***Advance notice of a new work in preparation! An extensive reference book covering the subject of scale colour in much greater detail than this brief guide. To be produced as a heavily illustrated full colour publication of about 200 pages. Progress on this project is rather slow due to other demands on my time, but a publication date will be posted on this web site when the book is finally complete, expected retail price in the region of £25.***

**"Scale colour is an atmospheric approach to modelling exactly what we see, rather than a technical approach to reproducing all that research has proven to be there."**

Now having read the title some of you will be thinking what on earth am I on about, whilst others will roll their eyes skyward thinking will that old chestnut never die. Nevertheless, let me chip in my tu'penny worth. For whilst my words are unlikely to be hailed as earth shattering pearls of wisdom, enough of you have been asking me about this topic when you have seen me at exhibitions for me to feel it may be of interest if I were to briefly outline what I mean by 'Scale colour'; So, before you get the wrong impression, this is not the same as 'weathering' a model to simulate age and deterioration, although those modellers that can convincingly weather a model, tend to have an innate understanding of the basics of scaling down colour to suggest size and distance.

So what am I talking about? As model makers we are all familiar with the idea of scaling down (or up) dimensions. A tape measure and a spot of simple mathematics is all it takes to calculate the overall dimensions a finished model needs to have. The idea of scaling down colour is perhaps more abstract. However, when in real life we look at a large object in the distance it looks small, fine detail is obscured and we really only identify it by it's basic shape, that's perspective for you. Atmospheric haze fades and alters our perception of colours until objects on the far horizon become difficult to focus on, and end up looking a washed out blurred mix of pale blues and greys regardless of what colour they actually are. Variations in lighting (natural or otherwise) can also alter our perceptions of colours which does a lot to exaggerate mood, atmosphere or character, whilst at a distance gloss surfaces tend to lose their sheen to become a mild satin finish or ultimately matt in appearance. These are all things we instinctively pick up upon and acknowledge in the subconscious long before the conscious mind has begun to critically appraise a model based upon it's dimensional accuracy or inclusion of fine details. Consequently artificially manipulating our use of colour can be by far and away the most emotive way of making a model feel more atmospheric, much more so than the time consuming production of minuscule detailing parts or worrying over the last thousandth of an inch when measuring components.

By and large we only tend to make small scale models of large things (ships, planes, trains, buildings etc.). Consequently when we look at a small scale model part of our brain is telling us we are looking at something that should be big, another part of the brain recognises that it actually looks very small. This incongruity is reconciled by assuming we are viewing from a distance. We can enhance these false perceptions of distance by artificially fading our colours and introducing subtle variations and changes, all of which imply atmospheric haze and help our small models look more realistic or atmospheric. If we actually paint small scale models the same colours as their full size counterparts, maybe even using the very same paint as used on the real thing, the brain gets confused and can't work out why it's getting mixed messages of close proximity and distance at the same time. Brightly coloured or high gloss surfaces used on small models also hide most of the detail in a dazzling shiny glare, so scaled down colours can also bring out the detail in a model, which can only add to the perceived quality of a model. Furthermore when viewing from a distance we don't expect to see very fine detail, so the use of scale colour can also trick the brain into not looking for such details, enabling us to more easily get away with not including them. Although few of us would specifically recognise all these as problems, this is why many models can start to look not so much "wrong", as "too right". They may look like exquisitely made models but not at all like the real thing, which after all is what most of us are trying to achieve with our miniature creations.

I therefore find it amusing the number of modellers who will debate for hours the exact colour of paint used by a particular company on a particular date for a particular locomotive, ship or aircraft. Even if they could get it right, it would only look correct on the full size thing. Furthermore, it is worth remarking on the startling variation in colour reproduction of old photographs and how changing lighting conditions can further vary this; Two different pictures of the same subject taken at the same time can still look quite different, consequently even photographic evidence of colours and liveries can itself be misleading. In short there is no such thing as the correct colour. You'll just have to decide what looks correct to you, but simply using a varying mix of pale, drab, matt paints instead of a single tin of gloss goes a long way to achieving a scaled down finish.

