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## WHAT IS COLOUR?

*When I first started painting, I was most interested in technique. Then as I became more familiar with the media, composition became more important to me. As I started to understand composition expression became more important. And to express myself effectively in painting, I needed to know an astonishing amount about colour.*

*[Stephen Quiller](#)*

I've come up with seven different ways of looking at and responding to the question "What is colour?"

1. [A scientific perspective](#) – how we experience colour
2. [A materials perspective](#) – pigments and dyes
3. [A classification perspective](#) – naming chemical and paints
4. [A systems perspective](#) – models for thinking about colour
5. [A behavioural perspective](#) – mixing colours
6. [A cultural and symbolic perspective](#) – in art history
7. [An experiential perspective](#) – from representation to emotions

Figure 1: Pigments for sale on market stall, Goa, India.

Photo by [Dan Brady](#) from [Flickr](#) via [Wikimedia Commons](#)



This colour project will provide an introduction to each.

First a short explanation of what each of the perspectives is about

Then, in order to keep things accessible, at the end I've got a [glossary](#) of words which get used in relation to colour plus a bibliography of books I've consulted when developing this article.

If you're ready to start learning more about colour with me, read on!

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## A SCIENTIFIC PERSPECTIVE - HOW WE EXPERIENCE COLOUR

Books about colour seem to divide into those which go off into great big long explanations about physics and the science relating to what is colour – and those which don't.

The former tend to get a lot of artists switching off just as they've opened the book or skipping that chapter and the latter leave would-be artists with no little or understanding at all of the basic principles about what colour is and how it works.

My own personal perspective is that it's very useful to understand some of the scientific basics about colour but it's probably better to avoid the physics lesson if people know where to go to find out if they want to know more. I think it's also unhelpful and misleading avoid any explanation at all which leaves people with incomplete and misconceived ideas about colour.

I'll be providing an overview of the basic scientific concepts and facts relating to what is colour:

- **The differences between the different characteristics of colour** known as:
  - Hue - otherwise known as pure colour
  - Value - otherwise known as lightness or brightness or luminance
  - Intensity – otherwise known as colourfulness or saturation or chroma
- **How colour is made** – the differences between:
  - Additive processing – which relates to all things visual and digital – which includes everything you are looking at right now)
  - Subtractive processing – which relates to pigments and paint
- **How we see and think about colour**
  - Colour - what our eye can see
  - Colour - what our brain can remember

I'm not going to deal at all with optics and the physiology of visual perception or the physics of light and wave lengths – other than to note a few basic facts.

## A MATERIALS PERSPECTIVE – PIGMENTS AND DYES

What is the colour in paint?

Colour in paint comes from pigments and dyes. All media – oils, watercolours, acrylics, pastels and coloured pencils – are derived from the same pigments and dyes. What varies is the vehicle used to bind the pigment together.

Some pigments and dyes have been around for a very long time and some are modern and the result of recent manufacture. Some pigments are extracted from natural sources while other pigments are manufactured.

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It's important to know that not all pigments behave in the same way. Consequently it is worth trying to understand a little bit more about the characteristics of different pigments.

This is different from understanding the difference between different paints. Differences between media and between different brands of one medium are significantly influenced by the different formulae used by different manufacturers and the extent to which they vary substances used to bind the pigment into the medium.

Basic concepts include an elementary understanding of:

- Where natural, organic and inorganic pigments and dyes come from
- The relationship between pigments and dyes and lightfastness (why you might want to get rid of very old paints!)
- 'Old' pigments still in use – and those which have been replaced
- 'New' pigments created in the laboratories – and why they are a good thing

#### A CLASSIFICATION PERSPECTIVE – NAMING PIGMENTS AND PAINTS

People often confuse the names of paint with the names of pigments and dyes. They're not the same thing – although manufacturers often 'borrow' the name of a pigment or dye when creating a new colour of paint.

Unfortunately, some manufacturers also provide paints with names which have nothing whatsoever to do with their ingredients!

This introduction will provide an overview of

- What's in a name? Why people get confused.
- How naming conventions developed
- How pigments and dyes are classified, named and numbered
- How paints are named – and why the names of colour paints can sometimes mislead

#### *Colour according to [Chambers Dictionary](#)*

*colour or (US) color noun 1 a the visual sensation produced when light of different wavelengths is absorbed by the cones of the retina and relayed, in the form of nerve impulses, to the brain; b the particular visual sensation produced in this way, depending upon the wavelength. 2 any of these variations or colours, often with the addition of black and white. 3 photog, art the use of some or all colours, as distinct from black and white only • in full colour. 4 a colouring substance, especially paint. 5 a the shade of a person's skin, as related to race; b the darker skin shades. 6 pinkness of the face or cheeks, usually indicating healthiness. 7 lively or convincing detail • add local colour*

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*to the story. 8 richness of quality in music, or its mood and quality generally. See also [colours](#). verb (**coloured, colouring**) 1 **a** to put colour on to something; **b** to paint or dye. 2 (often **colour something in**) to fill in (an outlined area or a black and white picture) with colour. 3 to influence • Personal feelings can colour one's judgement. 4 intrans to blush. **lend colour to something** to give it credence; to make it more believable. **nail one's colours to the mast** see under [colours](#). **off colour** colloq unwell.*

*ETYMOLOGY: 13c: French, from Latin color.*

#### A SYSTEMS PERSPECTIVE – THE COLOUR WHEEL

Over the centuries, lots of people have tried to develop different theories or systems for understanding and explaining colour.

