

Why is History Related Colour Design so Complicated?

The Factors Governing Colour Experience in a Historical Cityscape

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ABSTRACT

Colour experience in a historical environment is controlled by a broad variety of factors. This paper presents an outline for the categorization of these factors to gain a better understanding of their interaction and cause-effect relationship. The model I present divides the colour experience into six entities. 1) Any surface, object or view seen has objective qualities, which can be described with specific, factual characteristics. The moment of perception is composed of 2) timebound extrinsic factors (light, scale, temperature, humidity etc.) and 4) timebound intrinsic factors (personal focus, values, information, aesthetic evaluation, memories etc.). The interface and sieve between these two entities is formed by 3) the senses, especially the sight, including the seeing organs and the neural processes of perception. Behind, or inside, the “objective” reality of material are 5) the cultural processes related to the evolution of any given environment. Yet another category is needed in discussing the colour experience phenomenon: 6) our collective colour experience is present in our language and in our imagery.

KEYWORDS: historical colors, designing color, perceiving color



INTRODUCTION

This paper has been written as part of my doctoral thesis, which will centre on the colour history of the most important historical square in Helsinki, The Senate Square. The thesis is inspired by my experience as a building history expert and as the architect responsible for the restoration of the neoclassical façade of the National Library, adjoining the square. The Senate Square is an iconographic city space to the Finns and it is perceived as unchanging and stable, yet the colours of the buildings originate in lime wash, which in this moderately harsh climate means a non-ending need for repainting. Each facade has been repainted approximately every 20 to 30 years and every time the question of colour or hue must have been addressed. Throughout its history the colours of the square have been discussed, due to aesthetic, political and technical reasons. Having become a part of this chain of design questions I have been compelled to try to understand what is the play that I am part of. During a colour design process, I have noted that I am simultaneously working with very many interrelated questions and factors, without a good understanding of their relevance. Working as part of a group, I was faced with individual preferences, nonspecific vocabulary, constantly changing circumstances, various historical values and all the factors of a building process – budget, skills,

timing, norms, health aspects etc. During this study it became evident, that both colour perception and colour experience are necessary concepts. Colour perception is dependant on light, the surrounding colours, scale, distance, structure etc. Colour experience, I find, is the next level – it is dependent on our personal, intrinsic thoughts, moods and earlier experiences, as well as our cultural background and momentary focus. The act of choosing colours and comparing colour samples is a highly specialized activity, which focuses on colour perception, whereas everyday colour experiences are seldom focused singularly on colour. The ways in which we look affect what we see. Magicians know, that we see what we look at, and that we are easily fooled.

The following model with six categories of factors is based on my personal experience as well as some chosen texts. The Senate Square in Helsinki will act as my primary example. Aiming at analytical understanding of my colour experience, I am also very well aware, that designing beautiful or aesthetically meaningful colour environments is an intuitive act, based on imagination and a sense of colours, which again may be consciously acquired and further refined through knowledge, insightful terminology and understanding intricate concepts. Each factor in this interdisciplinary phenomenon has previously been researched with deeper insight, but the aim of this presentation is to outline the field, where experiences of colour are born, as an entity. This paper is the first draft presenting a rough structure, which I hope to open discussion and interdisciplinary contacts.

AN OUTLINE FOR THE CATEGORIES OF FACTORS

1. The Objective Qualities of a Coloured Surface and its Surroundings

These are the factors typically recognized, when a colour or colour scheme is discussed. These features are directly attached to the object examined, they exist independent of the perceiver and they can be presented with accurate, objective, even mathematical means. The category can be divided in two: 1) the qualities of the given surface eg.: Nominal Colour; Material of the Surface; Structure, Gloss and Texture of the Surface; Pigment and Binder Composition and Cellular or Molecular Structure, which all affect the Light Absorption and Colour Emission; Surface Area; Form and Shape etc. and 2) its surroundings: The Spatial Characteristics; Adjoining Surfaces and Colours; Changing Natural Elements.

2. The Extrinsic, Time-related Factors of a Subjective Perception

These factors are mostly atmospheric and relate to the circumstances in which a view or object is perceived. Light is definitely the single most important factor.

Light: Without light no colours exist. Therefore the brightness, quality and direction of light are essential factors of the perceived colour. Natural light varies from sunrise to sunset, being richer with yellow and red wavelengths when the sun is lower compared to midday bluish light. Quality and amount of light varies greatly also with time of year and weather circumstances. In Finland, relatively close to the polar region, sunlight often reaches the surfaces of buildings at a very low angle, sunrise and sunset happen slowly. The direction and intensity of sunlight are greatly altered through the day and with the amount of cloudiness. Rain and fog cuts off the intensity of light and thus the colours appear darker and less saturated. Also, the more diffuse light means less shadows and therefore less simultaneous contrast of brightness.

