

CIRCULATION DESIGN OF MUSEUMS

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"The best architecture is where we are, but we don't know that is the end of nature and the start of art."

—Lin Yutang



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

Master' s Thesis

CIRCULATION DESIGN OF MUSEUMS

LINKING CHINESE CLASSICAL GARDEN ART WITH MUSEUM SPACE

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ABSTRACT

Museum architecture has always been receiving considerable attention from art and architecture communities due to its exclusive culture, history, and artistry. The circulation design discussed in this paper and is an exploration of architectural design methodology, based on the author's criticism of contemporary museum architecture's spatial order chaos, illogical spatial organization, and excessive attention on form.

This paper intends to intergate circulation, space together with Classical Chinese Garden art under the same stopic. The relevant theories of art, philosophy, aesthetics, and psychology are applied as well, with a large number of design cases from various countries being cited in hope to summarize the design-oriented architectural design theory.

Space is both the main body of the architecture, and the carrier for people to live in while nourishing the people. Therefore, the architectural space should not be talked alone without caring the nature. In conclusion, this paper aims to provide a new mindset for future museum design, hoping to achieve rational design arrangement, considering the relationship between space, circulation and people.

Keywords: Circulation, Museum Space, Nature , Classical Chinese Garden

绪论

博物馆建筑因其自身的文化、历史和艺术性，一直是艺术界和建筑界所热衷和探讨的场所之一。本文所探讨的流线设计便是围绕博物馆建筑而展开，是关于建筑设计方法论的探讨，是基于作者对当代博物馆建筑空间秩序混乱，空间组织无逻辑，过度注重形式的批判。

本文将流线，空间以及中国古典园林艺术集中于同一对象展开探讨。对艺术、哲学、美学、心理学的相关理论学习研究，并引用大量各国经典设计案例进行学习总结，设计为主的建筑设计理论。

空间是建筑的主体，又是使用者的载体，而自然滋养着使用者。所以建筑空间不应该与自然隔绝，通过流线设计方法论的归纳，为往后博物馆设计提供一种新的设计思维，以达到考虑到空间，流线以及人三者的关系并合理组织和设计的目的

关键词： 流线设计， 博物馆空间， 自然， 中国古典园林

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CHAPTER 1
INTRODUCTION

1.INTRODUCTION

1.1 RESEARCH BACKGROUND

What is a museum? According to the International Council of Museums (ICOM), *A museum is a non-profit, permanent institution in the service of society and its development, open to the public...*¹ Tracing its roots back to ancient Greece, there is a tradition of building the Temple of the Muses, a sanctuary for the gods of literature and art and a place for philosophers to study, and in the third century AD, Alexander the Great also built a temple to the Muses and housed a collection of exotic treasures from different countries.

Because of its rich collections, the *Muse* also became the name of the Museum and was synonymous with *a space for collecting*. But what do the public think of when mentioning a museum? The artworks, objects, and cultural relics on display or the magnificent buildings. A common phenomenon is that the one thing that seems to be common is that everyone who goes to a museum will start a journey of exploration here, either as an artist seeking inspiration or as a scholar studying history. Its openness allows everyone to participate in it.

1. ICOM Statutes. (2007, August 24). Museum Definition. International Council of Museums. <https://icom.museum/en/resources/standards-guidelines/museum-definition/>



FIG. 1.1 ALEXANDER MOSAIC (DETAIL)
SOURCE: ES.M.WIKIPEDIA.ORG



FIG. 1.2 LIBRARY OF ALEXANDRIA
SOURCE: EN.WIKIPEDIA.ORG

In contemporary times, people will also have higher requirements for spirituality in addition to material satisfaction, and because of this demand, museums are being built in increasing numbers, with statistics showing that there are currently over 95,000 museums in 202 countries.¹ Behind this figure lies the prospect of a huge economy of visitation and experience in museums, where a single exhibition space is no longer sufficient to meet the demands of the cultural diversity of the times, especially after the industrial revolution, when the emergence of new technologies and materials led artists and architects to explore modernist architecture. New technologies and materials not only solved the contradiction between structure and spatial scale but also allowed space to be released to a large extent, giving architectural design more space to play and gradually diversifying.

Museum design today is also one of the most interesting projects for architects, with the grand spatial scale making the design process challenging and creative. However, the excessive preoccupation with form has led to a series of problems in the design of museums, the order of the space is chaotic, the organization of flow lines is disordered, the shape of low-level interest and a complete disconnection of the building from its environment. The building is built on the ground, it is tied to its surroundings, and if forcibly separated both, the building will lack life. For museum design, in addition to meeting its most basic functions, it is also important to deal with the relationship between the building and nature (the surrounding environment) and to organize the building space, and let the user has a good experience and sense of use within.

1. *Museums*. (2021, February). UNESCO. <https://en.unesco.org/themes/museums>

1.2 RESEARCH'S PURPOSE AND MEANING

1.2.1 PURPOSE

The Japanese architect Ashihara Yoshinobu believes in his book *Exterior Design in Architecture*, Space is essentially formed when an object and the person who feels it come into an interrelationship.¹ In simple terms, when a person picks up tools to build an object that can shelter him from the wind and rain in an open land and makes him feel safe, this space is formed. Functions of the space, which can be a space for work, study and living. To a certain extent, function determines the size and shape of the space, and a building, which does not consist of just one space, but of many different functional spaces.

How to organize these spaces and functions? It is to connect them reasonably. In the design practice of museum buildings, we often mention a concept of circulation. The identity of circulation in the entire building is not only the internal guidance system, but also the division of different functional spaces and the rational organization of their related construction. Therefore, This paper is concerned with the design of the museum's circulation and spatial organization. It analyzes how to organize the flow so that users have a good visiting route and the different functional spaces in a logical layout.

1. Ashihara Yoshinobu. (1970). *Exterior Design in Architecture*. Van Nostrand Reinhold (Trade).

Meanwhile, It also introduces the concept of the classical Chinese garden, an art that contains nature, literature, architecture, and philosophical thought. In common with Western gardens, they are all about integration and connection with nature. The former, the seemingly irregular gardening is based on the organization of space in accordance with the laws of nature, while in the latter, it is geometrically and regularly organized. And whether it is the art of gardening in the East or West of the past or the urban landscape of today, it all unintentionally conveys the message that our lives cannot exist apart from the natural environment-mountains, rivers, flowers, and trees are all closely related to our lives. By choosing classical Chinese garden art to study the circulation design of museums, we are learning how to follow nature as a basis and then organize the space in a rational way to give it a rich variety, create a good sense of participation (of space) for those who use the space.

At the same time,combined with some excellent museum cases,to learn how to summarize the design of the flow and the Layout of the space in classical Chinese gardens. At the end of the study, a museum design theory is summarized from the perspective of circulation design and combined with the art of classical gardening.

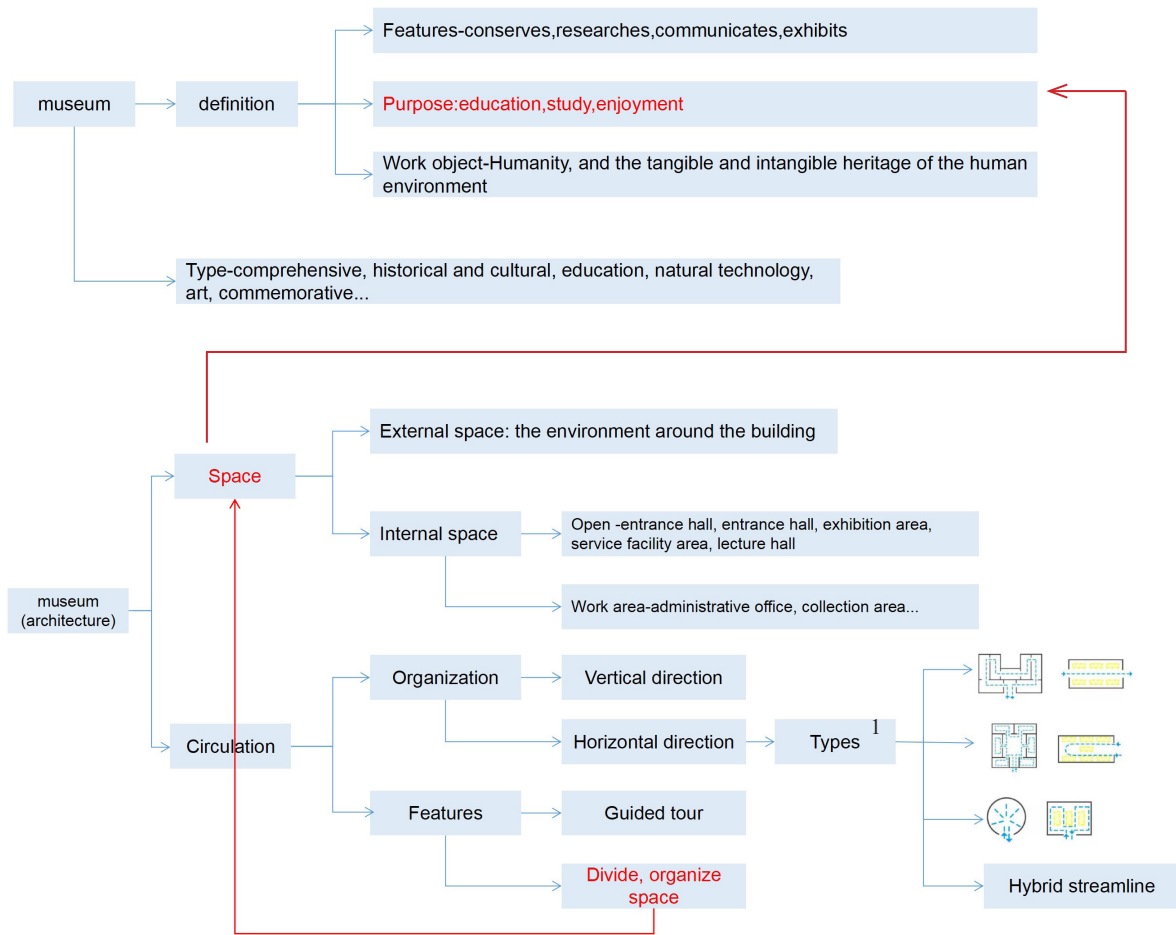
The questions addressed in this paper around the theme are thus summarized as follows:

1.How do circulation and space influence each other in museum architecture?

2.How can the art of classical Chinese gardening be translated into a new design methodology from an architectural point of view?

3.What is the specific design approach to circulation in museums?

MUSEUM RELATIONSHIP CHART



SOURCE: THE AUTHOR

1. Wang Lu, Zou Huiying, & Qi Bin . (2009). *Architectural Design Of Museum*. China Architecture & Building Press.

1.2 RESEARCH'S PURPOSE AND MEANING

1.2.2 MEANING

*"Everyone in the public space is present and involved in an appropriate way, and this sense of participation is very clear."*¹ Public buildings, a part of the city, a continuation of the urban space, a form of urban life, the museum serve the citizens of the city, therefore, the feelings of the users must be taken into account. When the public is inside with, a smooth and comfortable visit route is very important. The design of the flow, on the one hand, must achieve a rational organization of the building space, and on the other hand, it must also achieve the purpose of using the museum.

In summary, the implications explored in this paper are summarized at four levels:

1. Establishing a new perspective on design research with a 'human-centred' focus.
2. Exploring and studying the spatial design of museums.
3. Learn from traditional aesthetics and inherit its art.
4. Summing up a museum design methodology.

1. Ashihara Yoshinobu. (1970). *Exterior Design in Architecture*. Van Nostrand Reinhold (Trade).

1.3 RESEARCH METHOD

COLLECTION OF RELATED THEORETICAL TEXTS

In the field of architectural design, whether in the East or the West, a group of outstanding scholars, architects have invested a lot of research and discussion in museum design. In China, studying architecture, the earliest books that students can learn about museum design are *Architectural Design Of Museum*, co-authored by scholars from Tsinghua University, which delves into the cultural, artistic and functional requirements of museums based on their characteristics and explores the methods of museum design through the study of excellent examples. This book also has many of the most basic architectural fundamentals that are helpful at this stage of studying circulation design. In addition to design books, the American scholar David's *Museum Skepticism: A History of the Display of Art in Public Galleries* is also worth reading and studying.

David's analysis of the new ideas conveyed by museums from an art historical perspective and his personal theoretical explorations allow readers to re-examine some questions, such as should museums exist? What are the better ways to exist? Museum research and study cannot escape from space and design to study. For every architecture student, we will read a lot of books about this theory in the early stage of study, such as *Exterior design in architecture*, *Design with Nature* and *Modern Architecture - A Critical History*, etc.; Regarding Chinese classical gardens, most of them are studied by Chinese scholars, such as *Analysis Of The Traditional Chinese Garden* and *Classical Gardens of Suzhou*, etc. These outstanding scholars have made their contributions to museums, architectural spaces, and the history of gardens, and have added more references and possibilities to the research in the field.

RESEARCH METHOD

RESEARCH ON CLASSICAL CHINESE GARDEN

In addition to the study of books on classical Chinese garden art, it is important to study some examples of gardening, analyze the deep structure of its internal space in conjunction with theory, and learn to generalize and summarize. The art of gardening, which has a long history in China, has not only changed with the dynasties, but has also had a profound impact on the art of gardening in Japan. In *The Craft Of Gardens*, there is a saying that "three parts of the craftsman, seven parts of the gardener", which shows that the construction of gardens should be done according to the appropriate site design and reasonable and clever scenery arrangements, and the Chinese aesthetic ideas contained in it are also very important.¹



FIG. 1.3 THE COVER OF THE CRAFT OF GARDENS
SOURCE: BOOK.DOUBAN.COM

1. Ji Cheng. (2015). *The Craft of Gardens*(Liu Yanchun, Ed.). Jiangsu Literature and Art Publishing House.

RESEARCH METHOD

DESIGN CASE STUDIES

The study of relevant case studies, mainly for museum design, will be divided into two aspects, one is to combine some excellent cases of classical Chinese garden art and construction, from the environment, space structure and functional organization to analyze how to combine the art of gardening into museum design; another aspect is to focus on the research and analysis of some amazing design examples in terms of the flow design and space organization, and to learn how to sort out the relationship between audience needs and museum functions.

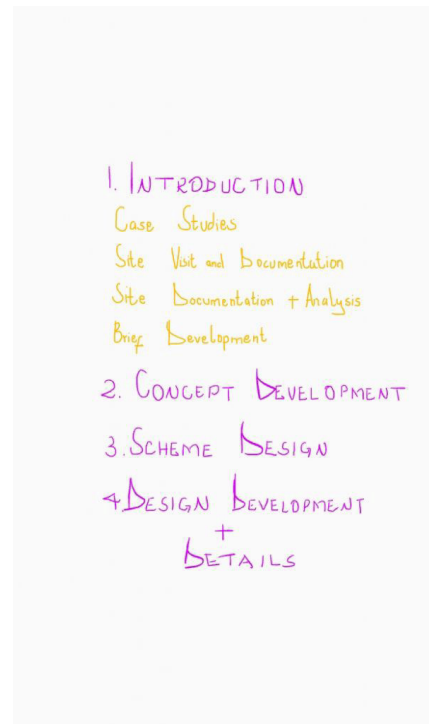


FIG. 1.4 ARCHITECTURAL DESIGN AS A PROCESS
SOURCE: MEDIUM.COM

RESEARCH METHOD

COMPARATIVE ANALYSIS METHOD

This research method is often used in statistical and experimental research, but I apply it to theoretical research in architectural design in order to derive a relatively suitable design approach through comparative analysis, for example, assuming that both houses are in similar environments, analyze which spatial processing and functional organization is better to achieve a "symbiosis" between the house and its surroundings. The basis is that circulation of the house is unobstructed and has good interaction with the environment, and the functional organization is not cluttered to meet the basic needs of the house.

SYMBIOSIS: THE ART OF LIVING TOGETHER

Symbiosis is a term describing any relationship or interaction between two dissimilar organisms. The specific kind of symbiosis depends on whether either or both organisms benefit from the relationship.¹



FIG. 1.5 CLOWNFISH AND ANEMONE
SOURCE: WWW.NATIONALGEOGRAPHIC.ORG

1. National Geographic Society. (2019, April 19). Symbiosis: The Art of Living Together. National Geographic. <https://www.nationalgeographic.org/article/symbiosis-art-living-together/>

RESEARCH METHOD

EXPRESSING DESIGN THEORY THROUGH IMAGE DRAWING

Architecture is a cross-disciplinary subject that requires a variety of skills, in addition to the basic design ability, it is also to master the ability to express, design is not only to understand their own ideas but also to learn how to make others more clearly understand what they want to express.

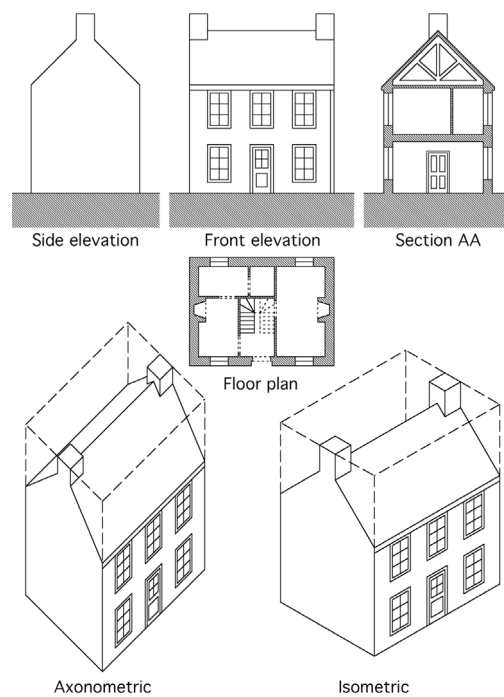


FIG. 1.6 STANDARD VIEWS USED IN ARCHITECTS' DRAWINGS
SOURCE: EN.WIKIPEDIA.ORG

1.4 RESEARCH FRAMEWORK

a. Research Background

b. Theoretical Foundations

- Classical Chinese Gardens
- Environmental Psychology
- Museum Design Theory

c. Element Analysis

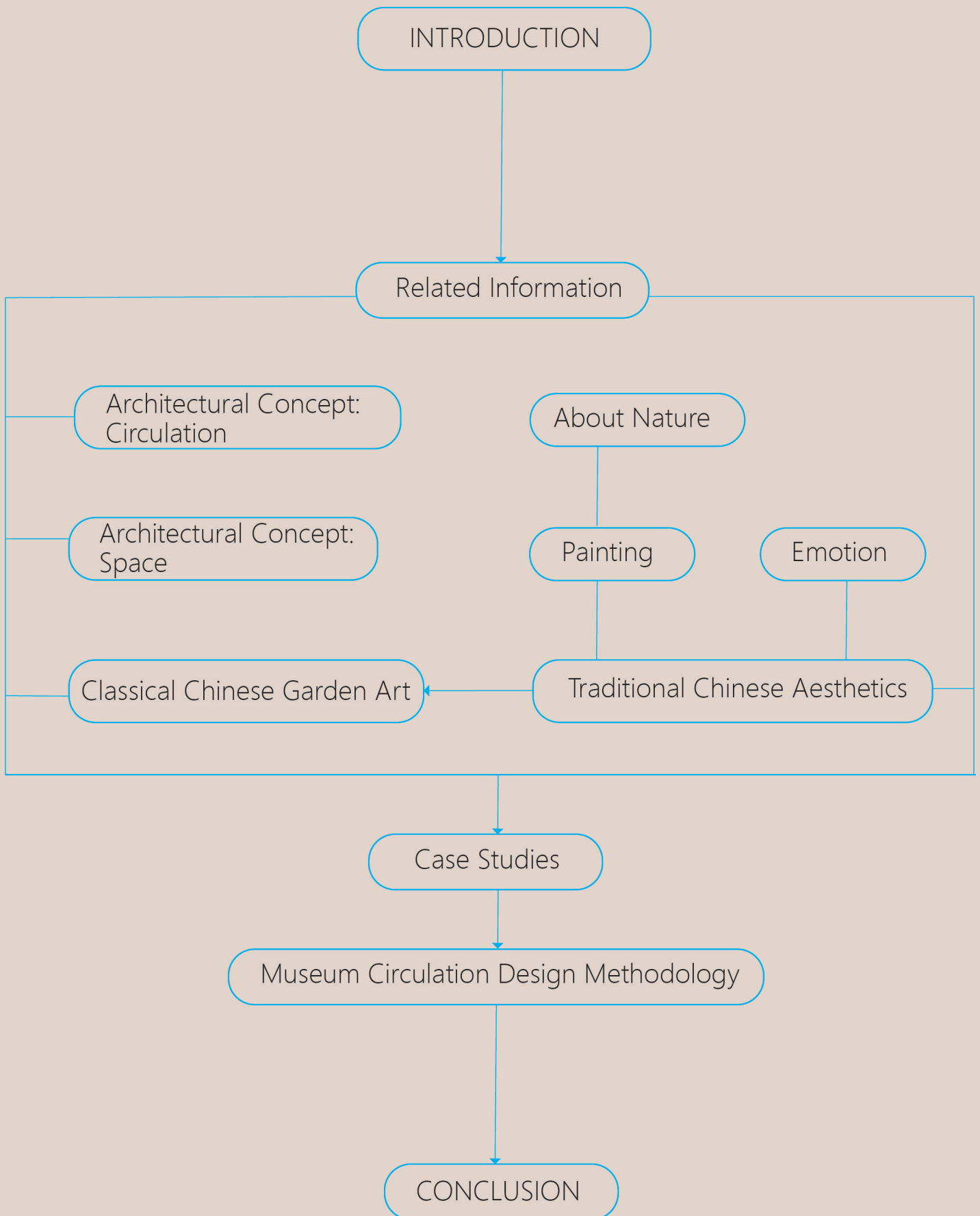
- The concept of circulation
- The relationship between circulation and space
- Gardening design
- Chinese Aesthetics

d. Case Studies

- Suzhou Museum
- Miho Museum
- Experimenta - Das Science Center
- Solomon R. Guggenheim Museum

e. Design Methodology

- About Circulation: Basic type & New type
- Design Principle



SOURCE: THE AUTHOR



SOURCE: THE AUTHOR

CHAPTER 2
CIRCULATION

2.CIRCULATION

2.1 THE CONCEPT OF ARCHITECTURAL CIRCULATION

What is a circulation? Before studying or understanding architecture, this term was unfamiliar to all. In architectural space, it refers to the way in which a people walks through or interacts with a building;¹ When a person walks from one point to another in a space to achieve a certain purpose, this trajectory is the circulatin; when a person moves from one space (e.g. the living room) to another space with a different function (e.g. the bedroom), a link is created between these two spaces with different functions, and the link is the circulaion.

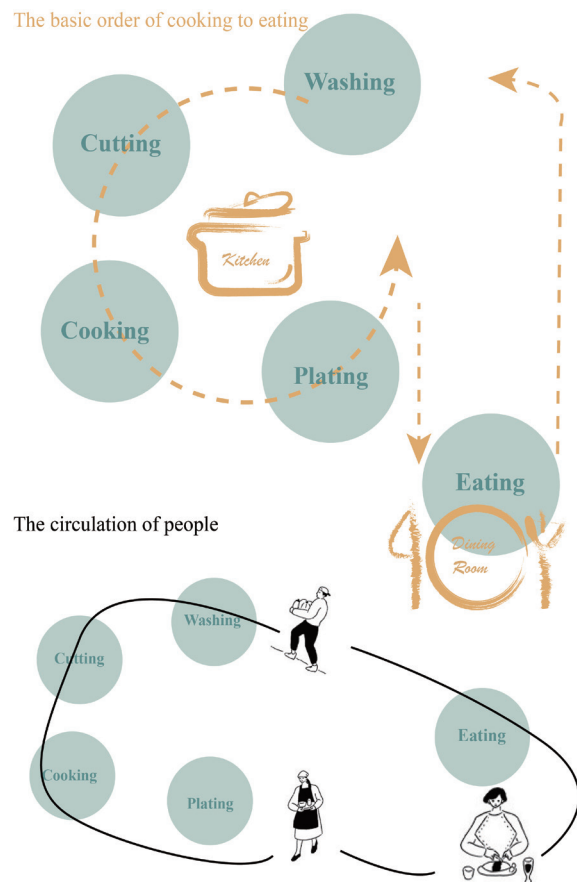


FIG. 2.1 CIRCULATION BETWEEN KITCHEN AND DINING ROOM
SOURCE: THE AUTHOR

1. circulation "circulation (architecture)" in Britannica Online Encyclopedia. <http://www.britannica.com/EBchecked/topic/118392/>

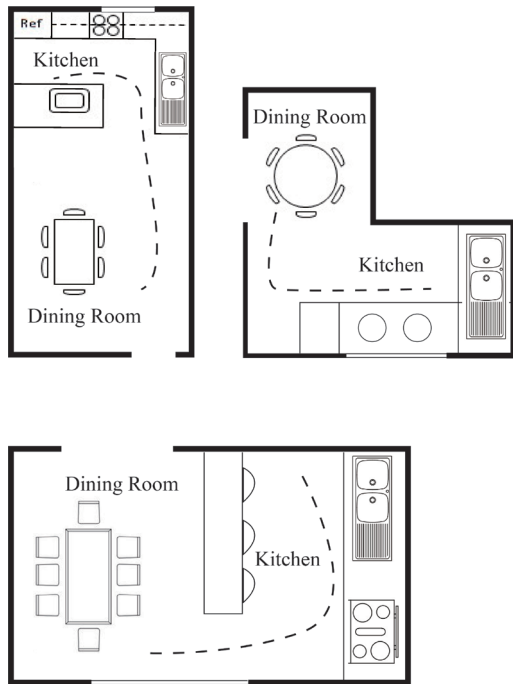


FIG. 2.2 KITCHEN AND DINING ROOM PLANS
SOURCE: THE AUTHOR

As a discipline closely related to life, architectural design covers a wide range of information and is closely related to many disciplines, so that architects must be able to control every detail of the design process even after receiving a large amount of information. For architects, no matter what stage of development or how advanced the technology is, the most basic needs of architecture cannot be ignored in the design and creation process.

It is clear from this that in the dictionary of architecture, circulation is the trajectory of human movement, the guidance system for human movement and the linking system of space. The design of the circulation is often related to the functional layout, and by arranging and laying them out a relatively rational plan is produced, but the flow lines must not only be rational, different designs will produce different combinations of spaces, and different combinations will produce different architectural forms and spatial atmospheres.¹ Different buildings, the design of the flow and the organization of space often have to consider its main function, and the combination of design on the basis of meeting the function will create a good architectural work. On the other hand, people are the main body and blood of the space, and the pedestrian flow should achieve convenience and ease, and the overall sense of space created by the design makes people feel comfortable and willing to stay here for a long time.

1. Yang, H., & Ma, Y. (2019). *A research on the streamline structure of exhibition space in the museum*. Design. Published.

