significant effect on color, form, texture, and depth in the resulting photo. Front lighting spills over your shoulder and falls squarely on the front of your subject. Because front lighting is very even, auto-exposure systems handle it well. It produces bold, saturated colors, but when too strong can actually wash out some colors. The downside is that, because all the shadows are falling behind the subject and away from the camera, front-lit scenes lack a sense of depth or three dimensionality.



**1. FRONT LIGHT, 2. SIDE LIGHT, 3. BACK LIGHT.** (Look at where the shadows are). All have a differing effect on the final image. Experiment with the look you are after. It may surprise you to know, that often the wrong light makes for the best image.

Side lighting comes from the left or right of a subject. Because the light is scraping across from side to side, it catches every surface blip and imperfection, leaving a trail of large and small shadows and exaggerating surface textures. It is ideal for landscapes, like deserts or beaches, where you want to convey the textured surfaces. Sidelight also imparts form and three-dimensionality to objects, giving a pumpkin its full roundness or a tree trunk its volume. Gentle side lighting, especially from slightly above, works well for portraits because it creates a delicate modeling of facial features.

Backlighting can produce theatrical effects, particularly with landscapes. Shadows coming toward the camera exaggerate depth and distance and help lead the eye into the scene. When backlighting is used behind partially translucent subjects, like leaves or human hair, it creates a bright fringe called rim lighting that helps separate subjects from their surroundings. In backlit portraits, however, you may need to increase exposure by 1 to 1 1/2 stops over the metered value to keep faces from being lost in shadow. An alternate solution is to use flash fill (see Fill-In Flash). Keep the sun itself out of the frame or it will trick the meter into severe underexposure. With many subjects, you can change the apparent direction of lighting by changing your shooting position—by taking a short walk if you're shooting a close-up of a barn or a horse or landscape.



## **NATURAL LIGHT**

You can use the natural light coming through doors and windows to photograph interiors. You have to pay lots of attention to where the light is coming from when you're doing this. The light, even on a cloudy day, will be hard because it's coming in through the doors and windows. If you include open doors or windows in your photo, they will burn out because they are so bright compared to the interior. The good thing about this type of light is that it can be very dramatic and moody, especially inside an old building. Some people will solve the problem of shooting in these conditions by using HDR (High Dynamic Range) techniques. But be careful if you choose this option, as your image can look very "fake" very easily if you apply too much HDR correction.

## **BACKLIGHT**

Backlight is evident when the light source is behind the subject. Backlight, like hard light, has lots of contrast. Also like hard light, it's normally best for photos at the end or the start of the day. Backlighting from the sun at any other time of the day has too much contrast. Backlighting is good for landscapes, portraits and architecture. It's a powerful, moody, evocative type of lighting. It is very dramatic if combined with weather conditions like mist or fog. You'll need to keep your lens scrupulously clean for shooting backlit subjects, as the light will shine right on the front element of your lens, causing flare. Sometimes flare is unavoidable – if this happens to you the best way to deal with it is to work the flare into your composition. Make it look like a deliberate part of the photo, rather than an unwanted side effect.



## **HARD LIGHT**

The light from the sun on a sunny day is hard light. It's strong and direct and casts deep shadows with hard edges. In the middle of the day, especially in the summer, hard light can be very ugly. Avoid taking photos at this time if you can. Hard light is best at either end of the day, shortly after the sun has risen and just before it sets. Photographers call this period the golden hour, because of the quality of the light. If the sky is clear, the light is still hard, but it's a great deal softer than in the middle of the day. It also comes at your subject from a low angle which reveals form and texture and is much more interesting than midday light.



## **SOFT LIGHT**

Soft light describes the type of light that you find in the shade or on a cloudy day. Any shadows have soft edges. Soft light, especially on a cloudy winter's day, can seem grey and dull, without much potential for photography. The key to using soft light is to

understand that it has very little contrast. It's the opposite of hard light from the sun. Soft light is great for taking photos of people, especially portraits. If you're outside on a sunny day, taking photos of people, find some shade and take photos of them there. The results will be much better.

Soft light is also suitable for taking photos in rainforest and woodland, and for still life and flowers. On a cloudy day, avoid including the sky in your photos – it usually just comes out white.



## **MOONLIGHT**

Opportunities for shooting a landscape by moonlight don't present themselves every night when you're travelling, but when they do, it's nice to know how to capture them. You can take two types of moonscapes: those that feature the moon itself (usually a full moon) in the frame and those that are simply landscapes exposed by the light of the moon. The former are the simplest and are best made shortly after the sun has set, just as the moon is beginning to rise: The moon appears largest at this time because of the land reference of the horizon and the refraction of the earth's atmosphere.

As lighting is predominantly from the twilight sky, you'll still get a sufficient amount of foreground detail. Look for a simple scene that you can compose with a telephoto lens 300 mm or longer; remember that the longer the lens, the larger the moon will appear. If you are using color negative film, take a meter reading of the scene and shoot. When you're shooting slide film, bracket your exposures (see Exposure and Metering Modes) by a full stop, both under and over the suggested reading. Be careful to avoid exposures of more than a few seconds, or the moon's shape will become elongated.





Moonlight can often provide just enough light to give the impression the image was captured during daylight. Sometimes the only giveaways are the stars in the night sky.



**FLAMING HOT TIP** - If your camera allows you to make exposures of several seconds or longer, landscapes illuminated exclusively by the full moon but not including the moon can make eerie, ethereal pictures. The technique works best with snowscapes or beaches, because light reflected from snow or sand brightens the entire scene. Exposures will still be quite long; with ISO 400 film, start with two seconds at f/2.8 and then make several additional exposures, doubling the time for each successive shot. You'll need a tripod.

If you want to be really creative, consider taking a double exposure (see Multiple Exposures). The simplest method is to make one exposure of just the moon using a very long lens (300 mm or longer) and another of an interesting landscape, then combine them later in a slide duplicator, or software like Photoshop.

## ***DRAMATIC LIGHTING***

One of the great thrills of travel photography is coming unexpectedly upon a sudden and dramatic light phenomenon—when the light's direction or color or intensity stops you in your tracks. As a traveler, you don't often have the luxury of waiting by a scene for a spectacular bit of lighting, but if you know when such light is likely to occur, you can be on the lookout for it. Among the best times to expect dramatic lighting are just before or after a storm. Often storms end with dozens of brilliant rays of sun bursting through a bank of clouds.



Similar displays contrived by architects occur on almost any sunny day inside many cathedrals, when the sun pierces the highest windows and a thousand rays gleam down on the altar. Another way to increase your odds is to rise before the sun and linger until long after it has set. In addition to the theatrics of sunset and sunrise (see *Sunrise, Sunset, and Afterglow*), the low-angle light of these times often brings high drama. Such bits of dramatic illumination don't come without problems. They can be high in contrast, and the range of highlights and shadows may be beyond the capacity of your camera to record. Don't try to compensate: Either use your spot-metering mode or move close physically and take an exposure reading from just the highlights.

## **SILHOUETTES**

If you've ever slowed your car when you've seen the outline of a bounding deer on a yellow road sign, you know the immediate power shapes have in identifying objects. In photography, the simplest and most effective way to reveal a shape is by creating a silhouette. You can use silhouettes in your travel pictures to dramatize subjects whenever shape is more important than form or texture, or just to jazz up your slide shows. To create silhouettes, simply put an opaque object in front of a bright background and expose for the background. Any brightly colored surface will work: a glittering gold sea at sunset, a cheerful colored wall, or even the illuminated glass wall of an aquarium. Rarely, however, do elegant coincidences of interesting subject and colorful background just appear. More often, you'll have to use your artist's eye to spot the potential of a bright background and then hunt around until you match it with a suitable foreground subject. Look for subjects that have a bold and simple shape. It's important, too, that the subject be entirely surrounded by the bright background. A fisherman on the beach at sunrise will produce a clearly identifiable shape, but fishing boats lined up too closely in a row may merge into a dark clump.



The image and the setup; simply a window leading into a darkened room. Exposing for just the window light, will ensure a strong silhouette. Using your camera's menu, you could also manually increase the contrast to refine the desired effect.

Exposing for silhouettes is fairly simple; as with sunsets, a variety of exposures will produce good results. If your camera has an averaging meter (as do most point-and-shoots), be sure to point your camera toward the brighter area first and then use your exposure-lock feature to hold that exposure. This means your camera will set for a bright picture and therefore see the shape of the silhouette as dark. If you have an SLR that has a spot-metering feature, take a reading of just the bright area and then bracket in half - or full-stop increments toward overexposure.

## **LIGHTS AT NIGHT**

If you're willing to go exploring with fast films and/or a tripod, the after-dark world is rife with bright and colorful subjects. Neon lights, theatrically lit landmarks and monuments, and carnivals, all present picture opportunities that don't show up by daylight.

The stripes and squiggles of neon lights and signs are colorful and provide good results over a wide range of exposures. Often, too, the lights are bright enough for making handheld exposures with a moderate-speed film, typically 1/60 second at f/4 with ISO 200

film. Sometimes individual signs work as a whole, but more often you'll create stronger images by moving in close to isolate patterns or abstract designs within a sign. In places like Las Vegas or Times Square, where neon propagates with wild abandon, use a telephoto lens's ability to compress space to squeeze a number of lights into a brilliant fanfare. Carnivals and amusement parks abound with night lights. You can get a bird's-eye view by climbing aboard a Ferris wheel. Lighting will be fairly dim, so use a very fast ISO speed (i.e.; 1000, 1600 etc) for sharp handheld pictures or use a tripod and long shutter speeds at ground level to capture the motion of the rides.



Bridges, fountains, and monuments are often more interesting to photograph at night, when they are theatrically lit and the darkness hides distracting or unattractive surroundings. Use a tripod to steady the camera, and make long exposures so you can use small apertures for maximum depth of field. Exposure isn't critical; move in close, take readings of just the lighted areas (or use your spot-metering mode), and bracket a stop or two in both directions. In any nighttime situation, color negative films will provide the greatest exposure forgiveness. Don't worry about getting a correct color balance; the

potpourri of light sources creates some very pretty effects.

## **EXPOSING FOR DARK & LIGHT SUBJECTS**

If built-in exposure meters are as omniscient and sophisticated as camera manufacturers claim, why do people still get poorly exposed pictures? The truth is that while most built-in meters are fabulously accurate, they can be fooled. Fortunately, there are ways to wrestle difficult subjects into submission, provided you can recognize a difficult situation.

Light meters are calibrated to give you good exposure for subjects of average brightness; fortunately, most outdoor subjects are of average brightness. Problems pop up when you want to photograph subjects that are much lighter or darker than average. Rather than recording such scenes as you see them, the camera will see and record them as a medium tone. Instead of pristine white snow, you'll get a drab grey winter wonderland; instead of an inky-black horse, you'll get a grey nag.

If your subject is nearby or very large, the simplest solution is to take a close-up reading and then adjust the exposure using your exposure-compensation dial (or manually) by a stop or two. To photograph a black bull in a meadow, take a reading from the animal and subtract one to two stops of exposure to keep it black.

The problem gets more tedious when you are photographing a relatively small average-toned subject against a very dark or light background, a friend lying on a bright sandy beach, for instance. The best recourse here is to use your spot-metering mode and take a reading of just the subject. This way at least your main subject will be correctly exposed, even if, because of the contrast, you lose some detail in the background. Yet another solution is to scout the scene for something of average brightness, green foliage is good and set your exposure for that.

## **LIGHTING EQUIPMENT - FILL-IN FLASH**

Though making dark places brighter is the primary use of flash, the next-best place to use it, surprisingly enough, is outdoors in bright sunlight. One of the problems of taking pictures especially individual or group portraits, by midday sun is that the harsh lighting creates deep, distracting shadows. In people pictures this usually means dark eye sockets and unattractive shadows under the nose and lips. Fill-in flash lightens these shadows to create more attractive portraits.

Fill-in flash looks most natural when it's about a stop darker than the main light. When the flash-to-daylight ratio is too even, or when flash overpowers the existing light, the balance looks false and draws attention to the fact that you used flash. Until the advent of built-in and dedicated accessory flash, making the calculations for fill-in flash was like doing the math for sending a rocket into another galaxy. It was easier (and quicker) to wait for a hazy day. Today, most built-in and dedicated flash units have a special mode just for fill-in flash. Basically, all you do is point and shoot. The camera reads the ambient lighting and then kicks out just enough flash to fill shadows but leave the picture natural-looking. Many dedicated accessory flash units even let you set a specific flash-to-daylight ratio, so you can make the fill more or less bright. Because a dedicated flash's output is mated to the auto-focusing system, the camera even knows how far away your subject is.

If you are using an automatic accessory flash on an SLR, the procedure has a few more steps, but it's still painless. First, take a reading of your subject's highlights and set that exposure on your camera; then, using the calculator dial on your flash, set it to provide a flash equal to one stop less light. The instruction manual with your flash will provide more specific information. Fill-in flash isn't limited to taking pictures of people: I frequently use just a gentle kiss of flash to open up the deep shadows in close-ups of flowers or architectural details.



A **Ring Flash** can help to “spread the light” across your subject, so that the tones of a portrait can appear more naturally lit. If placing your subject too close to a wall as a backdrop, be aware you may see a slight halo effect from the shadow created, but nevertheless its nowhere near as harsh as standard speedlight flash

## **FLASH EQUIPMENT AND STUDIO STROBE**

Flashes are very important to get the final results of a professional photographer. The truth is, the flash that comes on most cameras does not really do justice to what you are shooting. The direct, bright light tends to wash out color and make funny shadows or very flat images. While it is great if you are just in a point-and-shoot mode, it will not get you the results you want. Even if you are using a point-and-shoot type camera, you should try to not use the flash and rather extend your shutter speed in order to get a more accurate representation of what you are photographing. You will want to get a variety of lights to work with in the studio and outside the studio. There are all sorts of “heats” when you are looking at lights and these will produce brighter, more harsh looks. But you can tone many of these down with certain bounce cards and other photographic tools. You will want a few bright lights so that when you need to feed in more light you can, but you will diffuse it so it does not wash out your subject or the scenery.

Shoe mounted flashes are the ones that can be connected directly to your camera. When it comes to a flash that is in tune with your camera and attached these are the best. You can usually swivel the flash so it is not directly flashing in the eyes of your subjects or washing out the area. Another great thing about shoe-mounted flashes is that you can put them on a timer. This allows you to use them with a stand and a bounce or umbrella in order to diffuse the light before it hits the subject and it does not limit where you can put or carrying your camera. Your camera placement will be totally separate from the light source itself. These are great for when you are away from a power source or need

something light to carry with you. Because the shoe-mounted flash is meant to be placed on your camera directly, it is quite lightweight and can be put on the most flimsy of stands. This gives you a great way to control light in outdoor settings or when you are travelling.



A studio strobe is a step above a shoe-mounted flash. This type of light is meant to tie in with your camera and will flash when you take a photo. The wireless adaptor tells the strobe when to go off so you get flawless images without disturbing your subjects. Out in the “real world” you will often see these used for wedding photography, especially at receptions. The room tends to be dark and you don’t want to ruin the ambiance. The light is so quick and undetectable it gets you the shot you are looking for without disturbing the dancers or diners. It is perfect. Another great thing about the studio strobe is that it can be set to beep when it is fully charged again. This means you never have to worry about trying to snap a photo and not getting the image because the flash is not ready to light. This ensures you get your photo every time. The studio strobe also has an “on” switch. This means you can test the light placement while it is on, check your light meter and even place your subjects. Then you switch it back to the responsive mode and it will only flash when you are taking a shot. This gives you a more accurate sense of the light. The strobe comes with many settings so you can control the heat of the light and adjust it accordingly.



A typical studio setup looking from overhead with a main light with umbrella to the right and a reflector to bounce light onto the subjects from the left. Support lights fill the background.

## **LIGHT STANDS**

A light stand is a must. This is what you will use to clip your lights to and there are a number of different types. While it may be tempting to go with the low weight light stands, consider getting a few heavier ones for the studio because if you get larger lights you need something that can handle the weight without tipping over. For the road, there are many lightweight stands that fold out from a very small packing size, making them easy to use on the road. You should still bring a sand bag with you to lock the bottom down. The last thing you want is your light stand to fall over on one of your subjects, a very real danger when you are extending lights overhead.

In the studio you should keep an array of light stands at various sizes. The stands become more unstable the higher you raise the bars, so boxes are often preferred as well. There are standard photography boxes known as “apple boxes” that are simple wooden rectangles. You can use these to get extra height out of the stand without extending the bar too high and making it wobbly. Sandbags are imperative for weighing down the light stands and the boxes so that you are working in a safe environment. Without such weights, a simple bump can cause a big problem down as the entire structure can come tumbling down.





A studio light with barn doors (on the left), can greatly control the direction and intensity of your light in a certain area, where a softbox (on the right) will spread the light across the whole area, “diffusing” the light, the same way clouds soften the sunlight”.

## **UMBRELLA AND SOFTBOXES**

Umbrellas are some of the most common diffusers used with lights today. They can be used with simple shoe-mounted flashes, studio strobe lights or just regular lights. They diffuse the light in such a way to provide a glamorous look to the shot. When you are looking at all the stylized shots in magazines and on the covers, chances are they are using some sort of umbrella to spread the light out. It works to equally send the light on the subject so as not to blast the color out of the area and “burn” it so it looks too bright in some spots and too dark in others. They really do look like an umbrella. They store just as easily and can even come with various shades of color to change the color of your lighting. Most common are the slightly gold, white or black umbrellas.

Softboxes come in a variety of shapes and sizes. You can use them to create shadows or just point lights in a particular direction. Do you remember those shots when everyone was a kid where you have the great profile looking up at a light and then in the corner they print a small circle of the full body image? These often used softboxes to present a real spotlight effect. It gives a very dramatic look if you want it to. You can also use it to simply control where the light is going so that only certain areas of the background are visible. This will help you learn how to control your light and work with it.



## **FLASH TRIGGERING DEVICES**

Some of your studio strobes and flashes will come with a setting to be able to read your camera. If you want to work with other lights or you want complete control you can get a flash triggering device. This gives you the opportunity to set lights anywhere and remotely trigger them with the push of your camera button. This gives you the right lighting for every push. You can even set different lights to different frequencies if you are working with multiple looks simultaneously, but this is often a much more advanced type of process.



An excellent start to a studio or outdoor lighting set up, main light with portable battery pack, a softbox and

triggers to remotely control the main light from your camera, without cables.

## **FLASH AND LIGHT METERS**

Light meters are very important. It is important that you know how much light will be hitting at different depths of your image as it will distort and affect the overall look to the glass of your lens. You may find certain places on a subject's face or body are "hot" meaning quite bright. This could be an effect you are looking for or something that will make the photo turn out badly. While you can always decide what type of lighting you enjoy, there are some standards for portrait sessions. This might be something you wish to discover in a basic photography class as you can only learn by doing.



A dedicated light meter (set to spot meter) has been used to determine accurate spots of light as reference to measure the required exposure. 5 points have been measured - **A** – a highlight, **B** – a shadow, **C** – bright midtone, **D** – midtone, **E** – dark midtone. The points at A and B represent our "dynamic range", or the "difference" between the highlights and the shadows, of which are about 5 f-stops. Most cameras will struggle keeping detail in anything with a difference more than about 4 stops. We use the other spots to determine the ideal "balanced exposure reading to ensure we hold detail in both the highlights and the shadows.

## **EXTRA BATTERY PACKS**

Battery packs are essential. Not only does your camera require batteries, but your lighting unites as well. While studio strobe might have a plug in, it is good to have a battery back up. Any time you are going out to take photos, bring extra battery packs and your charger. This will help keep you in a rotation that means you will never be without power. Extra batteries have saved many photographers. You don't want to miss the "big moment" because you are at the corner store buying more batteries.

## **BACKPACK OR BAG**

When you are picking your camera bag there are many things to consider. Chances are you will need more than one bag for different scenarios. You will want a bag that covers most of your lenses and flashes, but you will also want a smaller bag for when you need to travel light. There are bags that have handles and wheels, which can be quite helpful if you have developed a package including lots of heavy equipment.

A backpack bag is often great for when you are on the go. This gives you a place to put your equipment even when you are shooting. One of the dangers of shooting out in public is you will start sorting through things and leave something on the ground as you follow the shot. By having it on your back, you are less likely to leave things behind.

Make sure you have a separate bag for your memory cards. There are all sorts of cases out there now. You may even want to get two different cases, one for used cards and one for “clean” cards. When you are in the middle of shooting you will be amazed how quickly you go through your memory sticks and even more surprised at how quickly they can become mixed up. The last thing you want to do is shoot over the important images you just took.

Consider getting bounce cards that disassemble. There are many types of bounce cards for light that have small frames and different center cloths. These fit better in your bag than large cards you may use in your studio. You can easily fold them on the side and take them with you. As it is best to shoot out of direct sunlight, it becomes a way you can use the natural light without having to be right out in the middle of it.

## **SPRING CLAMPS**

There are all sorts of clamps you can use to attach flashes to stands, cameras to stands and various bounce cards to the right area. The most versatile type of clamp is the spring clamp. You can often adjust the size significantly and you can hook it onto just about anything. There are all sorts of clamps that use a locking motion, but the spring clamp will not leave a mark on any surface. This means you can use it with a table or other sensitive area without worrying about damaging the wood or breaking glass. When you are dealing with small spaces, spring clamps often work really well.

You can get a variety of sizes and shapes. This can be helpful when you are trying to control a bit of light out in nature. When you are taking photos on a swing or at another play place you can set up a little bounce just to give you the right amount of light to add a layer to your photo making it more professional.

## **ELECTRICAL AND GAFF TAPE**

Electrical tape is a silver tape that does not damage surfaces. It is easy to remove (much like painting tape) and won't leave behind a sticky residue. In addition to electrical tape, gaff tape can handle various temperatures so you can use it to add filters to lights or different types of diffusers, but it does leave a sticky residue. The tape can handle the heat of the surrounding metal, holding the objects still without causing a fire hazard. In addition, even after heated up, the tape still removes easily, but you may need a cleaner to remove some of the tape residue. As various color gels (similar to filters) or filters are

quite expensive, it is nice to be able to reuse them, gaff tape and electrical tape makes this possible.

## PART 6 - COMPOSITION

# COMPOSITION



Composition is the placement or arrangement of visual elements or ingredients in a work of art or a photograph. The term composition means ‘putting together,’ and can apply to any work of art, from music to writing to photography, that is arranged or put together using conscious thought. It is this conscious thought that is activated when a viewer sees your image. The smarter and more balanced the arrangement of your subject matter the more likely the viewer will be pleased by what they see.

Instead of looking at composition as a set of ‘rules’ to follow – I like to think of it as ingredients that can be used to make a great ‘meal’ (in this case a photograph). Alternatively you could describe it as a set of ‘tools’ that can be taken out of one’s compositional tool belt at any given time in the construction of a great image. Those tools are Pattern, Symmetry, Texture, Depth of Field, and Leading Lines. How these tools are used to arrange your composition is up to you, but to create the strongest appeal, using the ancient Rule of Thirds will surely add to your images appeal.

### ***RULE OF THIRDS***

Taking the time to find a pleasing and effective placement for your main subject is crucial to the success of your photographs. One method, first explored by painters from the Renaissance period that artists have been using for centuries is the Rule of Thirds. It involves mentally dividing the viewfinder frame into thirds, both horizontally and vertically, a bit like a Naughts and Crosses or Tic-Tac-Toe board. The four lines and four intersections of these lines can then be used as invisible guidelines to help you find the most dynamic subject placements.

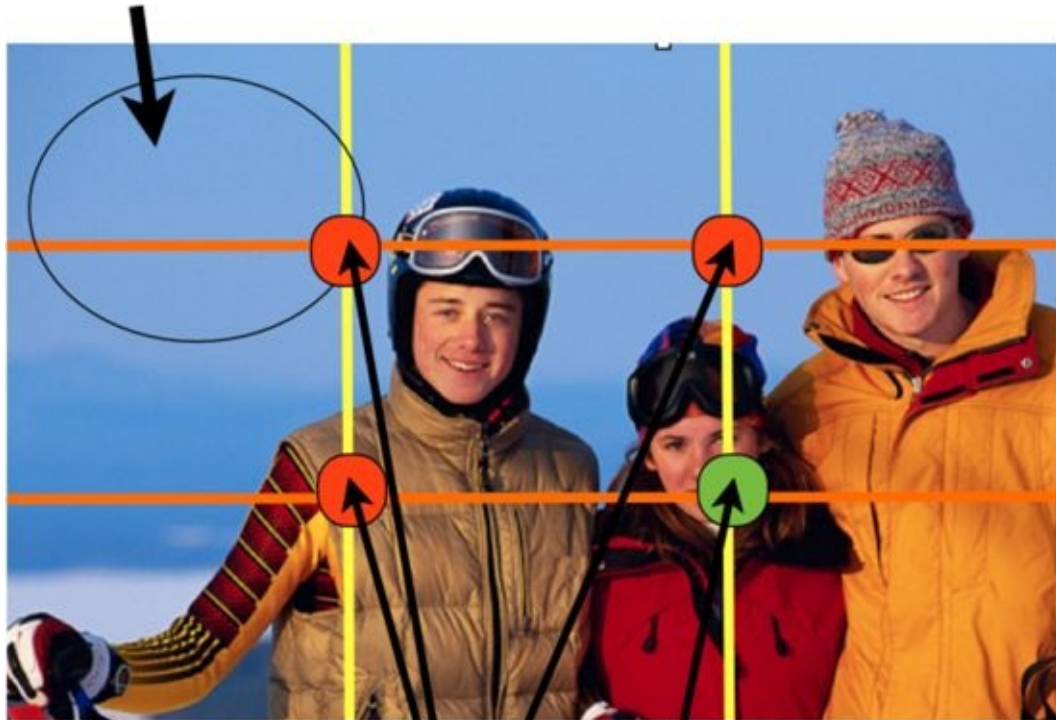
By locating a subject at one of the four intersections—as opposed to nailing it squarely in the centre of the frame, for example, you give it added emphasis. The technique works well with all subjects but is particularly effective when you are photographing a relatively small subject surrounded by a large expanse of space or against a plain background. The visual weight of your subject balances the vast emptiness. A sailboat on a calm sea centered in the frame appears stagnant and overwhelmed by its surroundings, but if it is placed at a thirds intersection, its position fulfills our need for a dynamic visual tension.

You can also use thirds to help organize and support secondary subjects by setting them at diagonally opposite intersections—for example, placing a bee's eye (the main subject) at the lower left juncture and the rising full moon (a secondary subject) diagonally opposite and above at the upper right intersection. Again, you achieve balance and dynamics.



By dividing into horizontal thirds this can also help you decide where to place the horizon. If you place it along one of the two frame divisions, you have a quick and effective shortcut for deciding how to arrange the composition. Imagine, for instance, that you're photographing a tree on a hill. Placing the horizon at the lower line gives the sky two thirds of the frame and the foreground one third, accenting the clouds and the moon and the colors of the sky. Conversely, placing it along the top division line accents the sky by giving it only one third of the frame. You can use the same principle whether you're shooting horizontally or vertically. Remember though, whatever you place into the two-thirds section, make it interesting, this is especially the case with expansive skies.

I looked here first but I cant find anything, only a lot of blank space with no interest....so Ill keep looking until I find something I like!



What is he doing here?

NOTHING OF INTEREST HERE, MEANS THE VIEWERS GOES SEARCHING FOR SOMETHING

ONLY ONE INTERESTING SUBJECT HAS BEEN PLACED IN THE RIGHT SPOT, MORE BY LUCK THAN INTENTION!

What is this here?



**Anatomy of an image with a bad composition...** What your minds eye may react to first, causing confusion, then disappointment all in a millisecond, rendering the image unappealing, and causing you to only find the distracting elements in an image, due to bad composition. Receiving a “wow” reaction from a viewer will always prove your composition has worked.





A new perfect composition using the Rule of Thirds. The orange lines dissect the faces and hands, and the yellow lines dissect the vertical positioning, defining a “correct image”. Whilst you may not necessarily like this image, subliminally your conscious mind accepts it as a “correct” image, helping you to interpret it quicker than an image not using the Rule of Thirds.

## **CLOSE-UPS**

The world is full of tiny things that can draw a curious eye. Often seemingly insignificant details tell the story of a locale as well as broad views do. The degree of closeness you can achieve will depend largely on your camera. Most point-and-shoot cameras have a minimum focusing distance of around 1 1/2 to 2 feet. Some zoom-lens-type point-and-shoots have a macro (close-up) mode that enables you to work much closer—often as close as a few inches (a feature worth considering if small subjects excite you). In either case, you’ll know when you’re trying to take a picture that’s beyond the camera’s close-focus capability, because the auto-focus won’t lock on. With most cameras the correct-focus indicator light will blink rapidly and the shutter release won’t fire. All you can do is back off and recompose at a greater distance.



An albino amethyst python shows interest in my camera. Interestingly, this python is over 5 meters long, and at its thickest 20 centimeters wide. 1/125<sup>th</sup> sec @ F4, ISO 100

With an SLR camera, on the other hand, the degree of closeness is almost unlimited. A variety of accessories can be used to provide ever-increasing magnification. If you take close-ups only occasionally, a simple set of screw-on close-up filters will provide an inexpensive solution. For more serious work, a macro lens or a zoom with a macro feature offers superior quality.

Whatever camera equipment you have, using a fast (ISO 400) film is very important: The closer you get, the less depth of field there is (see Controlling Depth of Field) and the more camera shake is magnified. Fast films allow higher shutter speeds and smaller apertures, which help correct both problems. The trade off is that faster films and higher ISO speeds have larger grain and therefore show up more grain (often referred to as noise in digital forums), the larger you print the image.

## **CHOOSING A FORMAT**

Among the most basic decisions that face you in composing any photograph is whether to frame it horizontally or vertically. Because cameras are rectangular and are more comfortable to hold horizontally, that's exactly how most people compose their pictures. Turning the camera on end makes handling a bit awkward, but the effort will add power and visual variety to your pictures. Imagine how boring it would be to go to an art gallery and see only horizontal paintings. Many subjects cry out to be framed in a particular way. As a rule, tall subjects (like trees or waterfalls), or those in which you want to exaggerate near-to-far distance, stand more comfortably in a vertical frame. Framing a scene vertically forces the eye to scan the photograph from bottom to top (and vice versa), which exaggerates the impression of depth and distance. Wide scenes or long, squat subjects lie

naturally in a horizontal composition. Horizontal compositions draw the eye from side to side across the frame, reinforcing the sense of width and spaciousness.

