



Maria João Durão editor

COLOUR URBAN SPACE ARCHITECTURE AND DESIGN



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Colour: Urban Space, Architecture, and Design

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preface

Colour: Urban Space, Architecture, and Design is a bilingual publication (portuguese and english) on colour, in separate volumes, with an international scientific committee of researchers, which aims to disseminate the research undertaken in the multidisciplinary area of colour at the Lisbon School of Architecture – ULisboa. From the embryonic stage, these studies are guided by developments in knowledge of colour phenomena and the practical and sustainable use of their results in the environment.

Colour is ubiquitous in nature and always present in our experience, consciously or unconsciously. The earth, the sea, the sky, the cosmos have colour in their constitutive elements that animals and humans seek to interpret and use, both in material and virtual reality for cognitive, aesthetic, symbolic, cultural, civilisational psychological, spiritual and epistemological effects. The chromatic substance itself exists in the animal, mineral and vegetable kingdom. Even where there is no light, underwater animals have adapted to produce light and colour and to recognise them in order to survive.

It is not surprising, therefore, that colour is the subject of study in a wide range of fields: fine arts,

terrestrial and aerospace architecture, urban planning, cinema, theatre, virtual reality, lighting, light, product design, communication design, fashion design, textiles, paints and pigments, ceramics, physiology, neurophysiology, biology, vision, ergonomics, chemistry, psychology, history, symbolic, aesthetics, phenomenology, sociology, anthropology, linguistics, marketing, advertising, geography, colorimetry, webdesign, nanotechnology, material technologies, audio-visual technologies as well as multiple other applications in art, science and technology.

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The Faculty of Architecture – at one time belonging to the Technical University of Lisbon – was a worldwide pioneer in creating the Masters Degree in ‘Colour in Architecture’. This embryonic beginning was followed by the development of connecting organs for colour research in the same environment of interest. As it spiralled and radiated outwards, it was followed by the Portuguese Colour Association – a member of the International Colour Association (2003), the Colour Laboratory (2004), and the Colour and Light Research Group (2016) integrated in CIAUD (Research Centre of Architecture, Urbanism and Design) of the Lisbon School of Architecture – ULisboa.

While, in its initial phase, research was part of the Masters Degree in 'Colour in Architecture' modules, it later involved the wider community in doctoral and post-doctoral projects, initially in the area of pedagogy. Currently, the Lisbon School of Architecture has academic, entrepreneurial, industrial and other research projects – national and international – hosted in three organisations along with pedagogical input in undergraduate, Masters', doctoral and postdoctoral programmes, at the University of Lisbon (ULisboa) and other universities. The results are disseminated through teaching and in practical aspects of projects carried out in the three major fields of architecture, arts and design.

- 8 This book begins with João Pernão's article "Teaching Light and Colour in Architecture: Objectives, Methodology and Results", resulting from his fifteen years of teaching Light and Colour at the Lisbon School of Architecture – ULisboa. The processes developed through the practice of preparing colour studies integrated into architectural projects make it possible to define a methodology that ensures coherent and well-founded results. These strategies are designed to interest and motivate architecture students to use colour and are developed in three distinct parts – Deconstruction, Construction and Application of Concepts –, with a multidisciplinary theoretical framework and a practical component in which students use the projects they develop within the Project Laboratory Course Unit. Furthermore, the existing architecture consultancy established

through protocols between the Lisbon Faculty of Architecture and various external entities, has opened up the interrelationship between theory, teaching and practice, and proved to be enriching in its pedagogical dynamics.

Contextualised in her doctoral project in Design, "Care for the Façade, Care for the City: Participatory Painting in Buenos Aires", Verónica Conte discusses three interventions made on residential façades in this capital that supported research on the participatory and creative processes of architectural façade transformation. Along with the motivating agents of the projects, the local population debated the choice and acceptance of façades as well as colour proposals that were presented to them. The research brings together interviews with actors and users, focusing on wall painting interventions that transform the city's image and encourage individual and popular expression, singularisation and revitalisation of public space, as well as the development of ties between participants. Cultural traits are thereby explored, memories are recovered and new place identities are created, especially for local communities. The study highlights the painting process itself, as it reveals civic engagement and responsibility and inspires other design processes.

