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AC 2012-3652: CULTURE REFLECTIONS EMBODIED IN MODERN ARCHITECTURE: AN ANALYSIS SYMBOLIC MEANINGS OF CLASSICAL CHINESE GARDEN DESIGN ELEMENTS AND PRINCIPLES

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Introduction

When people walk into a space or built environment, people should feel the design intention made manifest through visual cues. Amos Rapoport stated that the built environment holds meaning as part of a cultural system of symbols, and influences our actions and our determinations of social order [4]. It also has been a consensus that designers must understand the effect of the physical manifestation of design on people in the body of knowledge of the interior design profession [2]. Therefore, understanding the symbolic meanings conveyed by design elements become crucial for designers. This paper presents a case study of analysis of classical Chinese garden design elements including water, plants, architecture, rocks and tracery windows (borrowed views) in modern architecture designed by I.M. Pei. This case study has been used in teaching cross-cultural comparison of architecture course. The purpose of this case study is to reveal symbolic meanings that interpreted by classical Chinese garden design elements in modern architecture. Findings illustrate distinct design strategies of utilizing Chinese garden design philosophy and principles in modern architecture that embodies culture reflections. Findings also help students to further understand that the built environment conveys meaning as part of cultural system, which is one of the learning objectives of cross-cultural comparison of architecture course.

Background Information

Culture and Design: Cross-cultural Comparison of architecture is a course designed to expose students to culture varieties that reflected on architecture. In this course, the meaning and symbolism of the art of Chinese architecture and Chinese garden is examined, focusing on the cultural, philosophical, and religious influences. Both architecture and garden in eastern country and western country are introduced and compared with given rubrics. One of the segments in this course is to introduce the concept of cultural reflections in modern built environment. The artistic characteristics of classical Chinese garden design include the harmonious relationship between the parts and the whole. This humanistic philosophy and approach of classical Chinese garden design can be an inspiration to modern architecture practice and a resource for the creation of a new architecture. In this course, the Chinese garden design principles are identified and the building adaptations to the modern world are explored.

This course has been taught during the past five years. With the continuing course improvement, a new case study has been added to the course content in order to better introduce the concept of cultural reflections in modern architecture. Particularly, the case study not only reveals the meaning of Chinese garden design elements in modern architecture, but also it provides distinct design guidelines for future architectural design. This paper describes this new case study that has been added to the Culture and Design course.

Review of Literature

There are five design elements in classical Chinese garden design. They are water, plants, architecture, rocks and tracery windows (borrowed views). An overview of images of design elements of classical Chinese garden can be found in Figure 1 in Appendix. All Chinese gardens contain architecture. In addition, gardens are enclosed by pavilions, verandahs, halls and walls. The spaces in the garden are formed by architecture. The main difference between Western and Eastern gardens and their basic elements lies in the use of architecture and not in vegetation [1]. Another element in a Chinese garden is stone. A stone may serve as a central theme of a courtyard, where it is placed on a pedestal, in a pond, or cemented together to form caves or peaks. One kind of stone is made from lake rock, quarried from a small island in Taihu Lake near Suzhou. Water serves as another natural element in Chinese garden design in addition to landscaping. In the private garden, a large body of water is not possible but a pond is a must. A bridge usually is built across narrow channels, or causeways are used as stepping stones to connect several smaller ponds in order to enhance the depth of the garden [1]. Reflections made from a pool can enlarge the dimension of a garden visually. Scenery and track is another characteristic of classical Chinese garden. Gardens are different in shape and size. The large garden is naturally divided into more courtyards, and each courtyard has its particular theme in order to create a particular feeling of place. Because of the courtyards are interconnected, they create a series of spaces that have special meanings. As one enters the small entry leading to a garden and walks into a particular space, although it is usually small in scale and wrapped around with winding verandahs, the feeling gained is always the same as repose, harmony, serenity and elegance.

Pei employs a lot of traditional Chinese symbolism in his Suzhou Art Museum. The SuZhou Art Museum floor plan is shown in Figure 2 in Appendix. He built it on a symmetrical north-south axis, which is one of the design principles of Chinese architecture. It allows the building to take advantage of the sun's warmth and reflections (Figure 3 in Appendix). The structure is built to surprise the visitor when walking down the winding interior corridors offering tracery windows with a view of the central courtyards and gardens. Traditional garden elements are prominent. There is the main garden, with eight small gardens. Every angle has a garden view. From the outside, the buildings reflect the traditional Suzhou private garden style; it is in harmony with its surrounding atmosphere. The five garden design elements are used in the design of the garden, such as local Taihu stones and rocks, water, bamboo, and a walking bridge that zigzags across the pond. Stone is the skeletal structure and is used in SuZhou Art Museum as sculpture. Water is qi energy and is balanced with the rigidity of stone. The bamboo represents uprightness, and the flowers add colors and present the four seasons. In the main garden, there is special Chinese stonework "ink-wash painting" (Figure 3 in Appendix). Pei uses the white wall as paper; stone as paint, creating a unique visual effect with granite replicate a miniature mountain of abstract sculpture.

