

RESEARCH ARTICLE

The Role of Design Thinking in The Construction Industry and Its Fundamental Principles, Concepts, And Methodologies

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VOLUME: Vol.06 Issue04 2026

PAGE: 09-14

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Abstract

Among the rapidly developing areas in the age of technology, the field of architectural construction has especially stood out. There is a growing demand for convenient and comfortable buildings for all people, which is a requirement of the time. Design thinking is required from civil engineers when designing such buildings depending on the industries. It has been proven that design thinking can provide a solution to suit any requirement.

KEY WORDS

Design, architect, design thinking, graphics, project, graphic education, aesthetics, principle, architect-designer.

INTRODUCTION

Design Thinking (DM) is an interactive process in which we seek to understand users, identify their potential problems in order to develop solutions that may not be obvious at the initial level of understanding, and, as a result, develop a user prototype. On-demand products require a pre-designed and automated approach on the part of consumers. The concept of design thinking includes specific ways of thinking and working, as well as a set of practical methods.

Graphics training helps us design a solution that works for our users and asks the right questions. That's why teams use this concept to solve complex problems, reframe them to be human-centered, and focus on what matters most to users. This helps teams better conduct graphics research, design proposals, and usability testing to find new ways to meet user needs. Therefore, design thinking is a way of thinking about the future.

Today there really was a cultural interest in the problems of organizing a beautiful human environment, in the urban environment, streets, squares, recreation areas, residential areas of the city, industrial buildings bordering the residential

environment, and unresolved problems within the framework of architectural activity., but until recently was its own field. The fact that it was solved by non-specialists increased the demand for specialists in this field.

We are talking about the profession of a civil engineer and his design thinking, an expert in the field of environmental design, a profession based on the deepest traditions of architectural design culture and at the same time forming a unique focus and aspect of activity. the intersection of artistic fields such as architecture, design and environmental art. The environmental focus of the activities of the architect-designer is very broad and directly affects the most diverse areas of material and artistic culture - industrial design, practical design, design art, exhibition art, theater, cinema, object-visual.

We talk about the need to create today's ecological artist, a new designer who does not have the traditional conservatism of an architect; does not have the limitations of an industrial designer, but is strong in its penetration into the world of consumer ideas, the world of technology and materials;

perfect engineers-builders who create in the spirit of the times.

The core of educating an architect-designer who solves various problems of visual significance is developed compositional thinking and spatial sensitivity, that is, the ability to empathize imaginatively with the sense of form, space, material, and objective reality. arrangement of plastic matter (linear-graphic, rhythmic, then-n, coloristic) in plane, volume and space according to the task.

An architect-designer must have a professional and artistic culture, including mastering various means of expression; understanding the current socio-cultural situation; feel the development trends of modern artistic culture; directing issues of ecology, technology, economy, organization of architecture and design production, material science, tectonics of form organization. It is a kind of architectural and design thinking that is formed mainly in the educational process, where a large number of knowledge and skills are combined and concentrated around a core. How much can be achieved by focusing on the development of the nature of thinking is shown by the essays written by third-year students (six months after the beginning of the specialization) in 1989 for forty minutes on the topic "High School". What is the profession of an architect-designer?"

Time presents new and new tasks, which cannot be solved using the same methods, new ways must be sought. The synthesis of architecture and design is an expression of an urgent need (O. Kulikov);

An architect-designer is a person who not only creates architecture, but also designs the environment and space "with architectural tools" (L. Samartseva);

...that is, it regulates the architectural space and the objective world (O. Kulikov);

He is an architect, artist, sociologist, designer (E. Koval) synthetic specialist working at the intersection of fields of activity;

... has the ability to think unconventionally.

An architect-designer is as free a person as possible. A person who has a great sense of color, shape, sense of space and modernity. Able to work with unlimited, different materials. An architect-designer, unlike an artist, must justify "why", "why" (Yu. Kuleva);

An architect-designer should not create projects in vain

without envisioning their actual implementation, but should include an integral possibility of implementation in the project (E. Koval);

The architect-designer is a bit of a psychologist, a bit of a poet and a man of the stone age, who looked at fire for the first time and drew the first line on the cave walls (M. Albanova);

A person who practices art, who is able to create an object, an environment that evokes the feeling that it "has always been like this", ie. an architect-designer working in the analogy of nature (M. Sokolova);

Architect-designer - artist of our time (A.Usachev);

The life of an architect-designer is a search, but not an abstract game of the mind fueled by vanity, but to discover to others the versatility of the world around us, its natural beauty and uniqueness. After all, it teaches us life in this world (V. Kuzmin);