"Colour in Social Housing: Routes of Discovery", by Cristina Pinheiro, recognises the importance of colour as a decisive factor in improving the urban environment by affecting people's well-being and influencing behaviour and emotional

balance. The research project shows that the application of colour must be conscientious, have criteria that underlie it, and be guided by scientific knowledge-based principles. The Masters in Colour in Architecture dissertation that was the basis for this article, answers questions such as what the criteria and fundamentals used by the designers are, when deciding on the colours to use and in the execution of colour plans; if colour choices were integrated into the conceptual phase of the projects and what principles have guided their application in the social neighbourhoods of Lisbon. The outcomes of the research indicate that colour can and should have a positive influence on users, increasing their self-esteem and contributing to their social and emotional integration.

Included in her Masters in 'Colour in Architecture' dissertation, Helena Soares chooses the theme "Porto: Harmonies and Chromatic Memories in the City". She adopts a methodology aligned with that used by Jean-Philippe Lenclos, and presents an experience of approximation between the built environment and the concept of 'place'. Highlighting the chromatic memories and chromatic symbolic values, Porto is revealed in three representative periods of its urban and architectural evolution. Thus, centred on the chromatic qualities of architecture, an analysis of visual space identifies the elements that influence the formation of defining images that constitute the character of place. These architectural elements led to chromatic syntheses of the environments,

respecting the attributes of colour and the relations of chromatic contrasts. The aesthetic quality of the place was gauged from synoptic tables, and the intervention of three observation scales – global perception, elemental perception and detail perception – within a framework of historical, cultural and aesthetic data.

"Bairro Alto: Chromatic Proposal", by Filipa Santos and Zélia Simões presents a case study on the phenomenon of colour and light in Bairro Alto - a historical nucleus in the city of Lisbon. The study developed within a curricular unit of the Masters in Colour in Architecture, circumscribes some streets and lanes and analyses the relationship between them and the exterior of the neighbourhood: Rua da Rosa, Rua Diário de Notícias, Rua da Atalaia, Rua das Gáveas and the Travessa da Queimada. Based on the theoretical and methodological foundations of Jean-Philippe Lenclos, Dominique Lenclos and Antal Nemcsics, the contextualisation of the place integrates historical, aesthetic, social and functional points of view and safeguards regional and geographical identities. The inventory and determination of frequencies and chromatic values in the urban and architectural space produced a series of considerations as well as the creation of a palette that was graphically tested on a standard street. The results of the study highlight the importance of adopting an interdisciplinary light and colour planning methodology for the environmental space, through the recognition and establishment of harmonious relationships.

“Colour in the City: Symbolic and Environmental Qualities”, by Rui Barreiros Duarte, addresses the symbolic and environmental qualities of colour in the city, in a text about sets of place variables and conditions of colour use that interact with conceptual determinants established from cultural anthropology, cultural or acculturation typologies, markets, taste and sensibility. Phenomenology, semiology, and sociology intersect the purely physical perspective of the city and architecture. It is concluded that the meaning, the incidence and the influence exerted by colours depend on phenomenological, cultural and perceptual relations. In order to understand the use of colour in the city, concepts of identity, new myths and new ideologies, the architectural thinking underlying aesthetic discourse and the symbolism codified in the appropriacy of colour and light materials and technologies are also important.

Maria João Durão’s “Atmospheres of Mystical Beauty in the Work of Barragán” focuses on the chromatic atmospheres in Luís Barragán’s architectural work. His architecture is saturated with the colours of Mexico, in a mystical attempt to reconstruct an earthly Paradise, where the human being is in communion with nature, and thus attains serenity of mind, in the face of the mystery of insecure ontological existence. In Barragán’s work, mystical beauty results from the sensitive interconnection of the personal and collective memories of the ancestral, mythical and ritualised environments of pre-Hispanic architecture. Atmospheres are accessed at the

level of the mysterious and the dreamlike, whose metaphysical qualities continue the ancestry of tradition and collective memories, which Barragán accepted in order to transmute them into his unique and timeless work.

