Improve Your Photography by using Simple Camera Settings and Techniques

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Introduction

- Digital Cameras offer tremendous flexibility to change settings in real-time, for every shot if desired, review the image immediately, and make unprecedented changes using editing software such as Photoshop.
- However, achieving a well balanced, correctly lit photograph still requires care, skill and patience if the result is not to look false, or obviously 'Photoshop-ed'.

- So, whatever camera you have, the aim should be to get right as much as possible in the camera before pressing the shutter button, and spend less time correcting images in software.
- Remember that with digital files you cannot recover details that aren’t there at the start! (Over exposed and burnt-out, or underexposed black)

Getting it Right - Checklist

- [ ] Mode Dial
- [ ] Exposure
- [ ] Aperture value (f-Stop)
- [ ] Time value (Shutter speed)
- [ ] ISO value
- [ ] Metering modes
- [ ] White Balance - what is it and how to choose the right setting?
- [ ] Focus - Manual, Auto/Servo
- [ ] Horizon - keeping things level
- [ ] Composition - Landscape or Portrait; Rule of Thirds
- [ ] Cropping - filling the frame
- [ ] Clutter - check your viewfinder

Mode Dial

Many compact and entry level DLSR cameras have a Mode Dial that pre-sets a selection of the camera's functions for you before pressing the Shutter release button.

e.g. Automatic, Portrait, Landscape, Macro, Sports, Night, Flash and more.

These will all give satisfactory results for average situations, but for really creative photography where more control over the camera's settings is essential, then one of the remaining Modes should be used:

Exposure Control Modes

Most cameras have a number of Exposure control modes:

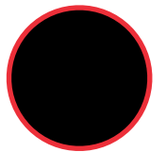
1. *Manual* - you have full control of all settings.
2. *Av - Aperture value or priority*. You control the Aperture; the Shutter value is set by the camera.
3. *Tv - Time value or Shutter priority*. You control the Shutter value; the Aperture is set by the camera.
4. *P - Program*. Some settings can be changed depending on the camera make and model.
5. *Full Auto* - Aperture and Shutter values automatically set.

We'll now explore *Av* and *Tv* in more detail as these are where your creativity begins!

Av - Aperture value or priority

The Av or Aperture setting controls the area over which light can pass through the camera lens. It is specified in terms of an *f-stop* value, which can at times be counterintuitive, because the area of the opening *increases* as the f-stop value *decreases.*

So:

Large Aperture  = Small f-Stop number e.g. f2.8

Small Aperture  = Large f-Stop number e.g. f22

- The smaller the f-stop number (f2.8), the more light will enter the lens - but the depth of field will be small. Ideal for macro and portrait shots, or those where you require a blurred background (bokeh).

- The larger the f-stop number (f22), the less amount of light enters the lens - but the depth of field will be large. Ideal for landscape shots or those where you require as much as possible to be in focus.

- In photographer slang, when someone says they are "stopping down" or "opening up" their lens, they are referring to increasing and decreasing the *f-stop* value, respectively.

- Every time the f-stop value halves (say from f5.6 to f2.8), the light-collecting area quadruples, as shown in the following table:

Aperture Setting	Relative Light	Example Shutter Speed
f/22	1X	16 seconds
f/16	2X	8 seconds
f/11	4X	4 seconds
f/8.0	8X	2 seconds
f/5.6	16X	1 second
f/4.0	32X	1/2 second
f/2.8	64X	1/4 second
f/2.0	128X	1/8 second
f/1.4	256X	1/15 second

The above aperture and shutter speed combinations all result in the same exposure.
Note: Shutter speed values are not always possible in increments of exactly double or half another shutter speed, but they're always close enough that the difference is negligible.

The above f-stop numbers are all standard options in any camera, although most also allow finer adjustments, such as f/3.2 and f/6.3.

The range of values may also vary from camera to camera (or lens to lens). For example, a compact camera might have an available range of f/2.8 to f/8.0, whereas a DSLR camera might have a range of f/1.4 to f/32 with a portrait lens.