An important component of the structure of architecture and design thinking is the designer's perception of himself in time, his relationship with tradition and modernity. Along with his emerging ideas on these issues, the nature of contemporary professional thinking has a significant influence on his work. Without seriously focusing on the structure of professional thinking, it can be noted that the retrospective nature characteristic of it today has freed historicity, worked with various (often simultaneously) historical materials, achieved a poeticization of the old style, everyday life and extravagance. Naturally, it leads to an implementation that can easily be defined as disruptive or uplifting. Signs of retrospection, stylization, eclecticism. Behind the "retro screen" the plastic features of the professional language characteristic of today's designer's thinking are often not visible, features here called "true visualism". Systematic precision, the completeness of the implemented artistic principle, the clarity and precision of form formation, which are traditional for the design culture, today are filled with spontaneity, unpredictability, incompleteness, openness and sketchiness of elegant solutions.

Such a plastic system is the result of anti-functionalism tendencies instead of professional one-sidedness, professional purism - it is a living environment, communication with the consumer, striving for brightness, density and inaccessible environment. Processing; instead of aesthetic functionalism, where function, design, and material define form in one sense, there is an aesthetic of sketchiness, spontaneity, and

randomness.

Today, everything created in architecture and design cannot be called modern, that is, it reveals signs of today's plastic consciousness. The current popularity of design retrospectives does not automatically make them fashionable. Decoratism, neo-functionalism, neo-classicism, neo-baroque, eclecticism, traditionalism or contextual architecture is not enough - it is important that it is created by the designer's hands, thoughts and feelings, based on modern visual and plastic ideas.

Designers, not realizing the need for plastic and modern thinking, everywhere seriously, naturally fall into neoclassicism, relive the stage of development of the architecture of the 1930s, do not recognize and do not create a distance between today's feelings and the material they attract. There is no modern plastic thinking that can present a retro material in such a way that a person feels in a modern street with the values of a traditional urban environment. Perhaps what is happening today cannot be considered a stage of development of the modern style. The "modern style" is the last phase of the classical understanding of form formation, characterized by full composition, clear harmony and tectonic structures. Although the situation at the stage of "modern style" is very specific - a dramatically expanded palette of new materials (concrete, metal, glass), new design techniques (structures, shells, wire and inflatable structures), a new unusual aesthetic built on the basis of opening rhythm, relief, mass - after all, the goal of formation remains traditional, classical - to create a clear whole. Today, instead of the harmony of simplicity, there is complexity and conflict; instead of logical clarity - inconsistency and duality; instead of a single interpretation, there are multiple meanings. To be clear, not instead of, but alongside, together, not "one or the other", but all are becoming modern beautiful styles. What is important today is not to choose and exclude, but to add and increase (in the words of L.P. Monakhova), to work on the border of thought and feeling, emotion and abstraction, real and conceptual, expressive and inexpressible, generally understandable and subjective, very modern. and historical, traditional. Theoretically, these ideas were formulated by R. Venturi in 1966 and implemented in many architectural buildings, design products, visual arts works, including his book "Complexities and Contradictions in Architecture" long before publication. It is difficult to hope to return to an academicism of completeness, precision and absolute coherence, because work at the 'marginal' produces 'marginal

realization'. Today is not only the growth of consciousness, but new values are constantly entering it, shaking the simple mind of the "modern" architect and constantly complicating it. This complexity is actually pure beauty, and the path to it is design thinking.

The content of the thinking of engineers-builders is largely based on the traditions of the designer's thinking, which seeks to see the design object from the inside, from a certain lifestyle, from the structure of the organized space. This way of looking at things in educational design reveals a number of problems that may not be encountered when designing from the outside, from the facade. For example, let's take a one-story apartment building. We find that it is necessary to take into account not only the geographical and climatic conditions, but also the characteristics of rural life. All this must be reflected in the structure of the house. In addition, the nature of the home is reflected not only in the number of people in the family (which is usually satisfactory), but also in the type of family - newlyweds or a larger family, a family with preschool children or older children. Then the design task is not only to plan buildings for family members, but also to take into account the lifestyle of the family of a field farmer or mechanist, manager or cultural worker: the need to work in the home workshop, on the plot or at the table; the need for physical activity in children, etc. Behind the way of life, there is a certain system of artistic preferences that does not allow the designer to ignore this fact, although it does not deny the natural possibility of realizing the author's subjectivity, although it is related to the artistic desires of the consumer. Each design topic requires the same careful treatment of a person, his way of living or working, his artistic guidelines, specific features of the artistic culture of that time and region, which is solved in the style of interior design. Design is very diverse with interesting traditions. But design thinking has something in common that unites different aspects of design - from the narrowly commercial to the artistic and critical. It is a combination of a high level of rationality, meaningfulness and systematic creativity with thoroughness and deep penetration into the content of concrete terms to solve design problems.

