Track Planning Services

COLOUR – We All See It Differently

Colour in model railroading is a factor that can make a model or layout come alive. Modern Australian locomotives have strong and distinctive colours. If we model Australian scenery we expect to see a preponderance of browns and dull greens. Other prototypes have their favourite colours too. But, we can shape the enjoyment of our work by putting effort into the colours we use. As modellers we can use colour for many purposes:

- To specify landscape
- To indicate season
- For backdrops to show climate and demonstrate stormy, sunny or any other type of weather
- To identify focal points in scenes and indicate specific functions and businesses
- Using corporate or special colour schemes for retail and wholesale industries, railway operators etc

In fact colour is taken for granted by modellers to the exclusion of making a good module or layout, great. In this short article I am going to explain the basics of colour in artistic terms and demonstrate how colour selection can be used to make structures, rolling stock and other focal points come alive.

We all see colours differently. Assuming that you are not blind to some colours humans see a broad spectrum of colours from the 'warm' colours of reds thru to the 'cool' colours of blue. A portion of men can be blind to some colours, meaning they cannot distinguish between different colours. This commonly occurs with reds, greens and blues. Many animals do not "see" colour but instead see shades of grey for everything.

If you visualise a rainbow you can understand the range of colour frequencies humans can see. In dealing with description and appreciation of colour we rely on memory to identify colour. In visualising the rainbow we will all recall it in different descriptive terms. Consider our perception about the railway colour 'Tuscan'. We have probably all seen the colour on coaches; we all describe it differently and when confronted with chips of paint colour we all pick a different Tuscan!

Colour can be formally described in many ways. There are systems for describing colour and many formats that use specific systems that cannot be used in other formats. We are familiar with the RGB colour system because it is used in electronic devices such as computers and televisions. In this system all colour is described using the proportions of Red, Green and Blue frequencies to make other recognisable colours. Sometimes these are called Windows (Microsoft) colours because this is where our familiarity resides.

The RGB system is of little use in printing processes, painting and many other applications. Printing uses the CMYK system of four base colours to make all other colours, using a 'prescriptive' measurement. For example 1 part (50%) Magenta + 1 part (50%) Yellow makes Orange; 9 parts (90%) Cyan + 1 part (10%) Black (K) makes a 'Teal' type of colour. You can see the CMYK colour system in use when you open your morning newspaper, look at the gutter (the middle of the sheet of paper where it is folded) and see the CMYK colour bars.

Paints for modelling (and other applications) use pigments in combination. These pigments historically came from organic and inorganic sources. Typically the pigment used for white is Titanium Dioxide (TiO_2). Reds and browns are often Iron (Fe) based but can also use simple extracts from vegetation processes. Many blue pigments are Cyanide based because the chemical (nitrogen) compounds produce blue salts. Similarly yellow uses Chromium based pigments.

Colour description systems leave a big gap in being able to describe colour for specific purposes, because each system is designed for its own format. However to simplify the description of colour and to create specific colours we can use three primary (or pure) colours in various combinations. The following three images demonstrate how the combination of two adjacent colours can produce a colour midway between each of them.

Primary Colors

Secondary Colors

Tertiary Colors

When mixing colours, use a white cardboard sheet ruled into squares for paint samples. Add a description of how many parts of each colour used to create the sample. These swatches become a yardstick (colour memory) for the next model.

The use of primary colours is infinitely expandable when we introduce White, Grey and Black. By adding these (non) colours we can create TINT (adding White), TONE (adding Grey) and SHADE (adding Black). The use of a colour wheel to create a specific colour for your model is a handy method to save paint and frustration. Colour wheels are available from artist and stationery stores. A good colour wheel shows colour variations when adding a second colour and can also show tint, tone and shade.

Thus if we need to paint our Caves Express locomotive in faded blue use grey or black in our blue paint mix to achieve a colour that is pleasing to us.