Sarah Frances Dias’s “The Colours of Eternity in Islamic Art and Architecture” deals with relationships between light, geometry and colour as agents of transcending worldly boundaries for the consciousness of the divine and spiritual dimensions. As in nature, light is only fully revealed through geometry and colour: geometry is the structure by which light manifests and colour is the essence that materialises intangible beauty in sacred spaces through symbolic, metaphysical and spiritual meanings. The article provides examples to show that colours, geometry, and light are not just three indivisible essences, but are the essential means by which Islamic spirituality physically manifests itself as transcendence.

Margarida Gamito and Joana Sousa’s “New Chromatic Planning Methodology for Urban Furniture” explores the application of colour in urban furniture, according to a chromatic methodology that highlights the surroundings, through improved readability, identification and orientation in cities. The assessment of the methodology is made by focus groups composed of locals of different ages and genders, colour application specialists, municipal technical officers, architects, urban planners, equipment designers,

landscape architects, and engineers. The results serve to encourage a more rigorous approach to colour plans for urban furniture and contribute to the identification of city colours.

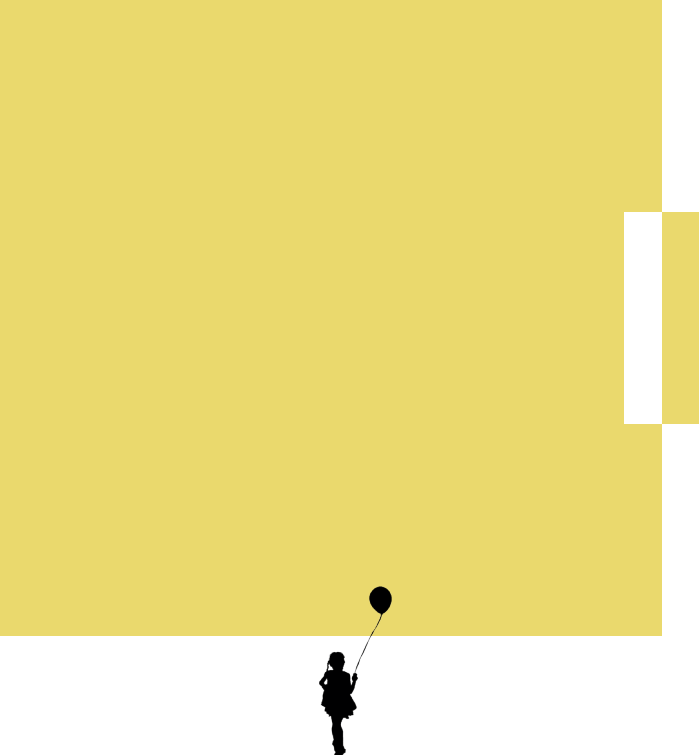
Ultimately, we welcome achievements of this nature as they always bring contributions to the science of colour and its careful use, as well as its beneficial effects on the improvement of urban space and development of architecture, design and the arts. Equally, they are an incentive for new studies to emerge, and update and develop information. For these reasons, we congratulate Professor Fernando Moreira da Silva, President of CIAUD, for agreeing to act as Guest Editor of this volume and for the fruitful cooperation between the APCOR – Associação Portuguesa da Cor / Portuguese Colour Association, the Grupo de Investigação de Cor e Luz / Colour and Light Research Group, and Laboratório da Cor / Colour Laboratory, from FA-ULisboa.

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Chromatic greetings,

The Editor
Maria João Durão





ABSTRACTS

TEACHING LIGHT AND COLOUR IN ARCHITECTURE

OBJECTIVES, METHODOLOGY AND RESULTS

João Pernão

This article discusses the objectives, methodology and results obtained following fifteen years of teaching Light and Colour at Lisbon University's Architecture Faculty. Throughout these years, it has been possible to test, adjust and establish a criterion in approaching this area of knowledge and its introduction into teaching practice in an Architecture school. It is of importance to reveal this criterion.

14 The Lisbon School of Architecture – ULisboa, are research pioneers in this field, having established the Colour and Light Research Group; a Colour Lab; integrating a range of degrees (Masters and Doctorates) into the curriculum and promoting practical consulting in architectural projects, as part of protocols between the faculty and several external entities. This cycle of theory, teaching and practice has been very productive for all these branches, allowing practical examples to be used as illustrations for theoretical concepts in the pedagogical field.

