Formal restoration processes of the historic centre. Urban colouring and shaping in the Carmen District of Valencia

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ABSTRACT

The present paper provides part of the results of the investigation carried out by a Valencia Polytechnic University team, the aim of which was to restore the chromatic characteristics of the historic centre of the city of Valencia (Spain) in a number of proceedings that were financed by the public organisms involved (The Autonomous Government of Valencia and the Valencia City Hall Council). These proceedings anticipated a group of chromatic studies on the historic city being performed which, by including the entire number of the buildings that make up the historic centre, allow for scientific mechanisms to be established in order to formally control the restoration processes on the facades of the historic residential buildings, and more specifically, with regards to the chromatic control of this intervention. [1]

1. COLOUR AND CITY. ANTHROPOLOGICAL COLOUR VALUES.

Colour constitutes an indissoluble whole with architectonic shaping, which both serves and characterizes it. Colour belongs to the group of aesthetic and formal values which characterize the aesthetic and formal trends of each architectonic period, either through purely visual and compositional values, or through the intimate interrelation between the constructive technique and the visual values of the architectonic work. We might state that colour forms part of the group of formal values that are typical of Architecture itself, to an extent that the formal and compositional characteristics of architecture are clearly shown through colour. Yet this profound interdependence between colour and architecture is not restricted to the visual logic itself of the isolated architectonic work, rather it goes beyond the small scale to irradiate itself within the whole urban shaping, by creating chromatically characterized zones and areas, and the logic of which needs to be understood in order to achieve an integral conservation of the historic city landscape [2]. This is so since each urban area responds to the logic that was in force at the time of its construction. The city is the result of an complex law of internal relations that not only respond to functional and economic requirements, but also to those of a social, cultural and aesthetic type.

2. COLOUR AND THE URBAN LANDSCAPE.

The origins of the investigation carried out are in the scientific analysis of both the urban generation processes and the colours associated with each architectonic typology. An analysis of the small-scale architectures was dealt with in the study conducted. An intervention project aimed at restoring the large heritage architecture was not dealt with in this particular case, rather we moved in the rehabilitation field of the historic city urban landscape itself, by preferably seeing to small-scale residential type architectures; we believe that without those buildings forming the strictly speaking urban framework, the rehabilitation processes of the large-scale buildings, such as cathedrals, palaces or singular buildings, would be impossible. In fact, this type of small-scale heritage buildings is what is ultimately responsible for the chromatic image of the city.

What remains certain is that while the monumental buildings act as a visual focal point, the urban landscape is defined by the addition of numerous minor residential buildings which, given both their juxtaposition and addition, form a chromatic continuum which both defines and characterizes most of the city. It is precisely this collection of buildings that directly owes its material characteristics to the soils of their nearby, natural vicinity, since the use of surrounding soils as

building materials generates an intimate relation between urban colouring and the territory, which the monumental buildings are exempt from, as they are freely able to use more costly materials, such as stone.

This intimate relation is that which rests upon the popular culture, and it goes beyond urban shaping to swell the cultural heritage itself belonging to those people who live in a specific city. This intimate relation between colour and territory, between urban shaping and popular culture, was to remain inalterable until the rupture that played a predominant role in the 18th and 19th centuries through the transformations that resulted as a twofold product of the Industrial Revolution: the disintegration of the closed and autonomous cultures of the Medieval populations; and the disconnection of colour from the characteristic materials of the surrounding territory in favour of the industrialized and universal constructive techniques, in which modern colourings and dyes permitted previously inconceivable wide chromatic ranges. [3]

In the case of the Carmen district of Valencia, one of the five districts that administratively divides the historical centre of the city, a total of *693 buildings* – this amount does not include empty plots of building land - have been included in the chromatic study, which would bring the total figures to 885 buildings the district is composed of, according to the 1984 Special Protection Plan [3]. The figures relating to these buildings inform us that the residential buildings constitute 77% of the total number of buildings in this district, which unquestionably constitutes a prime factor of the historic centre urban image itself. Thus, the formal control of the architectonic rehabilitation process, and more specifically that relating to the chromatic control of the intervention, is basic to conserve the traditional urban landscape, without which we believe, any talk about conserving the historic city shall always be insufficient.

3. METHODOLOGY

The aim behind the methodology used is an objective determination of the original chromatic characteristics, whether they are visual, or constructive and material. For this reason, it employs an extensive series of parallel proceedings which may be classified into two main groups: the *Historic, urban and typologic study* of the area being studied, and the *Analysis of the traditional mortars*, to determine both their chromatic characteristics as well as their historic materials.

With regards to the *Historic, urban and typologic study*, the aim was to conduct an analysis of the documentary sources conserved, relating to the formal and chromatic characteristics of the buildings occupying the Carmen District. In view of this, we resorted to analyzing the content of the Valencia City Hall Council Historic Records Register, which conserves the original files presented in the City Hall Council to start works carried out throughout the 19th century. These files are kept in the Local Police section. This analysis supported the study that was conducted as far as the origins themselves of the urban shaping and the development of the urban areas analyzed are concerned, upon which the specific period it was built, and the transformations which historically took place, are characterized. This whole group of activities has been completed with the development of a complete *typologic analysis* of the district, in which the proceedings to classify all the buildings had begun in accordance to their formal and stylistic characteristics, and also to the time they were built. The origin of this analysis stems from the existence of a profound relation that binds architectonic typology and the urban landscape [4]. This is so, given that the architectonic typologies present very close bonds with the constructive and formal solutions that characterize them as a result of technological capacities and of the predominant aesthetic trends that existed at the time of their construction.

