

AIC 2004 Color and Paints

**Interim Meeting of the
International Color Association
Porto Alegre, Brazil, November 3-5, 2004**



AIC2004
PORTO ALEGRE • BRAZIL

Proceedings

edited by José Luis Caivano

2005



AIC 2004 “Color and Paints” was organized by the
Brazilian Color Association
(ABCOR, Associação Brasileira da Cor)
on behalf of the
International Color Association
(AIC, Association Internationale de la Couleur)

AIC 2004 Color and Paints, Proceedings of the Interim Meeting of the International Color Association, Porto Alegre, Brazil, 3-5 November 2004

The proceedings include: invited lectures, oral papers, posters.

Reference to papers in this book should be made as follows:

For the electronic version on the Internet:

Author(s). 2005. “Title of the paper”. In *AIC 2004 Color and Paints, Proceedings of the Interim Meeting of the International Color Association*, Porto Alegre, Brazil, 3-5 November 2004, ed. by José Luis Caivano. In www.fadu.uba.ar/sicyt/color/aic2004.htm, pp. X-X [first and last page of the article].

For the printed version:

Author(s). 2005. “Title of the paper”. In *AIC 2004 Color and Paints, Proceedings of the Interim Meeting of the International Color Association*, Porto Alegre, Brazil, 3-5 November 2004, ed. by José Luis Caivano and Hanns-Peter Struck. Porto Alegre, Brazil: Associação Brasileira da Cor, pp. X-X [first and last page of the article].

Colour and the design of urban image

María Mercedes ÁVILA, Marta POLO, Adriana INCATASCIATO, Inés GIRELLI, María Marta MARICONDE, Darío SUAREZ, and Guillermo OLGUIN

Institute of Colour, School of Architecture, Town Planning and Design
National University of Córdoba, Argentina

ABSTRACT

Colour is a tool of expression and communication which requires, on the part of designers, an updated knowledge of its scope of action. It is necessary, therefore, to understand the problems involved in the city of the end of the century, which will enable us to fully exploit its communicative and expressive potential. The research on the action of colour and its use as a tool of design of the urban image leads to the fact, today more than ever, that we have to admit that the science of colour is a science of information with a psychological and technical focus which has gained ground and has given back a referential function to colour in the contemporary city. Taking into account that daylight is the most important element that reveals colour appearance, this communication will emphasize the relationship between the changes of colour of daylight, the perceived colour of façades and the impact over the used paints. It will develop some provisional conclusions of the last researches of this team.

1. LIGHT AND THE CONSTRUCTION OF IMAGE

Some studies on light in the urban space contribute to understanding the value of light to be able to perceive the essential meaning of this space, its dimensions, the induced and produced effects, the colours, what it really is and wants to express. The construction of the urban space involves some processes such as thinking, perception, memory and behaviour, not only in the social and institutional frame of the city but also in a technical and ideological context. Any situation that allows a selection of reality, determining factor and a syntax as a manifestation of order can be considered as an image. According to Justo Villafaña (1996: 44), the construction of a model as a process achieves its purpose with the interpretation of the observer; he is the one who perceives the most important structural features of the object and elaborates a pre-iconic scheme as the beginning of the representation that ends up with the creation of the image and its following subjective valuation. In all these aspects, colour as a form or sign, plays an important role in the perception process as well as in the representation one.

The information of the perceived urban environment is codified since the human visual system is able to locate and interpret certain regularities in the luminous phenomena in the scope of sight with reference to three characteristics of light: its intensity, wave length and distribution in space.

The intensity refers to the perception of luminosity coming from the visual system reactions to the luminance of objects; this intensity is subjective, since it is an interpretation modified by psychological factors which also depends on whether it is a luminous source or reflected by them. The wavelength enables the intelligibility of colour coming from the reactions to the light lengths emitted or reflected by those objects. Similarly, this is also a subjective factor since colour is not in the objects but exists in the perception.

Finally, light permits the perception of the spatial limits of objects, their outer edges, determining in this way the boundary between two surfaces of different luminance for a definite point of view.

2. LIGHT AND MORPHOGENESIS OF SPACE

The perception of space is not only visual and in fact is essentially connected to the body and all the sensorial channels where the information flows. The experience of space is, apart from visual, tactile, kinesthetic and kinematic and its essence arises from the relationships between the perceptual modalities or visual synesthesia. This statement in the theory of design is complemented by César Jannello (1984) who considers the existence of four categories of visual systems where light plays the main role. These categories are grouped in two and depend on some common characteristics. The features are: spatial delimitation and visual or tactile textures; and colour and cesias (luminosity, brightness, softness, translucency, specular reflectiveness, opacity, diffusion, transparency, and absorption).