Another major aspect of scale colour is that of shadows and highlights. In the real world these help define the edges of features and give form and texture to three dimensional shapes. Since we are unable to see in Ultra-Violet or X-rays, we can not scale down the wavelengths of our light sources in the same way we scale down the dimensions of our models. Consequently lights appears to interact differently with a small model than it does with the full sized thing. Visible light refracts noticeably around the edges of tiny objects, therefore it is difficult if not impossible to create natural looking real shadows on small scale models. Consequently we need to find methods to alter our perception of the real shadows and artificially paint in or exaggerate missing shadows. What's more we also need to scale down the colour of these shadows so that these also look believable. Shadows are rarely black and should never be painted black on a model. Shadows occur where the light falling on a surface is restricted, it therefore reflects back less light, the surface looks a tonally darker version of what ever colour it is. It only looks black if no light reflects off it at all, and with multiple light sources reflecting of a multitude of surfaces some light usually reaches everywhere.

Not only must we think about the impact of scale on our judgment of shadows and highlights, we must also consider the impact of dramatic lighting and shadows in terms of making a model look more atmospheric or interesting. Simply displaying or photographing a model under the nearest spot light or lamp will not help it look atmospheric or realistic.

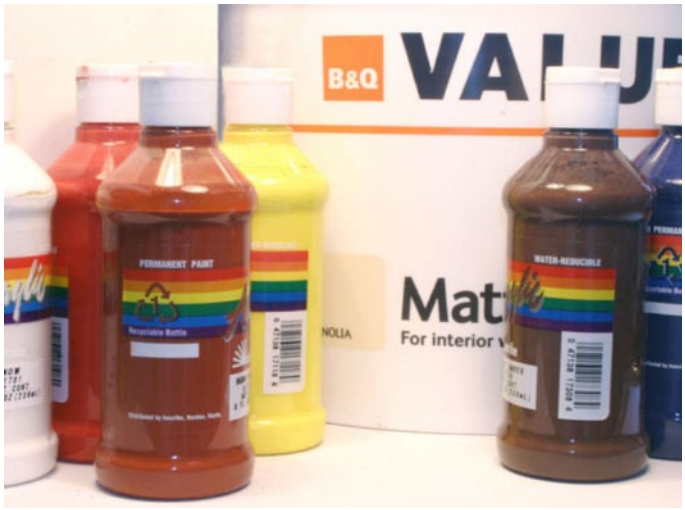
Colour psychology is a huge and specialist subject I cannot possibly do justice to here. One of particular interest to advertising agencies who can use colours to suggest or exaggerate moods. As different colours have strong connections with different moods restricting our colour palette of paints can dramatically increase the atmosphere of our models. Whereas use of lots of different colours within a small space can end up looking emotionally confused and fussy. If we greatly restrict the range of colours we use, maybe even artificially manipulating our choice of paints, biasing them away from true or accurate colours we can greatly exaggerate the feeling we are trying to create. Of course the extent you choose to scale down colours and play with the colour balance of your paints is a question of scale and personal preference. (One of the most dramatic and yet believable models I ever saw was painted entirely in pale sepia tones)

In short then, we are trying to control contrasts across every aspect of a model; Not just the main feature but also background accessories, ground work, back-scenes, maybe even bases, plinths or framing for a display. Controlling coloured surfaces and the effects of shadows and texture on those surfaces; Toning down those colours that appear too vibrant, strengthening those that appear too weak, and varying those that are too uniform until we have achieved the subtle variations, gentle contrasts and softened harmonious colour balance that simulates the effects of viewing from a great distance. We may also be trying to bring all the colours used into the same part of the colour spectrum, both to add to the overall harmony of the work and to add to the mood of the model. If we can achieve this then the whole project should work as a single entity with no single feature becoming more prominent than, or competing with another. Free from any such distraction, each viewer is at liberty to leisurely explore your work looking for that which interests them, and it is this time spent exploring or studying a model that helps it "feel" more real. If a model "feels" too busy or fussy we tend to psychologically retreat from it rather than be drawn in to it.

