A Chronological Study and Statistical Analysis of Steven Holl's Architectural Design Works

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Abstract

The purpose of this study is to obtain chronological knowledge of Steven Holl's architectural design works. In this study, the buildings designed by Steven Holl are analyzed by classification. Steven Holl, a world-famous American architect, expresses a unique space using light and colors. There are many kinds facility of works in the world. Numerous works with geometrical forms that unite the history and culture of each land have been published and evaluated. Steven Holl is also very interested in design methods and often mentions his thoughts and concepts, which gives him an insight into the overall architectural form. Since 2000, research on the works of Steven Holl are increasing year after year. This study has classified the projects by classification of architectural information. Analyzing Steven Holl's work and understanding the period of activity will serve as the basis for research on Steven Holl that will be actively conducted in the future. Steven Holl's biography and published work will be researched by analyzing the features in chronological order. In this study, all Steven Holl's works are compared in terms of age, facility use, site and building area. We will consider the history of activities in Holl's architectural design in comparison with the history of activities of Steven Holl.

Keywords: Steven Holl, architectural design works, chronological classification

1. Introduction

1.1 Background and purpose of this study

Steven Holl, a world-famous American architect, expresses a unique space using light and colors. Numerous works with geometrical forms that unite the history and culture of each land have been published and evaluated. He started design activities in 1975 and was active mainly in the United States before 2000. Representative works before 2000 include Nexus World (1993, Japan) and Kiasma Museum of Contemporary Art (1998, Finland). Since 2000, we have continued to carry out large-scale design in the United States. In addition, the number of large-scale projects in China has increased, and many works have been designed in Asia. Representative works include MIT Student Dormitory Simmons Hall (2002, United States) and Linked Hybrid (2009, China). Figure 1 shows Nexus World (Fukuoka, Japan). His work expresses the concept from a watercolor sketch and has a design feature.

Holl's architecture has changed from an early interest in typology to a modern phenomenological approach. Because Steven Holl is influenced by the French phenomenologist Maurice Merleau-Ponty, Merleau-Ponty's physical theory is often incorporated into the architectural spirit of Steven Holl's works. He is very interested in his own design method and often mentions his thoughts until he arrives at the concept. There are several studies about Holl's design methods. However, there are few studies focusing on the design of the exterior, discussing from the viewpoint of the elevation design.

Elevation expression can be analyzed from a morphological aspect and analyzing an elevation with a morphological expression in architecture is important for understanding Steven Holl's architecture design progress. First of all, this study has analyzed the design expression of Steven Holl's architectural work based on the architectural information and obtain knowledge about the design works of Steven Holl by age.

Figure 1 Nexus World (Fukuoka, Japan)

In this research, we focus on the categories that set up the works designed by Steven Holl and analyze the period of activity to mention the basic part of the expression method of the works.

1.2 Literature review

Steven Holl is an architect who is willing to speak about his process and ideas. To date, there are over 40 books that contain thoughtful words about Steven Holl's architecture. According to Steven Holl's words, design methodology is influenced by the thinking of phenomenologist Maurice

Merleau-Ponty. Steven Holl is influenced by Ponty's "physical theory" and describes the relationship between the two terms "body of the body" and "the entity of the architectural space" which means that he is perceived.

Even though he was in position to perceive what is in this world, Steven Holl discovered that he was also in a position where he was united and perceived. Steven Holl describes this phenomenon as a changing situation, calling Merleau-Ponty, calling between and intertwining. Architectural works designed based on this thinking are called phenomenon architecture.

Research on Steven Holl's architectural works has been seen since 2000 and is increasing year by year. As a study on the design method, Ikuo Ono's research on methodology related to production--About Steven Holl (Ikuo Ono), Eiko Tajima's study on the design method of Steven Holl: through analysis of watercolor sketches (Eiko Tajima) and Ángel Allepuz's study on Sensitive Experience on the Steven Holl Architectural Drawings: Phenomenon, Fragment and Device (Ángel Allepuz).

