COMPOSITIONS FOR CHROMATIC KEYBOARDS

Colour and composition in Le Corbusier's works

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ABSTRACT
With a gap of 20 years, Le Corbusier develops 2 collections for the wallpaper company Salubra and 2 tools to choose the colors, which he calls color keyboards. Differences between the 2 sets record 2 moments of an evolving relation between color and his architecture. Continuing the musical metaphor proposed by the “keyboards”, we can say that while at first color plays with other instruments of the spatial composition in a subordinate position, later it becomes a single voice engaged in variations on self-pace, like in a polyrhythmic composition. The parallelism with music reveals that change is the nature of the composition: from gear wheel of the “machine for living” color turns into an autonomous element of a symbolic machine.

Keywords: Le Corbusier, Architectonic Polychromy, Symbolic color

1. INTRODUCTION
The collaboration between Le Corbusier and the Swiss wallpaper company Salubra, which leads to the development of two collections, in 1931 and in 1959, may be the starting point for a reflection on the relation between color and composition in Le Corbusier’s architecture, but not just.
The role of color can become a key to understand Le Corbusier’s work, its becoming, beyond the specific discipline, part of some research on the existential meaning of the human condition.
The writings presented as “manifestos” of the new architecture in the 20s, with slogans such as “the house is a machine for living in”, didn’t express an analogy with the machine. They instead reflected the aspiration towards full adherence to purpose, that is peculiar to Nature, to Classic, to Machine. If the classic is serene possession of this condition, the mechanistic metaphor expresses the still “in search” condition of modernity. In last works, the prototypes projected into the future give way to timeless archetypes, to symbols and figures with a mythical origin that turn each work by Le Corbusier, in architecture, painting and poetry, into a kind of symbolic machine. Lecorbuserian color follows this course: from gear wheel of the machine for living in, color turns into an autonomous element of a great mythical-symbolic machine.

2. COLOR KEYBOARDS
Alongside Salubra wallpapers collections, Le Corbusier provides a few boards which select certain colors and, through the use of masks, allow to isolate specific chromatic chords. Le Corbusier called them “color keyboards” because the colors are placed in a procession of rectangles, as keys of a piano. While the role assigned to color in
Purist period is explained in various texts, color keyboards provide, in a cryptic form, the evidence of the gradual shift in the way of conceiving the color. In the *Après le Cubism*, Jeanneret wrote that the idea of form precedes that of color, it is prominent, the color is only one of its accessories. This position, is modified in *Polycromie architecturale*, the text written in the 30s, where Le Corbusier quotes Léger: “Man needs color to live, it is just as necessary an element as water or fire”; here he explained how color can change space perception of architecture and tried to explain what could lead one of the main responsible of the invention of modern space to get concerned with an object that is peculiar to interior decoration, very distant from the new concept of the modern house.

First, he replaced the expression “wallpaper” with “oil paint in rolls”, with reference to the production technology of Salubra wallpaper, created by means of spreading oil painting on a base of thick paper. Then, he explained his interest for Salubra as the interest of a builder, motivated by two arguments: the rolls imply, compared to the application of colors in a building yard, the advantage of being available anywhere, even in the absence of exact color pigments and involve complex measuring operations. So the oil paint in rolls meets one of the main missions of new architecture: to determine standards which set certain qualities and make them easily available. The second advantage is the durabil-
The composition of the keys of keyboard n.11

