

Enrique Castaño Perea
Ernesto Echeverría Valiente *Editors*

Architectural Draughtsmanship

From Analog to Digital Narratives

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 Springer

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Preface

The book presented here is a compilation of articles collected under the title *Architectural Draughtsmanship: EGA (Architectural Graphic Expression) From Analog to Digital Narratives*. It is the result of the International Congress EGA (Architectural Graphic Expression)16 held in Alcala de Henares in June 2016 with the subheading: “Teaching and researching in architectural graphic expression.”

This was the 16th edition of the Congress, and it was again centered on the exchange of knowledge of what is taking place within the arena of architectural graphic expression inside and outside of our country.

The implementation of a successive curriculum over a short period of time (BA in Architecture, BA in Fundamentals of Architecture, Master of Architecture and Ph.D.) has led to the necessity of restructuring all areas of study within this field, and for that reason, it seemed the right moment to turn our attention to the work of professors and researchers. As the last Doctor Honoris Causa of the University of Alcala Kenneth Frampton said in his acceptance speech, we have to reclaim innovation by starting from tradition, both in terms of architecture and educational disciplines attached to it.

This book is organized into two major parts:

A/ Research into the field of architectural graphic expression, including related areas of education, in which innovative experiences have been presented in the new curricula,

B/ and how to teach research methods that are essential to the work and experiences found in the field of postgraduate studies.

The editors have grouped the articles into four major chapters, according to their individual subjects:

1. Innovation Teaching Strategies (Teaching experiences applied in EGA).
2. Design and Education (General education concepts in EGA).
3. Design and Architecture (Design issues related to current architectural practice).
4. History and Cultural Heritage (History of a particular designs and/or the design's application within the architectural heritage).

Blind pairs reviewed all articles as a guarantee of quality in order to obtain the recognition of the scientific community.

All the works are in English, although they may have originally been written in one of the languages of the Congress, either Spanish, Italian, or Portuguese, with the goal of emphasizing their respective international characters.

We believe this compilation of articles could be the trigger to start a new collection of books about the international relevance of architectural graphic expression. It is the result of the important contributions taken from the congresses dedicated to the subject that have been held regularly for over thirty years, with the participation of a large number of researchers from European and Latin-American countries.

Alcalá de Henares, Spain

Enrique Castaño Perea
Ernesto Echeverría Valiente

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Experimentation with Colour in Architectural Spaces

Juan Serra Lluch, Ana Torres Barchino, Irene de la Torre Fornés
and Ángela García Codoñer

Abstract Even if the false myth of white in modernity is already over, we have a chromatic tradition to some extent broken and which needs to be rebuilt, or better re-experienced. In the Master's subject "Color and Design of Spaces", a teaching is developed seeking for a critical understanding of our visual culture and a creative experimentation with colour in architecture. We analyze in depth the strategic ability of colour to support a particular architectural intention together with its cultural and semantic connotations. Secondly, we experience the chromatic possibilities rendered by new building materials, lighting technologies and computer design software.

Keywords Colour • Interior architecture • Design

1 A Two-Fold Approach to Colour in Architecture: Review and Experimentation

Colour has always been an essential visual attribute in the configuration of interior architectural spaces. Historiographers of modernity paid no particular attention to it, and even went so far as to accuse it of perilous flights of fancy, but the fact remains that the architects of modernity used colour in a very deliberate manner, at a time when psychology was striving to get to grips with the mechanisms of the perception

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of shape. So although the myth of the colour white in modernity has been overcome (Serra 2010), we find ourselves before a somewhat discontinuous chromatic tradition that needs to be reconstructed, or better still re-experimented.

In this context, somewhat bereft of prominent references, the question of colour has made a resounding and at times spectacular return to contemporary architecture. As a result, as part of the “Colour and Design of Spaces” course, part of the “University Master’s in Advanced Architecture, Landscape, Town Planning and Design” (MAAPUD), we advocate a curriculum that facilitates a creative experimentation with colour, supplemented by a discourse that takes into account our visual culture.

Students firstly carry out a critical literature review of colour in architecture, with an in depth analysis of the work of an architect or artist of interest with which to collaborate. We begin with the standard insights into the visual perception of shape, we analyze the strategic capacity of colour to bolster a specific architectural purpose and we evaluate the resulting semantic and cultural connotations. An attempt is made to compensate for this lack of concern for colour in traditional architectural critics that brings with it a lack of criteria and arguments to allow us to carry out our own architectural considerations.

