

CHAPTER 17

Preparing for work

Introductory

This second of the summing up chapters starts with an admonition and a warning. There follow sections on the choice of pigment-colours and other matters that need to be taken into account before starting to paint. Most of the suggestions relate to working in all mediums but, where there are differences, these will be pointed out.

An admonition

While considering practical matters, it will help to keep in mind the two rules which should be familiar by now:

- That all colours used in paintings should be mixtures containing some proportion, however small, of complementary or near complementary pigment-colour.
- That no region of colour on the picture surface should be the same as any other region of colour on it.

They may seem daunting, but actually, as has been explained in earlier chapters,¹ they provide a context of thought that simplifies matters considerably.

A warning

It would be nice if the particular choice of pigment colours could be left to personal inclination, but there are at least three strong reasons for not doing so:

- The very limited availability of pigment-colours with the requisite properties means that there is little room for manoeuvre.
- It is widely taught and believed that orange, green and violet are not necessary because they can all be mixed from primaries. This is simply not true

¹ Chapter 14 and other places

with respect to any actual orange, green or violet tube colour.

- Personal prejudice can seriously limit the exploration of colour space. For example, many people do not like what they see as the synthetic (unnatural) quality of phthalocyanine green² and dioxane violet³. Also, it is common for people to react against oxide of chromium green because of its rather dull appearance.

In all three cases what is being forgotten is that we are seldom choosing colours for themselves but for their *mixing potential* and all three of the above named pigment-colours are very useful for that purpose. The phthalocyanine colours and the dioxane violet are relatively pure and translucent. Accordingly they are useful for mixing relatively pure colours with their neighbours on the colour circle and more importantly still for mixing deep, rich colours, including blacks. The oxide of chromium green can be a godsend for its very high degree of opacity, as can any one of the thousands of mixtures that can be made using it.

FUNDAMENTALS OF PIGMENT COMPOSITION

Artists thinking about colour mixing should take two considerations into account. These are:

- All pigment-colours have a unique absorption/reflection characteristics.
- No pigment-colour is either totally opaque or totally translucent. All of them are at different places on a continuum between the theoretical, although actually non-existent, extremes.

In practical terms this means two things:

- No pigment-colour as we find it in the tube can be mixed from no matter what combination of other pigment-colours.⁴
- Even when the match with a pure pigment-colour is close (as, for example, it can be when trying to match earth colours), the mixing properties of the result will be different from those of the pure pigment-colour when combined with the same combination of other colours.

2 Introduced by Rowney as “*Monastial Green*”; Otherwise often given names associated with the artists colour company, such as “*Winsor Green*” or just fanciful, eye catching ones.

3 Again often given company names such as “*Winsor Violet*”.

4 Unless the manufacturer has put a mixture in the tube. This is actually quite common for cheaper ranges of colours particularly when familiar names are followed by the word “*hue*”. This is one reason for sticking to “*artists colours*”.

THE PERIPHERY OF THE COLOUR CIRCLE

No pigment-colour reflects a single wavelength of light. Rather they all absorb and reflect across a band of wavelengths. On occasion the wavelength combination includes some surprising components, for example though clearly a blue, French Ultramarine, in addition to reflecting in the short wavelength (blue) part of the spectrum, reflects to some extent in the long wavelength (red) part of the spectrum. It is important to keep in mind two implications of this:

- The narrower the band, the purer (more fully saturated) the appearance (for example, cobalt blue, phthalocyanine green, azo yellow, cadmium red or a dioxane violet).
- The wider the band, the more de-saturated the appearance (for example: oxide of chromium green, yellow ochre, venetian red and any pink, brown or grey).

The periphery of the colour circle is made up of unmixed pigment-colours and mixtures between them and adjacent unmixed pigment-colours.⁵ When neighbouring pigment-colours are mixed together, the narrower the band of wavelengths reflected by them and the nearer they are with respect to their wavelength absorption/reflection characteristic, the purer will be the result. The further away from one another they are in these respects, the greater will be the de-saturating effect of complementary influences. For example a mixture using a Phthalocyanine blue and an Azo yellow will produce a much purer green than one made up of a French Ultramarine and Cadmium yellow.

