

# Structure Reconstruction in Historical Site Development

## - An Example from the Ichijodani Asakura Family Site-

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### 1. Introduction

The preservation and development of historical sites are viewed in the Law for the Protection of Cultural Properties as the physical means for preserving and utilizing cultural assets. The fundamental objective is to protect and preserve ancient sites and structures. In addition to this, the goal is to utilize these properties as focal points for scholastic education and life-long learning, host sites for citizen activities, and a core for community development by bringing out and opening to the public the hidden values of these sites, and to help protect the environment that surrounds us.

In planning these objectives, it is necessary to accurately assess the site, set clear development objectives and targets, express the site in an accurate and easy-to-understand manner, ensure the sincerity of restoration work, and strive to protect the harmony with the surrounding area. Additionally, the opinions of residents must be reflected in the plans, and consideration must be shown for management and operation methods.

There are an increasing number of examples of historical site development projects in Japan in recent years, and the approaches they take are broad in nature. These approaches include those that aim to maintain the current state of the site, those that aggressively seek to express the original state of a structure by rebuilding it, and those that take diversified ways of utilization into perspective. The main issue is how to convey information on buried structures to visitors as it has been a struggle exploring ways to restore the original state of lost or damaged structures.

The term *reconstruction* can have a broad meaning, and the effects of reconstruction are equally as extensive. The problems of the easy approach have been pointed out.

## **2. Structure Reconstruction Based on Materials from Archaeological Excavations as a Methodological Approach to Historical Site Development**

In Japan, where wooden structures predominate, there are few superstructures remaining today to recount the situation of the past. Indeed, most sites consist of building foundations buried in the ground. It is difficult for the average person to imagine how the structure looked in its original state by observing only the unearthed foundation stones.

In this respect, it is very effective to directly convey the culture and technology of the times to visitors, in order to reconstruct and to exhibit structures that no longer remain.

This paper discusses the basic concepts of rebuilding historic structures from remains unearthed at archaeological excavations.

The materials excavated in archaeological digs that are important towards the reconstruction of a structure can be roughly divided into those that are directly related to the structure (hereinafter, referred to as “primary materials”) and those that are indirectly important towards inferring how the structure looked (hereafter, referred to as “secondary materials”).

### **• Primary Materials**

Primary materials are categorized into structural elements that maintain their position such as foundation stones (or their traces), mortises, continuous plinth courses, filling stones, platforms, paving stones, pounded earth floors, flooring, joists (or traces), pots, ovens, fireplaces and wells, and structural members recognized as having some sort of movement such as pillars, beams, doorsills, walls, fixtures, fittings and tiles. These structural elements generally demarcate the floor plan or basic structure (stone base pillars vs. dug-in pillars) and sometimes floor structures such as earth floors and joists. In fact, the location of street gutters often indicates the projection of roof eaves. Furthermore, the size of pillars and structures themselves can basically be inferred to some extent from foundations and mortises, although they are considered more an indicator of the floor plan. In contrast, remains such as structural members, although normally a part of the whole structure, can determine details such as specific architectural styles and dimensions. Needless to say, in cases that a collapsed structure still remains at the site, the materials can best indicate the style of a structure.

### **• Secondary Materials**

To begin with, the overall geology, arrangement of structures, and groundwork are essential for inferring the use of a particular structure. They are important materials for studying floor plans. It should also be reiterated that the diversity of artefacts and their distribution are materials for inferring the function of the structure, the class of people who used it or lived in it, and the social background of the technologies and culture. Building a structure involves not only carpenters but other numerous craftsmen such as roofers, plasterers (for walls), paperhangers and metal fitters, thus secondary materials can be thought of as the embodiment of the technologies and cultures of the society as a

whole.

There are many people who think about only primary materials, however, secondary materials are just as important in the reconstruction of a structure and deserve attention. It must be understood that the reconstruction of a structure is not possible without using both primary and secondary materials in order to determine the overall period, such as spatial features.

During the actual research, prior to the reconstruction of a structure, reference materials such as other cultural assets belonging to the same period (including paintings) should be added to materials unearthed from archaeological sites in order to complete the designs.

### **3. Development Project for the Ichijodani Asakura Family Site**

#### **• Ichijodani Asakura Family Site**

The Ichijodani Asakura Family Site was the seat of government of the Asakura Warlords during Japan's age of civil wars from A.D. 1471 when the first generation head, Asakura Takakage established control until 1573 when the fifth generation head, Asakura Yoshikage lost a battle to Oda Nobunaga, who was trying to unite Japan into one nation, and subsequently the structures were burned to the ground.

A project aimed at converting the site into a park is underway according to the vision that was crafted in 1972 with basic plans drawn up in 1974. The site is roughly divided into a flat area where there is a high density of buildings concentrated within a localized area, and a hillside area where structures such as a castle and towers dotted the forested slope. The flat area was further zoned by the type of buildings that consisted of a labyrinth of apartments and gardens belonging to the Asakura family. The buildings were systematically arranged and comparatively large residences for senior individuals and also included some temples and a district of small townhouses. Around the complex area is a wondrous natural environment with splendid landscapes. In order to utilize these structures and the landscape, it was decided to zone the site, reconstruct buildings and floor plans, preserve the landscape, and protect and develop the vegetation of the forest. Also, in addition to the aforementioned, an infrastructure necessary for a historical site park is being sequentially built, including a visitor center with conveniences for tourists, a museum and a research centre for exhibiting research results and unearthed artefacts, a park management office, parking space for visitors and paths and walkways.

