

# Analysis of Space Construction under Artistic Design Thinking

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**Abstract:** *The integration of disciplines in the 21st century triggers design thinking from tradition to complexity. At this point, open topics, radical ideas and technological advances are proposing more exploration areas for thinking about living space. Standing at a new height, we should look around the history, identify the disadvantages of The Times, explore fresh discourse rights to adapt to modern space from multiple perspectives, and create intelligent force and orderly environment for creating dynamic laws of contemporary design.*

**Keywords:** Artistic thinking; Space construction; Function; Form; Discriminate.

## 1. INTRODUCTION

Nowadays, the open flow of knowledge and the thinking system under the new science are opening up unlimited space for the design field, and the multiple integration makes many factors such as creativity, form and function no longer become a single factor limiting the current spatial thinking. How to learn the lessons of architecture from the historical development process and how to revise and guide the concept of space construction under the current time and space is an important issue for contemporary designers to discuss.

## 2. DEFINITION OF THINKING IN THE CONTEXT OF DESIGN

### 2.1 The discrimination between perceptual thinking and rational thinking

Thinking is the interrelation between ideology and consciousness, and the combination of different cognitive systems produced on the basis of cognition. It is a unique attribute of higher organisms and a general expression of the understanding of objective reality. This expression condenses the brain's processing and refining of the law occurring between things, which is an advanced stage of the cognitive process, and reflects the matching perceptual signals as the environment changes. Therefore, the process of thinking formation is impacted by different stages and specific places, showing different characteristics and having the characteristics of time and space. In the voice of thinking system, the connection of conscious memory reflects the similarities and differences of cognitive process. Based on the difference of this fragmentation factor, thinking has different categories of performance. In the process of these different kinds of speculation, perceptual thinking and rational thinking are often two different branches to determine where the thinking is going, marking the starting point and the ending position of different consciousness.

Modern scientific research shows that rational thinking produces rational knowledge and perceptual thinking expresses emotional imagination. The degree of activity of perceptual thinking depends on people's cognition of different shapes, colors, emotions, etc., that can stimulate the brain, and accelerate creative association, imagination, and jump ideas[1]. The consciousness and concepts involved in the cognitive process of rational thinking are limited, and the fringe thinking mode determines the divergent logic of the matrix form, so it has strong directivity and established goal value, and is a simple linear cognition. In the process of understanding things, rational thinking will search for the deterministic results of the real world, and choose the corresponding objects as thinking factors to match the research process of other problems, so as to obtain the conditions of various levels of progress, and achieve the cognition of new things and the external world again. The thinking it presents reflects the corresponding expression of the matching between the spiritual world and the real world, so the cognition of rational thinking to the real matter is always based on the material existence, with scientific authenticity, logical rigor, and the continuity of thinking.

Different from rational thinking, the formation of perceptual thinking needs to meet the basic conditions of individual contact with the world, and on this basis, the formation of knowledge accumulation, the construction of cognitive system, the storage of perceptual materials, the release of emotional content. It is the use of the brain's subconscious and conscious activity ability, through intuition, imagination, inspiration, etc., to grasp the outline of things to think, with the characteristics of directness and vividness[2]. This perceptual thinking mode can be triggered at an appropriate time, so that individuals can produce the first intuitive mental image and form unconscious conditioned reflex. At the same time, it can also produce rich associations across time and space according to the cognitive memory of different time periods, with strong nonlinear characteristics. Chinese Taoism thought and Deleuze's postmodern creation theory all show the characteristics of the desire and tension of perceptual thinking, such as jumping, folding, stretching and nomadism. However, the understanding of perceptual thinking often falls into the wrong trap, that is, it represents confusion, ambiguity and strong uncertainty, and it is a deviation from the track that leads the result to the target territory. Therefore, the term "irrational" is often judged to mean foolish behavior that is not controlled

by experience, based only on abstract feelings, and detached from the realization criteria. However, as a way of active thinking, its logical correlation is often ignored. In the definition of perceptual thinking, it can be seen that its occurrence is the result of the coordination of multiple fragments of consciousness, each fragment of consciousness is affected by its own internal certainty and external unknown environment, thus providing an opportunity for the influx of "non-perceptual" factors to invade. The process that makes consciousness occur constantly generates new interfering elements to complete the constraint of the uncertainty of the result.

