

## Colour and Power and Ethics

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### ABSTRACT

The power of colour for good is not in doubt. For example, colour and colour difference form the foundation of all visually perceived attributes of a product or creation. Colour can have a profound effect on an individual's moods and feelings, and designers exploit these effects to provide acceptable spaces in which we can live with minimal stress and optimal comfort. This paper advocates expanding the total appearance concept developed for foods to wider problems of design in general. The second part of the paper asks whether colour is always used for good. Ethics is the philosophical study of the moral value of human conduct. It is the process by which we conclude whether a condition is good or bad, right or wrong. It applies when any aspect of life and behaviour, including communication, seeks to influence others. As the main use of colour is to communicate, can it communicate for bad as well as for good? Certainly, use of colour in communication with adults and children has changed. A number of actual scenarios are described, all of them theme around the central question "Can colour be used to hurt or harm the individual?" Questions include situations occurring in environmental design, foods and marketing. No answers are given, the purpose being to encourage awareness and perhaps debate within the colour using community that there might be a dark and sinister side to our beautiful subject.

### 1. COLOUR – POWER FOR GOOD

The total appearance of a space can exert a profound influence on the occupier of the space<sup>1</sup> and within the space we know that colour is a powerful tool. Interior designers may be asked to design for *visual comfort* or *visual homeliness*, or perhaps to maximise *visual space*. Architects are asked to build while bearing in mind *visual continuity*, or *visual compatibility* with existing country or townscape. Alternatively they may set out to provide *visual shock* and *surprise*. Artists are asked to try to make a miserable townscape more cheerful and more uplifting to the spirit. It is part of the pride of the designer to succeed, and when successful such projects have powerful effects on the psychology and feelings of the viewer or occupier of the space.

We are gaining a deeper understanding of light and shade on colour in specific design interior<sup>2</sup> and exterior<sup>3</sup> environments. The part played by colour itself in the creation of these environments has also been investigated. For example, concepts such as visual *pleasantness* of colours and colour combinations have been defined<sup>4,5</sup>. Emotions associated with colour combinations have been studied in Japan<sup>6</sup>. It has been demonstrated, for example, that those working in offices tend to suffer from high anxiety states when working in warm coloured rooms<sup>7</sup>. Colours appealing to the appetite have been listed<sup>8</sup> and specific ranges of colours are found in specific food and drink environments<sup>9</sup>. Both Green-Armytage<sup>10</sup> and Caivano<sup>11</sup> vigorously advocate teaching of colour and appearance as active parts of college design courses. They recognise that colour is a power for good. Further progress will involve collaboration between science and design possibly using the approach of the food scientist<sup>12</sup>. Colour science and psychophysics together have the power to help the designer further unlock the visually perceived secrets of the scene.

### 2. COLOUR – POWER FOR BAD(?)

The major part of the paper is concerned with possibly negative aspects of colour. It would be sad if a subject as wonderful as colour had a dark aspect; can colour be a power for bad? The dictionary definition of ethics is linked in a circular way with moral behaviour and with right and wrong. It is to do with the way we treat people, either directly or via their environment. The Center for Ethics and Business<sup>13</sup> distinguishes two styles of ethic; ethic of justice and ethic of care. An ethic

of justice or rights is based on impersonal moral principles applied to all equally. The advantage of this approach is that it gives a logical and impartial view of the problem. The disadvantage is that people relying on it can lose sight of the immediate interests of the individual and in the extreme may tolerate human harm in the name of principle. An ethic of care or responsibility, on the other hand, implies an intention to reduce actual suffering to the individual. The advantage of this approach is that it is caring and flexible, responsive to immediate harm to the individual. The disadvantage is a reduction in appreciation of the principles involved and decisions can appear to be arbitrary; it involves consensus rather than the obeying of orders. Women tend to relate more to ethic of care, men to the ethic of justice.

Is it possible that we can hurt people using colour? There follows a series of questions mainly concerned with the case of the potential for corporate hurt to the individual. The following examples, of possibly different degrees of ethical consideration, are taken from real life experiences. The first derives from the use of colour in the environment. This is followed by what some refer to as instances of dubious morality within the food and marketing industries. All examples ask questions of the designer of the food or of the marketing of any object or service.

### **Example 1 Colour in environmental design**

The skilled designer, when requested, will plan a room that will make those occupying the space feel comfortable and at ease. However, consider the following scenario. In 1973 the USSR was a police state, we were in the middle of the cold war and tensions were high between east and west. In that year, during the registration period for the second AIC Congress at the University of York, England, two men from Moscow approached one of Colour Group (GB) secretaries manning the desk and questioned her about the scope of the meeting. It became apparent that the men wanted to learn about environment lighting conditions, decoration and design that would encourage people being questioned to 'cooperate' with their inquisitors. The secretary assured the men that the Congress did not deal with colour design and concentrated on the mechanics of vision and the measurement of light sources and colour. Was the secretary correct in directing the men away from the conference? Should she have introduced them to designers attending the meeting? Would a designer seeking to create such a 'cooperative' space be behaving ethically?