Tv - Time value or Shutter priority

Tv or Shutter speed determines how long the camera sensor will be open to incoming light from the camera lens. Its influence on exposure is perhaps the simplest of the main camera settings as it correlates exactly 1:1 with the amount of light entering the camera. For example, when the exposure time doubles the amount of light entering the camera doubles. It's also the setting with a wide range of possibilities:

Shutter Speed	Typical Examples
1 - 30+ seconds	Specialty night and low-light photos on a tripod
2 - 1/2 second	To add a silky look to flowing water Landscape photos on a tripod for enhanced depth of field
1/2 to 1/30 second	To add motion blur to the background of a moving subject Carefully taken hand-held photos with stabilization
1/50 - 1/100 second	Typical hand-held photos without substantial zoom
1/250 - 1/500 second	To freeze everyday sports/action subject movement Hand-held photos with substantial zoom (telephoto lens)
1/1000 - 1/4000 second	To freeze extremely fast, up-close subject motion

It’s important to set the shutter speed high enough to prevent camera shake and blurring. A good rule of thumb is:

$$\text{Tv (seconds)} = {}^{1}/_{\text{lens focal length (mm)}}$$

- So if you have a 100mm focal length zoom lens, then you should ideally set the Time value to $^{1}/_{100\text{th}}$ second.

- You may need to adjust the aperture and/or ISO settings to achieve this.

- Many DSLR lenses have Image Stabilisers or Vibration Reduction (IS and VR) that give as much as 4 extra f-stops, allowing reduced Tv. This is especially useful in low light or where flash isn’t possible or allowed. However, be careful when using image stabilisers at shutter speeds of $^{1}/_{60\text{ second}}$ or less, as objects or people will also move, which may result in movement blur.

- Some people can hand hold as low as $^{1}/_{30\text{th}}$ second on a 50mm lens without producing camera shake.

ISO

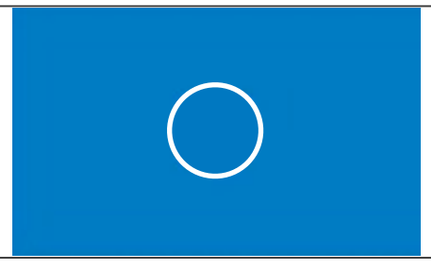
- This is the ‘speed’ or ‘sensitivity’ of the digital sensor and *generally* range in values from 100 to 1600 (up to 248,000 for pro DSLRs).
- The lower the ISO, the longer the exposure and/or wider Aperture value will be needed, and vice versa.
- At very high ISO values there is a high risk of ‘noise’ appearing on the image, so use the minimum possible. Remember, you cannot recover information that isn’t captured at the start!

Metering Modes

- **Evaluative or Matrix**

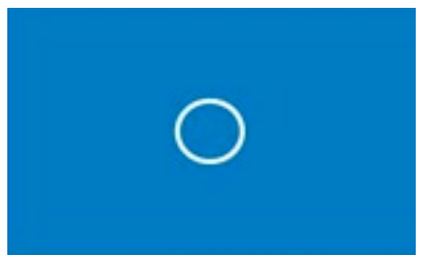
This is the default mode on your DSLR. Canon calls it 'Evaluative' and Nikon's is called 'Matrix' metering, but both operate in a similar way by taking a number of readings from different areas of the frame and combining them to produce the best overall exposure.

- **Partial**



Some Canon DSLRs, don't offer a spot-metering option. They have partial metering, which works just like spot-metering, but takes a reading from an area of the frame, around 8%.

- **Spot**



Spot-metering takes a reading from about 3.5% of the frame, and assumes this point will be a mid-tone. If you point the camera at a highlight or shadow area, the meter will give the wrong overall exposure reading. Arguably this is the most accurate and reliable metering mode when you learn to use it effectively, by comparing exposure readings for highlight and shadow areas, then working out the brightness range of the scene and adjusting the exposure to suit.

- **Centre Weighted**

This takes an average reading from across the whole frame, but biases the overall exposure toward the light reading from the centre of the frame. This is fine for average scenes and where your subject is central, but bright or dark areas can easily fool the metering, especially if they're close to the middle of the photograph.

White Balance

White Balance dictates how natural looking the colours will be, and this depends on the subject's 'colour temperature'. To the human eye, a white object looks white regardless of the type of lighting. When a camera 'sees' white, it is in fact a value of about 18% grey - a hangover from the printing industry standards.

However, many of the new compact and DSLRs are remarkably accurate using the Average White balance (AWB) or Auto setting, so for most situations you don't need to change this. You can of course choose one of the camera settings below or alter the white balance in post processing to obtain a special effect. e.g. Tungsten white balance will look a very cool blue!