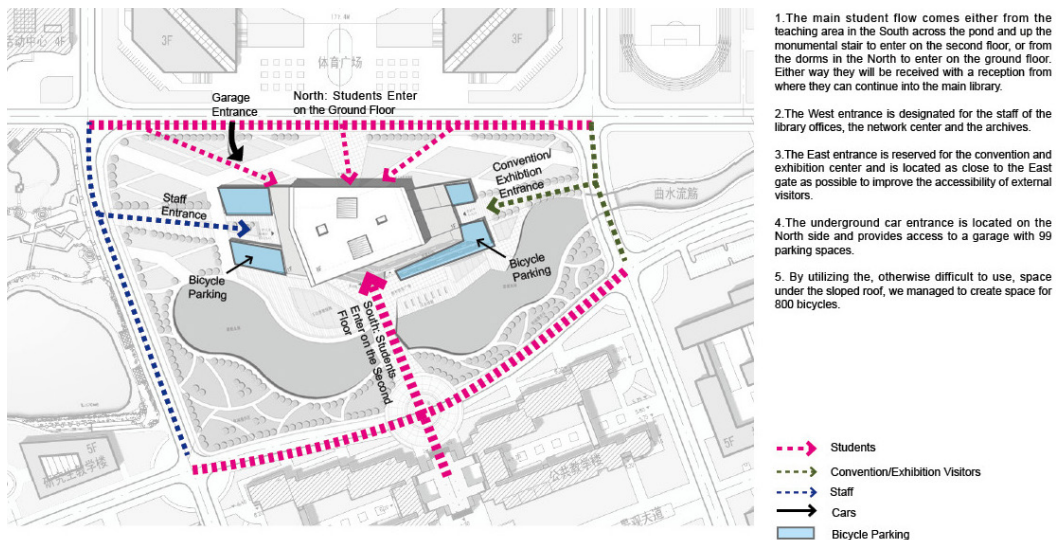


FIG. 2.3 SITE AND ENTRANCE ANALYSIS FOR ARCHITECTURAL DESIGN
SOURCE: WWW.ARCHDAILY.COM

ANALYSIS OF CIRCULATION

In addition to defining the flow lines, the design must also be analyzed in the context of the actual situation. The surrounding environment of the building and its function itself will have different effects on the route of human activities in the building. For example, the main entrance of a building will generally avoid the main arterial roads because the traffic flow will create safety hazards.

In the case of public buildings, there should be a plaza for people to evacuate near the main entrance. These environmental factors will influence where the entrance is set, and the entrance is the front of the building and the beginning of the human experience of the building, where human activities start. So the analysis of the flow line in the pre-design stage is an indispensable part. If it is done by stages, then the first thing to do is site research, analysis of the surrounding environment and the traffic activity route.

When making the design scheme combined with the site situation analyzed in the preliminary stage, the functional units are reasonably organized to make a complete flow line to meet the needs of different people's activity paths inside the building. According to the scheme of different functional buildings, the analysis and design of the flow line should also follow the theme, but the final deciding factor is: human movement in space.

A term often involved in doing pre-design is called circulation analysis. As mentioned above before and after the design it is important, so what is its role in the design process and what impact will it have on the production of the design solution? The three roles that can usually be thought of are:

1. Planning and organizing spaces for different functions. For example, in an apartment, the location of the kitchen and dining room must be close to each other, because it is in line with the activity habits of people who cook in the kitchen and then get the dining room to eat;

2. In the space, it plays the role of a transportation hub, horizontally it is the traffic space that moves from one room to another on the horizontal plane, usually a corridor. Vertical direction is connected to the space where there is a height difference, the space is not on the same level, usually stairs, elevators and other transportation hubs to connect;

3. Hospital buildings, because of its special nature, patients, families and doctors are in the same building, but some special spaces are not allowed to patients and families to enter. The flow design should avoid the intersection of different users' routes in the space, and at the same time, ensure the integrity of medical functions (medical staff) and good user experience (patients and family members).



*FIG. 2.4 THE ROLE OF PSYCHOLOGY IN ARCHITECTURE
SOURCE: WWW.RE-THINKINGTHEFUTURE.COM*

ENVIRONMENT AND BEHAVIOR

On summer afternoons, people on the street generally choose to walk on the backlit side of the walkway, where the tall buildings fronting the street will block some of the harsh sunlight. This is just a very common scenario that happens every day in different places, when the environment - the shade - will attract pedestrians to choose this path to walk. It is not difficult to find that in fact, in our daily life.

Our behaviors are unaware influenced by the surrounding environment. The relationship between environment and behavior, originally known as environmental psychology, exists as an interdisciplinary field that focuses on the interaction between people and their environment. Starting in the late 20th century, scientists focused on the field of architecture and began to wonder if there was a connection between the environment and architecture.

As a result, environmental perception, behavior, and evaluation became the three main aspects studied in the field of architecture in relation to the environment. The environment of architecture, specifically, refers to the artificially created environment inside and outside the building by the architect, which can be combined with the natural environment or another new environmental state.



*FIG. 2.5 GREEN BUILDING: MAN-MADE
SOURCE: SIMONECIUFFINI.IT*

But in any case, it should make people in the space know where they are and where they should go, and the environment around the space should make people feel comfortable physically and psychologically. Because architecture is not a sculptural existence, it has to be integrated with people and have a sense of life. As Ralph Erskine said, architecture must not only meet the specific requirements of aesthetics, but also take into account the trivial daily life of individuals.¹ This is why it is necessary to study the environment and behavior, and through this study and analysis it is possible to summarize their influence and effect on the flow.

1. "Ralph Erskine : Architect who created humane offices and housing in cold and challenging environments", *Times Online*, 2005.0319.

COMPONENTS OF CIRCULATION

To understand circulation more clearly, it is useful to shift your thinking to the simplest of mathematical problems and assume that a circulation is treated as a line segment. When a person moves from one point to another, the part of the line that connects the two points can be called a line segment or distance traveled. The person can choose to move in the horizontal direction or with the help of transportation aids - stairs to a location where there is a difference in height from the starting point.

The formula for distance is speed multiplied by time, which translates into time of use and frequency of use in the specific problem we are discussing. Time of use, what time of day a person is moving, morning, noon and night or all day; frequency of use, this section of the journey is often, sometimes or rarely used. By simplifying the concept of flow and making it concrete, architects are able to think about every detail of the space in architectural design and planning layout according to different flow lines. As it is often said, the details reflect the art, and only the details are the most expressive.

2.2 CIRCULATION DESIGN OF THE MUSEUM

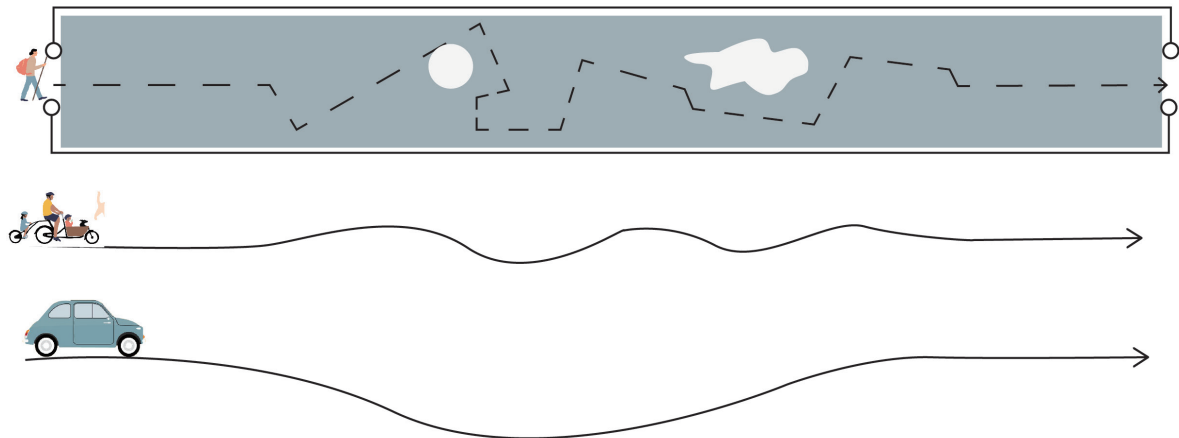
2.2.1 CONCEPT

Different types of buildings have different requirements for the design of circulation. It is like a surgeon who has to study the patient's condition systematically and thoroughly before he can make a specific plan for the operation. As an architect, the purpose of understanding the function of a museum is to master the architectural function of the museum. The economic recovery after World War II led to the development of many industries, and museums began to flourish during this period. In addition to museums of historical artifacts, museums of art, science and technology, and nature were also bred.¹ The Museum of Modern Art in New York is not only a place for the public to rest and receive education, but also a temple for countless modern art lovers. To a certain extent, the Museum of Modern Art in New York has brought out more values, which is exactly what this era needs, and the museum needs to explore and discover more uses.

Before understanding the flow of a museum, it is important to first understand the basic composition of a museum. Although the museum building varies in its given scale because of different types, the function of the museum determines that the museum has a common basic composition. It consists of two parts: the internal work area and the open area. The internal work assumes the responsibility for the storage, management and repair of the artwork or artifacts, as well as research, and is only relevant to managers, professional researchers and external professional visitors; the external part is open to the public for educational purposes, usually through exhibitions. In general, the internal and external parts have to have their own circulation, which are reasonably organized, and each space can meet the basic functional requirements. Thus, the circulation of the museum can be divided into external open flow lines, which belong to visitors, and internal work flow lines. When subdivided internally, it is composed of two parts: the staff and the goods flow lines.²

1. Bennett, Tony (1995). *The Birth of the Museum*. New York: Routledge Press.

2. Wang Lu, Zou Huiying, & Qi Bin . (2009). *Architectural Design Of Museum*. China Architecture & Building Press.



*FIG. 2.6 THE ROUTE OF HUMAN ACTIVITY
SOURCE: THE AUTHOR*

The circulation is often seen in architectural design as the route of human activity in space, and can also be treated as a spatial mathematical problem. And how should it be defined within museum architecture? Through some of the above studies, it is easy to see that the social function of museums indirectly determines the role played by the circulation in the space. Here, the circulation of the museum is defined based on the information reviewed: it is a general term for the route of visitors, staff, and goods movement.

When working in internal functions, it is the link between the various functional spaces of the museum and provides horizontal and vertical connections to the museum space. When open to the public, the flow line becomes an invisible story line that guides the unfolding of the story and one's understanding of the exhibit's story in order to facilitate visitors' ability to understand the exhibit's content.

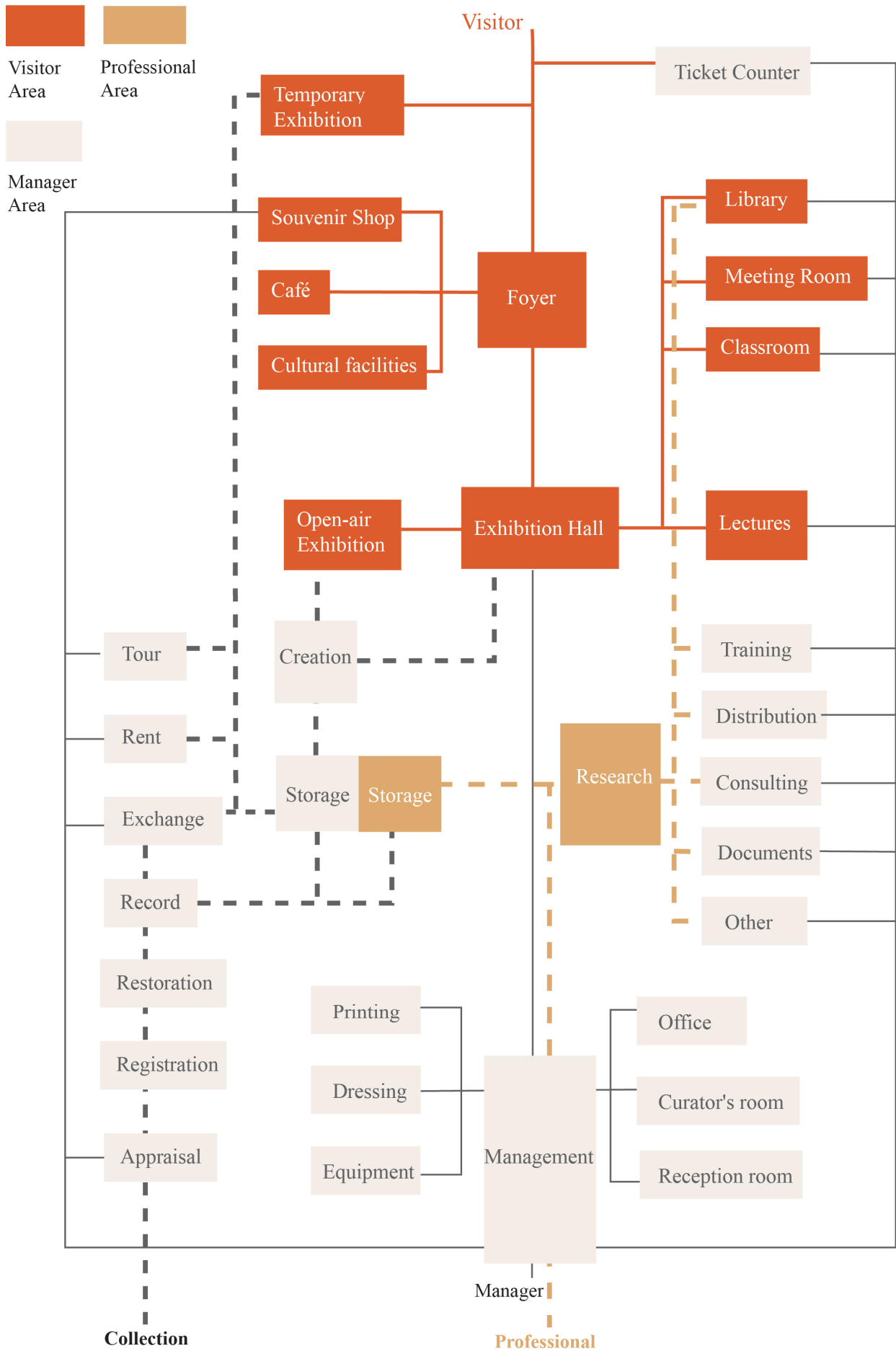


FIG. 2.7 MUSEUM FUNCTIONAL STRUCTURE
SOURCE: THE AUTHOR

The object that exists will have its own meaning, it will not grow alone, it will be connected to the environment in which it is located. The circulation exists in the space, and in the case of the museum, it interacts with the museum, which is what makes museum architecture different from other buildings. Here the “flow” is the guidance system of the space and the trajectory of human activity, and the narrative nature of the museum breeds additional functions.

Function 1. Organize spatial sequence

The “flow” will play the role of dividing the space and planning the site, and can determine the direction and order of each space function in use.

Function 2. Guidance system

Human activity with purpose is also directional, in the museum's, human behavior will be influenced by the environment, the purpose of the activity will also be affected. The “flow” guides people through the space, and must meet the psychological needs of the audience, so that they can enjoy the pleasant environment.

Function 3. With a "story line"

Research data shows that in the 1980s, *Bernard Tschumi* and *Nigel Coates* of *AASCHOOL* led the exploration of modern narrative practice in architectural design. Narrative architecture revolves around a "topic", combining the site environment, through the layout of space, flow design and details such as materials, so that the experience of the experience of the building can generate emotional experience because of the "story", inspiring their imagination.¹ But museum architecture, because of its inherent narrative nature, the architect only needs to create its own "story line" and organize the planning flow rationally. Thus, in museums, there is a hidden "story line" in the circulation.

Function 4: Connecting internal and external spaces

Building space can be divided into outdoor space and indoor space according to the form of space. Outdoor space refers to the space outside the building enclosure, which is the space formed by the three-dimensional structure of the building enclosure and the surrounding environment of the building.² In modern architecture, more attention is paid to the psychological activities of people, so architecture should also be combined with life and nature. In terms of spatial processing and integration, architects can make a close connection between interior and exterior through the careful processing of inner structure and outer form. The flow line is the trajectory of human activities in the space, when people walk inside the building, unintentionally, they have connected the space inside and outside as well.

1. *Nigel Coates. (2012). Narrative Architecture (1st ed.). John Wiley & Sons.*

2. *Duan Yaxuan, Zhang Chengfeng. (2014). Fusion of the Inside and Outside Space. Furniture Interior Design. Published.*

2.2 CIRCULATION DESIGN OF THE MUSEUM

2.2.2 TYPES

The exhibition area occupies a large part of the museum, including the foyer, the lounge, the exhibition hall and the visitor service facility area. As a building dedicated to serving visitors, the layout of the exhibition area is important and is the main focus of this paper. In other words, the architect has to organize and reasonably plan the circulation of visitors and apply it practically to the layout of the museum exhibition area. The planning and layout of the display area is to some extent also the organization of the "flow", so the design of the "flow" should be clear to avoid the phenomenon of road detours, crossings, etc., and visitors can easily walk around the museum and not get lost.

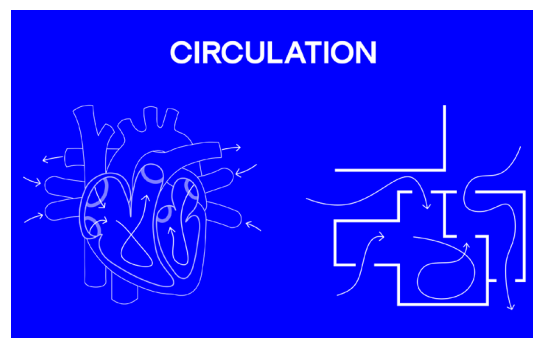


FIG. 2.8 CIRCULATION
SOURCE: ARCHLOGBOOK.CO

According to the *Architectural Design Of Museum*, it is known that the types of museum exhibition flow organization are roughly divided into four basic types.

TANDEM

HALL

RADIAL

HYBRID

Tandem circulation means that the exhibition halls are connected to each other along a single path, backward and forward, end to end, and visitors can go directly from one hall to the next. It has a smooth flow and is not easy to get lost in the process of visiting. However, this layout is relatively single and inflexible, lacking some interest and easy to make people *museum fatigue*.

Radial circulation is usually several display spaces arranged around a central hub space, which can be the foyer, courtyard, and other central or core spaces. Visitors enter one or more of the cascading galleries, return to the central space, and proceed from there to the other galleries. This type of flow organization can reduce or avoid *museum fatigue* to a certain extent, but at the same time, it also weakens the relevance of the exhibition space in the museum, and will also appear to cross the flow of visitors.

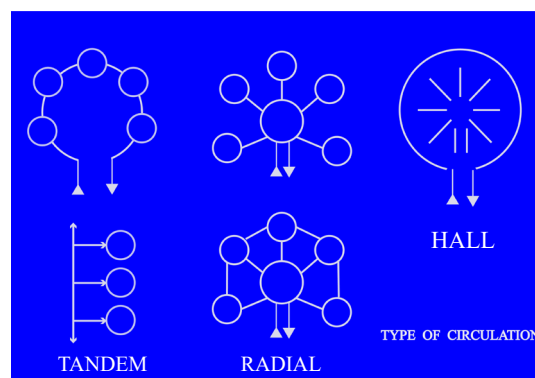


FIG. 2.9 TYPES OF CIRCULATION
SOURCE: THE AUTHOR

Hall circulation concentrates all exhibition spaces in one lobby, which can be flexibly separated into smaller spaces according to the actual content of the exhibition. The layout and flow of the hall type are not restricted, and visitors can choose the order of visiting according to their own wishes. However, this type of organization without a clear visiting route tends to cause crowding and crossover. And because there are no physical walls, problems such as noise will inevitably occur during the tour.

Hybrid circulation is more casual and flexible, and can be a mixture of two or three types of organization. This mixture of multiple streamlines can build on strengths and avoid weaknesses, balancing the contradiction between streamline organization and visitors' self-selection.

2.2 CIRCULATION DESIGN OF THE MUSEUM

2.2.3 GUIDANCE SYSTEM

In the exhibition space of a museum building, the main object of service is the external visitors, and here the sign of guidance is the flow line. This flow line is a part of the guidance system in the museum. According to psychological research, it is not difficult to find that human beings tend to rely on some guiding symbols in a new environment. Just as when traveling to a new city, we arrive at the airport and follow the signs to navigate to the exit. However, museums are different in that they do not "blatantly" mark the ground with 1, 2, 3 , telling people that they should follow the directions in order. The time and form of the visitor's visit are guided by the visitor's own psychological perceptions and the architect's design, and the visitor's behavior in the museum is an outward expression of his or her own psychological perceptions while visiting.

The Warsaw Declaration of 1981 states that *the responsibility of the architect must include consideration of the environment in which he works and the obligation to ensure that his work contributes to the harmony of the environment.*¹ The museum environment, open to the public, also has private and exclusive working areas. When designing and planning, architects must strive to avoid the phenomenon of visitors walking aimlessly within, getting lost or walking into work areas. It is important that architects understand and analyze in advance the psychological feelings and reactions of users to the building, and have a more complete understanding and self-experience of architectural psychology. This is the only way to shape a good guidance system in the museum and make the museum have a good application value.

1. Gu Menchao. (2016). *Architecture and Culture*. BEIJING BOOK CO. INC.

When looks at a guidance system from a systemic, holistic point of view, it is not just a flow of visitors, and it is not just a flow that needs to be kept open. Since it is called a system, it must be an organized whole with internal things related in a certain way. For the museum's flow structure, it is mainly divided into internal and external parts, the internal organization includes the flow of people and goods, and the flow of people is divided into the circulation of external and internal personnel; the external connection includes the flow of vehicles. And its planning and division is to be reasonable, sorting out the flow so that they do not interfere with each other and normal operation.

Architects need to design the circulation in the process of architectural design as a whole, which means organizing the guidance system. Each subdivision must keep up with the whole in order to be a complete system. Because visiting is the main activity and behavior in a museum, the main structure of the guidance system is the circulation of the external people visiting. Therefore, the main research and study of this paper is focused on the flow of external visitors, and also takes into account the influence of other factors.

2.3 CIRCULATION AND SPACE OF THE MUSEUM

2.3.1 THE SPATIAL STRUCTURE

Space is one of the more important components of architecture, and there are so many words to describe it when talking about it. The study of flow inevitably has to be explored along with space. So, what exactly is space? Why does architecture refer to space? From some sources, it is easy to find that Descartes' concept of space is closely related to his theory about the nature of body, mind and matter, *cogito ergo sum*, space has no beginning and no end, it can carry everything.¹ From this perspective, it can be seen that the modernist masters have inherited Descartes' ideas about space. Referring to Adolf Loos's *Raumplan*, Le Corbusier's *Free plan & Promenade architecture*, Mies' *Flowing space* and Wright's *Ambulatory movement*, it can be found that in modernist architecture, space is something that is free and open, and has communication and fluidity.



FIG. 2.10 VILLA SAVOYE
SOURCE: WWW.URBANA-DESIGN.COM



FIG. 2.11 MIES VAN DER ROHE PAVILION
SOURCE: WWW.ABC.ES



FIG. 2.12 FREDERICK C. ROBIE HOUSE
SOURCE: WWW.ARCHIPOSITION.COM

1. Tom., Sorell (2000). *Descartes : a very short introduction*. Oxford: Oxford University Press.

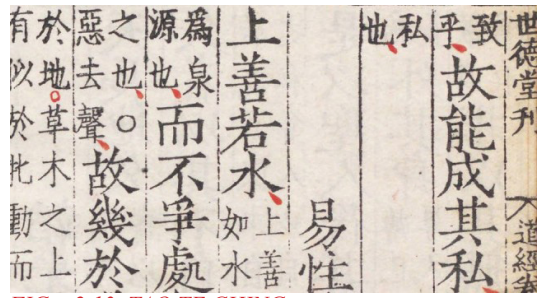


FIG. 2.13 TAO TE CHING
SOURCE: WWW.SHUGE.ORG

Turning to the Tao Te Ching, 埴埴以爲器，當其無，有器之用。闔戶牖以爲室，當其無，有室之用。故有之以爲利，無之以爲用。¹ The room was created by cutting doors and windows, and when there were doors and windows in the room, there was space to use. So "there" refers to the doors and windows and other openings to give convenience, "no" refers to the space to play the role of this thing, the ancient understanding of space that space does not exist alone, necessarily accompanied by the presence and absence. Therefore, in architecture, the theory of space is the subject of eternal research, and with the progress of technology and culture there will be newer knowledge and understanding. But in any case, for architects, space is everything.

The museum is different from other buildings, just like its name, it has the property of elegant and sacred cultural and artistic connotation. Therefore, the interior space of museums does not need additional artistic decoration, *less is more*, museum architecture only needs to show its own artistry through introspective and clear design, and create a vivid, rich and practical interior environment. Therefore, it seems that the interior space of museum architecture is the most important criterion for evaluating its attainment in architectural art. However, it should also be noted that a museum is not a temple, and its art should be accessible to the people. It is a public building for viewing, learning, leisure and entertainment, and everyone who comes here just needs to enjoy the colorful exhibitions with ease and pleasure.

According to the main functions of the museum the exhibition area space is subdivided into social space, transportation space, exhibition space and service space, so the design must meet its functional requirements in order to make the museum function properly.

1. Laozi. (1990). *Tao Te Ching*. Anhui peoples Publishing House.

2.3 CIRCULATION AND SPACE OF THE MUSEUM

2.3.2 RELATIONSHIP

The first step in design is to determine the functional spaces based on programmatic needs, followed by the initial layout of the program, which is to determine the location of the various functional spaces, which are connected to each other, a connection known as flow in the language of architecture. *For we traverse the sequence of space and move through time.*¹ In museum architecture, its attributes have expanded the function of the circulation, which is not only a perceptual link of space but also a spatial guidance system. The dynamics of the museum architecture space is essentially the act of flow, the audience enters the space and all activities must begin with a prerequisite, a clear directional guidance and spatial orientation within the space.

Relationship:

The circulation is the narrative of the museum space.

The circulation structure responds to the direction and sequence of the functional use of each space, and plays a planning role for the space.

The effective path formed by the circulation structure can also channel and connect visitors, forming a good spatial sequence and ensuring the effective operation of each functional institution.

The functions of the various rooms in the museum and the relationship to each circulation

Various Functions	Visit	Lecture	Reading	Collection	Preservation	Research	Restoration	Work	Disinfection	Rest	Meals	Reception	Meeting	Sales	Storage	Unloading	Security	Hygiene
Vistors	●									●	●	●		●	●			●
Professional	●	●								●	●			●	●			●
Researchers	●	●	●	●	●	●	●		●	●	●	●	●	●				●
Technicians				●	●		●	●	●		●		●			●		●
Curators	●										●	●	●					●
Staff								●			●	●	●				●	●
Space	Exhibition Hall	Lecture Hall	Library	Data Room	Storeroom	Research Room	Restoration Room	Office	Disinfection Room	Lounge	Café	Reception Room	Meeting Room	Souvenir Store	Temporary Storage	Warehouse	Guard Room	Toilet

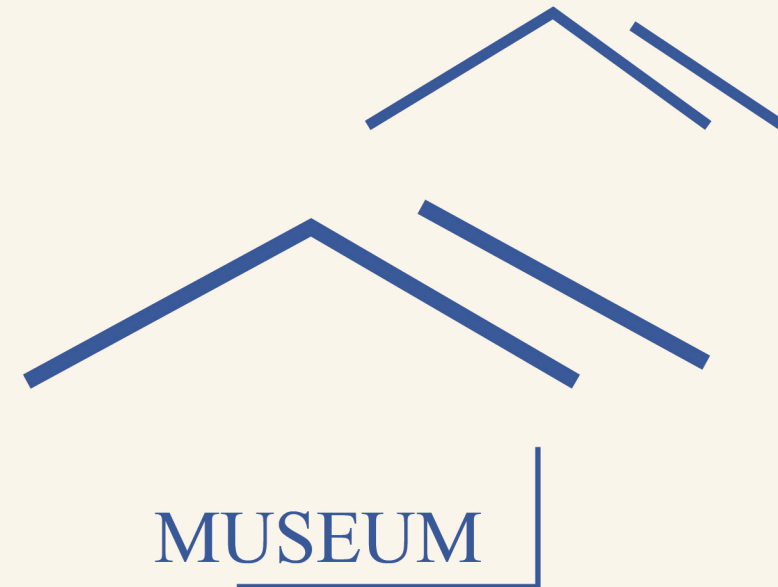


FIG. 2.14 SPACE & CIRCULATION
SOURCE: THE AUTHOR

2.3 CIRCULATION AND SPACE OF THE MUSEUM

2.3.3 HOW TO INFLUENCE

One of the most important factors for visitors to measure the organization of museum space depends on the design of circulation, which is an important intermediary for people to perceive and read information about the spatial environment. The analysis and study of circulation design is a need for people's perception of museum space, and for visitors, the rational design of circulation will directly affect their quality of viewing and experience. In the design of museums, more and more architects are pursuing the transformation between levels of museum space organization without a clear and explicit flow system to guide the activities of visitors.

