Color design in the Bauhaus laboratory of wall-painting

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ABSTRACT

Representation is the weak element in color design. It actually seems to condition the expression of color in the project. The la always favored the design as a media between design and building, by the use of conventional codes and symbolic languages, which are able to unambiguously describe formal characteristics that couldn't possibly be described in detail in the technical representation on scale.

Even for the representation of the color, there is a long tradition of attempts to obtain an unambiguous identification through geometric conventions, mathematical coordinates and numerical formulas, but this can only marginally affect the tradition of architecture and interior design. This is due to difficulties in reproducing the elaborate, which forced to use watercolor drawings (colored or otherwise) in the original. The effects of representation tools on the project, and therefore the possibility of remote control of the color, required an investigation of the color's representation when it becomes a decisive feature in the characterization of the inhabited space and therefore a research element for architectural and interior design.

With regards to the relation between color and design, the research of avant-garde artists of the early '900 is significant as the contribution of the painting played a decisive role in the general renewal of architecture and applied arts.

In the crucial years of the birth of the Modern Movement, the activity of the Laboratory of mural painting at the Bauhaus reinforced the concept of color as an active element of "building"by replacing the ornament to emphasize the articulation of the constructive elements of the room. The research in design required the development of an experimental approach to the color representation, with a free reinterpretation of conventional drawing codes.

The research aims to investigate how the lack of conventional references on the one hand, and, on the other, the cultural contribution of painting and interior decorating, encouraged the experimentation with new representation codes.

1. INTRODUCTION

The project adopts the design as an intermediate tool between the concept and the building, using conventional codes to describe characteristics that cannot be exhaustively defined by their scale reproduction. Which is why the symbolic and simplified representation in accordance to the standards developed by technical languages needs a specific expression of the characteristics that can't be measured as a form or can't be directly related to numbers.

One of the qualitative elements of the project is just the color, that kind of rigorous identification is conditioned by practical difficulties. As a result, color seems to be the weak element in the expression of the project. The representation of color has been subject to long succession of attempts to be identified without any ambiguity, usually using references to mathematical models: geometric patterns, math coordinates, or numerical formulas.

This type of approach can only marginally affect the tradition of architecture and interior design, where the graphical representations of the project witnesses a controversial relationship with the expression of color. In fact, unlike other qualitative elements, there isn't such thing as a unique coding for the representation of color in project documents.

The issue with identifying the exact color can be dealt with by adopting numerical coordinates in the color-systems or perhaps by referencing to the color-producers' palettes that are partially unified at least in relation to specific design sectors (mainly Pantone, Ral, Munsell); however, the real intrinsic problem is the control of the color throughout the intermediate stages of the project, in which the design and the representation serve as verification tools.

The immediate consequence of these difficulties shows in the simulated and simplified control of the preliminary design process, causing a quite common tendency to postpone color choices to

the construction stage and directly on the site. This could be due to difficulties in the reproduction of technical drawings and to the high cost of multiple color drawings, which, before the diffusion of digital printing, required the use of original coloring of copies.

The importance of representation instruments and the need of some kind of remote control on the developing of the design process, lead to the research of representation codes of color once it explicitly gained a decisive role in the characterization of the *shape* and of the *room,* becoming a formal element in design research.

The research aims to verify how the lack of conventional references from one hand and the cultural contribution of painting on the other pushed towards experimenting with different representation codes, in which the graphical and geometrical concepts acquire a value that goes beyond their design content, with a special reference to the *"constructive"* or *"decorative"* concept of color in architecture and interiors.

2. COLOR AND DECORATION: THE AVANT-GARD AND THE DESIGN

The color was always perceived as a finishing decorative element, such as the ornament. It had secondary, accessorial importance in relation to the building elements of the architecture.

Quatremère de Quincy, when expressing his position on the subject in his Dictionnaire d'Architecture, defines it as *"a finishing"*, stating that the use of color can be a money-saving solution to replace plastic ornamentations, thus emphasizing the supremacy of the form on the color. This prejudice survived even after the rediscovery of original color in the monuments of classical antiquity, where the bright hues of pure primary color marked the hierarchical role of the constructive elements of the order: *red* along the main lines of the basic structure, *blue* on the secondary elements of the entablature (medallions and triglyphs), *yellow* in the decorative details of the frieze. [1] Even Semper [2] and Ruskin implied its decorative concept as a surface coating of the wall, when they re-evaluated the aesthetic role of polychromy.

