

# **An Exploration of Design Strategies for Exhibition-Type Architectural Spaces Based on Gestalt Psychology**

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**Abstract:** In modern cities, exhibition buildings are a key part of a good cityscape, and they provide a place for people to learn, watch and carry out various types of cultural activities. In addition to good architectural functional layout, designers should pay more attention to the design of exhibition building space in the higher visual perception and emotional senses and other spiritual level of experience. Therefore, this paper draws on the existing research results of well-known exhibition-type buildings at home and abroad in many fields such as architecture and psychology, and analyzes the design strategy of exhibition-type building space from the perspective of Gestalt psychology theory.

**Keywords:** Gestalt; Visual Perception; Exhibition Architecture; Spatial Design

## **1. Background and Significance of the Research**

Gestalt psychology, also known as “completion psychology,” emphasizes the wholeness of behavior and experience. Gestalt theory suggests that the “shapes” observed by the human eye are the result of the active construction of our visual system, that the whole has a greater effect than the sum of its parts, and that the whole determines the nature of its parts<sup>[1]</sup>. It has had a profound impact on architectural design and art design in terms of visual perception and aesthetics.

This paper takes the “Gestalt” psychological theory as an entry point to explore how to meet the demand function and create a humanized, emotional and other good visual and perceptual experience of the architectural space of the exhibition class design strategy from the way of thinking, aesthetic point of view and other levels.

## **2. Content and Methodology of the Research**

Gestalt psychology has had a profound impact on the exploration of architecture, space, and the environment in the field of visual perception. Japanese architect Yoshinobu Ashihara, in “The Aesthetics of Streets”, used the psychological theory of “Gestalt” to explain the beauty of streets<sup>[2]</sup>. Therefore, Gestalt psychology can also be used in architectural space design, this paper hopes to take Gestalt psychology theory as an entry point to improve the visual experience of the exhibition class architectural space, to give the viewers a more humanized, emotional experience of the exhibition.

The main research of this paper is as follows:

- (1) Basic Theory of Gestalt Psychology
- (2) The basic principles of Gestalt psychology in the spatial design of exhibition-type buildings
- (3) Discussion on the strategy of Gestalt psychology in the spatial design of exhibition buildings.

After clarifying the object and content of the research, this paper uses literature review, field research, comparative analysis and other ways to explore the Gestalt psychology theory in the architectural environment, spatial form design and other aspects.

## **3. Gestalt Psychology Theory**

Gestalt psychology, whose concepts have their origins in the visual realm but are also not limited to it, and whose application extends even beyond the experience of perceptual experience, can provide us with a new way of understanding our behaviors, thoughts, and experiences. The following is a brief description of the theories related to Gestalt psychology that will be utilized in the research process.

### **3.1 Holism**

“Holism” is an important attribute of Gestalt psychological theory. Although the entirety is composed of different elements, the whole

cannot simply be regarded as the sum of all the elements. Gestalt emphasizes the ordered whole: the “whole” is more important than the “parts”; the “whole” is neither simply the sum of the “parts” nor does the “parts” contain the characteristics of the “whole” [3]. Just like when people appreciate paintings, each element in the work is an independent visual element, but the connection between these elements makes the isolated images form a composite whole, thus presenting the overall appearance of the painting.

### **3.2 Law of Organization**

Gestalt psychology theorizes that people usually view elements that are specifically connected as a whole, and that this way of thinking causes people to bring their own subjective experiences to bear on their observations, which is called the “law of organization.” The principle of simplicity, the graph base relationship and the optical illusion are the three main elements commonly used in organization laws [4]. When people look at space, they will actively regard the elements that they consider important as the main body of the content, and regard those unimportant elements as the background of the content, which is the principle of the relationship between the bottom of the map. In a complex space, one strengthens the impression by simplifying part of the space and regards it as a “figure”, while the rest of the space can be weakened and regarded as a “bottom”, which is the principle of simplification. People are often led by empiricism to misjudge what they observe, which is called an optical illusion.