It would be fantastic if I could give you a simple mathematical calculation which you could use to work out just how much you need to 'scale down' each colour on your model, but sadly it's not a precise science. This is where we have to trust the artist in us all and make a subjective judgement. I will begin though by expressing a sentiment I've rarely seen in print; That is to say model making, sculpting, carving, painting, sketching and all other artistic creative processes are much more about learning to use your eyes, learning how to observe, not about learning to use your hands and learning a particular technique or how to manipulate a new material. We can all put a paintbrush in a pot of paint and transfer that to the surface of a model, but few people can reliably look at a subject and decide what colour of paint to use, or where to put it.

We can't all be brilliant artists but if we can get away from the idea that there are special tricks and short cuts we can use to become brilliant, and instead just spend more time looking at the real world, then you will steadily improve. Realistic models don't happen by accident they are made when we try to reproduce in them everything we acknowledge in real life. The more we learn to consciously acknowledge the differences between what may actually be in front of us, and how little of this we actually see, then the better our models will become. All too often people base their models not on actual observation of the real world but on assumptions made when sat at their workbench. These being heavily directed by study of plans and technical drawings along with reading the modelling press where other modellers describe what they are doing (which is usually reproducing their assumptions and misconceptions about the real world). Consequently we are all in danger of simply mass producing more and more models of each other's models. It's easy to see a proliferation of people slavishly reproducing the techniques and methods of other 'more successful' model makers, rather than studying and reproducing their chosen prototypes or real life. By all means try somebody else's methods and techniques (even mine), but be your own judge as to their success, and never be afraid to experiment with something new in order to achieve a real looking model. Remember, when looking for a suitable paint, it's far easier to start out looking at the real thing and ask what colours can I actually see in this? Than ever it is to start by reading the labels on a manufacturers tins of paint. Starting with a metaphorically clean sheet means you are unhindered by everybody else's failures, problems and misconceptions.

If anybody asks me which tin of paint I used to paint a particular model I can't give them a single answer, but will explain to them how I would attempt to mix similar colours again. All my paints are my own mixes and are decanted into unlabelled glass vials, many prepared long ago for now forgotten projects. Working in this way you are forced to actually look at your subject and the colours of your paints and mix from the most appropriate of them. Rather than relying on the manufacturer's label telling you what they think a particular tin should be used for. It is rare for me to use less than three different paints to mix even the simplest of colours, and I will occasionally work with about a dozen different bottles open. What's more if you do actually mix your own colours you can produce the subtle variations we desire by just varying the mix slightly or working in a little extra of a certain colour directly on the side if the model. If you are working solely from one pot you can't get any variation.




If I was asked to recommend a basic selection of paints to buy for model work, I could do no better than to list the dozen or so paints I keep as basics from which everything else is blended. These are nothing fancy or expensive from specialist model manufacturers, they are just cheap bottles of acrylic emulsion from the DIY store. As such I always have to hand matt versions of black, white and a mid tone grey, along with a large pot of cream or magnolia, a dark brown, a sandy coloured light brown, a natural green, plus the three primary colour; red, blue and yellow. Silver and Gold make up the last two although these are rarely used. None of these will be suitable for painting anything on their own, but odd as it might seem, this is the strength of such a small selection, it forces you to mix every colour you need rather than use something which is a poor match. The reason I recommend a large pot of the cream or magnolia is that I use this to tone down most colours, adding more the smaller the scale of the model. This works far better than fading paints with white as it subdues the contrast of hues as well as lightening the tonal values. For those who don't trust their artistic judgment or ability to mix paints to match specific colours, then by all means buy the little tinlets of colour matched paints from model shops. However, don't use these as they are, but tone them all down with a generous dollop of cream or magnolia to achieve a more believably subdued effect.

It would be easy for me to write much more on this subject, Indeed that is why I started on the book mentioned previously. However, I think the quickest way to illustrate some of the points I wish to make is with a few examples, as given below.

The first of these is a tiny 1/12th scale scratch built model of a robin's nest in a plant pot. I've talked about how blurred, indistinct colours look far more natural than the bright uniform colours we tend to buy in paint pots. Pretty much everything here has been painted mottled shades of indistinct browns and I'd challenge anybody to precisely define anything about the colours used. Nevertheless, if people can't exactly define the colours used they are unlikely to decide they are wrong. Consequently the indistinct tones used are far more likely to be accepted as being right as most of the judgement is going to be each individual's sub conscious picking up on the touches of colour that correspond with their own expectations of what is right.