Given that, throughout these teaching years, we have come to recognise that generalist knowledge on light and colour is abundant with preconceived ideas, many of which are wrong, the theoretical framing process starts by establishing a *tabula rasa* on which a new argumentation, to be worked on over the elaboration of Colour Studies for Architecture, is built.

In view of the input of the latter practical component, diverse processes and instruments are taught each year to a group of approximately thirty students, during one Semester (fourteen sessions of three hours each). From the survey, to colour notation, the digital simulation and the communication of the Colour Study through reports and specific drawings. These processes, developed through the integration of Colour Studies into Architectural Projects, makes it possible to define a methodology that ensures coherent well-substantiated results.

KEY WORDS: light, colour, architecture, teaching.

CARE FOR THE FAÇADE CARE FOR THE CITY PARTICIPATORY PAINTING IN BUENOS AIRES

Verónica Conte

In a context where resources are insufficient and local power is unable to meet the demands of the public space, artistic / chromatic interventions on residential façades in the city of Buenos Aires, made by residents, artists and non-government organisations are exceptions in promoting and taking care of the architectural façade. The paper herein focuses on three of these interventions: *Calle Lanín* / Lanín Street (Barracas Neighbourhood), a project carried out by the artist Marino Santa María; *La Villa 20 es una pinturita* / Favela number 20, a small painting monitored by the artist Martín Roisi; and *Barracas Pinta Bien* / Well Painted an initiative developed by the civil association *Más Color* (Barracas Neighbourhood).

It was found that despite occupying only a small proportion of the city's fabric, interventions of this nature can convert façades into local visual references and singularities, legitimised by their artistic component and by the public participation

generated. Through the updating or manifestation of elements of local identity, colours and concepts proposed, sometimes debated and/or thought out by the local population, these processes try to reverse the abandonment of architecture, and transform the greyness of the city.

After interviewing actors, users and specialists working with the public space, and establishing converging and diverging opinions, it is believed that the social event, the process that can be produced, is as important as, or even more than the visual result on the walls. It is here that these interventions raise bigger questions, but also where they offer paths to explore in design, new proposals focusing on social values, involving the participants in true creative acts of personal and social development, which become genuine ways of taking care of and belonging to a space that is everyone's.

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COLOUR IN SOCIAL HOUSING

ROUTES OF DISCOVERY

Cristina Pinheiro

This article was based on the Master's Dissertation in Colour in Architecture entitled *Colour management in social housing – Lisbon 21st Century*, (FA-UTL, 2005) that studied the guiding principles of the application of colour in social housing in Lisbon. This article reflects on the use of colour in social neighbourhoods and is part of that work.

16 The role of colour in improving the quality of the urban environment is very important in these areas with social problems. Colour affects people's well-being, has physical and psychological effects, and may influence behaviour and emotional balance. It should have a positive influence on users, contributing to their social integration and acceptance of new housing, as well as increasing respect for surrounding exterior areas. In this context, colour plans should be conscientious, have supporting criteria, and be guided by knowledge-based principles.

We have identified (as far as possible) all social housing areas built between 1935 and 2004; in the second phase, we selected some architectural groups presented below, and conducted interviews with authors.

Our aim was to understand the criteria and fundamentals used in chromatic decisions made by architects or designers, to understand if colour is part of a conceptual phase, if there is any concern about the effects of colour and which principles have been guiding its application

KEY WORDS: colour, architecture, social neighbourhoods, colour functions.

PORTO

HARMONIES AND CHROMATIC MEMORIES IN THE CITY

Helena Soares

This article, adopting as a central strand in investigating the language of light/colour in space-time in the city of Porto, presents a study of colour in the context of place. The research is part of a Master's dissertation on *The Colours of Porto* (FA-UTL, 2008), with the focus on colour and the city simultaneously and alternately. From a local observation and a survey of the colours found, through historical, sensorial, cultural, and plastic approaches, we aimed to establish a relation between colour and the city's identity and image. We cannot dissociate a place's identity from the identity of the society to which it is a part; and colour, just like the architecture and the natural landscape, in its capacity to symbolically represent that identity, is part of the city's heritage, which we should preserve.