It follows that any one who wishes to create the colour circle with a maximum number of pure colours, will find it necessary to start with a large number of different, as pure as possible pigment-colours. Georges Seurat with the limited pure pigment-colour resources available in his time (1880s) settled for at least twelve. My friend, the artist Alan Cuthbert, with many more modern pigment-colours at his disposal, did rigorous experiments in the 1970s and concluded that he needed eighteen such “*parent colours*”. Mixing between any one of these with adjacent colours in this selection, he was able to reach his objective of creating 72 pure-as-possible colours.⁶ Since many new pigment colours have come onto the market since then, it can be supposed that, if Alan had done the same experiment today, he would have

5 In other words those that are the most similar to it in terms of their absorption/reflection characteristics.

6 Corresponding to the maximum number illustrated in the Munsell Book of Colour, the scientific reference on the subject.

felt the need for an even higher number, presumably one in the twenties.

THE REMAINDER OF THE COLOUR CIRCLE

All the remainder of the colour circle and the colour sphere, which extends it to include the black/white dimension, is made up of de-saturated (“*impure*”) colours. As indicated earlier, nobody knows how many colours can be mixed, but it exceeds Alan’s 72 pure colours by at least a matter of hundreds of thousands and very possibly by well over a million. It follows that the overwhelming majority of the colours which are available for use by artists are mixtures. It is this treasure-trove of colour that is opened up by the rule of Professor Bohusz-Szyszko that, “*All colours should be mixtures containing some proportion of complementary colour.*”

Whenever an element of complementary is added to any mixture, however pure the parent colours, there will be an element of de-saturation (“*impurity*”). This may be so small that it is invisible. However, it is important to remember that it is one of the main theses of this book that even smallest differences can play a vital role in determining how we experience a painting as a whole.⁷ In this case, the ‘*impurity*’ frees the colour to take its place in illusory pictorial space.

CHOOSING COLOURS FOR MAKING MIXTURES

If we wish to make a large range of colours that are different but similar to any particular colour, we are obliged to make mixtures containing complementaries or near complementaries. For example, if we wish to make a large range of similar greens,⁸ we will need to make mixtures containing at least some proportion of red pigment-colours, orange pigment-colours and/or violet pigment-colours.⁹

If pure looking colours are required, a minimum of complementaries or near complementaries will be required. Using some variant of the progressive colour mixing procedure detailed in *Chapter 13*, large numbers of colours can be cre-

7 Even ones below the threshold of our awareness.

8 As explained in *Chapter 14*, this means any number in excess of about five.

9 N. B. Although it is perfectly possible to produce an orange mixed from a red and a yellow or a violet mixed from a red and a blue, refraining, as many people do, from using orange or violet pigment-colours as a matter of principle makes a travesty of the potential of the fundamental principles indicated above concerning how to create a maximum of colours.

ated that are only very slightly different from the pure tube-colours. There, it is suggested that it might be possible to make a cluster of around 150 pure-looking greens that are hardly noticeably different from the parent tube-colour. Similarly it should be possible to create in the range of 150 pure looking colours that are scarcely different from to any other tube-colour. In these mixtures of seemingly pure colours, there is no visible sign of the particular colour quality of the complementaries or near-complementaries that they contain. Whether we like or dislike any of the component tube colours is of no practical importance.

If fairly equal amounts of the complementaries or near-complementaries are used in mixtures, the result will be colours within the range of browns and greys.

CHOOSING COLOURS TO BUY

From the above it is clear that for almost all paintings, the implementation of the rules will be made easier by having available a fairly large palette of colours with representatives in all segments of the six segment colour circle (details below). Also, as far as possible there should be both translucent and opaque colours in all the segments.

Whether or not artists accept Professor Bohusz-Szyszko's rule concerning complementary mixtures, they will have no alternative to using a majority of mixtures if they seek to get anywhere near to reproducing the variety of colours found in nature. From what has been written above, it is clear that, in a very high proportion of these, the original characteristics of the pigment-colours from which they are composed will be lost. In short, as suggested above, the general rule is that how we respond to the way a pigment-colour looks in a tube has only marginal relevance to its potential as a colour mixing agent. My experience as a teacher makes clear that this is an important point. Many students tell me that they do not possess this or that colour because they do not like it. For example, students deprive themselves of phthalocyanine greens, oxide of chromium green and various sorts of violet on these grounds. It does not occur to them that this self-imposed limitation explains why they find themselves so far from being able to mix the range of greens and of other colours they need for making the naturalistic paintings to which they aspire.