## 2.2 Design thinking as a balance fulcrum

Since its establishment, the design discipline has a clear purpose of serving "people", which is multi-faceted, not only to complete the fundamental mission of solving problems, but also to meet the additional tasks of presenting appreciated value for human beings. Therefore, in the face of scientific and aesthetic discipline requirements, it is often entangled with a lot of difficult to separate the perceptual and rational colors, need to contribute more reasonable cross-thinking. Therefore, when designers interpret design propositions, they do not use a single formal language and independent speculative mode to perceive and make decisions. The establishment of problem solving thinking intermingled with sensibility and rationality is an inevitable way to form design ideas, which also creates a unique design thinking mode.

In design thinking, perceptual colors drive designers to establish a basic cognitive mode for design propositions. These cognitions are due to the fact that sensory organs directly absorb many impressions from nature and life, and the impressions continue to ferment and sublimate in the designer's brain, forming an intentional effect, which leads to the designer's response to design problems. Unconsciously extract the intended material and use it as the basis for the materialized design[3]. Therefore, perceptual colors often control the wandering brain circuit, which is nihilistic, jumping, divergent and creative, and has the essential characteristics of endless, it can cross the limitations of time and space, and bring creative solutions and so-called inspiration sources to the problem solvers on conceptual problems. It is the organic tension formed by all design creativity, beauty feeling and art form.

On the contrary, rational color begins to exert its effect after perceptual color completes the first intervention on the human brain, reorganizing and screening the disordered perceptual chapters and fragmented chaotic dreams, and combing out effective branches and leaves of thought according to the backbone path of the design goal, thus forming the solution logic of the design result and the pre-judgment rule of the design method. Therefore, rational thinking is full of introverted, constricted, limited, aggressive and anti-unrealistic characteristics, advocating the mission of promoting the program strictly in accordance with the required results. Once the perceptual gene is wandering outside the design purpose that should not be, the rational color is full of the power of containment, pulling the overall design process back to the right track of solving problems, so as to correct the directionality of the goal. And establish the maximum range of associations generated by the form.

Therefore, design thinking is turbulent, circuitous, and also a process of trial and error. In the journey of expressing ideal perceptual aesthetics and creating suitable purposes for users, its life is always filled with the tangled blood of creativity and constraint, form and function, which also creates the principle that the criteria for judging design should have multiple perspectives.

## 3. REUNDERSTANDING OF SPATIAL STRUCTURE

### 3.1 Origin of space

Why does space come into being? This is a specific question that many space designers should return to today. Based on this question, we can trace back to the reason why there is the emergence of this enclosed place of architecture. "Han Fezi · Five beetles" recorded: in the ancient world, the people are few and beasts, the people are unable to beast insects and snakes, there are saints, wood for the nest to avoid group harm, and the people said, so that the king of the world, the number said nest. It can be seen that in the early stage of primitive society, the productivity level was extremely low, and in order to resist the attack of predators and meet the basic needs of human survival, some specific functional enclosure had to be produced. This kind of enclosure has a simple purpose and a strong functional direction, which is the absolute factor of space generation. Among them, natural caves or some fixed occlusions can become the media to achieve the enclosure, so the rational goal of satisfying the survival function creates the inevitable emergence of spatial forms.

With the formation of clan culture and the improvement of skill level, human needs began to move to a new level, and there were higher requirements for space enclosure. This relatively easy to obtain functional attribute gradually put on a gorgeous coat, stepped out of the state of absolute rationality and emerged a branch of multi-faceted needs, that is, it was endowed with some form of optimization or symbol placement on the basis of enclosure. These forms and symbols often have the ability to express emotions and desires, record human emotions in specific time and space, and at the same time inject life genes into the enclosed space, so the concept of place definition begins to imagine and evolve with the existing characteristics of human settlements, and provides surging springs for the occurrence of future enclosed forms under the continuous intake of irrational factors. However, the expression of forms is not a single thing, and its occurrence follows the development of history to produce an endless series of complex effects. At first, it was simple, superficial, random and chaotic. With the evolution of clan culture

and the need of imperial ideology, it began to be written into a popular spiritual color and became the symbol of ideology and culture in a certain period and the memory of historical times. Therefore, function and art, function and culture are written into a unified whole, become a symbol, and gradually produce a system, which is the beginning of the architectural system, and is the artistic vocabulary that solidifies the memory of The Times.

At this point, space is no longer a simple material, but a spiritual machine with thinking energy, conveying the creator's personality, attitude, concept and other personality factors, but also reflecting the cultural color of different periods, and becoming a powerful tool for writing the memory of The Times.

