

The Image – Monthly NEWSLETTER

The Abertawe Photographic Society – Based near the heart of Swansea, Abertawe Photographic Society is an established, friendly and welcoming club, who's members both amateur and professional all share a common interest, in all aspects of photography.

Whether you are a complete beginner or a seasoned snapper, interested in digital techniques or 35mm film, there is a warm welcome by a likeminded group of people sharing in the search for the perfect image.

By sharing, not only our enthusiasm but also our skills, techniques and knowledge, we all grow as a club and by trying new things we all get the opportunity to stretch our boundaries. All members are encouraged to take part in club events.

The Society meets every Tuesday at:
Greenhill Community Centre
Chapel Street, Dyfatty,
Swansea.SA1 1NB.

This Month's Events: October

2nd AGM

9th Open Evening & Hand-in for Colour Comp

16th An Evening with Carl Ryan

23rd Hand-in for B&W Print Comp

23rd Annual Colour Print Comp – Tim Fernside

30th TBA

Do You Want Sharper Prints? Look at Difference Between PPI and DPI:

I have often wondered why I should set my images at 300 pixels, especially for printing, as my printer operates in dots per inch (dpi). There is actually no relationship between the both of these. To add further confusion to that that my monitor's resolution is a mere 60 pixels, check your monitor specifications if you like, it may be more, or even less.

If you print an image in Landscape format, using the criteria we are used to, i.e. 1400 @ 300 ppi, and depending on your camera sensor size and how you crop your image the actual size may be approximately 1400 x 933 @ 300 ppi which is a total number of pixels in your image of just over 1.3 million pixels. Like wise, for a Portrait format at 200 x 1050 @300 ppi this will be approximately equal to 735,000 pixels. In contrast to this, and depending on the size of megapixels that your camera will give you, plus the sensor size, then the number of pixels within the image in your camera is way in excess of this. For example, if you have a camera that has 24 megapixels the actual size of the image taken is around 6,000 x 4,000 pixels, which equals to 24 million pixels. So what happens when you print and image to all of those pixels? The simple truth is that they are lost, resulting in an inferior quality image.

Therefore, perhaps more importantly for those crisp clear printed images, is to associate your camera's Mega Pixels with the size of print your require. Below is a chart that shows the three most common print sizes. As you will see the only size that shows 300 pixels is an A3 print if your camera has 12 to 16 mp.

	PRINT SIZE	10" x 8"	A4	A3
CAMERA MP	12mp	420	360	300
	16mp	480	420	300
	24mp	480	480	360
	36mp	600	600	420
	50mp	720	720	480

So how did we get the figure of 300 pixels? Well, it's all down to when computers and programs were not as fast as today's. An arbitrary figure was given, i.e. 300 pixels, but this figure has never been adjusted for today's faster technology within the PCs and programs.

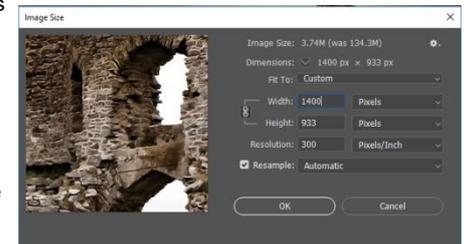
Consequently there is a great deal of confusion among many people regarding the use of some terms in digital imaging. One of the more common sources of confusion is the difference between DPI and PPI. The main problem with this is that DPI (dots per inch) is an old term that has been applied to everything relating to resolution and the size of a digital image. This is very confusing because different situations work with resolution in very different ways, and having a single term for all of them just makes things more confusing. These days, the term PPI (pixels per inch) has appeared in common usage and is far more specific for what the term entails. DPI is still used in some documents and software when PPI is really what they mean, but this is, I happy to say, changing. I'm going to try and explain what PPI and DPI acronyms both mean, and how they should be used. Hope you can follow me, because it's confused me for a long time and still does to a certain extent.

PPI - Perhaps the easiest to understand is PPI, so perhaps we can begin with that! PPI is the number of pixels per inch in an image. This will affect the print size of your photo and will affect the quality of the output. The way that it will affect the quality of the output is that if there are too few pixels per inch, then the pixels will be very large and you will get a very pixelated image (jagged edges, you may actually see individual pixels). You have been told that the size required competition images is 300 pixels per inch. In fact the default in Photoshop is 72 pixels, very low. As I have shown above in the chart, a lot of this will depend on the size of the print for a crisp printed image. This is

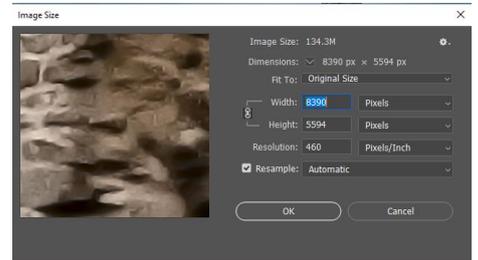
because you look at large prints from a further distance than a small print, so you can get away with a lower PPI and still have the image look fine.

All that PPI does is affect the print size of the image. There are 2 ways that you can change the print size, by resizing some call it resampling) or by not resizing. this will only change the size of the print. Just remember that if you change the resolution of your image you must remember that both the width and the height will change, but does it matter when printing if you are constrained by 1440/1050 @ 300 Resolution, not a bit, as you are still printing at your chosen size, e.g. A4.

I mentioned earlier the word resampling, what does this mean? Well, as I explained earlier, your camera shoots in megapixels, but if you were to print at the actual size the print size is bigger than A4 for example. The image below shows a width of 1400 Pixels and a resolution of 300 Pixels/Inch.



