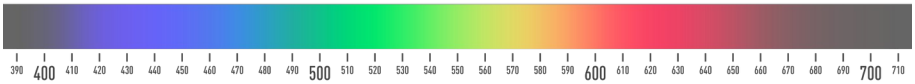
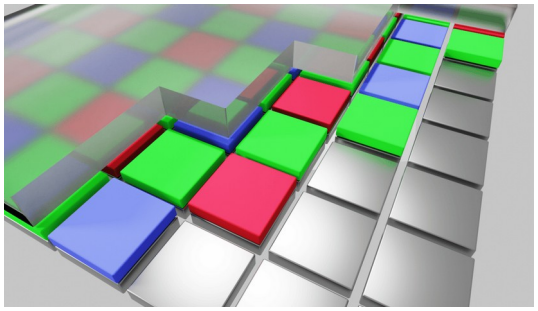
Colour

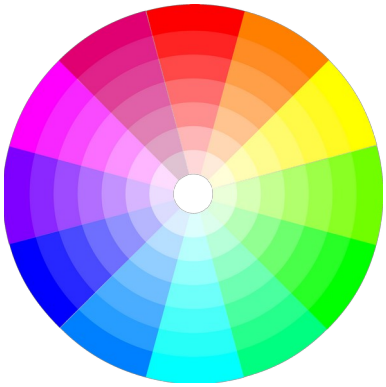


Colour, the aspect of any object that may be described in terms of **hue, saturation and lightness H.S.L**. Hue is the colour of the colour, saturation of the intensity of the colour and lightness is ….

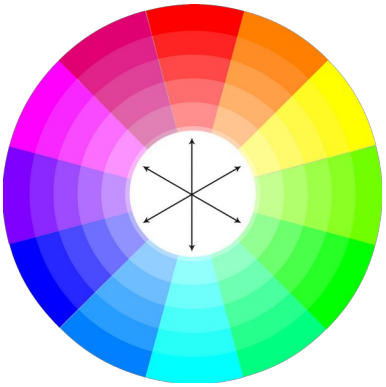


Photographs are captured in a combination of three colours. Red, Green and Blue.
A sensor converts light to an electrical charge. The pixels on that sensor are covered by colour filters. By combining these these we can create the missing colours in between.

Colour theory is a practical combination of art and science that's used to determine what colours look good together. The colour wheel was invented in 1666 by Isaac Newton, who mapped the colour spectrum onto a circle. The colour wheel is the basis of colour theory, because it shows the relationship between colours.



Colour Wheel



Complimentary colours

Analogous Colours

Complimentary colours

Analogous colours are groups of colours that are next to each other on the colour wheel

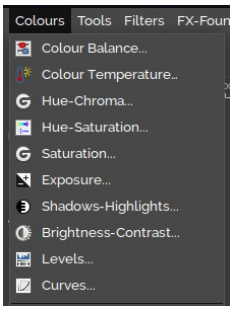
Complementary colours are those opposite each other on the colour wheel.

Monitor profiling
You need to ensure that your monitor is showing accurate colours.

You can buy hardware to calibrate the monitor or a simpler and cheaper (but arguably less perfect) way is to display an image with known colours and a grey scale. You can then adjust your monitor to achieve a neutral white balance and ensure that you can see the full range of tones from white to black.