The influence of the critique is confirmed by the contemporary emphasis of the ornament painting in interiors, where the tempera simulated the most expensive wall dressing, forcing an implicit relationship between the *painting of walls* and the *interior decoration*, entrusted in the execution of skilled craftsmen whose education came from schools of arts and crafts. At the turn of the eighteenth and twentieth century, the dichotomy between major and minor arts,
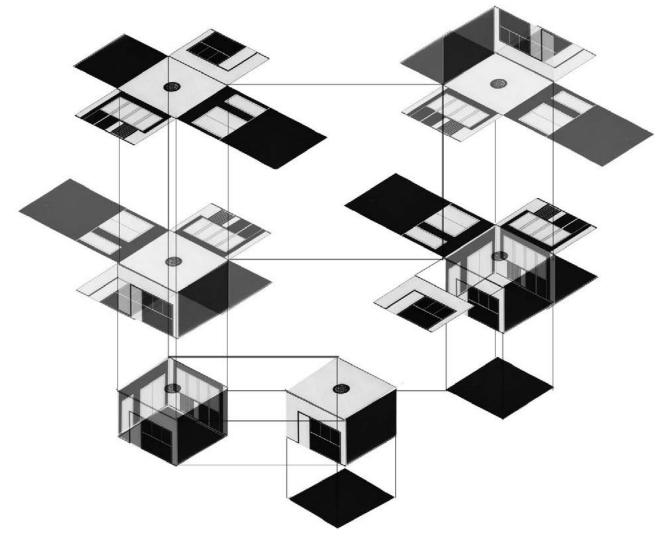
Fig.ure 1 - Reconstruction of the achromatic painting of the Kandinsky's dining room in Dessau (1926), designed by the students of the Laboratory of mural painting at the Bauhaus. The original design is a plan with walls at the floor opening to the sides of the ceiling, just like a child building a dice, in which the ceiling is the face with the number one.

namely architecture and decoration being the *"poor"* daughter of painting, appeared in the identification of new professional abilities.

Later on, the formal renewal of the arts, started by the avant-garde, challenged the color as a result of the ornamental blaze of previous decades; at the same time, the leading role of the painters in the search for new formal canons lead to the re-thinking of the color in architecture, as a possible answer to the elimination of plastic ornaments. Architects, searching for a unity in between the arts, found a new way of characterizing the built space in the geometry and in the color, similar to what they had been doing for a long time. As a matter of fact, in a way, they became painters too.

The color lost its previous reference to the decorative surface, becoming an elective element of architectural qualification. Just after the end of World War I, Bruno Taut, who had declared his interest in the *"composition of the Color in the Space"* in 1905 before experiencing the use of saturated hues in the garden city of Berlin-Grunau [3], suggested the color as an economic tool for the improvement of the house and living in the city. In the same years, Cézar Klein designed a seaside town with full c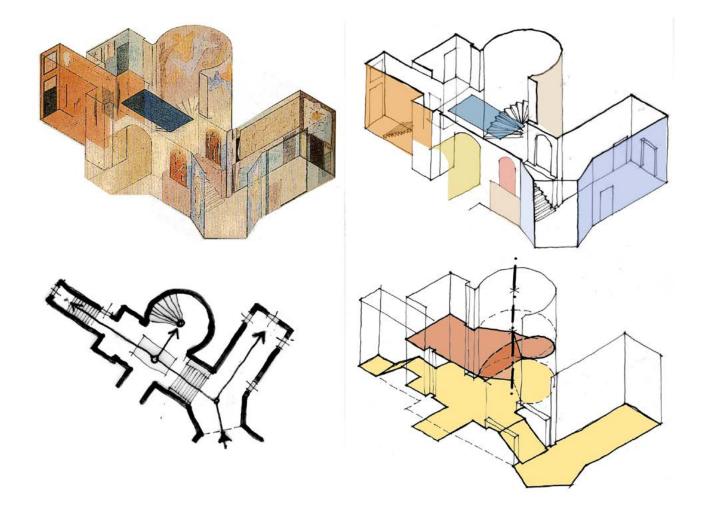olored streets and Behrens, Poelzig, Schmitthenner and others appealed to colorful architecture as a manifestation of joy in life.

Despite those calls, design only truly started perceiving color as a constructive element of the spatial box thanks to the members of De Stijl, for which it get possible the balance between *space* and *time* in the pictorial composition of the three-dimensional space. Therefore it became one of the constructive and creative elements of the architecture: it emphasizes the plastic values, removing heavy walls.

