



Colour and its effects in interior environment: a review

Soma Kalia*

Department of Interior Design, OIIFT, Utkal University of Culture, Bhubaneswar, Odisha, India.

*Corresponding Author's Email: somaghose@yahoo.in, Telephone: +91- 9338142990

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ABSTRACT

Colour is an inseparable as well as an important aspect of an interior design. The maximum influence in interior comes with the design of colour. So it is very important to study the colour and its effect in interior environment, it may be physiological as well as psychological. For this, articles were reviewed and analyzed from the existing literature, related to use of colour in both residence as well as commercial interior. The three major areas reviewed were (1) Psychological and physiological effect of colour (2) Meaning of Warm, Cool and Neutral Colour (3) Effect of Colour in forms. The results show that colour is important in designing functional spaces. The results of this analysis may benefit to architects, interior designer, and homeowner to use colour effectively in interior environment.

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Introduction:

The primary goal of study the colour in interior is to equip the architect, professional designer as well as the homeowner with the tool and understanding to use colour effectively in architectural and interior design. This review of literature is done to be used as a reference manual, an actual tool to experiment with colour in interior. The greatest challenge in colour design is to be able to predict and control the result of a colour scheme, effective colour selection can be an inexpensive yet powerful element in any design. Colour can perform a multiple roles and can affect a person's emotions, energy level, and sense of order or disorder as well, it can set the tone of an interior and make it seem formal or informal, masculine or feminine, cool restful or invitingly warm. The aim of successful interior design is to be able to control these effects through the masterful use of colour as a design tool itself.

Methodology:

So many studies and articles are published in this field, my work is to compile the literature related to the effect of colour in interior environment so that this article will guide and help the architect, interior designer

and the homeowner to choose the best colour while planning to colorings their interior environment. The reviews were done initially by internet, books, journals according to the key words like psychological effect of colour, colour, colour theory, nature of colour etc. finally the systematic review of literature into the three categories that is psychological and physiological effect of colour, meaning of Warm, Cool and Neutral Colour, effect of colour in form. Then the valuable result is summarized which is the main aim of this study.

Literature Review:

Psychological and physiological effect of colour:

It is recognized that colour has strong psychological influence on human reactions. (Pile, J, 1997). Colour and light are major factors in man-made environments; and there is no doubt that they have a strong influence on psychological and physiological well being. We cannot assume that the only role of light and colour is to provide tolerable illumination and a pleasant environment. Although colour vision does not appear in the forms of animal life, radiant energy and its spectral component still provide various psychological processes in all kind of living organism. For example: radiant

energy is apparently vital for the growth of plants (Mahnke,F, 1993).

Psychological responses to colour include changes in mood and attention (Engelbrecht 2003; Shabha, 2006). The brain releases a hormone which affects moods, mental clarity, and energy level when colour is transmitted through the eyes (Engelbrecht, 2003). For example, pink may suppress aggressive behavior in prisoners (Walker, 1991). Interestingly, colour's impact is not limited to visual aspects since colour wavelengths are absorbed by the skin (Torice & Logrippo, 1989). (Wohlforth and Sam 1982) also supported this claim in their study. Findings showed that changes in the colour of the environment resulted in a drop in blood pressure and reduction in aggressive behavior in blind children as well as sighted.

Some colour responses are temporary and others may last for a long period of time. Many reactions are immediate (Morton, 1998). A number of studies have explored the impact of colour in the classroom (Engelbrecht, 2003; Grangaard, 1995; Imhof, 2004; O'Connor et al., 1990; Wilkins, 2003). Findings are inconsistent in determining the optimal colour choices in learning environments.

The research conducted by (Torice and Logrippo 1989) has shown that active children prefer cool colours and passive children are more comfortable surrounded by warm colours. A strong green may stimulate an individual as much as a strong red (Morton, 1998).

