

Schröder House Gerrit Thomas Rietveld as the Development and Transformation of the Architectural Color Composition of the Ancient Temple in the 20^s of the XX century

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Abstract. In the article, the authors discuss the compositional activity of the Dutch architect and designer Gerrit Thomas Rietveld, using the Schröder House as an example that he designed and built. Nowadays, to solve artistic and compositional problems, architects and designers look to the art of the 20th century for new original ideas in the development of architectural and design techniques and means of composition. The study and analysis of the achievements of architecture, art, design, and engineering in the development of artistic methods, methods for creating artistic images, and volume-spatial composition allow for effective creative thinking in future architects and designers. For the practical activities of architects and designers, as well as for the development of the theory of architecture and design on the problems of compositional solutions, it is necessary to turn to contemporary art and the art of past years. We believe that it is necessary to determine the influence of personalities on modern architecture and design.

Keywords: composition, compositional thinking, design, architecture, construction, figurative solution, propaedeutics, Schröder house, Gerrit Rietveld.

1 Introduction

A methodically competent approach to educational activities implies a gradual transition from the general to the particular, the movement from simple to complex in the process of training future architects and designers. The study and analysis of masterpieces in the field of volume-spatial composition allows future architects and designers to form the compositional thinking necessary for further practical activities.

The Schröder House, designed [1] and built in 1922-1924 by Gerrit Rietveld, is a neoplasticist building that has become a classic of modernist architecture and design.

As the main material in the construction, G. Rietveld did not use only concrete – traditional for the era of modernism in Western Europe in the 1920s. [2]. Due to the compactness, small area and small size of the building, it would be economically unprofitable to use only concrete [3]. So, the structural composite frame was made of steel profiles and reinforced concrete slabs. The walls were made of brick, plastered. The

balconies and the foundation of the Schröder House were made of concrete. And the floors, doors and window frames are made of wood. The windows hinged so that they can only open 90 degrees to the plane of the wall. This is dictated by the conventional pictorial (creative) language of creativity of the De Style Group. During the construction of a building, its project is first created, and then the foundation and walls erected.

The third part of the estimate for the construction of the Schröder House was the project of the heating system by G. Rietveld. The heating boiler itself was located in the basement of the building, in addition, it was possible to use a “potbelly stove”. Along with the steel frame, the composition also included engineering aesthetics [4].

The term “composition” both in the educational activities of students and in the practical work of future designers and architects implies the creation of such an (ideal, perfect) creative product that cannot be improved by moving parts of a single whole or by adding any additional elements. The same can be attributed to graphics, painting, etc., both in the educational process and in professional activities.

The creation of any composition, whether graphic, pictorial or design, begins with a figurative compositional solution. It is necessary to study the design object of a volume-spatial or planar composition, determine the most interesting place for it, identify its figurative visual characteristics, and select the optimal viewpoint (main view) on the designed object. On the surface of the image, the dimensions of the proposed object are selected, and all its elements are applied within the format: a plot, a site plan, a font composition, or a field performance (if it is a planar graphic or pictorial composition).

The correct implementation of the composition, according to the authors, is the key to a bright modern creative figurative solution that has the necessary functional characteristics of the designed object of architecture and design. When looking for a compositional solution, it is important to choose and study analogs that match the tasks of designing according to a figurative or functional solution. This is true not only for objects of architecture and design, but also for painting, graphics, sculpture and other arts.

In order to successfully master the ability to create high-quality creative or educational products in the field of architecture and design, it is necessary to develop compositional thinking – flair. Therefore, such concepts as “planar composition” and “volume-spatial composition”, according to the authors, are very conditional. Both of them are based on the same laws and properties. In universities that implement creative areas, propaedeutics – composition – is introduced into the curricula as a separate discipline, of a fundamental importance for the educational and professional activities of future designers, architects, graphic artists, sculptors and painters.