This is where the panoramic format for landscapes is perfect. It can be used to capture a wide scene, or when turned up vertically, can draw a very deep view into the frame, as an example, a small but strong subject of a starfish lying on the waters edge of a beach, looking all the way up into a brilliant blue sky or sunrise/sunset. For many subjects, either format will work; choosing the best framing is then largely a matter of instinct. If deciding which format looks best becomes difficult, photograph it both ways and decide later; it's often easier to grasp the full impact from a print than it is when you're looking through the viewfinder. Though we may not always be aware of it, format also deeply affects the psychological content of a scene. Subjects framed vertically, for instance, often seem more aggressive and less stable: Skyscrapers loom overhead and trees totter in the wind. Conversely, horizontally framed subjects offer a sense of equilibrium and stability.



Landscape



Portrait

## **PLACING THE HORIZON**

In landscape photography, where you place the horizon line in the frame has a powerful effect on how your compositions are interpreted. Shifting horizon placement by tilting the camera up or down can alter the entire balance of a scene.

Placing the horizon high in the frame, for example, accentuates foreground details and enhances the sense of distance. Take care when using expansive foregrounds to get as much depth of field (see Controlling Depth of Field) as possible. If your SLR camera has an aperture-priority mode, use it to set a small aperture (f/11 to f/32) to ensure maximum near-to-far sharpness. Some SLR and point-and-shoot cameras provide a landscape-exposure mode that automatically sets a small aperture for you. Shooting from a high vantage point and tilting the camera down so it is more parallel to the plane of the foreground also helps extend the range of sharp focus.



The horizon has been placed in the bottom third of the image, simply because of two reasons. Firstly the cloud formations are more interesting than the surface of the water. Secondly the positioning of the island and the high cloud formation are exactly as per our Rule of Thirds, and are opposed diagonally, immediately creating a connection visually. This makes for an appealing image. Keeping your horizon perfectly level is where you will succeed in such an image, by defining areas and depth.

Horizons placed very low in the frame heighten the isolation of subjects at the horizon. In isolating a lone tree at the bottom edge of the frame at right, the photographer has created an atmosphere of emptiness by contrasting it with the vastness of the sky. Low horizons are effective, too, for capturing dramatic skies and colorful sunset-illuminated clouds, for instance.

Dividing a composition exactly in half by placing the horizon across the middle of the frame is often considered breaking a sacrosanct design rule, but it isn't quite as serious as cheating on your income taxes. Try it. If it works, as it sometimes does in catching mirror reflections in pond or lake scenes, use it without shame. Often not including a horizon at all is what works best. Instead of struggling to find the best placement, zoom in on a main subject and eliminate the horizon. Finally, no matter where you place the horizon, keep it level unless you're intentionally trying to rock your viewers' visual boats. Overall, make sure your horizon is always level and straight. That is a rule I don't break.

## **FILLING THE FRAME**

There's an old adage in photography that says if you want to improve your photographs 100 percent, move closer. It's true. The one sure way to keep from including too much extraneous information in a photograph is to fill the frame with your subject and nothing but your subject. Filling the frame from edge to edge leaves little doubt about what your intended target was. There are two ways to get closer: Use a telephoto lens (see Lenses) or put some more wear on your walking shoes. The simple act of making your subject bigger in the frame involves the viewer at a much more intense level. A chin-to-forehead portrait of an interesting face, for example, immediately puts the viewer eye-to-eye with your subject. A very tight shot of a bear (even if you made it with a long lens at the zoo) creates breathless drama.



Filling the frame doesn't mean you can ignore the Rule of Thirds in your composition. Look at where the eyes and lips are. Smart posing means the fingers point to what you want the viewer to focus on, and in a portrait that should always be the eyes.

As soon as you think you're close enough to your subject, take a few steps forward (provided you're not on the rim of the Grand Canyon) and try again. Just before you snap the shutter, roll your eye around the frame and see if there's anything you can eliminate, especially on the outer edges of the frame, that may appear like they are poking into your shot as a distraction (remember our three skiers in the Rule of Thirds section above).



**FLAMING HOT TIP**, which is somewhat unknown, is that the human eye sees at an angle equivalent to a 50mm lens at the 35mm format. So a wide angle lens, say 28mm, which captures more than the eye's direct vision and invokes peripheral vision, has to push the subject away in the frame to fit it all in. Hence why your waterfall looks close in real life, but looks like its 100m away in your shot.

## **LINES**

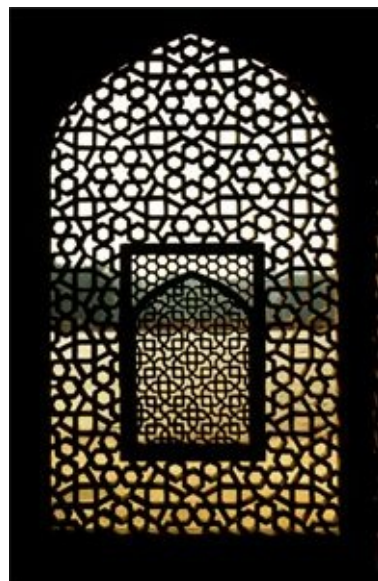
Often referred to as "leading lines", you may not think of lines as being as exciting a subject as, say, a jungle snake slithering through the grass. But photograph that snake and you will surely have captured a distinctive and emotionally charged leading line. Nor would the idea of photographing a line in the sand seem irresistibly intriguing, unless of course, it was the sinuous line of a sand dune shifting in a desert wind. Lines have many uses in a photograph. They can divide, unify, or accent certain parts of a composition. Lines lead the eye into a scene. Stand on a train platform and you'll see it's all but impossible to keep your eye from following the line of the tracks to the horizon. Parallel lines that appear to converge this way create what's known as one-point or linear perspective, potent for showing distance and depth in a photograph. Curved lines can lead equally well, with the undulating lines of the country road draw the eye into the frame.



Leading lines are most effective when there is some relation between line and subject, such as a wooden wharf leading to some bungalows in the distance. You can exaggerate their impact further by using a wide-angle lens and finding a vantage point close to the beginning of the lines, getting close to a railing of a fence, for example.

### **TAKING PICTURES THROUGH FRAMES**

A quick way to focus attention on a particular subject and to enhance the sensation of depth in a scene is to use some object or shape in the foreground as a frame within a frame, such as the overhanging branch that frames a landscape. Many other creative possibilities include doorways, windows, and archways, almost anything that lets you look through one thing at another. When using frames, lens choice is important. You may want to put on a medium telephoto lens and back away from the frame so you use the lens's power to compress the background and frame together—a garden statue seen through a rose-covered trellis, for example.



To keep both frame and subject in sharp focus, set a small aperture so there is sufficient depth of field. If you want only the subject sharp, use a wide aperture. Be sure that the focusing sensors (see Auto focus Techniques) are on the main subject and not on the frame; otherwise you'll focus on the foreground instead of the main subject. Frames work best if they are darker than your main subject, so take your light reading from the subject

and let the frame fall into darkness.

## **PATTERNS**

Patterns, both natural and man-made, bring a sense of visual rhythm and harmony to photographs that, like a series of repeating notes in a melody, capture the imagination. Patterns appear whenever strong graphic elements such as lines, colors, shapes, or forms repeat themselves.



Once you do become aware of the power of patterns, you will discover them almost everywhere: in a field of tulips, the veins and spine of a leaf, even in the zigs and zags of modern architecture. The secret to finding patterns is to explore potential subjects from a variety of angles. While you might not notice the colorful design of umbrellas as you maneuver a crowded Paris sidewalk, they become blatantly clear from an upper-floor window or balcony. Lighting is another potent painter of pattern: Fresh ploughed furrows in a cornfield, all but invisible on a dull, overcast day, rise into waves of highlight and shadow when lit by a bright, low-angle sun. Red, vibrant sand dunes blown by recent winds show similar striking patterns. Close-ups are also filled with pattern: Consider the swirl of seeds in a sunflower or the intricate tracings of color in a butterfly's wings.

The key to emphasizing patterns is to isolate them from their surroundings. By excluding everything but the design, you create the illusion that the repetition is infinite, extending beyond the frame. Telephoto and longer zoom lenses are excellent tools for isolating and extracting patterns by enabling you to exclude extraneous images. Once again a tripod is essential to ensure pin sharp images.

## **TEXTURES**

Look at a close-up photo of a weathered old barn board and you almost wince at the imagined pain of catching a sharp splinter. Our memories of how things feel are so ingrained in our consciousness that the mere sight of them brings a vivid sensation of touch. By exploiting textures you can bring a tactile dimension to your photographs.

Surface textures become most apparent when they are illuminated from an oblique light source. Angled light catches the shape and imperfections of an object's surface and creates a pattern of highlight and shadow to produce visual texture. The quality of the light is also important. Bold and large textures, such as the bark of a tree or the rough surface of the door detail), are best revealed by strong, direct sidelight. Smooth, more finely detailed textures, such as that of satin, would be erased by powerful light and are revealed best by gentler, oblique light.



When looking for texture in a photograph, ensure you are doing everything you can to ensure sharpness throughout the shot. Texture is dependant upon the finest of detail being in focus

Framing is important, too, especially when you want to give texture a leading role. By moving in close to an old, weathered face, either physically or with a long lens, you focus the viewer's attention on the wrinkles and crevices. When the texture is part of a broader scene, as in the surfaces of a coarse and barren desert, it's often better to back off and show its expanse. Sometimes you can dramatize texture by comparing different surfaces within a scene: an elderly potter's gnarled hands turning a vessel of wet, silken clay. In revealing such contrasts, it's important to move in close and exclude everything that doesn't enhance the tactile qualities of your image.

Black-and-white is often a better choice than color in capturing texture, because it enhances the graphic qualities of your subjects and eliminates the distraction of color. In either color or black-and-white, use a low ISO speed (200 or less) to capture the tiny details that make up all textures.

## **DRAMATIC ANGLES**

Surprise is an important ingredient in a good travel photograph, and photographing your subjects from unexpected angles is a simple way to add the unexpected. Most of us tend to spot and snap potential subjects from an eye-level, straight-ahead point of view. We look down at tulips, or out at the sea, and up at skyscrapers. By exploring your subjects beyond predictable first impressions, you can create new and startling compositions.

This requires a bit of visual detective work: You have to walk (or crawl or climb) around, over, and under your subject until its true personality surfaces. You may feel silly in getting to such vantage points, but your pictures will vindicate you.





High vantage points, for example, help organize complex scenes. At street level, faces and signs in a crowded marketplace dominate, making the scene chaotic. From a balcony or window above, however, baskets of colorful spices form patterns, and streaming crowds weave inviting visual rhythms.

Low angles can exaggerate the height of tall subjects or reveal unseen aspects of low-lying ones, especially when combined with a very close viewpoint and the perspective-stretching effects of a wide-angle lens. A photograph of the Eiffel Tower from a normal viewpoint with a normal lens looks, well, normal. But move up next to the base with a 24 mm or wider lens and shoot straight up, and it becomes a soaring tower of converging angles.





A low perspective can exaggerate height very effectively. Look for a different angle.

## **ABSTRACT COMPOSITION**

No rule in photography says every picture you take must be a completely literal translation of your subject. Indeed, many of the most alluring travel and landscape photographs break from reality and offer an interpretive or even totally abstract vision of the world. Because travel itself is often a surreal and fragmented experience, occasional forays into abstraction may be the best way to capture the true spirit of a trip. There are no rights or wrongs: You can simply let your imagination run wild.

Where to find fodder for your abstract ambitions? After a rain, reflections from wet sidewalks and puddles produce myriad impressionistic images. At twilight, when neon store signs and traffic lights begin to glow, wet asphalt becomes a luminous billboard of color. Look also to the fractured, mosaic-like mirror of city life found in the glass-and-steel facades of modern buildings.



Striking abstract subjects can emerge from well-observed (though often overlooked) confluences of color, shape, texture, and form that are the components of larger scenes. Pioneer color photographer Ernst Haas, one of the masters of abstract color photography, had an intense affection for peculiarly shaped fragments of peeling paint, torn billboard posters, and even crushed beer cans. Another master of photographic abstraction, Pete Turner, frequently finds his colorful compositions in the odd shapes and contrasting colors of such ordinary things as plastic garbage cans and beach umbrellas.

Whatever the source of the design, as with patterns, the secret to finding and capturing powerful abstracts is isolation — extracting the components of your images from their surroundings completely enough so the design and not the individual object or objects becomes your subject. Keep in mind, though, that not everyone will see the same beauty in your flights of visual whimsy that you do; don't be too offended by quizzical stares

when you pass your snaps around at the office.

## PART 7 – TECHNIQUES

# TECHNIQUE

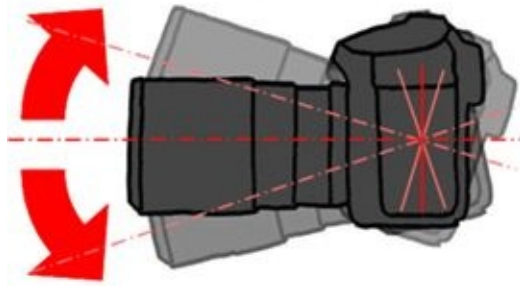


### **CAMERA HANDLING**

Optical quality is so good today that even the cheapest cameras can make acceptably sharp pictures. Why, then, are “blurry” pictures the chief complaint among casual photographers?

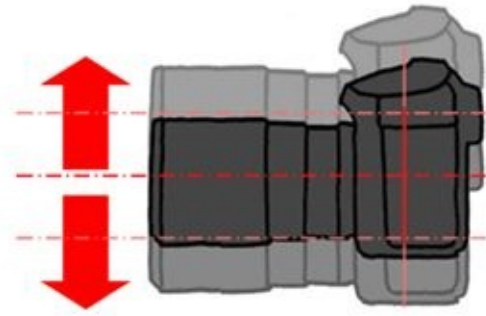
*The answer is simple: The unsteady hand.* Shaky hands have ruined more pictures than all the poor lenses in the world. Whether you’re using a point-and-shoot or an SLR, one of the best techniques is to rest the camera in the palm of one hand and squeeze the shutter button gently with your free hand, gently, even better is to do the same whilst leaning against something like a tree or pole. The technique works best if you wedge your elbow into your side as if you’re a waiter carrying a tray of drinks.

### Angular camera shake



Shake angular  
to the optical axis

### Shift camera shake



Shake parallel to the  
imaging plane



The effects of camera shake increase with telephoto lenses (or zooms set at telephoto settings, (e.g., 70-200mm lens set at 200mm), as these lenses are heavier and magnify not just your subject's size, but any camera shake. Most automatic cameras are programmed to pick a sufficiently fast shutter speed and have a warning beep (and/or a light in the viewfinder) that lets you know when your speed's too slow. If you get a warning, either switch to a higher shutter speed or, if that's not an option, find something to rest the camera on, like a fence post or porch rail, for example. The best solution though would be to use a tripod!

## **AUTOFOCUS TECHNIQUES**

One ingredient of sharp images is focusing the camera carefully. Back in the ancient days of photography, focusing a camera meant laboriously twisting the lens barrel until the image in the viewfinder was in sharp focus. Auto focus (AF) technology today has made focusing as painless as pressing a button; still, to increase your percentage of sharp pictures, keep a few things in mind before you press it.

All auto focus systems, for example, require that you place your subject at the centre of the viewfinder, because that's where the focusing sensors are. What if you decide to get a little artistic by putting your subject, say, a tad off-centre? No problem; AF systems have a focus-lock feature (usually activated by partially depressing the shutter button) that lets you focus with your subject in the centre, lock focus, then recompose to put it where you want it.



Your Auto-Focus can be locked as you take a picture, using the AF-ON button on the back of your camera or through the camera's menu. Depending on the model and brand, your button could also be labeled AE/AF Lock (Auto Exposure/Auto Focus Lock). With AE/AF Lock you choose to set the function of that button to either AE or AF Lock in the camera's menu settings.



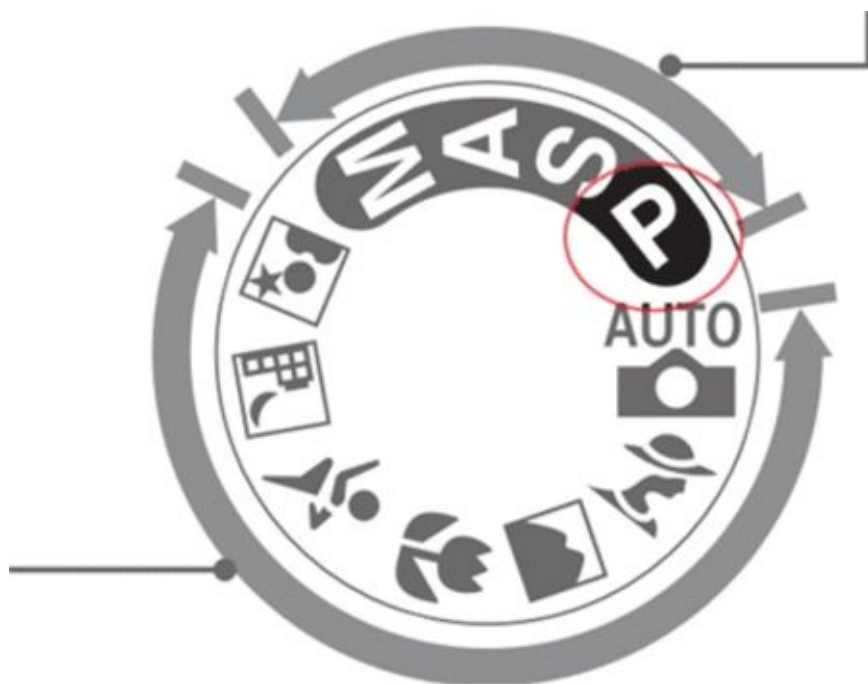
Most AF cameras offer two focusing modes: single-shot and continuous. If your subject is one that sits still (like a landscape), the single-shot mode is better, because it will not fire the shutter until it finds sharp focus. If you're trying to snag a moving target (like a race horse or a not-so-patient dog), switch to the continuous mode, and the camera will continuously refocus until the instant of exposure. In this mode, however, the shutter will fire whether or not your subject is sharp.

Most point-and-shoot cameras use an "active" AF system that bounces an infrared light beam off subjects, while most SLR cameras use a "passive" system that focuses by measuring subject contrast to determine subject distance. The advantage of active systems is that you can use them in virtual darkness as they provide their own focusing light; their disadvantage is that they are not as precise. Passive systems are more accurate but require a certain level of contrast to focus and may have trouble focusing on subjects of low contrast, such as a white wall or a foggy harbor, forcing you to resort to a manual-focus mode.

## **EXPOSURE AND METERING MODES**

A choice of different exposure modes enables you to manipulate the camera's selection of shutter speeds and apertures to match a particular type of subject: you can tell it to pick a fast shutter speed because you're photographing into the sun, for instance. Generally, the more costly the camera, the more modes you'll have to choose from, but these are the most common options:

**In Program Mode**, the camera selects both the shutter speed and the aperture for you. It is often called the green mode because it's frequently marked by a **green "P"** on the mode-selector dial. The camera will choose a shutter speed that is safe enough for hand holding and an aperture that will provide a moderate amount of depth of field. It's ideal for shooting relatively stationary subjects (like a tall ship sitting at anchor) that don't require either a very fast (or slow) shutter speed or excessive (or excessively shallow) depth of field.



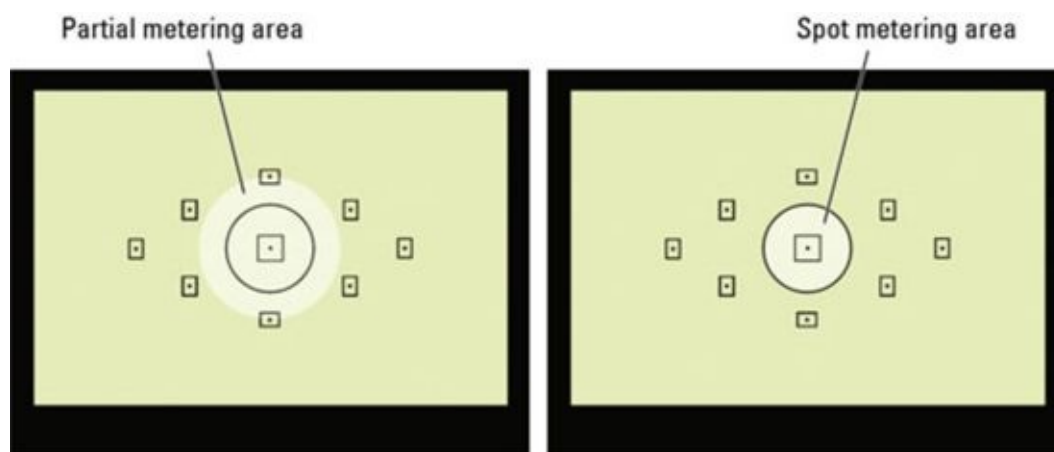
**In shutter-priority mode** (sometimes indicated by **"S" or "TV"**) you choose the shutter speed and the camera selects an appropriate corresponding aperture. If you want to blur the water rushing over a waterfall, for example, you can select a very slow shutter speed and the camera will choose the correct aperture. Conversely, if you want to halt that water in mid fall, you can pick a fast shutter speed and, again, the camera will select an appropriate aperture.

**The aperture priority mode**, (sometimes indicated by **"A" or "AV"**) as you've no doubt guessed, lets you pick the aperture, while the camera selects the matching shutter speed. This is the mode to choose when you want to manipulate depth of field. For example, you could set a small aperture for extensive depth of field or a large one when you want to limit depth (as in a portrait). Metering modes allow you to control what part of a scene the meter will take its reading from—an extremely useful capability when it comes to getting good exposure in difficult lighting situations.

**Averaging meters**, as their name implies, simply average all of the bright and dark areas in a scene to provide an "average" exposure. If the range of brights and darks in a scene is

modest, averaging meters provide good exposure. Problems arise when a scene contains particularly large areas of either bright or dark subject matter (see Exposing for Light and Dark Subjects), which can fool the metering system. Most averaging meters overcome this handicap by also using a centre-weighted design that gives added emphasis to the centre section of the viewfinder, which is, not coincidentally, where most of us put the important subject matter. If you aim the centre section at this important part of your subject, excluding dark or bright areas, the meter can calculate a more accurate setting.

**Spot meters**, a more sophisticated version of centre-weighted meters, take their readings from an even smaller section of the viewfinder—often just a few degrees of the total view. Spot meters are an ideal solution in situations where you want to meter a very small area of one tone against a large area of brightness or shadow, for example; a person's face surrounded by bright sky.

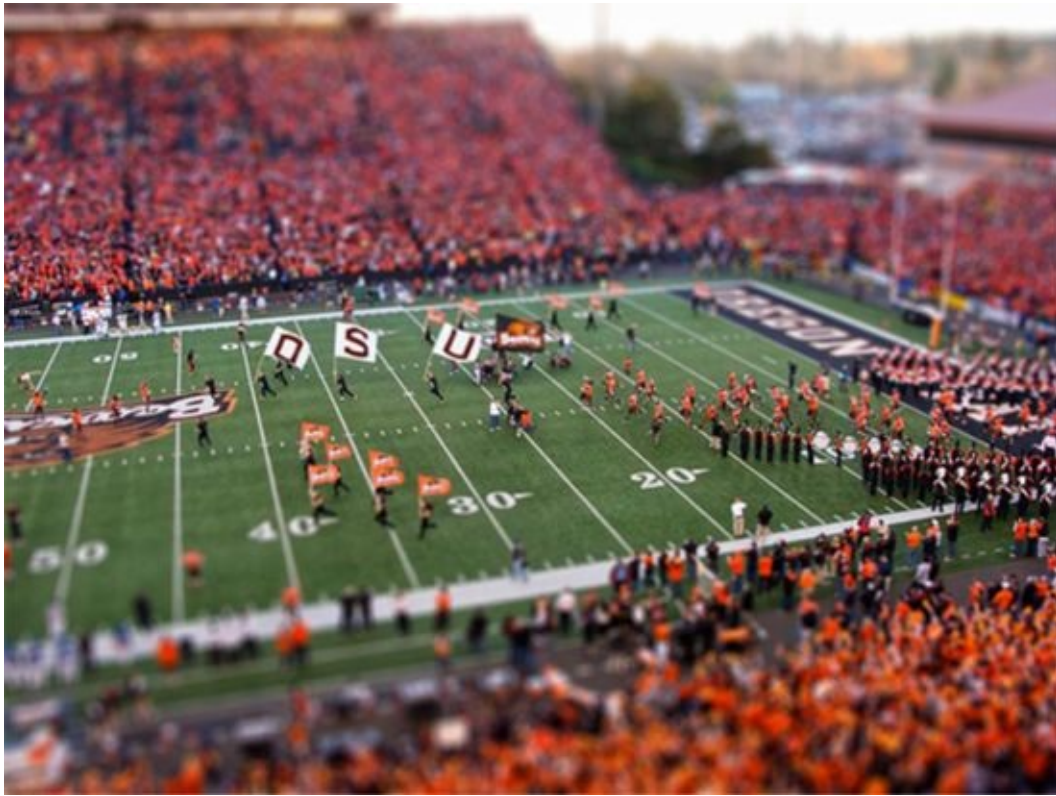


**Matrix metering or evaluative systems**, by far the most sophisticated type of metering wizardry, are eerily accurate even in the most confounding situations. They work by dividing the viewing area into a series of key zones and taking separate readings from each area. This information is then fed into a computer chip that has been programmed with hundreds of thousands of potential lighting combinations; the meter then makes an educated guess at what the important parts of your scene are and exposes accordingly.

## **CONTROLLING DEPTH OF FIELD**

The topic of depth of field (DOF) tends to give the shakes to many budding photographers, but the concept is actually very simple. It is the range in a scene, from near to far, that is in sharp focus. The ability to control how much is in focus has an immense effect on your photos. When shooting a landscape, for example, you'll want as much of the photograph in sharp focus as possible, so a significant depth of field is required.





Three things control how great the depth of field will be in a photograph: lens focal length, aperture, and distance from the subject. Depth of field also increases with distance.

The farther you place the camera from your subject, the more of the subject you can get in focus. Landscapes tend to have deep depth of field, while macros have a very shallow depth of field because the subject is so close to the lens. When you look through your lens, however, you will not be seeing what's really sharp and what's not.

With point-and-shoot cameras, this is because you are not looking through the lens, you are looking through a separate viewfinder. With DSLRs, you're looking through the lens at it's widest aperture; it closes to a smaller f/stop only at the instant you press the shutter button.



A comparison of depth of field settings, showing a shallow depth of field (f2.8) where the focus has been placed on the cherries in the foreground, with the cherries naturally falling further and further out of focus. Then we move to a deep depth of field (f32), where more of the cherries are in focus.

This is a problem if you're using a medium telephoto lens to take a portrait of a friend on holiday in New York. As you look through the lens, it appears that the traffic and crowds in the background are out of focus. But because you have a small aperture set, when you get the picture back, your friend is lost in all that junk behind her. The solution to this? Many DSLRs have a **depth-of-field preview button (DOF)**; when you press it, the lens briefly closes to the shooting aperture, showing you the real depth of field.

Be aware that when you press this button, the image in the viewfinder will temporarily darken. If too much is in focus, simply open the aperture, put on a longer lens, or move closer.



## **MULTIPLE EXPOSURES**

By making more than one exposure on a single frame of film, you can create striking images. The exposures can be related thematically (a sailboat over a pretty sunset, for example), or they can simply fit together into an arresting graphic design. Many SLR and some point-and-shoot cameras have multiple-exposure buttons that make creating such pictures simple; on some older SLRs, you may be able to override the film advance by holding in the rewind button while you re-cock the shutter.





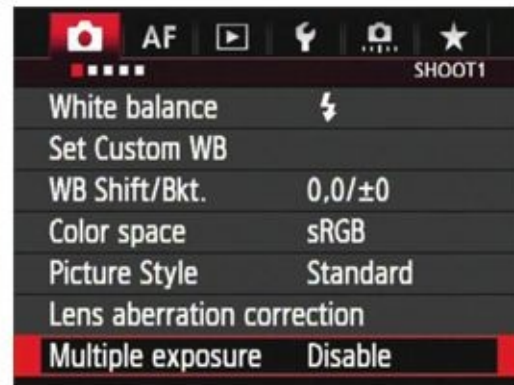
Multiple exposures allow for a series of images to be recorded over the top of each other creating the effect above.

Whenever you make two or more exposures on a single frame, you must adjust the exposure or the film will be overexposed. Some auto-exposure cameras make this compensation automatically; on others you have to do it manually. As a basic rule, you should decrease exposure by one stop for each exposure you add. If you make a double exposure, for example, decrease the exposure for each by one stop below what the meter recommends.

Nikon Multiple Exposure Setting



Canon Multiple Exposure Setting



## MULTIPLE EXPOSURES

### IDEAL APERTURE & SHUTTER

As Req

As Req

### MENU SETTINGS & ACCESSORIES

*Use your multiple exposure setting if you have one*

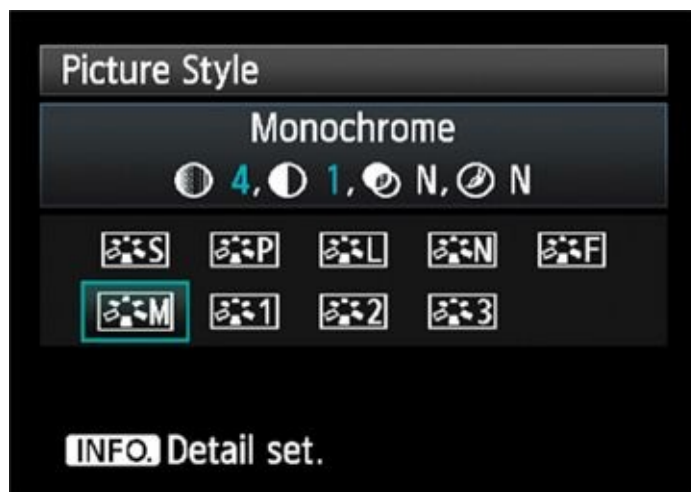
### CONSIDERATIONS AND THINGS TO REMEMBER

*For any situation where you want to include several images "stacked on top of each other in one photo*

## ***BLACK-AND-WHITE***

Though the idea of working in black-and-white may seem a tad old-fashioned, reducing the world to a palette of greys has a number of creative benefits. By wiping away the superficial veneer of color, black-and-white settings unleash a world of line, shape, texture, and form that color often disguises. Black-and-white pictures also have an inherently journalistic look, which forces viewers to give more serious consideration to the content of your images—an important point if you want to add social commentary to your travel pictures.