This often results in visitors being unclear about the content of the exhibition after the exhibit is over; easily developing *Museum Fatigue*; and getting lost during the visit. This section analyzes the factors that influence the quality of visitors' visit from both *Environmental Psychology* and the *Genius Loci*.

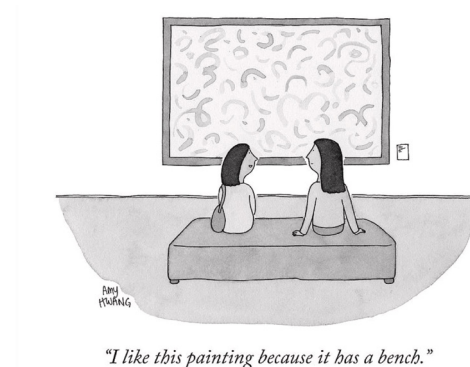


FIG. 2.15 MUSEUM FATIGUE
SOURCE: CONDENASTSTORE.COM

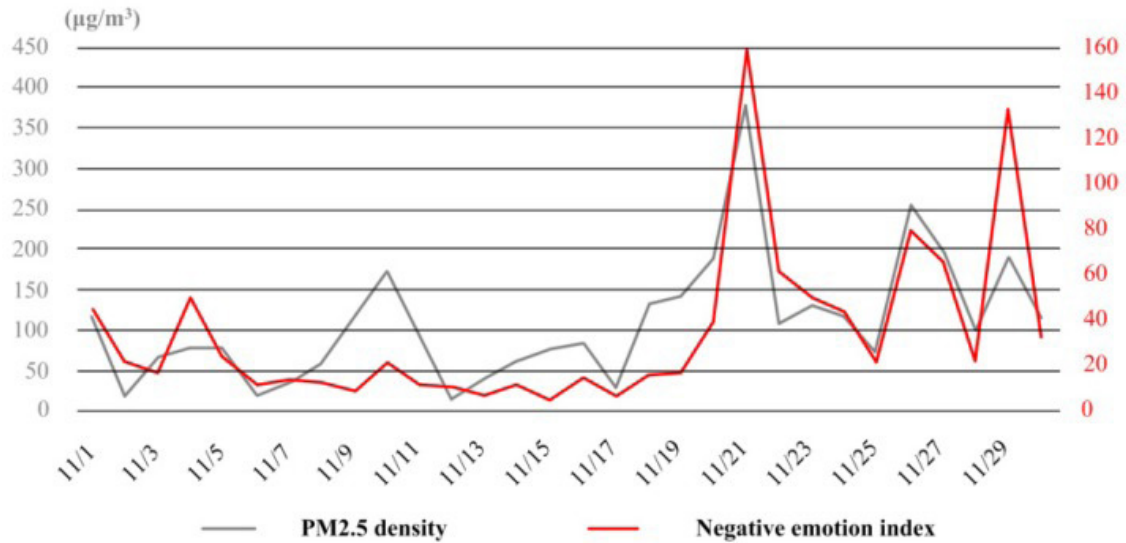


FIG. 2.16 THE VARIATION CURVES OF PM2.5 DENSITY AND NEGATIVE EMOTION INDEX IN NOVEMBER, CITY OF TIANJING, CHINA
 SOURCE: WWW.NCBI.NLM.NIH.GOV/PMC/ARTICLES/PMC6338934/

ENVIRONMENTAL PSYCHOLOGY

Human behavior is often influenced by the characteristic environment. For example, in the city full of haze, people's work, study and living conditions will be largely affected by this weather, so that people produce depression, pessimism and other adverse emotions. And the cause of these symptoms is the reduction of sunlight exposure, resulting in the pineal gland secretion of melatonin increased, the human body melatonin more, it will inhibit the hormone that divides the body cell activity and excitement, people will be depressed and depressed.¹

Studying the relationship between architecture, environment and people, making full use of psychological knowledge to solve practical problems in design, thus enabling the establishment of an architectural environment that can meet the needs of people's physical and mental development and improve the quality of environmental design. In museums, due to the presence of exhibits, human consciousness can easily form a cognitive map, which is perceived through signs, images and colors. Therefore, studying the psychology of visitors can better shape the spatial structure, establish a complete flow system and improve the quality of visitors' viewing.

1. Why is natural light so important to our lives? (2019, April 2). BBC NEWS. <https://www.bbc.com/ukchina/simp/47787678>

The layout of the exhibition space needs to pay attention to the relationship between the bottom of the figure and present the focus through the shape and color of the objects. When the space is shaped similarly, in order to make the form of the exhibition space more diverse and reduce the visual fatigue of the viewers, the space can be made to change dynamically visually through various art forms or designs. Therefore, when an incomplete figure appears in human vision, human visual thinking will tend to automatically complete it, so that it becomes a known, complete, common, overall figure, that is, "complete".¹ Some spaces in museums do not need to be surrounded by walls in order to be coherent with each other, and when they are visually enclosed, people feel that they already belong to another room.

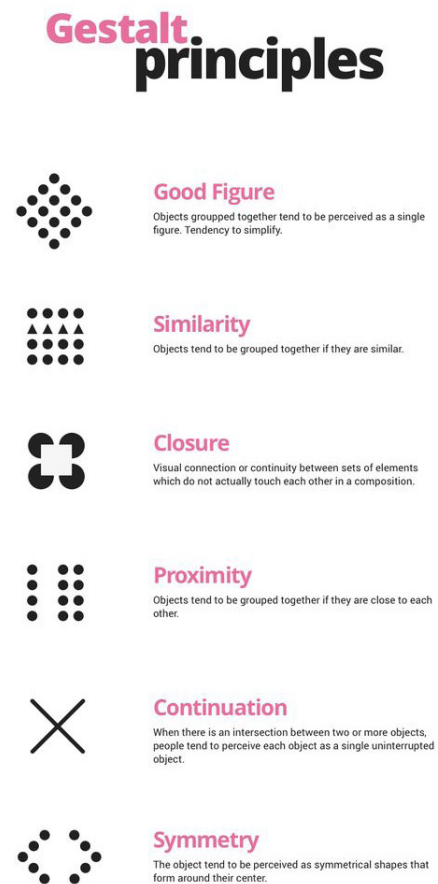


FIG. 2.17 GESTALT PRINCIPLES
SOURCE: BR.PINTEREST.COM

*Sensory memories usually begin with a mood that is difficult to trace, an undefined feeling, and it is not until later that they begin to understand where these feelings come from, to be able to give a specific context for the sensory impressions, to re-experience what has happened in the past.*¹

Every museum has its own story and needs to be remembered in the same way. The design brings the viewer a rich psychological experience and indelible memories by mobilizing the senses.

The visual experience, in general, is presented through color as well as shape and form. Color affects one's mood, and the shape and material of the form create a different sense of atmosphere.

*The visual system automatically structures visual input and perceives shapes, figures and objects at a neurological level, rather than seeing only disconnected edges, lines and areas.*²

Applying the holistic properties of vision to the study of psychology gave rise to Gestalt psychology.

The auditory experience, different sounds will stimulate different psychological states of people, such as night insomnia, the sound of gentle rain will make people calm, and then slowly fall asleep; nature's insect chirping, can relieve fatigue, soothe the mood. Because the museum exhibition form is, in a certain sense, like storytelling, then there must be a sequence relationship: beginning - development - climax - end. In the four stages need different sounds to mobilize the audience's emotions and participate in it. A quiet exhibition hall is needed, then noise needs to be reduced to avoid annoying and unpleasant feelings.

The smell experience, different smell will make people have different memories and also mobilize people's emotions. The smell of grandmother's and mother's meals makes people feel warm; the rich and creamy scent will remind us of the freshly baked bread in the corner coffee shop in the morning.

1. *Scent memory: the power of smell.* (2017). I-d.Vice. https://thefifthsense.i-d.co/zh_cn/articles/anosmia-and-memory/

2. *Jeff Johnson.* (2020). *Designing with the Mind in Mind.* Morgan Kaufmann.



FIG. 2.18 TRAILER MEET VINCENT VAN GOGH EXPERIENCE
SOURCE: SECRETSFROMPORTUGAL.COM

The tactile experience, the objects exhibited in the museum generally have historical and artistic value, and are generally not allowed to be touched. However, there are also special exhibits, such as some installation artworks, which require interaction, and when people touch them, they will produce interesting chemical reactions.

Environmental psychology studies the direct connection that exists between space and behavior, focusing on what happens to people when they use space. Particular attention is paid to the inherent ways in which people behave spatially when engaging in social interactions, concepts such as personal space, privacy, and domainality.¹ Circulation design throughout the space, so the design can be combined with environmental psychology, the active guidance of people walking in the space, planning the scope of activities, but also at certain nodes to use sensory memory to enhance the experience of the space, so that people participate in it, seriously read the "museum story", to achieve the silent message.

1. Wang Jing. (2019). *The use of environmental psychology in display design*. *Industrial Design*, 12.

GENIUS LOCI

Place, narrowly understood as location, site, and broadly interpreted as land, context, these meanings do not have any emotional elements, but only objective descriptions. In 1978, Norwegian architectural theorist *Christian Norberg Schulz* introduced the concept of *Genius Loci* from the perspective of architecture and published his book *Genius Loci: Towards a Phenomenology of Architecture*. In his book, he mentions that the spirit of place is actually an ancient concept that comes from the Roman belief in the patron saint of places, who believed that each "independent" essence has its own genius, and that the patron saint gives life to people and places, accompanies them from birth to death, and determines their The patron spirits gave life to people and places, accompanied them from birth to death, and determined their identity and nature.¹

Schulz believes that the *Genius Loci* is the fusion of the space of subjective consciousness and the space of objective existence within a person.



FIG. 2.19 LOS EDIFICIOS MÁGICOS Y NOSTÁLGICOS DE ANASTASIA SAVINOVA
SOURCE: WWW.YOROKOBU.ES/

1. *Christian Norberg Schulz. (1980). Genius Loci. Rizzoli.*

Compared with place, *Genius Loci* has a broader meaning, that is, a sense of belonging or identity to the place that people feel in the process of participating in activities, which contains spirit, emotion and memory. In *Toward an Architecture*, Corbusier says, *The purpose of architecture is to move us. The architectural emotion is present when the work surrounds us by obeying, experiencing and respecting the laws of the universe.*¹

Churches, in themselves, are places of spiritual and symbolic significance, and traditional church buildings are generally structured with soaring flying buttresses, skeletal coupons, and ornate decorations to show the grand narrative view of the place and the sanctity of the church. Modern architecture, however, has more possibilities, and breakthroughs in structural technology have allowed churches to evolve from traditional forms to new ones.

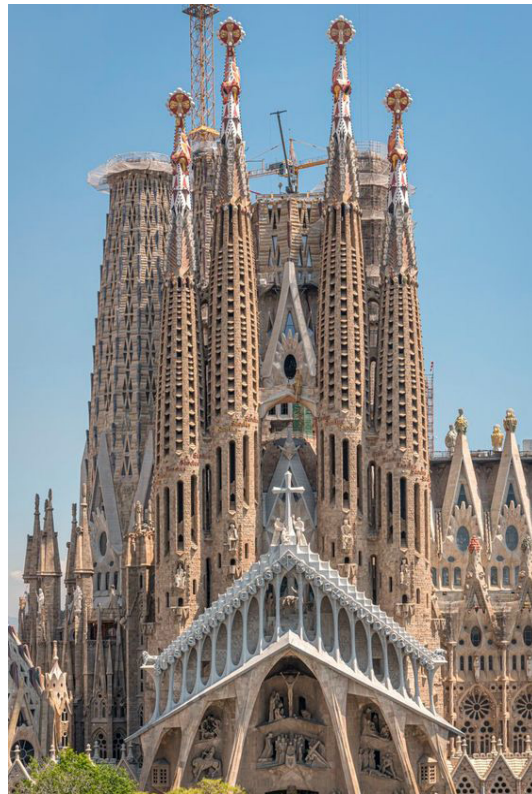


FIG. 2.20 LA SAGRADA FAMILIA
SOURCE: WWW.SKYSCRAPERCITY.COM

1. le Corbusier. (2007). *Toward an Architecture*. Getty Publications.



FIG. 2.21-22 CHURCH DESIGNED BY TADAO
SOURCE: WWW.TADAO-ANDO.COM/

Church designed by *Andou Tadao* cleverly borrow elements from nature such as light, water and wind. The sense of place created is similar to that of traditional churches: sacred, solemn and inspiring. It also places greater emphasis on people's spiritual connection to the world. *The key to architecture is the ability to be remembered for a long time by those who enter it. I want to create architecture that is not only beautiful, but also vibrates the heart and speaks to the soul.* Ando draws believers into the place through the shaping of natural light. The pristine concrete building and the clean surroundings allow people to rest their minds and create an immersive space where they can focus on prayer.

How to create a place with temperature, sentiment and vividness through design? As a place containing people and their activities, architecture should have emotional resonance with people while satisfying their basic functional needs, and the space of architecture should be shaped with emotional expression, paying attention to users' psychological and physical feelings. The buildings in specific areas also need to integrate with the local culture, based on the local natural environment as well as humanities, history and culture, so that the building gives spirit and soul. On the other hand, museum buildings, like museums, have cultural connotation and deep educational significance, and in order to facilitate the understanding of the audience, museums need to create a space that "expresses the life situation" to express the spiritual meaning of the place.

How to make the *Genius Loci* in museums? *Schulz* uses the concept of perceptual schemata to deconstruct the spirit of place. The perceptual schemata of place spirit can be understood as a sense of belonging to a place, which consists of a sense of direction and a sense of identity.¹ A sense of direction is a necessary "quality" for museum flow design, and a flow with this "quality" can help museum visitors not to lose their way in the space and not to feel insecure, which can truly improve the quality of the exhibition.

1. Christian Norberg Schulz. (1980). *Genius Loci*. Rizzoli.

Shaping the sense of direction on the flow generally requires the aid of environmental psychology in the design, usually visual, auditory and other perceptual feelings. Perceptual feelings are the basic way for people to relate to the world, and the strength of perceptual feelings significantly influences the creation of *Genius Loci*.¹ A sense of identity represents a person's assessment of the value of self and surroundings, a sense of security on a psychological and spiritual level, and enables a person to perceive the culture in which he or she lives. The museum space is the human surroundings, where visitors have a direct connection with the environment and need to identify with it, perceive its existence and the "story" it has to tell.

The sense of direction and the sense of identity together constitute the sense of belonging and represent the experience and perception of place. The stronger this perception, the easier it is to develop a spirit of place. The sense of direction of the museum's flow creates a sense of identity for the people in the space, and in the process of experiencing the space, the spirit of place uses the qualities that architecture gives to the environment and makes these qualities intimate with people. In this way, the design of the museum can return to its most authentic form, where people develop a psychological response, interact with the exhibits, and create an emotional resonance.

1. Maurice Merleau Ponty. (2013). *Phenomenology of perception (1st ed.)*. Routledge.



SOURCE: THE AUTHOR

CHAPTER 3
CLASSICAL CHINESE GARDEN

3. CLASSICAL CHINESE GARDEN

3.1 AESTHETICS

流水断桥春草色，
槿篱茅屋午鸡声。
绝怜人境无车马，
信有山林在市城。¹

Means: The flowing water, the broken bridge, and the green spring grass, the hedge, the thatched cottage, and the crowing of the rooster at noon all these make one fall in love with the place and believe that there is a quiet mountain forest in the city.

This poem is a tribute to the beauty of the Humble Administrator's Garden by Wen Zhengming, who was regarded as one of the Four Masters of Ming painting. Sitting in the Humble Administrator's Garden, although lives in the city, man fell like in a quiet mountain forest, with flowers and trees as well as gurgling water.

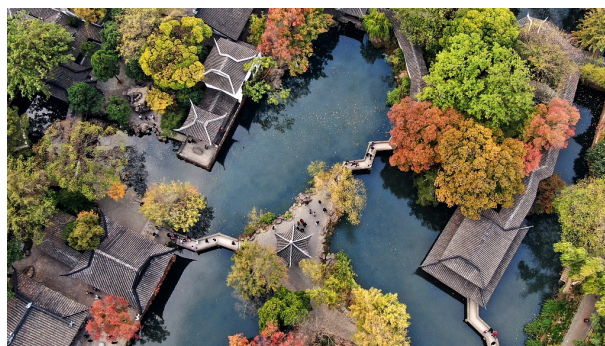


FIG. 3.1 AUTUMN SCENERY IN THE HUMBLE ADMINISTRATOR'S GARDEN
SOURCE: NEWS.CGTN.COM



FIG. 3.2 DEPICTING THE HUMBLE ADMINISTRATOR'S GARDEN BY WEN ZHENGMING
SOURCE: WWW.METMUSEUM.ORG

1. Wen Zhengming. (2012). 拙政园图咏注释. China Architecture & Building Press.



FIG. 3.3 XU DA'S MANSION EAST GARDEN
SOURCE: WWW.DPM.ORG.CN

During its long history of China's development, classical Chinese gardens have had an inseparable relationship with the literati and the scholars. The garden is not only a place for literati to study before becoming an official, but also a place for literati to go into seclusion and meditate after resigning and retiring; It is not only a paradise for literati to cultivate their hearts and souls, but also a place for literati to elegantly gather, sing, write poems and discuss the truth and talk about the past and the present. Therefore, it embodies everywhere the ideal personality pursuit and aesthetic interests of the literati and scholars.

These early artists, who loved nature, were keen to indulge in the gardens, and the aesthetic interest of the gardens themselves deeply attracted them. Classical Chinese gardens, especially private gardens, are based on architecture, with a high degree of integration of architecture, landscape and flowers and trees. In the final analysis, it is to unify nature and people to create a landscape from the aesthetic movement of the visitors. This is the ultimate goal of traditional Chinese (literati) art, which is to create an aesthetic realm of unity between man and nature through aesthetic embellishment by means of painting.¹

1. Chen Wei. (2001). *Aesthetical Study on Chinese Classical Garden*. Journal of Beijing Institute of Civil Engineering and Architecture. Published.

CONFUCIANISM



FIG. 3.4 CONFUCIUS
SOURCE: WWW.KZBWG.CN

Within the history of Chinese philosophy, Confucianism, founded by Confucius, has long occupied the position of the orthodox school of thought in China. Although Confucius also had quotations about nature: *the benevolent man enjoys mountains and the wise man enjoys water.*¹ But his real interest was not in nature, but in social life, and his philosophy was pragmatic. Classical literati gardens likewise reflect Confucian philosophical thought.

1. Confucius. (2006). *The Analects*. Zhonghua Book Company.

The Confucian scholars in Chinese history were mostly idealists, not politicians, they were well-read in poetry, but subject to Confucianism, their political aspirations in the ruler's view is no more than absurd and comical fantasy, so they were often depressed and unmotivated. It was almost their usual pattern to resign from the government and return to seclusion. But they were not really "hermits"; their reclusion was a manifestation of their helplessness, and these were only superficial gestures; their dream of one day being reappreciated by the imperial court to realize their political ideals was the deeper essence of these "hermits".

In order to express such feelings, they often sentiment in things. Therefore, the construction of classical gardens was based on the Confucian philosophy of governance, but it is difficult to define which part of the garden was influenced by Confucian philosophy, it should be said that Confucianism provides a completely rational theoretical basis for the construction and design of gardens, the most fundamental impact on the garden is to create a "secular atmosphere".¹

1. Confucius. (2006). *The Analects*. Zhonghua Book Company.

BUDDHISM



*FIG. 3.5 LINGYIN TEMPLE, HANGZHOU, CHINA
SOURCE: FOURSQUARE.COM*

The concept of "emptiness" in Buddhism: people are advised to achieve a spiritual state of complete peace and tranquility, and "emptiness" is the concept of the supremacy of behavior, which has a negative attitude toward the real world. On the other hand, Zen believers are also involved in the real world, which is contradictory to their belief that "mind is Buddha" and that "emptiness" is uncontested in the world. To resolve the contradiction between reality and faith, they either traveled to the mountains or planted flowers and gardens to feel nature in order to reach the true meaning of life.

The gardens provided them with a place to seek silent meditation and to find eternity in a hill and a ravine, in a flower and a bird. In this way, Zen believers living in gardens sought both spiritual liberation and the purpose of Buddhism. Garden life provided a practical way to combine Buddhist faith with an appropriate lifestyle, which is why temple gardens, one of the three major gardens along with royal gardens and literati gardens, flourished. When Zen thought spread widely in China, it gave a great impetus to the development of the art of gardening in China.

TAOISM



FIG. 3.6 WUDANG MOUNTAIN TAOIST TEMPLE, HUBEI, CHINA
SOURCE: CHANGAN-MOON.TUMBLR.COM

In the Spring and Autumn and Warring States Periods, ancient Chinese philosophers proposed the idea of following nature and being obedient to nature. The greatest Chinese philosopher, Lao Zi, said more than 2,000 years ago about his worldview: *Man follows the ways of the earth, the earth follows the ways of the sky, the sky follows the ways of the Tao, and the Tao follows the ways of nature.*¹ He advocated that all things return to their original roots, and that mankind and society must return to their original state in order to realize the harmony of all things. Taoism (Tao follows nature) is the core of Taoist philosophy, and the Taoist way of thinking and understanding of the nature of the world is based on the concept of Taoism.

Ancient Chinese aesthetic thinking and art design has been influenced by this basic logic, under the guidance of this idea, the goal of garden design is to find the expression of personal emotions in an appropriate way, to enjoy the beauty of nature on a level beyond the mundane. Beauty is the product of a harmonious balance of subjectivity and objectivity, emotion and reason. The Taoism establishes the connection between the Tao and nature, implies the laws of operation of the entire universe, and emphasizes a profound respect for the natural world. This is a decisive point in Taoist philosophy, and it can be said that the principles of Taoist aesthetics have directly influenced the design approach of classical Chinese gardens.²

1. Lao Zi. (1990). *Tao Te Ching*. Anhui People's Publishing House.

2. Zhou Weiquan. (2008). *中国古典园林史* (3rd ed.). Tsinghua University Press.

YIJING 意境

Chinese gardens generally have a very high pursuit of mood in their aesthetic pursuits. The explanation used by Wang Guowei in his 人间词话: Yijing does not only refer to scenery, but also to emotions such as happiness, anger, sadness and joy, which are some kind of mood in one's mind. So (article) can describe the real scenery, the real emotions, it is called the Yijing, otherwise it is called no Yijing.¹ In other words, the aesthetic interest of classical Chinese gardens in addition to the material world of the object, but also often the pursuit of human emotional feelings. The creation of Yijing is the core aesthetic standard of ancient Chinese gardens.

Yijing, not only refers to the objective "scenery" and subjective "feelings" intermingled when an artistic atmosphere, but also refers to the spiritual temperament contained in the aesthetic object, garden art shows a fun, style, trust.

Garden maker Ji Cheng in the *The Craft of Gardens* put forward a basic principle of gardening, that is, 巧于因借, 精在体宜 (although it is made by hand, but it is like the gods from heaven to cut out the same. The ingenuity lies in its natural smoothness, and the exquisiteness lies in its appropriate shape and size).² The 因 is the construction of the garden because of the person, according to the character of the owner of the garden to give the garden scenery to compare and symbolize, so that the garden scenery and the character of the owner, through the garden scenery to show the spiritual world of the owner. 借 is to borrow the scenery of other places for their own use. Through 因借, to create a natural, remote and ethereal mood.

1. Wang Guowei. (2004). 人间词话. China Renmin University Press.

2. Ji Cheng. (2015). *The Craft of Gardens*(Liu Yanchun, Ed.). Jiangsu Literature and Art Publishing House.

3.2 THE ART OF GARDEN

3.2.1 HISTORY AND DEVELOPMENT

Historically, the development of Chinese classical gardens, like other classical cultures, has been divided into a period of germination, formation, maturity, peak and downturn. The budding period of Chinese gardens was represented by the royal gardens, which were large in scale but had the nature of enclosure; in the formative period, gardens began to break away from the function of enclosure and hunting and became a kind of ornamental art; the art of gardening reached a new level - the literati participated in gardening and brought the concept of poetry and painting into gardens, at which time gardens as an art form reached maturity;

In the Song Dynasty, gardening activities were at an all-time high, and the theory of poetry and painting further influenced gardening, which was considered the peak of classical Chinese gardens; after the Yuan Dynasty, gardening activities entered a downturn due to foreign rule; immediately after the Ming and Qing Dynasties, gardening activities became active again, and mature gardening theories and treatises emerged, forming another peak period. Until modern times, classical Chinese gardens have played an important role in traditional culture



·Tang Dynasty

The imperial palace, which was mainly a garden, was set up for the emperor's recreation in addition to the garden scenery, and also held dynastic congratulations and dealt with imperial affairs.



Landscape painting as the subject matter of the creative stage. Literati and painters participated in the creation of the garden

·Tang dynasty

The design of the palace imperial court also became more and more exquisite, especially because the stone carving process has been skilled, the palace building carved fences and jade, especially gorgeous

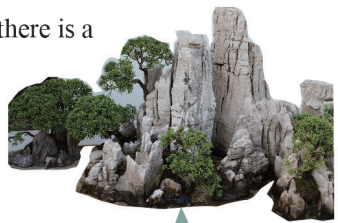


Produced a theoretical book on the creation of garden art, *The Craft of Gardens*



·Song dynasty

In terms of stone use, there is a greater development



Peak Period

1644

Budding period

1600 B.C.

220

Creation period

·Shang Dynasty



It is to enclose a place with beautiful natural scenery and release birds and animals for the emperor to hunt.

581 Development Period

·Sui dynasty

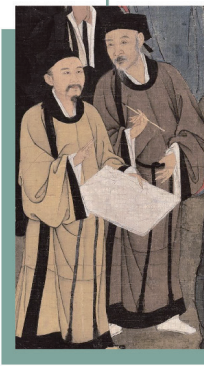
Ended the state of war, the social and economic prosperity for a time, the feudal emperors and noblemen living in the prosperous city, in order to enjoy the scenery of the natural landscape, they will follow the natural landscape near the construction of gardens



Countryside: natural landscape

960

Thriving Period



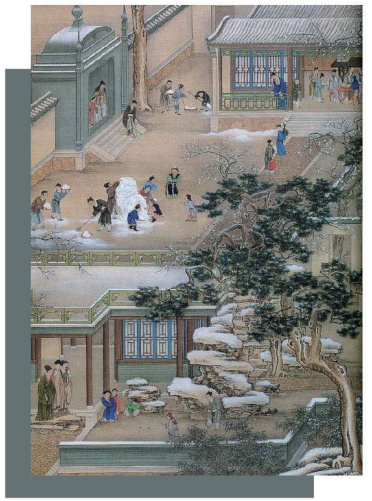
A large number of literati, painters involved in gardening, to further strengthen the creative landscape garden



City: construction of gardens

·Qing dynasty

The architecture in the forest plays the most important role and becomes the main means of landscape creation



Representative works:

Old Summer Palace
Summer Palace

3.2 THE ART OF GARDEN

3.3.2 FEATURES

According to the *中国古典园林史* summarizes the characteristics of Chinese classical gardens are four¹

Everything comes from nature, but creates beauty beyond nature

The integration of architectural and natural beauty

The "feelings" of poetry and painting

Connotation of Yijing

1. Zhou Weiquan. (2008a). *中国古典园林史* (3rd ed.). Tsinghua University Press.



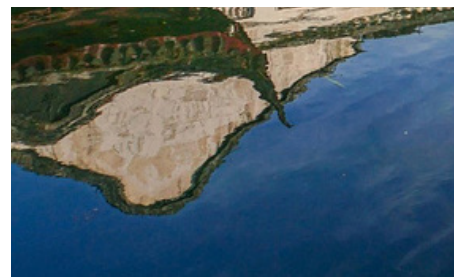
FIG. 3.7 CANGLANG PAVILION
SOURCE: TRAVEL.QUNAR.COM

Everything comes from nature, but creates beauty beyond nature

Mountains, water, plants are the basic elements of natural scenery, of course, is also the landscape elements of the garden. But classical Chinese gardens are not generally used or simply imitate the original state of these landscape elements, but have consciously transformed, adjusted, processed, cropped, so as to show a concise overview of nature, typical of nature. The presentation is *an artificially created art, but the scenery it presents must be real, as if it were generated by natural creation.*¹



Mountains



Water



Plants

1. Ji Cheng. (2015). *The Craft of Gardens*(Liu Yanchun, Ed.). Jiangsu Literature and Art Publishing House.

The integration of architectural and natural beauty

The French regimented garden and the English landscape garden are the two main streams of Western classical gardens. The former plans gardens according to the principles of classical architecture, controlling the whole situation of gardens with the extension of architectural axes; the latter tends to have a relative separation between buildings and other three elements of gardening. However, these two diametrically opposed forms of gardening share a common characteristic: they pit architectural beauty against natural beauty, and either architecture controls everything or retreats from it. This is not the case in classical Chinese gardens, where architecture, regardless of its nature and function, strives to organize organically with mountains and plants, the three elements of gardening, in a series of scenic images.