Students should not rely solely on spontaneous intuitive performance when creating a project, It is impossible to obtain a high-quality result either in manual or computer graphics ignoring the properties and laws of composition. The authors believe that professional compositional activity requires deep intellectual development in the field of formal Heritage. In universities of architectural and design orientation, much attention is paid to a creative approach in the educational process, this is necessary for the accumulation of "creative wisdom" by students and a gradual transition to the maturity of the author in the professional field. At the training stage, errors in the drawing from the point of view of anatomy or color inaccuracies in painting are possible, but compositional errors are unacceptable either in educational art projects, or

in design creative work in the practice of an architect or designer. Thus, the importance of composition is difficult to overestimate, since the result of any creative or educational project, both in the field of design and architecture, and in other types of art: graphics, painting, sculpture, largely depends on it.

2 Methods and Materials

Mastering the art of composition during training is necessary for the further implementation of design work in manual or computer graphics.

According to the authors, one of the fundamental methods for achieving the formation of a compositional vision among students is the study and analysis of the design work of architects and designers - classics of modern times and past eras. So, in the Schröder House you can see a transformable kitchen, a dining room, a studio, a living room and a reading room on the first floor, and bedrooms on the second floor, here the space is divided by mobile (portable) partitions [5-7] (Figure 1).

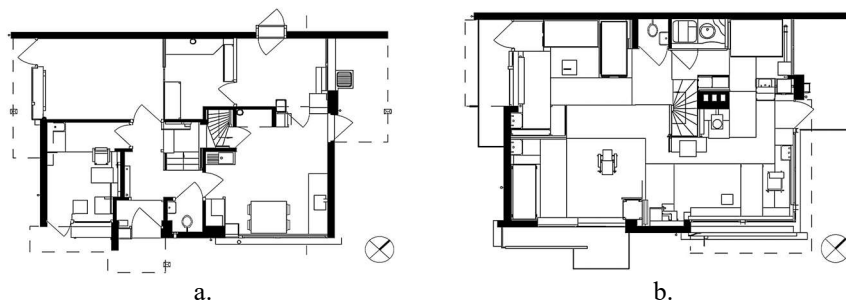


Fig. 1. Schröder House: a – 1st floor plan; b – 2nd floor plan

(source: <https://web.archive.org/web/20140903064033/http://turtle.net/grivarius/blog/152-dom-shryoder-schroder-house/>)

Having identified and analyzed the metric series, rhythm and modular elements, it is possible to determine what analogues Rietveld took as a basis for designing, and to follow the author's thought process in the process of creating the Schröder House (Figure 2).

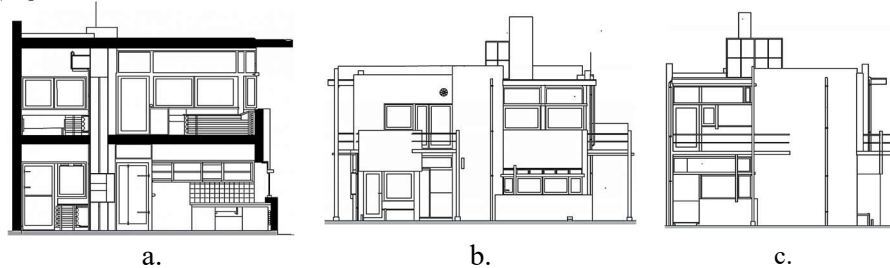


Fig. 2. Schröder House: a – transverse section; b – facades

(source: <https://web.archive.org/web/20140903064033/http://turtle.net/grivarius/blog/152-dom-shryoder-schroder-house/>)

In the course of educational or professional design, such a graphical schematic compositional analysis should always be carried out based on the works of the great masters of painting, sculpture, architecture, graphics, as well as representatives of industrial design [8-10]. The forms in these works were already comprehended by the authors and translated into a pictorial or graphic image, and their projects entered the history of design and architecture.