A Black-and-white setting does not record the world in the same way that color does, although most modern DSLR cameras will provide for some way to control your cameras black and white or “monochrome settings”.



Look for the “Monochrome” setting under “Picture Style” in your cameras menu. This will give you control over your images in a full black and white setting. From there you can adjust brightness and contrast in the camera, saving you time editing in Photoshop etc.

While they are sensitive to all the colors of the spectrum, they are more sensitive to some (particularly blue) and less so to others (greens and reds). If you are photographing a red barn in a green field with a blue sky, the sky will be very light, while the barn and grass will record as much deeper shades of grey. Also, because the red and green sensitivities of black-and-white film are similar, the barn and grass will record as much the same tone. If you own an SLR and a few colored filters, it’s easy to manipulate the way black- and-white settings record different colors. Filters enable you to re-establish a more natural-looking contrast by controlling how much light of each particular color strikes the film. The basic rule to remember is this: Filters lighten objects of their own color and darken opposites. A yellow filter, for example, will lighten the tone of a yellow dress while slightly darkening a blue hat. A red filter will cause a red barn to record as a much lighter shade of grey but will make both green grasses and blue skies record very dark.

## BLACK AND WHITE

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS &amp; ACCESSORIES</b>
As Req	Medium
	Medium to High contrast in Picture Style Menu

**CONSIDERATIONS AND THINGS TO REMEMBER**

Indoors = ISO 400/800, Shutter Speed = Medium (if needed, add flash)  
Outdoors (Sun) = ISO 100/200, Shutter Speed = Fast  
Outdoors (Cloud) = ISO 100/200, Shutter Speed = Medium > Fast  
At Night = ISO 1600+, Shutter Speed = Slow > Medium (use a tripod or support if needed)



## **USING HYPERFOCAL DISTANCE**

The hyperfocal distance is the point at which you should focus your lens to allow you to get maximum depth of field (DOF). Once you've focused on this point, everything from half the hyperfocal distance to infinity will be sharp. This means that if you're focused at a hyperfocal distance of 10 meters then, five meters to infinity will be sharp. If you simply focus on the subject itself, then only one-third of the area in front of that subject and two-thirds of the area behind it will be sharp. This is really only used in landscape photography where much time and patience can be set aside to perfectly calculate a focus point.

A simple cheat that will work most of the time, is to focus one third of the way into the scene. Whilst this works up to a point, to obtain maximum depth of field, you will need to calculate the hyperfocal distance correctly!

### **Hyperfocal Distance Calculator – Cameras with a crop factor of 1.6**

	Focal length						
f-stop	17 mm	24 mm	35 mm	40 mm	50 mm	75 mm	100 mm
f2.8	5.53 m	11.01 m	23.39 m	30.54 m	47.7 m	107.26 m	190.64 m
f4.0	3.88m	7.72m	26.39 m	21.4m	33.41 m	75.12 m	133.49 m
f5.6	2.78 m	5.52 m	11.72 m	15.3 m	23.89 m	53.69 m	95.40 m
f8.0	1.95m	3.88 m	8.22 m	10.73 m	16.75 m	37.62m	66.83 m
f11	1.43 m	2.83 m	6.00 m	7.82 m	12.2 m	27.39 m	44.64 m
f16	0.99 m	1.96 m	4.14 m	5.40 m	8.41 m	18.87 m	33.49 m
f22	0.73 m	1.43 m	3.03 m	3.94 m	6.14 m	13.76 m	24.40 m

### **Hyperfocal Distance Calculator – Full frame camera no crop factor**

	Focal length						
f-stop	17 mm	24 mm	35 mm	40 mm	50 mm	75 mm	100 mm
f2.8	3.46 m	6.88 m	14.62 m	19.09 m	29.81m	67.04 m	119.15 m
f4.0	2.43 m	4.52 m	10.24 m	13.37 m	20.88 m	46.95 m	83.43 m
f5.6	1.74 m	3.45 m	7.33 m	9.56 m	14.93 m	33.56 m	59.62 m
f8.0	1.22 m	2.42 m	5.14 m	6.71 m	10.47 m	23.51 m	41.77 m
f11	0.89 m	1.77 m	3.75 m	4.89 m	7.63 m	17.12 m	30.44 m
f16	0.62 m	1.22 m	2.59 m	3.37 m	5.26 m	11.79 m	20.93 m
f22	0.45 m	0.90 m	1.89 m	2.46 m	3.84 m	8.60 m	15.25 m

## **ENSURING SHARPNESS**

There are a number of things you can do to ensure you get the maximum sharpness you can from every shot. Firstly always, always, always practice your focusing. As you get better, the tiniest change in focus will appear like beaming headlines in the oncoming traffic to you. Also where possible, use the fastest shutter speed possible to suit the situation, without ruining the effect you are after. The faster your shutter speed is, the higher the chance your image will be sharp.

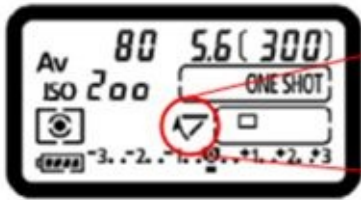
If you are shooting on tripod, widen the legs as much as possible, weight it down by hanging your backpack off the tripod, if you are in high wind, try to use a cable release. If you don't have a cable release, use the cameras timer.

If you really want to make sure you get every ounce of sharpness out of your shot and your worried about moving, camera shake or motion blur, simply holding your breath and pressing the shutter at the end of a breath will help. I know it sounds miniscule in its effort, but it has been proven to help.

## **USING MIRROR LOCK UP MODE**

There are also some advanced things you can try to maintain as least camera shake as possible. Many cameras nowadays (mainly DSLR's) have a "**Mirror Lock Up**" (**Mup**) function, where you can command the mirror be risen with a click of the shutter button prior to a second click of the shutter button, which will actually take your photograph. Why use this? If you carefully consider the inside of your camera as a shell, with a lot of electric energy and moving parts within it, you will find that there can be a reasonable amount of vibrations expected during any capture.

Your camera's mirror reflects the projected light through the lens into the viewfinder for you to see what you want to photograph. When you click the shutter it rises, just a fraction of a second before your shutter rises to allow the light to hit the sensor and record your image. The rising of this mirror, causes it to bounce against the inner ceiling of your cameras housing. This is often known as "Mirror Slap" and at certain shutter speeds, particularly slower than 1/15 sec, it can kill your shot, with very evident blur.



During mirror lockup, the mirror lockup icon will be displayed on the top LCD panel

## **FREEZING MOTION**

When you want to take a photograph that stops the action of your subject, you have to first consider the *speed* of the action. The speed of the blades of a helicopter in flight is much greater than that of a kid biking down the street. Trying to freeze those helicopter blades might require a shutter speed above 1/1000 second; stopping the movement of the bike might be possible at 1/250. Thus, the shutter speed you choose has to be relative to the action you're trying to stop. A good rule of thumb would be that 1/500 second is a good starting point for stopping motion that's fairly fast.

### FREEZING MOTION

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS &amp; ACCESSORIES</b>
<span style="border: 1px solid orange; border-radius: 15px; padding: 5px 15px;">As Req</span> <span style="border: 1px solid orange; border-radius: 15px; padding: 5px 15px;">Fast</span>	<span style="border: 1px solid orange; border-radius: 15px; padding: 5px 15px;">TV or Shutter Priority Mode</span>
<b>CONSIDERATIONS AND THINGS TO REMEMBER</b>	
<i>If needed, test your shots first to find the best aperture and light, as freezing motion will use a very, very fast shutter which will in turn, cut out a lot of light</i>	



1/100 second



1/1000 second



A much faster shutter speed, of 1/1000<sup>th</sup> sec appears to freeze the helicopters rotor blades as it is on the ground, standing still.

Sometimes it's better not to stop the action and let it blur instead, even if its only a slight blur. This type of blur can add to the feel of the picture. In the case of the helicopter, showing some blur in the blades may look more natural than having them stopped completely while in mid-flight. Conversely, you can see blur in helicopter blades at 1/500,

but showing the motion of a snail crossing a log may require an exposure of several seconds.

As you begin to work with shutter speeds, you'll learn there are different types of blur. For instance, blur can be brief or pronounced. The slower the shutter speed, the easier it will be to see the resulting blur. Traditional blur is when the camera is being held still and a moving subject is photographed at a slow shutter speed. In that case the non-moving area around the subject will be captured with no blur, and only the subject will be blurred. Panning is when you do essentially the opposite.



In panning you follow the subject with the camera during the action, actually tracking the subject. Doing that means the *background* will now blur because you're moving the camera during the relatively slow exposure. And because you're tracking the subject, it's possible that part or all of the subject will be captured with little or no blur. This technique is very effective when it works. The key to making a successful pan shot is to shoot a lot of photos. Because you're shooting a slow shutter speed, *and* moving the camera, you're likely to have several photos that don't work, but when you get one, it can look great.

## **HIGH SPEED PHOTOGRAPHY**

High-speed photography is a technique of capturing pictures with a remarkably quick shutter speed. It's not often practiced, but should be, as it teaches you accuracy in shutter speed techniques. For an average everyday shoot, a shutter speed of 1/30 to 1/125 second will suffice in preventing camera shake. Shutter speeds for high-speed photography are much faster though – often as fast as 1/8000th of a second. Only then, does a photographer start to take advantage of their camera's ability to freeze action and eliminate any motion blur whatsoever (so long as their focus is correct). High-speed photography needs lots of light, tones of light in fact to render a visible subject, due to how fast the light is cut off. Ensure you have an open aperture (f2.8, 3, 4 etc), as well. Using a studio flash or an on camera flash will also greatly aid you in stopping any blur, even if outdoors.





## HIGH SPEED

### IDEAL APERTURE & SHUTTER

As req

Very Fast

### MENU SETTINGS & ACCESSORIES

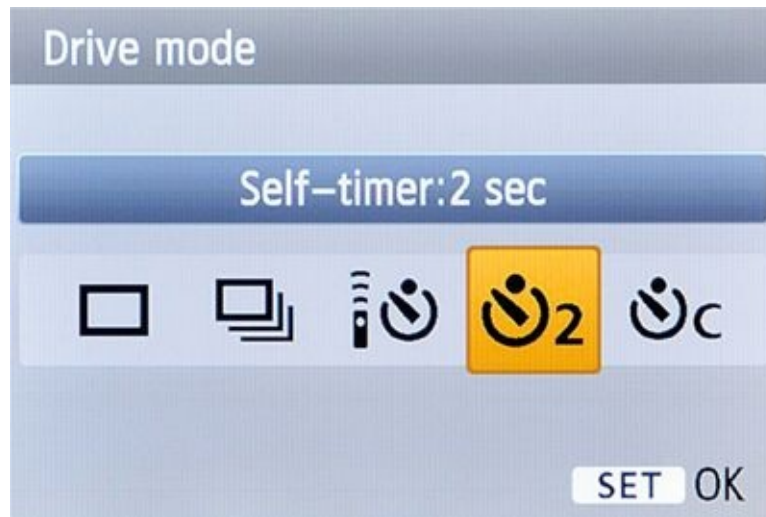
*TV or Shutter Priority Mode, with a high ISO and plenty of light (flash or other)*

### CONSIDERATIONS AND THINGS TO REMEMBER

*Great for motor racing action, high speed, jets or experimental and scientific projects. Also suited to scenarios in studio such as pin point accurate freezing of movement, similar to motion freeze.*

## USING SELF TIMERS

A **self-timer** gives a delay between pressing the shutter release and the shutter actually firing. These are popularly built into nearly every camera and are used to let photographers take photos of themselves and the family, hence the name (self timer). The self-timer is also used to reduce camera shake when taking photographs in low light or with long (telephoto) lenses. The timer's delay gives the photographer time to steady the camera before the shutter fires, and allows vibrations from the mirror flipping up (remember the term "mirror slap" from earlier) to die out. It also eliminates any photographer-induced camera motion when the shutter button is pressed.



Your drive mode will allow you to access your self-timer, for either 2 seconds, 5 seconds or 10 seconds. Use it regularly to get use to where it is in your cameras menu and how easily you can access it when you need to.

Most modern cameras with a self-timer flash a light during the countdown, emit a beeping sound, or both. These warnings generally increase in speed or intensity during the last few seconds, to warn that the shutter is about to fire. The most common delay is 10 seconds, although some cameras also have a 2-second setting. Single-lens reflex cameras have to flip up the viewing mirror before the picture is taken, which can also shake the camera. It is not uncommon for a camera to combine mirror lockup with the two-second self-timer mode, which reduces camera shake still further. Alternatives to the self-timer include a cable release, and infrared or radio remote control.

## **MOTION BLUR**

When a camera creates an image, that image does not represent a single instant of time, rather a range of time, determined by your shutter speed. Most often this exposure time is brief enough that the image captured by the camera appears to capture an instantaneous moment, but this is not always so, and a fast moving object or a longer exposure time may result in blurring your image, with intent and purpose.

Experimenting with different shutter speeds will allow you to see the effect of motion during your shot. Panning is a way to see the effect whilst maintaining your subject in focus.



## MOTION BLUR

**IDEAL APERTURE & SHUTTER**

As req      Slow

**MENU SETTINGS & ACCESSORIES**

*TV or Shutter Priority Mode, with a high ISO and plenty of light (flash or other)*

**CONSIDERATIONS AND THINGS TO REMEMBER**

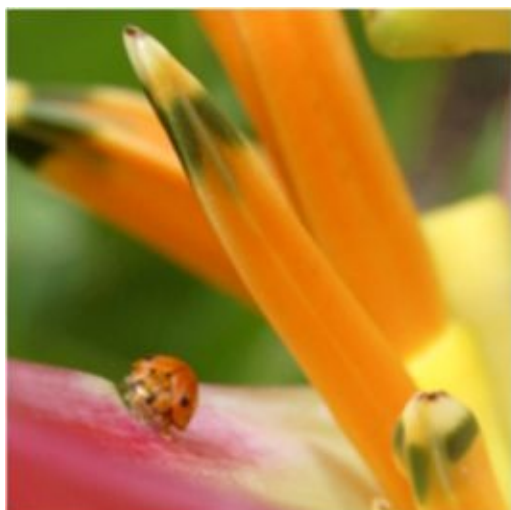
*Great for waterfalls, moving people and traffic in street scenes etc. Remember your tripod, and cable release or remote trigger!*

Try the following, next time your on a merry go round or a even just driving along the freeway, set your camera to “shutter priority” or TV, and shoot three images. One at 1/30<sup>th</sup> sec, one at 1/250<sup>th</sup> sec, and one at 1/800<sup>th</sup> sec. See the difference. Many waterfalls captured by landscape photographers will often use motion blur to give the impression of running water. This is known as the “painterly effect”, as if the water has been painted into the shot.

### **MACRO AND THE MINIATURE WORLD**

The world is full of tiny things that can draw a curious eye. Often seemingly insignificant details tell the story of a locale as well as broad views do. The degree of closeness you can achieve will depend largely on your camera. Most point-and-shoot cameras have a minimum focusing distance of around 1 1/2 to 2 feet. Some zoom-lens-type point-and-shoots have a macro (close-up) mode that enables you to work much closer-often as close as a few inches (a feature worth considering if small subjects excite you).

In either case, you’ll know when you’re trying to take a picture that’s beyond the camera’s close-focus capability, because the auto-focus won’t lock on. With most cameras the correct-focus indicator light will blink rapidly and the shutter release won’t fire. All you can do is back off and recompose at a greater distance.



With a DSLR camera and the right lens, on the other hand, the degree of closeness is almost unlimited. A variety of accessories can be used to provide ever-increasing magnification. If you take close-ups only occasionally, a simple set of screw-on close-up filters will provide an inexpensive solution. For more serious work, a macro lens or a zoom with a macro feature offers superior quality.

**MACRO**

**IDEAL APERTURE & SHUTTER**

As req      Slow

**MENU SETTINGS & ACCESSORIES**

*TV or Shutter Priority Mode, often with medium to high ISO speeds*

**CONSIDERATIONS AND THINGS TO REMEMBER**

*Use a high quality Macro lens with a 1:1 ratio of magnification. you could also use extension tubes and close up filters if needed. Use a tripod if windy. Excellent for extreme detail, insect, wildlife, flowers etc*

Whatever camera equipment you have, using a fast ISO speed (400 and above) is very important: The closer you get, the less depth of field there is, and the more camera shake is magnified. Fast ISO speeds allow higher shutter speeds and smaller apertures, which help correct both problems. The trade off is that faster ISO speeds have more pronounced digital noise, which shows up very evidently, the larger you print the image. If you cant find a lens to suit, or the budget doesn't allow for it, try a set of extension tubes, or close up filters (often called dioptres), which will act like a magnifying glass and allow the lens to focus closer without moving.

## **PERSPECTIVE**

Perspective refers to the relationship of imaged objects in a photograph. This includes their relative positions and sizes and the space between them. In other words, perspective in the composition of a photograph is the way real three-dimensional objects are pictured in a photograph that has a two-dimensional plane. In photography, perspective is another illusion you use to produce photographs of quality composition. When you are making pictures, the camera always creates perspective. Because a camera automatically produces perspective, many novice photographers believe there is no need to know much about it. This attitude is far from correct. When you know the principles of perspective and skillfully apply them, the photographs you produce show a good rendition of the subject's form and shape, and the viewer is given the sensation of volume, space, depth, and distance. Additionally, the photographer can manipulate perspective to change the illusion of space and distance by either expanding or compressing these factors, therefore providing a sense of scale within the picture.

**There are three types of perspective –**

**Linear** – Elements in a scene diminish in size the further away they appear.

**Rectilinear** – Straight lines remain, unlike a fisheye lens which will bend a straight line.

**Vanishing Point** – Lines that are parallel, appear to vanish into the distance.



A vanishing point perspective should always have a complimentary subject, leading the viewer from the camera to the secondary subject, making a connection, thus telling a story.



Using the world around you, you can create some interesting images using emphasized perspective. This is an example of a rectilinear perspective image, with no curvature or warping of the perspective.

## **BRACKETING**

Bracketing is a technique where several images are captured of the same subject in the same situation, but with various exposure settings. Bracketing is a useful way of “blending exposures” in post-production when editing in Photoshop, or for simply ensuring you have captured as much detail in the highlight and shadow areas as possible. You can also try bracketing your focus. If you need a very fast shutter speed, which limits you to a small f-stop (f2.8, 3, 4 etc), which in turns limits your focus, you can always “focus stack” and process in software such as Helicon Focus.

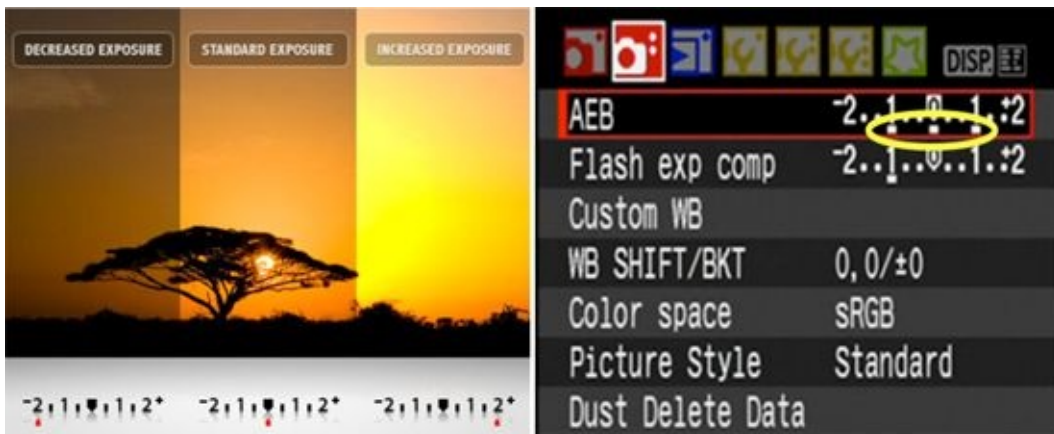
It is a particularly calculated technique and often only used by serious professionals to build a series of images for processing later. The result can often be the equivalent of increasing your cameras dynamic range, i.e.; the difference in f stops between your

highlights and shadows. Most cameras can only capture between 4-5 stops of difference, although some very high end DSLR's have been able to expand this to up to 8 stops, which is significant.



A focus bracket is where you can gain a full focus, but using two separate images. In this example of the fly, there is a focal point on the front half of the fly and a second images where the focus is on the rear of the fly. Blending this image in software can provide a full detailed focus.

However, the easy way to get around possible exposure differences is to bracket your exposures. All you need to do is take a well-exposed shot, then 1 x under-exposed and 1 x over-exposed. This will provide you with 3 x images, a dark, bright and a well-balanced shot. Don't stop at three though, experiment with 5, or even 7 brackets, and see what results from them, you may be surprised.



Left - An exposure example of an image bracketed, with exposure values indicated underneath the image. Right - Camera menu indicating AEB (Auto-Exposure Bracketting), and the three saved points of exposure. When the shutter is pressed, three images are captured at once, using the three saved exposure values, in the setting.

## **HIGH DYNAMIC RANGE PHOTOGRAPHY**

When we refer to Dynamic Range we talk about the difference between extremes. As it relates to photography and exposure we talk about the difference between the lightest part of the scene and the darkest parts.

Dynamic Range is best expressed as a Ratio. The human eye can see a range of approximately 10,000:1, but your digital camera can only capture a scene with about 1,000:1. So, that's only about 10% of what you can see. Even more incredible is that a scene with both dark and light aspects—such as dim room lighting, and the sunlight

streaming in a window, all in the one scene—can scale as high as a 100,000:1! Now that makes it nearly impossible for your camera to see both the lights and dark together at all.

So, here's where we as photographers, need to make compromises. We can expose for the highlights and get them without blowout (over brightness), but the shadows will be dark and full of noise (digital pixilation). Or, we could go the other way and expose for the shadows, but then we would blow out the highlights and lose all the detail.

We could use a split Neutral Density filter (remember back to Creative Filters earlier in the book), and half of the image would be one exposure and the other half would be 2 or 3 stops less depending on the filter. But that would only work with the straight line of a horizon. What if you were shooting an odd-shaped mountain or an open doorway? There is no way to put these shots in a standard photographic filter.

But if we were to make an image that exposed for every area “just right” we could expand the dynamic range of our camera to make it comparable to what our eyes can see and beyond. That is what High Dynamic Range Photography is all about.



An HDR image can be compelling in its color and impact, however it can also render terrible flaws. One of these flaws is “haloing”, where every edge in your image has a halo type glow around it. Sometimes this can be minimal, and other times it can be almost cartoon like. Depending on the “look” you are after, you should always take extreme care when processing an HDR image in Photoshop or other software such as Photomatix to minimize this effect. Over doing this effect will cause you image to look fake.

HDR is an extremely sought out effect used by photographers. This effect is just as much

a post-processing trick as it is smart photography using a bracketing technique. To merge and level the photographs, one could also use special software such as **PhotoMatix**, by the guys at HDRSoft, and then add a little bit of channel tuning and color correction. On the whole, HDR allows the photographers to more accurately represent the wide range of intensity levels found in real scenes. But be warned, pushing your editing too far, may render a fake looking image.

The trick here is to use numerous exposures, not just a handful. The more exposures you use the less likely your haloing effect will appear.

**A good rule of thumb for successful HDR photography is –**

- 1. Use a tripod**, to ensure each exposure is exactly aligned
- 2. Test your exposures**, before shooting for real. This means manually adjusting through the different exposures to see how many different settings may be required between dark to fully bright.
- 3. Use a calculated bracketing method**, where you start at the very darkest recording of the scene and move through the camera settings until you arrive at the very brightest exposure. You should have 2 f-stops difference on each exposure. As an example –

Exposure 1 = 1/100 sec @ F22

Exposure 2 = 1/100 sec @ F16

Exposure 3 = 1/100 sec @ F11

Exposure 4 = 1/100 sec @ F8

Exposure 5 = 1/100 sec @ F4

Once you get more advanced you can adjust both your shutter speed and f-stop to minimize the risk of a shallow focus affecting your “blend” of images. More advanced HDR work is laid out in our other title [“The Secrets of HDR Photography”](#)

## **PANORAMA STITCHING**

Panoramic images are achieved by taking more than one image of a scene at varying degrees and then stitching them altogether using software, such as Adobe Photoshop. Many older professionals still use a specialized camera (sometimes film) with a panoramic format built in. Panoramic images are available in various sizes, but usually have a format of 3:1 or 2.5:1 ratio. This format is mostly suited for landscapes, as it provides for a wide point of view, exactly how we see.

Shooting a panorama can be very rewarding if you learn how properly, don't employ shortcuts and you have the proper equipment available to you.

### ***Getting started***

You'll need a sturdy tripod, with a level bubble on it, to indicate when you're level, and a tripod head that allows for level balanced swiveling. These are commonly called panoramic heads, and are quite easy to find, from any serious camera store.

You'll also need stitching software for joining your panoramic images together. There are a lot of software packages, so be sure to Google them and test them as trial downloads to find the best software for you.





A specialized panoramic head on a tripod, will often use guide rails to maintain an exactly even plane as you swivel your camera across the scene.

### **Panoramic Software available -**

Adobe Photoshop, PTGui, Panorama Tools, Panorama Studio, Panavue, Panorama Factory, RealViz Stitcher, AutoStitch, Pano Stitcher



### ***How to Shoot***

You should always leave a little overlap as you can cut out what you don't need but you can't build in what is not shot. Using trees, lakes, rocks and other static markers will help

you get the perfect panoramic shot. Using a tripod will also help you keep the horizon on the right level throughout each of the images.

The idea is to capture a series of images, whilst rotating your camera on a flat plane or axis that is perfectly level. Snap your images with care, every tiny detail captured will need to be perfect in order to save you a mile of headaches later on when you get to the software and editing stage.

You should pick distinct edges for your images so it is easy to frame the next shot. It's ideal that you overlap each shot by at least one third of the previous shot. This means small movements when rotating your camera on the tripod. This can be done by hand, but requires a very trained eye, watching not only the horizon is level, but being able to use a landmark in each shot, as a reference point for the overlap. See the illustration below....



Capturing a panorama means using a specific method of starting on one side and sweeping across the scene, from either left to right or vice versa. Try not to start in the middle and then sweep left and right as the software you use later on, will NOT re-arrange the images in the correct order. You'll either have to re-arrange the images in the correct order, which means more work, or watch as the software messes up your stitch.

Canon 1Ds markII + Sigma 8mm Fisheye lens



Canon 10D + Sigma 8mm Fisheye lens



Nikon D70 + 10.5 mm lens



Nikon D200 + 17-55mm lens



How a set of images can become a panoramic stitch. Note how each image seems to have exactly the same lighting, by using the exact same exposure. This is where your stitching software will thank you.

Another important thing to note is the exposure mode you use with your camera. Make sure not to use auto exposure mode because this may cause dramatic changes in difference, between each of your shots. Always stick to manual settings, including manual setting of your white balance.

## PANORAMAS

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS &amp; ACCESSORIES</b>
As req	As req
<i>(M) manual setting, identical aperture, shutter, ISO, white bal. for each shot</i>	
<b>CONSIDERATIONS AND THINGS TO REMEMBER</b>	
<i>Used to create a wide angle view of a scene or setting, be sure to use a tripod with panoramic head, level bubble and cable release. Be sure to use a high quality lens with good edge to edge sharpness</i>	

Once you are done and your photos are ready, it is time to load them into your computer and let the software weave its magic. If you've been less than regimented when shooting, the software will show this, by being unable to stitch your image without distortions,

cracks between the stitching and some blended areas that have doubled up. That's why you're shooting is crucial. Once done right, this "stitching" technique gives the illusion that it is all one image rather than a series of photographs.

## **INFRARED PHOTOGRAPHY**

IR photography is the art of capturing invisible light, the so-called Infrared color spectrum. Now it is possible to photograph infrared light with a digital camera. Since some newer cameras have a built-in filter that prevents IR rays from coming through, you have to check if your camera can see IR light.

A simple check can be made by pointing, for instance, a normal remote control to the camera, with no filter attached. If you can see the infrared glow then your camera is capable of taking IR shots. Additionally, you'll need to buy a colored IR filter that best suited for your camera. When you place an infrared filter in front of the lens the camera simply adjusts itself to accommodate IR wavelength blocking visible light.



Infrared filters will often darken your image substantially, requiring a very long shutter speed, hence why a tripod is necessary. You will also notice green aspects of your image such as grass and foliage will turn as white as snow. Don't be alarmed, this can be quite a creative effect to dazzle your friends with.

Another piece of equipment that is crucial is the tripod to play the role of a proper stabilizer when using a slow shutter speed and the often long exposure necessary for taking IR photos. This technique, by the way, works best with a bright overhead sun for maximum IR reflection since it is hard to see anything when looking through an IR filter. All the more, you can simulate this photography technique digitally through applying a color filter and working with Photoshop's channel palette.



Captured from deep space, the Cats Eye Nebulae was captured using multiple long exposures to find infrared radiation being emitted from space. Infrared cameras, or filters, separate the normal light we see into different spectrums. This is a very advanced type of photography, but if curious, ask questions of your local astronomy club to get started.