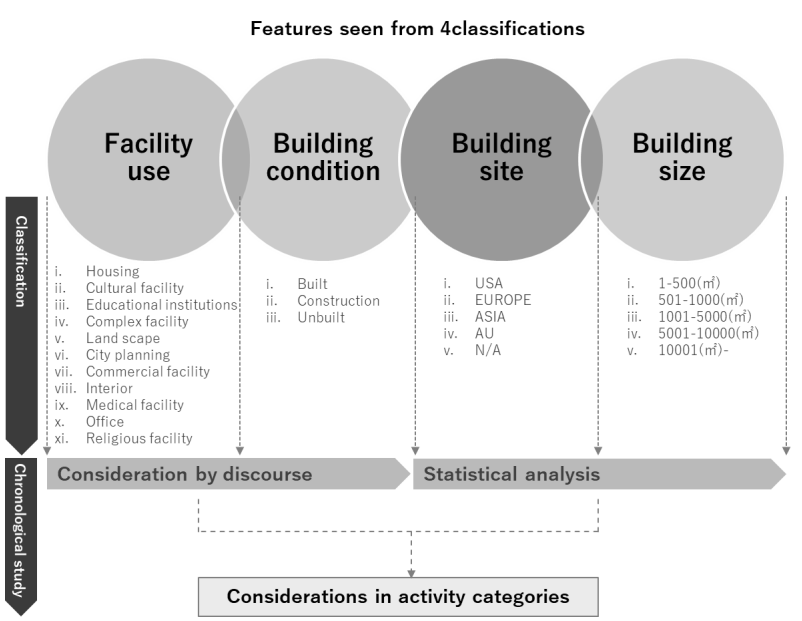

Figure 2 The framework of this study

Most of the previous studies are about Holl's design process. There has been little research that has captured the work in form. There is Kazuya Yamada and Motomu Uno's study on Design Method of Steven Holl: Based on 9 Houses (Kazuya Yamada), and Koichi Konishi and Asao Inoue's Research on Stairs in Houses Designed by Steven Holl: Through the Comparison with Le Corbusier, Mies, Wright and Aalto (Koichi Konishi). There is no mention of the activity history in all the works by Steven Holl, and
this study considers the activity history of Steven Holl and positions it as a basic research in Steven Holl's architectural design.

1.3 Research methodology

The subjects of the study are 143 architectural works from 1975 when Holl started designing. Collect information through books and the Internet and conduct research. The information is collected mainly from Steven Holl's collection works and the official website of STEVEN HOLL ARCHITECTS". All data has been collected between June 2019 and April 2020. Categorize by building information and consider the chronology of Holl's work.

In this study, all Steven Holl's works are compared in terms of age, facility use, site and building area. Figure 2 shows the framework of this study. We will consider the history of activities in Holl's architectural design in comparison with the history of activities of Holl.

Architectural facility uses are classified into 11 types. There are 11 types housing, including independent housing, housing complex, cultural facilities, educational facilities, complex facilities, landscapes, urban planning, commercial facilities, interiors, medical facilities, offices and religious facilities.

The building state is divided into three states phases. Classified into three categories: Built, Construction, and Unbuilt. Next, the site information was classified. Steven Holl is active in 25 countries, and projects are underway in various countries.

The 25 countries were divided into five regions: America (USA), Europe (EU), Asia (ASIA), Africa (AU), and private projects of which the location is unknown (N/A). Finally, the building scale was classified. About the building scale, 80 works out of 143 architectural works were used as valid data and classified into five scales. The size was classified into five 1 to 500 (m^2), 501 to 1,000 (m^2), 1,001 to 5,000 (m^2), 5,001 to 10,000 (m^2), and more than 10,001 (m^2). Based on this information, we considered the period of Steven Holl's activities. The activity period of Steven Holl is analyzed by considering the characteristics in chronological order of design based on the set category items. This study focuses on the diachronic consideration of Steven Holl's work and discusses the period of activity.

2. Classification

2.1 Features of facility use

In this chapter, we classify from architectural information and describe the characteristics of architectural works that Holl has designed to date. As shown in Figure 3, the 143 projects studied include 46 housing-related projects, 34 cultural facilities, 16 educational facilities, 13 complex facilities, 12 landscapes, 6 city plans, 5 commercial facilities, 4 interiors, 3 medical facilities and 2 office and religious facilities.