Significant are the statements Theo Van Doesburg, who stated that the building is a *"monumental synthesis of space, form and color"* [4]. He conceived the latter as an organic element of architectural expression, set against to its decorative and ornamental use, emphasizing the difference between *the painting* (the media) and *the color* (the goal).

Starting from this theoretical assumptions, the Neoplasticism developed new original design concepts in which the combination of primary colors with black and white placed on the *"whole"* of the surfaces of the room sides shatters the unity of the spatial box. Architecture applied the poetry of the abstract painter Mondrian, who gave up figurative painting in order to investigate

Figure 2 - Oskar Schlemmer's design for the lobby of the workshops wing in the Bauhaus in Weimar (1923), isometric view. The design shows the color pattern of painted decoration in its transparency, representing the e pictorial surface, without the walls depth: ceilings and raised floors are the same, without any consistency in the projective overlap of the edges that define the surfaces walls. The color and its representation emphasize the spatial continuity on three horizontal levels that can be rebuilt, despite the image emphasizes the boundary of the box space.

the concept of *space*.

Despite some important differences, the close relationship with the painting in the use of color for the renewal of architecture evokes the activity within the Bauhaus, where Van Doesburg was a guest in Weimar.

3. THE LABORATORY OF WALL- PAINTING AT BAUHAUS

At the Bauhaus, the awareness of color's conditioning significance had a great relevance in its studies, which were entrusted to the teaching of painters like Kandinsky, Klee and Itten in the preliminary courses introducing scholars to the design through practice. The experimentation of *sign, shape* and *color* were conceived as primitive elements of design: primary colors became starter elements of the process, together with the basic geometric shapes.

The first manifesto of the school therefore included a workshop for decorators, stained glass designers and a wall-painting laboratory, whose first leader was Oskar Schlemmer' [5]. This activity differed from the others, because of the color's interaction with the form and the perception, even though there was no actual creation of any objects. The business was then directed towards the experimentation on the other application areas of the school, working on behalf of other sections, involving students in Gropius's direct commissions and in his private work. Among these, the most successful was the

Figure 3 - Heinrich Koch studied color combinations by the isometric opening of the room box to show colors on the covered walls.

contract with the firm Gebrüder Hannoversche Tapetenfabrik Rausch & Co, for which - between 1929 and 1930 - the Laboratory created two collections of oil-tapestries, selling 6,000,000 paper rolls in four years.
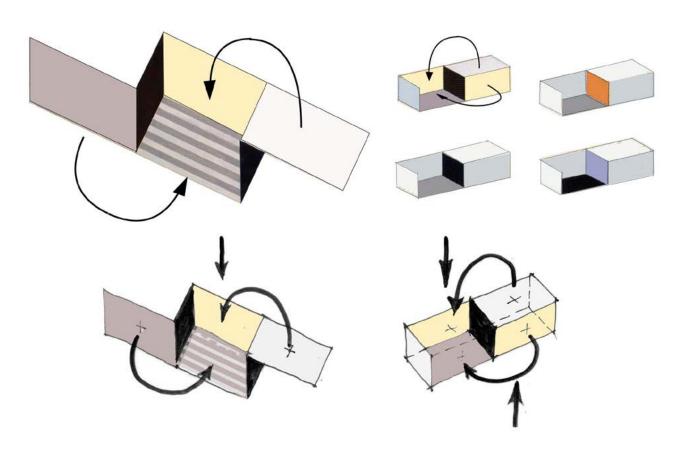
The laboratory's activity was well documented in the catalog of the exhibition by Renate Scheper, who followed the rediscovery of the Bauhaus Archives after the fall of the Berlin Wall, with the restoration of the *"masters's hauses"* and the recovery of the original interior colors [6].
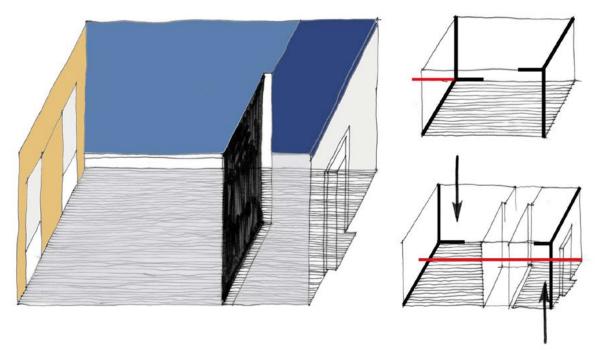
The work of the laboratory is interesting for two different reasons.

