

Acquisition, Dissemination and Reflection of Knowledge: Reflection and the outcome of Reflection, which comes first?

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Abstract

What is knowledge? From Plato to Heidegger, from Confucius to Mozi. Wise in the West and the East always think about knowledge, spread knowledge and use knowledge. At the same time, how should a practitioner view knowledge in his field? And take reflection as the source power to explore the boundary of knowledge and the meaning of knowledge?

Starting from the background of architect, the author thinks about acquisition, dissemination and reflection of knowledge, combined with architect's knowledge structure, thinks about what the relationship between knowledge and reflection is in the knowledge structure of architecture, and takes project as the support to seek how to guide research.

Key Words

Knowledge, Architecture knowledge, Reflection

What is knowledge?

There is a classic definition from Plato (BC427-BC347): a statement can be called knowledge must meet three conditions. It must be verified, correct and believed. In other words, "for one to have knowledge: (1) the proposition must be believed; (2) the proposition must be true; and (3) the proposition must be supported by good reasons, which is to say, you must be justified in believing it. Thus, for Plato, knowledge is justified, true belief." (Vaughn, 2015) On Wikipedia, knowledge is defined as follows: Knowledge is a familiarity, awareness, or understanding of someone or something. And knowledge can be further divided into facts (descriptive knowledge), skills (procedural knowledge) and objects (acquaintance knowledge). Until today, we still have different views on what knowledge is. Based on each of us' different knowledge background, practice background and views on the world, we can interpret knowledge from more angles. In the following part, the author will explore the boundary of knowledge from the perspective of epistemology, historicism and functionalism.

In philosophy, the study of knowledge is called epistemology. The acquisition of knowledge involves many complex processes: feeling, communication and reasoning. According to Stanford Encyclopedia of Philosophy (1995), Knowledge is among the many kinds of cognitive success that epistemology is interested in understanding. There is such a story in China, Confucius (bc551-bc479) and his students said "There are innate differences in human talent and intelligence, but they can still be made up by the day after tomorrow". In other words, knowledge can be acquired through their own efforts, emphasizing people's initiative. From the perspective of knowledge acquisition, Michael Polanyi emphasized the importance of personal enthusiasm and investment in knowledge acquisition and knowledge innovation, "We know more than we can say," he said. (Polanyi, 1958). Yujiro Nonaka inherited Polanyi's concept of tacit knowledge. He believed that knowledge obtained through physical practice is tacit knowledge, which is an oriental tradition. He also pointed out that strictly speaking, knowledge creation can only occur at the individual level, and the role of organization is to provide an environment for knowledge creation and enlarge knowledge, which is similar to individual variation in evolution Amplification of population selection. (Nonaka, 2007) We can explore that although from the perspective of cognitive theory, the process of knowledge acquisition is cyclic and repeated, from the perspective of results, people seem to have their own methodology for knowledge acquisition. And in this process, different people's subjective initiative can be brought into play.

Focus on the perspective of the functional theory of knowledge, the author believes that knowledge becomes knowledge because its significance lies in communication and exchange. Yuval Noah Harari wrote in his book "Knowledge is useless if it cannot change behavior; But once knowledge changes behavior, knowledge itself immediately loses its meaning." (Yuval, 2017) In my opinion, knowledge plays a more media role, and this media also plays a role of identification in the process of transformation. As the above scholars said, the relationship between knowledge and human behavior needs to be attached to people's exchange of knowledge itself. Whether our knowledge is useful depends on whether we use it. And whether to exchange opinions with the object in the process of use.

From a historical perspective, Peter Burke said Knowledge is: "the so-called knowledge revolution in early modern Europe -- the Renaissance, the scientific revolution and the Enlightenment -- is only the surface of some popular or practical knowledge, and their legitimacy as knowledge is established by the academic structure." (Peter, 2018) From ancient times to middle ages, many great men and scholars have discussed what is knowledge, the classification of knowledge, and how people obtain knowledge, but what is the practical role of knowledge. It seems that this problem is more vague and unclear than how to define knowledge. Where knowledge comes from may be a topic that needs to be discussed. We can say that knowledge comes from education, practice, action and self perception. In this process, environment, social system and personality will have a great impact on us. However, when we think about these elements carefully, we will be surprised to find that history has always played a great role. Today's knowledge is completely different from that in ancient Greece. Today's human beings have completely different knowledge acquisition systems and ways.

Our yearning for knowledge is like our genetic code. Philosophy tells us how to acquire knowledge.