Students need to study the previous design experience of one or another author, identifying exactly how the object was created, to understand of what scientific, rational, compositional methods the result was achieved. Before starting a project, students and professionals should look at the analogs. This is necessary to determine by what means it was possible to come to a particular artistic image. To do this, the author of the future project should:

- conduct a graphical analysis of world architecture works, painting or design (“line”, “spot”);
- reveal linear plasticity in the works of the classics;
- determine the elements of the module and meter, as well as the direction of the linear-rhythmic components.

It is very important to study the works of other authors, both classics and contemporaries, during all educational and practical activities in order to fix the most interesting techniques of linear plasticity, spot outlines, contrasts, etc., and pay attention not only to artificially created design products, but also to objects created by nature. To do this from different points of view and graphically fix linear-plastic or light-and-shadow changes occurring with these objects in various conditions.

You need to be able to mentally select the main object – the center of the composition, as well as determine the place of its environment. A mental-visual analysis of the environment can help develop compositional vision, the ability to find such a position on the plane to eliminate the need and possibility of transferring and possibility of transferring the image of an object up or down, to the right or to the left. This way of training compositional thinking helps students realize the importance of working with the format.

3 Results and Discussion

Analyzing the Schröder House, one can see that the volume-spatial composition of Gerrit Rietveld also meant opening the interior doors with the help of special levers and buttons designed by the designer. In addition, the heating system was thought out: there was a boiler in the basement, and hot water was supplied through pipes. When it was cold, they stoked the “potbelly stove”, which Rietveld brought from the house of his ex-wife. From the kitchen, located on the first floor, food was served to the rooms on the second floor using a lift – an elevator. As a kind of "curtains" the author of the project proposed plywood panels for windows (Figure 3).



Fig. 3. Schröder House (source: <https://www.magazindomov.ru/2011/03/21/rietveld-schroderhuis/?ysclid=ldtx25jeny946408665>)

Taking into account the need to study and analyze previous successful experience when creating an object of design or architecture, the authors developed and proposed the following exercise aimed at understanding the figurative solution of the composition using the example of the Schröder House and its dependence on how the objects fit into the format:

- an exalted image – the image is “placed on a pedestal” – raised up;
- the image of freedom, endless space – a low line of the horizon, the top is free – the image is at the bottom of the format.

In the course of this exercise, the student learns to understand that the location of objects in different parts of the image plane allows you to give the image greatness, movement, monumentality, etc. An analysis of the works of world architecture, painting, design, graphics, sculpture and an attempt to change the format based on this analysis, moving the top and bottom horizontals, right and left verticals of the image, allows you to find your own artistic image and a successful compositional solution. Also, within the framework of this exercise, using the example of Gerrit Rietveld's project, the authors invite students to ask themselves if they can do better if they change the color scheme of the composition of the Schröder House. To do this, you can close part of the master's work with your finger or hand in order to trace the compositional changes that will occur in this case. The exercise allows you to learn how to identify the need to add one or another contrasting, dark or light in tone, bright in color or, conversely, element to the compositional system of the project being created (Figure 4).

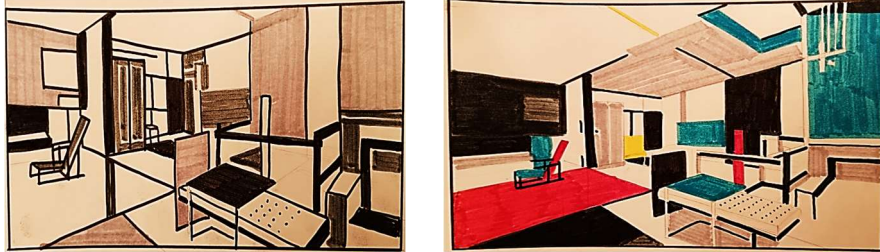


Fig. 4. Schröder House: educational work of students, Institute of Design and Spatial Arts. Discipline «Propaedeutics» (teacher – article author: R.F. Mirkhasanov)

The projects studied in the form of schematic compositional images should be world masterpieces of classical types of fine arts and design (Figure 5).