## **BOKEH PHOTOGRAPHY**

This technique consists in producing subjectively pleasing blur and out-of-focus areas by playing with focus and the way your lens renders out-of-focus points of light. This effect usually happens to those parts of the scene that lie outside the depth of field.

Photographers use a shallow focus technique to create the prominent out-of-focus background and to make the subject stand out. Bokeh is often most visible when taking a close up picture of a subject with nice clear lighting, plus it works best around small background highlights. The extent of Bokeh produced in a photo depends on various depths of field, lens aberrations and different lens designs.



## **PINHOLE PHOTOGRAPHY**

This technique can go without any high-end costly equipment to get beautiful results. A pinhole camera is actually a simple camera without a lens and with a single small aperture. To produce a pinhole effect it is possible to use DSLR with some modifications (replacing camera lenses with a pinhole). The overall form is extremely simple with that tiny hole replacing a bulky lens.

Light from a scene passes through this pin-sized point and projects an inverted image on the opposite side of the pinhole box and the image is formed in the camera. In this case, you don't have to worry about the focus and distortions as there are no lenses involved. The images turn out softer, with nearly infinite depth of field, and are less sharp than pictures made with a lens. The only flaw here is the greater chromatic aberration and no ability to tolerate huge enlargement. It's noticeable that an authentic pinhole effect can be easily reproduced in Photoshop.



## **BURST ZOOM EFFECT**

Zoom burst is the photography effect of using slow shutter speed and a manual zoom lens to create outward blurred streaks emanating from the center, which is being the subject of focus. To capture a burst zoom photo, choose a good defined object and ideally with some bright colors, then set your camera to slow shutter speed (generally under 1/60sec) and a wide aperture, and try to shoot in manual mode to execute the burst zoom. As soon as you press the shutter release button to take a photograph, either zoom in or zoom out the focus lens as the exposure is made. This will give the sense of high speed towards or from an object. This zoom burst effect can also be achieved by using the “Radial Blur Filter” in Photoshop during the editing process or by using a specialized filter on your lens. Be patient, it is a hard technique to master, and may take a fair bit of time, before you have anything worth bragging about. The most appealing subjects are usually macro subjects.



## PART 8 – SHOOTING ACCESSORIES

# SHOOTING ACCESSORIES



In working out a budget for buying a camera, you should consider purchasing two accessories as well, a camera case and a tripod, at least.

### **CAMERA CASES.**

Travel is tough on photo equipment, so it's a good idea to buy some type of case for protecting it. The size and style will depend on how much equipment you own. A small waist pouch is a convenient way to carry a point-and-shoot and an extra roll or two of film, or camera cards. If you're going to be toting an SLR and a couple of lenses, a few camera cards, a flash, and a few special-effects filters, you are probably a good candidate for a shoulder bag. (If you carry much more than that, you're a good candidate for visiting a chiropractor.) Buy a shoulder bag that is comfortable when fully loaded and provides easy access to the gear inside. The main compartment should open and close using an oversize zipper or hook-and-eye fasteners and should keep the contents secure even if the bag turns upside down. Weather protection is important too; Pelican and Wet-Pac manufacture waterproof bags and cases with built-in rain hoods, an excellent feature if you're trekking to wet climates.





## **CABLE RELEASES.**

If you are using a tripod, then you should also be using a cable release. This allows you to remotely or via cable fire the shutter button without even touching the camera, making for perfectly still shots.

## **TRIPODS.**

Whether or not you should bring a tripod with you on a trip depends on how dedicated a shooter you are and what type of trip you're taking. For many forms of photography, a tripod is essential, especially landscape photography. The fact remains, whenever you do bring one along, you will take sharper, more carefully considered pictures. Tripods enable you to use your camera's full range of shutter-speed and aperture combinations, which gives you immense control over depth of field (see Controlling Depth of Field) and provides ultimate stability with long telephoto lenses. Pick a tripod sturdy enough to give good support but light enough so you won't dread carrying it. It should be tall enough to let you work at eye level and steady holding the longest lens you own. For high wind situations, look for tripods that are heavy, or have a "wide spread" or "wide stance". These are tripods with legs that can swing to a very wide setting. Some cheaper tripods, have a limited swing, where they are latched at the top of the legs to limit the stretch. This

limitation is not a great selling point for any tripod.



Gorilla Pods” are neat little compact tripods that wrap around fence posts, railings and anything else handy, like a pipe cleaner, to hold your camera in place.

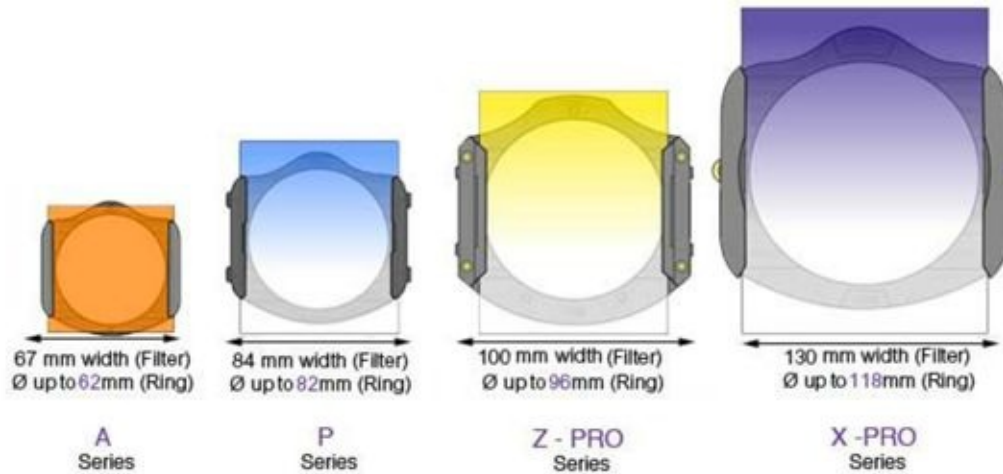


LEFT - Cheap tripods have “bracing” between the centre stem and the legs, which prevent a wide stance by the tripod. These are great for beginners.

RIGHT - Better tripods are sturdier and stronger but have no bracing. They allow for a wider stance for better balance and independent leg movement. Advanced users will see more benefit from these types of tripod.

## **CREATIVE FILTERS**

Neutral Density Graduated Filters (often known ND Grads) have a graduated area of color (or density) across the surface of the filter. Neutral filters are good for holding back the brightness of a sky so you can expose for a dark foreground. They typically come in one, two and three stop densities.



1 Screw the adapter ring onto the front thread of your lens.



2 Slide the filter holder onto the adapter ring until it snaps in place. The filter holder is now solidly attached to the lens, yet it can rotate both left and right.



3 Slide your Cokin filter into one of the three filter slots.

Colored graduates do the same thing but add a tinge of color to the sky, You often see this effect in magazine advertisements. The best graduated filters are manufactured by Cokin and Hoya and are available as a rectangular filter that slides into a lens-mounted frame so you can precisely position the area of density.



**With Neutral Graduated Filter**



**Without Neutral Graduated Filter**

Star filters are great to experiment with for starscapes and night photography. They create pretty patterns from the point of a light source, such as stars, light bulbs, candles and the sparkling reflection on water. Typically they come in 4, 6 and 8 point configurations.





An eight point star filter can add a very creative “sparkling” look to your images

## **POLARIZING FILTERS.**

If you use an SLR, the single most helpful accessory you can own, other than a tripod, is a polarizing filter. This seemingly simple bit of glass that screws to your lens in a rotating mount performs a host of remarkable photographic feats, including deepening blue skies, removing reflections, and increasing color contrast and saturation, by removing atmospheric haze. How it works is a seminar in the physics of light on it's own, but using one is simple: All you do is turn the filter until you see the effect you want in the viewfinder, and then shoot. Polarizer's are most commonly used to darken blue skies in landscape photographs by cutting through the atmospheric haze or glare that is associated with bright skies. They work with both color and black-and-white settings to create a striking contrast between deep sky and white clouds.



Sky-darkening works, however, only when the sun is at about 90 degrees from the angle you're facing; in other words, it must be to your left or right or overhead, but not behind or in front of you. Nor does the effect work on overcast days. Take care to use sky-darkening in moderation; too much saturation can make skies look ominous and unnatural. Polarizer's are also handy for removing reflections from non-metallic surfaces, like glass or water. If you're trying to shoot the crystal clear water of a beach like Palm Cove, in Northern Australia, or the waters of Bora Bora in Tahiti for example, just turn the filter until the reflections vanish. The effect works best when you are at about a 35-degree angle to the reflecting surface. You can even use a polarizer to remove the myriad infinitesimal bits of reflection and glare in outdoor scenes, making subjects like foliage and grass vibrant and rich with color.

The only drawback to using polarizing filters is that they do absorb some light, usually about 1 1/3 stops. In other words your shutter speed will be slower, another reason to use a tripod every time. Most cameras will compensate for the lost light, but be sure you are using the right type of filter. Manual-focus cameras use a linear polarizer, while many auto-focus cameras use a circular polarizer. Check your camera manual to be sure.

# USING A POLARIZER

## IDEAL APERTURE & SHUTTER

As req

As req

## MENU SETTINGS & ACCESSORIES

*Landscape in Picture Style Menu, with medium to high saturation*

## CONSIDERATIONS AND THINGS TO REMEMBER

*Position yourself 90° to the sun (overhead, left or right only).  
Remember - Indoors, outdoors under cloud, night = not effective. Outdoors under sun = effective, but allow for 1-1.5 f-stops less light, in other words slow your shutter or open your aperture to compensate for the filter darkening your image.*



Your polarizing filter, when rotated on your lens, will “dial in” or “dial out” as much effect as you desire. The image on the right has been “dialed in” to full effect, enriching the colors right through the shot, with brighter saturation in the blue sky and the greenery.

## PART 9 – OUTDOOR SUBJECTS

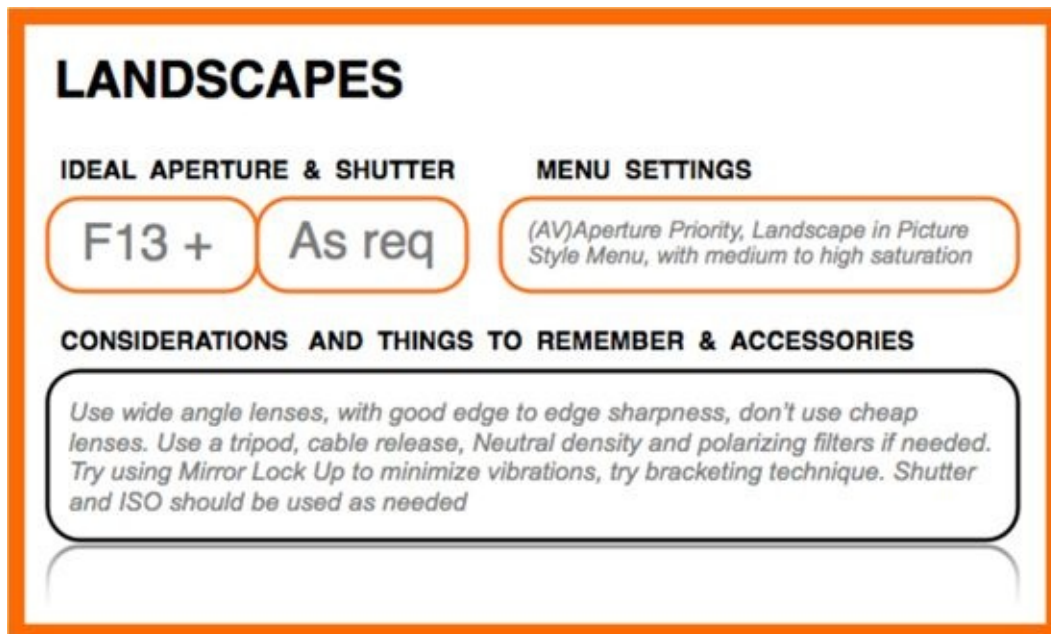
# OUTDOOR SUBJECTS



### **LANDSCAPES**

In the hands of a creative photographer, an artful landscape can be made of any subject from the Great Barrier Reef to an Inca ruin in Peru. The natural inclination—especially in scenic areas—is to put on a wide-angle lens and randomly take in as much of a vista as possible, assuming that the beauty or intrigue of a place will carry the photograph. Usually it won't. While a wide-angle lens's ability to include a broad view can be a real blessing, often it is better to use a telephoto lens to isolate a particularly interesting portion of a scene. In either case, you must find a way to organize and present your landscapes with as little excess baggage as possible.





Try to think of a landscape photo as being like a short story that has a beginning (the foreground), a middle (the middle ground), and an ending (the background). In a farm scene, for example, you could use an old wagon as the foreground, a winding dirt road as the middle ground, and a bright red barn as the background. A farmer leading a horse up the road can stand in as your main character. (Scatter a few chickens around if you need some minor characters.) Very few landscapes will be so neatly arranged at first glance, so your main chore is finding a vantage point that translates to the viewer what it was that attracted your eye to the scene. A landscape should also capture the spirit and mood of a place. Before you even raise a lens to the scene, pause to ask yourself what it is about it that appeals to you emotionally. Is it the yellow morning light glowing through the fields of hay? The color, direction, quality, and intensity of light all have a profound effect on landscapes. Or is it the evening mist rising off the river? Weather in all its forms can work wonders with even the most common of scenes.

For further in depth tuition on photographing Landscapes I have written a best selling book just on this topic [“How to Photograph Landscapes like a Pro”](#).

## **TROPICAL BEACHES**

The glistening white sands, turquoise waters, and vibrant blue skies of tropical beaches are the stuff of which wall calendars (and daydreams) are made. Capturing the simple beauty of such scenes is relatively easy if you keep a few basic concepts in mind. Because tropical beaches have such inherent prettiness, finding attractive compositions isn't hard. For broad views, use a wide-angle lens and look for vantage points where the curving line of the sea lures the eye into the scene—perhaps leading to a particularly attractive palm grove or a row of beached sailboats. In places like the Caribbean or the South Pacific, where the sea and hillsides are close neighbors, climbing to a clearing and shooting down at the beach below may reveal vistas unseen from sea level. Be sure to use a small aperture (or your Landscape exposure mode), so everything is in focus from near to far. Don't be afraid to let your designs border on abstraction; sometimes-simple arrangements of sand, sea, and sky are the most effective.

# TROPICAL BEACHES

## IDEAL APERTURE & SHUTTER

F13 +

As req

## MENU SETTINGS

(AV)Aperture Priority, Landscape in Picture Style Menu, with medium to high saturation

## CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*Use wide angle lenses, with good edge to edge sharpness, don't use cheap lenses. Use a tripod, cable release, UV and polarizing filters if needed. Try bracketing to measure exposures due to high contrast. Remember sand is an element of glass so glare will be high. Shutter and ISO should be used as needed, but over-exposing will help, as the bright sand will fool your camera, into making shots dark. Over-exposing by 1 f-stop fixes this.*



Including people provides a good centre of interest and also helps establish scale, but take care with exposure. Tropical beaches are very bright and contrasty, and the intense light reflecting off the sand will fool your camera into turning the sugar-white sands grey and casting your human subjects into silhouette (see Exposing for Dark and Light Subjects). One compromise if you have an SLR or a sophisticated point- and-shoot is to use your camera's exposure-compensation feature to add a full stop of exposure to the suggested settings.

Better still, try working early and late in the day, when the light is less harsh and contrast isn't such a problem. The low angle of the sun at these times also casts long shadows that give scenes a sense of depth and three-dimensional relief. If you are forced to work at midday, be sure to use film with a speed of ISO 100 or slower, so you are not working beyond your camera's available range of shutter speed and aperture combinations (see Exposure and Metering Modes).

A polarizing filter will invoke even more vibrancy in the waters clarity and turquoise

colors as well (see Polarizing Filters).



## **SUNRISE, SUNSET, AND AFTERGLOW**

Sunrises and sunsets attract photographers for the simple reason that they produce lots of color and glory for very little technical effort. They also elicit a whole spectrum of emotional responses, from awe to tranquility to romance. Though they are sometimes viewed as a trite travel subject, don't look such radiant gift horses in the mouth. When we see a dramatic sky, we tend to point the camera up, excluding the ground entirely, but this is to overlook the potential of the event.

Including a simple foreground element not only adds a centre of interest but also can reveal something of your location and help evoke a particular emotion or mood. Remember, though, that most foreground subjects are cast into silhouette when photographed against a bright sky, so look for clean and quickly recognizable shapes.

### **SUNRISE AND SUNSET**

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS</b>
<b>F13 +</b>	<b>As req</b>
<i>Landscape setting in Picture Style Menu with medium to high saturation, AV (Aperture Priority), White balance set to cloudy or push Kelvin to 6500* + to add sun tint.</i>	
<b>CONSIDERATIONS AND THINGS TO REMEMBER &amp; ACCESSORIES</b>	
<i>Use a very good lens to avoid edge haloing often known as aberrations (where you often see a green or purple edge to darkened objects). Use a tripod, cable release, UV and neutral density filters if needed. Try bracketing to measure exposures due to high contrast. Shutter and ISO should be used as needed, remember a lens hood to avoid flare</i>	

For sunsets and sunrises, a variety of different exposures will provide acceptable results. Be especially careful to keep the sun out of the frame while you take a meter reading: Aim

the lens at a bright area of sky just to the left or right of the sun itself; either set this reading manually, or use your exposure lock to hold the setting and then recompose to include the sun if you want it. If you are shooting with slide films, bracket by at least a full stop over and under this setting for a choice of color saturations.

Don't put your camera away immediately after the sun disappears. On partly cloudy days, especially, the sky may be suddenly and briefly illuminated with color several minutes after the sun has set—the afterglow phenomenon. Expose for afterglow by taking a reading from any area of colorful sky.

## **RAINBOWS**

If there's a silver lining for travelers enduring a rainy morning or afternoon, it's the potential for spotting one of nature's most charming phenomena, a rainbow. Elusive, ethereal, and always cheerful, rainbows can spark a feeling of mystery and romance in even the most jaded of souls. You may not be able to predict where a rainbow will occur, but you can increase your chance of seeing one by facing away from the sun toward the dark opposing sky after a storm.

### RAINBOWS

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS</b>
<span style="border: 1px solid orange; border-radius: 15px; padding: 5px 15px; font-size: 1.2em;">F11+</span>	<span style="border: 1px solid orange; border-radius: 15px; padding: 5px 15px; font-size: 1.2em;">Med</span>
<i>Landscape setting in Picture Style Menu with medium to high saturation.</i>	
<b>CONSIDERATIONS AND THINGS TO REMEMBER &amp; ACCESSORIES</b>	
<i>Use a polarizing filter, be careful with it. Dial in your polarizer until you get a string saturation, but beware too much polarizer will actually eliminate your rainbow from your image. Why? Rainbows are simply light refracting off the water droplets in rain. These droplets provide a reflection, which can be controlled by a polarizing filter.</i>	



**FLAMING HOT TIP** - (some pros don't even know this one!): Because rainbows are made of millions of tiny droplets of water that are reflecting light, you can use a polarizing filter (see Polarizing Filters) to modulate the intensity of the colors. Simply mount the filter to the front of your SLR lens and, as you rotate it, watch in the viewfinder as the color bands brighten and then fade. Shoot when you see the saturation you want. Beware, though: In the wrong

position, the filter will completely erase the colors. Also, polarizer's reduce light by about 1 1/3 stops, so you may want to adjust your exposure setting to compensate.

The best time to plan your rainbow shot is not after but during the storm. Use the rain time to scout around for potential compositions. Pictures of rainbows dangling in an open sky are pretty, but including an interesting foreground imparts a sense of scale and place. Exposure is straightforward. If you're using color negative film, the exposure that the camera sets will be fine; if the rainbow is too light in the final print, ask your lab to redo the shot and darken it up. With slide film, use your camera's exposure- compensation feature to underexpose by a half or a full stop for more saturated color bands. If your camera has a manual exposure system, take a light reading from the sky near the rainbow and then underexpose by a half or a full stop.

## **LIGHTNING AND STORMS**

**LIGHTNING AND STORMS**

**IDEAL APERTURE & SHUTTER**

F4-11      Slow

**MENU SETTINGS**

*Landscape setting in Picture Style Menu with medium to high saturation.*

**CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES**

*Use a tripod, cable release or remote trigger and lens/camera hood for rain protection. Be mindful of your safety, lightning can strike for far distances away. Try bracketing your general exposure and be mindful that any lightning strike will add a lot of light to your image. As a guide, start with an under-exposed shot and let the lightning light your scene.*

Lightning, like rainbows, produces a dramatic but unpredictable show in the sky. Unlike the sweet prettiness of a rainbow, the connotations of lightning are of danger, power, and gloom. As those who are careless about being outdoors in an electrical storm sometimes find out, lightning can deliver on its threat of danger. You should photograph lightning only from a distance and preferably from inside a building or a car. If you're outdoors, seek shelter the minute a storm begins to approach. You'll probably also need to concern yourself with keeping your camera and yourself dry (see In the Rain) if you're outside.

You can photograph lightning day or night, though night shots are generally more productive. In daylight, the technique is simple: With your camera on a tripod and aimed at a likely sector of sky, wait for a large bolt and fire. Base your exposure on the existing light conditions, using a small aperture and the longest shutter speed available. The odds are slim that you'll catch a spectacular streak, but it's possible.



Your chances of creating a thrilling lightning shot increase dramatically after dark. You can make exposures ranging from several seconds to several minutes and record a series of bolts. An upper-floor hotel window with a city view is a good and safe vantage point. The method is simple but requires that your camera have a B setting and that you use a locking cable release and a lens cap or a small sheet of black cardboard.

Here's how it works: With your camera on a tripod, compose around a simple foreground with a large area of open sky. Set the camera's shutter-speed dial to the B position and lock the shutter open using your cable release. Keep a lens cap or the black cardboard over the lens until you see a flash, uncover the lens and then recover it, and wait for the next flash. Once you have several bolts on the same frame, close the shutter, advance to the next frame, and try it again. Exposure isn't critical; use an aperture of around f/5.6 (with an ISO of 100 or so) to start, and then bracket by changing the aperture.



**FLAMING HOT TIP** - (Safety) – If you wait for a bolt of lightning, and then begin counting the seconds until a clap of thunder, and then half the number, this will roughly give you an indication of how far away the storm is from you. E.g.: 10 seconds between a bolt of lightning and a clap of thunder says the storm is roughly 5kms from you. If the seconds reduce, then naturally the storm is approaching you. Be aware though, a storm within 3-5 kms of you can put you in imminent danger of a fatal lightning strike if you are not protected or are over exposed in an open field. Remember, tripods standing in the middle of an open field make fantastic electricity conductors. Be careful and smart. Don't risk your life for the shot.

## **MOUNTAIN SCENERY: SCALE**

# MOUNTAINS

**IDEAL APERTURE & SHUTTER**

As Req As Req

**MENU SETTINGS**

*Landscape setting in Picture Style Menu with medium to high saturation.*

**CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES**

*Remember to use a sturdy tripod, as mountainous areas can be extremely windy. Always register with park rangers offices or tell someone where you will be in the mountains. Utilize a GPS system for your own orientation and navigation. Try to include some foreground interest or something that can identify the scale and size of the mountain.*

There is an important point about photographing mountains: You must include some visual clue to indicate the true magnitude of the scene around you. Scale is probably more important in shooting mountain peaks and ranges than with any other subject. One way to establish a sense of scale is to use a wide-angle lens (24 mm to 35 mm) or wide-zoom setting and include an immediate foreground subject—a clump of wildflowers or a travel companion, for example. Putting close foreground subjects into the scene helps heighten the feeling of “presence” in mountain landscapes, but the downside is that wide-angle shots often make the mountains appear to diminish rather than increase in size.



To make the mountains look more imposing, use a moderate telephoto and include a middle-ground subject for scale, such as a single pine tree or a barn. A telephoto lens will compress the space between foreground or middle ground and background and enhance the apparent size of the mountains. Using a telephoto lens also exaggerates the effects of a naturally occurring phenomenon known as aerial perspective. This effect occurs when atmospheric haze makes each layer of progressively distant peaks appear lighter in tone and color. The diminishing density is perceived by the eye as distance—thus further exaggerating the scale of the scene.

## **MOUNTAIN SCENERY: LIGHTING**

The best mountain photos are made by photographers who rise before the sun and rest only after it has. In his book *Mountain Light*, celebrated mountaineer and outdoor

photographer Galen Rowell writes that “light during the magic hours [dusk and dawn] mixes in endless combinations, as if someone in the sky were shaking a kaleidoscope.” The pinks, yellows, golds, and reds of dusk and dawn are hallmarks of his work and make Rowell’s shots instantly recognizable.



At very high altitudes, just before sunrise or after sunset, nature may also reward your dedication with a very special phenomenon called alpenglow. This brilliant crimson glow emerges when blue light is scattered by the atmosphere and a predominance of red light briefly ignites peaks in warm, radiant hues. Alpenglow often illuminates the clouds around mountain peaks as well.

In addition to the continuous color changes, the raking light of dusk and dawn imparts texture, depth, and three-dimensional form to photos of mountains. Immediately before or after a storm are also great times to go picture-hunting. Many of Ansel Adams’s most famous portraits of America’s Yosemite’s peaks were made in the gathering or departing turmoil of a storm. Try to anticipate scenes where peaks disappear in descending gloom or shafts of sunlight burst through dissipating cloudbanks.

One problem you will encounter at high altitudes is an excess of ultraviolet light, which results in atmospheric haze. You can use this haze to advantage, but if it is obscuring your subject, you may need to place a filter over your SLR lens. A UV or strong skylight filter (81B or 81C) will absorb some of this excess, but a polarizing filter (see Polarizing Filters) is perhaps the most effective tool.

Exposure in mountain regions can be tricky because excessive light reflecting from haze, mist, or snowfields can trick the meter into underexposure. When you suspect conditions may be fooling your meter, set your exposure-compensation dial to overexpose the scene by a full stop or bracket in full stops.



## IN THE DESERT



Hostile and uninviting though they may seem, deserts can be wonderfully rewarding for photographers. We tend to visualize deserts as vast, arid wastelands, but in fact, most are rich with life. In the more barren desert regions, because the geologic and graphic components are so minimal—sand, rock, sky, and some plants—your compositions will by necessity often verge on the stark and abstract.

### DESERTS

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS</b>
F11+	As req
Landscape setting in Picture Style Menu with medium to high saturation. Wide angle lenses with good edge to edge sharpness	
<b>CONSIDERATIONS AND THINGS TO REMEMBER &amp; ACCESSORIES</b>	
<i>Try to concentrate on the patterns and lines in the desert. Areas like these are packed full of texture and pattern. Use this to your advantage to draw the viewer into your shot. Never change lenses in a sandy environment, it only takes one grain of sand, and your lens or camera can be up for serious repairs, or even permanently damaged. Use a camera wrap, sleeve or hood for some lens protection from blowing sand and grit.</i>	

In searching for and composing such scenes, then, exploit the visual simplicity to reveal the harsh nature of the place: ripples of wind-driven sand cresting into nomadic dunes, fractured patterns of cracking mud in long-dry watering holes, the delicate trail of lizard tracks leading from rock to rock.

Textures (see Textures) abound here too, and you can really pop them out with low-angle light from the side or rear. In regions that get some water, the shapes and textures of tenacious forms of plant life may be the main attraction. After a good drop of rain, the floor of a desert can often erupt into a tapestry of colorful blooms. Planning your visit for peak blooming periods requires research and sometimes flexibility, but the satisfaction is worth it.

Whatever the specific environment, take to heart all the cautions you've heard about deserts: Heat, nasty insects, sharp cactus spines, deadly snakes (Australia has 17 of the world's 20 most deadliest snakes) and rough footing can be torture if you're not prepared for them. The desert heat can be brutal at midday, and the light is not attractive; save your film for the low-angle light of early morning and late afternoon. Always, but always, bring

more water and film than you think you'll need. Store both in a white cooler on the floor of the car, or in the



## CANYONS



There is no place as mysterious or haunting as the canyons and valleys of the American Southwest or Australia's Kimberley's, or King's Canyon. Driving or hiking through them is like looking into the face of the history of the planet and of the people who first inhabited it. Translating these transcendent images onto a tiny piece of film is no mean feat, but it is a worthwhile challenge. Because most canyon region are vast in scale, you may have mixed emotions about wanting to see all of a place at once while simultaneously wanting to linger and study its infinitely curious details.



## CANYONS

### IDEAL APERTURE & SHUTTER

As Req

As Req

### MENU SETTINGS

Landscape setting in Picture Style Menu with medium to high saturation. Wide angle lenses with good edge to edge sharpness

### CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*As canyons can often be shrouded in dark areas, use flash in smaller confined canyons, but for larger canyons, take full advantage of a neutral density filter to balance your sky with the deep shadows of the canyon below. Remember to take a telephoto lens as well, as you will see things in the far off distance that you will want to explore as well.*

It's best to read about an area and, if possible, do an overall tour before you start shooting. Then, narrow down a shooting plan to a few specific ideas. For instance, there is usually one type of geographic feature that typifies a particular region: the Olga's, the Bungle Bungles, and Ayers Rock or, of course, the unfathomable vastness of the Grand Canyon. Focusing on one aspect of the whole area helps to fight off the temptation (and frustration) of trying to capture everything you see. Once you've decided on a particular geologic focus, try to match it to a specific design technique. In Bryce Canyon in Utah, for example, you would certainly want to concentrate on the shapes of the stone spires by silhouetting them against an open sky or finding patterns in the repeating shapes. At the Grand Canyon, you would want to find ways to establish size and scale.

## **RIVERS AND WATERFALLS**



## RIVERS AND WATERFALLS

### IDEAL APERTURE & SHUTTER

F11+

Slow

### MENU SETTINGS

Landscape setting in Picture Style Menu with low contrast and a medium saturation. Wide angle lenses with good edge to edge sharpness

### CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

Slow painted effects of flowing water are best shot delicately. A tripod, cable release or remote trigger and a polarizing filter are a must. It may serve well to also take a wet pack or rain sleeve for your camera and lens. Experiment with various slow shutter speeds in unison with gentle use of your polarizer. Avoid overexposed white wash, by using your polarizer to reduce this glare.