### **3.3 Visual Force Fields**

Physical space and psychological space two kinds of spatial form performance characteristics have two ways of moving and static. Physical space refers to the entity and the space formed by the enclosure of the entity, while mental space refers to the user's perception of the space on the mental level, which is generated by the stimulation of people's visual perceptions by the location, form, scale, shape, color and other elements of the object in the space. According to Gestalt psychology theory, “tension” and “motion” together constitute a visual force field and provide people with an unstable and balanced visual environment [5].

## **4. The use of Gestalt psychology in exhibition-type architectural space**

### **4.1 Use of the Law of Organization**

The graphic background principle considers the “graphic” to be the salient entity and the “background” to be the unspecified imaginary body that sets off the graphic. “Figure and bottom” are coexisting, people usually can attract people's eyes or positive things as ‘figure’, some more common and introverted or negative things as ‘bottom’, and with the change of people's observation angle and state, ‘figure and bottom’ can be converted to each other. And with the change of people's observation angle and state, “figure and bottom” can be converted to each other, and this principle can be reasonably applied in the design of exhibition architectural space [6].

(1) Figure-ground between the building and the environment

Exhibition building form space is large and variable, the internal space is also more complex, the building boundary contour is also rich, so people will always regard the building as the main body, as the “Figure”, and the environmental landscape as the background, as the “ground”, and so on to the building and the spatial environment. The environment is divided to strengthen the wholeness and hierarchy of architectural space. For example, in the East Wing of the National Gallery of Art in Figure 1, the building has a good Figure-ground. I. M. Pei divided the trapezoidal plot of land on which the East Wing is tucked into two triangles with a diagonal line, which makes the two parts physically distinct, but harmoniously integrates the building into the terrain and the surrounding environment. In terms of the overall environment, the building is the “figure” and the site is the “ground”; in terms of the building itself, the two triangular building blocks can be regarded as the “ground” and the atrium space can be regarded as the “figure 1”.

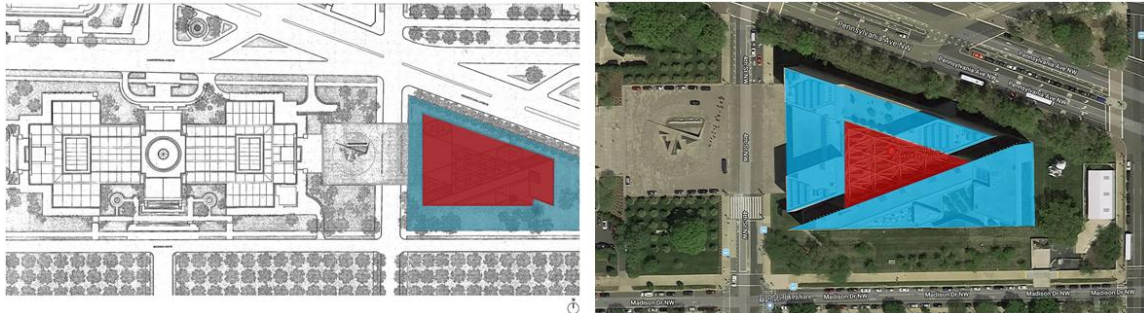
(2) “Positive and negative” landscape of the building

The spatial structure form of the exhibition building is getting richer and richer with the development of the society, and a variety of architectural space concepts such as “overhead”, “gray space” and so on are applied to the exhibition building, and the “positive

and negative” landscape effect is created by the methods such as “enframed scenery”, “view borrowing”, “opposite scenery” and so on.

“enframed scenery” is an important technique in architectural art and garden landscape. That is, the door frame door hole, window frame window holes or natural holes and man-made

design of the hole frame, the frame outside the scene consciously choose to take into the hole frame, so as to constitute a beautiful and vivid picture [7].The vivid picture formed as in Figure 2 is a “enframed scenery”, and one would think that the view one is looking at is a richly layered spatial entity.