Pavilion, with the decorative role and the function of the view;



FIG. 3.8 CHINESE PAVILION
SOURCE: OREGON-PHOTOGRAPHY.BLOGSPOT.COM

Gallery, itself is the role of connecting buildings, dividing space, in the garden, it can also be built on the water or rely on the original site terrain and built to go from low to high.



FIG. 3.9 CHINESE GALLERY
SOURCE: BLOG.XUITE.NET

The "feelings" of poetry and painting

Literature is the art of time, painting is the art of space. The scenery of the garden is appreciated in walking, so the garden is a comprehensive art of time and space. The creation of classical Chinese gardens, can fully grasp this feature, the use of various art disciplines between the touch of the class, cast poetry and painting art in the garden art, so that the garden from the overall to the local contain a strong poetry, painting interest, which is usually called *poetry and painting*. Poetic feelings, is to some realms of poetry, scenes in the garden with a specific image to reproduce, but also to learn from the literary art of the chapter, the technique makes the planning and design is quite similar to the structure of literary art. The meaning of painting is to reflect the principle of painting to a certain extent. Chinese landscape painting is about the emotional experience of the creator, not about how similar the shapes of the objects are depicted.

It is easy to see from the gardening technique of piling of rockeries that the pictorial meaning is brought to the extreme in the third dimension.



FIG. 3.10 *PAINING AND PILING OF ROCKERIES*
SOURCE: WWW.360DOC.COM

Connotation of Yijing

Yijing is an important aesthetic category in the creation and appreciation of Chinese art, that is, the subjective feelings, ideas fused in the objective life, scenery, thus triggering similar emotional excitement and conceptual associations of the connoisseur. Tourists get the information of garden mood, not only through the visual senses or with the help of words, literary creations of the ancients, myths and legends, historical allusions and other signals of feeling, but also through the sense of hearing, smell.

Chinese poetry and painting both place great emphasis on Yijing. The garden has the comprehensive nature of poetry and painting and the figurative nature of three-dimensional space, and its expression of mood is even more explicit than that. The subject of this painting is taken from *The Peach Blossom Garden* written by Tao Yuanming, a hermit of the Eastern Jin Dynasty, depicting the ideal of a literati's pleasure of seclusion. But the Peach Blossom Garden does not exist, which is only an aspiration for a better life in people's hearts. Yijing: The scene depicts a scene beyond the real life, and the scenery seen is related to the emotions the author wants to express.

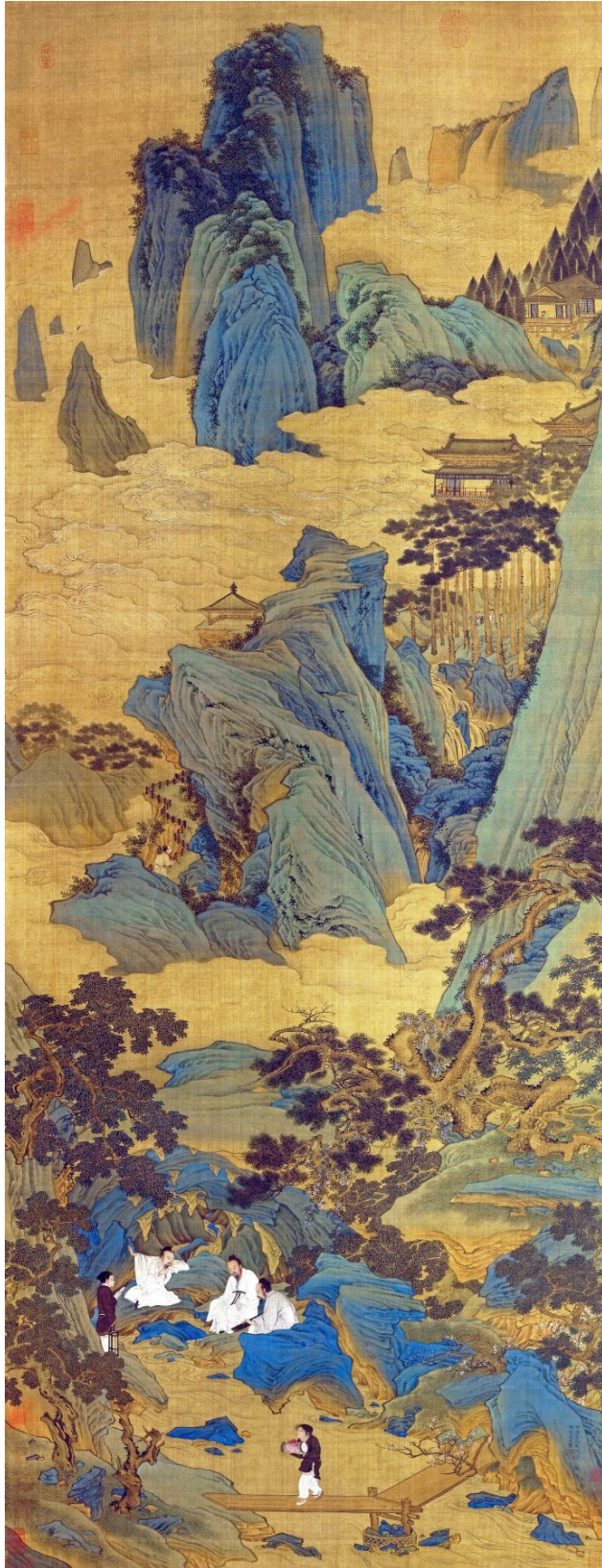


FIG. 3.11 LANDSCAPE AND FIGURES PAINTED BY QIU YING, MING DYNASTY
SOURCE: WWW.SOHU.COM

3.2 THE ART OF GARDEN

3.2.3 FOUR BASIC ELEMENTS

There are four basic components of a classical Chinese garden: mountains(stone), water, plants, and architecture.¹

Mountains(stone) - Within the garden, different stones are chosen to create small-scale nature's mountains. The natural mountains can be seen in the composition of the pile of stones.

There are four principles for choosing stones: clear and lean beauty; twisting and vivid beauty; stretched beauty; and profound clarity.

Plants - the ancients are good vulgarly, all like to plant some flowers and plants. In addition to meeting people's visual aesthetics, plants also provide a variety of aesthetic feelings, including smell and hearing. Plants and seasonal climate change together to affect people's mood, and become a unique aesthetic interest in classical Chinese gardens.



FIG. 3.12 MOUNTAINS(STONE)
SOURCE: WWW.INTERCONTINENTALGARDENER.COM

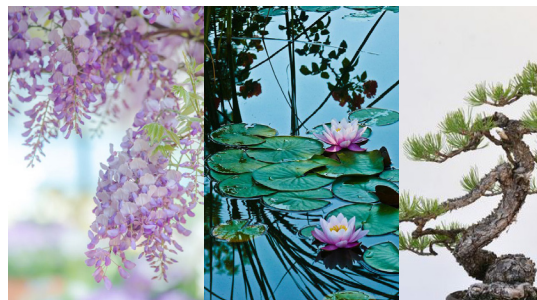


FIG. 3.13 PLANTS
SOURCE: WWW.PINTEREST.ES

1. Peng Yigang. (1986). *Analysis of the traditional chinese garden*. China Architecture & Building Press.

Water - the most vibrant factor. The design of water features: the use of buildings and plants, the zigzag pool shore cover, presenting a hazy sense of beauty; build a dike across the water, or a small bridge of zigzag stone slabs connecting the two sides; in the water is very small, (such as a small pool of clear water) available stones for the shore, with bamboo and weeds, lotus and small fish, although a pond, but people can feel the idyllic scenery.



FIG. 3.14 WATERSCAPE
SOURCE: BBS.ZHULONG.COM

Architecture - according to the intention of the garden design, functional requirements, landscape and other needs, must consider the appropriate combination of buildings and architecture; at the same time consider the volume of the building, shape, color and with the art of rockery, sculpture, garden plants, water features and other elements of the arrangement, and requires careful conception, so that the architecture of the garden plays an important role.



FIG. 3.15 ARCHITECTURE
SOURCE: BBS.ZHULONG.COM

3.3 MAKING WAYS

Principles of spatial arrangement.

1. Unlike European gardens, which showcase their beauty at a glance, classical Chinese gardens are progressive. Bringing visitors a surprising experience through contrast.

2. In the overall pattern of the garden, a larger area (usually the central area) is usually chosen as the center and focus of the whole garden, while the space elsewhere is relatively small to facilitate the separation of priorities and highlight the center. Key landscapes are treated with emphasis rather than evenly distributed.¹

3. The aesthetics of classical Chinese gardens is closely linked to the ancient aesthetics of real and imaginary, and the spatial awareness of the presence and absence of space. In the overall design of the pursuit of zigzag taboo straight, and through the tangible entity to divide the invisible space, the formation of space in the depth and transition. It is this layout that breaks the straightness of the tour route and leads to a variety of scenery, thus making people forget to return.²

1. Li Zhenyu. (2014.08). 论古代空间园林的艺术特色 . *Lantai World*. Published.

2. Li Jintao. (2014.02). 虚实掩映之间——苏州园林空间布局中的虚实手法 . *Design Research*. Published.

Seeing and Being Seen ¹

1. Enframed Scenery

Set up a frame-hole structure and guide the scenery.

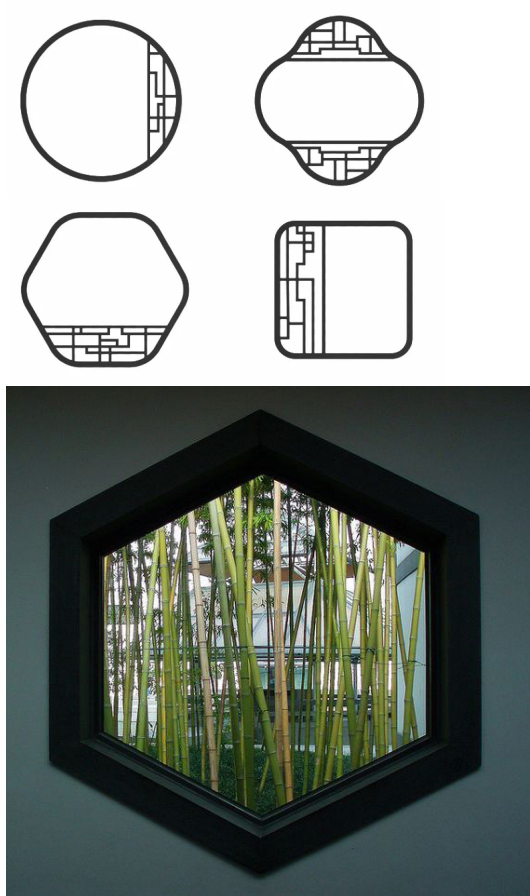


FIG. 3.16 SUZHOU MUSEUM WINDOW
SOURCE: WWW.SZMUSEUM.COM/

2. Borrowed Scenery

view borrowing;
Organize good views into the garden sightline within the reach of human eyesight.

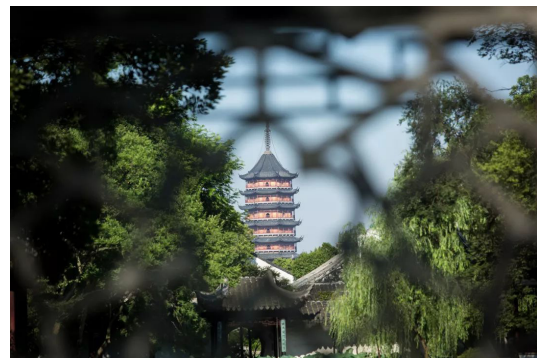
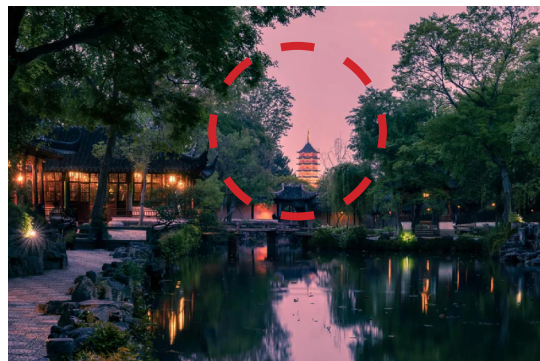


FIG. 3.17 THE HUMBLE ADMINISTRATOR'S GARDEN
SOURCE: PHOTOS.NPHOTO.NET

1. Chen Congzhou. (2017). 说园. TONGJI UNIVERSITY PRESS.

3. Opposite Scenery

View in opposite place;
In the garden, visitors at two points
in different locations look at the
view of each other's location, both
beautiful, like a painting.

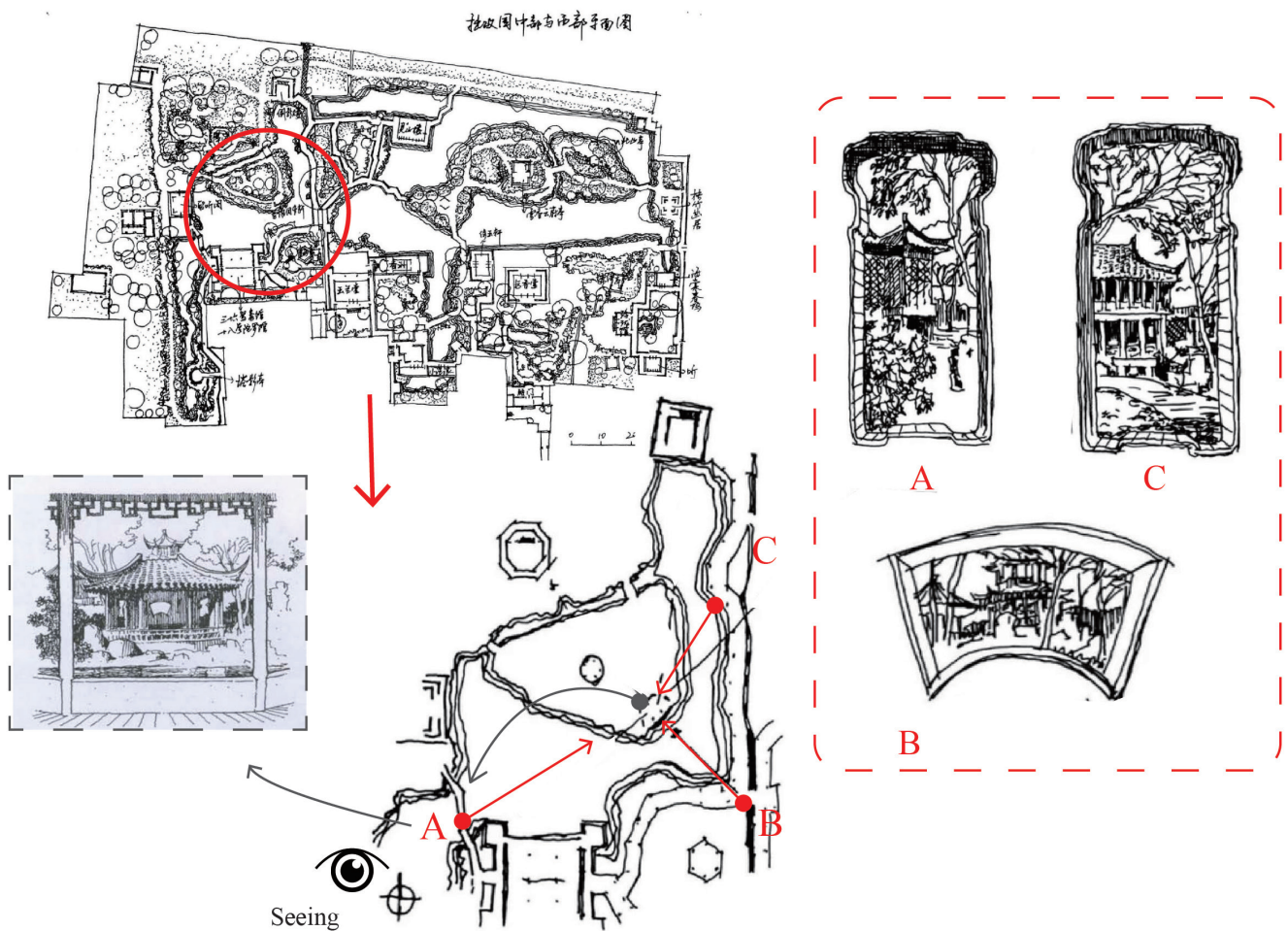


FIG. 3.18 According to 中国古典园林分析 Drawing ¹

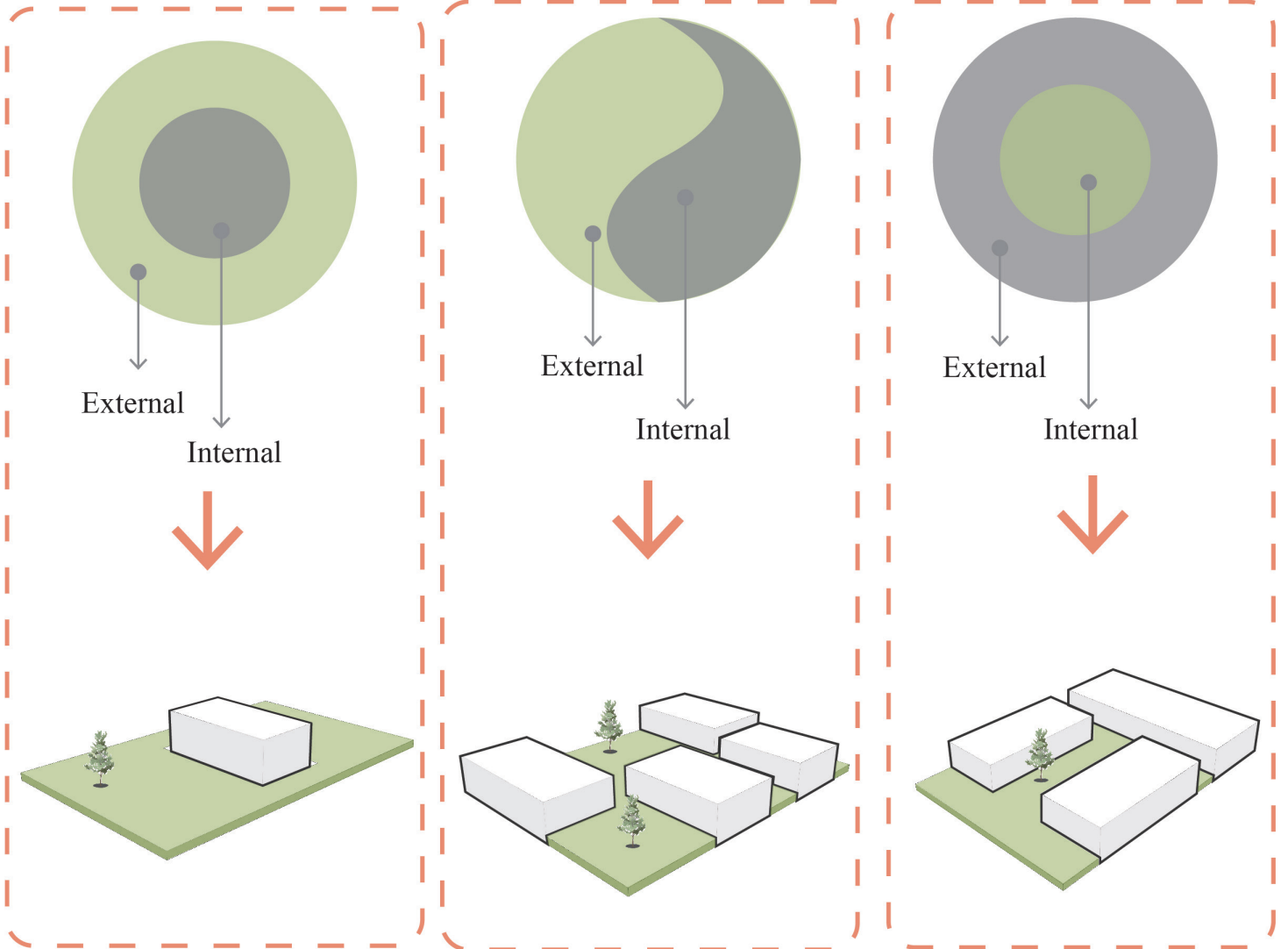
1. Peng Yigang. (1986b). *Analysis Of Traditional Chinese Garden*. China Architecture & Building Press.

Space organization

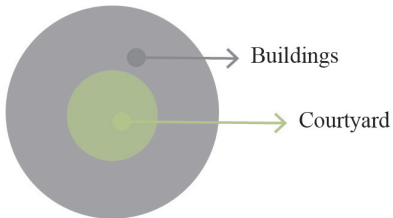
External:



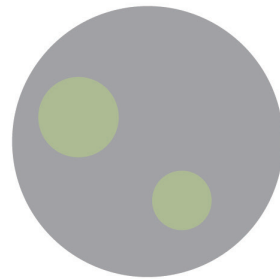
Internal



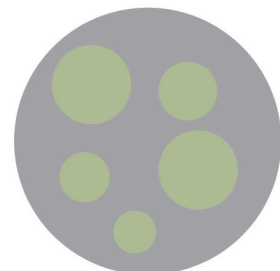
One Unit



Surrounded by buildings

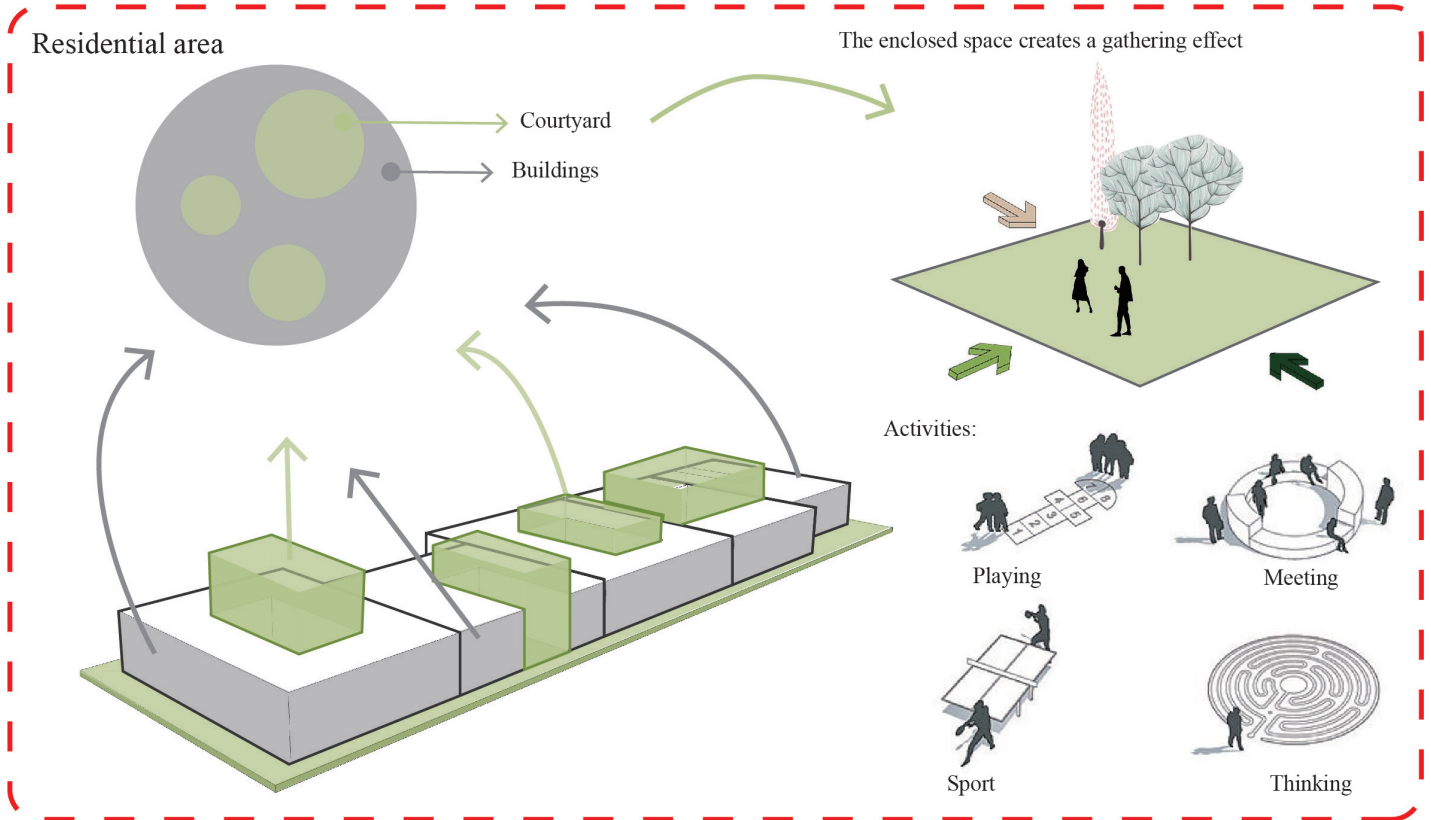


One Unit
+
One Unit

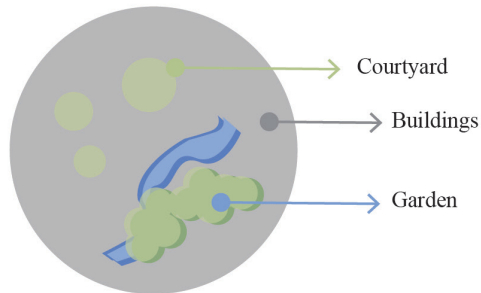


One Unit
+
One Unit
+
.....