Mode	**Approx. Colour Temp kelvin** (0 kelvin = Absolute Zero = -273.15 ℃)
AWB	3000-7000
Daylight	5200
Shade	7000
Cloudy, Twilight, Sunset	6000
Tungsten	3200
White Fluorescent	4000
Flash	6000
Custom	2000-10,000

Focus

- Manual - essential for macro, portraits, products and where a shallow depth of field is required.
- Auto/Servo - ideal for longer distances, fast moving subjects (sports, wildlife)

Tip: Traditionally, the main focal point when photographing portraits is the eyes.

Horizons - Keeping it Level - 1

The horizon/water isn't level

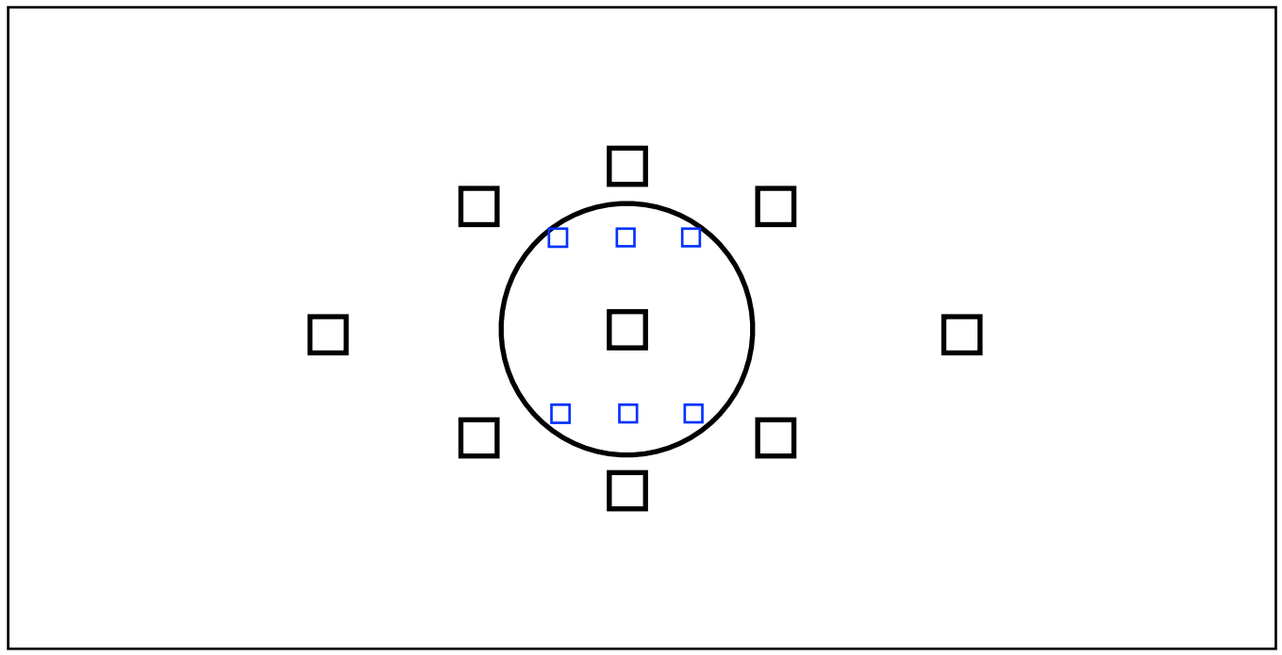
Level water/horizon

Although the picture on the left could be rotated in post processing to make it level, it's fairly easy to get this right first time:

- Water is always level and typically so are man-made structures like buildings, fences etc.
- You can use an inexpensive bubble level that will sit in your camera's hot shoe slot.
- Some cameras' have in-built artificial horizons or the the overlaying of grid lines in Live View mode.
- You can also buy a grid screen for your view finder that will give you level lines to view and use while composing your shot.

Horizons - Keeping it Level - 2

You can also use the metering/auto focus screen to provide perfectly usable levelling points within the viewfinder.



- Take the farthest Auto Focus points from the left to the right.
- While looking through your view finder set these points on the horizon or parallel with whatever you are trying to have level in your photograph.

Portrait or Landscape? 1

- The scene or subject you wish to photograph will often dictate which format to use, and which will instinctively look right.