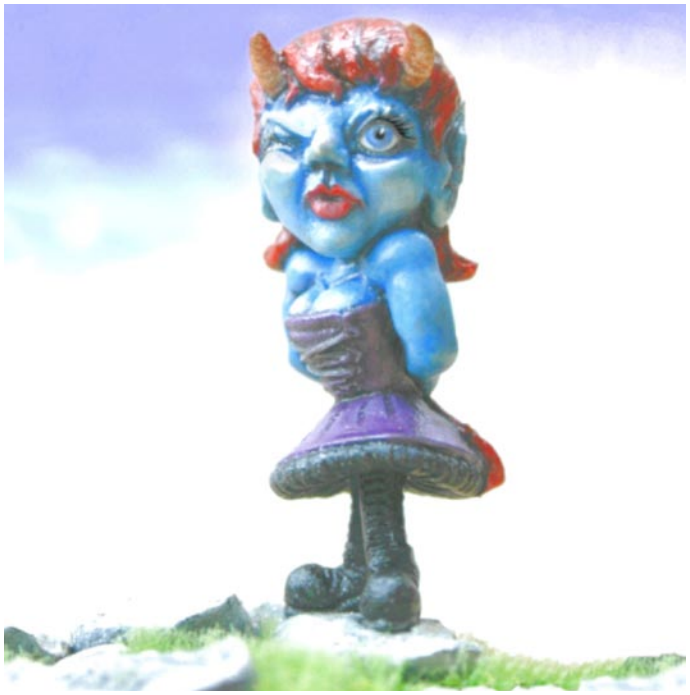
The next of these models is a 1/35th scale plastic kit assembled out of the box without modification complete with the figures included in the kit, needing only a scenic base and backdrop to produce the finished diorama. It is a good illustration of using a restricted palette of colours to enhance the mood or atmosphere of the model. Whereas normally I would scale down most colours through the addition of cream, in this instance every colour was toned down through the copious use of pale blue/grey so as to maintain the winter theme. Military vehicles would usually be heavily weathered, but in order to avoid using too much red or brown all traces of rust were kept to a minimum. Overall then the plan right from the start was to stick within the blue part of the spectrum, and in doing so exaggerate the feeling of the depths of a cold, gloomy wintery forest in the Ardennes.

This particular model is a small 1/144th scale toy painted as the result of a bet with a friend to prove my belief that good model making is not about dimensional accuracy and fine details, but about believable reproduction of colour and lighting. I was given just one day to build, paint and photograph the crudest model kit he could find. This being a nine part children's toy that cost less than the bottle of glue used to assemble it, which to meet the challenge had to be constructed as per the instructions with no extra refinements or improvements. Naturally most of the time went into painting the model, simulating the shadows of fake panel lines, small details, insignia and weathering by painting onto essentially flat and largely featureless surfaces. I'll admit I got lucky with a gorgeous sunset that evening, and by photographing the model suspended upside down against the setting sun reflecting of the bottom of the clouds, I was able to simulate a dramatic in flight aerial photograph just by turning the whole picture upside down. Shot this way, the orange light unites the aircraft with the sky in a manner that would not have been possible if I'd tried to use the computer to digitally paste the aircraft into a general aerial shot of clouds taken elsewhere. Shown at almost full size (wingspan 90mm) I like to think the end result proves my point that subdued colours along with a restricted colour palette and bold lighting can make even the crudest and most basic of models look dramatic and striking.

This particular model is a 1/43rd scale 20T brake van. Again it illustrates the use of a restricted colour palette to harmonise all of the subject with its surroundings. Magnolia has been used to subdue the bauxite of the sides of the van and surrounding brick work, and the black under frame has similarly been reduced to a mottled pale grey through the use of magnolia. What is more, since it is necessary to achieve a subtly varied finish, not just a uniformly toned down colour, this magnolia paint has been mixed into the bauxite and black directly on the side of the model. Working wet paint into wet paint we can blur and streak the paint achieving much of the weathering effect whilst simultaneously scaling down the finish to suggest size and distance.