The spatial delimitation and the texture, apart from depending on the incidence of light, are mainly involved in the conception of space for their development and application, that is to say the three-dimensionality, being colour and cesias modified by the incidence of light and its distribution according to Jannello (1984) and Caivano (1991).

The wavelength determines the sensation of colour. It is mainly a sensorial experience, the reproduction of which requires an energetic transmitter, an instrument to modulate that energy and a specific receptor, that is to say light, objects and the human eye that transmits the sensation to the brain which interprets the colour. These three concurrent agents of the chromatic experience are highly variable and it is this mobility which turns them into a strong agent of the design of image and of transformation of experiences in the urban environments.

Natural light provides very changeable views of the same urban sector at different times of the day, in different seasons and, of course, according to the hemisphere where the place is located. Light produces an intensity of colour, luminosity and shades which change rapidly with solar incidence creating other nuances of the same hue; at the same time it generates different textures, shadows and cesias. All these factors interact in the construction of urban spaces together with the diverse ways of obtaining colour as the mixture of lights or the mixture of pigments.

From the physics perspective, light behaviour can be described objectively by means of measurements done with technical equipment; however, from the phenomenological point of view this behaviour is supported by perceptual surveys. It is therefore relevant to introduce the concepts of perceived colour and inherent colour. As Karin Fridell Anter (2000) expresses in her research based on the Natural Colour System (NCS) these concepts constitute the basic system for a chromatic survey without technical equipment.

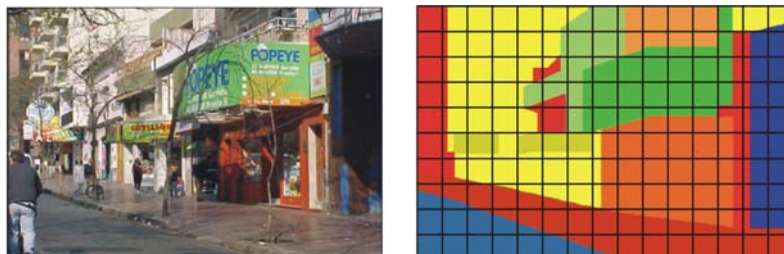
The colour that an observer interprets in an object or field under certain light and visual situation is called perceived colour whereas the inherent colour is a constant characteristic of the object independent from external conditions; it is an intrinsic capacity of the object to produce a certain perception of colour, which, whether observed under standard conditions or not, remains invariable.

To sum up, the four interrelated visual categories of spatial delimitation, textures, cesias and colour complete the visual perception of the world, with light as the element which, depending on different conditions of observation and/or mutation, can change the appearance of the surroundings modifying their image as well.

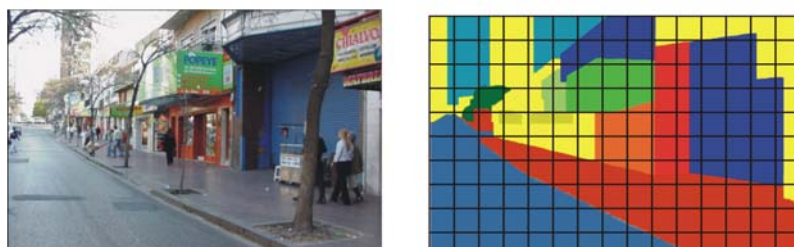
Table 2. Measurement on an orange wall “Popeye” façade.

Measurement point R3	Measured value EV (lux)	Reflectance
On wall	34 000	0.224
Reflected at 30 cm	7 600	

3.4 Inherent colour – perceived colour verification - NCS - Y50R



Month: August. Time: 10:30 AM.



Month: August. Time: 5:30 PM.

Table 3. Comparative chart – Inherent colour – Perceived colour.

		Inherent colour	Perceived colour	Comparative samples NCS
10:30 AM	Image 1	Y50R	S0585-Y40R	S1080-Y40R
	Image 2		S2570-Y40R	
5:30 PM	Image 1		S1080-Y50R	S0585-Y50R
	Image 2		S2070-Y50R	

REFERENCES

Caivano, J. 1991. Cesia: A system of visual signs complementary colour. *Color Research and Application* 16 (4): 258-268.

Fridell Anter, K. 2000. *What colour is the red house?* Stockholm: Royal Institute of Technology.

Jannello, C. 1984. *Fundamentos de teoría de la delimitación*. Buenos Aires: FAU-UBA.

NCS (Natural Colour System). 1996. *Color atlas*. Stockholm: Färginstitutet.

Hernández Andrés, J. s.d. www.ugr.edu.es/ha.

Villafañe, J. 1996. *Introducción a la teoría de la imagen*. Madrid: Ediciones Pirámide.

Address: María Mercedes Ávila, P. Ferrer 6324, 5147 Granja de Funes, Córdoba, Argentina
 E-mails: avilam@onenet.com.ar, investigacion@faudi.unc.edu.ar