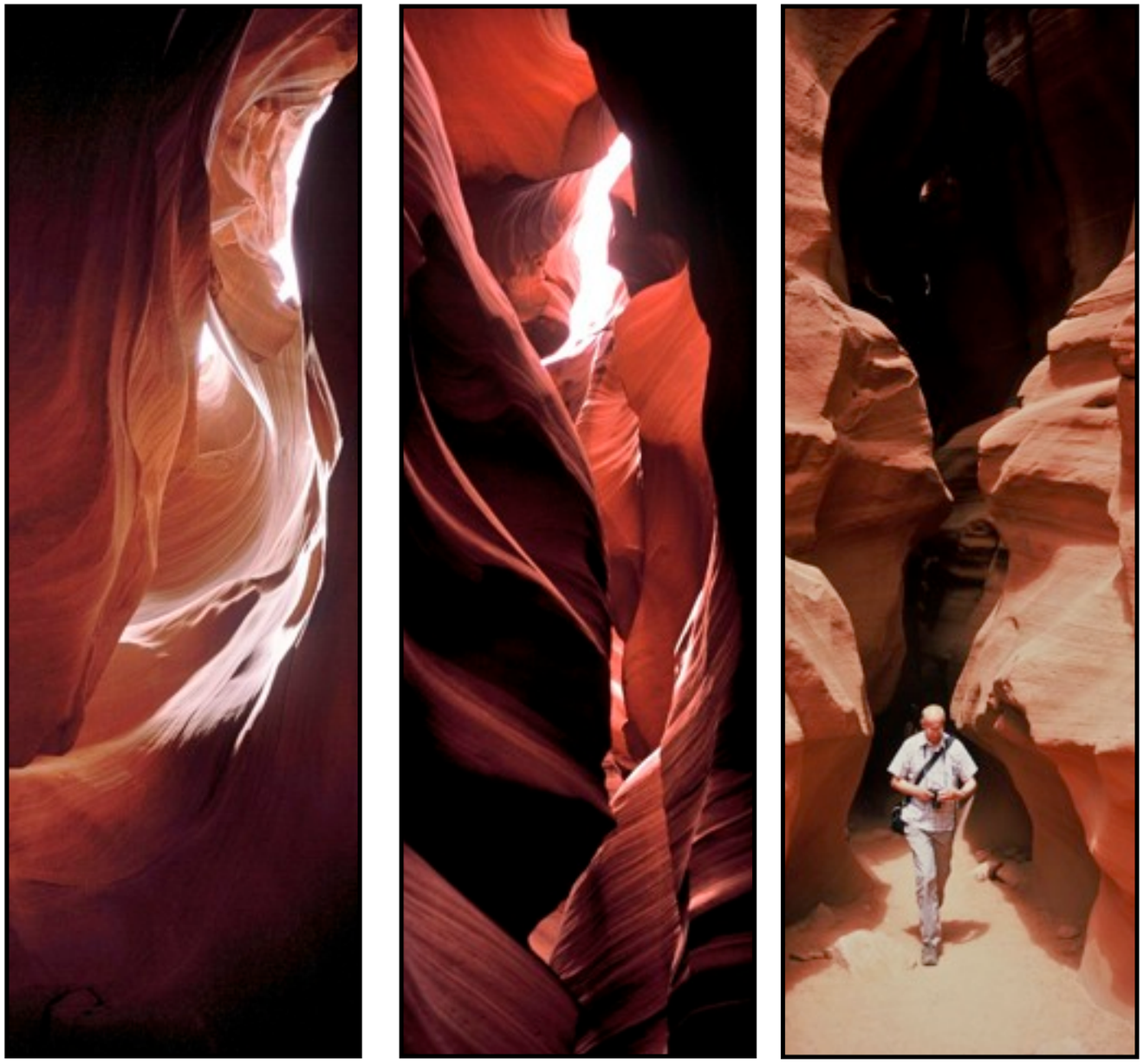
- Getting this right in camera, particularly if you shoot a large number of photos (as I do at weddings), will save time re-orientating and cropping them in post production.

- For instance, family groups against a Church background often look better in Portrait rather than the more natural Landscape, because people and Churches are taller than they are wide!

- Some landscapes can also look better if a portrait format is used.

Don’t be afraid to experiment - rules can be broken so long as you understand the rules to start with!

Portrait or Landscape? 2



Antelope Canyon - Arizona

Portrait format is ideal for these vertical slot canyons, and the figure on the right gives a sense of scale.

A Wedding Family

Portrait format accentuates the verticality of the Guests and the Church.