Therefore to retrieve those lost pixels you change the Resolution; in this case I have adjusted according to camera's megapixels (20.5) to a Resolution of 460 Pixels/Inch. This increases both the Width and image Height, but who cares, it's a printed image. This is basically what Resampling means.



So, throwing away those lost pixels is fine as long as you won't need the bigger size later (that's why it's usually a good idea to save the original large file).

Usually, the only reason you want to use re-sampling is for reducing the size of your image. For example, my scanner produces 3888 x 2592 images. These images are too big to use online (both for display and because of file size). By using re-sampling, I can adjust the size of the images to something more appropriate for online use.

DPI - Now let's talk about DPI, only refers to the printer. Every pixel output is made up of different coloured inks, usually 4-6 colours, although some printers these days use more. Because of the small number of colours, the printer needs to be able to mix these inks to make up all the colours of the image. So each pixel of the image is created by a series of tiny dots. Generally, the higher the DPI, the better the tonality of the image, colours should look better and blends between colours should be smoother. You'll also use more ink and the print job will be slower. If you wish, you can try setting your printer to a lower DPI, to save ink, and speed up the job, but you notice some difference in quality. The lowest setting where you don't see any loss in quality should be the best one to use.

So a 1200 dpi printer uses 1200 dots of ink in every inch to make up the colours. If you were printing a 300 PPI image, then every pixel would be made up of 16 smaller ink dots (1200 DPI x 1200 DPI / 300 PPI x 300 PPI). A lower DPI would have fewer ink dots making up each pixel, which would make the colour look worse. A higher DPI would have more ink dots for each pixel and should give more accurate colour (especially under close examination by a judge and his magnifying glass).

Now all this may be somewhat controversial for some, but believe me I have tried it and I have seen a crisper image when I increase the Resolution in Photoshop in-line with my cameras megapixel rating. You may want to give it a go yourself.

Complimentary Colours and Colour Theory

At competitions we have often heard a judge talking about Complimentary Colours, but what does this actually mean?

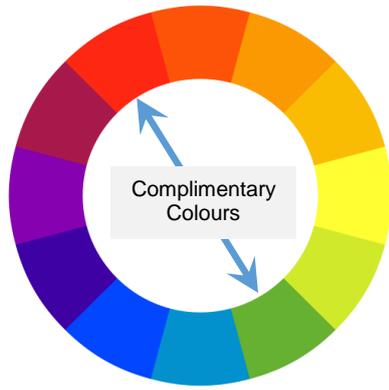
This term is part of Colour Theory, which encompasses a multitude of definitions, concepts and design applications, a bit of information overload really. However, there are three basic categories of colour theory that are logical and useful:

- The colour wheel,
- Colour harmony,
- And the context of how colours are used.

Colour theories create a logical structure for colour, and believe it or not, we consider this without the knowledge that we are. For this article I'm only going to talk about the colour wheel, as the other two mentioned above are too complex.

A colour circle, or colour wheel, based on red, yellow and blue, is traditional in the field of art, including the art of photography. Sir Isaac Newton developed the first circular diagram of colours in 1666. The arguments relating to variations of this theory and concept have raised opinions ever since, but that's too boring to continue with. In reality, any colour circle or colour wheel which presents a logically arranged sequence of pure hues has warranted merit by photographers and photographic institutions to include in our Newsletter. Below is a basic version of a colour wheel, whereby opposite colours are regarded as Complimentary Colours.

Complementary colours are merely two colours that are on opposite sides of the colour wheel. Therefore, if you are shooting a colour image you should always try to look for such complimentary colours.



Colour Definitions - There are also colour definitions (or categories) of colours based on the colour wheel. The categories are:

• Primary Colours -



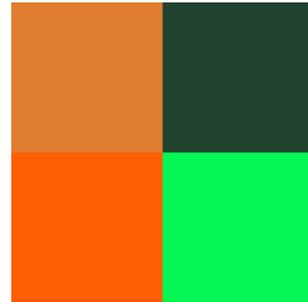
• Secondary Colours-



• Tertiary Colours



which are both toned-down colors while still providing a liveliness to a scene due to being complementary.



I guess I could go on with many examples of the use of these complimentary colours, but I guess the best thing is for you to think about it and try for yourself. If you do this just remember the Colour Wheel and remember 'warm is opposite cool'.

.....and finally

- A definition of a professional photographer: A "pro" NEVER shows anybody the mistakes.

Perhaps I should mention here that some photographers believe that green is a Primary Colour, as it appears in Photoshop under RGB, it's clearly not.

Definitions:

Primary Colours - are basic colours that can be mixed together to produce other colours.

Secondary Colours – are colours formed by mixing two primary colours.

Tertiary Colours – are colours formed by mixing two secondary colours.

You may notice from the Colour Wheel above that complimentary colours are a match of 'warm' and 'cool' colours. In fact in nature we can see these complimentary colours, for example many parrots or macaws are coloured red and green, yep they are opposite on the wheel!

So why do we need to use complimentary colours in our photographs? The use of colour in photography is actually a visual language that our brains, via our eyes, process before they are consciously aware of it. It 'pops out' at viewers in the early stages of vision; hence 'Colour Popping' is a phrase that we use in photography. Because colour is a potent element of visual communication, we need to think through how and why we are using it.

Often we may take a photograph and the colours don't really pop out at you, but with some tweaking in Photoshop we can pull those colours out. For example you may have a photograph of trees in a landscape, with a blue sky. You can improve this in Photoshop by going into **Edit>Adjustments>Hue and Saturation** for example to enhance the orange in the trees and the blue in the sky, but try not to overdue this.

Having said that, you can also use complementary colours in a subtle way by using subdued colours in a near-complimentary colour scheme. Such as red-orange and forest green, as shown below,