THE HARMONY AND FUNCTIONS OF COLOUR IN ART.*

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(*Continued.*)

These results would be somewhat minimized and modified if you divided the colours from each other by broad lines of black or white or colours. You will find also that if your colour is put on a white ground the colour will be stronger than if you put it on a black ground, because in the case of the white ground it tends to overpower the extra white rays given out by the colour, and in the case of the black ground the extra white rays given out by the colour are increased by those reflected from the black ground.

All this is but the alphabet of colouring. You will find that there are numberless gradations of hue and tint and shade of colour, and on your perception of these and skill in using them will depend your refinement of colour. Many never get beyond the use of the primaries and secondaries and perhaps one or two tints of the tertiaries, while between white and any of the primaries a skilful colorist might make a hundred different shades.

In nature the colours of shadows are always in contrast to their lights, and of positive hues with negative shades; accordingly you find that coloured back-grounds shew out white sculpture best; of these blue is one of the best colours from its affinity with shade, and we know that the Greeks used this a good deal in their back grounds for sculpture, etc. So gold, being in close relation to light, is good for dividing up colours and very useful in decoration, and will go with any colour. This is the reason it is used so much for frames for pictures.

The subject of colour blindness is worthy of attention; and many more persons are either colour-blind or have imperfect colour vision than is generally supposed. This is a very important matter in its bearing on railway officials and employees, as often the safety of carloads of passengers depends on the engineer's correct observation of the colored signals. In France it was found lately that over 9 per cent. of the railway officials were color blind.

The commonest defect is an imperfect impression of red, and many persons can see no difference of *colour* between a scarlet geranium and its green leaves, but only a slight difference in tone. You can see how this would affect an artist for example in the mixing and laying on of his colors, or a salesman in matching ribbons and silk, and other fabrics.

It will be useful to us to know something about the colours of which we have been speaking and which some of you may be indeed using.

A knowledge of his pigments is most important to an artist. Many of the failures of pictures and their grievous change for the worse in a few years after they were painted, are due to this want of knowledge. Both Sir Joshua Reynolds and Turner were great experimenters in colors, and sometimes sacrificed safety and permanence to attain brilliancy and a particular effect. There is no doubt that many oil paintings have altered very much from this cause, and others from successive coats of varnish laid on with intermediate layers of dirt, until what we see now as works of the great masters are often but caricatures of what they were originally. Also with water colours. Recently there was quite a journalistic war as to whether water colours were permanent or faded, and I think there is no doubt that it was conclusively proved that many water colours had undergone material change by exposure to light and especially to strong sunlight, and that certain colours were more evanescent than others.

In colours for the palette you should only use those which possess the following qualification—purity and brightness, body, or on the other hand, as the case may be, transparency, and above all, durability. There are very many beautiful colours, but the necessity of the above qualifications restricts the number to comparatively few. But this is not to be regretted; the tendency is to use too many colours. Many a fine picture has been painted with only three or four tints, and Henner often paints pictures which are lovely in colour and feeling with but three colours. The more you mix colours the muddier you are apt to get them and the more difficult it is to keep purity of tone.

Although White is not properly speaking a colour, yet it is an important pigment, as it enters into nearly all the other colors and is much used in combination in oil painting and in tempera, as it gives light and vividness, as well as easy toning down. White lead is the base of most of the white, and has this defect that it is apt to turn black in time and injuriously affects some colours. Zinc white is durable, but wants the body and brightness of white lead.

For water colour Chinese white is mostly used. It is a preparation of white oxide of zinc mixed with gum arabic, glycerine, etc., and especially in body colour work, is most valuable.

The primary colour Red is, as we found, the most positive of colours. Being so, it is somewhat difficult to manage, and has to be used very sparingly. If you will notice, a touch of red here and there in a picture will brighten it up, and draw attention to itself in the most surprising manner. Nature uses red with very great reserve, and when used, takes great care to tone it down with green or other soothing colour.