A more common example concerns the everyday experience of viewing price and product details in store. Low colour contrast or small print price labels, health warnings and nutritional details are accidentally or perhaps deliberately displayed in stores. This appears to be unethical, and colour difference and legibility specification may become a matter for legislation<sup>14</sup>.

### **Example 2 Colorants and specific foods**

For 4,000 years colorants have been added to foods for numerous manufacturing and consumer reasons<sup>12</sup>. First, we feel more comfortable if the food we are eating is the appropriate colour; consumers are happier, for example, eating mint-flavoured ice cream that contains green colorant. Product colour also influences our ability to identify a flavour and to estimate its strength and quality. Second, colours are added to solve problems arising during production, including the restoration of colour damage and making products more attractive. Such arguments have become acceptable to most consumers.

Natural colorants were used by the Ancient Egyptians, but much later poisonous but colourful copper and lead salts were used to colour sweets for children. Use of poisons that can kill us is clearly unethical and their use is not now permitted. However, some countries still allow the addition of azo dyes such as tartrazine and sunset yellow. These induce hyperactivity and asthma in a tiny minority of children. Clearly it is unethical to poison the mass of those consuming metal salts; is it still unethical to include ingredients that can harm a minority? After all, even water is poisonous if we consume too much.

There are more subtle questions concerning food additives. Nutritionists have spent many years attempting to educate the public that fruit juices are a good source of vitamin C. Fruit juices are traditionally marketed with ascorbic acid (vitamin C), which, because it degrades anthocyanins (fruit juice pigments), the manufacturer would like to leave out. Is it professionally ethical to market fruit juices as breakfast drinks when they contain little or no ascorbic acid? Is it ethical for producers to go

one step further fortifying fruit juices with riboflavin and thiamine and label them "fortified", when the public has come to accept the word as meaning fortified with vitamin C?<sup>15</sup>.

Egg yolks contain factors essential for our well-being and one problem concerned the yellow additive used in cake products to give the impression of greater yolk content. Manufacturers may argue to standardise colour because yolks are different in colour, also that the consumer may not be concerned about the inclusion of eggs. Is the manufacturer deliberately trying to induce the impression in the consumer's mind a fact about his product that the manufacturer knows is not true? In addition, what parts of the reality of life does the consumer put into the back of their mind in the hope that others are looking after their welfare? How much is the manufacturer consciously or subconsciously relying on this? Is the producer (or designer depicting a highly yellow cake on the pack) behaving ethically?

### **Example 3 Colour and marketing**

An ethical question which some regard as bordering on fraud concerns the display of meat. Red or aged and brownish meat can be made to appear redder by illuminating it with 'warm' light or by placing a red reflector near the display. Is it unethical to thus display foods to their best possible advantage?

The rules of colour and appearance in food marketing were simple. Bright high contrast saturated colours and horror figures for children; dark colours with sophisticated textures and design for adults. Hence, sweets for kids have traditionally been marketed with brash colours. This 'kett' is part of the individual child's anthropological other world; products that no self respecting adult would be seen eating. This extended to toy marketing and sickly (some say delicate, feminine, pretty) Barbie pink became a firm favourite with little girls. This is an established adult-style branding tool. Kids are successfully exploited, sight of the pink induces expectations that lead to pester power and thereby sales are increased<sup>9</sup>. Perhaps this is a harmless, though profitable, use of colour in marketing. Brand colours, such as those of chocolate wrappers and the MacDonald's logo, are now parts of our 'social dna'.

However, changes to the controlled order of brash for kids and subtle for adults have taken place. Although there are many examples of beautiful non-brash product displays and packs, marketing for adults has tended to become an extension of marketing for children and high contrast colours are used to attract everyone. This became evident when cities such as downtown Hong Kong became a mass of intrusive bright signs fighting for our attention. The challenge of marketing with boldness of colour and design is now a conspicuous part of the store.

Although cereal packs, for example, have always been highly coloured, intrusion of high contrast bright colours can be seen in other parts of the store. For example, the dairy area, once wholly white or cream, now displays cartoon labelled, brightly coloured sweet milk desserts. The once brownish bakery section now contains coloured sweet iced cakes increasing the intrusion of pester power into the shopping routine. Unnatural colours are still used to tempt children to overeat foods that contribute to obesity. High fat margarines include products that are purple bubblegum flavoured, or hot pink, or bright blue. High fat, high sugar ketchups include bubblegum flavoured blue mayonnaise, and 'Blastin' Green' and 'Funky Purple' versions of the normal yellow ketchup. High fat, high salt snacks include some that are neon orange, and high sugar drinks are marketed in colourful branded cans<sup>16</sup>.