SRGB colour image for calibration

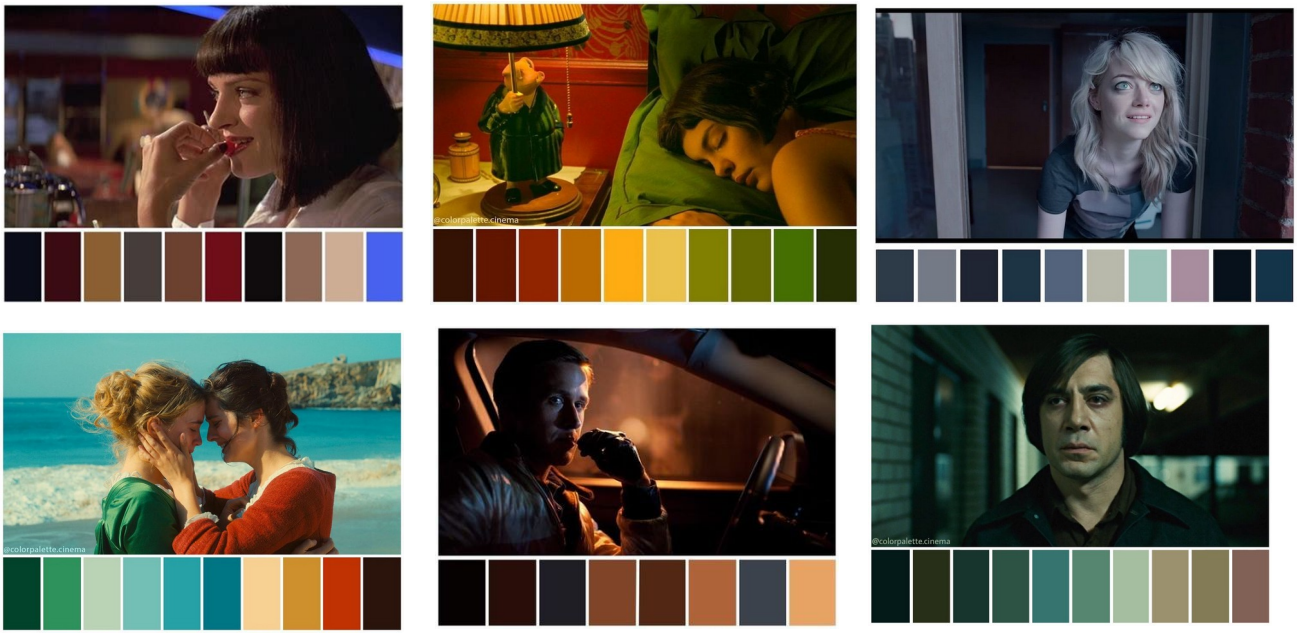
Changing or modifying colours.