Looking at the features of the works based on the time axis, as shown in Figure 4, the largest number of housing-related works have been published since the start of design activities in 1975. Since 1985, non-residential works have also been planned. The number of housing-related works temporarily decreased from 1995 to 5 years.

On the other hand, cultural facilities and complex facilities are often planned. After 2000, landscapes, cultural facilities, educational facilities and other large-scale works were announced one after another. With the opening of the Beijing office in 2006, various building types expanded in Holl's work.

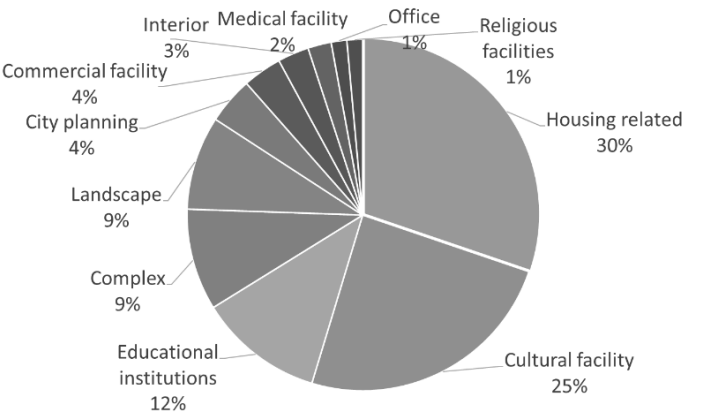

Figure 3 Propotion of works by facility use

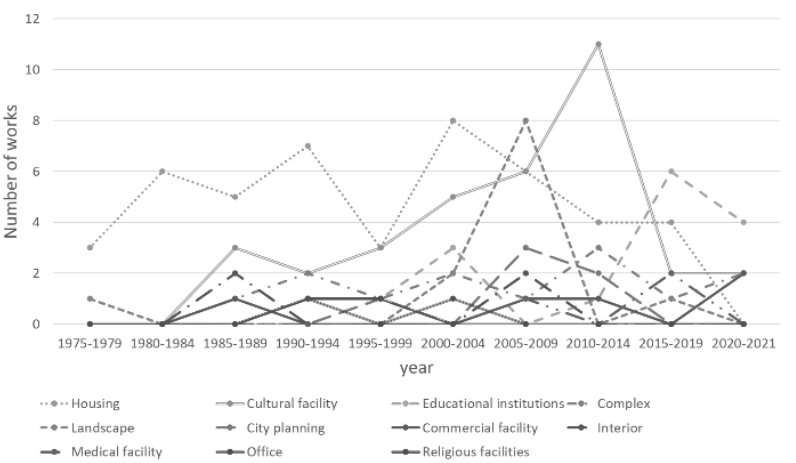

Figure 4 Number of works in order by facility use

2.2 Features of building state

The planned architectural works were completed, under construction, and classified into three groups. Figure 5 shows the number of building state by facility use. The largest number of completed projects is related to housing, followed by cultural facilities, educational facilities, interior / landscape / complex facilities, offices / commercial facilities, religious / medical facilities, and urban planning. Regarding housing, there are many requests for construction of private residences that have been requested by individuals.