Fig. 4
A keyboard and two masks

Fig. 5
The masks on the keyboard isolate chromatic chords

Salubra paper is washable, elastic, heat resistant.
The first collection includes 43 colors. The keyboards are 12, each of them divided into five bands, three in one color, the “background tones”, two composed of 14 key colors, the notes. Each keyboard has a title evocative of a chromatic atmosphere: Space, Sky, Velvet I and II, Masonry I and II, Sands I and II, Landscape, Checkered I, II and III (Fig. 1).
The codes of individual shades indicate that the 43 colors derive from 14 basic colors, varied, by adding white, in colors that get clearer and clearer (Fig. 2). The basic colors, which Le Corbusier correspond partially to those of the "Great range"; defined at the time of Purism for the "volume builder" colors: yellow ocher, sienna natural, sienna burned, ultramarine blue, white, black; others colors belong to the purist "Dynamic range", composed by colors that create a feeling of movement of layers: carmine and vermilion. No color comes from the purist "Transitive range", composed by colors, like emerald green, that have no building properties.
The arrangement of the "keys" follows criteria that we can only guess by observing, as Le Corbusier did not give any explanation. In each sheet the two rows of keys have the same sequence repeated. But Checkered II and III are exceptions, presenting different bands. In Checkered II we can however identify a principle: dividing the upper band in two sets of 7 colors, these series are repeated in reverse in the second band (Fig. 3). Two screens supplied with the color plates allow to isolate either two shades or three shades against two background tones, or two pairs or two trios of shades against the background tone of the central band (Figs 4-5).
The second collection presents 20 colors and one keyboard only, composed by two bands, each with 10 colors, without any background tones. The screens supplied have simple rectangular holes that allow to isolate a couple of colors on the two bands or 2 pairs of colors from each band (Fig. 6).
3. SAVE FROM THE ARBITRARINESS

As for the other most famous instrument designed by Le Corbusier, the Modulor with its series of harmonious proportions, the aim of the keyboards is to save the compositive choices from arbitrariness. The first step is to limit the range of possible choices. Le Corbusier wrote ever since 1925 about the problematic position of the painter in front of excessive choice of color, citing the piano keyboard as an instrument model that circumscribes and selects: “What is a piano? A choice of sounds necessary and sufficient. Poor painters ...! Chemists dream only to multiply the color tones ... Can you imagine a piano with 73,000 different notes? ... Every visual artist has to devote more of their lives to create a piano”, Jeanneret [2],.

Once the choice gets limited to certain ranges, there comes the need to establish criteria to make, among the possible choices, the more harmonious ones. Compared to the choice of the right proportion, resolved by the Modulor, to constrain and save from the arbitrariness the choice of the best color combination seems to be more difficult; Le Corbusier admitted this difficulty, starting the essay on architectural polychromy with the saying: “Des goûts et des couleurs” which refers to the inevitable subjectivity that governs some aesthetic choices, and the chromatic ones per antonomasia.

The criterion that justifies the restrictions is the architectonic one: the correct choice would be caused by applying principles which are not valid in the infinite range of colors, but specifically in the area of color choices in architecture. If the Modulor has two strong roots of legitimacy, one based on the history of civilization, in the tradition of the golden section, and the other on Nature, referring to measures of the human body, the references of the keyboards are less precise. For the first collection, historical authority and reference to nature are merged by using of colors of the purist “Great range”, used in the ancient frescoes and derived from natural pigments. The second collection shows a chromatic sensitivity that is so different that Salubra executives asked some changes to make the two series not too discordant the one from the other. The colors are mostly darker and there is a greater emphasis on red and blue.

To explain these changes, it is useful to trace the parallel evolving of the relation between color and architecture. In Le Corbusier architectures of the 20s, as in his purist paintings, the color is part of a composition in which the tones mimic the materials, transposing them in the abstract, by using the natural pigments of earth and varying the...
intensity by adding white. The color so obtained collaborates to the construction of space: it can put space in tension, dismantle it or block it.

In La Roche-Jeanneret house it is possible to observe three different kinds of space, constructed with the aid of color. The first is the traditional space of the “room”, where color, spread evenly on the four walls, gives its character to the pink dining room. The second interior is the double-height hall: here the space is broken by the introduction of color on one single face of white volumes, like in a house of cards with an origin in Neo-plasticism. In the gallery, the typical space of the new architecture makes its appearance, not broken or blocked, but made “elastic” by color, which puts in tension the space together with the principles of the new architecture (free plan, architecturale promenade).