**Figure 1. National Gallery of Art East**  
(Image Credit: Pei Cobb Freed & Partners, Google Maps Screenshot)

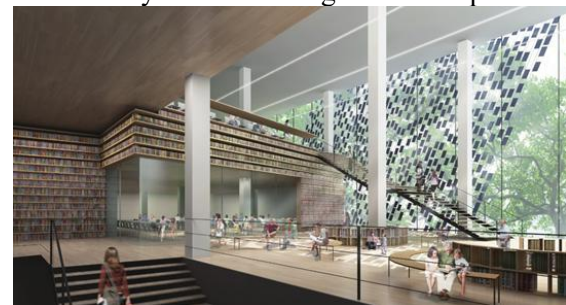


**Figure 2. Suzhou Museum (Image Credit: Internet)**

“view borrowing” is the external landscape of the building and the internal space associated with the scope of vision will be a good space landscape “borrowed” to the ornamental line of sight. In the exhibition building, through the “view borrowing” can build more deep, multi-level spatial atmosphere. A common technique is to create rich spatial layers through spatial cascading and infiltration, thereby increasing the breadth of visual viewing [8].As shown in Figure 3, the future of Suzhou technology sense of civic culture plaza building, glass facade design using multi-level relationship between the bottom of the map, the building facade through the glass hidden, so that the indoor and outdoor spaces are intertwined to form a good “Figure-ground”, creating a unique visual picture.

I take you as a view, you also take me as a view. The observer who walks in the classical Chinese gardens, looks at observation point B from observation point A, and looks at observation point A from observation point B, This is the “opposite scenery”. In classical gardens, rocks or buildings are often designed

on both sides of a stream to make the water landscape look more layered. In 1935, the modern poet Bian Zhilin wrote, “ You are standing on a bridge to see the scenery, and those who are looking at the scenery are looking at you from above ” , which is also similar [9]. “opposite scenery” are often seen in contemporary exhibition buildings, such as the Jixi Museum shown in Figure 4, where the narrow corridor and the pebbles on the ground correspond to each other, enriching the sense of hierarchy of the building's exterior space.



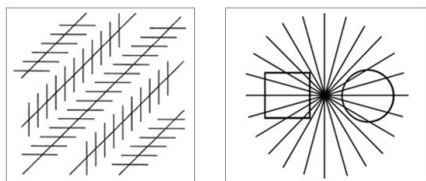
**Figure 3. Architectural Space of Citizen Cultural Square of Suzhou's Future Sense of Science and Technology**  
(Image Credit: Internet)





**Figure 4. Jixi Museum (Image Credit: Internet)**

Visual illusion refers to people's subjective understanding of visual images in a particular situation because of their psychological perception and empiricism. Factors that cause visual illusion include physiological and psychological factors, and very often in a particular environment, people will understand the picture based on their subjective impression before they can see the environment clearly, and thus visual illusion occurs [10]. As shown in Figure 5 for the Sonai and Orbison illusions, the original parallel lines look not parallel, and the original circles and squares look different from the original ones.

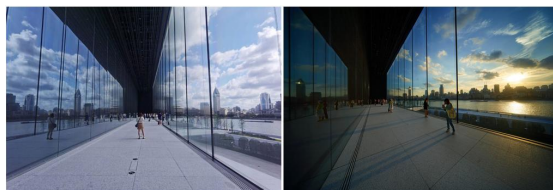


**Figure 5. Matsunai Illusion Map and Orbison Illusion Map (Image Credit: Internet)**

Reasonable use of optical illusion to increase the level of architectural space can enrich the interest of architectural space and build a better architectural space effect.

#### (1) Use of the “mirror” space

Setting up reflective materials such as mirrors and metals at appropriate locations in the architectural space can make the observer enter the space with the mistaken belief that the space has a larger scale and the architectural space becomes rich in content. As shown in Figure 6, the mirror corridor of the Pudong Museum of Art, blue sky, white clouds and water penetrate the mirror into the architectural space, greatly enriching the architectural space level.