The increasing analytical nature of design creativity is related to the important tasks that civil engineers have set for themselves. Let's dwell on what J. Nelson said about design thinking: design is a special kind of art that transforms things that can be used by a person into cultural phenomena, but

therefore it goes beyond the scope of art in the field of economics, politics, science, tries to think from a perspective. The wide range of tasks requires increasing the discipline of thinking, accuracy of analysis and comparison, systematic work with extensive data. The novelty of the problems solved by the designer does not allow to rely on past knowledge and preconceived ideas, which requires constant reorientation of consciousness, constant meaningfulness of actions.

Often, this trend has led to the emergence of design concepts based solely on calculations, with strict consideration of the entire range of possible factors and design conditions, to artistic features that are almost completely out of control. In the 1950s and 1960s, it was the Ulm School of Design (FRG) under T. Maldonado, where famous designers such as Otl Aicher, the corporate identity designer of the 1972 Munich Olympics, or Dieter Rams, who laid the foundation, taught and studied design by the Brown company, which in the 1960s It had a great influence on the development trends of European design. But design is not characterized by these extremes. In the best examples, the highest content of the project is multiplied by a subtle artistic intuition, but an intuition that works on the material of serious, multifaceted analyzes and offers a carefully prepared improvisation. First of all, a designer, unlike an architect, creates things with delicacy and beauty that directly correspond to the needs of the consumer. Therefore, he is not satisfied with the assumptions of the future consumer, unfortunately, the architect often relies on the above assumptions, but he must clearly imagine not only social characteristics, national, cultural, professional, age, gender characteristics, but also mental characteristics.

The unique feature of the designer's activity and thinking, which is related to the technological connection of creativity, deserves special attention. In general, design is a product of advanced technologies. The pre-design period is the period when things were made by hand or by hand, which gave birth to an individual aesthetic, a unique handmade look of the product. Changes in the shape or decoration of an object are a natural result of non-industrial technology. The architecture of the 20th century gives many examples of such construction technology in the desire to create unique structures: Le Corbusier's Ron-champ Chapel, J. Watson's Sydney Opera House, E. Saarinen's airports. But public architecture, with its excavation, plastering, and painting, is even more indicative of this. Architectural design consciously follows the technological laws and emphasizes them and requires an

aesthetic delicacy, which is mainly not in our industrial housing construction: modern technology means that it goes hand in hand with traditional aesthetics. The border between traditional architecture and architectural design is based on technology, more precisely, industrial aesthetics, a unique artistic consciousness.

The practice of unification and repetition forms the unique artistic thinking of a person in the period of scientific and technical revolution. If the pre-industrial artist appreciated the non-standard appearance of something based on irrational, non-metric proportional relationships, the modern artist sees and appreciates the sharp beauty of repetitions, right angles, large undivided planes, simple geometric volumes. can fully feel the precise rhythms of the surrounding surfaces created by modern technology. A number of great artists of our time have built their creative concepts on the same industrial aesthetic. The Dutch artist Piet Mondrian revealed the secrets of the importance of plastic bases using the simplest divisions of the plane and elementary color combinations. The Hungarian Victor Vasarely opened the richest plastic possibilities of combinatorial aesthetics by creating a series of compositions from repeating geometric elements (squares, rhombuses, circles, triangles and their derivatives). Inspired by welded and riveted structures, American Alexander Calder created an unconventional mobile sculpture. These were represented in their works by a number of representatives of those who found a language to express the industrial-artistic worldview in art, gave birth to industrial aesthetics, and inspired the design avant-garde of the first half of the 20th century. In recent decades, the industrial aesthetic has taken on very complex forms: La Tourette's monastery, Chandigarh buildings, Le Corbusier and K. Tange have passed through the active plastic period, and it returns to complex memories of style. P. Mondrian's, Juan Gris's cubism or early Le Corbusier's display of unusual plasticity of simple geometries seems to have ended.

As a conclusion, it can be said that the design thinking of construction engineers depends not only on graphic education, but also on directions. In the rapidly developing construction industry, the demand is increasing mainly for comfortable and tasteful projects. So we can see that we need to connect the future engineers-builders to the world of aesthetics and fantasy of artists.

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