Historical centres are symbolical places by nature, that represent part of the history and collective memory of the city. Their architecture, besides being the support for colour, constitutes a fundamental frame of reference for their inhab-

itants psychological and emotional balance. In Porto, the bourgeois housing façades, have a prominent role in the definition of the urban landscape due to their unique historical and architectural features, and assign the city a very specific identity based on their overall characteristics. In this research, the evolution of this residential building was explored, and a survey of its materials and colours was carried out in three urban areas responsible for the development of the city until the 19th century.

In its image, we remember the city by uniformity 17
in diversity, where the past incessantly reaffirms its presence. However, the city's environmental strength depends not only on the perceptual presences of its chromatic options, but also on the unique characteristics of its light, sky, river, and sea. Thus, the investigation, re-signifying the possibility of reading the city through colour, states the identity as an evolutive concept where the variation of its colours, in the different study areas, do not affect the feeling of belonging.

KEY WORDS: light, colour, city, image, identity.

BAIRRO ALTO

CHROMATIC PROPOSAL

Filipa Santos | Zélia Simões

The expression of light and colour interfere with the way reality is interpreted and increase the understanding of the representations and practices of a society in its environment. These expressions which are inseparable and essential to the urban space, give it a character and identity that reinvents and transforms itself over time. This article aims to present a reflection on the chromatic materialities and immaterialities of public and private initiative, in one historical neighbourhood of the city of Lisbon – Bairro Alto.

- 18 The research led to alternative project principles and to the implementation of two methodological strands of intervention. The first relates to the support of aesthetic and linguistic meanings of colour and light in urban and architectural space throughout time, as proposed by Lenclos and Lenclos and Nemcsis. The second relates to the technological knowledge of the application of colour and the effects of light.

After the field research, and the *in loco* observation of colours, patterns, and textures, a model was adopted that, according to Raimondo, represents a citizen's colour plan. This makes it possible to establish a propositional and polychromatic planning strategy, and create an interactive communication between the norm and the concrete reality in each context. Consequently, colour schemes are established which articulate multiple criteria, including geographical, anthropological, cultural, and social influences. The research revealed that it is essential to adopt an interdisciplinary light and colour planning methodology that stimulates the decoding, classification and ordering of the environment through the recognition of harmony relations.

KEY WORDS: light, colour, image, identity, urban and architectonic space.



COLOUR IN THE CITY

SYMBOLIC AND ENVIRONMENTAL QUALITIES

Rui Barreiros Duarte

Colours enunciate systems of relations that connect environments, cultural references and materialities sedimented over time, nowadays also combined with new types of supports and effects arising from experimentalisms and environmental investigations in this field. Changes in markets, in taste, in technology, in production and demand type create new expectations on the use of colour. In order to avoid casuistry, there must be criteria that identify the morphological units and the typologies whose colour palettes enhance these units. Thus, apart from the traditional uses, it is necessary to create principles that frame this matter by evaluating housing estates constructed, taking into account their cultural uniformity. The use of local materialities should be valued as a deposit in time of the collective memory, harmoniously framing variables that do not jeopardise the character and readability of the housing estate.

The changing tonalities that vary and vibrate according to the supports, pigments or paints creating harmony, giving textures and qualities to the surfaces, plasticities that need to be explored

under an architectural, pictorial and photographic vision. There are conceptual determinants that stem from cultural anthropology, markets, individual taste and sensibility, but it is also necessary to control the acculturation and the harmful effects they enunciate. We enter into the domain of the phenomenology of taste that opens the field of possibilities for intervention that must be approved by the suitability of its urban integration. Chromatic interventions have social and individual beings as interlocutor, and possess the quality of creating captivating or repulsive environments and different types of appropriation. Hence their phenomenological and symbolic importance. 19

Social necessity transcends a merely physical application, with a process of meaning beyond pragmatism where environmental qualities and the poetics of objects and urban estates are involved. Cities and architecture are the privileged domains of this research. It is necessary to preserve balance through a chromatic unity that values the significant urban ensembles and articulates identical buildings, providing a unitary sense to the housing estate.