This tiny little u-boat is made to 1/400th scale and consequently is not much bigger than a cigarette. It is used here as an example of presenting a model in the manner in which we are used to seeing the real thing, rather than as a technical example of detailed model making. As such it is back lit to keep it in silhouette and the painting is subtly blurred with more emphasis on the sculpted sea and painted backdrop than the submarine itself. Much of the delicate detailed construction may not be immediately apparent in such a view, but as it wouldn't be in real life this makes the model feel more realistic rather than less so.

This little hand sculpted caricature of a mischievous pixie stands only 60mm tall, but is a good illustration of how the ideas of scale colour can be applied in reverse to help a fantasy figure stand out and become more prominent as opposed to making a model appear more realistic through subduing colours. None of the colours here have been subdued, indeed they have been enhanced through the use of strong primary colours, which have, in turn been further enhanced with vibrant ink washes. The shadowing and highlighting is in no way subtle. Rather than subdued browns and creams I've used black and white for maximum impact. The application of a rich gloss varnish further enhances these bold contrasts. Perhaps the last trick used in the presentation of this model is to display it at such a height as we have to look up to it, rather than down on it. This again adds to it's presence making it feel much more impressive and dominant than it's small size might otherwise permit.



This last model was a somewhat unusual challenge in that I was commissioned to make a scenic display for a varied collection of 1/43rd scale railway locomotives. The client specifically requested something anonymous and lacking any obvious focal point, such that when added, his own locomotives would become the main feature of the scene. For a background to complement a wide range of unspecified subjects in a variety of colours my own work had to be very neutral. I therefore aimed to achieve a wide variety of subtle greens, yellows, reds and browns. Despite aiming for variety it was essential this was subtle variation such that the model had a feeling of a unified colour palette that linked every part together. As such the whole model was painted with just four pots of paint; magnolia, chocolate brown, brick red and olive green. These were endlessly intermixed to generate more and more subtle variation, and the airbrush used to further soften the blending across the whole model.

So, whilst there's obviously an awful lot more I could write about this subject, I can't do it justice in just a few pages. There are a myriad of thousands of techniques that must combine to produce those special models that have that supposedly elusive and magical thing we call atmosphere. Many would say that atmosphere is too subjective a thing to define, and that as such you can't plan how to build it into the models you make. I disagree as I always plan the type of atmosphere I want a model to have and work out in advance how I hope to achieve this. Whether or not you judge me to be successful in this endeavour only you can decide. However, I believe the key to all good model making is observation. You must identify not just what features make a model more accurate, but those that make it more characterful, and equally so those that contribute nothing to it's character. You must plan a good composition with pleasing balance and aesthetic flow. You must use lighting and the context in which you set your model to enhance the story you want your model to tell. Most of all you must use colour to unite all of the above into a coherent portrayal of what we see in real life. If you use your own eyes as your main source of reference and can learn to accurately reproduce what ever they see, however blurred or confused this may be, then your models cannot help but appear realistic. If your only sources of reference are technical drawings, measurements and colour charts, then your models will never be more than a sterile three dimensional pastiche of real life. The vast majority of factors that make the difference between a model that is merely accurate and one that is atmospheric are not things than can be measured numerically. They relate not to our slow conscious judgment of a model, but our immediate subconscious responses. As such it's not so much about what we make or how we make it, but about how we present what we have made.

***As mentioned at the beginning of this brief guide, I have been slowly working away writing a much more comprehensive book on this vast subject. The purpose of this has been to dispel the myth that all these subjective techniques are only within the capabilities of experienced and talented artists. I wanted to write a book for all those technical model makers who can build much more demanding models than myself but who invariably feel their models look better before they are painted rather than after. Feedback from the limited few who have proof read draft sections of this book suggest it is meeting it's goal and that my methods are described clearly and simply enough to be accessible and make a real improvement in the work of others. Three prospective publishers have been turned away on the grounds each wanted to rush me with an imposed deadline. This book is being produced to the best of my ability so will be ready only when I am happy with it. Once that point is reached I'll post more details on my web site.***