Secondly, we experiment with the visual capacity of colour in contemporary architecture: the plethora of chromatic possibilities of new building materials, lighting techniques and computer design software have managed to exponentially increase the number of interior finishes. This all culminates with a colour project for a constructed space, experimenting with traditional and innovative materials.

The outcomes vary, from a simple, unadorned architecture that is in keeping with the self-restraint of “minimalism”, to more stimulating, versatile and ambiguous colours through the use of digital technology. In any case, the aim is to achieve a colour scheme that is consistent with the architectural concept that reflects the contemporary moment.¹

2 Literature Review of Architecture and Colour

“I will never understand architects! They are always afraid of employing bold colours side by side”. It is of particular note that this comment is uttered by an architect, but even more so when we discover that they are the words of Loos (2011, 63), who has been unfairly blamed for the criminalization of colour and for paving the road for the predominant use of white in later modern architecture. And it is not an isolated example of this apparent contradiction by a number of architects, from the early part of the 20th century all the way up to the present day. How else would you explain the words of Sir Foster (2007, 224), an architect with an

¹This paper is just one of the activities linked to the R&D project “New methodologies to evaluate the visual integration of architecture that has an impact on the urban landscape” financed through funding from the *Valencia Regional Government’s Department of Education, Culture and Sport*.

apparent disinterest in the subject of colour, when he assures us that “colour has been a strategic component” in his work. And that “in each case, adding colour enables one to hone one’s thoughts”. Effectively, pondering colour may well help to fine-tune the architectural intent or purpose, in the case of Foster, through his collaboration with other artists such as Per Arnaldi. Of course, joint collaboration between architect and artist is not only fruitful but is at times essential to the aesthetics of architecture, as is the case with other partnership collaborations such as Michael Craig Martin or Adrian Schiess for Herzog and de Meuron.

It is therefore no surprise when carrying out a review of colour in architecture that there are two potential fallacies. The first consists of considering colour from an exclusively sentimental perspective, primarily catering to connotations that go beyond perception. An approach, which, in a best case scenario, limits itself to a semiotic interpretation of colour, and in the worst case, explains colour in terms of pseudoscientific or even esoteric convictions, about moods and their therapeutic potential. A marshy path to go down (O’Connor 2011) and somewhat short lived, to our understanding. The second fallacy is that of architects who articulate an artificial discourse regarding colour in their works, distancing themselves from the architecture that is constructed, normally in order to dramatise their detachment towards colour. Unfortunately, there are those who consider that colour should not be part of any architectural discourse or should be invisible, even when the work in question stands out for its colour scheme.² Some architects renowned for the use of colour in their work are aggrieved when they are asked about colour (Alsop 2010), as if it were of little relevance, despite knowing that colour carries a certain weight in their designs, together with other architectural variables, albeit with an exclusively two-dimensional assessment of the phenomena of contrast and harmony. This is very different however if the emphasis is on the light, something we architects love to talk about, as light is the source of architectural volume and space in a game we know only too well, that is shrewd and splendid. A wonderful paradox that makes us forget that colour is also “son of the light”³ when it fertilizes the space, once again paraphrasing Le Corbusier (1997 [1931], 1:113), or as indicated by Poelzig (1991: 16) “colour, when compared to shape, is the primary factor”.

We are specifically interested in an approach to colour in architecture that is far removed from the sentimentalism and somewhat artificial attitudes, that caters to the material reality of architecture constructed in a more systematic manner, and which enables us to study the links between colour and the formal concerns of any architectural project. This is, to our way of thinking, the key component of any

²It is of particular note that when Luis Barragán accepted the Pritzker Prize, he only mentioned colour twice during his speech: in the first, he referred to the inspiration he found in the “colour-filled streets” of the Mexican province, and “its white-washed walls”, while the second was to warn that an “indiscriminate colour palette” might conceivably chase away the serenity of the architecture (Barragán 1980).

³“The search for space, for light, for joy, for strength, for serenity, invites us to call for colour, son of the light” (Le Corbusier 1931, 1:113).

literature review of colour and architecture. Bofill and Bofill (1976, 49) captures it perfectly when he states that “colour should be used to define the internal laws of the architectural form of the building, making them visible and aesthetic”.

Naturally, from a colour perspective there are other cultural, symbolic, semantic and even emotional elements that abound, but as architects, we are mainly interested in those that are primarily design based. We attend to architecture that employs colour as a *strategic* component in arranging the forms and spaces, as would be the case with any other design variable that are orchestrated to achieve a single concept: no more, no less.