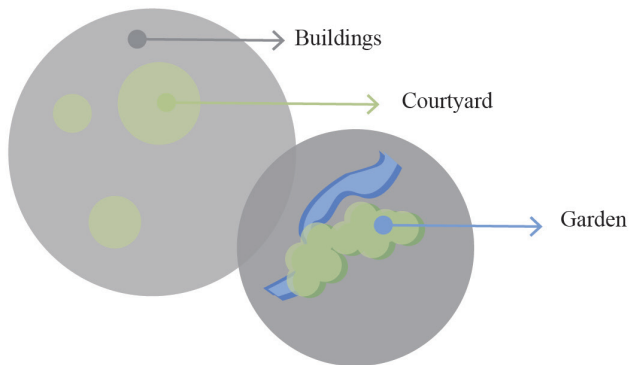
About Chinese Gardens' Space Organization



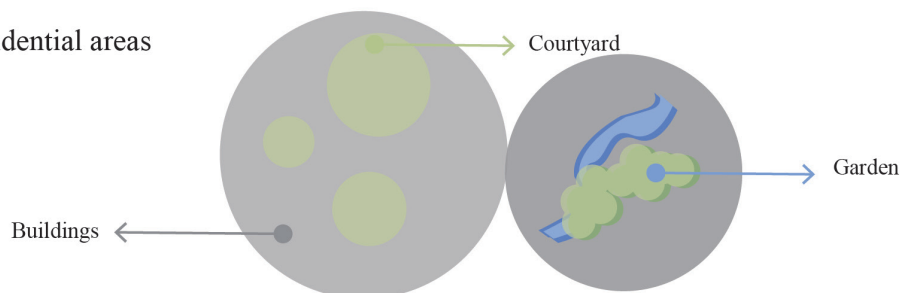
1. Set in the residential area



2. Relatively independent from the residential area, the garden has its own area

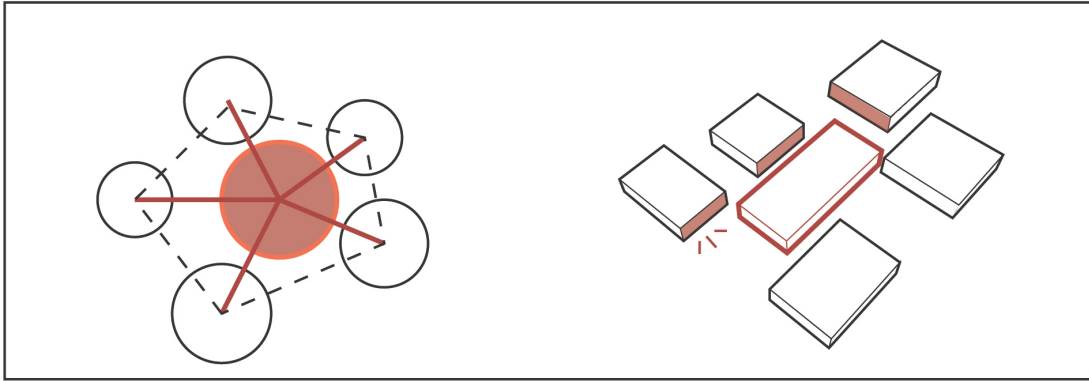


3. Separated from residential areas

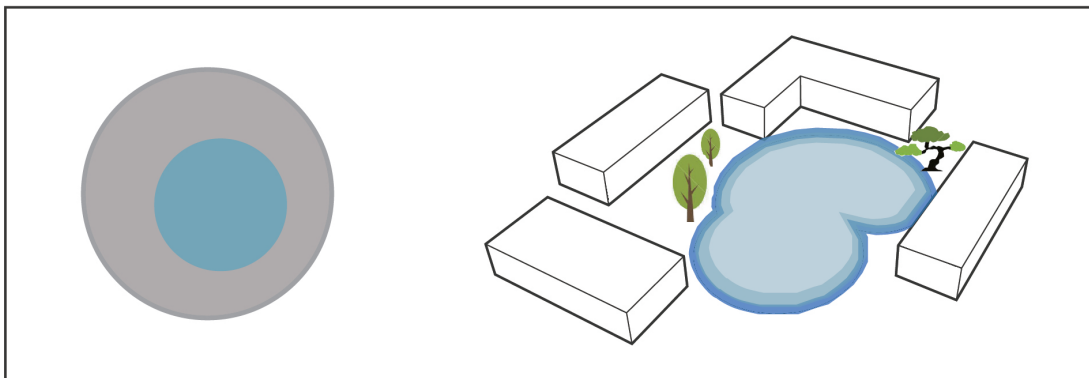


Primary space, secondary space

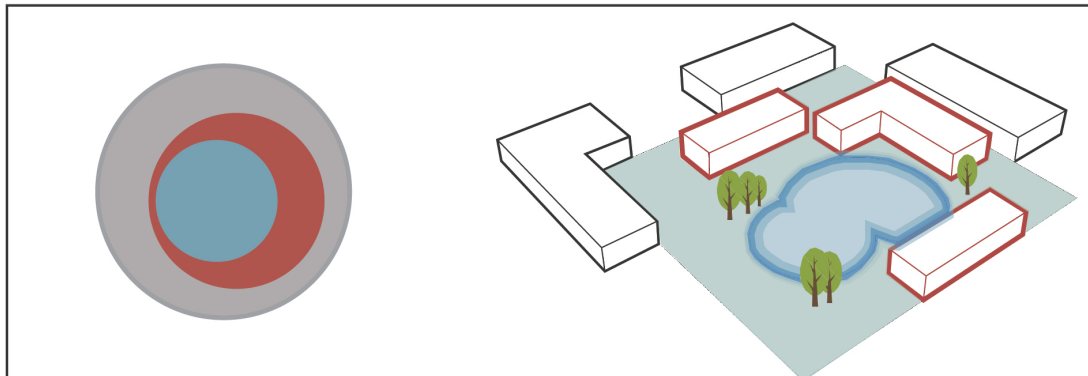
There is the main garden, the rest of the small gardens play a supporting role.



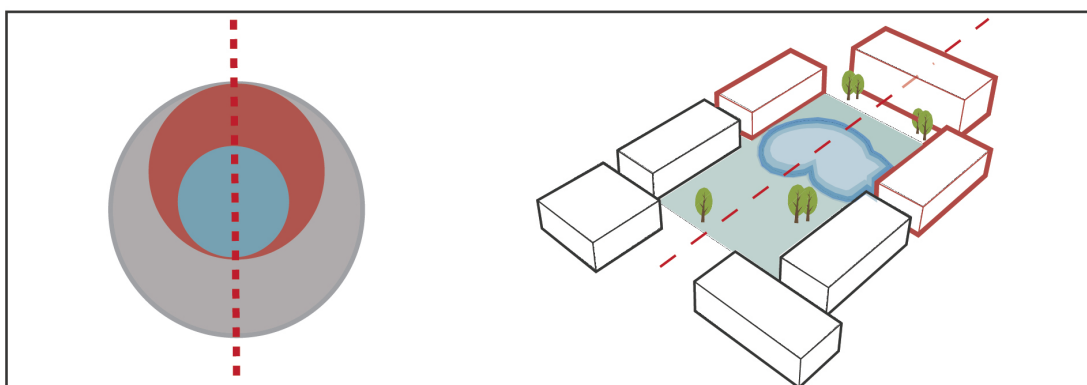
The main view is usually arranged with the pool as the center, and the secondary buildings are organized around it.



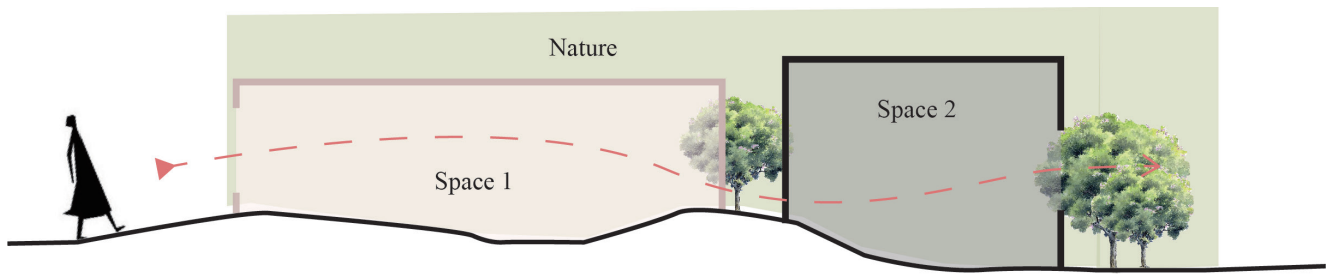
Large-scale garden, divided into three levels, primary space, secondary space and subsidiary space.



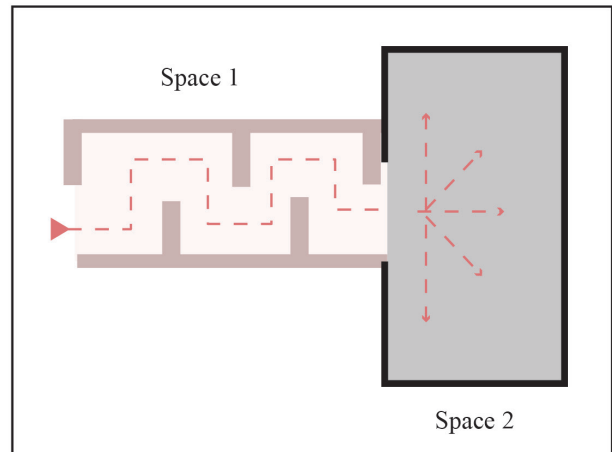
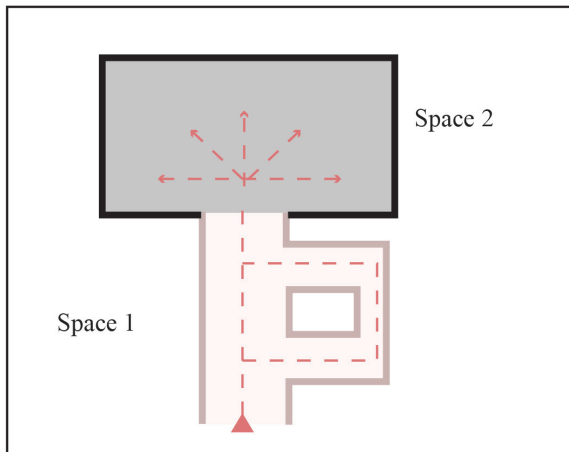
Royal gardens, which require a certain degree of grandeur, generally arrange buildings and organize space in an axis-symmetrical manner.



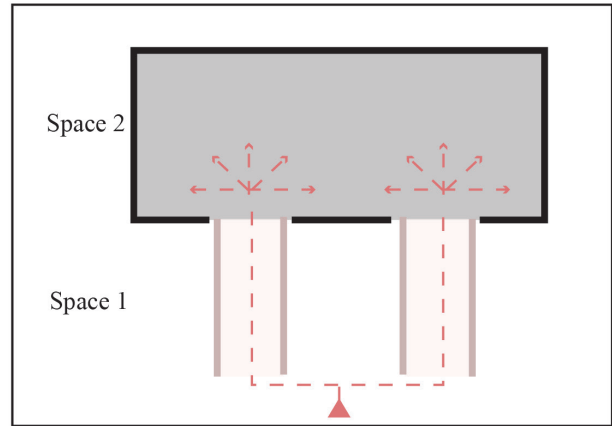
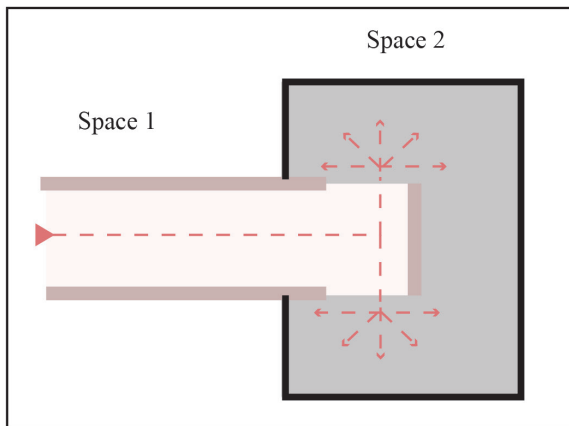
Comparison of spaces ¹



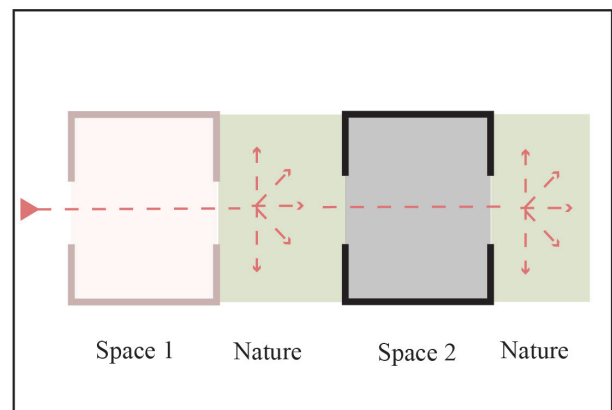
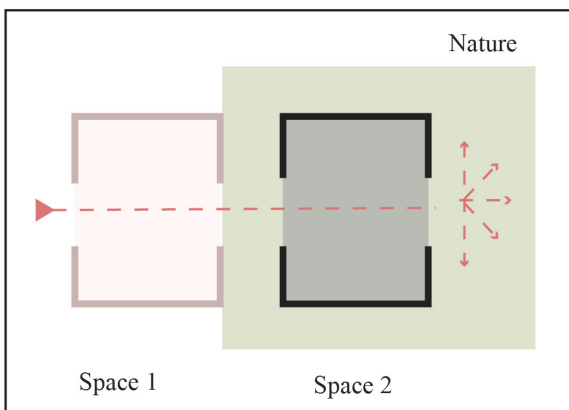
Varying, narrow spaces to wide spaces



Small, enclosed spaces to wide spaces



Comparison of artificial space and natural space



1. Peng Yigang. (1986b). *Analysis Of Traditional Chinese Garden*. China Architecture & Building Press.

3.4 WHY ANALYSE THE GARDEN

The development of today's society is constantly changing people's behavior and aesthetic style. In this new era, the amount of information and social systems that people are exposed to are extremely complex. Architects use new materials to pursue formal beauty and find structural breakthroughs while ignoring what the real meaning of architecture is. Architecture occupies nature, demonstrating the great power of man to transform it, but at the same time must make peace with it. Classical Chinese gardens are built with emotion and contain the natural concept of "unity of nature and man", characteristics that are missing in modern architecture. Garden culture offers a way of perceiving the world that is contrary to contemporary perspectives, a way of seeing the world from the inside and perceiving the whole from within.¹ The same is true of the museum's perspective.

In his comments on the new translation of *Glimpses of Garden in Eastern China*, Wang Shu points out that classical Chinese gardens are not only visual objects but also physical experiences. Museums are public buildings that carry the identity of entertainment, education, and a symbol of local culture. People go to museums not only to appreciate the artwork and see the historical artifacts, but also, and more importantly, to engage their emotions and resonate with them, the so-called *Genius Loci*. After the visit, it is a fun experience that involves the whole body and soul. Chinese classical gardens have a long history and cultural heritage, and the interior space is rich and vibrant. On the other hand, the museum is also a large "garden", rich in content, which makes it a "cultural garden" with beautiful scenery by combining classical garden theory with rational organization of space and flow.

1. Zhi Wenjun. (2018). 生机：中国古典园林之于当代建筑设计. *Time + Architecture*, 4.



SOURCE: THE AUTHOR

CHAPTER 4
CASE STUDIES

4.1 ABOUT THE GARDEN

4.1.1 SUZHOU MUSEUM



FIG. 4.1 SUZHOU MUSEUM
SOURCE: PHOTOS.NPHOTO.NET

BACKGROUND

Architecture Design: I.M. Pei
Location: Suzhou,
Jiangsu Province, China
Program: Museum

The design of the Suzhou Museum is a gift from I.M. Pei to his hometown, and as he said, he has an affinity with Suzhou. The design of this museum was a difficult challenge, not only to highlight the long history and culture of Suzhou, the ancient city, but also to consider the impact of the new building on the vast number of classical Suzhou gardens, including the immediately adjacent Humble Administrator's Garden design concept. The design incorporates the traditional Suzhou architectural style by placing the museum between courtyards to harmonize the building with its surroundings. The main courtyard of the museum is equivalent to an extension and a modern interpretation of the architectural style of the Humble Administrator's Garden to the north.

DESIGN CONCEPT

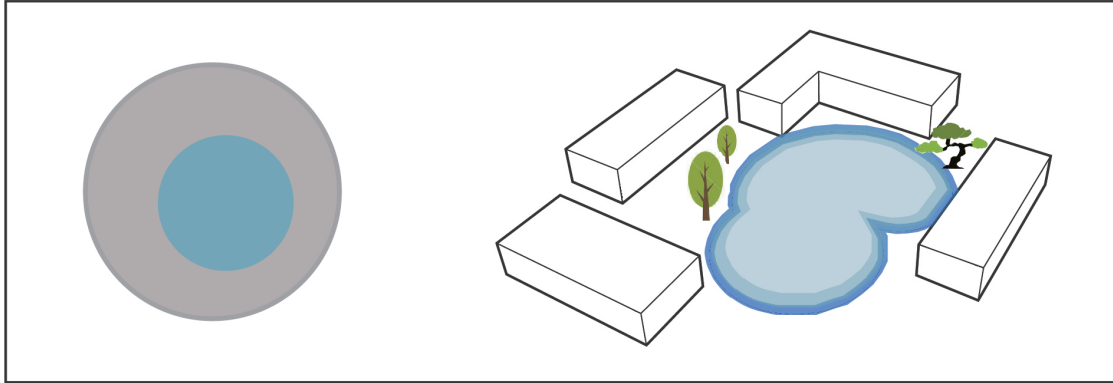


FIG. 4.2 SUZHOU MUSEUM
SOURCE: WWW.ARCHDAILY.CN

The design style of the Suzhou Museum emphasizes 中而新 (*new*), 苏而新 (*new*). 中 means the Chinese traditional aesthetic concept of architecture, and 苏 refers to the integration of Suzhou's humanistic connotations and geological features. New means new materials. The glass roof will mirror the stone roof, allowing natural light to enter the event area and the museum.

SPATIAL ORGANIZATION

The main view is usually arranged with the pool as the center, and the secondary buildings are organized around it.



The Suzhou Museum is divided into two parts: indoor and outdoor. Compared to the general architectural space, its special characteristics lie in the space for communication and art. The museum as a whole is arranged and unfolded as a geometric figure, with equal angles on all sides and shapes. Visitors gradually expand their view from the corner of the entrance, spreading their thoughts from low to high, for example, through a narrow corridor, which is an open exhibition hall connecting two side halls, switching back and forth between spatial shapes and perspective changes, breaking the inherent sense of a single hierarchy and adding a rich and full artistic experience.

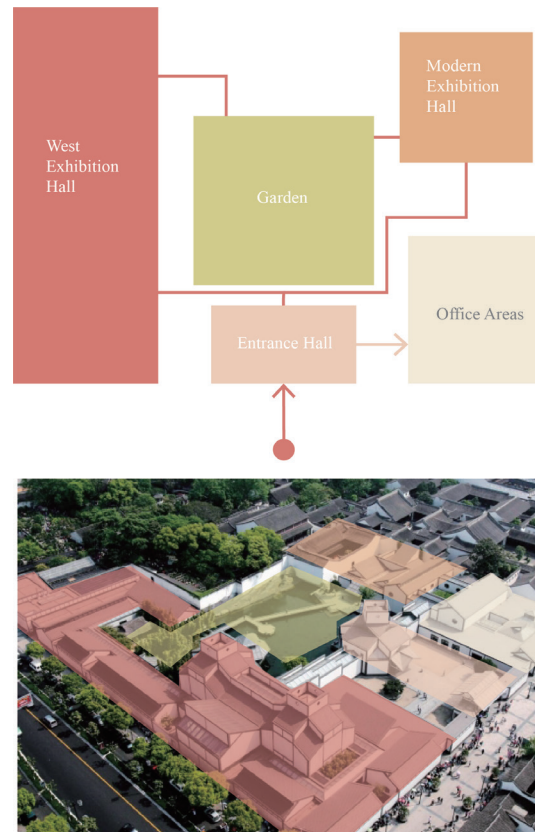


FIG. 4.3 SPATIAL ORGANIZATION
SOURCE: THE AUTHOR

GENIUS LOCI



FIG. 4.4 THE "WALLS"
SOURCE: WWW.SZMUSEUM.COM

When people visit the Suzhou Museum, they are often captivated by the stylized beauty that shines through a window, a tree, or a ray of light, as elements of the traditional Suzhou gardens are given a perfect modern interpretation. *I wanted to find inspiration for the garden design in ancient Chinese landscape painting and calligraphy, and work with local Suzhou artisans to create a new, innovative Suzhou garden.* The Suzhou Museum, more than just a public building, is a place that incorporates personal emotion and humanism. When people are here, they see the exhibits and the scenery, and inadvertently feel as if they have traveled back more than a thousand years, conversing with history and being present in it.

ENVIRONMENTAL PSYCHOLOGY



FIG. 4.5 SUZHOU MUSEUM
SOURCE: WWW.ARCHDAILY.CN

Visually, most of the ancient buildings in Suzhou have sloping roofs. In order to maintain better consistency with the surrounding buildings, Mr. I.M. Pei created the design of Suzhou Museum by keeping the sloping elements of Suzhou's ancient buildings. He also added modern architectural lines to make the whole building look more simple and generous, with a full sense of three-dimensional space. Color is an important factor in visual impact, and Suzhou's regional color palette of green and white is a reflection of the Chinese people's cosmic view of nature. Black, white and gray have been the cultural colors of Suzhou for thousands of years, and the Suzhou Museum follows the architectural colors of traditional Suzhou houses in its color design. The main color of the new museum's pink walls and tiles organically integrates the building with the traditional urban texture of Suzhou.

4.1 ABOUT THE GARDEN

4.1.2 MIHO MUSEUM



FIG. 4.6 MIHO MUSEUM
SOURCE: WWW.MIHO.JP

BACKGROUND

Architecture Design: I.M. Pei
Location: Shiga Prefecture,
Kyoto, Japan
Program: Museum

Ms. Mihoko Koyama, a leader of the Shinji Hidemichi Church, sought the "world's best architect" to build a bell tower at the sacred site of Kanda Meiyuan, and she found *I.M. Pei*, who had recently retired. Even in the face of the complex gap between history and religious beliefs, *I.M. Pei* quickly found a solution for this project with his wisdom. The building as a whole has three floors and a practical area of 9,241 square meters. In order to protect the natural environment, 80% of the building is hidden underground, blending in with the surrounding scenery.

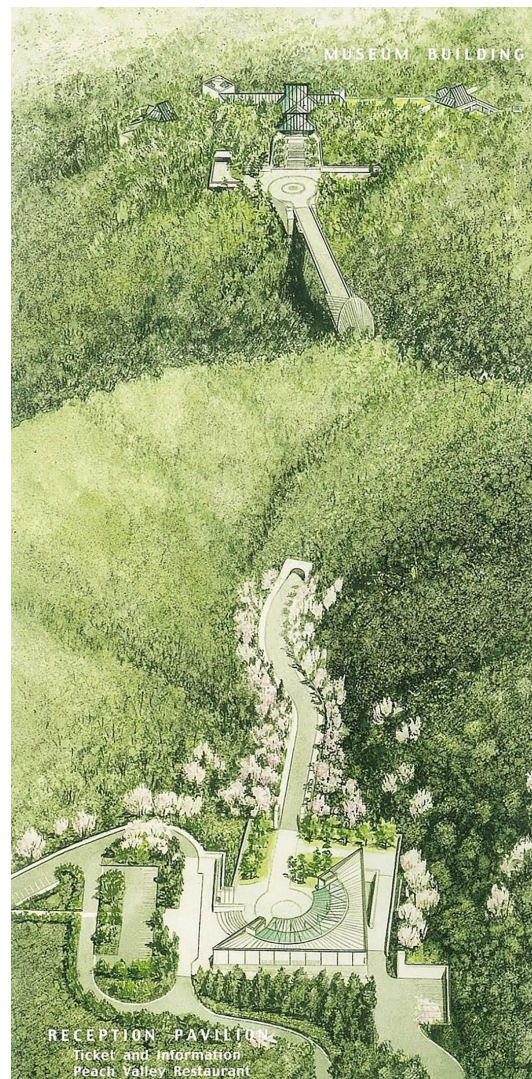


FIG. 4.7 MIHO MUSEUM
SOURCE: BLOG.SINA.COM.CN

DESIGN CONCEPT

*The Peach Blossom Spring*¹
From *Peach Blossom Spring Story*,
By *Tao Yuanming*. One scene
in this text depicts a fisherman
who, one day, as he rowed up a
mountain stream, he came upon an
orchard where peaches were in full
bloom. As he leaves the orchard,
he notices a light from a small cave
at the foot of the mountain. Once
inside, he finds himself in a narrow
path, and after going deeper, a
magnificent landscape is suddenly
before him. It depicts an ideal
social scene, a place of isolation,
elegance and tranquility, and a
place to which the Chinese heart
aspires, and the best place to live.
The Miho Museum applies the
concept of *The Peach Blossom
Spring*, where the visitor climbs a
gently sloping path lined with trees,
passes through a tunnel and crosses
a bridge before discovering the
Miho Museum. At that moment, the
museum suddenly appears in front
of your eyes, just like a fisherman
discovering the ideal home
where peach blossoms bloom.



FIG. 4.8 PAINTING OF THE PEACH BLOSSOM
SPRING
SOURCE: ITEM-PAIMAI.TAOBAO.COM

1. Tao Yuanming. (1979). 陶渊明集 . Zhonghua Book Company.

SPATIAL ORGANIZATION

The North Museum is composed of the North Hall and the South Hall. The North Hall focuses on Japanese art, and sometimes holds projects and special exhibitions. In the North Hall, there is an atrium with a courtyard in the middle, which was designed by a Japanese landscape architect. The inner courtyard, enclosed by a glass corridor, blurs the boundaries between inside and outside. The South Hall is dedicated to the world's ancient art. The entire space is organized by applying a classical Chinese garden-style layout, which perfectly integrates the museum and nature, and at the same time, depicts a modern version of the ideal home.