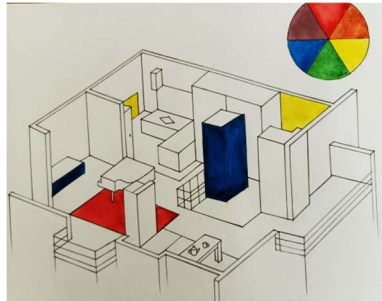


Fig. 5. Machine (computer) graphics. Schröder House: Color solution in the project of Gerrit Rietveld (illustration by the authors)

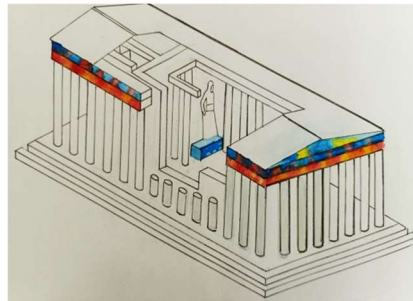
Schematic graphic representations of the Schroeder house and the ancient temple convey an undeniable similarity in the color scheme of the facade and interior zoning. Based on the research conducted by the authors, it can be argued that the icon of modernism - the project of Gerrit Rietveld has in its creation a classical base in the form of a world-famous object of ancient heritage - the Parthenon temple (Figure 6-7).



Fig. 6. Schematic graphical analysis of the color scheme of the facade of an ancient temple (illustration by the authors)



Project by Gerrit Rietveld. 1924
Utrecht. Netherlands



Temple of the project of Iktin and the architect
Kallikrat. 447-438 BC Athens. Greece

Fig. 7. Schematic graphical analysis of the color scheme of interior zoning
(illustration by the authors)

The only difference is the complete leveling in the Rietveld project of the elements of the ancient Greek order system and the dyes used in these projects (Table).

Table. Comparison of paints used in architecture of the era of antiquity and modernism

Iktin. Callicrates. Parthenon. Athens.	Gerrit Rietveld. Schröder House. Utrecht.
Natural red dye. Wax.	Red cadmium. Synthetic paint in a mixture of varnish and oil.
Blue tint: natural lapis lazuli pigment or Egyptian blue synthetic dye. Wax.	Blue. Synthetic paint mixed with oil and varnish.
Golden tint. Plates or metal powder mixed with wax or glue.	Ocher is yellow. Earth-based natural dye.
Brown or green tones based on natural pigments mixed with varnish and oil.	Brown color based on natural or synthetic dyes mixed with varnish and oil.
Black and white based on white lead, burnt soot or bone mixed with varnish or oil.	Black and white based on white lead, burnt soot or bone mixed with varnish or oil.

4 Conclusion

The study of the laws and means of composition and compositional means is necessary for the further practical activity of future architects and designers [11-13]. According to the authors In order to create your own author's (author's and own - the same in terms of semantic coloring) work with a positive predictable result, it is very important to be based on an analysis of the heritage of world-famous authors in the field of architecture, art and design. The creation of design and architecture products should be based on deep knowledge in the field of composition, which will avoid disappointment in educational, creative and practical design activities. in future. Our study translates in a schematic graphical analysis (SGA) the unity of the color architectural composition of the era of antiquity and modernism. The color scheme of the architectural composition

of the Schröder House designed by Gerrit Rietveld is a transformation of the temples of ancient Greece. The above transformation-development is based on new modern materials and dyes, but the base of color-like solutions is the same. These are the primary colors: red, blue, yellow and their derivatives, for example, black and brown. The golden color of ancient temples is transformed into ochre tones in Gerrit Rietveld's project, which is very logical and natural. It is impossible to imagine the golden color in the architecture and design of the modernist era, but its transformation in the form of patina copper or ochre color is possible.

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