KEY WORDS: monochromatism, polychromatism, identity, atmospheres, authenticity.

ATMOSPHERES OF MYSTICAL BEAUTY IN THE WORKS OF BARRAGÁN

Maria João Durão

Barragán stated that it was impossible to understand the art and glory of history without acknowledging the religious spirituality and mythical roots of the artistic phenomenon, thanks to which we owe the existence of Egyptian pyramids, Mayan pyramids, Greek temples, Gothic cathedrals, and the wonders of the Renaissance or the Baroque.

20 Barragán's chromatic atmospheres are a result of the sensitive interconnection of personal and collective memories of the ancestral, mythical and ritualised environments of pre-Hispanic architecture, created by architects who understood celestial and terrestrial bodies; energy, topos, local materials and colour symbology; the vernacular colour of architecture and popular artifacts. By traveling he became more permeable to magic and the mystery of places, as well as to the memory of atmospheres of light and colour experienced in his childhood, all of which Barragán brings to his monumental tectonic planes cast on each surface cell and in each cellular atmosphere.

The artistic trajectory of Barragán seeks to create beauty, magic, mystery, enchantment, serenity, silence, and intimacy, materialised in architecture as an expression of light and colour interactions, with variations, mutations and metamorphoses. However, the nature of light that interests Barragán is accessible only at mysterious and dream levels and so, his atmospheres are imbued with metaphysical qualities.

The work created by this unique architect reflects deep needs inherent to the human being, i.e. poetic content and reunion with paradise lost: a "nostalgia for Paradise", in Mircea Eliade's words. His spaces are synaesthetic, and communicate quietness, timelessness and rhythm, aimed at arousing spiritual enchantment by establishing dialogues between geometry and materials. Thus, Barragán continues ancestral traditions and collective memories, transmuting them into personal and timeless architectural creations.

KEY WORDS: Barragán, colour atmospheres, architecture, beauty.



THE COLOURS OF ETERNITY IN ISLAMIC ART AND ARCHITECTURE

Sarah Frances Dias

Islamic sacred art and architecture embodies a profound spirituality. This is conveyed especially through its geometry and colour that together aim to give a physical body to light. After clarifying the founding principles of this religion (which are fundamental aspects of spirituality and therefore of its art and architecture), the research continues by analysing the essence of light and its spiritual significance as that which symbolizes God. It is light that is considered the primordial essence from which all life evolves. Geometry is then understood, as that which defines the structure of material bodies, after which colour begins to be analysed. Colour, understood through its symbolical, metaphysical, and spiritual significances, is studied in different ways: its individual symbolism, its dual combinations and its rich polychromatic combinations.

At this point, various fundamental principles and their metaphysical and spiritual significances are enunciated, with the purpose of clarifying the inward depth and thus allowing these complex significances to be re-created freely. Lastly, two further examples are clarified, which combine and elucidate all of the principles and ideas studied and enunciated. The research shows that colours, geometry and light are not only three indivisible essences, (that need to be understood as a whole) but the means by which Islamic Spirituality is made manifest as transcendence. They create an intangible atmosphere that surpasses 21 the physical world by allowing man to dwell on what is eternal.



NEW CHROMATIC PLANNING METHODOLOGY FOR URBAN FURNITURE

Margarida Gamito | Joana Sousa

This article outlines a pertinent colour application to urban furniture, presenting a new chromatic methodology that will allow its elements to stand out from their background, improving their legibility and transforming them into means of identification that will benefit orientation within the cities.

The development and implementation of the new methodology, which is still in progress, will make it possible, with a higher scientific approach and rigor, to design colour plans for urban furniture as a strategy for achieving a better and more inclusive design project. This will also contribute to the identification of the city's neighbourhoods and aid its users' orientation.

The new methodology will be developed through active research, focused on case studies which include two municipalities around Lisbon: Loures and Oeiras. In each of these, three neighbourhoods with different specifications were chosen. For each one, sample areas were selected which will include their most representative areas applying the new methodology to all furniture elements, in order to increase their potential as relevant issues for the chromatic planning of the city.