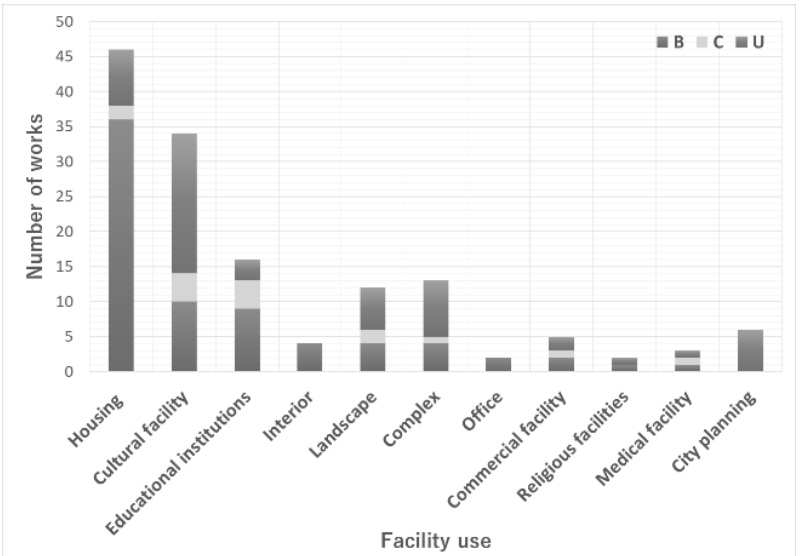

Figure 5 Number of building state by facility use

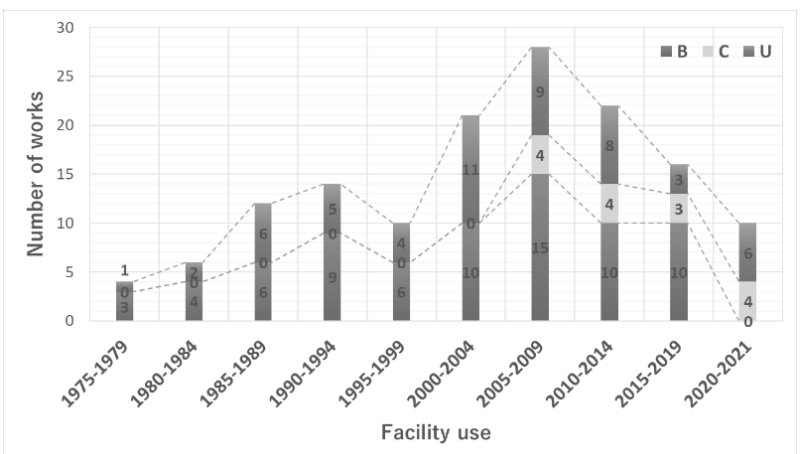

Figure 6 Number of building state by facility use

As for cultural facilities, the number of projects planned after the housing related facilities is the largest, and there are many completed works, but there are many plans, which are considered to have participated in design competitions. There are also buildings under construction, and it can be seen that the number of completed projects will increase. All the interior works have been completed, and it can be inferred that projects of relatively small scale are easy to complete. On the other hand, all city plans are not realized. These are representations of architectural ideas, not plans for realization. As a result, many residential works were most completed, followed by cultural facilities and educational facilities, but the number of other works was small, so the number of completed works was also small.

Next, as shown in Figure 6, we will describe the features that appear in each age group. Since the start of design activities, he has designed in various countries around the world and has increased the number of plans. Steven Holl Architects set up an office in Beijing in 2006 and worked on the project in New York and Beijing. New York and Beijing have almost reversed time, and it can be said that Steven Holl Architect operates almost 24 hours a day. Since 2000, the number of works has grown more than before, and some works that have been announced since 2005 are still under construction. Projects are still planned after 2020, and it is expected that the number of completed works will continue to increase in the future.

2.3 Features of building site

Next, I will describe the characteristics of the works classified by site. There are 75 works planned in the United States, followed by 39 in Europe, 27 in Asia, and one in Africa. There is also some work, and we don't know the location. Figure 7 shows number of projects in order by region. As shown in Figure 7, if you look at the characteristics of each era, the work progresses mainly in the United States after starting design activities in New York in 1975. From 1985, works will gradually be planned in Europe and Asia. Since 2000, the number of works has increased in the order of America, Europe, and Asia. In particular, the number of works has grown in Asia since the opening of the Beijing office in 2006.

Figure 8 shows number of facilities use by region. As shown in Figure 8, when looking at the number of works for each facility by region, there are many housing-related and educational facilities planned in the United States, and there are only two,

but religious facilities are planned only in the United States. Cultural facilities are mostly planned in Europe, followed by America, Asia and Africa. Many cultural, complexes, and landscape works are planned in the United States followed by Europe and Asia. In addition, urban planning, commercial facilities, interiors, medical facilities, and offices are spread in various regions, although the number is small. Steven Holl turned out to be planning various facilities in the United States.