Whether you're trekking through wilderness or simply strolling in the countryside, an especially pretty river or waterfall is a visual treat. There is something appealing and refreshing about the perpetual motion of water that translates readily to film. One way to capture the rush and tumble of moving water is by using a slow shutter speed and letting the water blur into shiny white, streaming ribbons. You often see the technique used in advertising and greeting-card shots, and it's easy to duplicate if you own an SLR that lets you choose your own shutter speed. Start by loading your camera with a slow-speed (ISO 64 or 25) film and setting it on a sturdy tripod. The trick is to set a shutter speed slow enough that the water moves through the frame while the shutter is open. The exact shutter speed will depend on the speed of the water and the degree of blur you're after. With a fast-moving stream or waterfall or where you just want a hint of a blur, you can use speeds as fast as 1/15 second; with slower-moving streams or to let the ribbons of water appear to be passing entirely through the frame, use a shutter speed of a full second or longer. If the light is bright, you may have to put a neutral-density filter (see Creative Filters) over the lens to cut down on the light so you can use such long exposures.

And if you don't own an adjustable camera? You can sometimes trick the camera into selecting a slow shutter speed by simply loading it with very slow (ISO 25) film and working when the light is relatively dim. You'll still need use a tripod, though, to keep everything other than the water steady. Of course, you can also use fast shutter speeds to halt the motion of water. This method can be very effective with particularly tumultuous falls or rivers. You can add power to compositions like these by finding low vantage points so the water looks like it's going to gush right out of the print. Don't ignore rivers

and falls in winter, when freezing temperatures turn swirling flows into fantastic frozen shapes

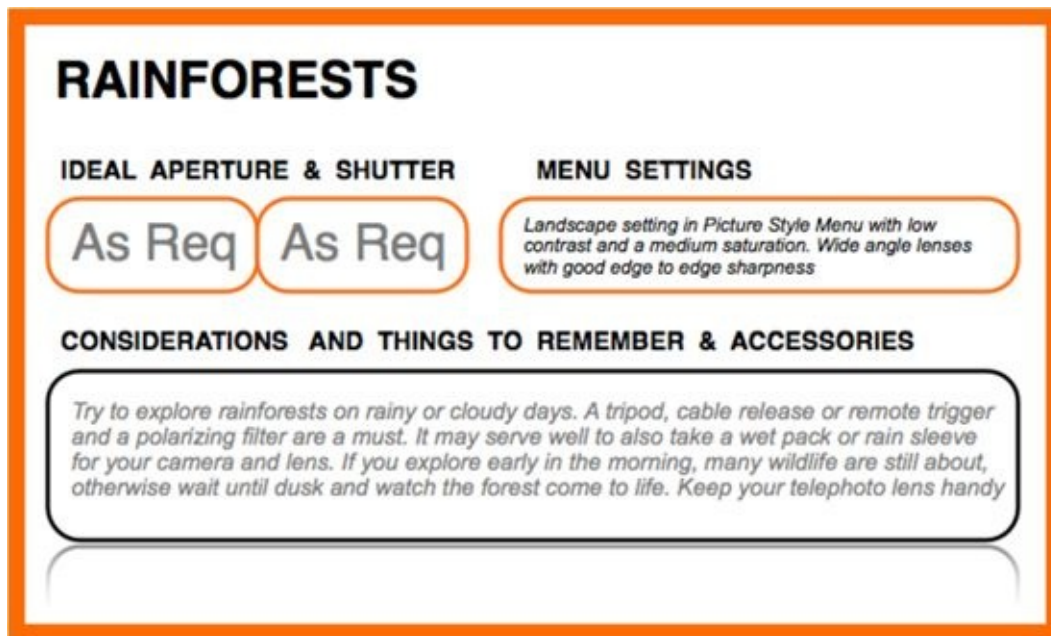
For further in depth tuition on photographing waterfalls I have written a book just on this topic [“How to Photograph Waterfalls like a Pro”](#). To be released in 2013.

## **RAIN FORESTS AND THE TROPICS**

Wild tropical environments elicit a deep sense of mystery and adventure in most of us. Resist the temptation to climb to a clearing to capture as broad a view as possible; all you're likely to get is a vague green mass with little detail or sense of scale. Instead, search out the myriad visual vignettes that impart your excitement: a colorful burst of jungle flower, a graphic spray of giant ferns, or a waterfall surging through dense vegetation. Forest wildlife, though elusive, is ever present; tour guides can often help you spot birds or snakes, but you'll need a fairly long lens (135 mm to 200 mm) to get close views.

Lighting in these environments presents a twofold problem: The canopy of treetops makes it dim, and it is almost always dappled and contrasty. A tripod and/or fast film will help you deal with the former, but contrast will still bring exposure problems. For close-up subjects, using flash fill will lessen contrast. For wider views, try using the contrasting tones as part of your compositions: Convert the clash of light and shadow into graphic designs.





A more pragmatic problem is protecting your gear (and yourself) from the onslaught of humidity and moisture. Modern cameras are full of and totally dependent on thousands of tiny electrical circuits that are susceptible to too much moisture. Keep your cameras packed in self-locking plastic bags that contain a large supply of desiccant (silica gel packets are available at most camera shops). As film is equally susceptible to heat and humidity, store it in and return it immediately to the vapor-proof plastic canister it comes in. Finally, be sure to bring rain gear, rubber hiking boots, and an umbrella—you'd be surprised how many people don't! After all it is called a "rain" forest for a reason.

### **IN THE RAIN**

A prediction of rain doesn't have to mean the end to photography. In fact, rain produces unexpected and pleasing picture possibilities. Because it paints smooth surfaces like leaves and pavement with a glossy sheen, it lends landscapes and city street scenes a bright, pearly glow and creates deep, saturated colors. Use a polarizing filter to further saturate colors by removing surface reflections. In the city, especially at twilight or night, puddles and wet pavement transform mundane street scenes into colorful, impressionistic tableaux with reflections of neon signs and other city lights. Bracket your exposures one stop over and under the camera's recommendation. In heavy downpours the rain itself can become the subject: At shutter speeds of 1/125 or faster you can halt the rain droplets; at slow speeds (1/30 or slower) you can turn them into long diagonal streaks cutting through the frame. Focus falling rain against a dark background to make it stand out.



**IN THE RAIN**

**IDEAL APERTURE & SHUTTER**      **MENU SETTINGS**

As Req    As Req      *Landscape setting in Picture Style Menu with low contrast and a medium saturation. Wide angle lenses with good edge to edge sharpness*

**CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES**

*Never change your lens in the rain, unless you are under cover. Experiment with as many settings as possible and don't be scared to include the rain in your image. It can make for a very interesting effect. If you have one, use a waterproof camera or housing to be safe*

Whatever the subject, it's important to protect your camera gear. If you don't have someone to hold an umbrella over you, you can carry a few locking plastic bags to use as temporary waterproof housings.

With an SLR, just put the camera into the bag, cut a hole for the lens to poke through, and secure the bag to the front rim of the lens barrel with an elastic band. You can jury-rig a similar protection for point- and-shoot cameras; just be sure that the bag doesn't block any exposure or auto- focus windows on the front of the camera.

In his book *Landscape Photography*, noted nature photographer John Shaw offers this unusual tip: Use a shower cap to protect a tripod-mounted camera and lens while you scout locations and then remove it briefly to shoot. If you're travelling to a place where you're likely to encounter significant rainfall, you might also buy a plastic-bag-type underwater housing (see *Under the Sea*) for your camera. Alternatively, you can take along a few one-time-use waterproof cameras.

## **AUTUMN COLORS**

Autumn foliage is like a long, slow-burning fireworks display. It begins by sparking a few

leaves or a branch, ignites entire trees into brilliant red-orange embers, and then finally explodes the entire countryside into a flaming finale of color. Autumn foliage is one of the few subjects that can make even the most casual snapshot attractive. To extract its essence, though, takes some thought. Most important, try not to be so overwhelmed by the glory of it all that you miss the leaves for the trees or the trees for the forest.



## AUTUMN COLORS

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS</b>
As Req	As Req
	<i>Landscape setting in Picture Style Menu with medium contrast and a high saturation. Macro lenses for detail</i>

**CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES**

*Experiment with your White balance in these situations. Try a shady or cloudy setting to add some punch to the oranges and reds of the fallen leaves and foliage. Look for detail, and use your macro settings to allow for a closer focus.*

Whatever the specific subject, pay particular attention to lighting. Because the colors are so brilliant themselves, they photograph well in a variety of lighting conditions. On sunny days work early and late, when the sun, backlighting the leaves, creates a translucent glow. Cloudy days can be good, too, because they tend to create a muted but very earthy spectrum of colors. Avoid including too much grey sky, which will just appear as blank space in a print. After a gentle rain, when the colors are intensely saturated, you can use a polarizing filter (see Polarizing Filters) to remove surface reflections for even richer color, as well as to deepen the blue of a clearing sky

## CAVES AND CAVERNS



# CAVES AND CAVERNS

## IDEAL APERTURE & SHUTTER

As Req

As Req

## MENU SETTINGS

*Landscape setting in Picture Style Menu with low contrast and a low saturation. Consider high ISO's*

## CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*Use manual focus as your meter will be unable to see too well in the dark and therefore wont find an edge to focus on! You may experience "hunting" on auto-focus, where your lens continuously tries to focus, but cant. Consider using flash for fill light or a torch for light painting. You will need a tripod and cable release or remote trigger.*

Caves and caverns, from the more famous tourist sites to the uncharted gems discovered while adventuring, will put your existing-light photographic skills to the ultimate test. In theatrically lighted tourist caves, such as the Jenolan Caves in New South Wales, the light is relatively dim and the spaces are vast. Flash is useless except for close-ups of stalagmites and stalactites.

Even if the flash is powerful enough for wider shots, it only washes away the colorful artificial lighting. Tripods are usually not allowed; instead, you'll be forced to resort to a very fast (ISO 1000 or 1600) film so you can get sharp pictures with your handheld camera. It pays to talk to the rangers or tour guides in these places, too: On slow days or in the off-season they may be willing to give you private tours at a pace that allows the use of a tripod.

Spelunking, the sport of cave exploring, is a way to find caves and caverns that no tour group will ever see or photograph, but it is dangerous and physically demanding. It can be done only in the company of experienced cavers—never venture into any cave alone—and the photographic equipment you carry will have to be secondary to necessary climbing supplies.



In wild caves, one trick for lighting a large area is to place your camera on a tripod with the shutter locked open in the B (bulb) position and then fire your flash multiple times to paint the room with light. The method requires experimenting, but you can use it to light any size space. I have used this method numerous times but only using a cable release for the shutter, as trying to hold a shutter open with one hand, and fire a flash with the other whilst holding onto a ledge etc, can make for an interesting ride. Tourist cave or lost cavern, however, you must take care to protect your camera from high levels of dust and humidity and from hard knocks. Store cameras and lenses in padded cases and, in very damp environments, in locking plastic bags or even underwater housings.

### **FOG AND MIST**



Like brazen, daylight thieves, both fog and mist steal away colors, textures, and shapes, reducing scenes to a muted palette of hues and simple, detailless forms. It's important, then, to build your compositions around subjects that can hold their own. Rather than try to capture a broad landscape, seek out the stark shapes of a lone tree and a stone wall. The farther subjects are from your camera, the more they will lose their impact, so be sure to place the most important subjects closest to the camera—a barn in the foreground of a farm scene, for example.

The reflective brightness of fog and mist fool most auto-exposure systems into allowing for more light than is actually available, so you'll have to increase exposure over your camera's recommendation. If your camera has an exposure compensation dial, use it to add an extra stop (+1). With manual-exposure cameras and some point-and-shoots, you can create the same compensation by setting an ISO speed that's half the actual speed of the film you're using. This will provide an extra stop of exposure; remember to set it back to the correct speed once the fog or mist has burned off. Long telephoto lenses compress the effects of fog and mist; the longer the lens, the more pronounced the compression will be. When shooting mountain landscapes, photographers often use lenses 300 mm or longer to accentuate an effect called atmospheric perspective (see Mountain Scenery: Lighting), which amplifies the sense of distance in mountain shots.

# FOG AND MIST

## IDEAL APERTURE & SHUTTER

As Req

As Req

## MENU SETTINGS

Landscape setting in Picture Style Menu with medium contrast and a high saturation. Avoid high ISO's

## CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*Look for mood, to draw the viewer into the mystery of what the fog or mist are revealing, or hiding! Use very simple compositions. Use a lens hood to protect from dew. Over expose by ½ stop to compensate for the cameras meter thinking the white fog is too bright and therefore darkening the exposure on you.*

## ASTROPHOTOGRAPHY AND STAR TRAILS



Star trails are those streaks you see in some night photos, where the photographer has actually captured the rotation of our planet in space. Pretty cool hey!. It is where a long enough exposure is used to allow the stars in the night sky to become streaks of light in a circular pattern as the Earth turns in orbit.

To photograph star trails, you'll want to use your camera's "bulb" setting. Other essential elements include:

- a.** A clear night with no clouds
- b.** No moon visible in the sky - the ambient light will mess with your exposure
- c.** A shooting location with no ambient light - in country areas this is easy, but if you live in a city you'll want to venture far from your city's limits.
- d.** A tripod (of course!)
- e.** An ISO of 800 or faster, along with an F-stop of F4 or 5.6

# ASTROPHOTOGRAPHY

## IDEAL APERTURE & SHUTTER

F4, 5.6

30secs

## MENU SETTINGS

*Manual setting with high ISO's of 3200+. Keep to shutter to max 30 secs to avoid streaking of stars.*

## CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*Get away from city lights, avoid a full moon, wait for a new moon with no clouds. Look for the Milky Way, and aim your camera towards it. Use only shutter speeds of no longer than 30 secs, or your stars will start to elongate with the rotation of the Earth. Lens hood should be used to protect from dew if a cold night. Tripod and cable release are a must. Use a torch if in a very dark area for managing your camera and your safety.*

Shutter speeds for star trail images are very long, anywhere from 15 minutes to several hours. The longer the shutter speed, the longer your star trails will be. Haze and moisture in the atmosphere can catch ambient light and affect your exposure, so it's difficult to give you a hard and fast "use this aperture setting for this amount of time" rule. But I would start off by setting my focus on infinity, opening my aperture all the way (f4 or F5.6), and taking a shot for 15 minutes. Next, try another for a half hour. Finally, take a final shot of an hour or more.

# STAR TRAILS

## IDEAL APERTURE & SHUTTER

F4, 5.6

10min+

## MENU SETTINGS

*Manual setting with high ISO's of 800+. Long exposures of 10-30 minutes, longer if your battery will last.*

## CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*Use a very sturdy tripod + weighted sandbags or backpack, cable release is a must. NO clouds, NO moon, NO wind. Use a wide angle lens, wider than 24mm, and aim for Southern Cross in the Southern Hemisphere or North Star in the Northern hemisphere. Ensure NIL camera movement during all shots. Blend files in Photoshop after. Prepare for a long night of camping!*



If you live where you can see the South Celestial Pole (Australia) or the North Star (Europe/Canada), compose your shot as you desire (sometimes this is guesswork in the dark) and your star trails will render circles around it. If you still use film, please make **SURE**, firstly you use only high quality slide film, such as Fuji Velvia, and secondly, when you take it to a professional photo developer, tell them that you took night photos of star trails and that you want ***NO ADJUSTMENTS to the exposure when developing***, or you won't get back prints that look anything like what you expect. I always use a super fast ISO speed of 1600 or higher when photographing star trails. It can be fun to put an object or even a person in your foreground when shooting these kinds of photographs. A bridge or building can make an interesting silhouette against this type of dramatic sky. A tree "painted" by a flashlight during your long exposure can be breathtaking (See more in our "How to Photograph the Night Sky" Book). As always, use your imagination and have fun!

For further in depth tuition on Night Photography I have written a book just on this topic "[How to Photograph the Night Sky like a Pro](#)". To be released in 2013.

## **WILDLIFE**



Wildlife are unpredictable but incredible to watch and photograph. Every day I'm amazed by the wildlife on this planet, no matter how big or small. The best advice I can give you is, always be ready for an animal encounter. Wherever you live or are travelling to, chances are there will be animals nearby you can photograph. Be aware of local species. Do your research to find out which kinds of animals frequent your chosen area and when they are active.

One of the most important investments you can make as a wildlife photographer is a 300 to 400mm lens for your camera. You can't capture a striking image unless you have a reasonably long lens and camera nearby at all times.

Keep your basic gear on you, not in your bag. Things like flash, batteries and memory cards should be in your pockets, not in your bag. Pawing through your bag in the middle of a wildlife encounter will usually result in a lost opportunity. I wear a small bag around my waist (sometimes known as a bum bag) for this reason and keep my basics in the same place every time I go out, so I can know where to find them.

## WILDLIFE

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS</b>
<b>F4, 5.6</b>	<b>FAST</b>
<i>S or TV (Shutter Priority) on a fast shutter speed (1/250th +), and a high ISO if needed in dark areas</i>	
<b>CONSIDERATIONS AND THINGS TO REMEMBER &amp; ACCESSORIES</b>	
<i>Expect to be shooting on the move quickly and taking advantage of sudden events! Be prepared, have your camera ready. Shutter as needed, but needs to be fast. Use a lens hood, a map for your area, or a GPS smart phone for safety. Consider a good travel lens (18-200mm) or a fast telephoto lens (300-400mm)</i>	

The simpler the background the better. If the story is the animal, keep the background

simple and focus attention on the real subject. Shoot with a fast shutter speed when trying to get moving animals in focus. I shoot wildlife in shutter priority mode and when using a long lens, I set to at least 1/500th of a second as my minimum shutter speed.

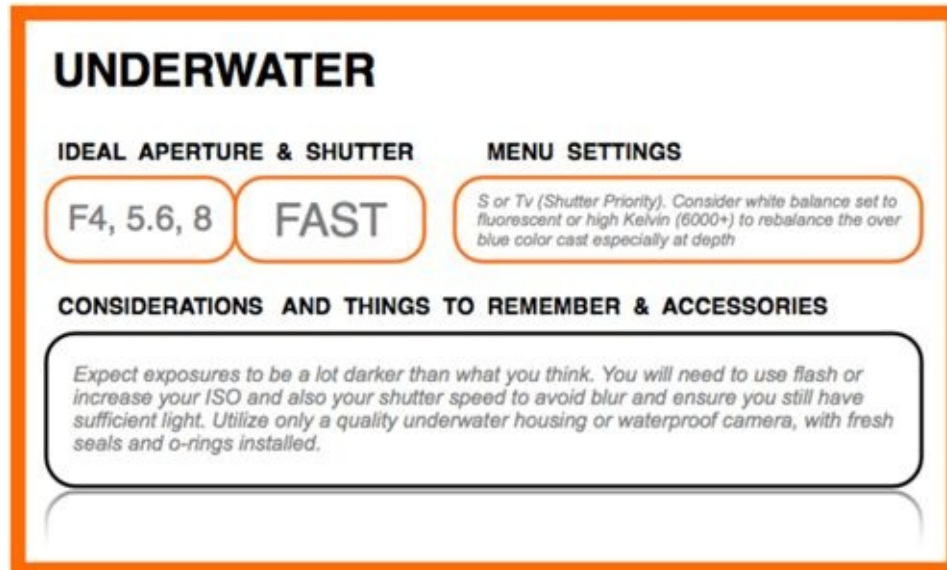
Look for situations that tell a story, convey a concept or communicate a mood. Keep the light at your back, and point your shadow at the subject unless you have a very good reason to do otherwise. When photographing groups of animals, look for separation between subjects. Avoid merges. It takes patience but it's worth it. Remember that in a photograph, a sleeping animal appears to be a dead animal, and therefore, not interesting.

Remember that when photographing action like moving animals, staring at your LCD will cause you to miss opportunities. Shoot, shoot, shoot, and only check when the action relaxes or you need to move to another area. As you get better at your photography, you'll hardly ever need to look at your LCD screen.

For further in depth tuition on photographing Wildlife I have written a book just on this topic "[How to Photograph Wildlife like a Pro](#)". To be released in 2013.

## **UNDERWATER PHOTOGRAPHY**

Underwater photography is completely different than any other photography. Light and color loss, water clarity, currents and housing condensation are all elements that affect underwater photography. Whilst most digital cameras are complex enough to deal with such difficult situations, it's often the swimmer that gets into more trouble than the camera.



One of the most important considerations should be your white balance to compensate for water and light conditions. Manual White Balance should be readjusted every 5 meters or so of depth. For cameras that do not allow manual white balance, setting White Balance to fluorescent may help. Fluorescent is bluish/greenish light similar to underwater and the camera will adjust for this.

There is a lot less light at depths than on the surface. Some light is lost just under the surface as reflections disappear. This effect is even more apparent when the sun is low in the sky. Underwater, light is further affected by absorption and scattering. Greater depth means more absorption and less available light. The millions of particles in the water



cause light to scatter, which can further reduce light. When water turns light into heat it absorbs the lowest energy levels first. This means that Reds, Oranges and Yellows are absorbed before Greens and Blues. This why many underwater photos appear greenish blue. In deeper water, a red filter can help add the red spectrum back into photos, or you can adjust your white balance via its Kelvin setting to recast an orange setting across the shot

All digital cameras create small amounts of heat. This heat can also cause the air inside your housing to warm slightly. When it interacts with cold water outside the housing, condensation may form. This is the same as the fogging inside a cars windshield on a cold night.



***To minimize condensation:***

- A) Avoid opening the cameras underwater housing right before diving, especially in humid areas.
- B) Place a silica bead pack in the housing to absorb moisture.
- C) Use a mask de-fog kit on the lens area of the housing.
- D) Keep the housing out of the sun and try to do your pre-dive set up in an air-conditioned or cool room to keep as much humid air out of housing as possible.



**URBAN AND STREET PHOTOGRAPHY**

Street photography often features subjects in candid situations within public places such as

streets, parks, beaches, malls, political conventions and other settings. This style often concentrates on a single human moment, caught at a decisive or poignant moment. Look at your local newspaper and you'll see street or urban photography right the way through it. It means walking and searching for an image in your city, in another city or if your travelling, the whole time your away.

**STREET AND URBAN**

**IDEAL APERTURE & SHUTTER**      **MENU SETTINGS**

F4, 5.6, 8      **FAST**      *Picture Style - Monochrome (black and white), or Landscape. Either with high contrast for string effects.*

**CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES**

*Expect to be shooting on the move, quickly and taking advantage of sudden events! Be prepared, have your camera ready. If outdoors - start with ISO 200, and f8, and if indoors - start with ISO 800+ and F4. Shutter as needed, but needs to be fast. Use a Lens Hood, map for your area, or GPS smart phone.*

Don't be afraid to ask people if you can photograph them doing whatever they are doing wherever they are, but persist if they decline your request. You don't want to be labeled as one of the "paparazzi" and offend your subject so early on in your photography career!

Look for the stray dog sitting in front of your local barber shop. Get on a train and photograph rush hour. Try to capture a scene or an event depicting everyday life. It could be simple, it could be dramatic. Look up the work of many of the world's best documentary photographers such as Michael Coyne, or Steve McCurry and you'll see what I mean.

Always look for an odd angle, get creative, lean over railings, looking down off a bridge, stand in the street (don't get run over) and catch the dozens of yellow cabs in New York's Time Square. ***The point is; photograph something that can tell a story in just one picture!***

For further in depth tuition on how to tell a photographic story I have written a book just on this topic "[How to tell a Photographic Story like a Pro](#)". To be released in 2013.



## PART 10 – INDOOR SUBJECTS

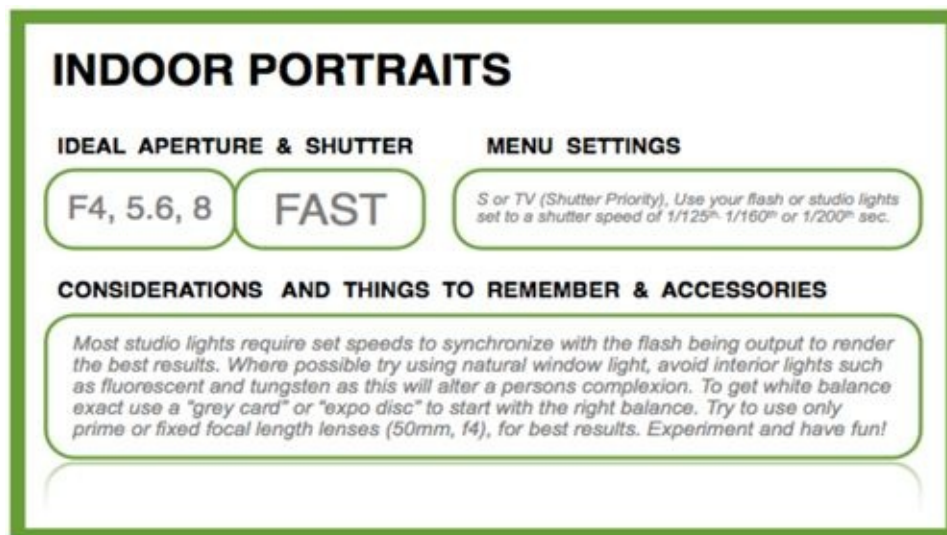
# INDOOR SUBJECTS



### ***STUDIO STYLE AND INDOOR PORTRAITS***

There are two elements to a photo studio for portrait photography. One is a controlled background. You want to focus attention on your subject and avoid distracting elements in the frame. Many of the worst portraits are taken against a gray seamless paper roll or cloth background. Boring! But on the other hand, you are unlikely to screw up and leave something distracting in the frame if you confine yourself to using simple static backgrounds. You don't have to build a special room to have a controlled background. Not everyone has the room or the money to do so. There are all kinds of clever portable backdrops and backdrop supports that you can buy or build. If you absolutely cannot control the background, the standard way to cheat is to use a long fast lens, e.g., 300/2.8. Fast telephoto lenses have very little depth of field. Your subject's eyes and nose will be sharp. Everything else that might have been distracting will blur into blobs of color.

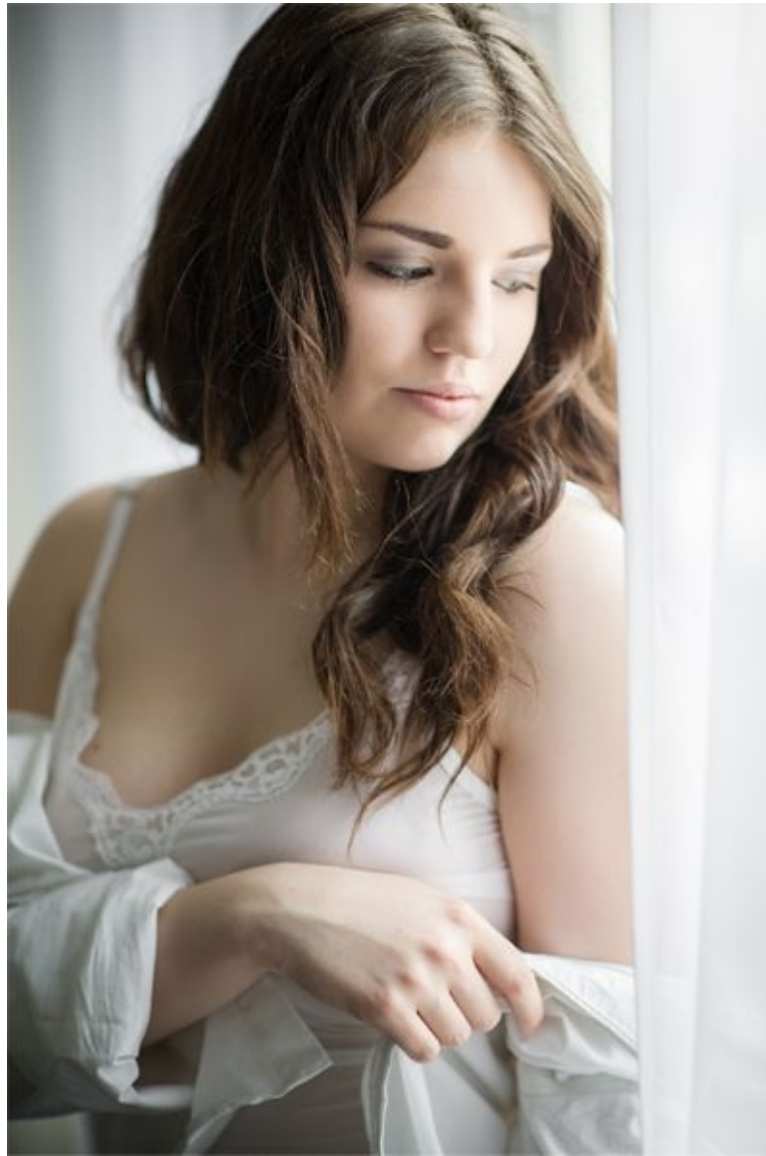
The second element of a portrait studio is controlled lighting. With lights on stands or hanging from the ceiling, you get to pick the angle at which light will strike your subject. With umbrellas and other diffusion equipment, you get to pick the harshness of the shadows on your subject. If you don't have the money, time, or muscles to bring a light package to a project, the standard way to cheat is to park your subject next to a large window and put a white reflecting card on the other side. Don't forget a tripod because you'll probably be forced to use slow shutter speeds.



All of this preparation allows you the best chance to capture your subject. Your subjects can be anyone who is willing to let you photograph them in a studio setting. Many photographers just starting out often ask me, if its ok to just shoot people portraits for free to build a portfolio. My answer is always, absolutely NOT. Great, you get a portfolio, the client gets free images, but what you get is a whole lot of people telling other people you are cheap and willing to do something for nothing, not exactly the best start to a career.

Choose “willing” subjects. This is especially true for children. Kids who don’t want to be photographed, will NOT be photographed. This rule applies to everyone. Many people need encouragement to loosen up and enjoy themselves, before the real magic in a portrait is captured. Corporate portraits are no different either. Build rapport and engage with the subject and your portraits will soon warm to you and their poses and smiles will look relaxed and natural.

For further in depth tuition on photographing People I have written a book just on this topic [“How to Photograph People like a Pro”](#).