4. COLOR INSUBORDINATES

Le Corbusier rarely applied the Salubra wallpapers to his architecture, but uses them as material for his collages, a preparatory exercise for tapestries, polychrome wood sculptures and lithographs. The relation between color and “brut” raw materials, as it will emerge in the architecture, is prepared by the experiments carried out on the wooden sculptures: here color talks together with a material showing all his veins, so it should not mime the material, as in the purist compositions, and can be free from natural pigments, using bright tones, near the primary ones.

In the collages and in the lithographs, the subordination of the colored surface to the line is subverted, in a gradual process which is fully carried out in the lithographs of the *Poème de l’Angle Droit*. The expressive independence of color, is detectable also in the title page and in the “Iconostasis”. The title page is divided into a daytime blue sky, with a red sun, and a night red sky, with a white crescent moon. Blue and red were used in the text *Polychromie architecturale* to explain the concept of “architectural colors”, through examples that demonstrate their own abilities to change the perception of space. In the Poem, blue and red take an independent value: they appear intertwined, as in the two sets of Modulor. The Iconostasis is the scheme which graphically represents the structure of the Poem, divided into seven parts, each of them with a title and a corresponding color. The section entitled *Caractére*, is dominated by the image of the Icon, a female figure with hands clasped in prayer which symbolizes the attainment of a higher state of grace; it is a white figure that seems to grow out of her clasped hands, colored in blue and red (Fig. 7). In the essay on architectural polychromy, white is described as a background color that enhances the character of the color affixed on it, here white has an independent meaning, becoming the “*Caractére*” par excellence.

5. POLYCHROMY AND POLYRHYTHM

Continuing with the musical metaphor, suggested by the keyboards, we could say that during the purist period the color “plays” with the other instruments of spatial composition in a subordinate position, then becomes a “single voice” engaged in variations on the theme, with an independent rhythm, as is in a polyrhythmic composition. The application of a method of musical counterpoint, with independent rhythms for various components, is present and declared by Le Corbusier for various works, such as the Duval factory in St. Die. Here the structure, the brise-soleil and the partitions of the windows follow three different cadences; in the Unité, an independent chromatic rhythm, non-hierarchically subordinate
is superimposed to the rhythm given by an alternating succession of plans and corridors. It is something similar to the variation on the theme and the polyrhythm characteristic of jazz music, that Le Corbusier had admired during the early trips to America. A traditional music characterized by the polyrhythm is that of northern India, where the polyrhythm is linked to a circular conception of time, so that on a given basic rhythm, one may play potentially indefinitely, through variations and repetitions. This cyclical conception resonates in the writings of Le Corbusier during the stays in India. It is also the mythical view that he transposes in the system of symbols of Chandigarh’s projects or in other late works. The music-color parallel indicates that what changes is not only the role of color, but the nature of the composition itself, once it has become a system of signs referring to a system of meanings, saved from arbitrariness to a level higher even than the laws of history and nature, in a transcendent dimension.

Fig. 8
6. COLORS AS SIGNS

To express this system of meanings, color cannot be calibrated in a complex exercise in scales and chords as in the first Salubra collection in order to put in tension the space, to block a wall or make it visually distant, but it sings with the power of full color against full color, as it happens in the second collection. The color range is reduced to a few opposing pairs. The colors are close to the prismatic ones: in an architecture with a metaphysical reference the elements of composition, including color, do not need a reference to the authority of canons, and even the authority of natural mineral pigments, the colors are the immaterial essence of the refracted light, as in the dawn that Le Corbusier sketches in his carnet flying from Chandigarh, showing the colors of the solar spectrum (Fig. 8). Like the Modulor, keyboards are a tool to find the way. Once found, one can go sure to the real destination, that is a poetry that can touch the soul of man, making him aware of being part of a greater mystery.

REFERENCES