Since the start of design activities in 1975, he has planned many works in the United States. There are few cases between 1975 and 1979, but works are planned in Asia and Europe. From 1985, work is gradually planned in Europe. The number of works planned for Europe has increased rapidly since 2000. Also, since 1990, he has begun to announce works planned for Asia, and since 2005 the number of works has increased rapidly. Steven Holl's first work in Africa is planned after 2020 and will continue to be developed around the world.

2.4 Features of building size

Next sre characteristics of the works classified according to the scale of construction. First, analysis was performed on 80 of the 143 cases where the data on the building area was made public, and the size was classified into five. As shown in Figure 9, there are the largest number of relatively small-scale works ranging from 1 to 500 m^2 in relation to housing, and works are planned at any scale, but relatively few are less than 5,000 m^2. There are few commercial facilities, interiors, medical facilities, offices, and religious facilities under the size of 1,000 m^2. Many of the works facilities, and landscapes have many works over 10,001 m^2, and the number of works has increased as the scale has increased. About city planning, only works with a scale of over 10,001 m^2 are announced.

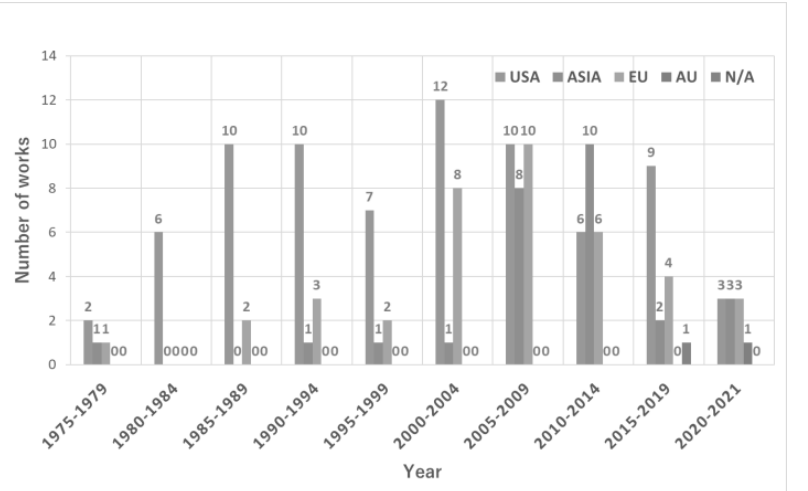

Figure 7 Number of projects state in order by region

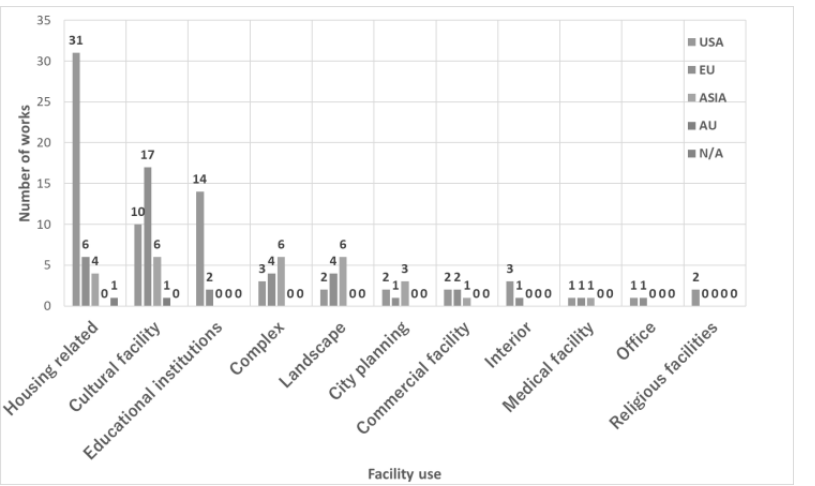

Figure 8 Number of facilities use by region

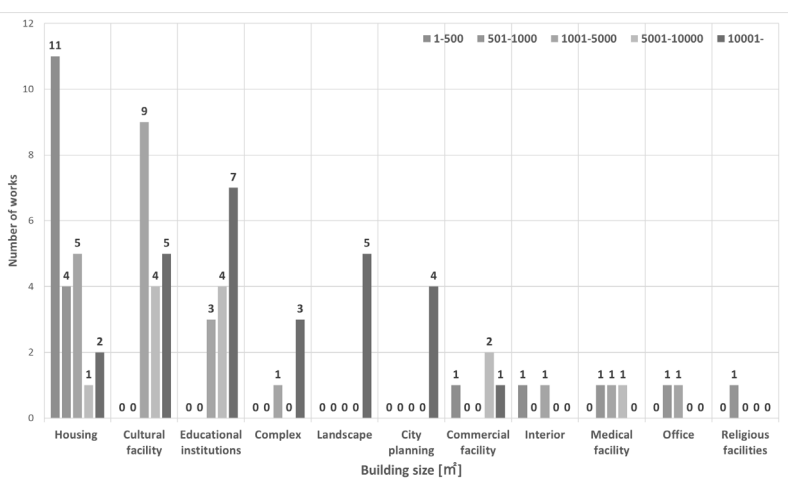

Figure 9 Number of facility use by building size

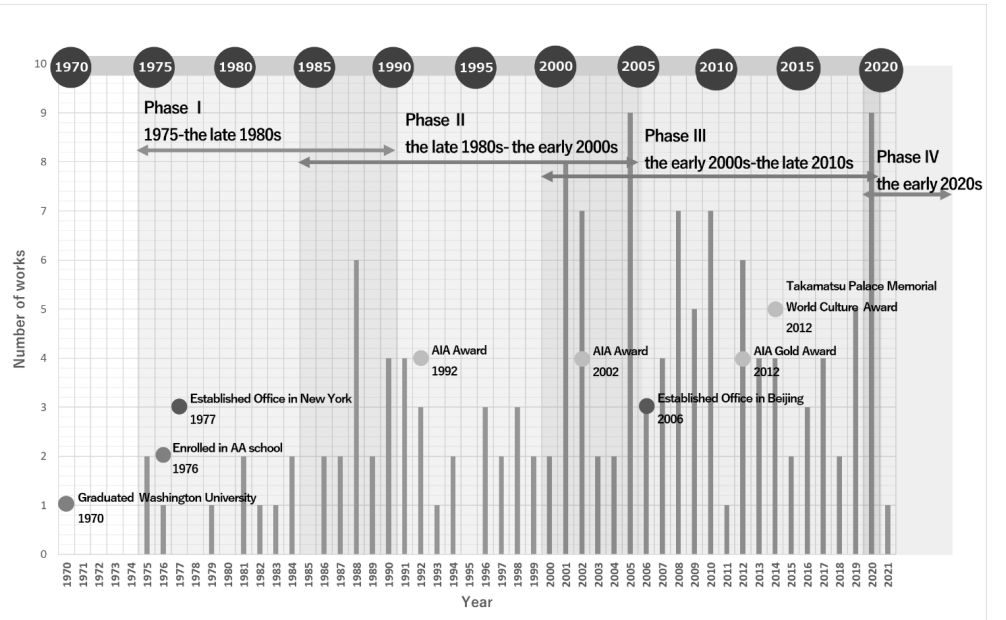

Figure10 Chronological classfication

Table 1 Chronological classification and number of building state

Phase	Year	Works	B	C	U	Overview
I	1975-1979	6	5	0	1	Steven Holl was AA school student and start as an architect.
	1980-1984	5	3	0	2	Mainly working on housing works.
II	1985-1989	11	5	0	6	Active in the United States and started various projects in Europe.
	1990-1994	13	8	0	5	Work on large-scale projects such as cultural facilities and complex facilities.
	1995-1999	9	5	0	4	
III	2000-2004	21	10	0	11	While still active in the United States, advance into Asia and proceed with large-scale projects.
	2005-2009	27	14	4	9	It was also a time when his work as a global architect, such as the AIA Gold Medal , was conspicuous due to the
	2010-2014	21	9	4	8	recognition of his works.
	2015-2019	16	10	3	3	
IV	2020-2021	10	0	4	6	There are signs that he is planning his work in Africa and will continue to work energetically.