**CASUAL PHOTOS OF THE FAMILY**



Casual family photos don't always have to be about having special poses, they should be about being candid, letting the event, the gathering, the party or whatever the situation is,

flow naturally. This is when you get genuine smiles. Rallying the family for a portrait often means coordinating a bunch of people, some of which hate being photographed. Let's face it, we've all got a disgruntled Uncle Tony in our family, that moans and complains (and sometimes disappears into the shadows), the moment someone mentions "family photo"! The best way around Uncle Tony, is to catch him in a candid state, when he's not looking.

Children are no piece of cake either, but at least they are natural. Spend some time with the younger ones, and invest in what their interests are and you'll be guaranteed some engaging images. Try to relax everyone, try not to formalize the process of a family photo. If everyone is gathered around, ask them to turn to the camera and give a cheer, or the biggest smile. If you don't ask, you won't get the shot. Aim for early on in the gathering, or sometime after the family meal. Early on, is when everyone is excited to see each other, and often makes for some great greeting shots. After a meal, in the late afternoon light, means you'll have the chance of witnessing some special quiet moments. Grandparent reading a book to a grandchild, or siblings playing in the yard. In essence, making a connection with the subject prior to taking any photographs, mean they will relax, even if they're family.

**CASUAL FAMILY SHOTS**

**IDEAL APERTURE & SHUTTER**      **MENU SETTINGS**

F4, 5.6, 8      **FAST**      *S or TV (Shutter Priority), Use your cameras flash if needed.*

**CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES**

*Where possible try to use natural light, by windows if indoors, and avoiding fluorescent and tungsten lights as these will change your subjects complexion. If outdoors, don't be afraid to shoot into the sun, just remember to use strong fill flash. Try positioning the sun just off the edge of someones shoulder or filtered through a tree, so you get that star like shape. Fill flash will balance the rest for you. Keep it fun, especially for the kids.*



## **PETS AT HOME**



### **PETS AT HOME**

#### **IDEAL APERTURE & SHUTTER**

**F4, 5.6, 8**

**FAST**

#### **MENU SETTINGS**

*S or TV (Shutter Priority). Avoid flash if possible, animals are spooked easily by bright flashes. Try increasing your ISO instead*

#### **CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES**

*Where possible try using natural light, if needed raise you ISO to compensate for low light. Using a bright flash can often spook some small timid pets into hiding, so use it sparingly. Look for playful or engaging poses. Cats are awesome play mates. Try to include the kids in play with your pets as this always adds a story to the animals behaviour*



Getting pets to cooperate for photos, can be a bit of challenge, but with some persistence, patience and some treats, you should be able to achieve a great shot. Dogs are usually a bit more cooperative when it comes to capturing a posed photo. Remember to make sure the pet is relaxed. Engage in a bit of playtime prior to any shooting. Often smaller dogs will feel threatened by a big black camera, with a massively bright flash bursting in its face. This can often bring on anxiety over lightning and storms and ruin the whole bond, you've worked on building.

Try a trigger word such as, "walk", "drive" or a word they know that will peak their interest to get a lively look from them. Some dogs are too excitable for this though and you may have to leave a long lead on them and work with them a bit. The key to dogs learning is repetition, so it may take a few times before you get them to stay just where you want them to. As for backgrounds it would be best to pick a background that suits the look of your pet. Puppies look best from a very low angle, up close, in long grass. Dropping to a lower angle can also make your older dog look a little more puppy like, especially when you get in close. The color of your dog or cat, is important when it comes to the background as well, and the whole essence of a good photograph. A lightly colored or even white colored coat can often wash out against a white wall, so be mindful of the "blending issue", where your pet can disappear into the background.



## **EVENTS AND PARTIES**



## EVENTS AND PARTIES

### IDEAL APERTURE & SHUTTER

F4, 5.6, 8

FAST

### MENU SETTINGS

*S or TV (Shutter Priority), Use your cameras flash if needed, but to retain color, increase ISO instead*

### CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*Where possible try keeping your flash off to avoid washing out the colors of the event or party! Keep it fun, and emphasize the enjoyment being had, concentrate on color, smiles and significant occasions during the event.*

Events are parties, although having their own separate purpose can be tackled in a similar way. Photographing kids parties has little to do with the event itself, its about finding the joyful moments where the kids are at play, munching down on cake and chasing each other around. Become part of the party, if you have to, take on a character and involve yourself in the play. This is the best way to get kids to think you are cool, one of them, and then they will pose for any photo you want, guaranteed.

For events where you are hired, there is a slightly different persona you will wish to project, to help being hired again. Look like the professional that has been hired and blend in with the crowd. Find the organizer or MC and ask who the notable people at the event are, to be photographed. If you get a chance, scout the location and analyze the lighting conditions before the event. Now with every party or event, watch your flash, if you're using one. Let it recycle and cool off before firing again. If you are shooting at full power, make sure that you are allowing sufficient time for your flash, as recommended in your manual. A lot of photographers end up killing their flashes, because they run them at full power, with little regard to recycle time or cool down time. In fact, I would highly recommend not using any flash if possible and decrease aperture or increase the camera ISO instead.

Don't get romanced by the event or party, trust me you will be dog-tired after photographing a 3 or 4 hour party or event. Ask any wedding photographer just how much work is involved in shooting just the reception alone.

Remember to look for bright lighting, keep your shutter speed high, to ensure sharpness and if you're using flash, use the red eye function to avoid the dreaded red spot in eyes.



## **STILL LIFE**





For still life shots, you may think you'd need a full studio or a fancy location to make a start. Not true. You can begin by simply using a space at home, such as a table placed by a window, along with a simple backdrop and utilizing a couple of lamps

What you photograph is completely up to you. Have a search around the house to see if you can find something simple but interesting to start with. Please don't feel like you have to take photos of fruit or flowers just because everyone else does, think outside the box without being overly ambitious

Try to avoid reflective surfaces such as glass and metal to begin with, as they will be extremely difficult to light. Once you've mastered single objects, try different things, combine objects of contrasting shape, color, and texture and see what you can come up with.

Lighting doesn't have to be expensive. Find a room in which you can block out all natural light by using shutters or curtains, this way you will have complete control over the light upon your subject. Depending on your lighting situation, you may or may not need to use a tripod and shutter release. I would recommend using these anyway, just to be sure your giving yourself every chance of a great shot. This set up will also allow you to use slightly longer shutter speeds if needed. However, don't let your creativity get forgotten with your camera sitting in the same position for the whole shoot. Vary the angles and heights at which you are shooting. Otherwise, before you know it, you'll have a whole collection of shots all taken from the same point of view. Boring! Move around. Try shooting at the same level as the subject or try a bird's eye view, looking down onto the subject, but be careful if you are moving around not to cast any shadows on your subject!

Having a suitable backdrop for your subject will play a crucial role in the overall success of your shots. Keep it nice and simple, so it doesn't interfere with your subject. A plain painted wall or a large sheet of white or plain colored paper would be ideal. Think about how your choice of background contrasts the subject, do you want a neutral background, or are there tones that may work in complimenting the shades within your subject. For smaller objects, you may not need a backdrop as such, but instead require a surface to place the items on, for which something like black velvet is ideal, as it absorbs light and looks like a solid black surface.

Unlike a landscape shoot, the light isn't rapidly changing and unlike a portrait, your subject isn't going to get bored of keeping still for long periods of time. Take advantage of this, set up your subject, lighting, backdrop and camera, try a few shots, then move things around a bit and have another go. If you get to a point where you feel like things aren't going quite right, you can just leave everything set up, make yourself a cup of tea and come back to it refreshed later on.

Another advantage is that there's no excuse not to have clean and sharp images, take time to get the lighting and focus just right. If you can get your hands on one, a macro lens will be ideal for this sort of work, however, if not, try selecting macro mode on your camera to give you the best chance of capturing the close up detail in your subject.

## **BOUDOIR AND SILHOUETTE NUDES**

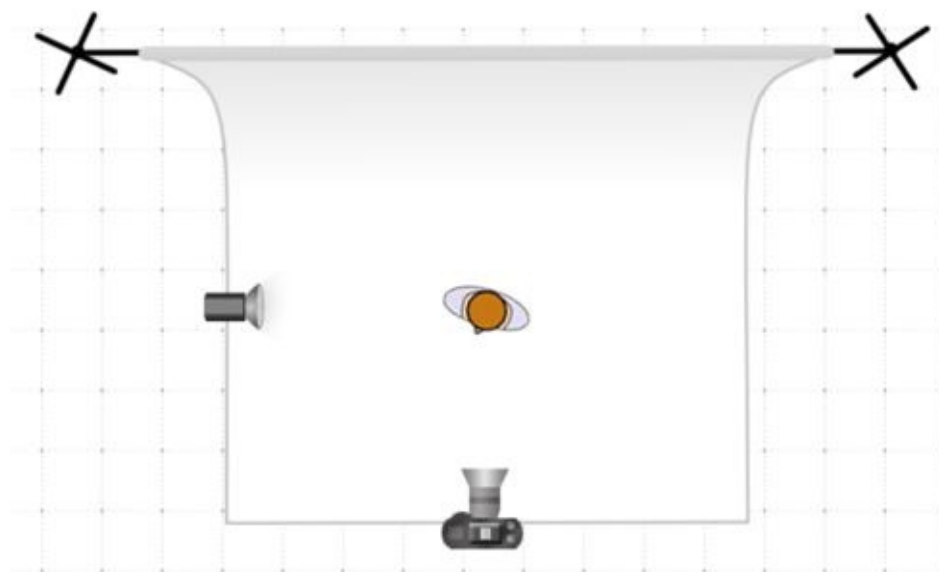


### **BOUDOIR SILHOUETTES**

<b>IDEAL APERTURE &amp; SHUTTER</b>	<b>MENU SETTINGS</b>
F4, 5.6, 8    As Req	S or TV (Shutter Priority) to engage and sync with studio flash. Use only fast prime lenses (F2-F4)
<b>CONSIDERATIONS AND THINGS TO REMEMBER &amp; ACCESSORIES</b>	
<i>Use various lighting styles - Split, Rembrandt and Butterfly. Try to use grids on studio softboxes to build contrast (deepen shadows and brighten highlights, using very direct light). Engage with the subject to enjoy their time. Never rush, make them feel special and sensual. Consider using a remote trigger to the process of you being behind the camera, which may help in relaxing the subject into better and more natural poses.</i>	

When it's time to turn the heat up on your shoot, it's time to turn down the lights way down. Boudoir silhouettes and nude photography should be lit in a sensual, yet dramatic way, to best enhance the subject and give just a hint of what the image is. They should be portrayed as abstracts to remain tasteful, and less offensive. Highlighting key elements of the subject's shape, body, posture and surroundings can all be achieved with special lighting techniques.

Choose your lighting pattern from an indirect and low light source, such as Rembrandt lighting technique, or split lighting technique, and using one key light source only. Turn off the fill light and focus on using the key light, or main light, in the studio to accent the subject. For a headshot, turn the main light toward the subject's face, allowing the rest of the body to fall into the shadows. Use this technique when attention should be brought to the face, or hands near the face. Use dark, light-absorbing, backdrops of black, purple or crushed red velvet. Have the subject lay on a chaise lounge, parallel to the camera. Use the main light, high above the subject, in a butterfly lighting pattern. Turn off the fill light, but use the backlights behind the lounge, aimed up at the length of the body. Allow the lighting to put the torso and legs in silhouette, while the face is properly exposed. This allows for accents of curves, posture and little or very revealing garments, without showing the full details of the body. Turn off the main light to put the entire form into silhouette.



Use a single or twin sidelight set up, known as “split lighting”, to create shape and accent curvature and form in a silhouetted portrait. This works for boudoir, nudes or any other types of portraits, when applied in an appropriately suitable manner to your subject.

To illuminate the entire body, without silhouette, position the main light at eye level with the subject, and keep their body parallel to the camera. Turn off the fill light, but allow some backlight to spill over the legs with a rim lighting effect. The uneven lighting will look dramatic and highlight the curves of the calves.

Use a zoom lens, the main light and backlights to focus on details. A bare foot running up a silky leg can be photographed without fill light, and the added shadows will make the scene appear more realistic to a bedroom scene lit by casual candle or window light. Use the zoom lens to compress the depth of field, and angle the main light at 45 degrees to the foot, because it is the main focal point of the image.



## **ARCHITECTURE**

Architecture and property will often be photographed in two ways, staged or contrived. Staged is where a certain setting is built to depict a lifestyle or a certain scene. It may include people as models to add life to the image. Contrived is where the architecture is photographed in a way to convey a message. It may be the shape and form the architect has used to design the building or property. It often means finding an angle that will provide the end user of a unique perspective of the building. This is not always easy. But often it may mean a very small change in positioning will mean a whole lot to the building owner or architect, to convey the most pleasing aspect of their work.

Where possible find the most flattering angle. Move around and look for angles that showcase the most exciting aspects of the property or building. It can sometimes be too easy to show off the good features and hide any bad spots just by moving your position though. Shoot from several angles if you're not sure which is best, then decide later. Always back up, when looking for a shot. Take your time, the building is not going anywhere! Put yourself tight into a corner or doorway if you have to, to emphasize the space inside a room. Rarely will the middle of a room be the best camera position.



## ARCHITECTURE

### IDEAL APERTURE & SHUTTER

F8 +

As Req

### MENU SETTINGS

A or AV (Aperture Priority), consider White Balance for fluorescent or tungsten lighting (downlights).

### CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*Take your time, Look for unique angles, and aspects that showcase the architecture. Look for areas of interest that lead the viewer from one area to another. Use hallways and pathways to connect the building. Use a tripod if necessary and wide angle or tilt shift lenses are a must for correcting perspective.*





Hold the camera straight, not inclining up or down and not tilted to either side. Ideally the

left and right edges of your viewfinder should be exactly parallel with vertical lines in the scene, such as doorways. Try to connect one area to another, especially if an outdoor pathway or indoor passage or hallway leads to another area and you can see it in your viewfinder. Remember your rule of thirds. Leading the eye through a building using the rule of thirds will always invoke a pleasing response.

Use a tripod, even if it's a \$10 discount mart special. Even though many interiors of buildings are lit well, your camera will not often see it this way. This is because your eyes adjust when moving from outdoors to indoors, but your camera cannot do this, unless you tell it to see more light. Using a tripod (except in public walkways) will save many shots that would normally be blurred by a hand-held camera. Use the self-timer and let go of the camera so you don't jar it during the exposure. The timer adds a few seconds, but patience is rewarded.

**Get Down!** If holding the camera straight (above) aims too high, bend your knees or sit on a chair to lower the camera position. Get comfortable, though, before carefully aiming and taking the shot.

**Get Up!** Not all shots need to be from human head height... try for some variety by elevating your position (careful if standing on things), or shoot from a balcony or staircase.

Adjust for even light throughout the room to avoid dark areas or too-bright areas (like sun-blasted windows). The camera captures a narrow range from dark to light, so the more evenly lit, the more good detail will show in the photograph. There are lots of things you can adjust, and lots of combinations: open/close shades, turn lamps on/off, add lamps from other rooms, use your flash. Avoid fluorescent lighting, which can cast an ugly green across your images, unless you adjust your White balance accordingly. Mixing fluorescent with daylight (windows) and tungsten (regular light bulbs) requires some expertise, though most high-end DSLR digital cameras with automatic white balance will handle the mix better than film.

Housekeeping details will show up clearly in a photograph. Schedule your photo session after a house cleaning, and watch for stray dirt. Take the time to straighten furniture, drapes, linens, and brush out obvious foot tracks in pile carpet using a broom. Move trashcans and clutter out of sight. Overcast skies can be perfect for shooting interiors: the windows look bright but not overwhelmingly so.

For further in depth tuition on photographing Architecture and Real Estate I have written a book just on this topic [“How to Photograph Architecture and Real Estate like a Pro”](#).



## **REAL ESTATE AND INTERIOR PHOTOGRAPHY**

Interior photographs should be in sharp focus everywhere. Use hyper-focal principles to focus one-third of the distance into the scene. Avoid shooting very close to objects (adding to focus difficulties). Keep apertures small (typically f/11 to f/16). With your camera on a sturdy tripod, use longer shutter times to drink in the available light. Interiors are still life: nothing moves, so long exposures work well. You don't need strong light... just consistent and even light.

Take a careful moment to scan your frame in the viewfinder, imagining it as a two-dimensional (flat) photograph. Interiors usually appear complex on film, so try to simplify: remove clutter and hide defects. Avoid prominent objects on the edges of the frame. Carefully align the camera on the tripod: avoid elevating up or down, or the side-to-side tilt characteristic of amateur photographs. Check the alignment of vertical objects (like door frames): they should be parallel with the sides of your viewfinder frame.



## REAL ESTATE

### IDEAL APERTURE & SHUTTER

F11-13

As Req

### MENU SETTINGS

A or AV (Aperture Priority), consider White Balance for fluorescent or tungsten lighting (downlights).

### CONSIDERATIONS AND THINGS TO REMEMBER & ACCESSORIES

*Expect exposures to be a lot darker than what you think. Watch for areas of extreme brightness and if indoors turn on all lights to re-balance any intense window lighting. Keep the image clean tidy and clutter free. Use a flash and tripod if necessary and wide angle or tilt shift lenses are a must for correcting perspective.*



Tip the camera up/down and right/left until all verticals are parallel. With a little practice this is easy, and it makes a big difference. If needed invest in a tilt shift lens to auto correct this perspective, if you have to angle your camera up or down during a shot. Meter on mid-tone objects (not dark furniture or white walls), and don't be afraid to overexpose

bright lamps and windows somewhat: it's a popular look because we generally like to see bright interiors, not underexposed murk. Bracket exposures by as much as a full stop plus and minus, varying the shutter speed — easy on a still life subject.

Later, you can pick the most appealing image of the three, and sometimes it's not the middle exposure you'd expect. Given the time you spend shooting, it's worth it to know you'll have a choice of the best result after you're finished. And different clients may have a preference for a more over- or under-exposed look than you personally favor. Shoot wide-angle to capture entire rooms and make them look big, but don't ignore the details: the unique character of some interiors can be found in smaller areas or objects, or even close-ups. Overuse of ultra-wide shots can be tiresome for your viewers, and the optical quality of wide-angle lenses is inferior (for those doing enlargements).

Watch out for mirrors, which can show part of you (the photographer) in the scene. Clients will almost certainly reject a real estate shot which includes the photographer (it's nothing personal). And other smooth surfaces such as window glass can reflect your flashes, so examine your results carefully before calling the shot complete. Watch out for flash reflections in glass (picture frames, windows, mirrors). Such reflections will create intense hot spots where you didn't expect them, and will likely cause the image to be discarded.

# PART 11 - THE LEGALITIES OF PHOTOGRAPHY

## THE LAW OF PHOTOGRAPHY

### COPYRIGHT

#### **What is copyright?**

Copyright is your intellectual property. It is a legal concept, provided in most countries, that gives artists the exclusive right to publish, adapt and license their work for financial benefit, and protects them as the creators of the work, be it written (stories, poems etc), visual still and moving pictures (photos and movies) or artistic impressions (anything drawn), from having their work stolen and reused or reproduced without their permission.

#### **Why have copyright?**

Copyright is designed for you — the artist. Without copyright, people would be free to use your artistic work without payment, and you'd have little financial incentive to create art.

With copyright, someone who wants to borrow, lend, commercially use, adapt or even edit and reproduce your work has to get your permission first. They have to **license** your work, and if you requested by you, pay you a fee. Any unauthorized access or use of your work without your permission is a breach of the Berne Convention and the applicable local or international copyright law and may be sued for.

#### **How do I get copyright?**

Automatically. The law protects your creation the moment you press the shutter. That is the case throughout the world, with slight exceptions to how the image is to be used or whom it is for.

#### **Do I have to register, publish, or add a notice?**

Yes and No. Those were requirements in the U.S.A before 1976 but they were omitted to conform to the "**Berne Convention**".

**The Berne Convention** is the common name for a landmark international agreement on copyright that over 160 countries have signed, thus standardizing many copyright concepts throughout the world. <http://www.wipo.int/treaties/en/documents/pdf/berne.pdf>

Formally titled "Berne Convention for the Protection of Literary and Artistic Works" the agreement is named for the city in which it was first accepted — Bern in Switzerland — in 1886. The text has been revised several times, lastly in 1979

In the USA, you do not have to register your copyright, but if you do and you are awarded a legal win, you may also apply for compensatory damages (ongoing loss of profit,

suffering, and other monetary loss etc) on top of the standard punitive damages (legal costs etc). If your copyright is not registered in the USA, you have no right to compensatory damages, only punitive. So if you are in the USA, register your work. No other countries have this “unknown” requirement in place. USA Copyright registration link - <http://www.copyright.gov/eco/>

### **What is the actual law?**

In the U.S., the federal Copyright Act is [Title 17 of the U.S. Code](#), which includes the Copyright Act of 1976 as amended by the [DMCA](#) and other laws. The law stems from the U.S. Constitution. <http://www.copyright.gov/title17/>

In Australia, your rights are bound by the Copyright Act 1968 (Cth), under federal legislation and applies through Australia. The Australian Copyright Council is the main authoritarian body that provides legal advice and guidance for photographers and other artists in Australia. <http://www.copyright.org.au>

Some excellent information from AFACT (Australian Federation Against Copyright Theft) is available as well. It relates a little more towards moving pictures rather than stills, but does advise on both. [http://www.afact.org.au/index.php/core/the\\_law](http://www.afact.org.au/index.php/core/the_law)

In the UK and Europe, your rights are identified via the WIPO (World Intellectual Property Organization) - <http://www.wipo.int/portal/index.html.en> and the European Commission - [http://ec.europa.eu/internal\\_market/copyright/copyright-info/index\\_en.htm](http://ec.europa.eu/internal_market/copyright/copyright-info/index_en.htm)

In Asia, you are governed by local copyright law, and fortunately many Asian countries are signed to the Berne Convention. The WIPO has much information on copyright as it stands in Asia, particularly on China - <http://www.wipo.int/wipolex/en/details.jsp?id=6062>

In Africa, you are governed by the Copyright Act 1978. It is interesting to know that South Africa is a party to the Berne Convention and the TRIPS Agreement, but it has signed, but not ratified, the WIPO Copyright Treaty. Much information can be found on the Companies and Intellectual Property Commission website - <http://www.cipc.co.za>

In most other countries, the basic laws are similar due to the Berne Convention Agreement.

### **What can get copyright?**

Anyone who wishes to protect their work such as paintings, murals, statues and sculptures, movies, TV shows, music, and photographs as well, as written and literary works such as poems, stories and tales.

### **Who owns the copyright?**

The person who presses the shutter-release automatically owns the copyright to the photograph. In general, a photographer owns the copyright unless they explicitly sign it away in writing.

The one exception is when the photographer is an employee and is required or requested to capture images as part of their job, for their employers use, then the employer owns the copyright as a corporate entity.

Models (and other people in a photograph) do not own the copyright on the image they are

in. If they sign a model release, or the owner of a property signs a property release, then they will forfeit any right to access compensation (either monetary or beneficial) for a specified or ongoing period into the future.

This can be inherently different in some countries when it comes to weddings and portraits. As a photographer, regardless if you are the creator and copyright owner, the ownership of copyright transfers from the creator to the buyer of the image automatically. However if a contractual agreement stating no transfer is applicable is signed or terms and conditions of service are signed, or implied by accepting and paying for a service provided by a photographer, then the copyright will remain with you the photographer.

As a rule, if you intend on selling your images or services to capture images for someone, have your copyright ownership laid out in black and white in an agreement, in your terms of service on your quotation and invoice, and even on your website.

### **Strange copyright requests**

If you have intentions on making a career out of your photography, then seriously consider your copyright laws. I have often been told by people who I have been contracted to shoot for, that they **MUST** have the copyright to the images I shoot for them. I firstly try to understand why they insist on seeking copyright, when I am happy to allow them to access the file and do what they require it, if they pay the applicable fees.

It is a simple “mis-belief” that people ***need or are entitled to, the copyright*** before they can use an image they have paid for. When discussing this with the client or person seeking copyright without paying the fees, I often use examples that are the same in general business and life. One example is that if I wanted to rent a car from a car rental business, would I expect to pay the first hire fee for the car, and then own the car for life. It would be the same if I stayed at a hotel. If I paid for the first night, would I then own the room in the hotel to be able to rent out and use as I choose. Nothing works like that, because it is simply bad business.

The **ONLY REASON** for someone to demand copyright from a photographer is to **CONTROL ANY FUTURE USAGE** of the photograph, and therefore avoid paying the photographer for their work. This to me is completely unethical, and I always decline such requests as a rule.

Accessing copyright is known as licensing which is no different to any other “fee for hire” service. You as the photographer may choose to sell the image to the buyer, which may or may not include copyright, however every other instance is simply fee for hire. This is how all of the world’s stock libraries operate. This is how Apples iTunes operates.

Many photographers also believe they have to give their copyright away in order to get work. This is why so many photographers are broke.

Investigate your local copyright laws, politely educate anyone your photograph, and always, always have a contract in place, for every single job. Contact one of the following authoritarian bodies in your region of the world for advice and examples of using photography agreements and contracts.

Australia – Australian Institute of Professional Photography – [www.aipp.com.au](http://www.aipp.com.au)  
United States – Professional Photographers of America – [www.ppa.com](http://www.ppa.com)



Canada – Professional Photographers of Canada – [www.ppoc.org](http://www.ppoc.org)

New Zealand – New Zealand Institute of Professional Photography – [www.nzipp.org.nz](http://www.nzipp.org.nz)

Asia – Hong Kong Institute of Professional Photography – [www.hkipp.org](http://www.hkipp.org)

Britain – British Institute of Professional Photography – [www.bipp.com](http://www.bipp.com)

Europe – Federation of European Photographers - [www.europeanphotographers.eu](http://www.europeanphotographers.eu)

South Africa – Professional Photographers of South Africa - [www.ppsaonline.co.za](http://www.ppsaonline.co.za)

### **Why should I keep my copyright?**

When you give or assign away your copyright, you essentially release any control over how your photographs may be depicted, used or even sold to. So long as you retain copyright, even if it is shared (under agreement), you retain control as the original creator, and therefore minimize the risk of your images being used inappropriately and ensure you get paid for your hard work.

### **ONLINE USE AND THEFT**

Sometimes it is necessary to legally protect your images if they are posted online, including social media websites.

Unfortunately many people intentionally steal images from websites every day. This is a fact. But many also don't realize they are stealing by either right clicking on an image online or even by taking a screenshot of the image as a copy for use on their blog etc. Essentially if you have not been asked permission, even if your work is credited with a link back to your website, your image has still been stolen, and you may request the offender take it down and destroy the stolen file.

This is a delicate balance though, because many people share so many images freely online nowadays, and if you feel a mutual benefit from having your work shared by others, that's is fantastic, but never let anyone sell or make money off your work, without either you knowing or you being paid.

In extreme circumstances, there are many ways to further protect your images online with coding and scripts that enforce a transparent layer over your image, which when right clicked or screenshot, the thief will only see a white box. You can use a watermark, which may deter people because your name is all over the image, or you can take it a little further if your work is of paramount importance and use a tracking service such as <http://www.digimarc.com/digimarc-for-images>. All these strategies are employed by the major online Stock Libraries to protect their photographers content.

### **INDUSTRY ADVICE**

If you would like to move into the field of photography as a profession, then I would highly recommend one of the Institutes or Associations below. These organizations are where real professionals are contributing to their industry and keeping themselves registered and accredited to ensure they are at the very top of their craft. You may choose to even talk to your local camera clubs. Many camera club members are retired working professionals now enjoying their craft as a weekend hobby, and they can be extremely helpful. Try looking for information from these industry accreditation offices -

Australia – Australian Institute of Professional Photography – [www.aipp.com.au](http://www.aipp.com.au)

United States – Professional Photographers of America – [www.ppa.com](http://www.ppa.com)

Canada – Professional Photographers of Canada – [www.pvoc.org](http://www.pvoc.org)

New Zealand – New Zealand Institute of Professional Photography – [www.nzipp.org.nz](http://www.nzipp.org.nz)

Asia – Hong Kong Institute of Professional Photography – [www.hkipp.org](http://www.hkipp.org)

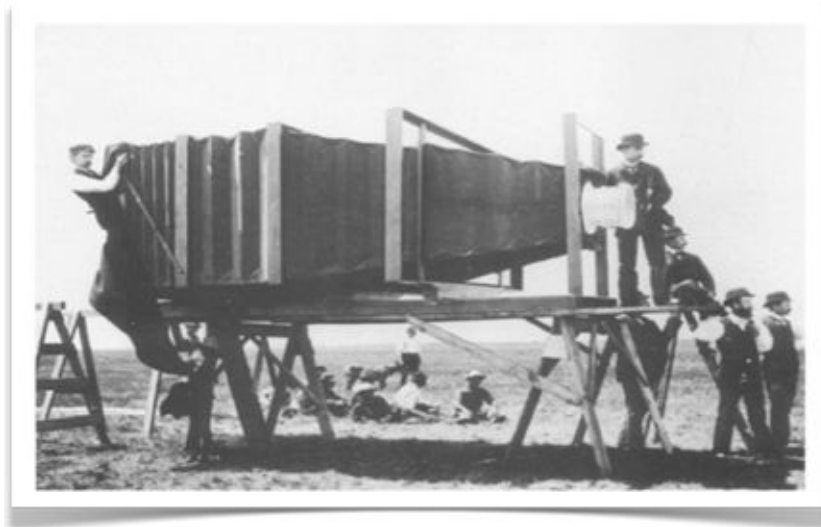
Britain – British Institute of Professional Photography – [www.bipp.com](http://www.bipp.com)

Europe – Federation of European Photographers - [www.europeanphotographers.eu](http://www.europeanphotographers.eu)

South Africa – Professional Photographers of South Africa - [www.ppsaonline.co.za](http://www.ppsaonline.co.za)

# THE HISTORY AND ORIGINS OF PHOTOGRAPHY

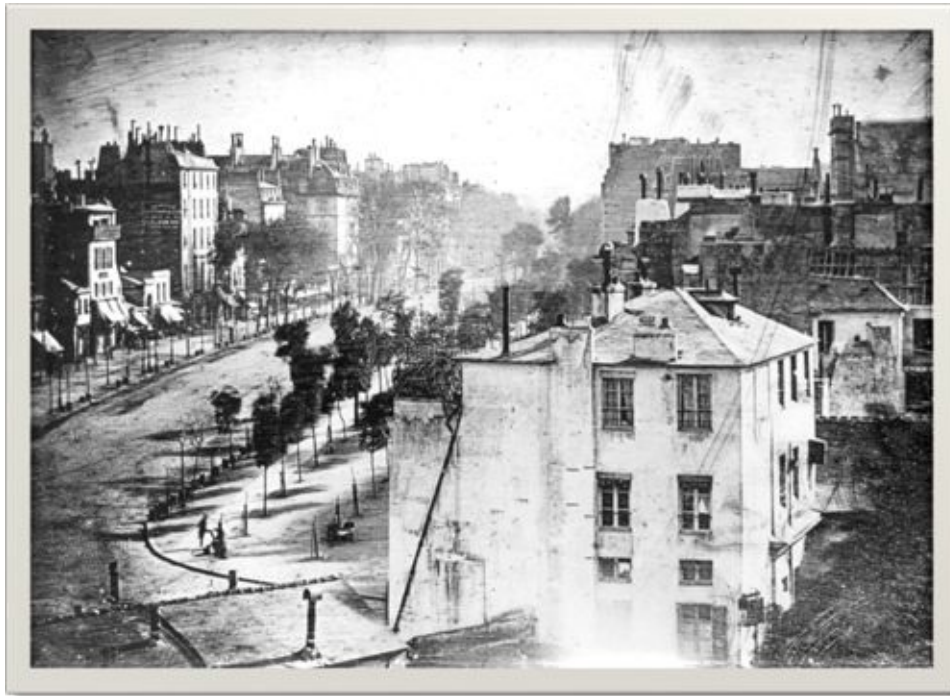
# THE HISTORY AND ORIGINS OF PHOTOGRAPHY



The Mammoth, weighed a full 1400 pounds, with a 500 glass plate (film/sensor). Built in Chicago, it moved about on its own railroad car, and required enough chemical solution to fill a modern motorcar fuel tank, to develop its gigantic 8 x 4.5 ft prints.