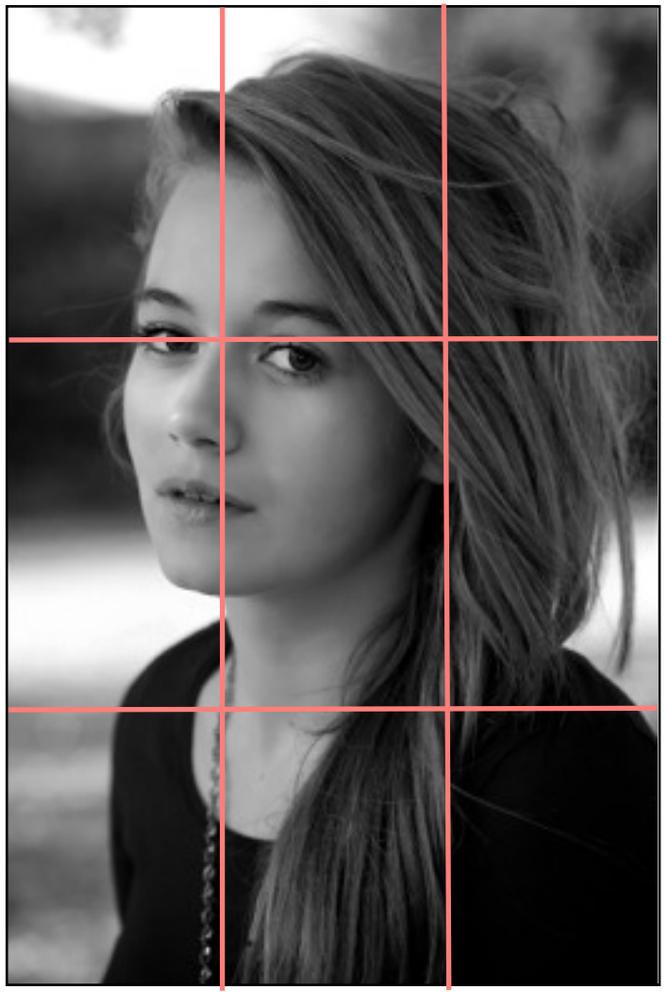
Rule of Thirds - Landscapes

This rule states, *'that an image should be imagined as divided into nine equal parts by two equally-spaced horizontal lines and two equally-spaced vertical lines'.*

Important compositional elements should be placed along these lines or their intersections. This creates more tension, energy and interest in the composition than simply putting the subject in the centre.

- The horizon sits at the horizontal line dividing the lower third of the photo from the upper two-thirds. The tree sits at the intersection of two lines, sometimes called a power point.
- Points of interest in the photo don't have to actually touch one of these lines to take advantage of the rule of thirds.
- For example, the brightest part of the sky near the horizon where the sun recently set does not fall directly on one of the lines, but does fall near the intersection of two of the lines, close enough to take advantage of the rule.
- The Rule of Thirds is a visually appealing ratio, and can be found in ancient Greek and Roman architecture, paintings and many forms of design.
- Getting this right in camera will save time cropping in post processing to achieve the same result.

Rule of Thirds - Portraits



- When photographing people, it is common to use the rule of thirds to line the body up with a vertical line, and having the person's eyes in line with a horizontal one.
- Remember, that for close up portraits, the eyes are nearly always THE focal point.
- If filming a moving subject such as wildlife and racing cars, try to get the majority of the extra room (negative space) in the front $^{2}/_{3}$ - i.e. the way they are moving.

Cropping 1

- Use the appropriate lens, whether it’s a fixed prime or a zoom. Remember that depth of field (what’s in focus) changes with the angle of view and focal length of the lens.

- Using software to crop images will reduce the file size - this is important if you’re looking to publish or sell images, where very large file sizes up to 50MB are the norm.

- Fill the Frame - no ‘Robins on Twigs’ or ‘My Little Spiders, lost in the centre please!

Cropping 2

Where’s My Robin?

Ah, there he is!

Clutter

- Before pressing the shutter, cast your eye around the viewfinder image and check there aren't any intrusions that would later need to be removed in post processing, such as:
- Litter, backpacks, handbags, unwanted rocks, branches, people's heads, arms and legs.
- You may want to keep some foreground interest to give a sense of scale for wide angle landscapes, but for action or wildlife photography you may have no choice, otherwise the moment may be lost.

This check will only take a few seconds and will save significant time in post production removal as shown in the next slide!

Backpack Intruder!

This is a good example of not checking the viewfinder before pressing the shutter!

I was concentrating on relaxing the model, and didn’t see MY camera bag in the background, and I’d also chopped off her right foot!
Fortunately, this was right at the start of the shoot, so we had plenty of time to get it right nearly first time!

Thank You!

This presentation will also be available on the

WillinghamPhotoClub

website:

http://photo.ballandia.co.uk/

Q & A

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