When we use knowledge, we realize the significance of knowledge. Historical experience and tradition tell us where knowledge is. Will the acquisition and dissemination of knowledge be different in a specific field?

What is architecture knowledge?

This paper discusses what is knowledge in the above chapters, and what form should knowledge exist in a specific field? For example, in the field of architecture.

First of all, we need to figure out one thing, how to distinguish between architectural knowledge and knowledge of architecture. The knowledge structure guides the understanding of the enterprise or the knowledge itself on its own structure. Henderson and Clark (1990) suggested that the technological knowledge behind innovation can be divided in two dimensions: knowledge of the components and knowledge of the linkage between them, called architectural knowledge. The architectural knowledge here is more about the knowledge of innovative technology in enterprises, rather than the knowledge related to architecture or architectural practice research. The architectural knowledge discussed in this paper focuses on the latter. All the following concepts about architecture and knowledge are equal to knowledge related to architecture. Although their statements come from different authors, they will be different in statement.

Hilde Heynen (eds), A professor of architecture at the University of Leuven in Belgium mentioned the knowledge of architecture in her latest book. The chronological dissection executed above through the discussion of a couple of focal points – Berlin 1967, Venice 1977, Delft 1990, and New York 2000 – indicates how the “figure of knowledge” of architectural theory changed contours and how shifting intellectual norms and forms were formative in that process. In engaging with various fields of learning, architectural theory transmuted in multiple ways. (Heynen, 2020) At the same time, proposed a double question: what kind of knowledge has become important throughout the recent history of architectural theory and how did the resulting figure of knowledge set the conditions for the actual arguments made?

The first book on architectural knowledge in the world is Palladio's ten books on Architecture (1508-1580). People summarized the knowledge of this book into four points of dedication, systematically summarized the early practical experience in architecture in Greece and Rome, established various basic principles of urban planning and architectural design, put forward evaluation standards and aesthetic norms for architecture for the first time, and made a specific and in-depth explanation of some basic principles of architectural art. Seemingly declarative views are very common in architectural knowledge. For example, Jenks pointed out in the theory and declaration of contemporary architecture that theory is a solidified declaration. The declaration is not to interpret the world, but to change it. The declaration will use any rhetoric as a tool to produce persuasion. The purpose of the Manifesto is to unify the readers' thoughts, not to turn them to different schools. In architectural theory, Sartoris also proposed that there has always been a metaphysical tradition in architecture, which is also reflected in modernist architecture. With the development of modernist architecture today, it is difficult to systematically summarize knowledge by qualitative or quantitative methods. Just as Koolhaas, a master of architectural design, pointed out in content: architecture is a fuzzy mixture of ancient knowledge

and modern practice. It is not only a clumsy way to see the world, but also a medium that is not enough to operate the world effectively. Knowledge is not enough to change the world, nor is it enough to change architecture.

So if the knowledge of architecture is so vague, how to disseminate the knowledge of architecture? The history of architecture has mainly focused on anthropocentric values and the agency of the architect (such as due diligence and professionalism), assuming, or building on, a naturalized connection between human conduct and the results of design. There are many ways to record architectural history, and photography of buildings may be the most intuitive one. Christenson holds that "It is well established that photographs of buildings are not simply neutral frames through which images of buildings are glimpsed, but are rather artifacts loaded with biases and exclusions. To some extent, these biases contribute to what might be called the object-value or art-value of photographs, as when an architectural photographer succeeds in calling attention to familiar or mundane environments in an extraordinary manner. Yet, the art-value of photographs differs markedly from their value as commodities – whether they are considered as devices for broadly disseminating a specific kind of knowledge or merely as marketing tools." (Christenson, M, 2017) Architecture is a kind of material existence, not a concept or a melody. People can perceive architecture, see architectural photos through their eyes and hear architectural stories.

Architecture can be perceived, so how should architectural knowledge be taught? Thomas believes that "The critique of both the architectural and academic professions has led to a tension between the two unlike that ever experienced before in the field. Some would separate professional practice and education, acknowledging their differences and presumably enhancing the ability of each group to defend itself more effectively against its critics. Others would encourage practitioners and educators to become more aligned, sharing their knowledge and standing together against those who would attack professionalism. A third position emphasizes the discipline of architecture that embraces both practice and education, taking the discussion away from the contested matter of professional privilege and refocusing on the building of knowledge." (Thomas, F, 2001) In architecture the border between raw information and a conventional notion of refined knowledge is quite fuzzy. The search in this gray zone for a discursive practice may help to partially recover these troubled terms — knowledge, information, practice, discourse. The juxtaposition of the facts of the practical and the concepts generated by intense discussion could form a rich field in which to both teach and practice.