Photography comes from the Greek, meaning for “light writing” and first became known in 1829, by French Inventor, [Joseph Nicephore Niepce](#). Originally known as “Heliography” – from the Greek “Helios” for sun and “Graphos” for writing/drawing, photography in a purist form was first experimented with in the 18th century, when there was a common belief that only light from the sun was strong enough to expose film.

As experimentation continued throughout the years, more sensitive film substrates were developed to allow the use of artificial light, such as fire torches, gas lanterns etc. This therefore meant the term “Helios” was out of date, as the sun was no longer the only source of light. Instead “Photos” (meaning light) was adopted. This transcribed to “Photos-Graphos” or “light writing”, which is exactly what photography is, the recording of light. For many years following, people had discovered ways of causing certain chemicals to change color when exposed to light but they did not discover ways of getting the images to remain permanent until the modern ages.



An original Daguerreotype image - the first commercially successful photographic process. ***“Boulevard du Temple, Paris”***, captured by Louis Daguerre in 1838. The first photograph of a person ever made). The image shows a busy street, but because exposure time was more than ten minutes, the moving traffic does not appear. Only a man getting his boots polished, the shoe shine boy and two people sitting at a table nearby stood still long enough for their image to be captured. The image is reversed (as were most Daguerreotypes) as is evidenced by the writing on a building in upper left.

Some early photographers in USA began setting up tent darkrooms in the countryside, where they mixed chemicals with Mercury, and then coated metal plates with the mixture to prepare the surface for placement into their large cameras. They would place a dark cloth over their heads, and open the shutters of their camera to expose the Mercury coated plates to the light being captured through the lens. These plates then provided an etched image of what was seen through the lens. This practice of handling chemicals including Mercury, was detrimental to these photographers, who under the dark sheath, inhaled the dangerous Mercury fumes by the lung full. Soon after, many who practiced this method for any prolonged period, became known as “Daguerreotypists”, after Daguerre, who developed the method, following on from Niepce. These “Daguerreotypists”, suffered mental issues from the mercury fumes, and were often committed to asylums.

Interestingly, Hatters also used this Mercury method, in the construction of top hats and other headdress from the ages. Writer Lewis Carroll penned the character “Mad Hatter” from this, with photographers escaping the blame, and avoiding being recognized as the original perpetrators of such a maddening practice to expose photographs.

Louis Daguerre was a professional scene painter for opera with an interest in lighting effects. He tested the effects that light had on paintings. Advantages were: exposures times were only minutes long instead of hours, the degree of fine detail captured in the daguerreotype image, and the image was visible after fixing and didn’t require etching or printing. Disadvantages included image quality, lens quality and the plate size was small and limited.



FIG 5. The oldest heliographic engraving known in the world. It is a reproduction of a 17th century Flemish engraving, showing a man leading a horse. It was made by [Joseph Nicephore Niepce](#) in 1825, with an [heliography](#) technical process. The [Bibliothèque Nationale du France](#) bought it for 450,000 € in 2002, deeming it as a “national treasure”.



Believed to be the very first portrait image of a human ever recorded, this image by Robert Cornelius, a self-portrait was captured in Oct or Nov 1839

# THANK YOU

Just a quick note to say ***thank you*** for buying this book. I truly hope you have enjoyed the journey of discovering all the aspects of photography in this book. It has taken a lot of my brain cells to pour out on the pages my many years of experience, as well as my successes and all of my errors.

I remember the very first 3 or 4 rolls of film I bought and how excited I was to head down to my local little beach at a place called South Cronulla in Sydney, Australia. I loaded the roll of Kodak 400 ISO speed negative film, into my little Pentax MZ-50 35mm SLR and set up my plastic legged tripod in the sand. It was a great feeling knowing I was about to create something...from nothing! I spent the next two hours photographing all the people, surfers, girls in bikinis and the rolling waves along the beach in the early morning sunlight. What an accomplishment!. I just created a roll of pictures that ***no one*** else has. I couldn't wait to see what the film looked like.

I waited an excruciatingly painful two days for my film to be developed and the pictures to be ready. I almost ran into the camera developers and asked for my pictures. The first snigger from the developer was odd, but after the second, I figured something was up. Low and behold every image was black, completely black. It was then very obvious that I needed help with my photography, as clearly I didn't have a clue! There began a very, very, long journey to learn the ins and outs of photography.

If you are beginning a journey in photography or simply looking to improve on what you already know, then remember, practice, practice, practice, and when you're not quite sure, practice some more. This is the only way you are guaranteed to stay on top of your craft, your passion, and therefore continue to enjoy what you do, taking photographs!

If you want further photography tuition in a certain topic please browse the other books in the "[How to Photograph Anything like a Pro](#)" book series. Or consider a photography class, tour, training course or workshop with me –[www.steverutherfordtraining.com.au](http://www.steverutherfordtraining.com.au)

## **Quote -**

*You don't stop shooting, because you get old...*

*You get old, because you stop shooting!*

**Anon**

*Regards,*

**Steve Rutherford**



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**Steve Rutherford**

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# GLOSSARY

1,2,3

**4K.** 4K is an emerging standard for digital motion picture resolution. The standard is so named because it refers to its approx. 4,000 pixels of horizontal resolution. 4K incorporates a number of aspect ratios that all utilize 4,000 pixels of horizontal resolution x differing numbers of pixels of vertical resolution. This is contrary to the standard HD resolutions of 720p and 1080p which represent the number of vertical pixels.

**51 Point Auto-Focus System.** Available in selected Nikon D-SLRs, the 51-point AF system positions 51 points of focus within the frame to allow photographers to choose a variety of focus configurations to suit the shooting situation.

The 51-area grid forms a wide rectangle across the frame, with minimal spacing between each AF area. The system keeps even quick-moving subjects in focus across a wide extent of the frame. The 15 points of the three center rows of focus points employ cross-type sensors for powerful focus detection.

## A

**AA-** Power source/battery type. Also NiCad and NiMH

**AA Filter** - Most Digital SLR's have a "Low Pass Filter" (LPF) or AA (Anti-Aliasing) Filter in front of the CCD or CMOS sensor. This helps to eliminate color aliasing problems, or the "moire" effect.

**AC Power** - Alternating Current which is used to operate your digital camera directly from the mains supply rather than a battery. Sometimes supplied, but normally requires additional expense.

**Accessory Shoes** - also often called "**Hot Shoe**". The early flash types were simple metal brackets. To install a flash unit, you just slide the mounting foot of the flash into the accessory shoe. No electrical connection is made between camera and flash - it's just a simple and convenient way to attach the flash unit to the camera. Subsequent accessory shoes have been built as part of the camera and usually rest on top of the camera's pentaprism; others are separate items that you mount on the camera body when you need them. Some like the Nikon early professional camera has special dedicated which was designed around the rewind knob.

**Aberration.** Failing in the ability of a lens to produce a true image. There are many forms of aberration and the lens designer can often correct some only by allowing others to remain. Generally, the more expensive the lens, the less its aberrations (More attention to optical quality). While no single lens is called a 'perfect lens'. The "ideal" lense would reproduce a subject in a faithful, clearly defined image on film. Aberrations, which can be divided into six basic faults, affect the Ideal performance in an optical system.

a) Spherical aberration. Basically, a beam of light passing through a lens parallel to the optical axis converges to form 3 focused image on the film. Spherical aberration is the term for an optical fault caused by the spherical form of a lense that produces different focus points along the axis for central and marginal rays.

b) Curvature of field. This optical defect causes points on an object plane perpendicular to

the lens axis to focus on a curved surface rather than a plane.

c) **Astigmatism.** Rays of light from a single point of an object which is not on the axis of a lens fail to meet in a single focus thus causing the image of a point to be drawn out into two sharp lines, one radial to the optical axis and another perpendicular to this line, in two different planes near the curvature of field.

d) **Coma.** This optical defect causes the image of an off-axis point of light to appear as a comet-shaped blur of light. Coma, as well as curvature of field and astigmatism, degenerate the image forming ability of the lens at the rims of the picture.

e) **Distortion.** Even if the first four aberrations were totally eliminated, images could result that still have a distorted appearance. For an example, an rectangle may appear as a barrel or pin cushion-shaped object.

f) **Chromatic aberration.** This aberration is caused by light rays of different wavelengths coming to focus at different distances from the lens. Blue will focus at the shortest distance and red at the greatest distance. Since the natural rays of light are a mixture of colors, each aberration will give a different value corresponding to each color thus producing blurred images.

**Add-on Lens** - Some point and shoot digicams have a filter thread on the front of the fixed lens that will enable the attachment of an additional lens. Usually wide-angle or telephoto.

**AE** - Auto Exposure. When the camera is set to this mode, it will automatically set all the required modes for the light conditions. I.e. Shutter speed, aperture and white balance. The 3 types are:

- **Program Mode** The camera will choose the shutter speed and aperture automatically, effectively making your SLR a “point-and-shoot”. It will normally assign a shutter speed of 60th of a second or higher if possible.
- **Aperture Priority** You choose the aperture setting and the camera will automatically choose the shutter speed according to the lighting conditions. Best setting for controlling the depth of field.
- **Shutter Priority** You choose the shutter speed and the camera will select the correct aperture as long as there is enough light. Good for sports or action photography where you need control over the shutter speeds.

**AE Lock.** This enables you to lock the current exposure reading and re-frame the shot using the same setting. A half-press of the shutter is normally required to activate this function, fully pressing only when you want to capture the image.

**AF.** Auto Focus. All digicams and most modern SLR lenses have this function now. The lens automatically focuses on the subject as quick as the eye. The only difference is that with an SLR you can normally select manual focus if necessary.

**Aliasing.** This is an effect caused by sampling an image at too low a rate. It causes rapid change (high texture) areas of an image to appear as a slow change in the sample image. Once this has happened, it is extremely difficult to reproduce the original image from the sample.

**Ambient Light.** The available natural light completely surrounding a subject. Light already existing in an indoor or outdoor setting that is not caused by any illumination supplied by the photographer i.e. not by artificial light source.

**Angle of View.** This is calculated by the focal length of the lens and the size of the image sensor. The 35mm equivalents differ according to the sensor size.

**Anti aliasing.** This is the process whereby you can reduce the “Stepping” effect on your images, by smoothing the edges where individual edges are visible. A great program for correcting this is Genuine Fractals by LizardTech. It is a plug-in for Photoshop.

**Aperture.** The lens opening that allows more, or less light onto the sensor formed by a diaphragm inside the actual lens.

**Aperture Priority AE.** When using this mode, the user selects the aperture giving control over the Depth of Field. A large aperture letting more light in gives a small depth of field, meaning not much will be in focus. Whereas a small aperture, not letting much light in, will give a greater depth of field or more will be in focus from the front to back of the image.

**APO.** Apochromatic. Having the ability to bring all colors of the visible spectrum to a common plane of focus, within close tolerances, usually refer to a lens with such superior color correction. Also refer to “ED”, “LD”, “SD”, “UD”.

**Aperture ring.** A ring, located on the outside of the lens usually behind the focusing ring, which is linked mechanically to the diaphragm to control the size of the aperture; it is engraved with a set of numbers called f-numbers or f-stops.

**Artificial light.** Light from a man-made source, usually restricted to studio photo lamp and domestic lighting. When used to describe film (also known as Type A or Type B) invariably means these types of lighting.

**Archive.** A collection of data in long term storage, usually the hard drive on your PC or an external hard drive.

**ASA.** American Standards Association. Group that determining numerical ratings of speed for US made photosensitive products. eg films. In 1982, its role and its influence was narrow down by the establishment of the ISO (International Standards Organisation).

**Aspect Ratio.** The ration of horizontal to vertical dimensions of an image. For example, 35mm slide film = 3:2, TV = 4:3, HDTV = 16:9, 4x5 Film = 5:4.

**Aspherical Lens.** A lens with edges flattened so that it is not a perfect sphere. These produce a much superior image.

**Automatic Exposure.** The camera sets the shutter speed and aperture for the correct exposure according to the light.

**Automatic Focus.** The lens on the camera focuses automatically when the shutter is half pressed. The viewfinder normally has focussing points shown to assist the user in knowing what will be in focus.

**AVI.** Movie clip in Windows AVI format. A lot of digicams now have this feature for producing small video clips.

**AWB.** Automatic White Balance. Most digital cameras have this feature where the camera sets the white balance. Override is available in most DSLR's.

## **B**

**B & W .** Abbreviation for Black and White.

**Back Lit.** Meaning the subject is lit from behind which can cause underexposing. Is also used for portrait photography for special effects and bringing catchlights to the hair.

**Backlight.** The illumination for a color LCD display on digital cameras or phones.

**Banding.** An artefact of color gradation in computer imaging. When graduated colors break into larger blocks of a single color, the smooth look of a proper gradation is reduced.

**Barrel Distortion.** A common geometric lens distortion causing an acquired image to pucker towards the centre and be *rounded* along the outer edges.

**Beauty Dish.** Light modifier used in a studio setting, that has two dishes facing each other, the light is reflected from one smaller dish into the other being much larger, and onto the subject. The result is a soft but rather directional illumination. Used widely in the fashion and glamour portrait industry, particularly Hollywood.

**Bit.** The smallest unit of memory. The word comes from *binary* and *digit* or 1 and 0. Also sometimes known as on and offs.

**Bit Depth.** Refers to the color or grey scale of each individual pixel. For example a pixel with 8 bits per color (red, green and blue), gives a 24 bit image. 24 bit resolution is 16.7 million colors.

**Bitmap.** The method of storing information that actually maps an image pixel bit by bit. Formats include; .bmp, .pcx, .pict, .tif, .tiff, .gif. Most picture files are bit-mapped.

**Blooming.** An effect caused by overexposing a CCD or sensor to too much light. This can cause distortions of the subject and/or color.

**BMP.** Bitmapped graphics file format which is popular with Windows PC's. It is an uncompressed file format like a TIFF.

**Borderless.** Quite simply, this means a printed photograph with no border around it.

**Bracketing.** Can apply to flash or exposure. It is used to create usually 3 photographs. One photo is exposed by the cameras meter automatically, one under exposed and one overexposed by a predetermined number of stops. Also "exposure bracketing".

**Brightness.** Value of a pixel in a digital image giving its value of lightness from black to white, with 0 being black and 255 being white.

**Buffer.** Temporary storage areas held in your camera or computers RAM. This acts as a temporary holding area for data that will be manipulated by the CPU before saving it to another device. For example if you are shooting in continuous mode, when the RAM buffer on your digital camera is full it will slow to a much slower rate while the buffer empties to your compact flash card or other device.

**Bulb Setting (B).** Term used for a long exposure setting normally more than 30 seconds. The start of the exposure is made by pressing the shutter, only ending when the shutter

button is released. Excellent for night photography and a remote release is recommended to prevent camera shake as you press the shutter button.

**Burst Mode.** Also known as continuous mode or “Auto wind” on older SLR’s. However, today’s Digital SLR’s have burst modes of up to 8 frames per second. Great for sports and action shots.

**Byte.** A collection of 8-bits of memory in a computer. I.e. 8 bits is a Byte, 1000 bytes is a Kilobyte (KB) or 8000 bytes, 1000Kb is a Megabyte (MB) or 8,000,000 bytes and so on.

## C

**Calibration.** The act of adjusting the color of one device to match that of another. For example when you match the calibration of your screen to that of your printer to ensure what you see is what you print. It is also used in the film SLR’s Canon EOS-3 and EOS 5 which have eye-controlled focussing. You calibrate the cameras focussing to where your eye is looking in the viewfinder. (Some fighter planes also have this. The missile follows the trajectory of the pilot’s eye).

**Card Reader.** Used for transferring data from your flash memory card to your PC. A better way of transferring your image files than connecting the *camera* to your PC. Sometimes the cameras circuitry can become corrupt. Better to fry a memory card than your camera.

**CCD (Charged Coupled Device).** This is a light sensitive chip used in your digital camera for image gathering. The CCD Pixels gather the color from the light and pass it to the shift register for storage. CCD’s are *analogue* sensors, the digitising occurs when the electrons are passed through the A to D converter. This “Analogue to Digital” converter converts the analogue signal to a digital file or signal.

**CD.** Compact Disc. You should have heard of these by now. Storage media capable of holding around 650MB of data. These come in 2 forms;

- **CDR** - Compact Disc Recordable. Can only be used once, no matter how little information you write to it. Can be re-read many times.
- **CDR-W** - Compact Disc Re-writeable. This can be erased and re-used many times.

**Centre - Weighted.** Term used to describe an automatic exposure system that uses just the centre portion of the image to adjust the overall value. So in effect, the exposure will be weighted to what you see towards the centre of your viewfinder.

**CF.** Compact Flash card. Used in your digital camera to record images. Storage space ranges from 16MB up to 12GB. A company in Japan is currently developing a CF card that will store 2TB of information or 2,048 Gigabytes.

**Channel.** One piece of information stored with an image. For example, a true color image has 3 channels, red, green and blue.

**Chroma.** The color of an image element or pixel. A chroma is made up of saturation plus the hue values, but is separate from the luminance value.

**Chromatic Aberration.** Also known as *purple fringing*. It is fairly common in 2MP digital cameras and above, especially if they have long telephoto lenses. You can see it

when a dark area is surrounded by a highlight. In between the dark and light, you may see a band of purple pixels that shouldn't be there. There are ways of removing this which I have covered in the Photoshop section.

**CIFF.** Camera Image File Format. This is an agreed type of image storage used by many camera makers.

**CMOS.** Complementary Metal Oxide Semiconductor (now you can see why it is abbreviated) - Another imaging system used by digital cameras. These produce lower amounts of power consumption, but are not as popular as the CCD sensors used in most digital SLR's

**CMS.** Color management system. A software program designed to ensure color matching and calibration between video and/or computer monitors and any form of hard copy output.

**CMYK.** Cyan, Magenta, Yellow and Black. Colors used by most printers to produce your prints. Color shifts can be caused when the color management system tries to convert your PC's RGB files to CMYK. Before printing, try converting your images to CMYK and see what the difference is.

**Codec.** A Codec compresses information to enable it to be sent across a network much faster. It will also *decompress* information received via the network.

**Color Balance.** The accuracy with which the colors captured in the image, match the original scene.

**Color Cast.** This is a very unwanted tint of one color in an image caused by the wrong amount of Cyan, Magenta and Yellow. It can be corrected using your editing software.

**Color Correction.** To correct or enhance the colors within an image.

**Color Depth.** Digital Images can approximate color realism but the process is referred to as color depth, bit depth or pixel depth. Most modern computer displays use 24 bit true color. It displays the same number of colors that the human eye can discern, about 16 million.

**Color Space.** Digital cameras use known color profiles to generate their images. The most common is sRGB or Adobe RGB. This along with all of the other camera data is stored in the Exif header of the Jpeg file. The *color space* information ensures that graphic programs and printers have a reference to the color profile that the camera used at the time of taking the exposure.

**Color temperature.** Description of the color of a light-source by comparing it with the color of light emitted by a (theoretical) perfect radiator at a particular temperature expressed in kelvins (K). Thus "photographic daylight" has a color temperature of about 5500K. Photographic tungsten lights have color temperatures of either 3400K or 3200K depending on their construction.

**Compact Flash.** See CF. This is the most commonly used type of memory. It is small, removable and available in a wide range of sizes up to 12GB.

**Composition.** The pleasing arrangement of the elements within a scene-the main subject,

the foreground and background, and supporting subjects.

**Compression.** A Digital photograph creates an image file that is enormous. To enable image files to become smaller and more manageable cameras employ some form of compression such as JPEG. RAW and TIFF files have no compression and take up more space.

**Continuous Autofocus.** As it says. The auto focus system is continuously working on focussing on the subject.

**Continuous Servo (Nikon's term).** AF Focus detection continues as long as shutter release button is lightly pressed and the reflex mirror is in the viewing position. Useful when the camera-to subject distance is likely to change.

**Contrast.** The measure of rate of change of brightness in an image.

**CRW.** The RAW CCD file format used by Canon Digital Cameras. Comes from Canon RAW.

## D

**Dark Frame.** A noise reduction process where a camera takes a *second* exposure of a black frame after the camera takes a long exposure image. The image **noise** is easily identified in the black frame shot and is then electronically removed from the actual image. This helps to reduce the amount of **hot** pixels that normally show up in long exposure shots from digital cameras.

**DC.** Direct Current. Battery power such as 9v DC battery

**Decompression.** Process by which the full data content of a compressed file is restored.

**Dedicated Flash.** An Electronic Flash Unit that is made to be used directly with a specific make or model of a camera. Canon, Nikon Minolta and Olympus for example, all have electrical contacts in the hotshoe which passes TTL (through the lens) metering and AF range information to and from the flash unit or speedlight. You **cannot** interchange flash units and cameras. I.e. a Nikon speedlight on a Canon camera.

**Depth of Field.** (DOF). The range of items in focus in an image. This is controlled by the focal length and aperture opening of a lens. A large or wide aperture gives a shallow depth of field (not much range in focus) and a smaller or narrow aperture give a large depth of field (more range in focus).

**Diffuse Lighting.** Lighting that is low or moderate in contrast, such as on an overcast day.

**Diffusing.** Softening detail in a print with a diffusion disk or other material that scatters light.

**Digital Film.** Quite simply that. Solid state flash memory cards in place of emulsion film.

**Digital Zoom.** A digital magnification of the centre 50% of an image. These give less than sharp images because the new zoomed image has been interpolated. Don't be swayed by the **incredible 500% zooms** on some cameras, the images won't be really acceptable. The optical zoom gives much more clarity to an image.

**Digitisation.** The process of converting analogue information into digital for use by a

computer.

**Dioptre Adjustment.** This adjusts the optical viewfinder's magnification factor to suit the eyesight of the camera's user. There should be a knob or dial near the viewfinder's eyepiece, however, not all cameras have this feature.

**DOF.** Abbreviation of Depth of Field.

**Download.** Term used for the transference of image data from the camera to your computer. Can be done via a serial port or the faster USB port. Downloads can also be done via Bluetooth or Infra-red without the need for cables.

**DPI.** Dots per Inch. This is a measurement value used to describe the resolution of a display screen or that of a printer

**DPOF.** Digital Print Order Format. This allows you to embed printing information on your memory card. You just select the photographs that you want printed and how many prints to be made. Some photo printers such as Pictbridge use this information at print time.

**DRAM.** Dynamic Random Access Memory. A type of volatile memory, which is lost when the power is turned off.

**DRAM Buffer.** All digicams have a certain amount of fixed memory to facilitate image processing before the finished picture is saved to the flash memory card. Cameras with burst mode have a larger buffer of 32MB or bigger to cope with the files however, they are more expensive.

**DSLR.** Digital Single Lens Reflex (SLR). Camera with interchangeable lens.

**DVD.** Digital Versatile Disk. DVD is DVD recorded on a DVD-R or DVD-RW disc.

**Dye Sub.** Dye sublimation is a printing process where the color dyes are thermally transferred to the printing media. The printers use CMYK color format. The paper is run in and out of the printer 4 times, once for each color (C, M and Y) and a fourth time when a protective overcoat is applied. Dye sub is continuous tone printing, it prints tiny square dots each of which is denser in the centre and lighter on the edges. The dyes are transparent so different colored dots can be printed on top of each other to form any one of 16 million colors.

**Dynamic Range.** This is a measurement of the accuracy of an image in color or grey level. More bits of dynamic range results in much finer gradations being preserved.

## E

**EPP .** Enhanced Parallel Port. This is the newer, hi-speed, bidirectional printer port on modern PC's.

**E-TTL.** Canon's "Evaluative Through The Lens" exposure system that uses a brief pre-flash before the main flash in order to calculate the correct exposure.

**EV.** Exposure Value. The ability to override the auto exposure system to under or over expose the image.

**EXIF.** Exchangeable Image File Format. The embedded information about camera and exposure for each image. Most decent graphics programs can read this information.



**Exposure.** Amount of light that hits the image sensor of film controlled by the shutter speed and aperture.

**Exposure Bracketing.** Camera will take 3 or 5 images and varies the exposure up or down for each photograph ensuring at least one will be well exposed.

**Exposure Compensation.** You can lighten or darken the image by under or over exposing the image. (EV compensation).

## F

**F-number.** The numbers on the lens aperture ring and the camera's LCD (where applies) that indicate the relative size of the lens aperture opening. The f-number series is a geometric progression based on changes in the size of the lens aperture, as it is opened and closed. As the scale rises, each number is multiplied by a factor of 1.4. The standard numbers for Calibration are 1.0, 1.4, 2, 2.8, 4, 5.6, 8, 11, 16, 22, 32, etc., and each change results in a doubling or halving of the amount of light transmitted by the lens to the film plane. Basically, calculated from the focal length of the lens divided by the diameter of the bundle of light rays entering the lens and passing through the aperture in the iris diaphragm.

**F-Stop .** Number indicating the size of the aperture. It is an inversely proportionate number as in F2.8 is a large opening and F16 is a small opening.

**File.** A collection of information like data, text or images which are saved on a CD, DVD or hard drive.

**File Format.** Type of program or data file. Includes JPEG, TIFF and BMP

**Fill-flash.** A method of flash photography that combines flash illumination and ambient light, but does not attempt to balance these two types of illumination. Also see "balance fill flash"

**Filter.** A colored piece of glass or other transparent material used over the lens to emphasize, eliminate, or change the color or density (ND) of the entire scene or certain areas within a scene. Also see "color temperature", "UV". Technically, it explained as a piece of material which restricts the transmission of radiation. Generally colored to absorb light of certain colors. Can be used over light sources or over the camera lens. Camera lens filters are usually glass either dyed or sandwiching a piece of gelatin in a screw-in filter holder.

**FireWire.** Officially known as the IEEE 1394 protocol. A high speed data transfer interface used on digital camcorders and the more expensive Digital SLR's.

**Firmware.** A micro program often used and stored in ROM. Normally the ROM based software is in all computer based products from PC's to digital cameras. You will often see firmware updates for electronic goods that deal with problem issues.

**Fisheye lens.** Ultra-wide angle lens giving 180 angle of view. Basically produces a circular image on 35 mm, 5-9 mm lenses showing whole image, 15-17 mm lenses giving a rectangular image fitting just inside the circle, thus representing 180 across the diagonal.

**Fixed Aperture.** Aperture remains constant regardless of the lens' focal length. I.e. The

Canon “L” series have a constant fixed aperture when zooming.

**Fixed Focal Length.** Basically a non zoom lens. 100mm, 50mm, 200mm etc.

**Fixed-Focus.** Describes a non-adjustable camera lens, set for a fixed subject distance.

**Fixed-Focus Lens.** A lens that has been focused in a fixed position by the manufacturer. The user does not have to adjust the focus of this lens, applies on most entry or disposable cameras.

**Flash.** The artificial light source in the dark. Electronic flash requires a high voltage, usually obtained from batteries through a voltage-multiplying circuit. It has a brief, intense burst of light, usually used where the lighting on the scene is inadequate for picture-taking. They are generally considered to have the same photographic effect as daylight. Most flash will correct the color temperature back to 5000 kelvin - the daylight color. You can play around with filters mounting on the flash head for some specific effects or alter the color if necessary. Modern flash has multiple TTL flash exposure control functions and even extend to autofocus control. Some specialized flash are high speed repeating flash which can use for stroboscopic effect, UV-flash for ultra violet light photography etc.

**Flash Bracket.** Often called handle mount flash. It comprised of one arm of the L-shaped bracket extends under the camera body and uses the camera’s tripod socket to mount the camera on the bracket. The vertical arm of the bracket serves as a handle and mounts a flash unit in an accessory shoe often on top of the handle portion, but there are other methods. Flash mounted in a bracket usually requires a separate electrical cord to make the electrical connection between camera body and flash unit.

**Flash Exposure Bracketing.** Enables a photographer to automatically bracket exposures at varied flash output levels, in TTL auto flash shooting, without changing the shutter speed and/or aperture, this is a one of the top flash feature that can only be found on some higher ranked cameras.