The one conclusion I can offer is that no one system ever explains everything.

Another conclusion, suggested by some, is that it is better to place practice before theory and to learn by doing rather than learning theory from tutors and by reading books and then practicing it.

*In order to use color effectively it is necessary to recognise that color deceives continually.*

*To this end, the beginning is not a study of color systems*

*Josef Albers*

However, if you want to know a little bit more about some of the different systems which have been developed I'll be summarising the following systems:

- the pigment wheel
- the process wheel
- the munsell wheel
- the light wheel
- the visual wheel

Reference will also be made to sources of more information and suggested ways forward for:

- People who want to learn more about the theories
- People who want to discover more about how colours work for themselves

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## A BEHAVIOURAL PERSPECTIVE – MIXING COLOURS

Next I'll be looking at:

- How colours behave in a context (otherwise known as 'why the background matters!')
- The different ways in which people mix colours as paints.

The latter will include an overview of the different categories of colours. Names and definitions are included in the glossary.

- The dominance of triadic colours
- Primary colours – what are they and are they always the same?
- Secondary colours -
- Tertiary, quarternary and qiniary colours
- Complementary colours
- Analogous colours

## A CULTURAL AND SYMBOLIC PERSPECTIVE

This part of the project will provide a very brief overview of the place of colour in the history of art.

Colours in paintings have had a cultural and symbolic meaning for many years – and learning a little about this has enabled me to understand more about what I'm looking at

Concepts covered will include

- How colour names have developed over time
- How colour triads vary according to country and culture and time
- How the significance of a colour often relates to its constituent pigment
- Meanings associated with different colours

## AN EXPERIENTIAL PERSPECTIVE – FROM REPRESENTATION TO EMOTIONS

Colour is used to represent what we see. Colour is used to express what we feel. Both of these perspectives come from our individual experiences of seeing or feeling.

This part of the project will look at issues to do with how we paint and use colour – in a literal and metaphorical sense.

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## APPENDICES

## COLOUR – A GLOSSARY OF TERMS

This is going to be developed over the course of the project

**Analogous hues** - hues which are next to one another on a colour wheel

**Biological pigments** – pigments from biological matter including botanical materials, animal waste, insects and molluscs

**Chroma** – a Greek word meaning colour. The saturation or brightness or colourfulness of a colour. Chroma can also be used to describe the purity of a hue and/or describe the strength of a hue

**Chroma strength** – the degree of difference in pure hue strength

**Chromatic** – relates to colours

**Colourfulness** – the perceived difference between the colour of some stimulus and gray

**Colour wheel** – a model which demonstrates the colour relationships by placing different hues around a circular shape

**Complementary hues** – hues which are directly opposite one another on a colour wheel

**Glazing** – layering of a transparent colour(s)

**Inorganic pigment** – An organic compound material which does not contain carbon.

**Light wheel** – a colour wheel which arranges colours in a circular shape according to the result of combining different coloured light. Primary colours are red, green and blue (RGB) and a light wheel helps with using colour as part of an additive process

**Mineral pigments** – Pigments derived from mineral sources

**Monochrome** – having only one colour or represented by black and white alone; using shades of only one colour

**Natural pigments** – pigments which come from animal, vegetable or mineral substances found in the natural environment

**Organic pigment** – An organic compound material which contains carbon.

**Pigment** - A pigment is a material that changes the colour of light it reflects as the result of selective color absorption. Permanence and stability are desirable features of pigments used for art.

**Pigment wheel** – a colour wheel which is arranged to ease working with hues on a subtractive basis. Its primary hues are red, yellow and blue.

**Primary colour** – a hue which cannot be obtained by mixing other hues.

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**Primary colours (mixing light)** - any of the three colours (red, green and blue-violet) which together give white light, but which can also be combined in various proportions to give all the other colours of the spectrum

**Primary Colour (mixing pigment)** any of the three colours (red, yellow and blue) which together give black, but can also be combined in various proportions to give all the other colours of the spectrum which can be derived from pigment colours.

**Quarternary** – the mixture which results from a primary hue mixed with a tertiary hue in visually equal proportions

**Quinary** – The mixture of a secondary hue and a tertiary hue in visually equal proportions

**Saturation** - The relative saturation of a hue. All pure hues at full strength are fully saturated – they are the most intense they can be.

**Scumbling** - softening the effect of existing colours in a drawing or painting by applying a very thin coat of opaque or semi-opaque colour, by light rubbing or by applying paint with a dry brush so that some of the underneath colour remains visible

**Secondary colours** – A hue which results from mixing two primary colours.

**Triadic hues** – three hues which are equidistant on a colour wheel. (These can vary depending on which wheel is being used).

**Triadic colour schemes** – a colour scheme formed by three hues that equidistant on a colour wheel.

Note: Glossary developed from '[Colour](#)' by Edith Anderson Feisner, the [Chambers Dictionary](#) and [Wikipedia](#)

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