In reality, the theoretical formation process of architecture is more similar to biological evolution. Therefore, we can put forward a hypothesis that the theoretical formation process of architecture is regarded as a process of knowledge evolution. The historical picture after the development of postmodernism shows that the theoretical formation of architecture is more similar to the image of biological evolution than the theory of natural science. One after another, endless. "The Mundaneum is a network," Otlet wrote in *Monde* (1935a). "The institution defined as such should be thought of as the multiplication and organization over the Earth of a chain of similar institutions on different scales and for different purposes, ultimately spreading over all places and for all specializations" The Mundaneum was now conceived as a network that gathered all knowledge

about the world society into a “central Mundaneum, into a point on the Globe [where] the reflection and total meaning of the World will exist”

The importance of architecture knowledge

Knowledge is understood as knowledge because it has rules that this correct concept can be verified and believed. The knowledge of architecture belongs to knowledge, but more than philosophy, history, communication emphasizes the importance of practice. The practice here is about the presence of the body.

The knowledge of architecture must also follow the standards of general knowledge and should be verified, correct and believed. However, more often, the feeling of construction knowledge is more vague, but in order to avoid falling into the agnostic trap, try to classify the specific elements of understanding construction knowledge based on knowledge. When we understand a building the most intuitive feeling is to enter the building, touch the building material, feel the light and shadow in space, atmosphere is an important part of building elements, these for the impression of the building and the phenomenon of building, together formed our idea of building and the experience of building. But can these ideas and experiences be directly translated and understood into the knowledge of architecture?

For professionals, building is an object that can be decomposed by data. We can clearly see the height of the building, the number of materials and accurately combined on the blueprint, where the blueprint is broken into becomes common sense after another, on which builders can build. In addition to the blueprint can be broken down into common sense, the economic indicators of building can also be understood as an attempt. For a new construction project, it is necessary to investigate the floor area ratio and conversion rate of construction land before landing. This research is often known as feasibility research report research, which is very important for investors or real estate companies.

For non-professionals or workers, these people may learn more about the reality that can be changed. For example, current social media will teach people to decorate their window sills or how to transform their kitchen, and workers can look at the drawings to assemble furniture and make materials for the building. In the process of these learning and imitation, knowledge is spread, while knowledge gradually forms habits in the process of dissemination and learning from each other. Interestingly, there are also individualized differences and different evaluations in the process, and this "knowledge" may change because of people's habits or different evaluations.

For more ordinary people, the way to acquire architectural knowledge still comes from the perception of the body. Famous Japanese architect Tadao Ando held an exhibition on architecture in the HE Art Gallery he designed, containing the history and stories of some of the projects he had designed, photographs of the architecture, a large number of sketches and manuscripts. In addition to the aforementioned visual elements, the exhibition contains small games about the architect design methods for the parents and kids, and large devices for travel to adults. Of course, the best part of the whole exhibition that conveys the spirit of the architect is the container. That is, the Art Gallery built by the architect.

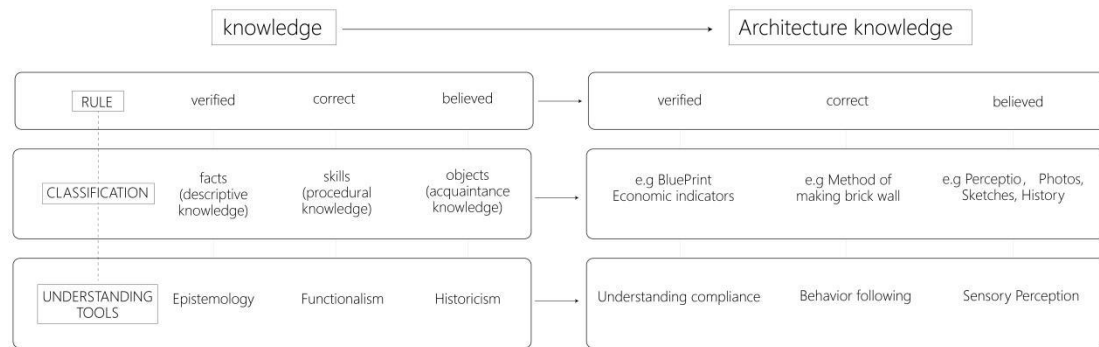


Fig.1 Knowledge and Knowledge of Architecture(Draw By Author)

Some knowledge is invisible, such as philosophy, but architecture is tangible, we can travel to the space in the architecture, but it is difficult to hang out in the "metaphysics".For the knowledge of architecture, the most possible way to feel is the presence of the body, in the space we can give full play to our subjective initiative, feel the material, atmosphere and all the clever space designed by the architects.Architects are like a director of space, showing all the ideas in the building and mobilizing people to feel.