Comparison of artificial space and natural space

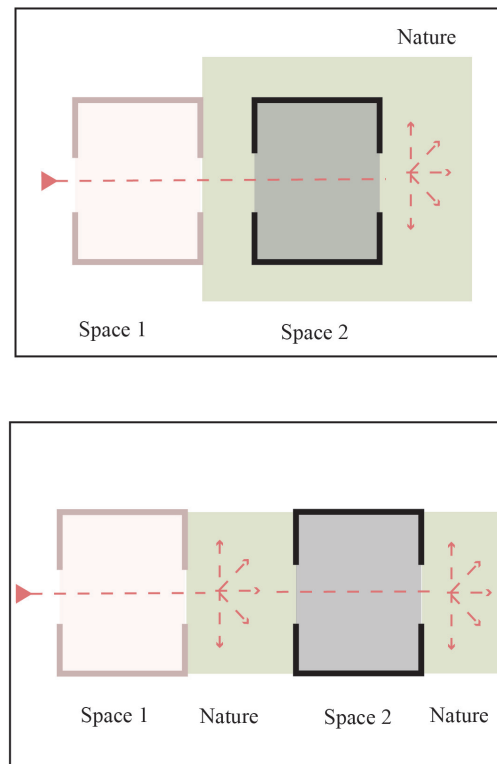


FIG. 4.9 SPATIAL ORGANIZATION
SOURCE: THE AUTHOR

Spatial sequence at the entrance
 Design concept : *The Peach Blossom Spring*

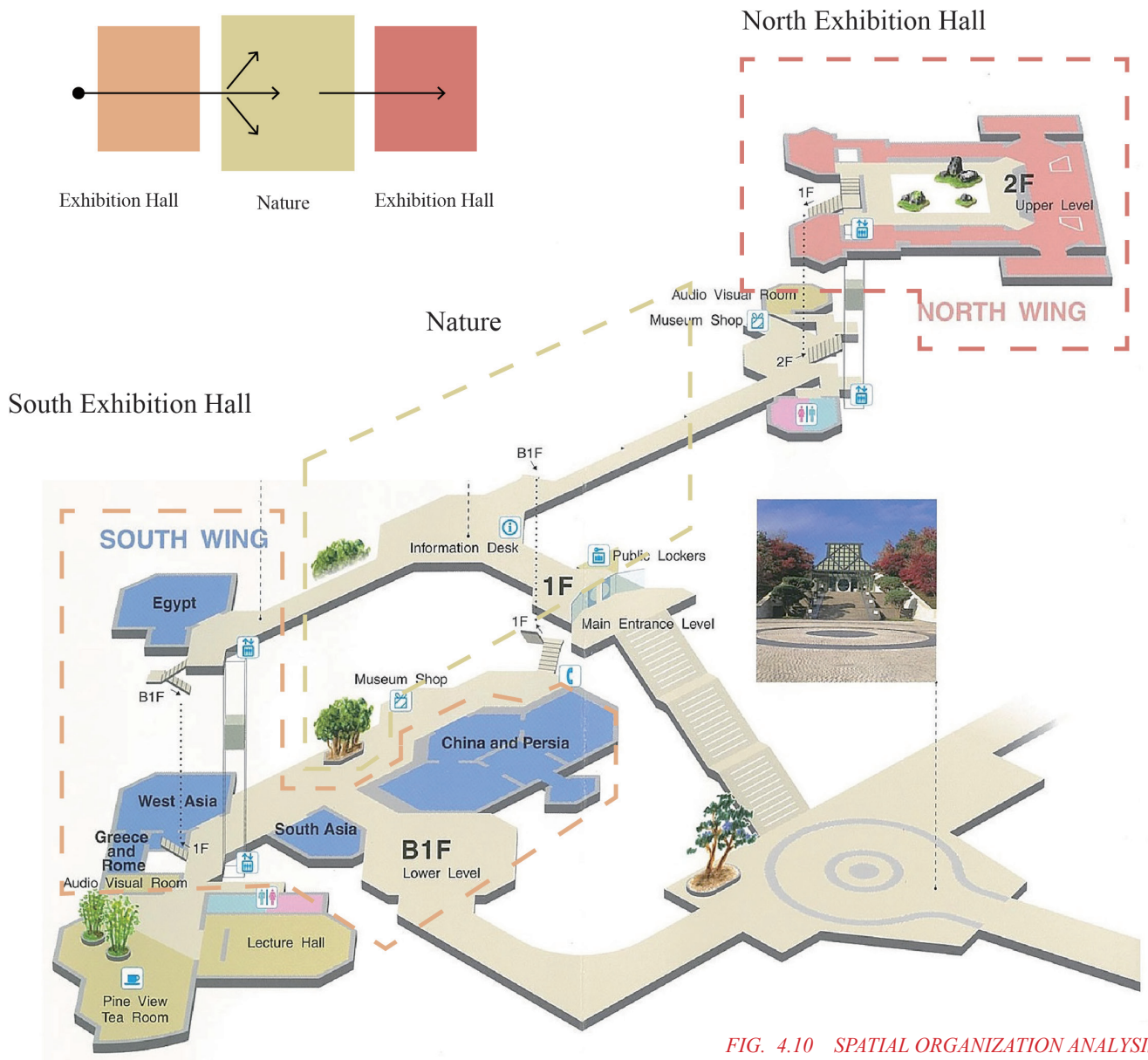
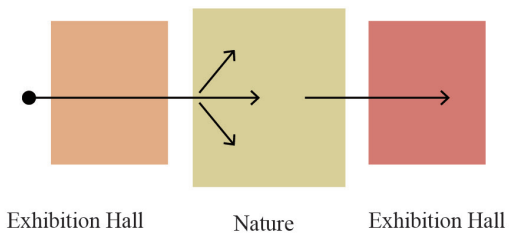
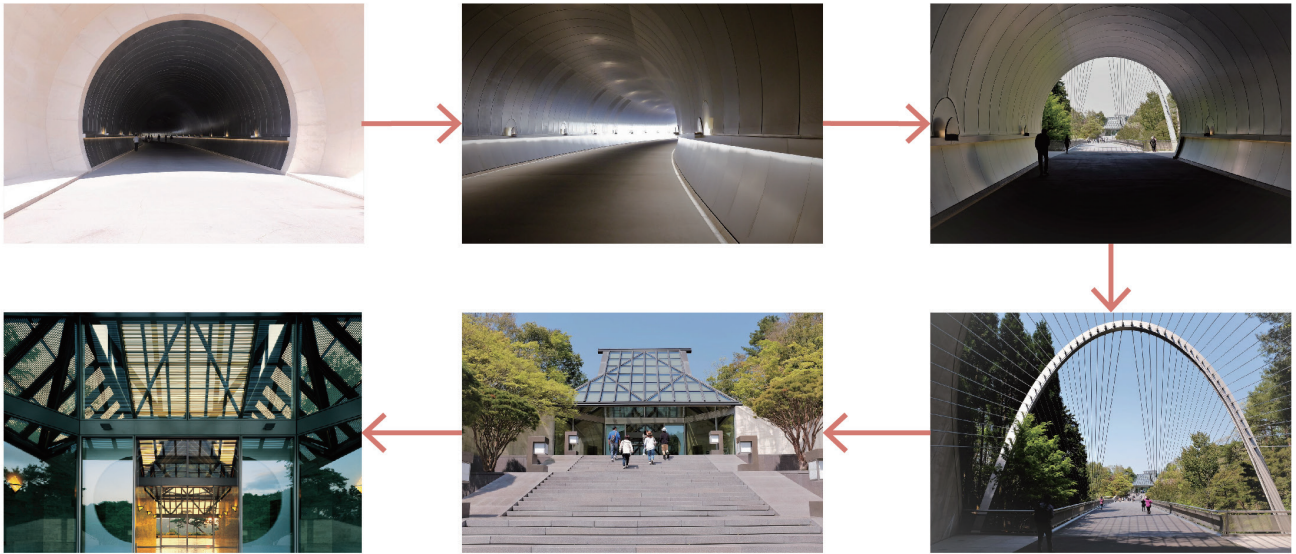


FIG. 4.10 SPATIAL ORGANIZATION ANALYSIS
 SOURCE: WWW.ARCHDAILY.CN

GENIUS LOCI

It is touching that in the design of the museum, *I.M. Pei* boldly chose *The Peach Blossom Spring* as the concept, conquering the owner, *Hideko Mi*, who had the faith of an ideal country and was fascinated by Chinese classical literature, and even threw away the mystery and sense of restraint in designing the church bell tower in realizing this building, and used an extremely neat and powerful modern architectural language to walk along the stream, taking nine years to build the flawless one that is completely detached from the Eastern sentiment *The Peach Blossom Spring*.

When step out of the tunnel through the mountain and look back, will see that the cave entrance is built on a suspension bridge. Natural beauty and industrial beauty stand side by side here gives the classical literature a more authentic intensity. It was not only theaesthetic imagination of the poet but also the rationality and creativity of a talented architect that created aparadise in this world.

ENVIRONMENTAL PSYCHOLOGY



FIG. 4.11 MIHO MUSEUM
SOURCE: WWW.ARCHDAILY.CN

Walking inside, the entire space opens up as if it were one with the mountains in the distance. What is unforgettable at the Miho Museum is the symphony of light and shadow, where *I.M. Pei* applies materials and structures to create a richness of light inside the museum. There is the "light" of an enlightened mood; there is the "light" of the holy spirit of worship; there is the "light" of the quietness of being in nature. Everyone who walks into the museum will feel as if they have suddenly found a peach blossom garden.

4.2 ABOUT THE CIRCULATION

4.2.1 EXPERIMENTA - DAS SCIENCE CENTER



FIG. 4.12 EXPERIMENTA - DAS SCIENCE CENTER
SOURCE: WWW.ARCHCOLLEGE.COM

BACKGROUND

Architecture Design: Andrew Kiel,
Peter Apel

Location: Heilbronn, Germany

Program: Science Center

The experimental building, completed and opened in 2019, was formerly a historic old warehouse. The design plan is to significantly update it, presenting a five-story building with a predominantly glass and steel structure. The five staggered and stacked square boxes are also the five exhibition halls of the building, which have an exhibition area of 25,000 square meters and an observatory on its roof.

DESIGN CONCEPT

Exhibition buildings with more floors often face the problems that the top part is not attractive enough for visitors and the space lacks spatial vitality, and visitors will rarely continue to go up to visit. The traffic flow of traditional public buildings will basically form a closed flow layout on each floor, that is, after a round of shopping will return to the origin and then find the elevator stairs to go up again. However, the closed flow layout of the multi-storey exhibition building reveals a fatal problem: the connection between the various levels is too weak, easily creating a sense of fragmentation and not leading visitors to explore upwards. Sauerbruch Hutton chose to use a spiral flow design, transforming the flow into space.

CIRCULATION DESIGN

The architects stacked the exhibition space in a spiral wrap-around fashion, with layers stacked upwards. The building blocks on each level are based on a pentagon, keeping one side immobile around the atrium space and directly twisting the other four sides to insert escalators in the gap space formed.

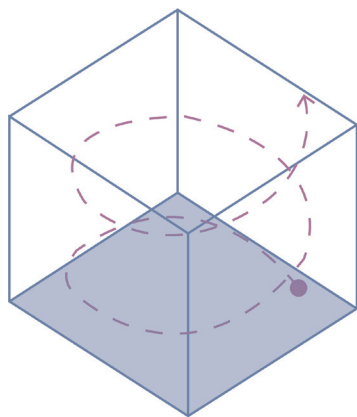


FIG. 4.13 SPIRALS
SOURCE: THE AUTHOR

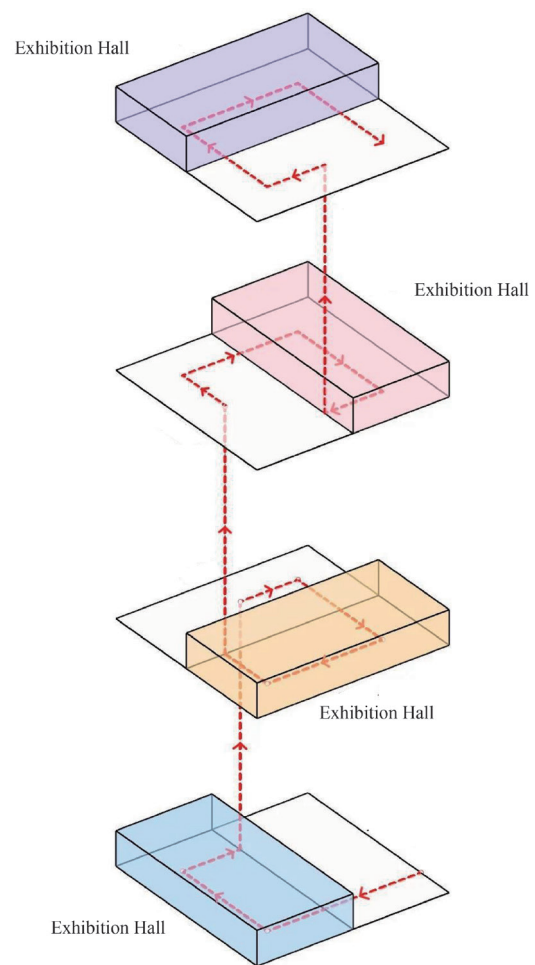


FIG. 4.14 CIRCULATION
SOURCE: NON-STANDARD ARCHITECTURE
STUDIO

SPATIAL ORGANIZATION

For public buildings with spirally ascending circulation, the ideal choice when shaping the space is to widen the circulation into a large ramp, hiding the traffic space in the functional space and ascending to the top without realizing it.

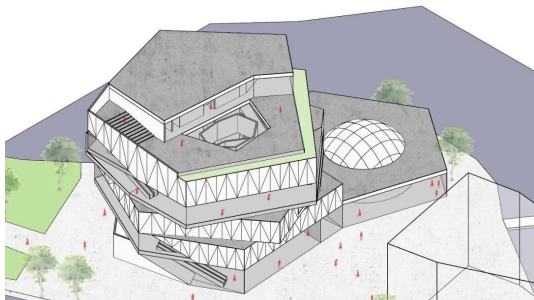


FIG. 4.15 DAS SCIENCE CENTER
SOURCE: NON-STANDARD ARCHITECTURE STUDIO

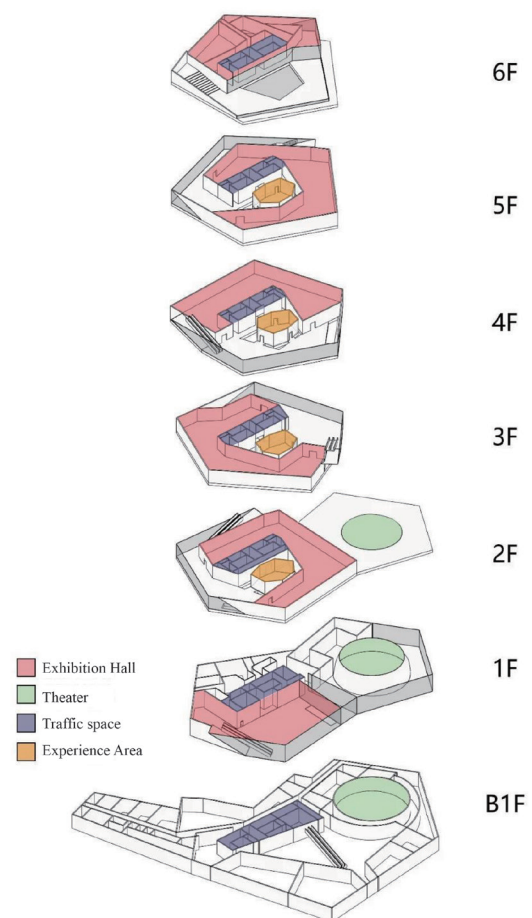


FIG. 4.16 SPACE ORGANIZATION
SOURCE: NON-STANDARD ARCHITECTURE STUDIO

GENIUS LOCI

Visitors follow the spiral space all the way to the building's roof terrace, thus enjoying a panoramic view of the river valley. An astronomical observatory and experimental theater space are set up on the roof, while the basement environment provides an ideal space for a 360-degree scientific dome cinema. This science and technology museum building is like a toolbox of science and technology. And the building space is created to further strengthen the educational significance of this toolbox. The building not only provides a distant view of the landscape, but also brings the visitor's eyes inside the space, allowing them to observe information on a microscopic scale.

ENVIRONMENTAL PSYCHOLOGY

Most visitors have a completion mentality or some OCD. They are always reluctant to turn back halfway. Generally, the traffic flow of public buildings will adopt a closed flow layout on each floor. The closed flow of each floor is a reminder of the end when returning to the origin, and visitors will naturally understand that they have completed the visit and tour. But for multi-story buildings, this closed flow makes the connection between each floor weaker, meaning that the higher the floor, the less dynamic and attractive the building becomes. The spiral flow of traffic in this laboratory building is like people climbing a mountain, attracting visitors upward to reach the top and the end.

4.2 ABOUT THE CIRCULATION

4.2.2 SOLOMON R. GUGGENHEIM MUSEUM



FIG. 4.17 SOLOMON R. GUGGENHEIM MUSEUM
SOURCE: ART.CITY.LY

BACKGROUND

Architecture Design: Frank Lloyd Wright

Location: Manhattan, New York City, USA

Program: Museum

This particular building, an important work of *Wright's* later period, was completed in 1959 and is a beautiful work of art in its own right with a unique design that attracts many visitors. The interior of the museum is divided into two parts: the larger one is the exhibition hall, with six floors, and the smaller one is the administrative office part, with four floors. The museum's exhibition hall is an inverted spiral space, surrounded not by stairs but by a slowly sloping floor, with exhibits hanging along the walls of the ramp so that visitors can enjoy them as they walk. Among the museum's exhibits are works by world masters *Picasso*, *Van Gogh*, *Cézanne* and *Monet*.

DESIGN CONCEPT

The exterior of the Guggenheim Museum is a white reinforced concrete column that spirals upward in layers. The striking curves of the museum's exterior take on an even more surprising effect on the inside. For the interior of the building, *Wright* proposed *a vast space on a continuous ramp*, a concept that he ultimately embodied perfectly in the museum.

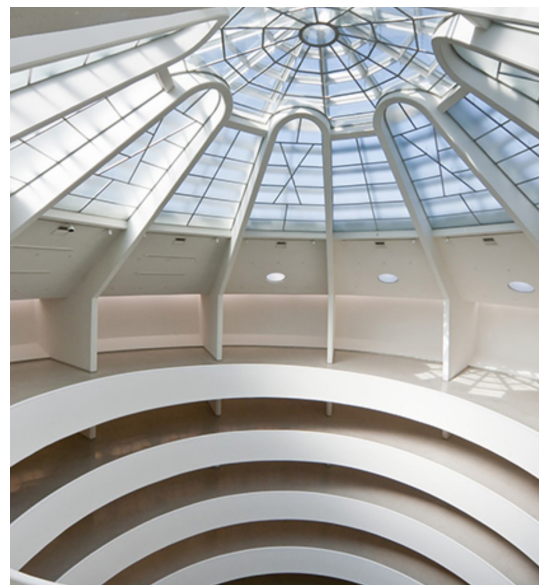


FIG. 4.18 RAMP
SOURCE: SOCIAL.MASSIMODUTTI.COM

CIRCULATION DESIGN

Wright abandoned the traditional room-like layout of museum buildings, believing that the visitor experience should not be based on a back-and-forth circulation of walking in and out. So in the museum, visitors take an elevator to the uppermost floor and then descend a 430-meter long ramp. The museum's displays are hung along the walls of the ramp, and the audience can walk and admire them without realizing that they have walked through the six-story ramp and seen the exhibits, which is obviously much more interesting and relaxing than a conventional exhibition room.

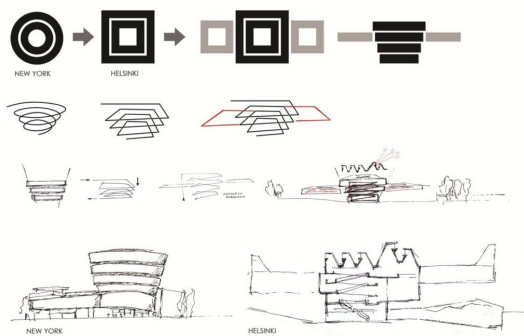


FIG. 4.19 CIRCULATION OF MUSEUM
SOURCE: WWW.LAB24PROJECTS.COM

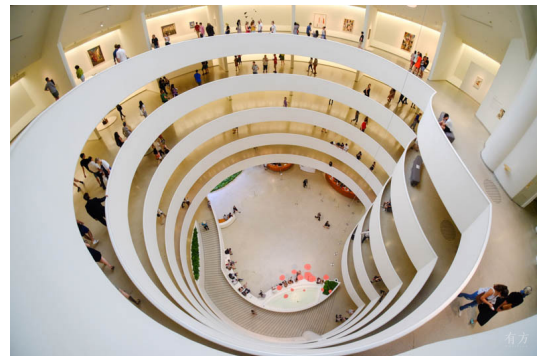


FIG. 4.20 THE GUGGENHEIM MUSEUM
SOURCE: WWW.ARCHIPOSITION.COM

SPATIAL ORGANIZATION

The spiral visitor ramp determines the shape of the exhibition space, starting from the ground and going up, the exhibition space slowly unfolds.

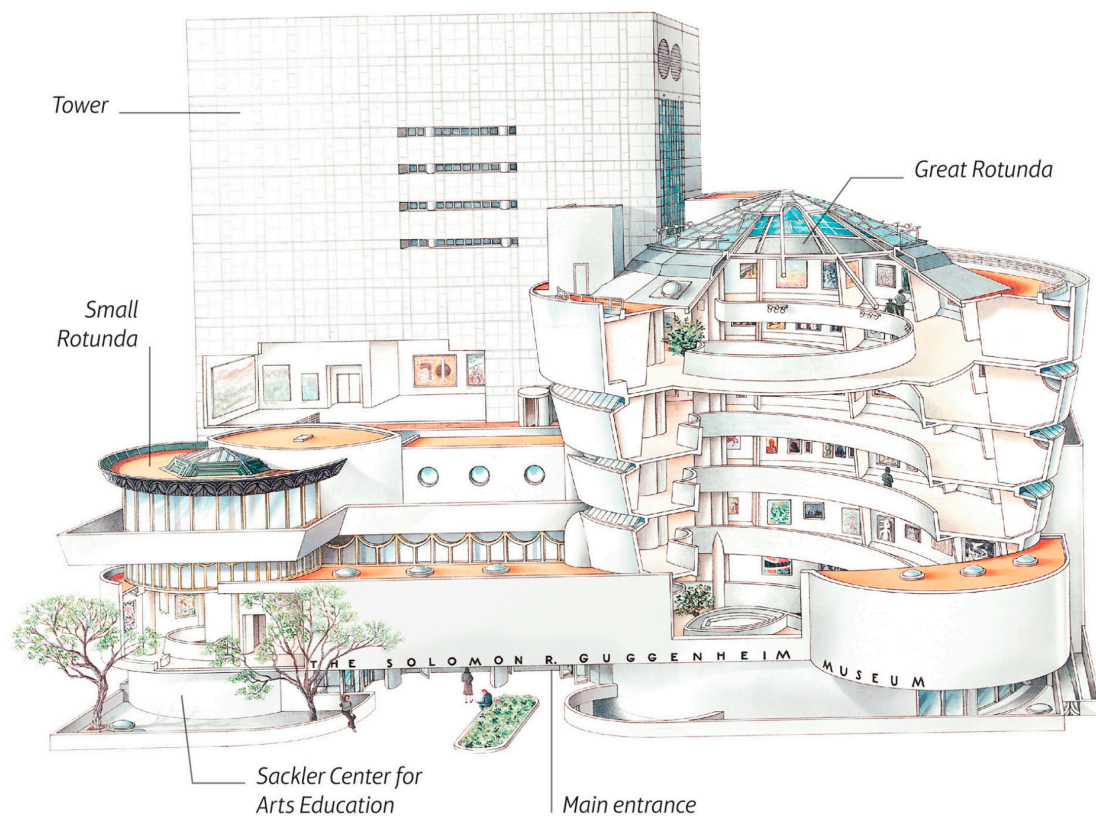


FIG. 4.21 THE GUGGENHEIM MUSEUM
SOURCE: EN.WIKIARQUITECTURA.COM

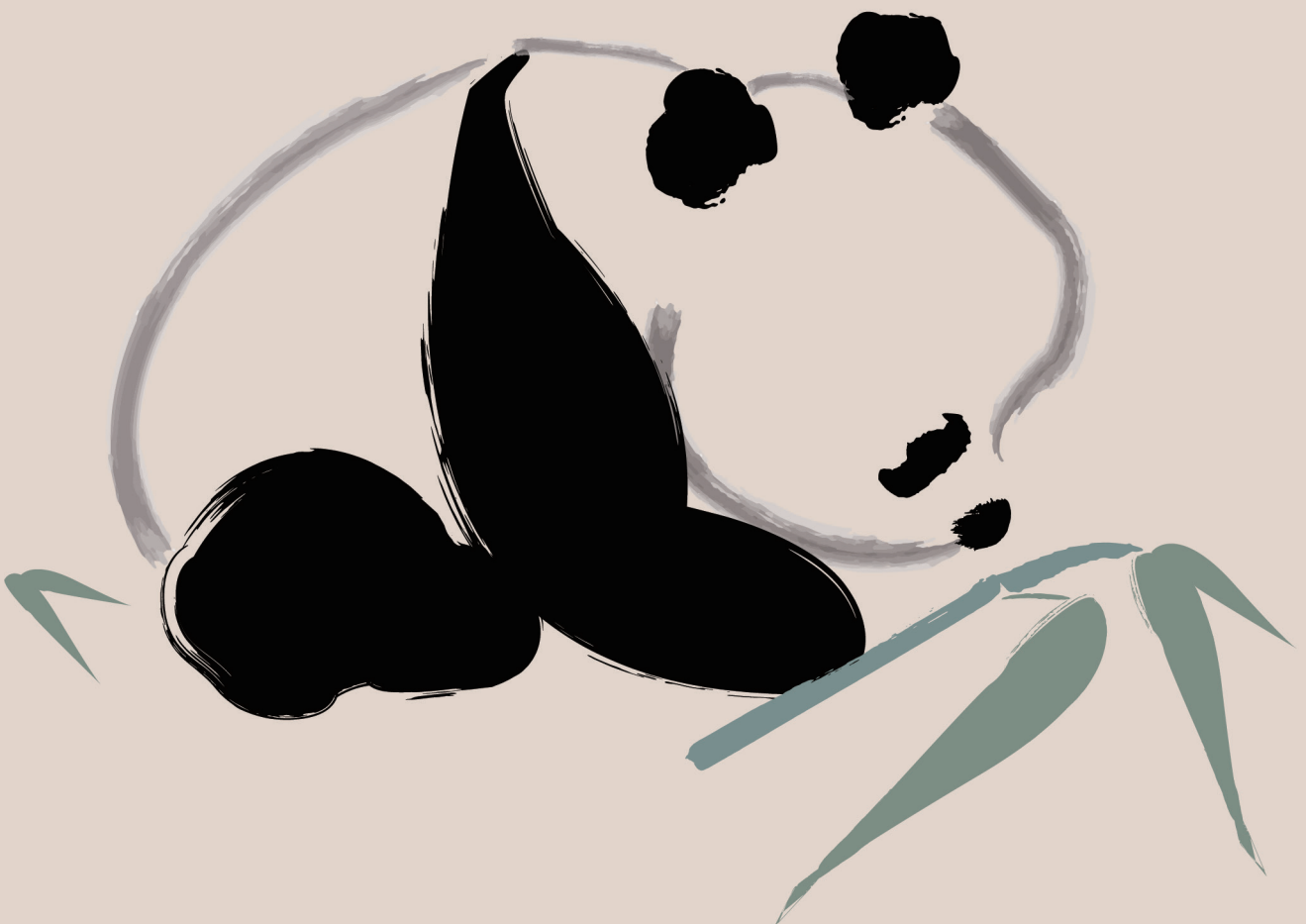
GENIUS LOCI

Wright believed that architecture should respond closely to the *land* in which it is located. The Guggenheim Museum is located in a bustling city and cannot stretch out in all directions like a *Prairie Style houses*. The spiral shape of the exterior and the interior's shrinking atrium draws the eye upward to the sky. The exhibition space is free and open, with no pauses in the touring process.¹ The entire building creates a free and tranquil art temple, where the visitor only needs to appreciate the artworks with inner peace, without being disturbed by the outside world, and with full concentration.

ENVIRONMENTAL PSYCHOLOGY

Visitors entering the museum first take the elevator to the top floor and then descend the ramp in a clockwise circle. The exhibits are integrated into the visitor's path, with the three-dimensional exhibits in the right atrium changing angles in the visitor's field of vision, while the artworks on the left wall are presented in sequence as the visitor moves along. *Wright* applies the principle of the classical Chinese gardens to attract visitors to keep moving forward to see different views.

1. Liu Jie, & Li Zhimin. (2018, August). *Guggenheim Museum, New York - Rereading the Modernist Architect Wright*.



SOURCE: THE AUTHOR

CHAPTER 5
DESIGN METHODOLOGY

5.1 DESIGN THINKING ABOUT CIRCULATION

5.1.1 BASIC TYPE

In traditional museum design, the flow line belongs to the internal traffic and is the hub of the connection of each space. Different functional relationships produce different circulation organization, and the joint action of circulation and space forms a diverse architectural form. In other words, according to different users, different traffic spaces are divided and organized in an orderly manner, so that the whole museum internal work as a large machine, the work can be carried out in an orderly manner. According to the research, the organization of exhibition space structure of traditional museum buildings can be roughly divided into four basic types: tandem, radial, hall and hybrid.

The relationship of basic types of circulation and exhibition space:

The layout of the exhibition space determines the organization of the circulation.

The circulation is the traffic of the connection between spaces.

The order of the exhibition space determines the starting and ending points of the circulation.

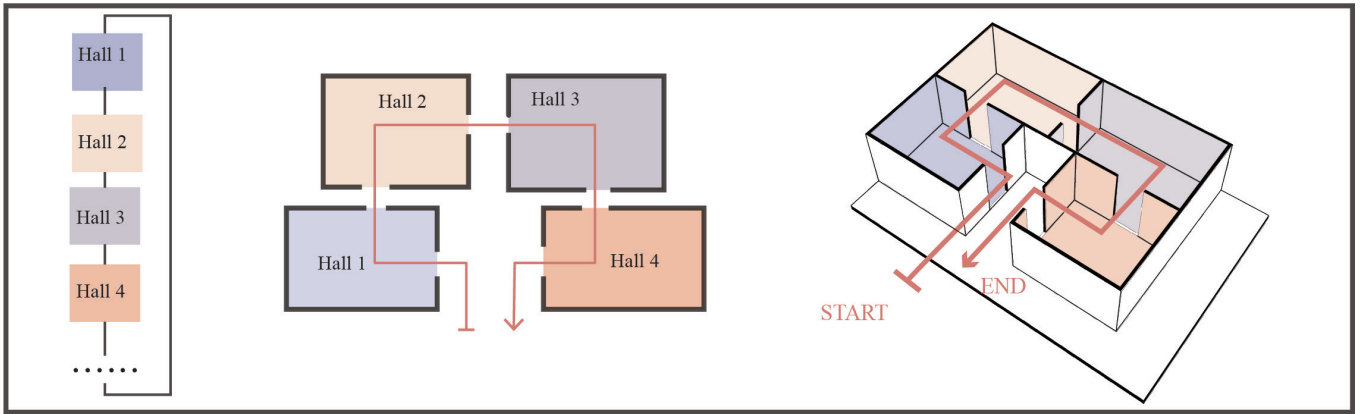
Result in:

Human participation is reduced.