### 3.2 Dialectical unity of function and form

When architecture, as a representative of enclosing objects, began to be valued, enduring research and the process of continuous accumulation of knowledge enabled it to launch a complex disciplinary system exploration, and to explore more details of function and form with the advance of The Times, the universal evaluation criteria for architectural design began to shift to two directions. That is to meet the requirements of the use of the creation and the beautiful appearance and feeling. However, the process of materialization often cannot maintain a constant speed, it is affected by the environment of different times and has a bumpy consciousness, people will extract biased energy from one of the parties in the unbalanced social background, in order to pray for a balanced situation between the design product and the social state. But what I never thought was that this kind of prejudice is a kind of poison, once the flowing cognitive fashion is formed, it will make one of the factors be infinitely enlarged, resulting in the absolute tilt and physical imbalance of the design result, and developing into a confrontation system represented by "formalism" or "functionalism".

When this contradictory system mixed with the flavor of medicine and fire has the rise of the first signs, its burning trend will quietly unfold, and then comes the controversial topic of whether the enclosing of form for function or the enclosing of form and function. This endless discussion seems inconclusive, as both have been at their peak in the history of design development. In the era of formalism, functional attributes with fixed standards often face the awkward fate of being solved first. Compared with the form, it has more rational arrival indicators and quantifiable formation standards. Whether it can be used and whether it can solve problems is the signal to determine whether its functional goals are achieved or not. It is also because of this easy access to rights, which leads to the rapid degradation of its status, and encourages people to be more willing to pursue endless aesthetics and creativity in the process of design thinking, and spend too much energy to play with the color of the form, so as to achieve the purpose of sensationalism, and thus open the level of design to highlight the status of different social class groups. This kind of inverted relationship and the noisy social environment of The Times often cloak the warm-blooded wrong ideas in an invisible fog, so that the blindly pursued design concept can continue to move forward until it goes to the ethereal extreme world. In this process, formalism can enlarge itself more boldly, lose the place of function as an element, and seek the unique discourse power of form to determine design. Therefore, demand factors are forgotten more quickly, and the voice of exploration form gradually evolves from a factor affecting the quality of architecture to a single dominant condition determining the quality of architecture. The unhealthy development of spatial expression and architectural connotation mechanism is pushed to an irreparable abyss.

On the other side of the functional school, that form can not exist independently of function, often adhering to the "form follows function" this design concept. The design process is defined as the condition that the functional needs should be met as the main goal, so that the representation form of the object will change with the completion of the function, abandon the useless complex modeling and decoration, and seek to create a higher cost performance for the original intention of solving the problem. At the beginning, this concept of advocating function first has strong public consciousness and anti-monopoly characteristics, and the origin of scientific affinity and the design concept of serving people make it quickly have a unique camp and show a strong form tension in the global context, so the star effect begins to integrate, and the external power of cocaine gradually leads to the bad trend of style and discourse. As a result, modern design was deformed and cancerous in the specific later world, and was endowed with the crazy momentum of extreme trend under the support of the powerful era in the early stage. Therefore, "form follows function" has evolved into a standard for grading and judging the good and the bad. It is no longer the existence and symbol of universal power, but exudes a strict atmosphere that cannot be criticized and overruled, making the hard concrete and cold curtain wall unbristly enlarged under the cover of function.

With the development of this concept of "function first", the behavior of architectural deception becomes more and more intense, and more simple, non-decorative and monotonous modeling language comes one after another. These results are regarded as the essential features of excellent design, and become the characteristic symbols sought after and emulated. In the misunderstanding towards excessive interpretation of form, this phenomenon has created the top-level effect of identity and power, as an important means of expression that cannot be separated for a time, it has triggered the concept of "less is more" form proposition, and built more imagination space for the blindly searching design territory. Mies van der Rohe in the middle of the 20th century is a typical representative of this crazy idea. His Farnsworth House (Figure 1), in order to pursue the external performance of steel and glass, ignored the privacy needs of spatial functions and the overall optimization of building costs, and violated the special requirements of sociality in the nature of human groups. It dispels the initial vision of democracy and socialism, and also makes modernist architecture fall into an awkward historical situation.



**Figure 1:** Farnsworth house (Image source: <https://www.treemode.com/>)

Function and form have inseparable entanglement. As a complete living body, the use benefit retained in architectural space and the external ornamental power as the nature of sculpture are the inevitable existence process of the life cycle of its emergence, growth, maturity and decline. Facing the inseparable unity of the whole, in the process of the energy surge of the evolution of flesh and blood, the beautiful appearance and feeling and the practical space efficiency should achieve each other, forming a feeding mechanism for mutual heating, rather than the narrow film set of the frozen era. The "ugliness of form" inevitably indicates the defect of its function, and the perfect form of some necessary functions is often accompanied by the appearance of "beauty", and the self-circulation system without self-regulation will always show the characteristics of decline[4].

