Martin Henson Photography

All about exposure

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In this PDF I will explain all the things you need to know regarding exposure for both Digital and Film users, detailed explanations’ and example pictures provided
To “See” in Black and White, a question of exposure by Martin Henson

One of the first difficulties in taking Black and White photographs is how to visualise the scene as different shades of grey. For those who are used to working in colour, it is difficult to remove the colour one naturally sees and interpret the scene, but with practice it is possible to train the eye to think Black and White.

Having achieved this, life becomes easier and the production of striking Black and White images is made that much easier.

To get a basic understanding of this you must think in grey tones, and how the data is transmitted to the camera sensor or film and what is actually happening when you press the shutter. Ansel Adams and his colleagues devised a way of precise control over exposure, which they called the Zone System.

This was assuming that the camera, film and developing of the negative where all calibrated correctly. This then allowed to determine where the tonal range would fall within the image, and gave them the ability to set a mood for the picture.

As an example, imagine a scene with wonderful fluffy white clouds against a blue sky. If you were to take an average reflected meter reading the whole image would be just another sky and cloud picture with no feel or drama to it which may be OK in colour but it may not be what we are aiming for in a Black and White photograph.

Sometimes we need to make the image more strong and powerful by adding drama, which can be accomplished using exposure control.

I will not explain to deeply about the Zone system as this was primarily devised for film; the development of negatives was an integral part of the system to control negative density by altering development times to suit the lighting conditions and mood of the scene.

Because digital is now the most popular way to capture, that part is missing, although through editing it can be implemented to some degree, however, it is still important to understand the basic principles. I will try to explain how to visualize and use exposure as a tool for setting the mood in Digital Black and White photography, however, this understanding also applies to film photography as well.

First we must understand how all camera meters work whatever the setting be it Auto, Semi Automatic, Programme and Manual modes, the meter will set the correct exposure for a given scene based on thousands of sample exposure scenes within the cameras’ micro-processor.

For your average snapshot this is fine for scenes of average tones in front of the meter, but as soon
as the tones are biased towards dark or light that’s when things go wrong, the reason for this is all in built in meters are calibrated to produce an overall 18% grey or “middle grey” all other tones are then moved up or down the gray scale from this to represent the scene in shades of grey.

Look at example 1 below this was a piece of black card I photographed, I set my DSLR in auto mode with no compensation, the black card has turned out mid grey 18% grey, in example 2, again with the camera set to auto no compensation and the white card has also turned out also 18% grey.

You can be seen that the two exposures although different give nearly the same result, middle 18% grey, the camera auto metered for the black card has given a longer exposure to turn it to 18% grey, and a shorter exposure for the white card has turned that to 18% grey.
In example 3 below, I have split the image which was a black and white card, the black and the white are still greyish after using the camera's auto exposure, what can be evaluated from the exposure values is that the camera has tried to average the exposure to come up with the best result it could give, however it is far from satisfactory as you can see. The image has turned out what is termed flat with no pure whites or blacks and lacking in tonal contrast.

So what does this tell us, all three exposures in example 1, 2 and 3 are incorrect to produce the desired tonal range and contrast, that's because we have let the camera take control and not the photographer?

Now if we have established what is happening and know the camera or any meter even a spot meter will always turn white and black to middle 18% grey, we are well on the way to understanding how it will affect our images.

Lets take the examples 1 and 2 previously mentioned, to turn the black card to a true black the exposure would need to be compensated by minus 5 full stops and the white card compensated by plus 5 full stops, in other words we would have to shift the shades of grey up or down from a given middle grey point.
Look at the zone scale below, auto exposure gave 1/500sec at f8, turning the pure white to middle 18% grey Zone 5, compensation needed to correct is +5 stops or 1/15sec at f8 this will move the middle grey to pure white.

And the opposite for rendering true black, auto exposure gave 1/60sec at f8, turning the pure black to middle 18% grey Zone 5, compensation needed to correct is -5 stops or 1/2000sec at f8 this will move the middle grey to pure black.

So let’s now see what happens to the cards 18% Zone 5 at different compensation settings.
The exposures below give me plenty of tones to play with in Photoshop, example 1 has given a nice middle tonal range, example 2 has moved the grey-scale down to bring out more cloud detail, example 3 has moved the grey-scale up to reveal shadow detail and provide more contrast to work on, it’s worth mentioning that different scenes will require varying amounts of compensation dependent on the intensity of the light, using this method expands the dynamic range of your cameras. All that’s left to do is blend the exposures in editing, keep in mind all exposures must be taken with a tripod mounted cameras.
To “see” in B&W does take some getting used to, if you can follow the principle of the grey-scale, and try to understand what is happening when you meter with your camera you will be able to produce better B&W images and prints.

Using the grey-scale method the 18% starting point, blacks will be deeper, whites cleaner and a range of mid tones in-between the two, you will also be able to dramatically change the mood of the image which is so important in monochrome by deciding if you want the image to be low-high key or produce the full tonal range, contrast can be reduced or increased for effect or your own visual representation.

Even in these high tech times I would suggest using a handheld light meter that can take 1 degree reflective spot readings, the benefits are that whatever you point your meter at its reading at 18% grey, so, pointing the spot in an area where you want shadow detail to be seen, and hopefully by now you understand how over and under exposure effects density, you can place that zone on where you want it to fall, then read from other areas buy counting the stops from the first reading and see where other zones fall, you can now then evaluate dynamic range, always remembering one stop shifts one zone. Even using the meter in Incident mode, the Incident meter is not affected by high or low reflectance from surfaces and does not get fooled like the cameras own evaluative metering, ever taken shots in bright snowy conditions and you get underexposed images, that’s because the cameras meter is fooled into thinking its brighter than it really is, the Incident meter is not fooled easily.
One stop over exposure puts zone 5 on to zone 6 and one stop under exposure moves zone 5 to zone 4.

In a world were skills are often taken over by technology, it’s satisfying to use methods that make you think about what you’re trying to achieve, understanding exposure and how it affects the outcome is a vital part of skilled photography.

From the above I hope you have a better understanding of how exposure affects the look and mood of a picture and helps you to think and see in grey-scale.