The quantity of colour should be considered in the design of the physical learning environment. Large amounts of colour over stimulate individuals. (Verghese 2001) discusses the process of visual search and attention in regard to signal detection theory. This theory states that the human mind continuously strives to organize visual information. Too much colour, motion, or pattern functions as distracters making visual search more difficult. A stressful learning environment will result from excessive use of colour. Table 1 outlines findings, issues, and associations related to specific colours.

It is recognized that colour has strong psychological influence on human reactions. There has been some research in this field to reduce various beliefs to some reliable finding that can be put to practical use (Pile,J, 1997). Colour and light are major factors in man-made environments; and there is no doubt that they have a strong influence on psychological and physiological well being. Radiant energy and its spectral component still provide various psychological processes in all kind of living organism. For example: radiant energy is apparently vital for the growth of plants (Mahnke,F, 1993).

Colour is kind of energy which is effect to the mind and emotional feeling. As John Ott writes, "Behind the psychological response to colour are more fundamental responses to specific radiant energy wavelength"(Birren,F, 1988).A person is likely to feel cheerful on a sunny day and glum on a rainy one. Conversely, psychological attitudes trough the colour will affect bodily responses, and also it effect to the nervous system and hormonal activity. The kind and amount of energy that colour effect to the space, evoke some of feeling response, it can calm or stimulate, cheer or depress. In the design of modern environments colour is very important. In fact, it is ahead of form in mans feelings. To talk about people, and their feeling about colour, many psychologists have noted that response to form is a kind of logical processes, while reactions to colour are more impulsive and emotional. (Birren,F, 1988,) There are indeed a great range of psychological aspects of colour uncovered through the years of comprehensive researchers. For example: numerous experimental studies suggest that colour can be identified in conjunction with colour, flavor and sound, weight and distance (Vodvarka,F, 2008). Additionally, psychological and physiological aspects of colour will become prominent in design decisions. According to the observations of theorists, the warm and cool colour effect to the human personality and sense reaction. Warm colour goes to the excitation, the extroverted human being, but the cool colour goes to the tranquilization, the introverted human being. For example:

Table: 1. Categories, Findings and sources related to psychological and physiological effect of colour

Categories	Findings	Sources
Red	Speed up heart and respiration rates and to raise blood pressure.	Vodvarka,F(2008)
	Heightened sense of smell.	Engelbrecht (2003)
Yellow	Less aggressive in impact than red It consider as sunny, cheerful and the happiest of all colours It seems to illuminate the space. At maximum saturation is the most aggressive of the hues.	Pile,J (1997)
Green	It is often the choice of persons who are intelligent, social, who are given to voluble habits of speech, and who	Pile,J (1997)

	often have an intense appetite for food, also calming, relaxing, refreshing.	
Blue	Calming, restful, and comfortable. Reduce blood pressure, pulse, and respiration rate.	Vergheze (2001)
Orange	Colour with happy implication. Colour increases the oxygen through the brain. Attraction and encouragement.	Seybert,J(2007).
Violet	The colour of sensitivity and artistic expression. Pale tint of violet are define as playful, magical. Deeper violet is dignified and mystical.	Pile,J (1997)
Brown	The more positive Implication relate to the comfort of the house. When it combine with other warm tones, it express the comfort, otherwise it will be very depressive if it doesn't Combine with lively tones.	Pile,J(1997)
Black	Seriousness, dignity .Dark gray and very dark blue can be close to the black; therefore such tones can express the qualities of black.	Ladu, R(1989)
White	most light of any colour Symbol of the blankness, simplicity, cleanliness and purity, favorite background tones.	Ladu, R(1989)
Gray	Dark gray can be depressive light gray in warm tone versions are useful as background.	Birren, (1988)

To end up, colour and light are as a form of energy. Colour affects to the people feeling, and encourages them to provide satisfying human relationships and it make their life enjoyable. Beside, colour is a response to physical phenomenon and cultural

society. Both affect how people feel about colour and how they use it.