**Figure 6. Pudong Art Museum (Image Credit: Internet)**

#### (2) Changing the visual perception of space

In the spatial design of exhibition buildings, the skillful use of optical illusion can make people get a better spatial perception experience. Expanding the area of outdoor environment through optical illusion can increase the overall spatial level; changing the area of indoor space through optical illusion can adjust the sense of scale of the space. As shown in Figure 7, the architectural façade of Anhui Museum, the design of horizontal lines strengthens the perception of perspective phenomena, affects the visual perception of spatial depth, and creates the optical illusion of expanding the depth of field.



**Figure 7. Anhui Museum (Image Credit: Internet)**

The principle of simplification includes the principle of proximity, the principle of similarity, the principle of continuity, etc. They can not only guide the visual-perceptual spatial design of the exhibition-type building space, but also guide the spatial layout of the exhibition-type building to create the exhibition-type building that conforms to the public's aesthetics and is closely connected with the whole and the details.

#### (2) Application of the principle of proximity

Gestalt psychology theorizes that when things are similar in a particular environment, people tend to mentally see them as a whole. For example, if there are teapots and cups on the coffee table, people usually see these as a tea set. In the exhibition building space, corridors, terraces and other spaces in the visual perception of the continuity of a certain connection, the rational layout of such spaces is particularly important. As shown in Figure 8, the arrangement of terraces, verandahs and courtyards in Jiangsu Zixianglong Redwood Art Museum can serve as part of the exhibition hall and provide visitors with gray space

connected to the natural environment. In the exhibition building, often through the corridor, balcony, atrium and other architectural

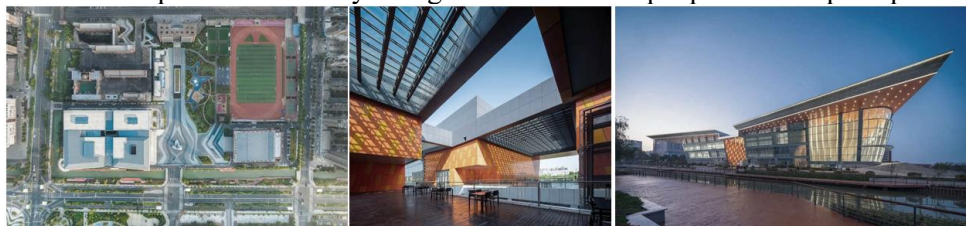
combinations together with each other to provide users with “gray space”.



**Figure 8. Jiangsu Zixianglong Redwood Art Museum Program Design**  
(Image Credit: <http://www.qbihui.com/>)

(1) Application of the principle of similarity  
Gestalt psychology theorizes that people's mental cues subconsciously integrate a number of things with different characteristics and see them as a whole. Things with similar colors, shapes and sizes are more easily seen as a whole. This principle is also often used in the design of exhibition spaces to visually bring

different psychological feelings to the user. As in Figure 9, four similarly shaped exhibition halls make up this building, and the uniform use of orange as a spatial linkage of the color, although the four areas seem to be relatively independent, but because of the similar shape and color consistency, it will be seen as a whole in people's visual perception.



**Figure 9. Rattlesnake Cultural Arts Center** (Image Credit: Internet)

(3) Application of the principle of continuity  
The principle of continuity means that people's visual perception will instinctively supplement an incomplete graphic into a complete graphic. In the exhibition class architectural space design, can have a similarity of things through the continuity of the clever arrangement, the formation of the associated whole, the rational

use of the principle of continuity on the graphic arrangement and combination of things can build a more vivid and creative space. For example, the China International Design Museum in Figure 10 forms a continuous exhibition space through the sequential arrangement of building combinations with similar volumes and colors.