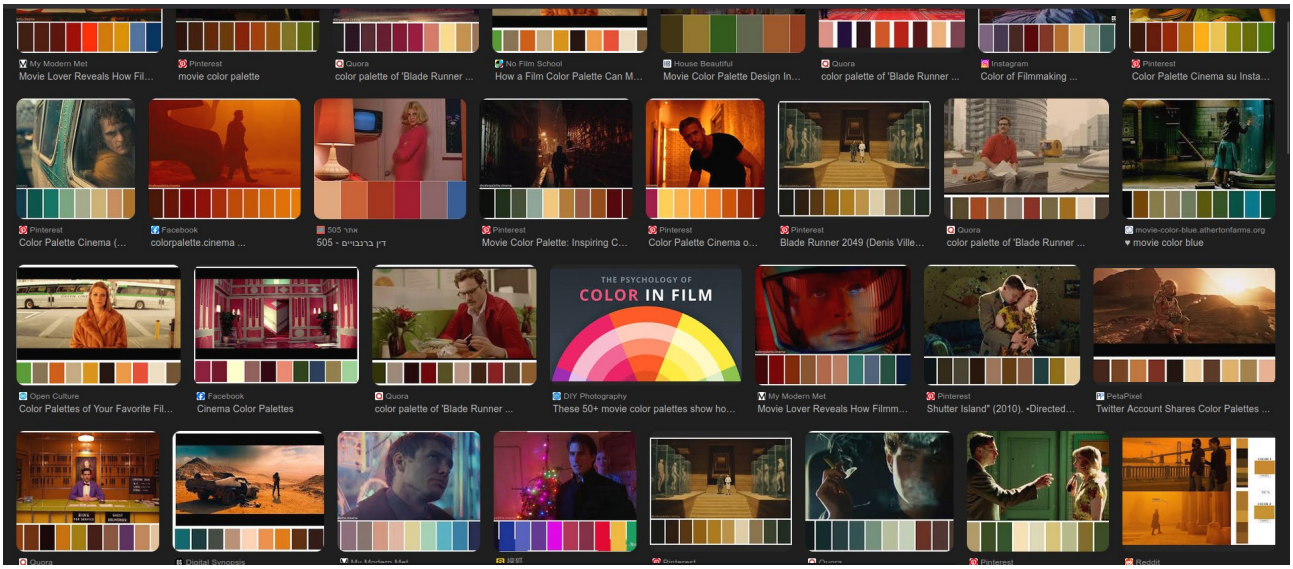


You may wish to to adjust colours in a photograph either to **correct** them or to **modify** them. The reasons you might wish to modify them would include to create a style or mood or emphasize an aspect of the image. Depending on the software you are using there are a number of ways to achieve this. These include: hue-saturation-lightness, colour balance, curves, levels, colour replace and colour temperature but there may be others.

Colour grading

This is a technique use in almost every Film and TV production.
It is used to help create the atmosphere and the 'tone' of the film.
It usually involves reducing the image to a smaller palette of colours or shifting it in a defined direction. Colours have perceived connections to mood. In general we talk about warm colours, reds, oranges and yellows. Cold is associated with blues.





Colour grading in stills photography
It is also used by stills photographers especially in the fashion and style sectors.

Photos: Jason Bell

Photos: Annie Leibovitz

Colour grading – before and after

Photos: Mike Alsford

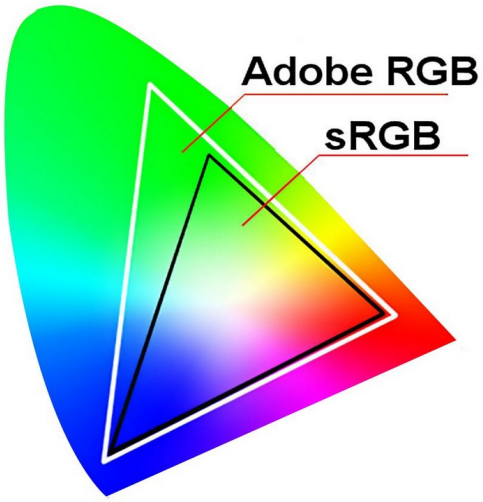
UNIT

UNIT

Some technical Stuff

Colours can be organized in a **colour space**, which when being abstracted as a mathematical colour model can assign each region of colour with a corresponding set of numbers. This is made up of the red, green and blue channels.

As such, colour spaces are an essential tool for colour reproduction in print, photography, computer monitors and television.
The most well-known colour models are **RGB, CMYK**, YUV, HSL and HSV.
Professional editing software such as Gimp or Photoshop allow you to work in a colour space of your choosing, this can then be embedded into the image allowing the printer you know your intended preference. Set these up in the preferences menu.



Colour Space
There are two main colour spaces used in photography. A colour workspace defines the boundaries of the colours that are displayed or printed.

Standard Red-Green-Blue (SRGB)
and Adobe Red-Green-Blue (ARGB)

SRGB is the most common colour space and is used for most photographic printing and for web sites as it is the way most devices will reproduce the colour information contained within the image.

ARGB is a wider colour space and contains more colours and more variation of colours and can be used for printing with printer able to take advantage of those.

Colour Management and Colour Profiling
This is the process of ensuring as far as possible that you work on your computer in the best way to enable accurate results.
All photographic equipment has a profile, a range of tones and colours that it can see and accurately reproduce. A monochrome laser printer will will print in black / white even if the image is in colour. This is an extreme example of a profile mismatch.

If your monitor and or software are working in a different workspace to your printer, your printed results will not reflect your image on screen, if your workspace set-up is different from mine I will see your images differently on my screen.
In order to make it possible to exchange files, and print images on different printers a number of 'standards' have been created. If we all work within these standards we should obtain reliable results across platforms and media. Cameras will embed a colour profile in the image to make things easier to maintain compatibility, this will usually be SRGB or ARGB.