So the students taking the course on colour taught at the Department of Graphic Expression in Architecture (DEGA) understand that the use of colour in the works of a number of modern and contemporary architects could be understood to be a component that is perfectly trained to their thoughts and their approach to conceive architecture, and that any bias expressed by considering colour as a purely cosmetic and epithelial matter is nothing more than a fallacy. Quite the reverse, a detailed analysis of the works of internationally renowned architects such as Neutelings Riedijk, Bert Van Berkel, Sauerbruch Hutton, AB Rogers, OMA, and Spanish architects such as Selgas Cano, Langarita-Navarro and MGM, enable us to acknowledge the ties that colour has with the design concerns of each and every one of them (Figs. 1, 2).



Fig. 1 Colour analysis in the architecture of Johannes Pieter Oud. Work by students Laura Benlloch Tur and Cristina Rivera Moncada



Fig. 3 Colour project designs by students in Calle Músico Peydró as part of the “Valencia Despierta” (Valencia Awake) event

During the 2013/14 academic year, the task involved an urban space in the historic centre of Valencia that as part of the “Valencia Despierta” (Valencia Awake) event, organized by the Association of Trade and Commerce for the Historic Centre of Valencia in collaboration with Valencia City Hall. In addition to the urban space, a series of small retail businesses opened their doors to enable the young artists to implement their innovative projects inside too. Among the proposals submitted by students, the ones that stood out were entered into a contest that involved well-known professionals, local authorities as well as representatives from the Association of Trade and Commerce. So, during the Christmas season, a series of streets and local retail stores located near the Central market were transformed using colour to reinvigorate their image, inviting passers-by to step inside.⁵ Furthermore, the project outcomes from this initiative were on exhibit at the Valencia Region Art and Crafts Centre from 29/05/2014 to 04/07/2014 (Fig. 3).

During the 2014/15 academic year, the programme focused on the interior of the Inter-University Research Institute of Human Centred Technology (LabHuman), located in the Polytechnic City of Innovation (CPI) at the Polytechnic University of Valencia (UPV). These laboratories are home to research projects linked to the collection of the emotional responses of users, as well as improvements to ensure that technology naturally and seamlessly integrates itself into our day-to-day activities (Fig. 4).

At the entranceway to the laboratories of LabHuman, there was an area used as a reception area and for circulating that appeared excessively innocuous and needed to be tackled to reflect the innovation concerns espoused by the centre. Once again, the work was carried out as part of a contest, with an exhibition highlighting the

⁵A video of the results of the work by students can be seen at the following link: <https://youtu.be/FL8Tv2gkvol>.



Fig. 4 Exhibition poster for the “LabHuman: Colour and Interior Architecture” Prize with a picture of the winning project by students Darío Perpiñá Girona and Adrián Tarrazó Ribes

projects submitted⁶ and the subsequent selection of winning entries by a panel of experts.

The winning students experimented with how colour can be used to shorten and lengthen one’s perception of the length of a space, experimenting with the geometric pattern of uneven dimensions based on their distance from the observer, and applying their knowledge of colour kinetics, stemming from the experiments of

⁶“Colour and Interior Architecture Award: Exhibition of entries submitted”. 22/09/2015 to 06/10/2015, UPV School of Architecture.

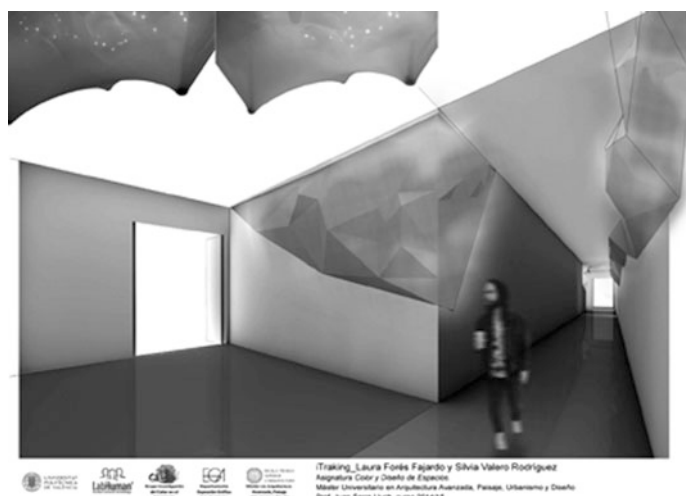


Fig. 5 Runner-up for the “LabHuman: colour and interior architecture” prize by students Laura Forés Fajardo and Silvia Valero Rodríguez

Joseph Albers in the 1960s.⁷ In addition to the fundamentals of the perception of colour, digital motion capture technologies were used, as well as LED lighting systems that allowed us to change colours, to give a boost to the material solutions, enabling them to achieve *chromatic versatility* that is so unique to our contemporary visual culture (Fig. 5).