Designed exterior artificial lighting is a growing phenomenon in the northern urban environments due to a change in urban culture demanding high illumination levels all year round. Traditional light fixtures starting from candles, gas and incandescent lamps offered “warm” light. In this type of light the traditional yellow ochre, carbon black and lime white pigments of the Senate Square have glowed with a warm hue. During the last decade LED-based lighting fixtures have been replacing more traditional light sources. The first and second generation LEDs with an abundance of blue and green and a poor spectrum of red turned the soft yellows into unpleasant greenish hues. Choosing colours for a historic environment should involve the lighting design as well. When natural and artificial lighting are present simultaneously, the overall impression may prove to be restless and undeliberate.

Temperature and Air Humidity: The temperature and the weather circumstances can have an impact on our perception, but also on our experience. It is often stated that colours can be classified as warm and cold hues and in situations where we become aware of the atmospheric temperature, also the temperature of the surrounding colours may have an extra impact and they may be experienced differently. The white Cathedral looks temptingly fresh and cool on a hot summer day, or distant and noble, when midst a drizzle of snow. Air humidity is a relevant factor when pigmented lime wash surfaces are examined. Due to the hygroscopic nature of the surface, lime wash attracts moisture from the air and thus the colours become more vivid when air

moisture is high. The effect gradually grows as the surface becomes wet. Typically, with Finnish raw materials, wet lime wash colours appear more yellow and stronger than dry ones. Another phenomenon related to greater atmospheric humidity is relevant over long distances. The aerial perspective turns colours in the distance towards lighter and bluer hues.

3. The Interface of Senses

Personal Vision and System 1: Our senses offer our minds “first hand” information about our surroundings. According to Daniel Kahneman (2011) our mind and our consciousness work in two modes, named System 1 and System 2.[1] System 1 works without effort, always present and active, working on the data the senses convey and take care of automated tasks, some are common to all of us, some are acquired by conscious practice. Our mind works faster than we can conceive.[2] Applied to colours, it might be assumed, that system 1 takes note of the colours, but only if system 2 is activated, do we become conscious of them. For example, the simultaneous contrast, so central to all questions of colour, is perceived without effort. The biology of our eyesight has proved to be complicated, but especially interesting is the complexity of what we see. Even though our seeing mechanisms are more or less identical, we definitely look at different things and in different ways. This is due to the life-long learning experience, which forms the models of our perception, or the models that our System 1 uses, when choosing what information to convey to the conscious mind. On the other hand, various colour systems and industrial colour charts and their somewhat universal usage proves, that normal colour vision, especially as an isolated function, has strong collective similarities.

Resolution and Activity of Looking: Our senses function continuously, but our System 1 filters the sensory data and casts out all that is irrelevant at the current moment. The theoretical resolution of the eye combined with its microtremor movement, producing multiple pictures resampled and overlapped by the brain, enables a high resolution vision, when focusing on something. When walking along, deep in thought, attention is not guided to looking, but only a “low resolution scanning” is necessary for keeping on a sidewalk. But if walking along a stony path, System 1 takes care, that enough resolution is available – and most probably the walker will approach a meditative state, since her consciousness is not given enough resources to think about more complex issues. More often than not the perceptions of colours are not the first in line to pass through the filters of System 1!

Sounds and Smells, Haptic and Motoric Senses: Any of the other senses has a possibility of intertwining with or totally overriding the visual perception. With the lime washed facades the haptic feel of the walls is rough, the colour perception combines illuminated and shadowed spots. As Pallasmaa (2011) states, one can also touch with the eye to feel and to understand the surface texture. [3]