Meaning of Warm, Cool and Neutral Colour:

Warm colours: In the daily life, is usually talking about warm greeting, warm friendship and a warm atmosphere. In colour terms, the hues on the warm side of the colour circle are generally understood as comfortable, cozy and pleasant. Experiment proved that warm colour in space provides more comfortable area rather than cool colour (Pile,J, 1997).

Cool colour: those are that give the feel of coolness or calmness. These colour are green, blue, violet are on the cool side of the circle. These colours give sense of relaxing and calmness. Cool colour may become depressive and negative in psychological impact.

Neutral colour: white, black, gray are in this category. They are between cool and warm and they have less intense psychological effect. These colour may seems very boring but in the positive perspective, they are using in practical area with a minimum of emotional content. Achromatic colours are also considered as a neutral colour, like brown, beige and tans are also considered as neutral colours (Hummie,Ed, 2009).

Effect of Colour in Form:

It has been suggested by some of the theorist that colour and form are related as expected. As a theory of Itten, there were connection between primary colour i.e red, blue and yellow and the simple geometric form of the square, triangle and circle (Pile,J, 1997)

Therefore, in terms of form perception, colour can be applied to stress, weaken, or convert perception of specific form into new sensation. Indeed beside its impact on the weight, size, and distance colour has ability to shape the space, diminish the volume or it makes it more pronounced. Apparently, colour form relationship is one of the aspects in a design. According to the Bauhaus theory, the supporting theory argues that the square with its horizontal and vertical lines is related to the gravity and so to red. The triangle and its weights it goes to the yellow, "the symbol of thought", the circle which is symbol of relaxation is then seen as relating to blue. To move this theory further, Itten proposed that the secondary colour had relationship to geometrical form as well. For example: Trapezoid related to orange, spherical triangle relates to green and ellipse relate to violet (Pile,J, 1997.)

To start with, it is worth to review the example of colour form synthesis which has proposed by Brochman on two dimensional planes. Firstly, Bochman draw a cube with red colour, but he left the third plane white

(Hesselgren, S, 1969.) He note that conspicuous perception of cube diminishes immediately, and appear as a part which is cut from another larger object Along these lines, another experimental study was conducted by Swirnoff. Among numerous researchers on characteristic of colour, Swirnoff, note that colour is one of the “constituents of form”, conducted a number of studies, and dedicated to effect of colour on visual appearance of object. One of the experiments according to this theory was that, two cubes of equal size were joined together at right angle by a square plane at their common base. It was supposed that the observer would be placed the frontally the object. Further, the face of the cube was divided by diagonal line into various patterns. As a result the division of each plane resulted in cluster of triangle which turns into impression of pyramids (Swirnoff,L, 2003)and it should be note that, value and saturation of colour rather than hue effect to the shape.

Conclusion:

The present analysis is done to investigate the appropriate use of colour in interior. Colour plays a vital role in the world of design, and since design can cover many different areas, it can be very powerful in human lives. Understanding the psychological impact of different colours, it is essential for designers for working in various sections such as interior design, logo; graphic design and advertising. In the world of marketing, colour combinations are not only used to attract our attention but are also used to represent a company's culture. red is especially synonymous with speed, whether it is fast cars, fast food or fast phone and internet service. And also there are some brands which are always dominate like, McDonald's, or KFC, who all make use of red as a dominant colour Colour has the ability to affect a person's appetite, so a restaurant owner has to be aware about the hues that they pick. When choosing colours for interior environments, the functional aspects as well as aesthetics of colour should be emphasized. Over-stimulation through colour creates sensory overload. In contrast, colourless interior spaces can be stressful and nonproductive. In other words, an under-stimulating environment may be as harmful as one that is over-stimulating. With the basic understanding of colour it is possible to apply the rules fairly literally and come up with conservative but successful colour schemes, by going through various literature a person's skill and confidence increases, and it is possible to take a more intuitive approach to design colour in interior whether it is in residence or in commercial place.

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