Prisms, Palettes and Panoramas: Colouring the World in the Seventeenth and Eighteenth Centuries

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Blue-Sky Thinking : Can We See 17th - 18th Century Colours ?

How should we distantiate our perception of the colours of the past ?

1) Colours have changed and cannot be restored

a. An exhibition took place in 2012 at the Musée Cognacq-Jay 'La Patine du temps,' arguing that it is impossible to restore paintings to their original state. One of the most telling examples was a comparison of two portraits of a child by Greuze (1775), where the unrestored painting, though crackled, had depth, whereas the relined painting, though it had a faultless surface in an attempt to restore it to its original state, gave a very flat effect and had lost its depth. You will note that the exhibition was contemporary with the controversial restoration of Leonardo's *Saint Anne* in the Louvre, and remember that Cognacq-Jay is a museum of the City of Paris whereas the Louvre is a national museum; they may have different approaches.

b. 17th and 18th-century writers knew that colours change; they knew that in addition, varnish darkens, and so a dark picture was an asset – a proof that it was an Old Master painting, so much so that forgers sold deliberately darkened pictures. Hogarth makes fun of the taste for dark paintings in his *Time Smoking a Picture* (1761).
Experimenting on pigments sometimes had a disastrous result, as some of Reynolds's paintings show. He experimented on various mixtures, which in the course of time proved to be unstable and darken.
As part of the debate on the relative merits of drawing and colour initiated in the academies of the 17th century, and on the relative

merits of painting and of literature, colour was an image of transience, a view put forward by Pope in *An Essay on Criticism* (1709)

> The treach'rous colours the fair art betray,
> And all the bright creation fades away ! (494-95)

So perhaps we are closest to our 17th and 18th-century forbears when we recognise that we cannot see the colours of their paintings?

2) We should historicise colours and our perception of them

a. Now to look at material culture, the period we study is characterised by the coexistence of traditional natural colours and the first synthetic chemical colours. The first of them, Prussian blue, a cyanide, was invented in the first decade of the 18th century by a Prussian colourman. It was soon adopted by painters, frequently in a light form to paint the skies, as it opened new possibilities to them. Among those who most widely used it for their skies was Canaletto, and we should bear in mind that our mental image of Venice, largely influenced by the *vedutisti*, with its light bluish-greenish sky, is the result of a then recent chemical discovery.

b. But can we see Canaletto's paintings as British collectors of the 18th c. saw them ? A major collection is to be found in the Canaletto room at Woburn Abbey (see 'Woburn Abbey'), where they were placed in 1800, coming from Bedford House in London for which they had been commissioned in the 1730s. As we can see, the room has windows opening into the grounds and is very bright. This is not the original lighting; when the paintings arrived, the Duke of Beford had the windows blocked so that all the paintings could be hung in one room, and the windows were reopened only in 1955, with three paintings removed to other rooms. The guests in 1800 would see them in a dark room, and in addition with the flickering light of candles, not with our stable lighting. Can we really reconstruct their experience or recreate their perception? we can attempt to do so in

an animation with modern media, as long as we are aware that it is only an approximation.

3) How far does 19th- and 20th-century research on colours separate us from earlier centuries?

Just a few examples of approaches to colour which have emerged since then:

a. Among the discoveries on colours in the 19th century was the discovery of the reason why the sky seems to be blue, an experiment (1868) that you may see at the Royal Institution in London in the section on Tyndall – the reason being that the sky (like so-called blue eyes) is transparent, but blue light having a shorter wavelength is more easily scattered (see 'Interactive Timeline').

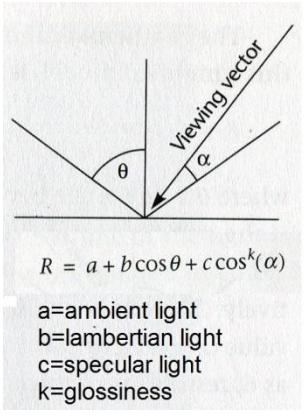
b. Digital colours are a late 20th century feature. They are based on arithmetics: 256 colours in the basic palette because $256=2^{8}$ – eight bits each having two options, so 256 combinations.
An interesting point is that, in geometrical constructions of volumes with 3D programmes, colours and textures can create volumes – e.g. the Voronoi texture (Voronoi being the name of a mathematician – around 1900) which can be used to make surfaces rise so as to produce hills or waves on a river where changes of colour and texture occur. So colours are not always subordinate to form, they can create them – an old debate.

4) Present-day research : arts and sciences – returning to Early-Modern universality ?

a. Recent research in museums and galleries combines artistic and scientific skills : the National Gallery exhibition 'Making Colour' (2014) studied colours in an 'artistic and scientific voyage of discovery' through the chemical nature of the pigments used for centuries, complemented by an interactive display experimenting on the visitors' perception of colour. The 'Regency Colour' exhibition at the Royal Pavilion in Brighton (2013) showed the scientific basis of

Regency approaches to colour.

Numerous projects such as 'Polyre' (2016) combine arts and sciences and rest on partnerships between laboratories in several fields, in the same way as medical tools of investigation are now used in archaelogy. It is therefore essential that we give our students both an artistic and a scientific grounding if they are to make a significant contribution in present-day society by establishing partnerships with researchers or creative workers from several fields of study.

An age-old question is the relationship between colours on the one hand, and light and dark effects on the other hand, ranging from Renaissance studies of shadows to definitions of colour 'tone' or dark/light 'value' by painters and their use of Claude Lorraine glasses to correct their paintings. An 18th-century text, Johann Heinrich Lambert's *Photometria, sive De mensura et gradibus luminis, colorum et umbrae* (1760) is the basis for present-day studies and practice in information visualisation, including the algebraic and trigonometric formula used to create reflection on colours in computer graphics, taking into account the Lambertian amount of light penetrating the pigment : 

(see Ware 43). It would be interesting to study, among the mathematics and physics behind the new media, which ones belong to classical physics dating back to the period we are studying, and which ones are based on more recent scientific revolutions.

b. Light/dark contrasts have been given a new lease of life by recent technologies in robotics: certain robots (2017) are programmed to follow paths indicated by dark lines on a white ground, which they can trace as they are equipped with sensors; this means among

other things that in a competition all the competitors much operate in similar lighting (see Lego). Contrasts of dark/light colour guide motion, depending on light. The issues of the relationship between colours, darkness and shadow, light, which have been discussed for centuries ever since Leonardo, take on a new dimension: then and now, colours need to be studied in context. We have to know the past in order to understand the present, but we also need to be aware of present-day research if we are to perceive the significance of the past.

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