Purpose and Method

The purpose of this case study is to analyze and interpret the classical Chinese garden design elements including stone, water, architecture, plants, literature and arts as well as borrowed view(tracery window), as a form of symbolic culture reflection in modern architecture.

This analysis is based on the methods of historical inquiry and literature review. Data sources include graphics and written representations.

Findings illustrate distinct approaches in reflecting culture heritage in modern built environment through symbolic forms. This study proposes four major design strategies to interpret the symbolic meaning of culture heritage: nature, poetic and painterly concept, scenery and track, as well as mystery and wonder.

Nature elements in design refer to landscaping, water, courtyard and stone. All these design elements are integral part of classical Chinese garden that create poetic and painterly feelings, creating a place of natural beauty with a serene and elegant atmosphere. [1]. Through the use of this concept, a unique garden architecture was created. Poetry, prose, painting and music in China are interrelated and were used to express inner feeling through symbolism. Garden design, nevertheless, was different from poetry or prose. The media are not brush or paper, but rather a process, where there is never a final stroke of the pen or a last word, and which is in a continual state of change. It is the placement of the elements which make a garden, such as water, rocks, trees and flowers, architecture and space as well as the utilization of the effects of natural phenomena including the change of seasons, light, color, shadow and sound to achieve aesthetic feelings and evoke associations between objects and the observer [1]. Architecture in a garden serves to “frame” or emphasize a good view. All these elements in the garden are connected by covered verandahs, which create mystery and wonder in the garden. The verandahs on both sides of the wall become what is called double verandah and the wall between them can be pierced with tracery windows to unite the two spaces visually (See Figure 1 in Appendix). Sometimes a verandah is built over water on stilts, looking very much like a covered bridge. More mystery and wonder would be presented to observers when verandahs are in zigzag form, following the shape and slope of the site. Sometimes it will bend on the way up a hill, reach an edge of a pool, pass through flowerbeds and cross valleys, twisting and seemingly there is no end. Although the verandah was built for circulation, it is not intended to reach its destination in a hurry. One could stop and wonder, read at the table and watch scenery and turn to wonder another mystery and pose again. The main purpose was to stroll leisurely and wonder around for more attractions. Sometimes it appears that the walker reaches the end of a path, but with a sudden turn there is another path or another open space. There is always something unexpected to see which surprise the visitor.

In Pei’ SuZhou Art Museum, the geometry thinking in the design made visitors feel to be in a world of pure lines and triangles, squares, and symmetry. Pei, the modernist seamlessly blends the modern and the culture in his SuZhou Art Museum. The geometry and spatial quality of his work satisfy the modern architecture by revealing culture meaning in modern built environment. Pei expressed his philosophy of using Chinese garden design elements in modern architectural design in Harvard Asia Pacific Review: “Chinese gardens are very unusual in the sense that you can create a microcosm of the world in such tiny space. And that has always been in my mind, so that I am never discouraged when I don’t have as much room to work with. I can always say, look at the SuZhou gardens and what wonders you can create with them. It is a sense of scale...” [3]. It is obvious that Chinese garden design principles have inspired Pei’s modern architectural design. Chinese garden design elements have been the major components in his work in modern built environment.

Conclusion

The four design strategies set forth in this case study assist in understanding the symbolic meaning of Chinese Garden design elements in modern built environment - SuZhou Art Museum designed by I.M.Pei. These four design strategies aid the students to understand the symbolic meaning interpret in the modern architecture through symbolic forms. The first strategy is to use natural elements, such as rocks, bamboo, water and landscaping. Bamboo presents uprightiness. The flowers add color and present the four seasons. The second strategy is to present poetic and painterly concept in design. Poetry and painting express inner feeling through symbolism that is a process to achieve aesthetic feelings and evoke associations between objects and the observer. When poetic and painterly concept is integrated in a designed space, the aesthetic feelings and appreciations are achieved for observers. In SuZhou Art Museum, Pei used stone to form a scene as ink-wash painting according to painting in Song Dynasty. The third strategy is to create scenery and track. Architecture, pavilions, verandahs, halls and walls, tracery windows are design elements that can be used to create scenery and track in a space. In SuZhou Art Museum, Pei made west wing longer (seems more interesting), and had a water fall at the end of the hall way, so the sounds of water can be very attractive to visitors. So it leads people turn left and see west wing first (Figure 3 in Appendix). There are also many tracery windows along the hallways. The fourth strategy is to create mystery and wonder in a space. These can be achieved by using verandahs in zigzag form, following the shape or slop of the site and tracery windows on verandah walls. In SuZhou Art museum, zigzag walking bridge was designed across the pond.

The analysis of these design strategies in Table -1 also assist and inform an examination of how future modern design could utilize classical Chinese garden design principles and philosophy. This approach may help designers to create a contemporary space with cultural reflections. In Harvard Asia Pacific Review, Pei indicated: "I remember the twists and turns of Chinese garden that you never see the end as you do at Versailles. In a Chinese garden, you make turn, and then you pause, you see something, and you turn again, and you see something different. This concept lingers with me, and I continue to draw from it." It is a very comprehensive conclusion that drawing ideas and inspirations from Chinese garden design will be an enduring process in order to create modern architecture that embodies culture reflections.

