Colour Gamut's

Murray Dean
16 October 2019

One of the most common comments heard at a photo evaluation session is:

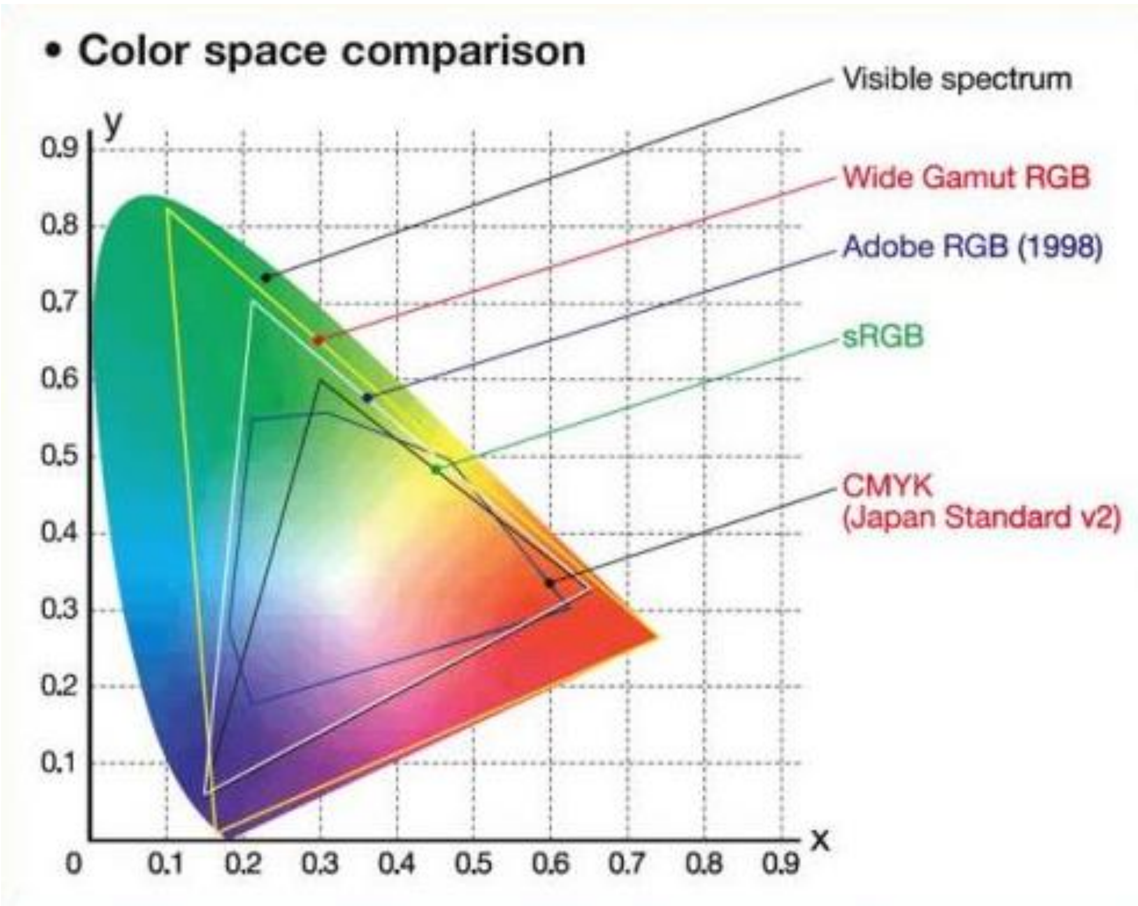
"it looked a lot different on my system"

I will try to explain the differences, but I do not want this to be taken as a criticism of anyone viewing the photos on their own system, just as an explanation.

With the digital age of photography we can all share our photos to a very wide audience. These photos can then be displayed on a wide range of devices such as: iPhones, tablets, computer monitors (CRT & LED) or even projected onto a wide screen. Every device (and online service through which he photo may be delivered) handles colour in a different way. Each device has its own colour space, and if you save your photo to the wrong colour space or display it on a device using a different colour space you can really change people's perception of your photos.

What is a colour space?