Bright high contrast colours tempting children and adults not only include fast food façades (69% of children under three years old recognise the MacDonald's logo), but also free strange toy figures (although toys have been used in child-targeted marketing since before World War I). Colourful cereal packs featuring cuddly animals or icons of respectability tempt children and adults to eat products that in 100g contain four times the daily recommended sugar intake and twice the daily recommended salt intake. During one month in 2003 UK children's programmes screened 721 commercials and of these 39% were for foods. The three main television advertisers spent 53 million dollars in 2003 targeting children. Under such relentless advertising national dietary education efforts (such as the US Food Guide Pyramid introduced in 1992) have collapsed. In a thorough review of the literature undertaken for the Food Standards Agency the University of Strathclyde's Centre for Social Marketing found that food promotion influences children's diets; children enjoy and engage with food promotion; promotion influences children's food purchase related behaviour and advertising affects

what primary school children claim to like. Also they found that signage on vending machines affects what secondary school children buy, and food advertising generally seems to have little effect on a child's concept of a healthy diet. Significant associations were found between television viewing and diet, and between television viewing and obesity and cholesterol; also that the greater the child's food advertising exposure the more frequent the snacking and the lower the nutrient efficiency. Promotion causes both brand switching and category effects in relation to food preferences and consumption behaviour<sup>17</sup>.

The binge drinking and slamming among teens and twenties in the UK has, as some have argued, resulted from the open marketing of alcoholic lemonades or alcopops sold in brightly coloured cartoon covered bottles. Intense marketing has forced formerly adult scenes (for example, the beautiful packs used for some high alcohol gin and vodka drinks) into the receptive minds of the potential underage drinker. Perhaps unethical of the producer, but does the designer also bear some responsibility?

### **3. CONCLUSIONS**

Colour has power for good and this can be increased through further collaboration between designer and scientist. That colour has a power for bad seems equivocal. The use of colour as a communicator and conditioner in marketing has changed. Once, children were tempted with bright high contrast colours and, on growing up, this preference changed to darker softer colours coupled with more sophisticated surface texture and design. However, we are now all targeted with brash intrusive high colour contrasts. There is now no natural dividing line defined by the adult signals of sophisticated design and darker colours. Products for adults can be seen by children as part of their world. Ought we colour people to take some of the blame for the creation and delivery of "eat and get fat" and "drink and get drunk" messages? Is it time for the colour community to ask what responsibility (if any) we bear for some of these perceived problems in the food and marketing environments? Is colour and appearance ethics included in design or food technology courses? Ought it to be?

### **References**

1. J. Hutchings, The continuity of colour, design, art and science - Parts 1 and 2, the total appearance concept and applications, *Col. Res. Appl.* 20 296-312, 1995.
2. M Billger, Colour in enclosed space, Chalmers University of Technology, Göteborg, 1999.
3. K Fridell Anter, What colour is the red house? Royal Institute of Technology, Stockholm, 2000.
4. L. Sivik, A Hard, Some reflections on studying colour combinations, *Col. Res. Appl.* 19 286-295, 1994.
5. O. do Pos, An experimental research into children's preferences for colour combinations, *Atti e Memorie dell'Accademia Patavina di Scienze, Lettere ed Arti* 103 51-63, 1992.
6. S. Kobayashi, Color image coordination book, Nippon Color and Design Institute, Tokyo, 1984.
7. N Kwallek, H Woodson, CM Lewis and C Sales, Impact of three interior color schemes on worker mood and performance, *Col. Res. Appl.* 22 121-132 1997.
8. EP Danger, The colour handbook, Gower Technical Press, Aldershot, 1987.
9. J Hutchings, Expectations and the food industry – the impact of color and appearance, Kluwer/Plenum Press, New York, 2003.
10. P Green-Armytage, Colour zones, connecting colour order and everyday language, in 9<sup>th</sup> Congress AIC, Rochester, *Proc. SPIE* vol 4421, 976-979, 2001.
11. JL Caivano, An atlas of cesia with physical samples, in 8<sup>th</sup> Congress AIC, Kyoto, Color Science Association of Japan, 499-502, 1997.
12. J Hutchings, Food color and appearance, 2<sup>nd</sup> edition, Aspen Publishers, Gaithersburg, 1999.
13. The Center for Ethics and Business at Loyola Marymount University in Los Angeles web site, 2005.
14. T Nilsson, Ensuring color legibility, AIC Grenada, 2005.
15. FJ Francis and FM Clydesdale, Color measurement of foods - cranberry products, *Food Prod Dev* 4 (2) 56-60 1970.
16. D Marder, "Playing with their food", *Philadelphia Inquirer*, 2 January 2002.
17. Food Standards Agency report, Review of research on the effects of food promotion to children, prepared by the University of Strathclyde's Centre for Social Marketing, 22 September 2003.