Table -1: Design Strategies

design strategies	Design Elements in Classical Chinese Garden	Symbolic Meaning Interpreted in SuZhou Art Museum
natural	landscaping, water, courtyard, Taihu stones and rocks, walking bridge	one main garden and eight small gardens - Taihu stones and rocks, water, bamboo presents uprightness, the flowers to add color and to present the four seasons
poetic and painterly concept	poetry and painting to express inner feeling through symbolism, a process to achieve aesthetic feelings and evoke associations between objects and the observer	Chinese stonework "ink-wash painting". Pei used stone to form a scene according to painting in Song Dynasty
scenery and track	buildings, pavilions, verandahs, hall and walls, tracery windows	made west wing longer (seems more interesting), and had a water fall at the end of the hall way, so the sounds of water can be very attractive to visitors. So it leads people turn left and see west wing first. Many tracery windows
mystery and wonder	verandahs in zigzag form, following the shape or slop of the site, tracery windows on verandah walls	zigzag walking bridge across the pond

References

- [1] Liu, L. (1989). *Chinese Architecture*. Academy Editions, London
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- [3] Pei. I.M. (Summer, 1997) *Finding Roots*. Harvard Asia Pacific Review. Retrieved on March 12, 2012 from http://www.hcs.harvard.edu/~hapr/summer97_culture/roots.html
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Appendix

Chinese Garden Design Elements



Verandahs with tracery windows and Zigzag bridges over the pond lead to more mystery and wonder



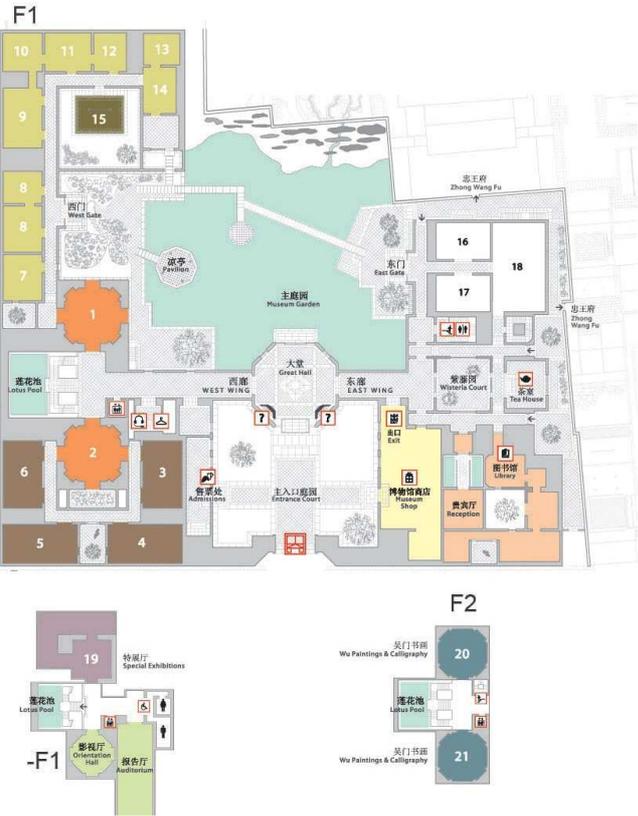
Water, Plants, Stones and Rocks



Tracery Windows (Borrowed Views)

Figure 1: Classical Chinese Garden Design Elements

SuZhou Art Museum – Designed by I.M.Pei



- 1 Hu Qiu Pagoda Treasures
- 2 Rui Guang Pagoda Treasure
- 3 Neolithic Pottery & Jades
- 4 Spring & Autumn Period Bronzes &Jades
- 5 Celadon & Yue Wares
- 6 Zhang & Wang Tomb Relics
- 7 Ming Scholar's Study
- 8 Porcelain
- 9 Jades
- 10 Bamboo, Wood & Ivory Carvings
- 11 Scholar's Accoutrements
- 12 Scholar's Collectibles
- 13 Folk Figures
- 14 Textiles
- 15 ong Pavilion
- 16-18 Contemporary Art Galleries
- 19 Special Exhibition Galleries
- 20-21 Wu Paintings & Galleries

Figure 2: SuZhou Art Museum Floor Plan

SuZhou Art Museum – Designed by I.M.Pei



The west wing was designed longer (seems more interesting), and had a water fall at the end of the hall way, so the sounds of water can be very attractive to visitors. So it leads people turn left and see west wing first. There are many tracery windows in the hallway.



A symmetrical north-south axis is designed to locate the building, which is one of the design principles of Chinese architecture. It allows the building to take advantage of the sun warmth and reflection. The colors of the building are gray, black and white, which are typical colors in classical private garden in SuZhou.



Special Chinese stonework “ink-wash painting” - Pei uses the white wall as paper; stone as paint, creating a unique visual effect with granite replicate a miniature mountain of abstract sculpture.

Figure 3: SuZhou Art Museum Case Study – Design Analysis