Painting structures gives great leeway for expression of strong colours. Unless we are trying to reproduce colours of the NSWGR, PTC, SRA or similar operating body we have free rein with our factories, farmhouses and urban streetscapes. In choosing colours we can make complementary or analogous choices when painting walls, windows, doors etc. On the colour wheel complementary colours are opposites and analogous colours are nearby (see above three wheels). It doesn't matter if the colours are tints, tones or shades. Consider the examples and descriptions in the following table:

Examples	Colour 1	Colour 2
Complementary Colours		
Analogous Colours		
'Heritage Scheme 1': Complementary		
'Heritage Scheme 2': Analogous		

The next table is a description of the combination of pure colours to create colours from the table above. The amount of each colour to make any other colour is not given, but for example to make brown requires more red than yellow:

Colour 1	Colour 2
Violet = Red + Blue	Yellow (pure)
Violet = Red + Blue	Mauve (tone) = Red + Blue + Grey
Red (shade) = Red + Black	Green = Yellow + Blue
Cream (tint) = Yellow + White	Brown (shade) = Red + Yellow + Black
Refer to coloured table above for descriptions in this table	

There is also an Australian Standard for colour description known as AS2700. This standard is used to normalise names and colour formulation throughout industry. For example the corporate paint scheme for Pacific National is:

Pacific National COLOUR	AS2700	Raileys Paint
Blue	B11 Rich Blue	#126 Navy Blue
Yellow	Y15 Sunflower	#127 Golden Yellow

An often quoted concept among modellers relies on the vantage point from which we view models and layouts. Almost all our vision is from above the structures and rolling stock. This disrupts our appreciation of the sides of buildings and wagons that we normally see in real life. From this disadvantaged viewpoint, is it reasonable to strive for perfection in creating the right colour for our efforts? Or should we be content with creating an aura that is easily recognisable by others?

The names we give colours often leads to confusion. NSW Freight Wagon Grey is really a variation of Black, but the name has stuck. Any new modeller will scratch his head about the naming of this colour! When looking at charts of colour provided by paint companies we might see the same colour in each chart with a different name. If we were given the technical description of the combination of pigments we might see they are the same or maybe subtly different. Suppliers of paint will not reveal proprietary secrets so we are left in the dark.

Some help is at hand. There are lists of paint brands where matching of colours is provided. An old but extensive comparison of modelling paints can be found at:

http://www.paint4models.com/

This list is not oriented to Australian modellers but it does give wide information for matching colours between brands.

When we paint models we are trying to achieve a small scale result that best represents what has happened in real railroading. Structures and rolling stock are subject to weather, everyday usage, repainting and mistreatment. Paint fades and is damaged. In real situations some colours are prone to change more than others, starting with reds, blues, greens and yellows. Dark cherry reds and bright yellows are particularly prone to fading (the new, fresh paint scheme of Aurizon may show signs of age sooner rather than later). Some colours such as browns and tans preserve their newly painted appearance longer than others. Perhaps this is the reason for NSW railways choosing colours such as Tuscan, Russet and other earth tones.

Any discussion on colour is subject to our experiences and prejudices. For example the colour "Violet" above is just as adequately described as "Purple". Colour in modelling is something we should consider in the context of making a better model, or giving a better impression of a scene. Whatever we decide to use to colour our lives is our distinctive and individual choice based on our memory, experience and interpretation. Too many arguments about the right colour for a model or scene are based on another individual's strong conviction in something they believe to be correct.

The right colour, like beauty is in the eye of the beer-holder!

<u>Important Note:</u>

In this article the colours reproduced may be different to your expectations. If you are viewing the article in PDF format (on screen), the electronic interpretation uses any one of a number of RGB systems. If you are reading from a printed page it is likely the colours are interpreted by a printer using CMYK format. This confusion is a natural consequence from variations in colour transmission and your memory of a particular colour. (Print the PDF file to understand the difference between screen and page colour).

To appreciate variations in interpretation of colours ask someone to view the six grey colours in the sample table of AS2700 colours (and yes there are six samples that could be called "grey"). Discuss your perceptions about the differences among these greys. To further confuse discussion centred on grey, when do whites and blacks become grey?

Graeme BARNES