4. The Intrinsic Factors of a Subjective Experience; the Cognitive Self and System 2

When the momentary perception of an object, a space or a view is processed by our consciousness, it is relevant to speak of an experience. A major question related to the processes of experience is the interrelation of a perception in time and the intrinsic factors of an individual – traditionally perception has been considered “non-penetrable” in this respect. Recently Dr. Fiona Macpherson (2012) has stated, that since certain experiments show biasing in given forms towards certain colours (eg. hearts are red, or a black-and-white picture of a face with African features is perceived darker than one with European features), a colour related mechanism for the cognitive penetration of the perception seems to exist.[4] The examples that Macpherson presents are focused and isolated experiments, and, in my opinion, are not the best material for understanding the phenomena of colour experience, which is always bound to time, circumstances and place. But – since laboratory conditions give a hint or a possibility of cognitive penetration, it is relevant to suppose that penetration occurs more easily in an uncontrolled situation, when the cognitive is focused on various things more or less simultaneously. According to my experience, personal values, mind set and memories affect the perception through a mechanism of unconscious choice, knowledge and conscious focus. As earlier stated – our consciousness cannot process everything our senses and mind conveys, and the filtering (System 1) is affected by everything we have previously experienced. Intrinsic factors affecting our colour experience include at least: Personal Focus (Momentary focus and Life-long interests); Motivation of Analysing, Looking, Seeing or Not Seeing; Knowledge; The Degree of Specialization or Professionalism; Personal Colour Palette; Personal Values; Personal Notion of Beauty or Aesthetic Value; Memories.

5. The Processes Leading to a Given Built Environment

This is the broad basis of all environmental experiences. We are surrounded by a built environment and the processes that it has been formed by are intertwined with human history - cultural, political and evolutionary history. From this immense ocean of influences I will fish only a few of the most relevant processes that relate to experiencing colours of a historical environment.

Cultural features and the design of buildings: Why is a building coloured the way it is? If we approach the question of the Senate Square colours from the design aspect, it is relevant, that the most important buildings were all designed by C. L. Engel, a German, academically trained architect, who had studied in Berlin and followed actively the contemporary European architectural discussion. This means that also the original colours of the square follow a distinct architectural intention based on neoclassical ideals of decorum, simplicity and certain geometrical conformities. This is yet only an intention. Most often we have no knowledge whether the architects intentions were realized in a satisfactory way or not, and how much was he forced to modify his intentions due to the poor availability of pigments and professional skill, or technical limitations of the materials.

The Building Process, a Building as a Process: When working with an existing or historically valued environment, being aware of the building process is a prerequisite. The original architectural intention of a building can be seen as the overall solution of an architect and related professionals, who in their turn, represent not only personal views but also the contemporary society with all its factors: materials, techniques, aesthetics and theories, as well as pigments and paints. The final realization of a building may be far removed from the architect's first idea, but represents genuinely its own time. This applies to the "original" colour of a building as well. Whether the colour scheme is the carefully made and intended choice of an aesthetic mind or the only available surface treatment at the time, it testifies of the contemporary life.

Buildings are the sediments of culture, both in the scale of the city, but also in the microscopic scale of the paint layers, preserving the historical colours, and in them, also the concrete proof of later intentions, crystallized as colour. Colour seldom has an outright function, and painted colours therefore often tell of aesthetic and cultural choices and in this respect colour is a truly communicating feature of the building. Compared to unchanging, non-ageing and maintenance free materials, painted colours testify human presence and should be valued as a feature adding meaning and depth to a building. The field of architectural paint research aims at giving trustworthy information on historical colours, but it is very typical, that the resources given to the research are so meagre, that the results are rough and inaccurate and due to the nature of ageing materials always somewhat ambiguous.

Understanding a given environment means being conscious of also the following processes: Passing of Time and Ideals; Ageing of Materials; Tradition of Colours and Paints; Changing of Motives within the Human Activities, especially in the Field of Architectural Conservation.

6. The Collective Colours

This last category of factors has to do with the complex social structures of words, images and concepts, always more or less cultural. These are closely linked to the phenomenon of media, both traditional and social, that form our personal opinion of colours. The effect of visual persuasion that the fashion and interior decoration industries produce is immense. With repeated shows our brains are systematically taught to enjoy certain colour combinations, which at first sight seem strange, but gradually become desirable. Analysing the factors related to our collective colours include language, education, living environment and prior collective colour experiences of a given group. The collective colour may be approached with qualitative questions like: how do I communicate about colours with friends and colleagues; what expressions do I use and what assumptions do I have when choosing, when experiencing, when writing about colours; how does knowledge of colour history affect my experience of colour; how is a colour accepted into a surrounding; what is the life cycle of a trend colour; how are colours taught, etc.

DISCUSSION

With historically valuable environments the choices of colours need to be very conscious to preserve the historical aspects. Only by being aware of the different factors and their effect on the experience, are we able to work towards more accurate discussions and more informed colour designs. This tool-like structure presented here aims at building knowhow and understanding of why conscious colour design is a time-consuming and complicated thought procedure. The same structure of experience is naturally present in the realisation of all artistic design ideas, which in turn are the basis of humane urban structures. Colour design cannot be broken down to a mathematical equation.

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