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# **Aspects of colour communication between different paint materials**

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## **ABSTRACT**

The big quantity of colours and paint materials is setting demands on different needs. Colour systems have been developed and are necessary to be able to communicate and produce all this colourfulness. We have to find solutions for visual agreement between different paint materials when we want them to be perceived as “the same colour”. Demands on colour accuracy have increased and today we only accept small colour differences. This paper will show different examples of how you can work with and solve these different aspects of colour appearance.

## **1. INTRODUCTION**

Different archaeological findings tell us that humans have always been aware of and using colour as a visual sensation. Colour as a visual phenomenon has been fascinating people in all times. Colours were probably first used for decorative purposes 150,000 or 200,000 years ago. Paint materials were made of plants and earth resulting in a very limited colour scale. The ability to distinguish different colours was a necessary asset in the fight for survival. Colour helps us to identify different objects, and colour informs us about inedible plants, access to water, distance, whether fruits are ripe or unripe, etc.

In the past it was expensive to paint interiors or dye textiles except in certain natural colours. Objects received their natural colour, which was determined by the availability of natural pigments. The possibility to influence our surroundings with regard to colour has increased considerably during the last hundred years as a result of the increasing availability of synthetic colouring materials. We now use colour everywhere as an environmental factor similar to shape and pattern. We are no longer confined to nature’s limited colour scale. We can choose colours more or less at our own delight. However nature doesn’t consist of unlimited resources and we have to restrict our use of environmentally harmful paint materials and harmful pigments, like cadmium and lead, to protect our world.

## **2. COLOURS MANY DIMENSIONS**

Because of ever expanding possibilities to influence and control our colour environment, knowledge about colour has become more and more important. The enormous variety of colours can even be a disadvantage and may end in a big chaos of colours. We will have difficulties in orientation and we might feel sick because of over stimulation through colours. Colour planning which is more consciously done is indispensable for a well-oriented society.

There are many different dimensions of colour appearance to consider when you look at a surface and paint material, like chosen colour, matt or gloss surface, texture, transparency, shades, patterns, reflections, metallic, viewing distance, light conditions.

The texture of a colour (Sisefsky 1994) is one factor complicating the colour appearance. If you look at two differently textured textiles that have the same colour they look different, because the patterns between the threads will cause small parts of light and shade. These will give different textures when you look at the textile in close distance.

Cesia is another visual percept of a colour:

Cesia is the name adopted to designate the aspect of vision that has to do with the perception of different spatial distributions of light. Light interacts with objects and it can be absorbed, reflected or transmitted; in turn, reflection and transmission may occur regularly or diffusely. These are physical matters. Now on, the human visual system perceives this decoding and interpreting it as visual signs that carry information about certain qualities of the objects around: level of lightness or darkness, degree of opacity, glossiness, transparency, translucency, matt quality, etc. This kind of visual percepts are the ones just covered by the generic name cesia. (Caivano 1997: 136)

The tincture of a colour is also an expression for the colours' many dimensions that were used in heraldry:

With the increased attention being paid to the geometric attributes of appearance and the recognition that these, like colour, have many dimensions, it would be useful to have a word like tincture, in its heraldic sense, as part of our everyday vocabulary.

The Art and Science of Tincture would deal with all aspects of appearance —metallic lustre, gloss, transparency, redness, chromaticness, tonal value, smoothness, hairyness etc. Colour theory would be just a part of the bigger picture offered by tincture theory which would show how all aspects of appearance are different from or related to each other. (Green-Armytage 1993: 252)

## 2.2 The colour appearance of different paint materials

In industrial design you often work with different materials like plastic, steel, and textile, and you want them to be perceived as “the same colour” even though they are based on different colour materials, such as dye and pigments. How can you solve this problem? How can you judge the colour without paying attention to the different textures?

When you are working in interior and exterior colour design there are today a lot of different paint materials to chose from. How do you deal with the different colour appearance of these different paint materials and how do you communicate? How can you compare the colours on, for example, a textile with a colour sample and get a visual accordance?

The appearance of a facade surface is due not only to the colour. Other visual attributes like gloss, depth, transparency and textures are also important for the expression that the surface gives us. This thesis deals about painted façade surfaces of plaster and wood and how the appearance of the surface is influenced by the type of paint and how it is applied. The appearance of a facade surface is not constant. It changes temporarily with changing in for instance light and moisture and it changes by time when the surface ages. All these aspects of appearance make it possible for us to recognize the material of a surface and judge its quality and I therefore call them the *materiality* of the surface. (Svedmyr 2002)

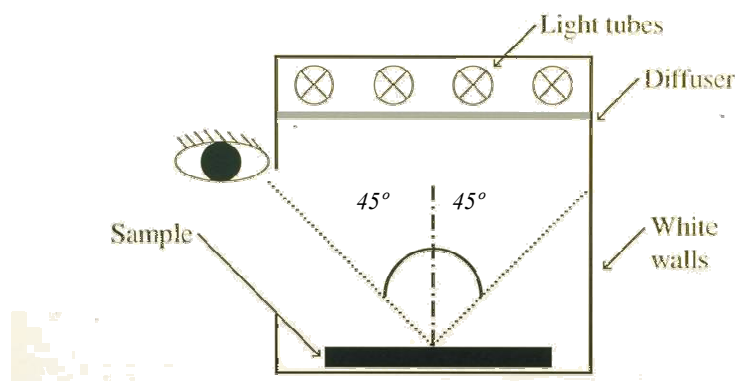


Figure 1. Conditions for the light box.

### 3. COLOUR ACCURACY

The wide range of colours and paint materials will lead to ever greater demands for precise knowledge on the part of colour designers. Demands on colour accuracy have increased and only small colour differences are accepted today. Accurate colour communication is important to almost all industries. Designers and developers who select a colour need tools to communicate this colour accurately to producers. Product development from idea to finalised product or environment entails a chain of colour communication that has to be based on a visual colour system. The process from colour appearance (the designer) to production consists of the following elements: the perceptual idea, the visual analysis, the designer's choice, documentation, communication, production and control. Bad colour matching will give customers the impression of bad quality of the product itself.

Colour has become an even stronger factor than before in different fields like graphic design, corporate identity, or marketing where the colour and paint of a product can be decisive of its fate and success. The colour designer is looking for experience and knowledge from colour research, which can be used in colour design. Colour research in areas like colour and paint, colour combinations, colour preferences, colour emotions, etc. have already gained a more prominent role and the demands on the practical use of colour research are increasing.

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