

Mysteries of Photography #5: Black and White Conversion

Most of us live in a world of colour but Black and White (monochrome) images are appreciated by many or most of us and it is not just something that has been learned. If you go into the dark, the colour receptors in our eyes (the cones) switch off and the panchromatic receptors (rods) take over and we have no perception of colour. (Don't try to choose a shirt in a dimly lit walk-in robe, you might get a shock when you walk outside!)

There is nothing inherently “unnatural” about an image without colour.

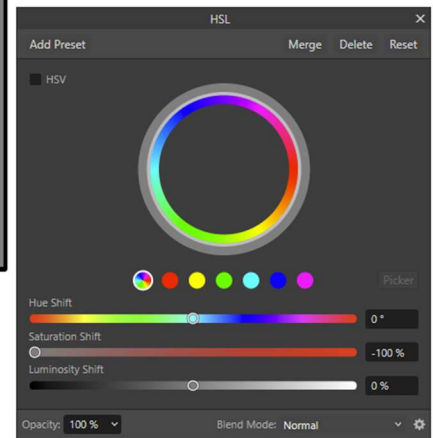
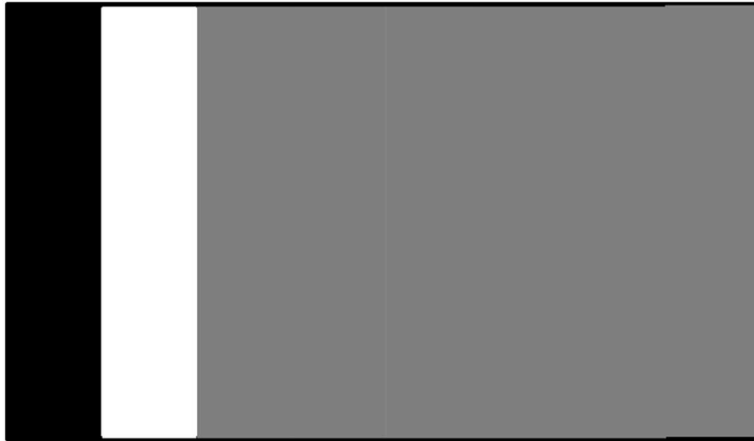
While we now all have cameras that capture images in colour, it would be hard to argue that some images look good with the colour removed. The question is, what is the best way to do this?

Let's make a test system with black, white and the gamut of colours constructed using the HSL colour model. (HSL: Hue Saturation Lightness). Why use HSL? Use it because it is easy to choose the colour you want for your colour patch. Below, you can see how the red and green patches have been colourised. Simply choose the colour on the Hue slider, set saturation to 100% and Lightness to 50%. The others were done exactly the same way but with the Hue slider moved to appropriate part of the colour spectrum.

Every HSL colour patch has an equivalent RGB value. It is just easier to set this all up using HSL.



This is now our test system to see how best to do a B&W conversion. Let's desaturate the image using the HSL Adjustment by moving the saturation slider to 0%. (All examples done using Affinity Photo)



We now have a B&W image but where is the differentiation between all the colours? Definitely not a good way to do an optimal B&W conversion!

Let's try another way. Let's try the B&W Adjustment instead. Disaster!

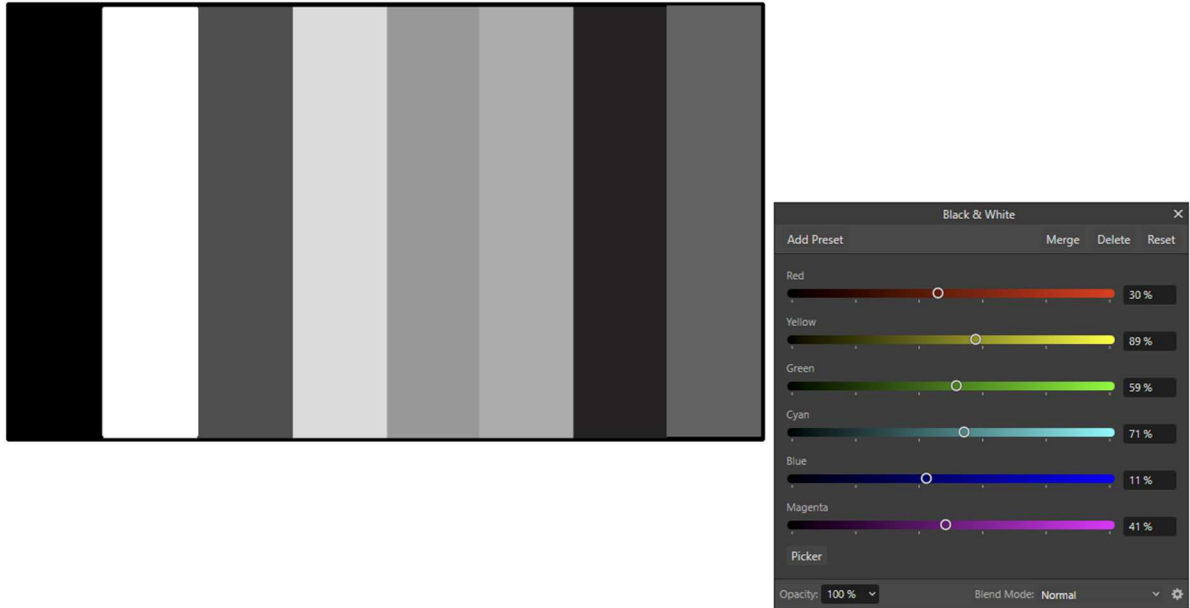


Now all the colour patches are pure white!

There must be a better way. Our eyes (and brain) register different colours as having different intensities. We are most sensitive to green, less so to red and the least to blue. The formula for sensitivities is:

59% Green, 30% Red and 11% Blue

Let's apply this to our B&W Adjustments.



For yellow that lies between red and green on the spectrum, the slider has been set as the sum of the sensitivities for red plus green (i.e. yellow equals 30% + 59%). Similarly for cyan and magenta. With our B&W sliders set like this, we now have a distinct differentiation between the different colours.

This does not mean that every B&W conversion should use these values for each of the sliders. However, it is a good place to start.

In practice, adjust each slider to bring out features that to you produces the most pleasing result in your particular image. However, the primary take home message is *don't just use a standard monochrome conversion!*

This article is completely based on an Affinity Photo tutorial available on YouTube presented by a young lady called Ally. Try it Photoshop and tell me if you get a different result!

David Woodcock