**Figure 10. China International Design Museum** (Image Credit: Internet)

## 4.2 Utilization of Visual Force Fields

Gestalt psychology theory emphasizes the existence of core tensions within the schematic structure to build a visual force field that satisfies people's visual-perceptual perception. In the book “Art and Visual Perception”, Arnheim put forward the concepts of “tension” and “movement”, thinking that tension is invisible movement, and movement embodies

tension. The tension of architecture can be strengthened not only by the relationship of volume, but also by the linear relationship based on the principle of continuity <sup>[11]</sup>. As shown in Figure 11 for Meixi Lake Art Center, both the external volume and the internal space of the building are made to show the movement of the building through the dynamic pointing structure, which in turn strengthens the visual tension of the building.

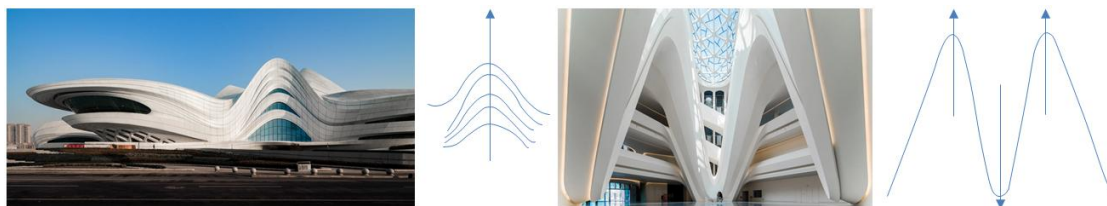


Figure 11. Meixi Lake Art Center

(Image Credit: Internet + Self-Painted by the Author)

In exhibition buildings, the transportation contact space has a crucial spatial coherence role, and a more vivid and rich spatial perception effect can be created through the creation of a linear spatial visual force field. Linear transportation space includes linear, arc and spiral patterns<sup>[12]</sup>. Take the spiral pattern in the exhibition of architectural space as an example, this kind of linear arrangement, so that the linear space has a strong centripetal force, will strengthen people's visual depth of field, at the same time the curve compared to

the straight line is more vivid and interesting, more conducive to the construction of the visual extension of the force field. Such as Figure 12 in the Vatican Museums, the Queen's Palace adjacent to the National Maritime Museum, Spain, Galicia People's Museum in the rotary staircase, the arc pattern as far as possible to strengthen the golden spiral linear, giving the space a very strong centripetal force, but also strengthened people's visual depth of field, architectural space is also more rich in visual tension.



Figure 12. Vatican Museums, Queen's Palace Adjacent to the National Maritime Museum, Galicia People's Museum (Image Credit: Internet)

## 5. Conclusion

With the development of society and technology, the traditional design method can no longer fully meet the needs of the new era of exhibition architectural design, "Gestalt" focuses on the visual experience to reshape the relationship between human and architectural space, the integration of the relevant theories in the design of the exhibition class architectural space, can build a rich visual experience, open and free architectural space effect. This paper will briefly summarize the strategies of architectural space design for exhibition from the following three aspects:

### (1) Application of the law of organization

Reasonable use of the theoretical principles related to the law of organization can give more possibilities for exhibition-type architectural space. By transforming architecture and landscape into each other, and transforming the various components within a building into each other, a multi-layered visual perception can be created, building a more rich and vibrant spatial atmosphere; Using the

principles of visual illusions in space design can make up for some shortcomings in space design, not only making the space more colorful, but also adding fun and mystery to the space, presenting a better visual effect; Using visual principles such as proximity, similarity, and continuity not only enriches the visual form of architecture, but also makes the space more integrated and unified.

### (2) Establishment of visual force fields

The combination of different elements such as point, line, surface and body can create various visual force fields. For example, points and lines can be used to build a single architectural space, and surfaces and bodies can be used to build a combined architectural space by combining centralized and networked elements. By creating a visual force field, the exhibition building can not only limit the spatial attributes of the building, but also bring a unique visual-perceptual experience to the visitors.

### (3) The use of holism

Arnheim has said, "In any case, if one cannot grasp the whole or unity of things structure. You can never create and appreciate works of



art.” In the space design of exhibition buildings, the inner connection of each component can be reasonably utilized to integrate the seemingly isolated ones into a whole, so as to achieve the creation of a complete space.

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