4 Knowledge Transfer—From Review to Experimentation

Perhaps one of the most interesting aspects of the two-fold approach (review and experimentation) to the source curriculum is the resulting two-fold knowledge transfer. On the one hand, a critical analysis of the role of colour in contemporary architecture to expand upon the repertoire of potential visual possibilities of an architect, while at the same time, stimulating activity. Furthermore, experimentation is an effective way to activate creativity and enables one to bring into play the ability to judge and self-criticise the colour decisions made while developing and architectural project. In short, it manages to integrate the colour variable into the dialectical discursive-creative variable that is involved in all architectural creation (Fig. 6).

⁷A new edition of this definitive book de Joseph Albers “The interaction of colour” (1963) was recently published, this time in the form of an electronic app that enables one to browse through the original exercises of the master of colour (Taboada 2015).

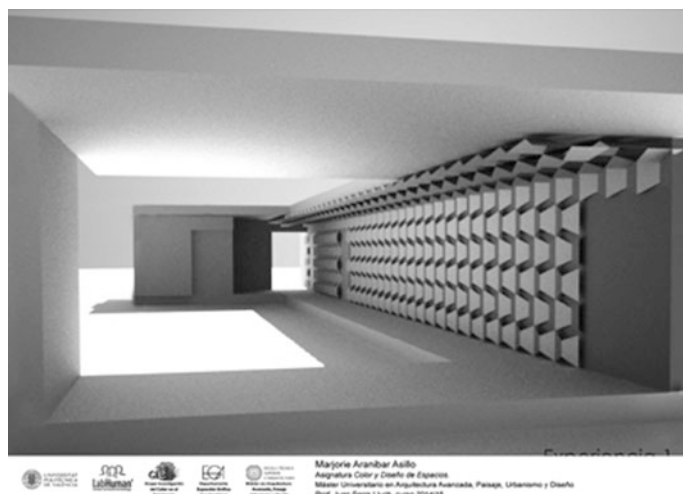


Fig. 6 Second runner-up for the “LabHuman: colour and interior architecture” prize by student Marjorie Aranibar Asillo

In this way, and by way of an example quoting certain cases, students put into practice the colour resources that enable them to meddle with the functional organization of architectural spaces, with the orientation of users and how they circulate, and with the characterization of the functional purpose, etc., based on a literature review about work by Norman Foster (together with Per Arnoldi), Richard Rogers and Renzo Piano.

Sometimes, the works involved the dialectic relationship that architecture establishes with its context, from mimicry to individuality, based on solutions employed by architects such as MVRDV, Neutelings Riedijk, Jean Nouvel, etc.

At other times, students implemented in their projects a range of subtle colours where aspects of contrast between light and shade dominate the hues and colour saturation, together with specific architectures such as those by Selgas Cano, RCR, Peter Zumtor, etc.

The possibilities for dynamism, space kinetics, anamorphism and optical effect are put into practice taking the works of artists with ties to architecture and with artistic movements such as Op Art, Kinetic Art, etc.: Felice Varini, Olafur Eliasson, Carlos Cruz Díez, Boa Mistura, etc. as references (Fig. 7).

In short, the list of chromatic resources assimilated during the analysis and taken as effective vehicles to achieve specific architectural purpose built around the architectural design, support the personal development of a specific intervention that has its own restraints which are answered by resorting to the visual aspects of colour and their materiality (Fig. 8).