The first one is directly connected to the experimentation of color in his formal and perceptive relationship with the spatial environment and it documents the development of Bauhaus's chromatic research in the choice of colors such as the one in representation. The initial conception of decorative finishing with Expressionist taste evolves towards the abstraction of surface-defined color with deep hues showing the coexistence of two opposed concepts in the choice of color palettes: on one hand the preference for primary colors under the influence of Van Doesburg, on the other, the restful shades suggested by Itten.

The second is merely research on color representation in design, with the preference for isometric views stressing the reference to Neoplasticism and finding justification in Van Doesburg's visit in Weimar in the late 1920s, followed by a course with 25 students in '22 [7].

4. CONCLUSION: COLOR RESEARCH AND DESIGN EXPERIMENTATION

The research of avant-garde artists of the early '900 is of particular interest to the study of the controversial issue of the relationship between color and design.

The contribution of the painting was extremely important in the renewal of architecture and of applied arts in general. In the crucial years of the Modern Movement's birth, the activity of the Laboratory of mural painting reinforced the Bauhaus's active conception of the color. The use of the color highlighted the articulation of the constructive elements of the spatial box, whose perception is determinedly conditioned by the chromatic effect.
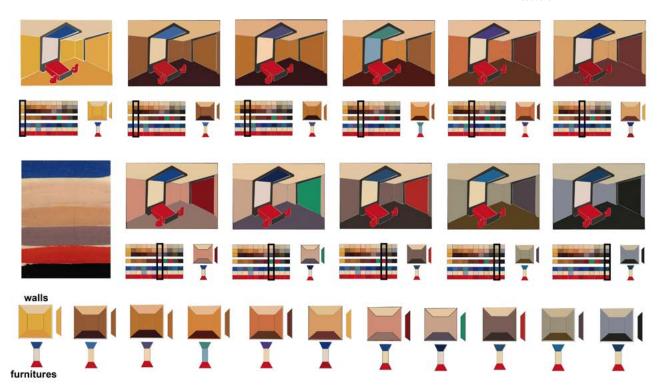
The awareness of the color's role upgraded the conformation of the perceptual space to a qualifying element of the project, which one should define and verify carefully. This idea improved the development of the experimental approach to the representation, featured by a free reinterpretation of the conventional codes of descriptive geometry, which is expressed in an original way in axonometric projections, in the development of sides on the paper surface or in perspectives, thus involving the three alternative methods of drawing projection.

The most innovative experimentation lies in the abstraction of axonometric projections, such as the joining of two different views from above

Figure 4 - in the color design of the Gallery Neumann (1926) Hinnerk Scheper combines two opposing isometric views (from above and from below) in a unique picture, applying different graphic expedients. The white base to the left, the vertical partition dividing the space and the "transparence" of the floor / walls, conceal the merging of two different projections.

Figure 5 - Luciano Baldessari, color pallet and perspective sketches for the color design of the bedroom of the Spadaccini's apartment in Milan (1932) (Archive CASVA, Milan) and the pattern of color matching in the sample and in the other 10 suggested solutions.

and from below merging in a sole image and exploiting the ambiguity of parallel perspective (as Escher did some decades later in the print "concave-convex" from 1953).

A common feature of the color's project, at the beginning of the Modern Movement, was the attention to the representation of color combination staying faithful to the hue, which privileged the tempera or other mat paints without shadowing, even in the realistic perspectives that always have flat backgrounds. This focus reflects in the drawings of several architects. Good examples are the Luciano Baldessari's perspective sketches for the bedroom of the Spadaccini's apartment (1932) or Figini and Polini's views for the *"Electrical House"* with its rigorous geometric construction, and avoiding the shade of lights and shadows.

Even more abstract is the solution adopted by Le Corbusier; in 1927 he attached the real samples of color in the project documents for the Maison Citrohan and later on even pen-drawings illustrating the *"Polichromie Architecturale"* (1956), he indicated the combination of colors on a schematic perspective box with numbers and letters, giving up the simulation of color completely [8].

The abstraction in the representation emphasizes the *"constructive"* and compositional role that they gave to color, as a significant element of the design, even more important than the realistic representation of its perception.

Figure 6 - Surfaces development in the color representation of Hinnerk Scheper's design for the ground floor of the building Reina in Dessau (1927). The three rooms have the a darker color on the windowed wall; in the middle one, which has the yellow ceiling, the backlit wall is black while the other are white like the skirtings and the frames.

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