Taking all the above considerations into account, it is easy to see that the first rule for choosing colours to buy is to get plenty. At a minimum these should

include two colours from every segment of the six segment colour circle, plus white and black (fourteen in all). The earth-colours though desaturated are useful for their opacity. Another factor is lightfastness. If you want your painting to last it is best to consult the information on this subject provided by the manufacturers. Otherwise colours can be chosen according to personal taste. If you are enjoying a colour for its own sake, it can only enhance the pleasure of using it.

EQUIPMENT

Little has been said so far about equipment since it has nothing directly to do with the matters discussed. However, since badly chosen equipment can ruin the best efforts of artists, it is worth making a few points relating to the subject.

Paints

In my view, the only good reason for not using artists' quality paints is that you cannot afford them. The manufacturers produce the other qualities by cutting out expensive pigments (sometimes replacing them with cheap mixtures - often given the name of a familiar colour qualified by the word "*hue*") and using cheaper and less suitable mediums.

Brushes

The best tactic is to buy one relatively small (not too small) brush and discover its limitations for yourself. Each limitation will suggest another brush to buy. In this way you will gradually accumulate a range of brushes suitable to your needs and you will know the virtues of each. One of my students, never went beyond one small brush when painting her watercolours. She found that the self-imposed limitations helped her to develop a style of work that gave her ample room for exploration and others a great deal of pleasure. My watercolourist friend, Derek Dalton, having started with one, eventually accumulated a huge number of brushes (certainly over fifty) and had a good story as to why he had found a need for each one. They included pastry brushes, house painters brushes, boat painters brushes and sticks, in addition to an impressive range of fine Kolinsky sable brushes. The results he obtained from his selection could be very special indeed.

Picture-support

The picture-support can make a large difference to what can be achieved in a painting and also in how well it will maintain its characteristics. For example:

- There are grainy and smooth watercolour papers which produce very different results. Some watercolourists find that they prefer one and others the other. It would be a pity to find yourself trapped into using the wrong one for you. Also, most watercolourist prefer a robust paper that can resist being flooded with water and that can be submitted to a certain amount of punishment when creating effects that depend on lifting off colour. However, the same student who works with only one brush loves to explore effects she can make on any paper that comes to hand (she once used crumpled brown packing paper to good effect). In short, in this matter as in all others, there are no rules until a project is defined.
- In my experience, pastel papers sold as such are too often particularly unsuitable for the job. Some are too thin and crinkle too easily if ever they get the slightest bit damp. Others have a sandpaper-like surface that is very efficient at transferring pigment from pastel stick to paper. Unfortunately, it is also a surface that both makes mixing colours on it much more difficult and ensures that the pastel sticks get used up very quickly, which is bad for the artist's purse.¹⁰ Myself I use acid free white card which I find works well for my purposes.
- There is a huge variety of canvasses and textured surfaces that are sold for painting with oils. Most of these serve their purpose, but some can add unnecessary difficulties to the painting process. The best approach, as with choosing watercolour paper, is to try out various alternatives and find out the one that suits you best.

Palette

The main requirement for a palette is that it should be big enough. In my view, even the largest palettes available commercially are on the small side. The amount of mixing space available in a watercolour box is ludicrously inadequate. Some artists use table tops, others drawing-board sized boards surfaced with Formica. Some use a number of enamel dinner-sized plates which, although not very large in themselves, in combination represent a large mixing surface with the

¹⁰ Though correspondingly good for the purse of the manufacturers.

advantage of being easy to carry around. Their main advantage is this portability.

Implications

This chapter on colours and equipment prepares the way for the last chapter of “Painting with Light”, which returns to the claim of Professor Bohusz-Szyszko that his dogmas represented, “All you need to know about painting”.