Vermillion if of the genuine kind is a good durable colour, and has great body and weight, but for this reason you will find it will not readily mix with other colours.

Indian Red is brought from Bengal, and is an iron ore or peroxide of iron. It is permanent and very opaque.

Light Red is a brown ochre, burned, and is very useful for flesh tints and in landscape.

Lake is a very transparent pigment, and is of several kinds. The scarlet lake is obtained from cochineal, and washes well; it is, however, liable to fade in strong light.

The carmines are also obtained from the cochineal, and work well, but are liable to fade in strong light, and are not permanent with white lead.

Blue is the coldest and most retiring of the primaries, and cools and tones down all colours with which it is in combination.

Ultramarine is perhaps the most beautiful blue that we have, and is prepared from the lopis lazuli, a precious stone found in Persia, etc. It is very transparent and pure, and has great brilliancy and permanency. It is largely used for skies. Unfortunately it is often adulterated, its costliness being a strong temptation.

Cobalt is prepared with metallic cobalt or its oxides, and is next to ultramarine in its brilliancy, and in water colour, works even better than the other. It is permanent so far, but is affected by time.

Prussian Blue is formed from prussic acid, iron and alumnia, and is a deep and strong blue of great body and transparency.

Indigo is got from plants in the East and West Indies; it is also very powerful and of great body and is transparent. In mixture with white lead it is fugitive and is not so reliable as Prussian blue.

Yellow is the remaining primary, and is the nearest to light; in varying tones it is much used in nature. It is akin to gold, and was often so used in old manuscript.

Chromes are a modern discovery, and are mostly chromates of lead. They are brilliant and beautiful, but are not safe colours, as after a time they lose their purity and become dull and heavy. They are also injurious to some blues when mixed.

Naples Yellow is a compound of oxides of lead and antimony, and was originally prepared at Naples, hence its name. It is a pleasant warm tint, is opaque and covers well, and in an oil medium is permanent and good, but will ultimately change its colour, in water colours, and must not come in contact with oxides of iron of any kind.

Yellow ochre is a native pigment found in most countries. The ochres are very useful and practically permanent.

Raw Sienna is an iron ore, but it is very useful and is transparent, and best of all, is permanent.

Cadmium Yellow is prepared in different shades and is a strong, light, pure useful colour; it is prepared from the metal cadmium, by precipitation with solution of sulphuretted hydrogen. It is permanent and good.

Gamboge is obtained from certain trees in India, and is of a gummy resinous nature. It is a bright, transparent, delicate yellow, and is exceedingly useful, not being affected much by sunlight or impure air, but it does not show in gaslight.

Indian Yellow has been long used in India, and is a beautiful, pure yellow, but it is not lasting, and in oils is very fugitive; it has a very strong unpleasant smell, and is not a safe colour.

We will not for the present take up the secondary and tertiary colours, as they are in large measure products of the primaries, and the subject is too large to treat properly just now, but rather go on to look at color as illustrated in painting, architecture and sculpture, and first of painting.

All painting was originally a hand-maid to architecture, that is, was employed to beautify parts of a building, and was incorporated as part of the same in fresco and tempora work, and therefore, being painted for, and actually at a particular spot, its colour was made to harmonize with its position. The modern pictures, or, as we would say, easel pictures, are much more recent, and being intended to hang anywhere, are governed by no such restrictions, but have each their own key of colour, independent of everything else. It is this that makes a modern picture gallery so confusing and tiring. Every picture is out of sympathy and tone with its neighbor, and if by very skilful hanging this is in any way modified, it can never be wholly got rid of. This is also true to a certain extent in our houses; pictures are bought and hung on our wall which are out of touch and tone with their surroundings—whether it be the furniture, the hangings, or the other pictures—and consequently there must be a certain amount of incongruity. What we call oil painting was practically not known, at least in its modern form, until the beginning of the 15th century. When the brothers, Van Eyck, the Flemist painters, may be said to have discovered it. Nearly all the work done previously to that time was in distemper, and therefore more suited to permanent positions on the walls of churches and other buildings.