Space is the container of architectural knowledge, and the best way to feel architectural knowledge is the travel of the body.Traveller can exchange experiences with each other in the process of mutual experience, and feel the flow of knowledge in the process of traveler's experience exchange.

What is Reflection?

In the above chapter, the author discusses the research of scholars on knowledge and architectural knowledge in detail, and the author emphasizes that the best way to experience architectural knowledge is the presence of the body. Reflection on the way is often a good way to get knowledge. "Reflection is part of learning and thinking. We reflect in order to learn something, or we learn as a result of reflecting, and the term 'reflective learning' emphasises the intention to learn from current or prior experience" (Moon 2004). Reflection is a type of thinking aimed at achieving better understanding and leading to new learning. All of the following are important aspects of the reflective process: Making sense of experience, 'Standing back', Repetition, Deeper honesty, 'Weighing up', Clarity, Understanding, Understanding.

The essence of reflection is a way to learn from past experience. It has three key elements: personal experience, past and learning. "Personal experience" requires that the content of reflection must be obtained through personal practice. "Past" requires reflection on your past experience. "Learning" refers to learning by transforming experience into knowledge with the goal of improving their own action efficiency.

Heidegger believes that we are not blank minds when understanding anything, and that our understanding has basic ideas that already exist in the brain. "Understanding is always rooted in what we have in advance fore having. On the other words, any understanding is based on the" fore having "that once existed in the mind of the understanding." fore having "will affect the new understanding, which will become the" fore having "of later understanding. However, in every new understanding, the new part of the new understanding will challenge the former part, namely "fore having", and the understanding person must correct the first structure and preconceptions of understanding at any time "according to things themselves".

Gadamer argues that only by forgetting can the spirit gain the possibility of comprehensive renewal, and the ability to see everything with a new vision, so that the things believed in the past and the new see merge into a multi-level unity.

Quadrant and Double Loop

In addition to various kinds of philosophers thinking on reflection and reflective learning and writing, they also have their own views on reflection in the fields of economics, pedagogy and others.

Quadrant method is the way for child to classify their work. The two coordinates of quadrant are success and Learning effect, success is divided into meaningful success and desired success, and failure is divided into meaningful failure and complete failure. As a researcher, we are often hoarding our learning results, so it is quite necessary to outline and summarize them for a certain period of time. Quadrant method is to make us stop to consider what specific outcomes have to the direction we ultimately want to study. What depends on whether the project is meaningful is not success or failure, but whether it is meaningful. In many cases, the projects that fail are more meaningful, because this project reflects the defects in the knowledge structure to some extent.

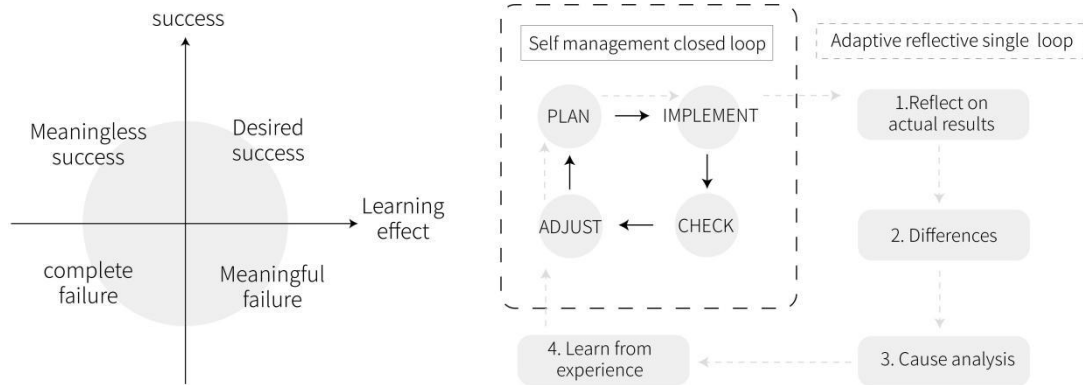


Fig.2 Quadrant method.Fig.(Draw By Author)3 Double loop(Draw By Author)

Double loop is another structure and method to reflect. The structure starts from the self-management closed loop, from the plan to implement to the check and adjust, and plans again after forming a cycle. The process of reflecting on things is actually a process of gradual horizon integration. And for another adaptive reflective closed loop, planning, implement and adjustment becomes part of the closed loop, and the rest of the closed loop goes instead: 1. Reflect on actual results, 2. Differences, 3. Cause analysis, 4. learn from experience.