As for the second line of work proposed, the *Analysis of the traditional mortars*, its objective is to obtain an analytical knowledge of the constructive finish techniques traditionally used in the historical cities of the Mediterranean western basin. The set of proceedings carried out involves a long list of analysis techniques, which is initiated by measuring the chroma values of the materials analyzed. The technology used in this process allows us to determine the chromatic coordinates of the present-day building, as well as differences in colour, colour values and chromaticity, and also the physical values of both light and humidity. Laboratory analyses are based on analysis techniques that require samples of the wall face to be extracted. These samples are actually complex mixtures, including inorganic and possibly organic compounds. It is for this very reason that the use of different

analytical techniques are needed to obtain a complete characterization of such samples. The techniques used to analyze the samples are as follows:

- *Optical Microscopy (OM)* with a low magnification power (binocular glass), covering an interval of X10-X63.
- *Scan Electronic Microscopy* combined with the *energy dispersion micro-analysis with X-Rays (SEM/EDX)* from which the plural inorganic composition of the different sample strata is obtained.
- *X-Ray diffracting (XD),* permitting the identification of the inorganic mineral substances present in the sample (mineralogical-petrographic composition).
- *Histochemical or Histologic Tests. Staining Tests*. This is an analysis technique that assists us in identifying any organic compounds present in the sample. This technique allows us to identify the type of agglutinating agent present through coloration changes.
- The *Fourier Transfer Infrared Spectroscopy (FT-IR),* also has a complementary application to study inorganic compounds, although it is mainly applied to the identification of organic compounds present in the sample.
- The *Thermogravimetric and Thermodifferential Analyses (TG/TDA)*. Identification and quantification of compounds (carbonates, gypsum, hydraulic compounds,…).
- The *Porosity testing. A mercury intrusion method***.** This allows for a distribution of the pore size to be obtained, a determining factor relating to the permeability and the resistance of the material.

This set of analysis techniques allows for a complete knowledge on the compositional characteristics of the continuous coatings that make up the finish layer, on the pigments that have been used in the chromatic treatment corresponding to each specific historic period, as well as on its relation to each building typology that the constructed heritage is composed of.

4. CONCLUSIONS

We can conclude from the study conducted that the colour of the historic city, and consequently the traditional urban landscape image itself, is intimately linked to the architectonic typologies that it is composed of, to the extent that the various architectures from each period, other than responding to their own formal and compositional typologies, intimately correspond to certain chromatic ranges that are typical of the dominant aesthetic trends of that particular time. This way, urban areas are generated that are characterized from both the stylistic point of view as well as from the chromatic perspective, and they intimately correspond to the period in which the buildings they are composed of were constructed, and to the social classes to which they were destined for. Therefore, they shape the typical, characterized city image, which has become a heritage value worth saving.

Yet, what is more, cities are not chromatically uniform; instead, a chromatic zoning exists that is directly dependent on the typologic characterization of the various areas involved. The ultimate reason is that if each area or urban zone has been generated in a certain period; a typologic predominance must exist that is derived from the social characteristics of this particular period, which expressed in other terms would be that the buildings society had established in their time, would predominate in each zone, along with the formal, constructive, and consequently the chromatic tendencies, from each period. It is for this very reason that we are able to talk about the chromatic ranges that are typical of either the *classicistic city* or the *eclectic city.* Yet we may also talk about the chromatic ranges that are typical of the crafted spheres, whether they were of the workmen or the bourgeoisie, in each of these periods, since the economic capacities and the formal tastes of each period are also subdivided according to the social stratum to which the constructed buildings were destined.

Finally, we wish to emphasize the need to use technical solutions that permit the traditional formal solutions to be saved with sufficient guarantee [5]. We have previously insisted on the inadequacy of the modern constructive techniques to save the chromatic feeling of the traditional constructive solutions. The traditional technique not only entails a certain chromatic range, but it also

entails a series of particular characteristics regarding the material texture itself, and its performance beneath light. Different textures, whether they are smooth or rough, change the perception of one same colour, and for this reason they become a fundamental value to be always borne in mind from the perspective and aesthetic parameters, particularly so in the case of historic architectures, as the colour and shape coordination, along with the value, depend on such parameters. The use of silicate paints has been recommended to restore the urban chromatic area. This is a solution given its adaptation to traditional technology, as it allows the appropriate tones to be obtained with the adequate texture.

References

1. The set of procedures described has been the object of several financing channels by the Autonomous Government of Valencia and the Valencia City Hall Council, as has an investigation project financed by the *Announcement of I+D Projects of the FEDER Program FEDER (B.O.E. (Official Spanish Document) dated 7-8-97). Area of Historic and Cultural Heritage.*
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