**Flash synchronization.** Timing of the flash coincides with release of the camera’s shutter. There are two types of synchronization: Front-Curtain Sync, which fires the flash at the start of the exposure, and Rear-Curtain Sync, which fires the flash at the end of the exposure. Also see “Rear-Curtain Sync”, “Front-Curtain Sync”, “X setting”.

**Flash sync speed.** Exposure time with a focal-plane shutter is measured from the instant the first curtain is released, to begin its travel across the frame, until the instant the second curtain is released, to begin its travel across the frame. When the first curtain reaches the end of its travel, the film frame is uncovered as far as the first curtain is concerned, so it closes the electrical contacts for X sync and fires the flash instantly. Shutter speed at which the entire film frame is exposed when the flash is fired in flash shooting. Most modern camera with vertical travel shutter curtain have faster flash sync speed like 1/250 sec. or slower, some top camera model like Nikon F5, changeable to 1/300 sec. with the Custom Setting.

**Flash output level compensation.** A control used to adjust a TTL auto flash operation, enabling an increase or decrease of flash output to lighten or darken the flash effect.

**Flash shooting distance range.** The distance range over which a flash can effectively provide light. Flash shooting distance range is controlled by the amount of flash output

available. Each automatic Speedlight's flash output varies from maximum duration to minimum duration. Close-up subjects will require lower (to minimum) output while more distant subjects will require more light up to the maximum output. The flash shooting distance range varies with the aperture, film speed, etc. Also see Guide Number.

**Flash Memory Card.** A storage medium that uses by most digital cameras. It resembles film in conventional photography. We have an detailed article relating to this.

**Flare.** An overall decrease in contrast caused by light being reflected off, instead of transmitted through, a lens surface; controllable through the use of multilayer coating of individual lens elements in a lens; aggravated by unclean lens surfaces on front and rear lens elements or filters.

**Flat Bed Scanner.** Optical Scanner in which the original image remains stationary while the CCD sensors pass over or under it. The scanned image is held flat by the lid hence the name.

**Focal Length.** A lens' angle of view. Such as Wide angle, standard or telephoto.

**Focus Assist.** Cameras with this send out a light, either normal or infra red to light up the subject to assist with the autofocus in low light or darkness.

**Focus Lock.** Focus lock means pre-focussing the subject and re-framing by moving the camera. This is done by half pressing the shutter to focus and fully pressing to expose. Done to ensure crisp, sharp eyes for example.

**Frame.** One of many still pictures that make up a video.

**Frame Rate.** Number of frames that are shown or sent each second. Live action is around 30 frames per second.

**Full Bleed.** Otherwise known as "Borderless" printing. Means the ink limit extends to all 4 edges of a print.

## G

**Gamma .** Measure of the amount of contrast in an image according to the properties of a gradation curve. High contrast = High Gamma and Low = Low.

**Gamma Correction.** With reference to displaying an image accurately on a computer screen, Gamma correction controls the overall brightness of an image. Images which are not properly corrected can look either too dark or bleached out.

**Gamut.** This is the range of colors that are available in an image or output process. Gamut is generally used in describing the capabilities of a printer to reproduce colors accurately and vibrantly.

**GIF.** A graphic file format mainly used for Web graphic or small animated (GIF) files. Not good for photographs as it only contains a maximum of 256 colors.

**Gigabyte (GB).** A gigabyte is a measure of computer memory or disk space consisting of about one billion bytes (a thousand megabytes). The **actual** value is 1,073,741,824 bytes (1024 megabytes).

**Gradation.** A *smooth* transition between black and white, one color and another or color

and no color.

**Grey Level.** This is the brightness level of a pixel representing its lightness from black to white. It is usually defined as a value from 0 to 255, with 0 being black and 255 being white.

**Grey Scale.** A term used to describe an image containing shades of grey rather than color. Most commonly referred to as a black and white photograph.

**Guide Number.** The power output rating of a speedlight flash unit.

## H

**Halftone Image.** An image reproduced through a special screen made up of dots of various sizes, to simulate shades of grey in an image. Normally used for magazine or newspaper reproduction of images. It is also how modern inkjet printers work. Half toning or dithering are the methods used to produce a smooth gradation of color versus distinct bands of color or moiré patterns.

**HD.** Hard drive (HDD). This is the internal, large-capacity storage unit in home computers, normally the C-Drive

**HDTV.** High Definition Television. New video standard that will give 1,125 lines in the United States instead of the traditional 525 NTSC standard lines. The aspect ratio is 16:9 versus 4:3 of normal TV's.

**Histogram.** A histogram is a bar graph analysis tool that is used to identify contrast and dynamic range of any image. Histograms are found in the more advanced digi-cams and software programs (graphic editors), such as Adobe Photoshop 7, CS or Elements, and are used to manipulate images. The histogram shows a scale of 0 - 255 (left to right) with 0 being black and 255 being white.

**Hot Shoe.** A flash connector generally found on the top of the camera that lets you attach an external flash unit and trigger it in sync with the cameras shutter.

**Hue.** A term used to describe the complete range of colors of the spectrum. Hue is the component that determines just what color you are using. In gradients where you use a color model in which hue is a component, you can create some rainbow effects.

## I

**i-TTL.** Similar to Canon's "E-TTL", Nikon's new flash exposure system is used on the new D70 DSLR and SB-600 and SB-800 Speedlights.

**ICC Profile.** "The International Color Consortium" is a group that sets the standard guidelines for color management in the imaging world. Most monitors, printers and scanners (as well as digital cameras), usually come with a driver disc for Windows and Mac systems that includes ICC profiles for that particular device. Color profiles simply let one piece of hardware or software know how another device or image has created its colors and how they should be interpreted or reproduced.

**IEEE-1284.** High-speed, bidirectional parallel port specification used on Windows PC's, used mostly for printers.

**IEEE-1394.** Better known as **FireWire**, it is a high-speed input or output bus used by

digital video devices, film or flatbed scanners, and high end digital still cameras & PC's.

**iESP.** Olympus' exposure metering system.

**iLink.** Sony's term for the IEEE-1394 FireWire data port found on Sony camcorders.

**Image Resolution.** This relates to the number of pixels per unit length of image. E.g. pixels per inch, pixels per millimetre, or pixels wide etc..

**Image Sensor.** Digital cameras use an electronic image sensor (CCD or CMOS), to gather the image data, whereas a traditional camera exposes light to emulsion film,

**Image Stabilization (IS).** An optical or digital system built in to a lens for removing or reducing camera movement, most effective with telephoto or telephoto zoom lenses. Can be found on most of Canon's "L" range of lenses as well as mid-range lenses such as the EF 28-125 IS USM

**Inkjet.** A type of printer that "sprays" dots of ink onto paper to create the image rather than paint or laser it on. Modern inkjet printers now have resolutions of up to 2880dpi and create excellent photo quality prints.

**Interlaced.** This is the term used to describe an image sensor that gathers its data by first processing the odd lines, and then processing the even lines.

**Interpolated.** Most software programs can enlarge image resolution beyond the actual resolution by adding extra pixels. This normally decreases the quality of the image but can be enhanced by a program (or plug in for Photoshop) such as LizardTech's "[Genuine Fractals](#)".

**Intervalometer.** (Or Interval Recording) Another term for Time Lapse Photography. You can capture an image or images at preset intervals automatically. Good quality remote releases have this function built in, meaning you don't have to stand around pressing the shutter every 5 or 10 seconds.

**IR.** Infra Red. This uses a beam of light that is invisible to us humans to either control a device without wires or as a method of transferring data from camera to computer (or printer) without cables. Some cameras also employ infrared in the auto focusing system.

**ISO.** Or ASA. (International Standards Organization). The speed or light sensitivity of a captured image is rated by ISO numbers such as 100, 400, 800 etc. The higher the number, the more sensitive to light it is. Similar to film, the higher speeds usually bring on more electronic "noise" so the image gets grainier. An excellent program for cutting down this "noise" is Neat Image.

## J

**JFIF .** Also known as EXIF , this is a specific type of the JPG file. format.

**JPEG.** Joint Photographic Experts Group. This is the name of the committee that designed the standard image compression algorithm. JPEG was designed for compressing full color or grey scale digital images of natural scenes. It doesn't work so well with non-realistic images, such as cartoons however. JPEG does not handle the compression of black and white (1 bit-per-pixel) images or moving pictures.

**JPEG - 2000 .** The new JPEG compression standard that may start to be used in digital

cameras and software. It will feature higher compression with less image quality loss.

**JPG.** This is the most common type of compressed image file format used in modern digicams. It is a “lossy” type of image storage because even in its highest quality mode, there is compression used to minimize its size.

## **K**

**KB .** A Kilobyte of data, or an abbreviation for keyboard.

## **L**

**Landscape Mode.** This is when you hold the camera in its normal, horizontal orientation to capture the image. The opposite is “portrait mode”.

**LCD.** (Liquid Crystal Display). There are 2 types. First, a TFT high-resolution color display device like a very small TV set. Secondly, a monochrome (B and W) information display using just black alphanumeric characters on a grey or green background.

**LED.** (Light Emitting Diode). This refers to all the little red, green and yellow indicator lights used on most cameras, power supplies and electronic devices.

**Li-ion.** (Lithium ION). Some digicams are packaged with a lithium-ion re-chargeable battery pack. Lithium ION batteries are lighter but are more costly than Ni-MH or Ni-Cd (NiCad) rechargeables. One advantage is that Lithium cells can be recharged regardless of the amount of discharge; also, they are lighter and maintain a charge much better in colder temperatures than conventional batteries. Li-ion also holds a charge for longer when idle.

**Lossless.** Refers to storing an image in a non-compressed format, such as TIFF.

**Low Pass Filter.** Most DSLR’s (Digital SLR’s) employ a Low Pass Filter (LPF) or Anti-Aliasing (AA) filter in front of the sensor to help eliminate problems with color aliasing (moiré).

## **M**

**Mac.** Refers to the Macintosh computers. I.e. Apple MAC.

**Macro.** Lenses with this feature can focus very close (less than 8”) for taking pictures of small objects at a 1:1 ratio.

**mAh.** (milliAmperehour). A rating used in the consumption of power of an electronic device such as an LCD, or the storage capability of a device like an NiMH or Nicad rechargeable battery.

**Matrix Metering.** Most digicams have a matrix metering option which uses 256 areas of the frame to calculate the best overall exposure value.

**MB.** (MegaByte). Memory term meaning 1024 Kilobytes. Used to denote the size of a flash memory card such as 4MB, 8MB etc. MB is often confused with Mb (megabit), there’s 8 bits in a byte so 256Mb = 32MB.

**MD.** (Minidisk). Digital recording media similar to a small floppy disc. Common for audio data and has been used on several digicams sold in Japan and Europe.

**Megapixel.** This is the CCD (or CMOS) resolution of one million pixels. Digicams are

commonly rated by Megapixels. You multiply the horizontal resolution by the vertical resolution to get the total pixel count. For example  $2590 \times 1920 = 5$  Megapixels.

**Memory Stick.** A flash memory card type from Sony. They resemble a stick of chewing gum and vary in size.

**Memory Stick Pro.** The year 2003 upgrade to Sony's Memory Stick flash cards. The new MS Pro cards are available in 256MB, 512MB and 1GB capacities and offer faster read/write times. All of Sony's digicams made in 2003 or after can use MS Pro cards.

**Metering.** Metering is used to calculate the exposure from the existing light conditions. Includes Matrix Metering, Spot metering and Center-weighted metering.

**Microdrive.** IBM/Hitachi mini hard disk drive for digital cameras and PDA devices. Packaged in a CompactFlash Type II housing and available in 170MB, 340MB, 512MB, 1GB, 2GB, 4GB and above as the years progress!

**MiniCD.** These are small diameter (3 inch) CD discs. Mini CD-R and Mini CD-R/W discs are used in the Sony Mavica "CD" series (CD200, CD250, CD300, CD400 and CD1000) digicams.

**MMC.** Multi-Media Card. A flash memory card used in some digicams and MP3 players. The MMC is identical in size and shape to the Secure Digital (SD) flash cards.

**Moiré.** A visible pattern that occurs when one or more halftone screens are mis-registered in a color image. Often produces a colored checkerboard (or rainbow) pattern.

**MOV.** Apple QuickTime Movie file format.

**Movie clip.** A sequence of motion captured in AVI, MOV or MPEG formats. More and more digital cameras can now capture short movie clips, many can also record the sound.

**Motion JPEG.** A video clip composed of a sequence of JPEG compressed images. Sometimes abbreviated to MPEG (see MPEG below), although they are slightly different. The main difference is that MPEG provides temporal compression, while MJPEG simply provides spatial compression.

**MP.** Abbreviation of Megapixel, i.e. 5MP or 8MP.

**MPEG.** Motion JPEG movie file. See "Movie clip" The digital video compression standard agreed upon by the Motion Picture Expert Group from the motion picture computer industry.

**MPEG-EX.** Motion JPEG movie file created by Sony cameras. This was the first motion video recording sequence mode that was limited in length only by the amount of available storage space.

**MPEG-HQX.** Motion JPEG movie file created by Sony in 2002, whose cameras incorporate the MPEG-HQ (high quality, full-screen) and the unlimited recording capability of MPEG-EX in 320x240 resolution.

**MPEG-VX.** Motion JPEG movie file created by Sony digicams in 2003. Its VGA resolution (640x480) at 16fps with audio and the length is limited only by available storage space. VX Fine is 30fps or very high quality.

**Multi-Pattern Metering.** Exposure is determined by reading many different zones in the frame. This gives a more optimum exposure than those cameras using just a central zone metering system.

**Multi-Point Focusing.** The autofocus systems uses several different portions of the image to determine the correct focus.

**Multi Zone Focusing.** Many digital cameras now offer multi zone focusing. The camera will automatically determine which zone (centre, left, right, upper or lower) to use to perform the auto focusing. You no longer have to make sure that your subject is in the centre of the viewfinder in order to be correctly focused.

## N

**NEF.** (Nikon Electronic Format). The Raw image data file format used by the Nikon DSLR (D2x, D100, etc) also some Coolpix digicams.

**NiCd.** Nickel Cadmium (Nicad). A type of rechargeable battery. NiCad was the original type of rechargeable battery and has been all but replaced by the NiMH type.

**NiMH.** (Nickel-Metal Hydride). A type of rechargeable battery. NiMH is the more modern type of rechargeable battery and has been touted as having no memory effect as is common with Nicad type batteries when they are charged before they have been fully discharged.

**Noise.** Relates to pixels in your image that were misinterpreted. Normally occurs when you shoot a long exposure (beyond 1/2-second) or when you use the higher ISO values from 400 or above. It appears as random groups of red, green or blue pixels. Programs such as [Neat Image](#) can remove most noise from an image.

**Noise Reduction.** Some cameras that offer long shutter speeds (more than 1 second) usually have a noise reduction (NR) feature that is either automatic or can be enabled in the menu. This is to help eliminate random “hot” pixels and other image noise. Can add a more time to the process as it needs to write the new image data along with the recorded image. Again, see [Neat Image](#).

**NTSC.** Term used to describe the 60 field video output (television) standard used in the U.S. and Japan.

## O

**OEM.** (Original Equipment Manufacturer). Means that a piece of equipment is made by one company but labelled for (and sold by) another company.

**Optical Viewfinder.** An eye level viewfinder that is used to compose the photograph.

**Optical Zoom.** Means that the camera has a real multi focal length lens, this is not the same as a “Digital Zoom” which magnifies the centre portion of the picture. Optical zoom gives better quality than a digital zoom.

**ORF.** (Olympus RAW format). The un-processed image format created by modern Olympus Digital SLR’s and high end Digicams.

**Orientation Sensor.** A special sensor in some cameras that can tell when you turn the camera round to portrait orientation to take a vertical shot. It also tells the camera to



display it that way later when viewed on a monitor or TV screen during playback.

**Overexposure.** This is an image that appears much too bright. The highlights and colors are totally lost and usually unrecoverable even by top software. Either the shutter speed was too long or the aperture was too wide.

## **P**

**PAL.** The 50 field video format used mostly in Europe and other places outside of the U.S. and Japan.

**Palette.** A thumbnail of all available colors to a computer or devices (much like an artist's palette). The palette allows the user to choose which colors are available for the computer to display. The more colors the larger the data and the more processing time required to display your images. If the system uses 24-bit color, then over 16.7 million colors will be included in the palette.

**Panorama.** This means capturing a series of images to create a picture wider than what you could capture in a single image, by "Stitching" the photographs together. Needs special software to allow and help you do this.

**Parallax.** An effect seen in close-up photography where the viewfinder does not see the same as the lens. This is normally due to the offset of the viewfinder and lens. This is not an issue if you are using the LCD as a viewfinder or if your camera is an SLR..

**PC.** In camera terms it denotes a type of flash synch connector, popular on most film and high end digital cameras. Otherwise, it means Personal Computer.

**PC Card.** Refers to a credit card sized device which can be a flash memory card, a network card, a modem or even a hard drive. Comes in two types; The type I/II which is a single slot height and type III which requires a double height card slot.

**PCMCIA.** These are the card slots found on modern laptop computers to enable the user to insert PC Cards. There are PCMCIA adapters for Compact Flash (CF), SmartMedia (SM), Secure Digital (SD), MultiMediaCard (MMC) and Memory Stick (MS) flash cards.

**PictBridge.** This is a new standard for direct USB printing from digital cameras to inkjet and dye sub photo printers. It does not need the use of a computer.

**PIM.** (Print Image Matching). Epson's new standard of embedded color and printing information for digital cameras. Many of the camera manufacturers have joined with Epson and now embed the PIM information in the Exif header of the JPEG images created.

**Pin-Cushioning.** This is a common geometric lens distortion causing an acquired image to pucker toward the centre of the image, usually found at telephoto focal lengths.

**Pixel.** The individual imaging element of a CCD or CMOS sensor, or the individual output point of a display device. This is what is meant by the figures 640x480, 800x600, 1024x768, 1280x960 etc., when dealing with the resolution of a particular digicam. Higher numbers are best.

**Pixelization.** The stair stepped appearance of a curved or angled line in digital imaging. The smaller the pixels, and the greater their number, the less apparent the "pixelization" of

the image. Also known as the “jaggies”.

**Plug-n-Play.** This is an automated installation process used in Microsoft Windows to connect peripherals to a computer. When new devices are plugged into the computer the computer automatically recognizes the device and prompts the user to choose setup options and finish installation.

**Polarizer. (Polarising Filter).** A filter for eliminating glare and reflections which attached to the front of your lens (normally just SLR’s). Just like your polarized sunglasses it will get rid of glare, the polarizer filter does the same for your digicam. There are 2 types of polarising filter, linear and circular. Linear is for film only, it screws up most auto focus systems on digicams. Therefore be sure you use a circular polarizer filter. It can also be used to darken skies and increase the saturation of colors.

**PNG.** (Portable Network Graphics). This is an image file format. It is a compressed file format similar to JPG.

**Point and Shoot.** Term used for a simple, easy to use camera with a minimum of user controls. The camera does everything automatically so you literally just point and shoot..

**PPI.** Pixels Per Inch. A measurement to describe the size of a printed image. The higher the number the more detailed the print will be.

**Pre-Flash.** Some digicams use a low power flash before the main flash to automatically set the exposure and white balance.

**Programmed AE.** The camera chooses the best shutter speed and aperture automatically.

**Prosumer.** Refers to more expensive semi-professional digicams aimed at a consumer market.

## Q

**QuickTime .** A motion video standard created by Apple. QuickTime video sequences can contain an audio track and are stored as .MOV files.

**QVGA.** Refers to Quarter VGA resolution (320 x 240) motion video sequences.

## R

**RAM .** (Random Access Memory). The most common type of computer memory where the CPU stores software, programs, and data currently being used. RAM is usually volatile memory, meaning that when the computer is turned off, crashes, or loses power, the contents of the memory are lost. More RAM usually means faster manipulation or faster background processing.

**Rangefinder.** This is the viewfinder on most smaller digital cameras and is a separate viewing device which is independent of the lens. It is often above and to the right or left of the lens. It exhibits a problem known as parallax when trying to frame subjects closer than five feet from the camera so it is advisable to use the color LCD when shooting close-ups for just this reason.

**RAW.** RAW files store the unprocessed image data at 12 bits per channel. Directly from the camera’s imaging chip to its memory storage device. “Lossless” compression is applied to reduce the file size slightly, without compromising the quality. RAW image files

must be processed with special software before they can be viewed or printed. These are normally in the form of a plug in for Photoshop or as a standalone product. . The advantage is that you have the ability to alter the white balance, exposure value, color values, contrast, brightness and sharpness as you see fit *before* you convert this data into the standard JPEG or TIFF format. Professional digital photographers import RAW image data directly into photo-editing programs like Photoshop CS (which comes with a Camera Raw plug-in that works with most popular RAW formats.)

**Red-Eye.** An effect caused by an electronic flash reflecting off the retina at the back of the eye making it look red. Compact cameras with the flash located close to the lens suffer the worst from this problem. Professional photographers use a bracket to hold an external flash unit above and off to the side of the lens to eliminate red-eye. It can also be easily reduced using most post-editing software.

**Red-Eye Reduction Mode.** A special flash mode whereby a pre flash or a series of low powered flashes are emitted before the main flash goes off. This causes the iris of the eye to contract meaning less light gets in the eye, therefore reducing red eye.

**Render.** This is the final step of an image transformation or three-dimensional scene through which a new image is refreshed on the screen.

**Resize.** In photographic terms, this means to take a large image and reduce it in size. Most editing programs offer a resize option. Good for cropping images or get them “Web-ready”!

**Resolution.** The quality of any digital image, whether printed or displayed on a screen, depends on its resolution, or the number of pixels used to create the image. More, smaller pixels add detail and sharpen the edges.

Optical Resolution is an absolute number that the camera’s image sensor can physically record.

Interpolated Resolution adds pixels to the image using complex software algorithms to determine what color they should be. It is important to note that interpolation doesn’t add any new information to the image - it just makes it bigger!

**RGB.** (Red, Green and Blue). The primary colors from which all other colors are derived. The additive reproduction process mixes various amounts of red, green and blue to produce other colors. Combining one of these additive colors primary colors with another produces the additive secondary colors cyan, magenta and yellow. Combining all three produces white.

**S**

**Saturation.** The degree to which a color is undiluted by white light. If a color is 100 percent saturated, it contains no white light. If a color has no saturation, it is a shade of grey.

**Scanner.** An optical device that converts images such as photographs, into digital form so that they can be stored and manipulated on your PC. Different methods of illumination transmit light through red, green and blue filters and digitize the image into a stream of pixels.

**Scene Modes.** Many digicams now have an exposure mode called *scene* where the user selects the best pre-programmed scene to suit the current shooting conditions. The camera will automatically change many settings to capture the best possible image. E.g. Sports, landscape, portrait etc.

**SD.** (Secure Digital). A flash memory card used in digicams and MP3 players. It is identical in size and shape to the MultiMedia Card (MMC). The difference being that SD cards were designed to hold protected (copyrighted) data like songs. Not all cameras that use SD cards can use MMC cards so be sure to read your owner manual before buying additional cards. **Secure Digital.** See “SD” above.

**Self Timer.** Preset time delay (e.g. 2, 5, 3, 5 or 10 seconds) before the shutter fires automatically. This allows the photographer be in the picture without using a long cable release or remote control. It is also great for taking macro or night shots as by not touching the camera, you eliminate the chances of camera shake. Is also good to use the “mirror lock up” function if you have it.

**Sepia.** The (brownish) mono toned effect seen in images from the original 19th and early 20th Century cameras. This is now a feature often found as a special image effect on some digicams and/or editing software.

**Shutter.** The physical device that opens and closes to let light from the scene strike the image sensor. Digicams use both electronic and mechanical shutters.

**Shutter Lag.** The time between pressing the shutter and actually capturing the image. This is due to the camera having to calculate the exposure, set the white balance and focus the lens. Is worse with smaller digicams whereas the better DSLR’s now have little or no shutter lag, like the better film SLR’s.

**Shutter Priority AE.** This is where the user chooses a shutter speed and the aperture is automatically determined by lighting conditions. Shutter speed priority is used to control motion capture. A fast shutter speed stops fast action, a slow shutter speed blurs a fast moving subject. It is good to use shutter priority for sports or wildlife photography.

**Skylight Filter.** This is an Ultra Violet absorbing filter that helps overcome the abundance of blue in outdoor photographs. Not really necessary in digital photography as the camera’s white balance system adjusts for the color temperature of the scene. You can also use them to protect the camera’s lens from scratching, fingerprints or dirt.

**Slow Sync.** A flash mode in some digicams that opens the shutter for a longer than normal period and fires the flash just before it closes. Is used for illuminating a foreground subject, but allowing a darker background to also be well exposed. Good for night time shots of buildings with people in the foreground.

**SLR.** (Single Lens Reflex). This means the camera has a viewfinder that sees through the lens (TTL) by way of a 45°-angled mirror that flips up when the shutter fires and allows the light to strike the image sensor (or film). Basically, what you see is what you get.

**SmartMedia.** (SSFDC). A flash memory card that consists of a thin piece of plastic with laminated memory on the surface and uses a gold contact strip to connect to the camera. SmartMedia cards are available in various sizes.

**Softbox.** A box with a diffuser panel that attaches to the front of a flash to give soft even light. Any visible highlights such as catch lights in eyes, reflections in silverware will be neat and square. Bigger ones give more surrounded and even light but absorb more light so are best used with powerful flash heads.

**Spot Metering.** The camera's auto exposure system is focused on a very small area in the centre of the viewfinder to adjust the overall exposure value just for that area.

**Stitching.** Combining a series of images to form a larger image or a panoramic photo. Requires special post editing software.

**Stock photography.** Photographs taken and submitted to a picture library. The library then sells the reproduction rights and takes a percentage of the fees. A good stock photographer regularly supplies images to the library and can earn a good income from picture sales throughout the year

**Stopping down.** Decreasing the size of the lens opening (aperture); for example, from f/8 to f/11. This increases the depth of field in a photograph, but a longer exposure is required.

**SuperCCD.** Fujifilm's image sensor used in their line of digital cameras.

**SVCD.** (Super Video Compact Disc). A CD-ROM disc that contains high quality video and audio. Normally, a SVCD can hold about 35-45 minutes (650MB) of video and stereo quality audio. The video and audio are stored in MPEG2 format, much like a DVD. SVCD video has better quality than VHS video.

**SVGA.** (Super VGA). This refers to an image resolution size of 800 x 600 pixels.

## T

**Telephoto.** This is the focal length that gives you the narrowest angle of coverage, good for bringing distant objects closer. (i.e. 100mm, 200mm, 500mm etc.).

**TFT.** (Thin Film Transistor). Refers to the type of hi-resolution, color LCD screen used in digicams.

**Thumbnail.** A small, low resolution version of a larger image file, which is used for quick identification or speedy editing choices.

**TIFF.** (Tagged Image File Format). An uncompressed image file that is lossless and produces no artefacts as is common with other image formats such as JPEG.

**Time-Lapse.** Capturing a series of images at preset intervals. Also known as Interval Recording or Intervalometer.

**Tran reflective.** This is a type of LCD display that uses ambient light as well as a backlight to illuminate the pixels. It can be seen more easily in bright, outdoor conditions.

**True Color.** Color that has a depth of 24-bits per pixel and a total of 16.7 million colors.

**TTL.** (Through the Lens). Used when talking about either an auto focus or auto exposure system that works "through" the camera's lens.

**Twain.** (Technology Without An Industry Name). Protocol for exchanging information between applications and devices such as scanners and digital cameras. TWAIN makes it possible for digital cameras and software to communicate with each other on PCs.

## U

**Under exposure.** A picture which appears too dark because insufficient light was delivered to the imaging system. Opposite of over exposure.

**Unsharp Masking** (Unsharp Mask). The process by which the apparent detail and sharpness of an image is increased. Generally accomplished by the input scanner or through computer manipulation using editing software.

**USB.** (Universal Serial Bus). This is the data I/O port on most digicams and is also found on modern home PC and Mac computers. It is faster than the serial port and transfers up to 12Mb/s (megabytes per second) with v1.1 interfaces.

**USB 2.0.** The newest USB standard which is close in throughput speed to FireWire, up to 400Mb/s.

**UV Filter.** This is an Ultra Violet absorbing filter that helps overcome the abundance of blue in outdoor photographs. Not really necessary in digital photography as the camera's white balance system adjusts for the color temperature of the scene. Can be used to protect the camera's lens from scratching, fingerprints or dirt.

**UXGA.** Refers to an image resolution size of 1600 x 1200 pixels.

## V

**VCD.** (Video Compact Disc). A CD-ROM disc that contains video *and* audio. Typically a VCD can hold about 74 minutes (650MB) of video and stereo quality audio. The video and audio are stored in MPEG-1 format and follow certain standards (White Book). VCD video quality is roughly the same as VHS video.

**VGA.** Refers to an image resolution size of 640 x 480 pixels.

**Video Out.** This means that the digicam has the ability to output its images on television screens and computer monitors using either NTSC or PAL format.

**Viewfinder.** The eye level device you look through to compose the image.

**Vignetting.** (pronounced – vin-yett-ing) The term that describes the darkening of the outer edges of the image area due to the use of a filter or add-on lens. Most noticeable when the zoom lens is in full wide-angle. It is also sometimes used as a special effect in the photo editing stage of development.

## W

**White Balance.** Refers to the adjustment of the brightness of the red, green and blue components, so that the brightest object in the image appears white. See also "AWB"

**Wide angle.** The focal length that gives you the widest angle of view. I.e. 10mm, 16mm, 24mm etc.

## X

**X3 Image Sensor.** Foveon's new image sensor for digital cameras that captures red, green and blue data on every pixel.

**xD-Picture Card.** A new flash memory card standard that was co-developed by Fuji film

and Olympus in mid 2002. Rumoured at the time, to be replacing SmartMedia which had stalled at 128MB. xD is scheduled to go as large as 8GB (at the time of writing), in a form the size of a postage stamp.

**XGA.** This refers to an image resolution size of 1024 x 768 pixels.

## **Z**

**Zoom Lens.** A variable focal length lens. The most common on digicams has a 3:1 ratio (i.e. 35-105mm). Detachable zoom lenses include for example, 24-70mm, 70-200mm and 100-400mm

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