Both methods of reflection are often used in daily life. They can guide us to better organize the things in life, and also reflect on and think about our own career, study and life. And in the process of thinking better to create new things and new methods and experience.

Reflection as the Design method.

So what does reflection mean for art and design?

I used to design a small vacation house, at the beginning of the plan, I went to think about how I am living in this vacation house, I want people to rest and live in nature, you can feel the subtle changes in plants very well. Plants are inseparable from people's lives. Many Chinese people plant small plants in their homes, which they think is good for the home air and children's eyes, so gardening was born. Bonsai art is one of them, and my uncle is a bonsai artist. When I was a child, I often play with my uncle. He is often addicted to bonsai, slowly pruning the plants with small scissors, and then telling me something about bonsai at the same time.

For the knowledge of bonsai, I summarize it into two points. The first point is that bonsai, like other Chinese arts, has a different way of viewing and scattered perspective. The perspective method of Chinese painting is different. The painter's observation point is not fixed in one place and is not limited by the fixed field of view. Instead, he moves his foothold to observe what he sees from different footholds as needed. Can be organized into their own pictures. This perspective method is called "scatter perspective", also known as "moving viewpoint". When I was doing interior design, I set most of the furniture at different heights, and set different windows at different heights. Because the house is very small, people can't help looking at the outside nature, so people can feel different scenery in the process of traveling around the space.

The second point is the Growth Logic of space. Sometimes bonsai is artistic, and sometimes its growth is not vertical like other plants. It needs to be guided artificially. Sometimes it grows downward, and sometimes it grows horizontally. Most of the houses we see in the city are vertical. The houses are built higher and higher, but they are farther and farther away from real life. Therefore, I hope that when people come to my buildings to feel nature, they will be more in a horizontal state, close to nature and real life, leave the vertical buildings and move towards a horizontal life.

Based on these two points, I designed "Shape of bonsai". Recently, I further thought about the work and found that this work fully meets the requirements of reflection. First of all, this is my personal experience. My thinking and continuous observation on bonsai have formed my combination of design points, and this thinking and observation has also been transformed from bonsai art to architectural art. Secondly, this is the impact of the past on me. My childhood experience has affected my control and ideas about the project. Finally, it is an imitation and learning. There is a certain relationship between architecture and nature. I combine the commonalities of the two and form a new vocabulary and turn it into a design method. Therefore, this design scheme fully meets the requirements of reflection.

After "reflection", I think that reflection should be a method of design. And how to constitute this design method, I think I need to do further research. But I can start by answering my previous question: reflection is an effective way to create work for art and design.



Fig.4-5 "Shape of bonsai"(Draw By Author)

Contemporary Art and Contemporary Architecture.

The article discusses the possibility of reflection as a design method before, and the next part will give examples of contemporary art and contemporary architecture to explain the feasibility of reflection.

In the general sense, "contemporary art" is just a type of art, rather than a general adjective phrase, whose classification can be traced back to the origin of modernism in the English-speaking world. In 1910, critic Roger Fry and others founded the Contemporary Art Society in London, a private group that bought art and put it in public museums. Some other institutions using the term were established in the 1930s, such as the Adelaide Contemporary Art Society (Australia) in 1938 and more institutions after 1945. Like many later institutions, such as the Boston Academy of Contemporary Art also used "contemporary" to describe what we now say "modern art" (Modern art), but when "modernism" is defined as an art movement in art history, many "modern" art can not become "contemporary" again. Over time, the definition of "contemporary art" has been changing, and what the Contemporary Art Society bought in 1910 is now no longer contemporary art.

Contemporary art is both an artistic result and a way of artistic production. Contemporary art is still moving, developing and evolving, a dynamic combination of materials, methods, concepts and themes; it spiritually challenges the boundaries of traditional art, records the artist's current feelings, and questions and asks the society's definition of something.