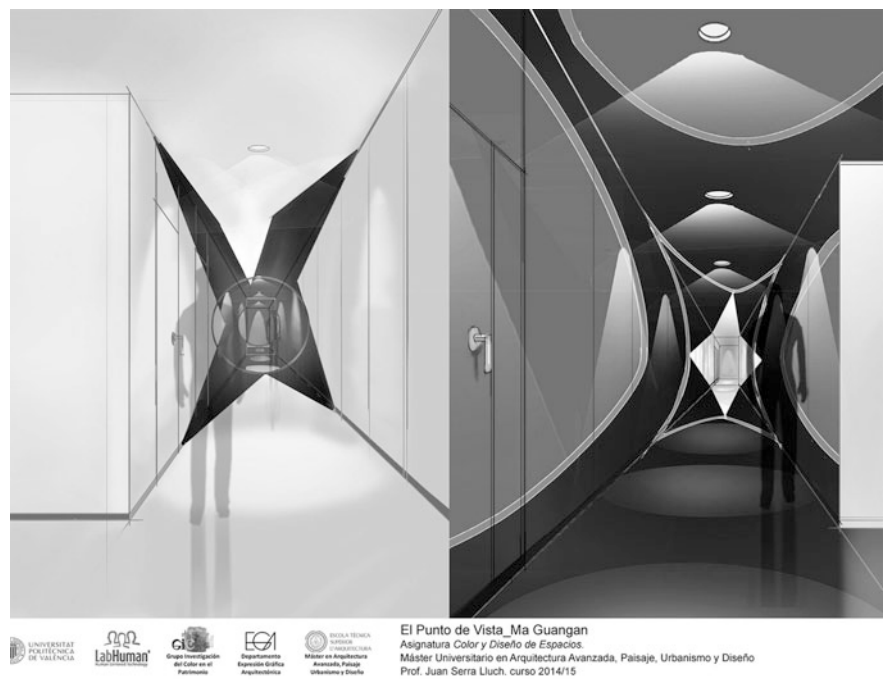


Fig. 7 Entry for the “LabHuman: colour and interior architecture prize” by student Ma Guagan

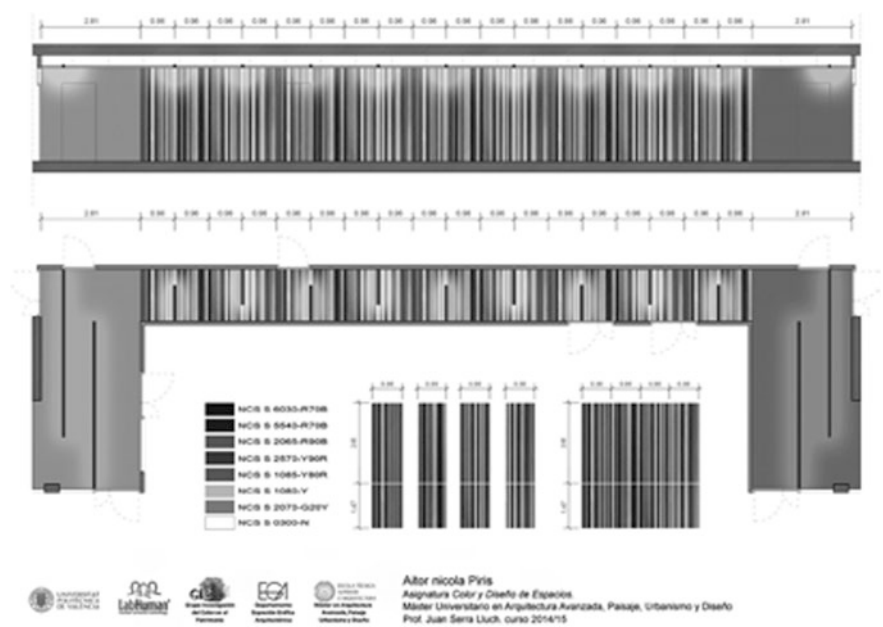


Fig. 8 Entry for the “LabHuman: Colour and Interior Architecture” prize by student Aitor Nicola Piris

5 The Teaching of Colour in Schools of Architecture: Essential Knowledge

The lack of training in colour that is included in the teaching curriculum of architects continues to the present day and needs to be revised. One need only remind ourselves of the importance that colour had in the early years of the Bauhaus, with the involvement of some of the most influential painters and colour theorists in 20th century architecture such as Kandinsky, Klee, Itten and his disciple Albers, also acknowledged for his later work at the University of Yale.

The EGA Department in Valencia has amassed a wealth of experience in the teaching of colour both over the past 15 years in both its degree and Master's courses, and has been able to ascertain its utility in the all-around education of a professional profile which, today more than ever, is unable to avoid the aspects of colour in a society that is over-stimulated by a multitude of images. The assessments made by students who have passed through our classrooms attest to this and coincide with the opinions expressed by other students from foreign universities where specific courses on colour and architecture are taught (Janssen and Mikellides 1998).

Of particular mention is the work being carried out by certain researchers and professors as part of the activities of the *Study Group on Colour Education*, part of the *International Colour Association* (AIC), in which the UPV Colour Research Group is also a member. The working group, which has been operational since 1978, exchanges experiences and expertise in the field of the teaching of colour by professors from different countries, with a scope that reached far beyond Europe.

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