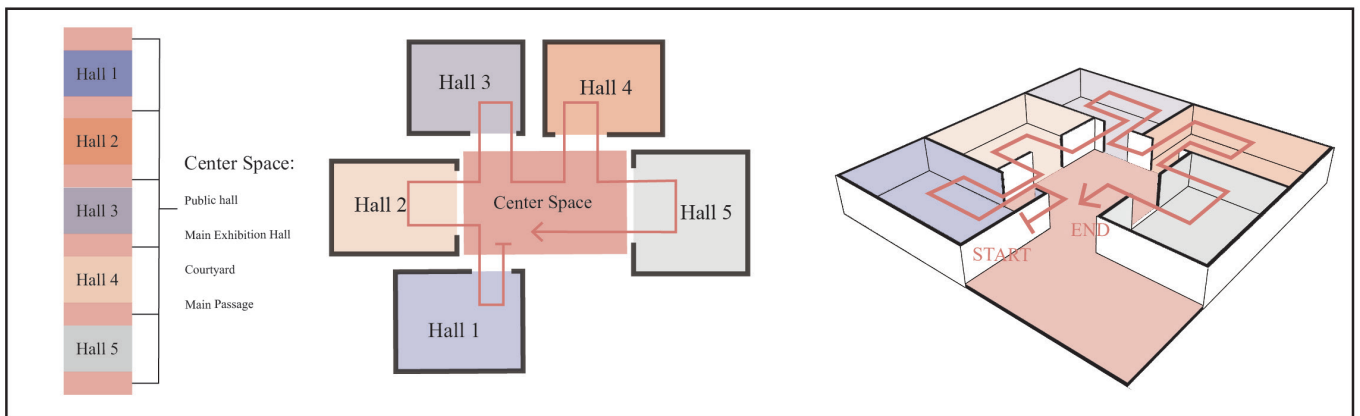
Exhibition space content is easily limited in terms of exhibiting effect.

People are easily lost.

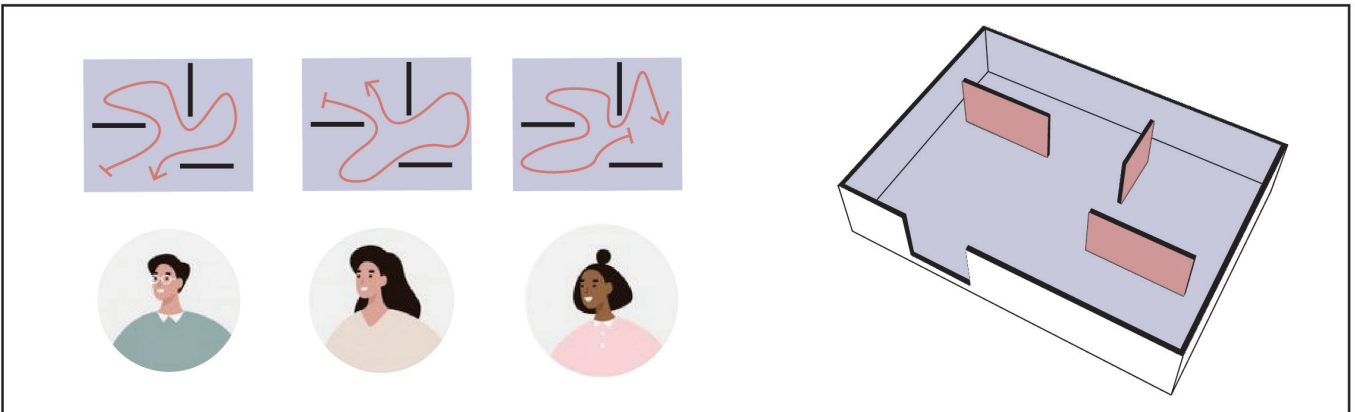
Tandem: Multiple exhibition halls need to be placed together, and in principle the spaces are connected to each other, and visitors walk from one space to the next, creating circulation which is based on the relationship between the spaces.



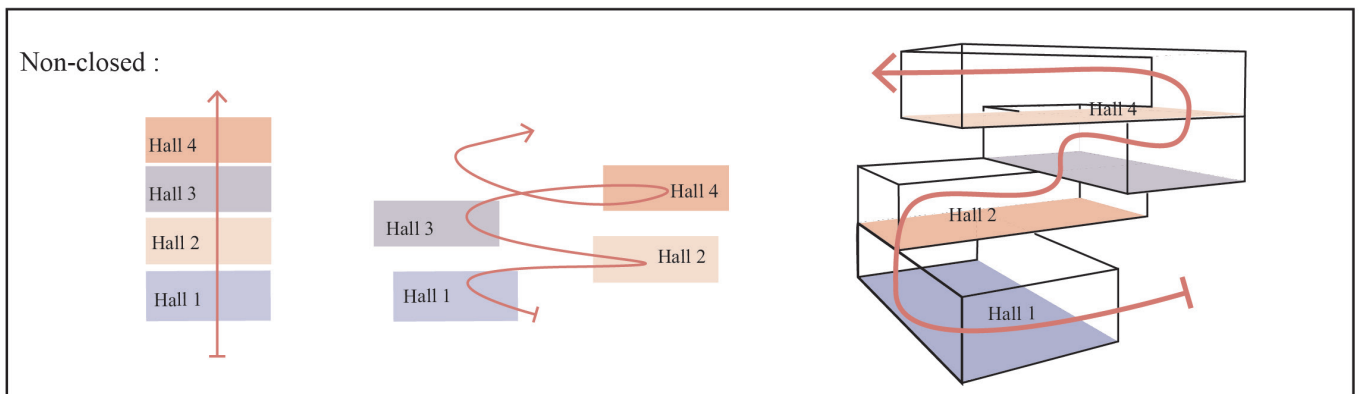
Radial: Multiple galleries are arranged around a central space, moving from one gallery to the central space before moving on to the next.



Hall: The exhibition hall space is not divided into separate rooms by solid walls, and temporary exhibition walls are added according to the content of the exhibition. Different people visit and walk inside, producing different circulation.

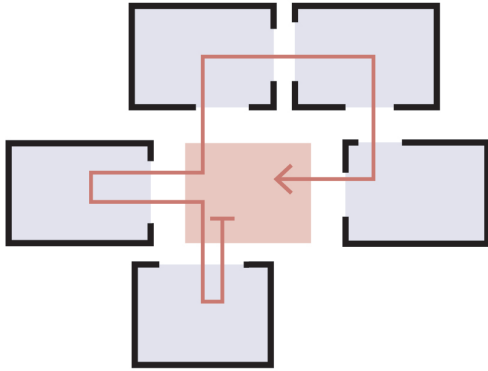


Spiral: There is a height difference between the exhibition hall spaces, which are not on the same level. Visitors visit from low (high) to high (low), forming a non-closed circulation.

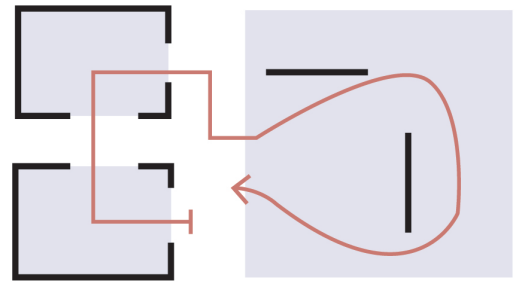


Hybrid

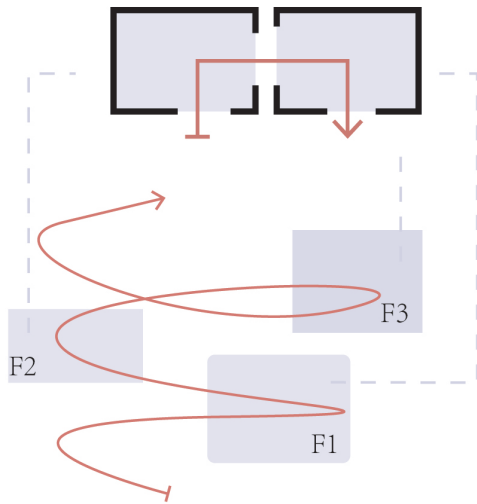
Tandem + Radial



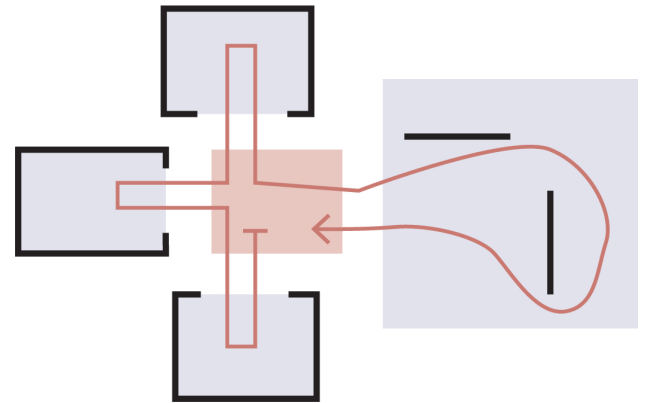
Tandem + Hall



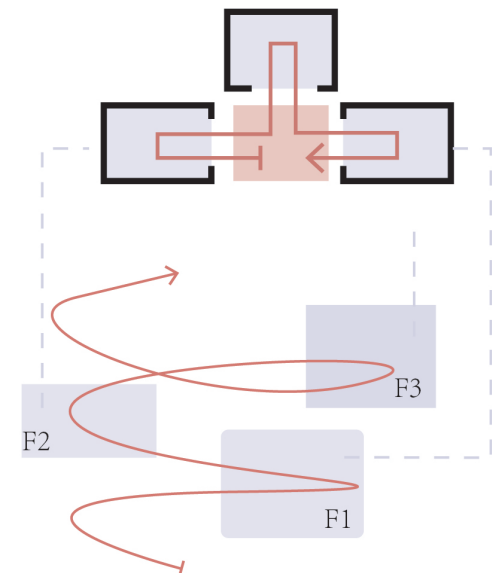
Tandem + Spiral



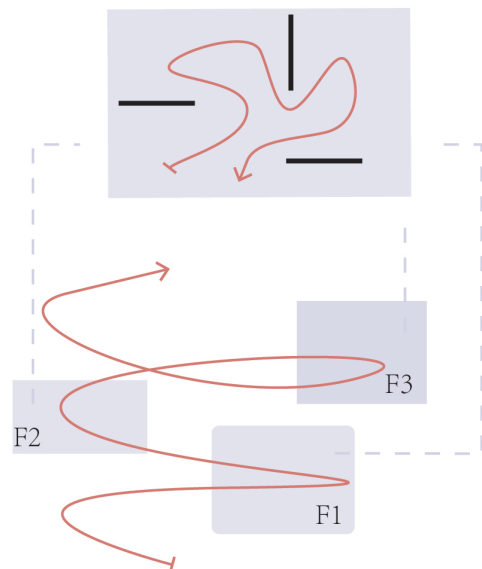
Radial + Hall



Radial + Spiral



Hall + Spiral



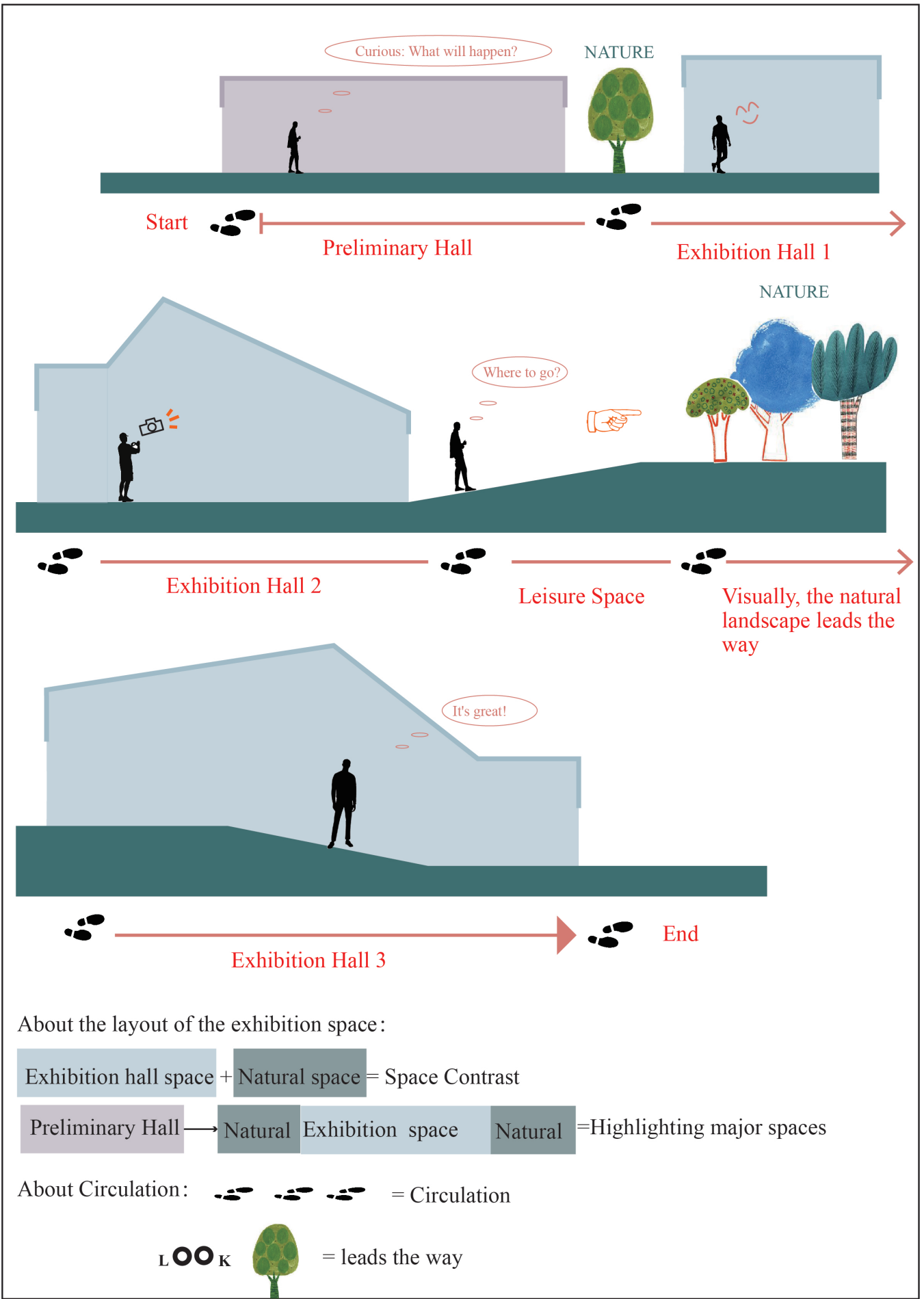
5.1 DESIGN THINKING ABOUT CIRCULATION

5.2.2 NEW TYPE

Within the museum space, the circulation is an important guidance system. *Each person in the public space is himself or herself present and involved in an appropriate way, and this sense of participation is very clear.*¹ In traditional museum design, which usually focuses more on the organization of interior spaces, circulation only serve to connect individual exhibition spaces, with a lower sense of human involvement. The basic type of circulation, while guiding visitors through the interior of the exhibition, tends to make people get lost and makes the order of the visit easily confusing. In order to solve the existing problems, better thinking and planning of the circulation is needed to ensure the rational layout of each function, which can connect the space and also allow people to participate.

In large part, the structure of the exhibition space, the circulation system and other influencing factors need to be explored, and a new circulation system is explored through case studies and the study of the structure of classical Chinese gardens. The new circulation type is based on the basic circulation type, which makes the circulation more guided and directional, with narrative and rhythm, and avoids the crossover of the circulation of different functions. While improving the circulation system, it can ensure that the space of different functions in the museum is clearly divided, and the correlation between each exhibition hall space is not weakened. During the visit, people feel a kind of museum education and popularization of cultural atmosphere, and sprout a sense of identity, and emotional interaction between exhibits.

1. Jan Gehl. (2011). *life between buildings* (6th ed.). Island Press.



About the layout of the exhibition space:

Exhibition hall space + Natural space = Space Contrast

Preliminary Hall → Natural Exhibition space Natural = Highlighting major spaces

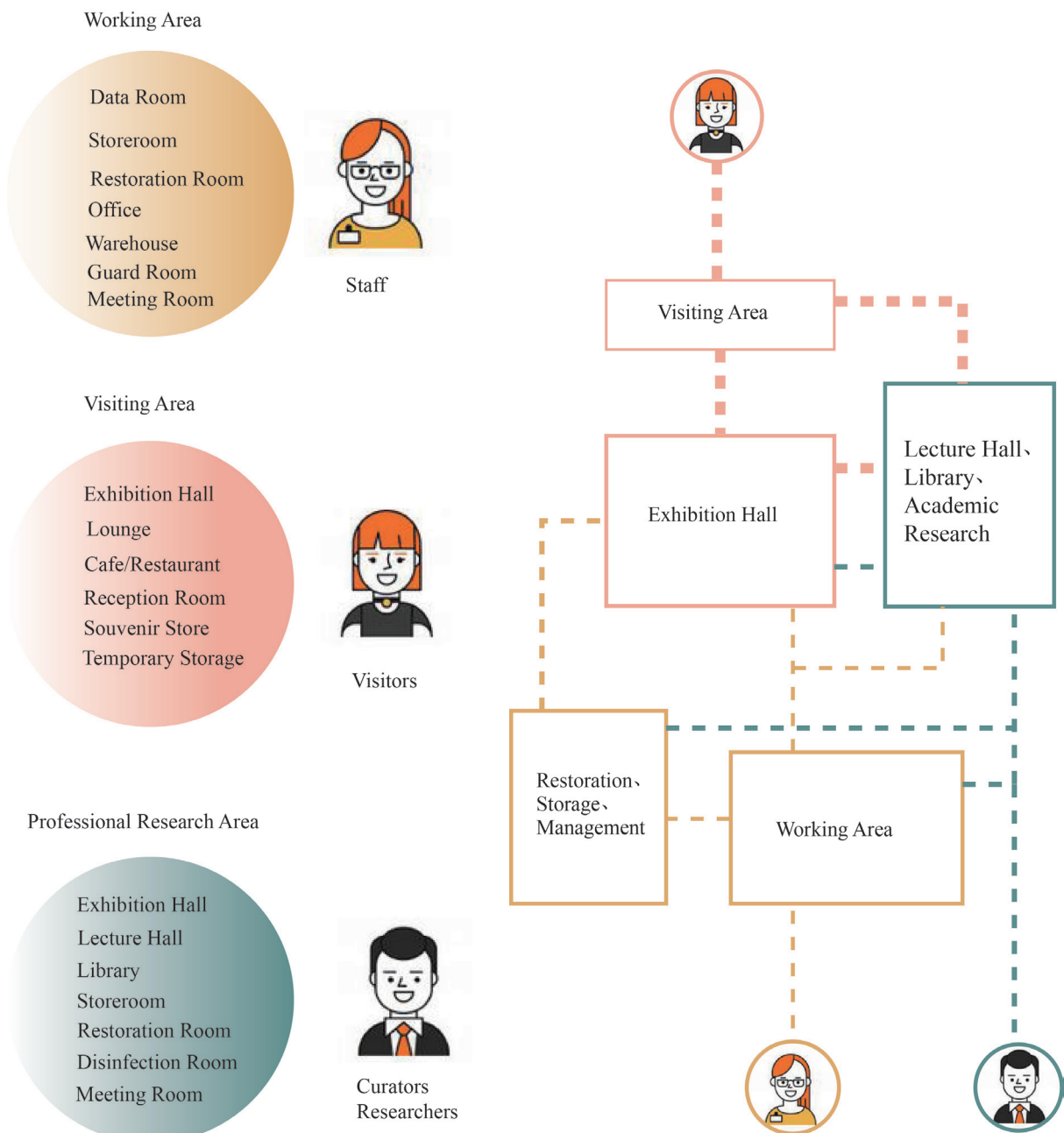
About Circulation: = Circulation

L K = leads the way

5.2 DESIGN PRINCIPLE

Clarify the division of functional areas

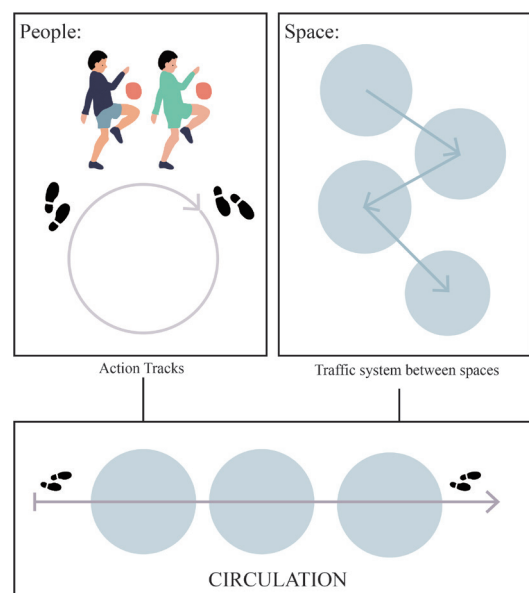
According to GIF 2.14



People / Space / Circulation

On the premise of meeting the requirements of each function inside the museum, the circulation design of the exhibition section needs to be carried out simultaneously with the spatial organization. Referring to the spatial structure of classical Chinese gardens, it is clear that the organization and layout of the garden space has a sense of order and rhythm, so the circulation, that is, the route of people walking in the interior will also be very smooth. This is because when creating a garden, the natural concept of *harmony between man and nature*, and the feeling of man in the garden is emphasized. Once people are involved, the organization of space and flow design can be coordinated at the same time.

Therefore, in the design of the museum, visitors become participants and are motivated to participate in the organization of the space. Thus, it can guide their participation behavior to rely on order to unfold, and also strengthen visitors' cognitive experience and clear perception of spatial imagery.



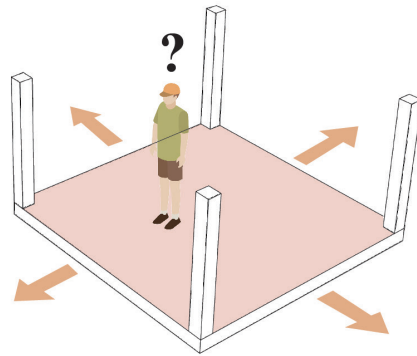
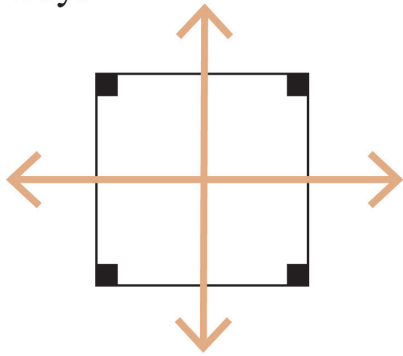
Guiding the way through vision

Reasonable organization of space and flow lines, and the inclusion of natural landscape and other factors to create a place for visitors to add interest and participation, while having a visual induction significance. People mainly through the eyes to perceive the external things, so the museum in the design of the circulation, in order to avoid the emergence of guidance direction is not clear and make visitors lost and other problems. Visually, it is possible to add objects with guiding direction to guide the circulation. This object should not be too deliberately arranged in the exhibition space, after all, the purpose of the exhibition is to display artworks and cultural relics.

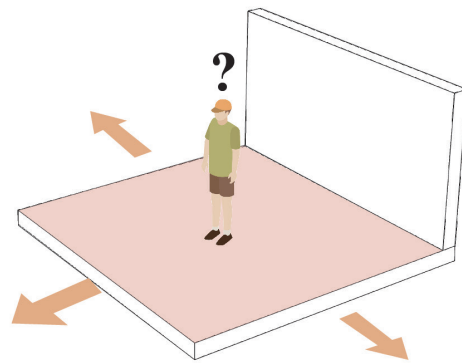
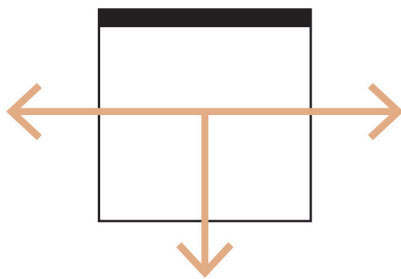
As is well known, the role of vision is mainly to observe and watch all things in the surrounding world, and the beautiful things in nature are reflected through human vision. Natural things, such as mountains, water and plants, not only reflect beauty visually, but also soothe people's mood. Therefore, through the natural landscape to guide the circulation of the museum exhibition space, it can clearly give the direction of walking with people in the space, gradually guide visitors toward the direction of the development of the story; it also present a continuous visual beauty of space, strengthen the structure of the exhibition space, highlight the main part and make the space with a sense of order and rhythm.

Limitation of space

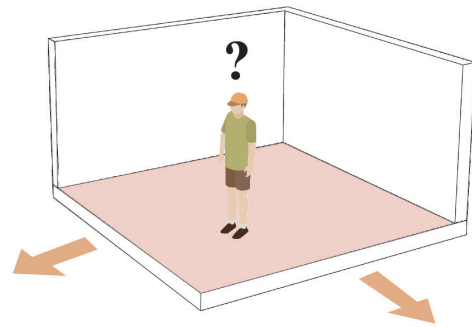
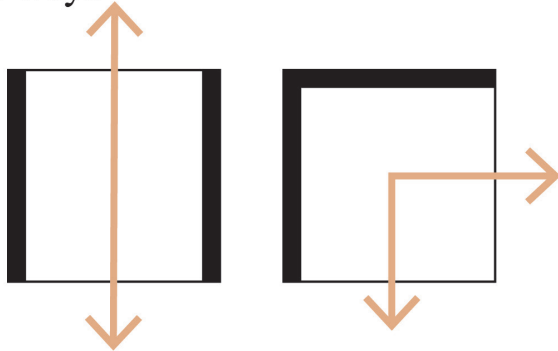
Four ways



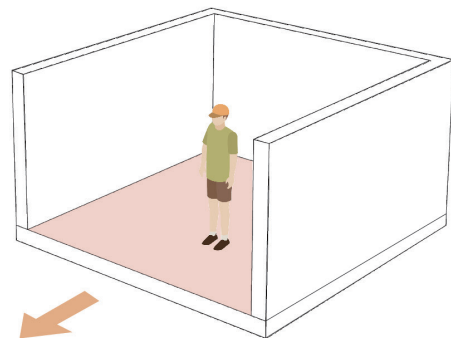
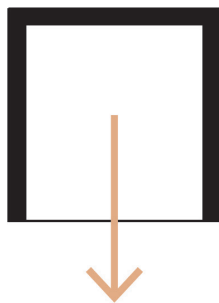
Three ways



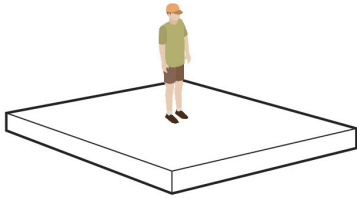
Two ways



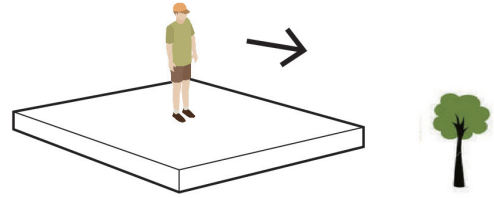
One way



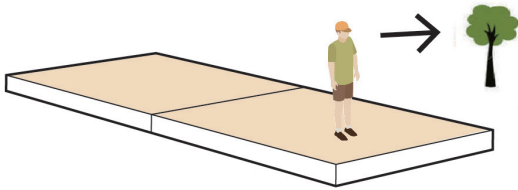
?