B :Built C :Construction U :Unbuilt

3. Considerations in activity categories

Until the previous chapter, 143 works currently planned from 1975 have been used for the characteristics of the facilities, site, age, and other architectural information. Based on this information and Steven Holl's history of activities, as shown in Figure 10, it can be divided into four categories of activities. And Table 1 shows Chronological classification and number of building state. The first is Phase I, about 10 years from 1975 to the early 1980s. It has been 10 years since Steven Holl started the design activity, it was a time when he was presenting mainly works related to housing, and it can be said that Steven Holl was in the early stage of design activity. Next is Phase II, about 10 years from the late 1980s to the late 1990s. During this period, he has been active in the United States and has proposed various facilities in Europe as well. In addition, the first work in Asia was completed, and it was a year that created an opportunity to expand the world of activities. Phase III is about 20 years from the early 2000s to the late 2010s. In 2006, the Beijing office was established, and since 2000, activities in Asia have been in full swing. It was also a time when his work as a global architect, such as the AIA Gold Medal and the Takamatsu Palace Memorial World Cultural Award, was conspicuous due to the recognition of his works so far.

Finally, Phase IV is after 2020. Currently, works are planned until 2021, and design activities will continue in the world. Especially the first work in Africa is planned, and it can be expected to play an active role in areas that have never been built before.

Phase IV, Steven Holl has also paid attention to the protection of the natural environment and has also adopted the concept of WABI-SABI, a Japanese expression which means the love of using the material of the regional area adapting to the local climate, in a naturally way. Compared to the previous phase III, Steven Holl shows a different attitude towards environmental protection.

4. Conclusions

So far, 143 architectural works by Steven Holl have been analyzed using architectural information. This study has analyzed the activity history of Steven Holl's that have released various works from all over the world and the characteristics of the works and divided the period of activity of Steven Holl's design activities. Many studies on the architectural work of Steven Holl that have been done so far have been on design techniques, and there are few studies on the morphological analysis of works. Also, there is little research that covers all the works from the beginning of Steven Holl's architectural design to the present. This study is the basic research of Steven Holl's architectural design. As shown in Figure 11, it shows considerations in activity categories and case study.

Steven Holl's design activities can be divided into four phases, each with distinctive features. Phase I is the early stage of the beginning of architectural design activities. Many of the works are small-scale residential works, and many are planned in the United States. It mentions building typology, suggesting Holl's interest. Phase II expanded the range of activities not only to the United States, but also to Europe and other countries, and large-scale works began to be planned. It mentions the influence of works of art and philosophy at the design stage, which suggests Holl's interest. In Phase III, a large-scale project in Asia started, and at the same time, Steven Holl opened an office in China and expanded the field of activity as a global architect.

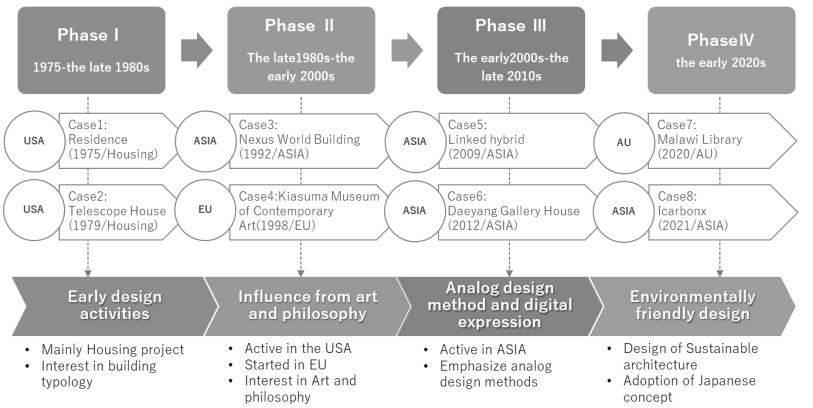

Figure 11 Considerations in activity categories and case study

With the rapid development of internet technology and CAD since the late 1990s, Holl emphasized the importance of analog design methods such as watercolor sketching, and there was also an interest in digital technology.

Phase IV is expanding its field of activity all over the world, including the first architectural design planned in Africa. He also shows his own ideas about environmental problems and is trying to show his approach to environmental problems by his own architectural design.

As described above, in this study, we have analyzed the characteristics in chronological order based on the set categories and analyzed them in chronological order. In the future, we plan to study the design of Steven Holl's architectural works based on this research.

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