Vasari tells us that Jan Van Eyck, who delighted in alchemy, set himself to try various kinds of colours and oils to make varnishes, as artists at that time knew of no way in which pictures on panels could be made durable, and could be washed without losing colour. He made many experiments and at last found that oil of linseed and oil of nuts were the best for drying. He also saw that when the colours were mixed with these oils, not only were they safe from injury by water, but the colours also had more lustre, and the colours blended better than in tempora. The fame of this invention soon spread in Flanders. Even the Flemish artists endeavored to keep the secret of oil painting, and it was not until later that it was known in Italy, and stories are told of Venetian painters disguising themselves and going to Belgium to try to learn this secret. One Antonello, of Messina, was so struck by a picture in oils that had been sent from Bruges to the king of Naples, that he set off for Belgium, and by dint of giving Jan Van Eyck numerous presents and flattering him, he got the secret, and returning to Italy, settled in Venice and painted many pictures in this new method, which could be kept secret no longer, and was rapidly adopted by other artists.

Painting upon the walls had certain advantages; it could not be carried off so readily as an easel picture, nor without risk of ruining it. It is said that the king of France tried hard to get the "Last Supper" of Leonardo da Vinci, which he painted for the friars of San Maria delle Grazie at Milan, transferred to France, but the risk was too great, and it has remained in position ever since, although now but a wreck of its former self. It is pleasant to find the estimation in which great art was held at that time, for we are told that another picture that Leonardo painted about this time, at Florence, was so good that his rooms were filled for days with crowds of people going to see his works as to a solemn festival. And the story of Cimabue's Madonna is well known, how it was considered such a marvellous thing that it was carried through the streets in joyful procession to the Church of S. Maria Novello, where it still is, and when King Charles of Anjou was entertained at Florence, a sight of this picture was considered a very important part of the programme. Would that this love and appreciation for art was as general now as then—Art would need no other stimulus.

As soon as painting in the medium of oil became known, a great change came over the character of the works; the scope of subjects became greatly enlarged; mythology, ancient and current history, classical story were drawn upon, and a great impetus was given to painting generally. Greater richness of colour was attained than was before possible with tempora.

In landscape painting, as in all painting, it is of the first importance that we preserve the clearness of our colour, as has been said by a living artist: "Good painting is like beautiful language, it must express briefly, clearly, forcibly, our meaning; each finishing touch in a picture should be considered like one word in a sentence; to put a number of touches where one ought to suffice is like stammering in painting."

We come now to colour in *Architecture*, and here the same laws of harmony govern as in painting, but being on so much larger a scale, and viewed in connection with the surroundings of nature, the scheme of colour must necessarily be on a much broader and simpler key. Under the sunny skies of Italy they revel in the most beautiful colours on the outside of their buildings, which present a continual feast for the eye of the beholder. The Duomo at Florence and the older Baptistry are glorious in colored marbles, and not a little of the indescribable beauty and loveliness of Giotto's Tower there, is due to its color as seen under soft Italian skies. St. Mark's at Venice, both inside and out, is rich in coloured marble and gold mosaics, mellowed by time into beautiful hues.

It is interesting to know that in all ages, and amongst all peoples, polychromy has had an important place in architecture. Hittorph, in his investigations in Sicily and the Acropolis Selinas and other temples, and recent investigation in Greece, has abundantly proved the liberal use the Greeks made of colour on the exterior of their temples, etc. The custom also prevailed extensively all over France in the middle ages and during the Renaissance, but gradually declined in the reign of Louis XIV. Viollet le Duc, the late eminent architect and antiquarian, made a careful examination of Notre Dame Cathedral at Paris, and found unmistakable evidence that a large portion of the facade had been radiant with colour, and even in England many of our cathedrals there show also remains of colour, but the climate has dealt too rigorously with them to leave much evidence. Somehow when we took to borrowing Roman Orders and Architecture, both in

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