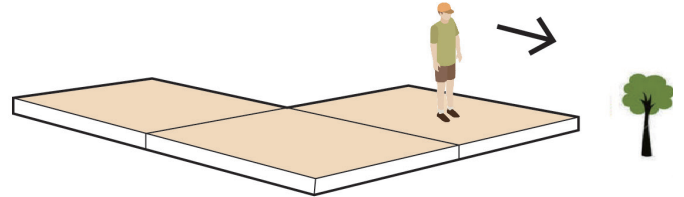
Four directions



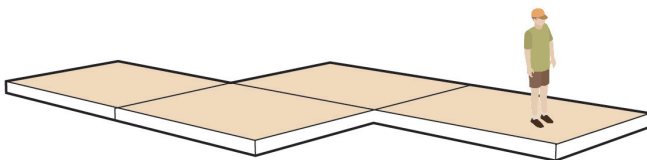
Landscape guides forward



The landscape is on the left



Walking to the direction of the landscape



Visually guide people's movement in space

Spatial level and environmental experience

According to Kevin Lynch, *a spatial sequence is felt and impressed through the experience of a longer period of time, because its image is not some separated points, but a set of lyrical melodies.*¹ Longer walks are always fatiguing and uninteresting. Therefore, people need some space to stay beyond visiting and perceiving the cultural atmosphere brought by the exhibits in the museum. These stopping spaces are interspersed in the exhibition space, forming a continuous sequence of spaces. The promotion of natural, landscape elements is essential if visitors are to have a more dynamic environmental experience within the museum space. These elements allow visitors to have greater mobility and direction within the space, providing an effect of a step-by-step experience.

Meanwhile, the interspersing of natural space not only does not affect the original spatial sequence, but also shapes the landscape atmosphere, which together with the exhibition space constitutes a flowing and continuous space, making the visiting process more interesting and, in a certain sense, eliminating the visitor's sense of fatigue.

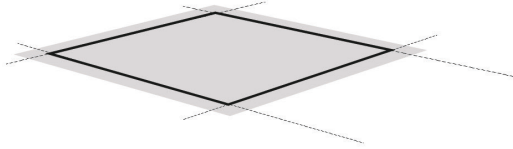
Exhibition space and Natural space

Primary space, secondary space

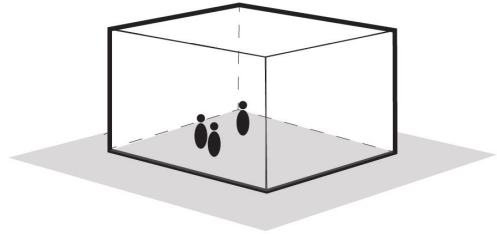
Comparison of spaces

1. Kevin Lynch. (1960). *The Image of the City*. The MIT Press.

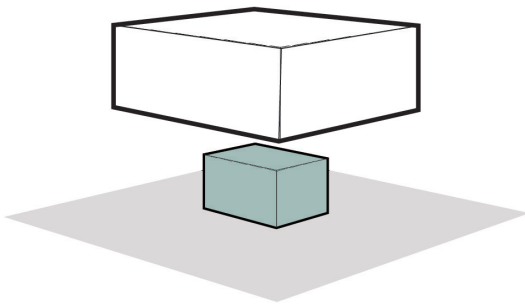
1. Insert



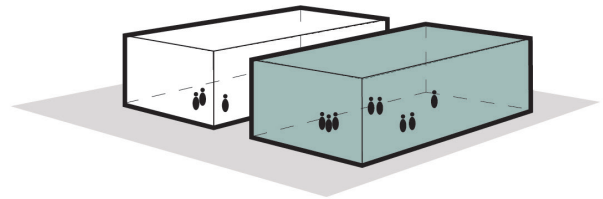
2. Exhibition Space



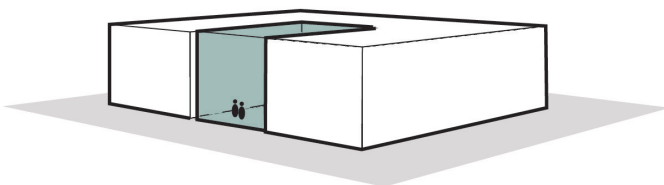
3. Add Natural Space



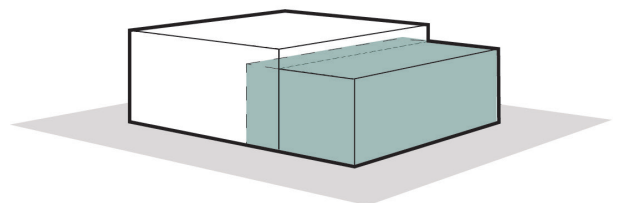
4. Separate



5. Set in



6. Relative independence



5.3 KNOWLEDGE AND EXPERIENCE

For the design of museums, in addition to studying the knowledge of architectural design, it is also necessary to combine the theories of psychology, environmental science, and museum art together to build a complete design idea. The purpose of this paper is to provide a new perspective on the design of circulation in future museums, and to refer to knowledge about environmental psychology, color psychology, and the analysis of examples of classical Chinese gardens in the design process.

Knowledge 1.0

Environmental Psychology¹

Human behavior in space is purposeful, and according to the study the types of behavior are classified as:

- Purposeful walking behavior;
- Selective walking behavior;
- Free walking behavior.

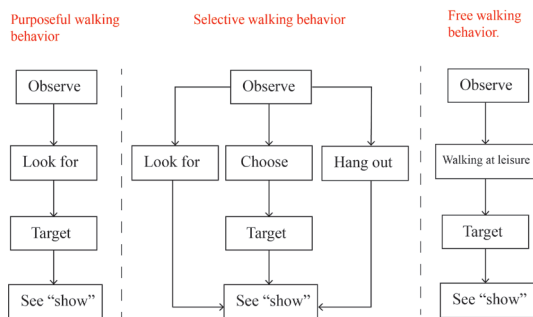


FIG. 5.1 HUMAN BEHAVIOR IN SPACE
SOURCE: THE AUTHOR

Knowledge 2.0

Color Psychology

People are engaged in art creation and art appreciation, in which the information received visually accounts for about 70% of all information, and color occupies a very important position in the visual arts.² Color psychology is a subjective reflection of the objective world. When different wavelengths of light act on human visual organs and produce color perception, it inevitably leads to some kind of psychological activity with emotion. Light and color will affect the way people see their surroundings. Different types of light sources affect internal or external objects by visually changing the color of their surfaces. For example, the specific hues observed in natural sunlight may vary, with lighter colors appearing more orange and darker colors appearing darker.³ By incorporating color psychology into the design of a museum, the design will be more focused on how people feel in the space, and the circulation will be more dynamic.

1. Lin Yulian. (2006). *环境心理学*. China Architecture & Building Press.

2. Duan Shu. (2006). *Color Psychology and Art Design*. Universitat del Sud-est. *Color Psychology and Art Design*.

3. Shevell SK, Kingdom FA. (2008). *Color in complex scenes*. *Annual Review of Psychology*.

	Black: serious, distinctive, elegant, bold, powerful, sophisticated, expensive, night, death		Brown: earthy, wholesome, delicious, rich, rustic, warm, natural
	Dark Grey: conservative, classic, responsible, dull, somberness, authority,		Dark Red: rich, refined, tasty, expensive, luxurious
	Light Grey: neutral, logical, rich, practical, reserved, trust		Red: aggressiveness, passionate, sexy, strength, powerful, assertive, vitality, fear, speed, danger
	Blue: authority, nautical, dignity, security, confident, classic, stability, trust		Hot Pink: exciting, playful, tropical, flirtatious
	Light Blue: calming, patient, cool, water, contentment, trusting		Light Pink: romantic, sweet tasting, femininity, innocence, softness, youthful
	Teal: serene, sophisticated, water, coolness		Purple: sophistication, mysterious, spirituality, dramatic, wealth, royalty, youth, creative
	Green: healthy, fertile, freshness, environmentally conscious, nature, reliable, appetite		Light Purple: romantic, sentimental, nostalgic, fragrant
	Light Green: calm, soothing, refreshing, young		Ivory/Cream: classic, soft, comforting, natural, smooth
	Yellow: youth, friendly, positive feelings, sunshine, surprise, cowardice, energetic, caution		White: purity, truthfulness, faith, pristine, contemporary, refined, airy
	Orange: fun, cheeriness, sunset, exuberance, spontaneous, optimistic, speed		Silver Metallic: sleek, modern, classy metallics can't be reproduced online
	Amber/Gold: history, autumn, earthiness, richness, tradition, conservative		Gold Metallic: rich, expensive, valuable, prestigious metallics can't be reproduced online

FIG. 5.2 *COLOR MEANING CHART*
SOURCE: *XTREMEBRANDMAKEOVER.COM/*

Expreience

Examples of famous classical Chinese gardens.

Private Home Garden

Humble Administrator's Garden;
Master of the Nets Garden;
The east gate of Qing Hui Yuan;
Jichang Garden;
Yu Garden;

Royal Gardens

Old Summer Palace;
Summer Palace;
Chengde Mountain Resort;



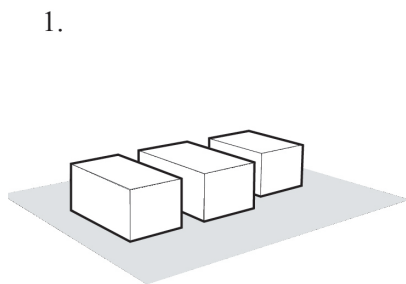
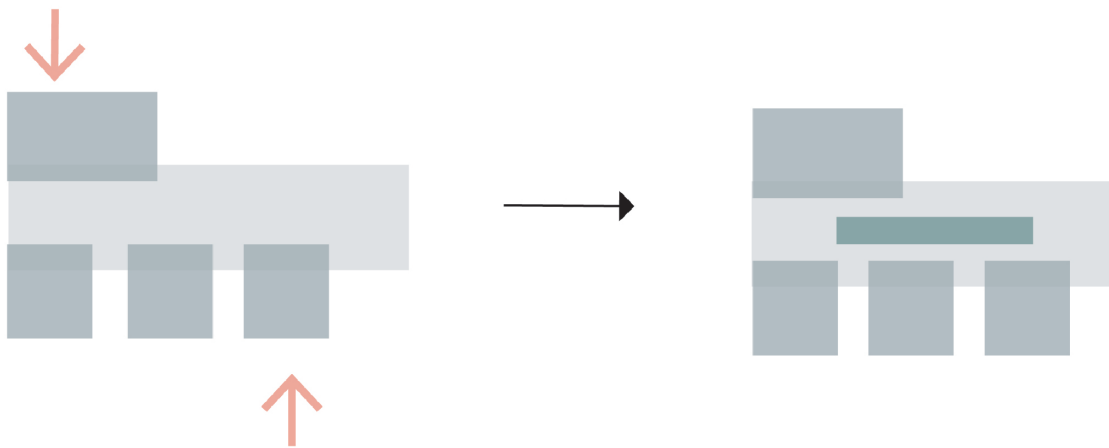
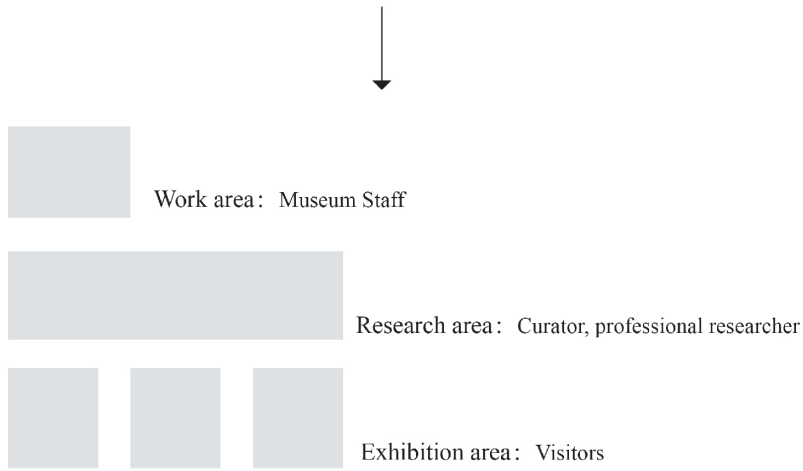
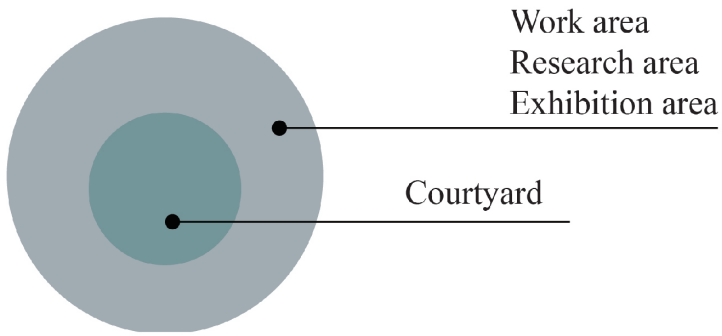
CHAPTER 6
CONCEPTUAL DESIGN

6.1 DESIGN DESCRIPTION

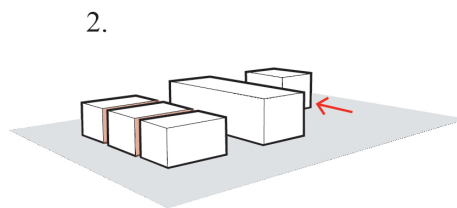
This design is a practical activity based on the circulation of museum design methodology. In order to meet the functional requirements of the space, the different areas are divided in order to sort out the circulation of different users. Since the main study is about the circulation design of the exhibition space, the main intention of the design is to create a continuous spatial experience for the visitors in the exhibition area. Natural elements are interspersed in this continuous space to guide people through the space and to provide a temporary resting space without interrupting the tour. The entire tour route is unobstructed and the direction is clear, and the circulation plays its role as a guidance system in the space and effectively organizes each gallery space.

The spatial organization is based on the spatial structure of classical Chinese gardens, divided into two main areas: interior and exterior, with the interior space surrounding the exterior space, creating an inner courtyard, which provides a resting space and also serves as a sight guide. At the same time, visitors enter the natural space from the exhibition space, forming a strong spatial contrast, from the closed exhibition space into the open and bright natural space, to feel the art and relax at the meantime.

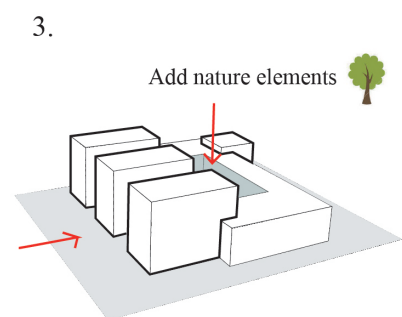
6.2 DESIGN IDEAS AND DEVELOPMENT



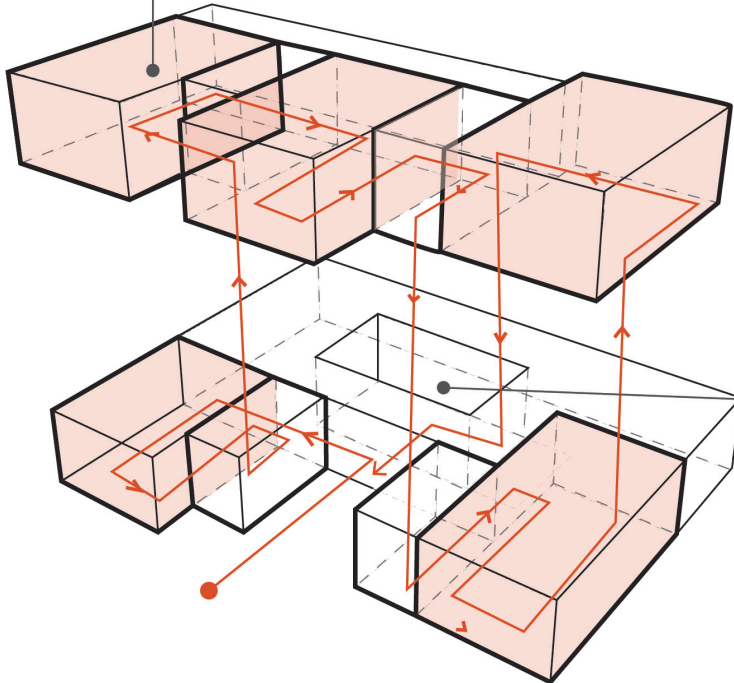
Divided into three areas



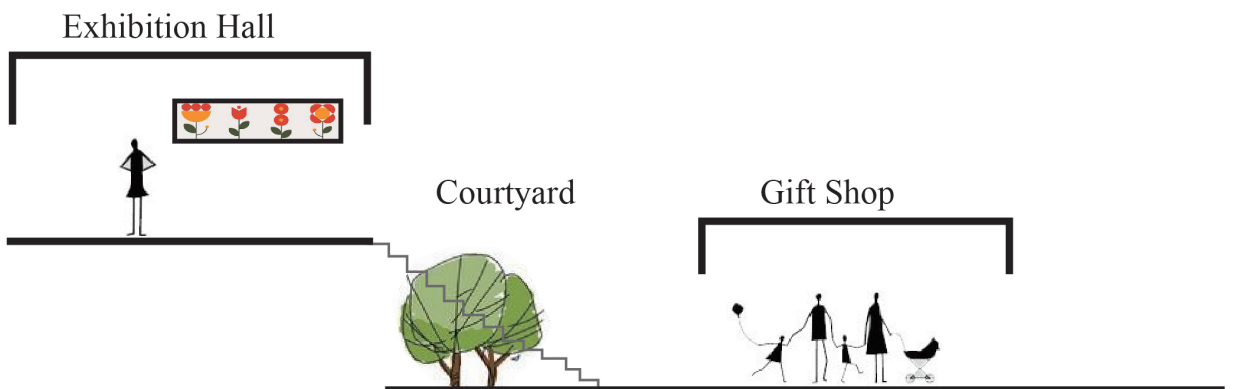
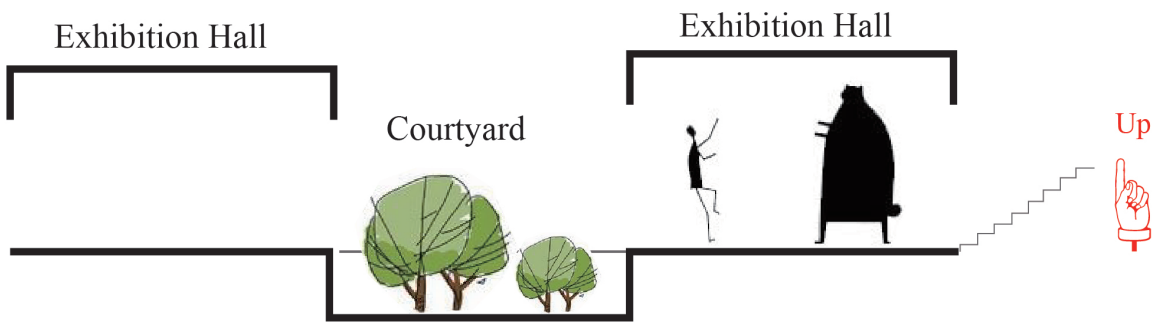
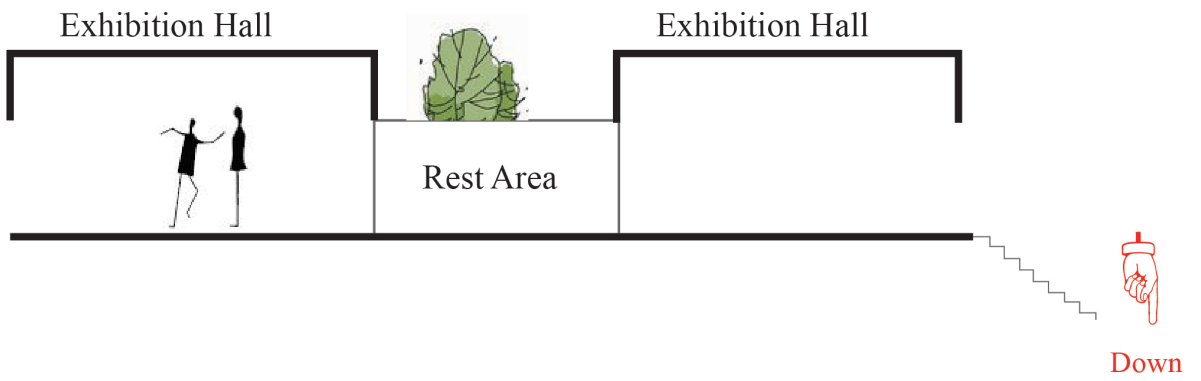
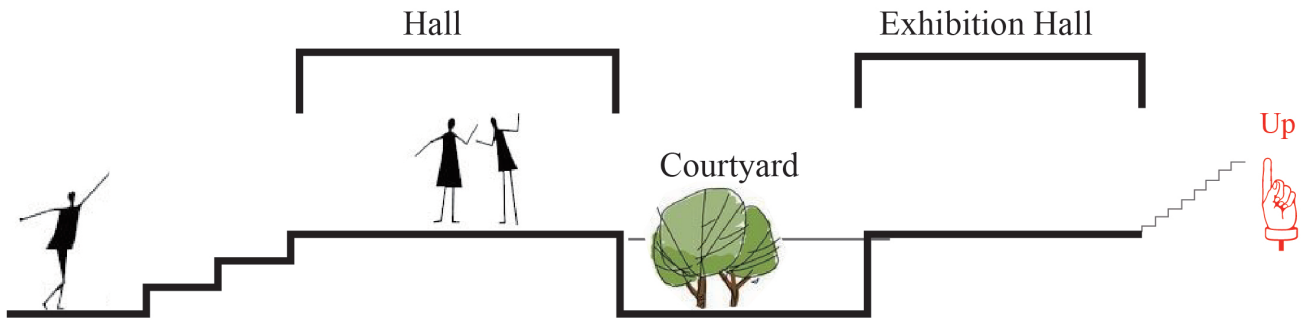
Three exhibition spaces



Separate different functional areas with courtyards

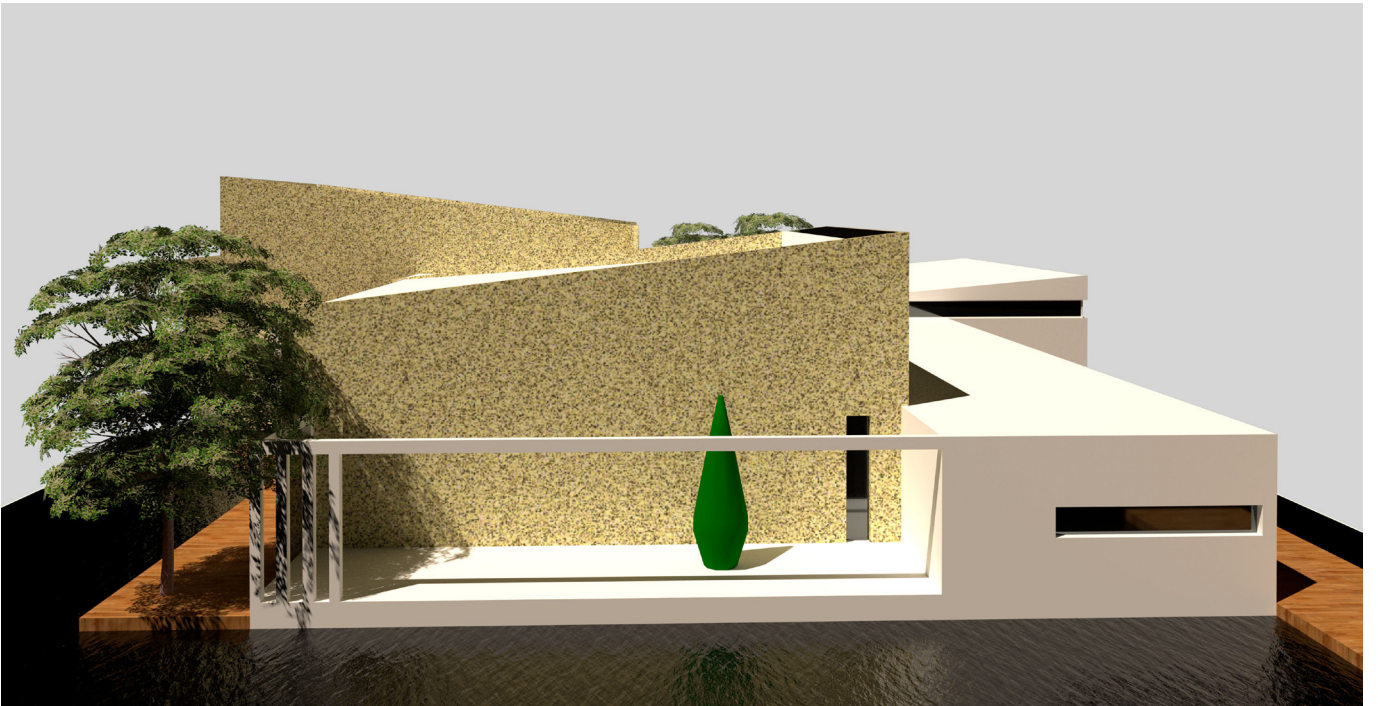


CIRCULATION



6.3 DRAWINGS







CHAPTER 7
CONCLUSIONS

The motivation of this museum circulation study originates from the criticism on the spatial disorder within contemporary museums. Besides, this paper intends to raise people's attention on emphasizing the sense of human experience in space to integrate humanity into museum design. It is well-known to us that museums represent culture, providing a shared platform for the public to draw their special cultural heritages. However, there is a common phenomenon in museum designs, whether in the past or in the present day, where spatial structure plays as the research focus while neglecting the humans' experience within the space. Noteworthy, the circulation discussed in this essay, on the one hand, serves as the trajectory of human activity in the space during the visit; on the other hand, it is also the navigation and connection system for the space.

In other words, the circulation not only relates to people and space, but also involves itself in the whole architectural design process. Currently, the limited research on the relationship between circulation and people is the key problem of confusing circulation chaos, museum fatigue, which leads to getting lost in museums. This paper starts from the concept of circulation, introduces the Chinese Classical Garden art and draws out a set of reasonable space organization. Most prominently, it combines the traditional Chinese aesthetics, the natural view of *Harmony between Man and Nature*, environmental psychology and other related disciplines together to systematically elaborate the circulation design and space organization, and summarizes a new set of design methodology about museum circulation.

This novel design methodology highlights the circulation type of the previous museum design. On this basis, it turns out that the integration of natural landscape elements with Chinese garden-style spatial organization creates more new types of circulation, which allow more guiding and ensure clearer spatial division with different function in the museum with better human experience in space. Meanwhile, the museum design concept shows the rationality of these new types of circulation and garden-style spatial organization, reflecting the interests in human activities in the museum space. Museums designed via this methodology can be more human-friendly, which means people can feel the culture once they step in the space without discomfort violating the visit quality.

In this paper, the author studies the circulation design of museums in the context of Chinese Classical Garden art, hoping to offer an ideal solution for excessive formality in museum design, In this way, architects will pay more attention to the most essential element of architecture, which is the relationship between space, environment (nature) and people. Meanwhile, the author also tries to contribute to the museum design and spatial organization on a theoretical level though the content, the content inevitably has shortcomings and defects, hopes that all professors and peers to give more opinions.

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SOURCE: www.ncbi.nlm.nih.gov/pmc/articles/PMC6338934/

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FIG. 4.3 Spatial organization
SOURCE: The author

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FIG. 5.1 Human behavior in space
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FIG. 5.2 Color Meaning Chart
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