In the context of Oriental artists, they pay more attention to the inheritance of tradition, while in the context of western artists, contemporary art puts more emphasis on the negation of the previous historical or social definitions. Therefore, compared with Oriental artists, the reflection and speculation of western artists are often used to the expression of their works. Contemporary artists connect with their daily life in their creation, are keen on cultural restructuring, and the satire on the authenticity of art all reflect the three main characteristics of reflection: "past", "personal experience" and "learning".

In modern China, there are some international artists who study in foreign countries to bring contemporary art trends back to China. CAI Guoqiang is an artist born in Fuzhou, China, who uses gunpowder to create a series of contemporary art as the media and holds one-person exhibitions around the world. He is best known for his work is the Sky Ladder, hanging two ropes side by side in the sky, and lighting it with gunpowder, gunpowder explosive fireworks in the sky like a conversation between humans and heaven. Interestingly, this is the present that CAI Guoqiang gave his grandmother, CAI guoqiang grew up with his grandmother, his grandmother is an employee of the national gun factory, he smell grandma residual gunpowder after work, this kind of memory of material taste follow he grew up and become his tool to express artistic ideas. CAI Guoqiang's art is reflected through the study of past life and personal experience, so this is created through the art of reflection.



Fig.6-7 "Sky Ladder"(www.Artron.com)

In addition to contemporary art, China is also known as the world's largest experimental field in contemporary architecture. Similar to contemporary art, the definition of contemporary architecture cannot be clearly defined and has a strong epoqueism. We can say that the building built today is a contemporary building, but not every recently built house can be called a contemporary building.

The idea that is easily confused with contemporary architecture is modern architecture. Modernist architecture is an architectural thought that dominated the western architectural world in the middle of the twentieth century. The representative figures of this kind of architecture advocated that architects should get rid of the shackles of traditional architectural forms and boldly create new buildings suitable to the conditions and requirements of industrial society. Therefore, it has distinct colors of rationalism and activism, also known as modernist architecture. Also like contemporary art, we are talking about contemporary rather than modern today.

At the end of the Renaissance, a series of stunning artists, such as Michelangelo and Da Vinci, had a great role in promoting architectural design, but because of this, these artists regarded the process of architectural design more as the process of artistic creation. Therefore, the building is broken away from the need of the wind and rain and becomes the carrier of artists' creation. The system is called academic, and this event also confirms the relationship between art and architecture in the embryonic stage of architectural design.

In the context of contemporary today, continue to explore the direction of architectural design development, academic let us see the possibility of contemporary and contemporary art, contemporary art relies on artists based on their own reflection on The Times to create new art, so is it possible that building also through reflection?

Wang Shu, a Chinese-born architect, won the Pritzker Architecture Prize in 2012, becoming the first Chinese person to win the award. His most famous architecture is known for the Xiangshan Campus of the Chinese Academy of Fine Arts. He has successfully introduced traditional Chinese spatial concepts, traditional poetry and aesthetics into contemporary architecture. Born in Xinjiang, the architect also completed his master's and doctoral studies in the Jiangnan area of China, and stayed in the south of the Yangtze River. His extremely personal experience became his motivation for creating architecture. His translation of the traditional Jiangnan culture has become a concrete architectural language, which is his study of the traditional Chinese culture and Jiangnan customs

in the past, and he has transformed it into the language of architecture. The completed Xiangshan Campus of the Chinese Academy of Fine Arts is known as the exchange between Chinese contemporary architecture and the past historical buildings. Therefore, Wang Shu's work also meets the three criteria of "past", "personal experience" and "learning".



Fig.8 Traditional Jiangnan architecture(www.baidu.com)



Fig.9 Xiangshan Campus of the Chinese Academy of Fine Arts(www.archidaily.com)

Reflection and the outcome of Reflection, which comes first?

The article previously discusses what is knowledge, views the acquisition of knowledge, importance and necessity from the perspective of philosophy, function and history, when discussing what is the knowledge of architecture, emphasizes the existence and the local meaning of the body. After research and thinking about reflection, it is believed that reflection should be a design method, or in other words, design is a process of reflection, and is demonstrated by two contemporary artists / architects.

The relationship between the outcome of reflection and reflection is a philosophical question, similar to a joke about whether the world has a chicken or an egg first. Through theoretical learning and the tracing of history, we know that reflection is a process of continuous thinking and, just as with contemporary definitions, it is always changing. After an artist creates art through self-reflection, the outcome again becomes the object of the artist's reflection in creating the next work. It is the significance of reflection and reflection in this paper.

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