Colour Space basically stands for the range of colours utilized. Every Colour Space has a Colour Gamut which is basically the amount of colours in a colour space. Every colour space is different and will give you different results. You may have heard the term Adobe RGB 1998, sRGB or CMYK before. Those are generally the most used colour spaces that you'll see when you're working with photos. Here's the difference in colour gamut from those:

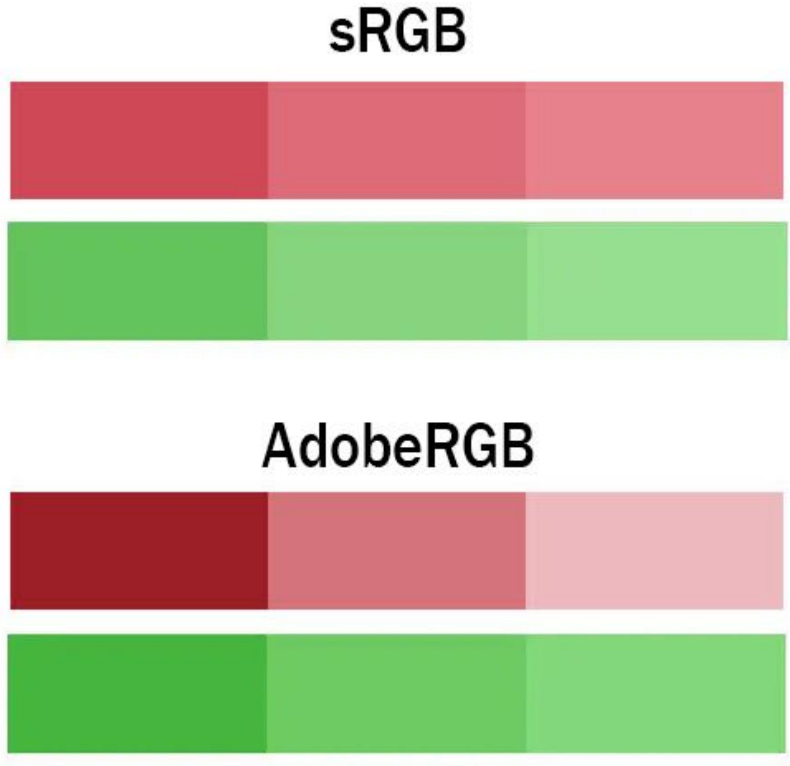


The Wide Colour Gamut (WCG) is used in High Definition devices such as 4K TV's.

What are sRGB and Adobe RGB Colour Spaces?

sRGB is a standard colour space that was created by Microsoft and Hewlett Packard in the 1990's for monitors and internet browsers. Since it was created before Adobe RGB, and because it was created by electronics manufacturers, it has become the standard colour space for electronic devices.

Adobe RGB colour space was created by Adobe in 1998 and is now widely used among photographers, graphic designers, and print labs. It contains an extremely broad range of colours, many of which cannot be displayed on certain screens, in internet browsers, or rendered by a printer.

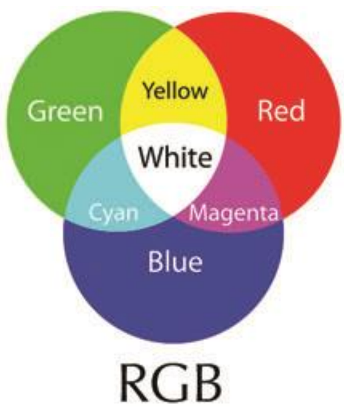


RGB vs CMYK

CMYK: In 1906, the Eagle Printing Ink Company incorporated the four-colour wet process inks for the first time. These four colours were cyan, magenta, yellow, and black (also known as key), hence the name CMYK. It was discovered that these four colours can be combined to produce an almost unlimited number of richer, darker tones.

CMYK colour is created using a **subtractive** process. This means that each additional colour means more light is removed to create it. When **C**yan, **M**agenta and **Y**ellow are combined, you will not achieve pure back, but rather a dark brown colour. Blac**K** is used to completely remove the light from the printed picture, which the eye sees as black.

RGB uses an **additive** property to create colours by combining the primary colours in varying degrees to create different colours. When all three colours are combined to their full extent, the result is white, as opposed to the black you achieve with CMYK. Combining all three colours to their lowest extent will result in black. RBG colour models are most often used in electronic devices as the screens tend to be darker. Combining red, green and blue light produces lighter colours, working in contrast to the dark screens.



Under the Information tab on the club web site is a document:

"Adobe – Preparing an Image for Print.Pdf"

Which covers step by step instructions on converting an image from RGB to CMYK.

Screen Calibration

The club projector is calibrated to project images in the sRGB colour space. Therefore to ensure your image is projected at its best, your editing software should also be set to this colour space.

However, just because your editing software is set correctly does not ensure what you see on your device (monitor) at home will be the same as that projected on club night. Most devices can vary significantly in the way they show colour and change over time.

The only way to ensure what you see at home is the same as what you see when it is projected is to calibrate your monitor using a calibration device such as Datacolor Spyder or X-Rite i1 Display Pro.

When using a calibrator follow the instructions that come with it. Some calibrators will take ambient light into consideration when making the necessary adjustments. However, if the ambient light changes then the calibration will be affected. You may need to create different calibration profiles for different ambient light conditions, i.e. one for during the day and another for the evening.

In summary, what you see may not be the same as what others see, unless all devices used to view/project the image are set/calibrated to use the same colour space.