Therefore, the discrimination of function and form is not the result of seeking their independent development in the closed world of units, but of exploring the conflicting personalized factors and closely linked universalization relationship between the two based on the bidirectional conditional model, and evolving into an indivisible unified whole through continuous penetration between organizations. Therefore, in the face of the current era of the cocaine type of form and the functional fixation of limited thinking, the tearing of the image, the screening of design impurities, and the abandonment of old rules can allow designers to plug in the imagination wings of not too rigid in the process of showing the essence and demands of the peak state, and also give the ideal and courage to get rid of the secret environment of various infatuations with infinite pleasure and blurred illusion. Therefore, at present, "form follows function" is only a low-level slogan left over from The Times, blindly amplifying functional signals is also an extreme tone that ignores the environment, and a reasonable building should be built on the premise of whether the form and function match, in order to explore whether it can be repeatedly optimized in the later period.

#### **4. SPACE ANALYSIS UNDER CONTEMPORARY DESIGN THINKING**

The 21st century has a strong diversity of social characteristics, fierce theory, endless desire, high-end technology and human's ever-upgrading sense of need are putting more requirements on current design, but also make the contemporary design thinking system under the collision friction more intense. Therefore, the boundaries between rationality and sensibility, science and art become more chaotic and fuzzy, and the continuous crossing of disciplines also provides more opportunities for thinking to cross boundaries. More and more cross-border design comes into being, and cross-border thinking has become the first creative pronoun of contemporary design thinking. This new way of thinking goes beyond the simple fixed relationship of function, form and production. With the integration of new discipline genes, cross-border thinking stands on a higher platform and transforms all the knowledge media required for creation into elements that affect the design results. Thus through the mutual integration and mutual penetration of elements to form a three-dimensional sense and depth[5]. To create more breakthroughs for the initiation of inspiration, but also make the design derived from the continuous innovation. The parametric concept and technology of architecture is a typical representative of this thinking and social context. Its emergence has revolutionized the top-down design thinking mode of traditional design thinking. At the same time, it has introduced computer science and programming technology into the field of art design, launching a subversive impact on the traditional design mode and seeking a better way for more efficient and intelligent results.

Of course, this kind of cross-border thinking also puts forward more space for thinking about the standards of contemporary architecture, such as "whether form follows function" and whether function is still making quantitative progress in the reflection of form, which has become an indispensable topic in the design field of today's era. As a figurative material form with formal expression, architecture is ultimately inseparable from the open topic of "what follows what", but unlike history, the degree of free response and assumption in the current era no longer limits the jurisdiction of people's discussion. Therefore, from the perspective of the new world, form may pursue function, or various factors such as sharing, climate, environment, and energy. This is the architectural expression after environmental intervention, and it is the demand characteristic of a diversified society, expressing individuality and correlation in different time and space. But what is certain is that the framework that constrains thinking is being greatly weakened, and the form is no longer pursuing a single form. So what the form follows is not the key, but our way of thinking, how we perceive and treat the form itself, and its relationship with complex factors such as function, structure, economy, city, environment, culture, etc[6].

Therefore, from the perspective of modern society, the following media of form can be polysemous and trans-boundary, and its scope covers almost all human behaviors and phenomena. The object the form follows is also erratic, chaotic. We can think of form as following a characteristic of The Times, which is a high generalization of a period in history, a dynamic idea that is constantly updated and reflects people's understanding of ideas, concepts, concepts, and laws in the current social context. This concept is dynamic, and it is also a continuous result of evolution and change in the process of continuous social progress. The occurrence of this result includes various factors in the social attributes, that is, the concept of "Tao gives birth to all things, and all things return to Tao." It is different from the revision of "form follows function" by designers and theorists in various periods based on the specific background of The Times, focusing on following the trend and adapting to the situation, rejecting empiricism, opposing particularity, and advocating the universality of relevance. It is a collection of many abstract concepts such as "environment", "ecology", "sharing" and "pluralism", with a high degree of generality, but also very abstract and stable, no longer bound by characteristics, no longer restricted by time and regional scope[7]. This is the dynamic development language of contemporary formal logic, which pushes the relationship between form and environment from a special middle-level theory to a general macro theory, not only transcending the boundary constraints of history, culture and region, but also pushing forward the self-evolution state that is constantly connected with various social factors, giving more dynamic energy to the era definition of function and form.

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