Because the designated site area is a vast 278 hectares, the project is being implemented by Fukui Prefecture and Fukui City. To conduct studies and built structures, Fukui Prefecture created the Ichijodani Asakura Family Site Research Institute (currently a museum), while Fukui City created the Ichijodani Asakura Family Site Administration Office as the management organization for operating services including land acquisition. Moreover, local residents formed the Ichijodani Asakura Family Site Preservation Society, which maintains the grounds and manages a restaurant and gift shop. The project has received high praise from many arenas thanks to the way the local area has come together to preserve this historical site, The Ichijodani Asakura Family Site Research Institute (renamed the Ichijodani Asakura Family Site Museum in 1981) that Fukui Prefecture created to study and build the park has researchers in the fields of archaeology, ancient literature, landscaping and architecture, and continues to conduct interdisciplinary studies and research. In the thirty years since the start of the investigations, an area of over 10 hectares has been excavated, studied and developed as a park.

Studies have produced several structural elements that were preserved in extremely good condition and more than 1.5 million artefacts of significance. The research has provided a window on the history of this area, the most significant discovery of which was that Ichijodani was a city systematically built directly by the Asakura family.

To physically represent these findings and build a historical site park as a place where people could experience history, a project to rebuild the cityscape by reproducing the site in 3-dimensions

according to the results of digs was started in April 1991 and lasted four years. Within the approximate 200 m of cityscape with samurai homes found in 1982 ~ 1983, the gates and earthen walls (total length of approx. 250 m) of 8 samurai homes and 10 townhouses were reconstructed as accurately as possible in terms of materials and techniques based on research findings, and the interiors were created to match the lifestyle that was inferred from the unearthed artefacts. One foot inside, a visitor is transported back in time where he/she can experience Japan's age of civil wars.

#### • Reconstruction Concepts

Since the Ichijodani Asakura Family Site received special designation as a historical site in 1972, an exclusive organization has been studying and developing the site based on an overall vision. As a result, an understanding of the entire site has been gained and the zoning into districts has come to light, while characteristics and uses of most of the structures targeted for rebuilding have been identified. Moreover, reconstruction work was made a specific part of the development project that was aimed at preserving and using the site, therefore designs were scrupulously prepared and buildings were built. The details of the reconstruction work at the Ichijodani Asakura Family Site are reported in project documents (Development Report of Ichijodani Asakura Family Site II: Reconstruction of Samurai Homes and III: Reconstruction of Townhouses).

The concepts of reconstruction design specifically identify the relationship of the aforementioned unearthed materials and structure reconstruction. As an example, let us look at the gates. The gates targeted for reconstruction consisted either of four foundation stones or two dug-in pillars. The residences of this former gate are comparatively larger than those of the latter leading one to think that the owners were of different social status. The structural elements directly relating to the gates include the foundation stones, mortises and the filling stones in between. In addition, also important for the overall structure of the gate are the foundation pieces of the fences on both sides of the gate and the stone steps descending from the front. The construction of each gate must be studied from these elements. The unearthed artefacts included the bolt box fittings, round-headed studs and decorative fixtures of the door panel.

Some examples of gates with four foundation stones that we see everyday are Yakui-mon style gate and Korai-mon style gate, while two examples of gates having dug-in pillars are Muna-mon gate and Kabuki-mon gate. All of the structural elements can be considered. The style exhibited in Yakui-mon gate and Muna-mon gate was selected after viewing paintings from the same period. Also, after examining details of the two uncovered dug-in pillars, it was decided to space pillars 8 *shaku* (2.42m) apart and shape the pillars almost 8 *sun* (0.24m) square for the gate's reconstruction. Moreover, from the positional relationship of the road to the front, the gutters and the fences on both sides of the gates, it was decided to project the eaves of the gate roof outward about 4 *shaku* (1.21m). From actual gates of the late Muromachi Period and dimensional calculations recorded in carpenter's notes, the foundation was found to be proportional to the spacing between pillars and the thickness of the pillars. The actual dimensions were determined based on this. For what regards the roof style, which is a big

factor in determining how a structure looks, it was surmised from the facts that no earthen tiles were discovered at the site, wood panels that could have functioned as roof shingles were found here and there at the site, and shingles appear in paintings, that long split panels were used.

Let us next look at an example of a structure that could have been a townhouse.

This district revealed a continuous row of lots approx. 6 m across by approx. 15 m deep, facing the street. The building foundations almost filled the breath of the lot as they touched the gutter stones on the adjacent boundaries. Moreover, from the foundation layout, it became clear that bearing pillars were spaced 1 *ken* 6.2 *shaku* (1.88 m) apart and were 2.5 *ken* (4.92m) at the front and 3.5 *ken* (6.89m) to the rear. Also, small stones that could have served as spacers between pillars in-between the foundation stones were found. What was conspicuous about these foundation stones was that there was a full size larger stone positioned at the centre of the front and rear planes. They were positioned halfway between the 2.5 *ken* (4.92m) spacing and were slightly larger than other stones. Because they were positioned at the centre of the front and rear planes, it was logical to think that there stood the pillars that supported the ridgeline. In paintings such as the *Rakuchu Rakugai Zu* Screen (screen with painting of scenes in and around Kyoto), townhouses are constructed with this kind of structural post rising all the way to the ridgeline where meeting with ridgepoles, so this hypothesis was backed up. Additionally, it is common that a moat demarcates this kind of small lot of home within the site and gutters were rarely discovered, therefore a vernacular style with gable ends was thought appropriate. Also, about halfway to the rear inside the home, a buried pot was found and assumed to have served for the trade of the owner. Thinkable trades that would use such items as buried pots were those of fabric dyeing and sake brewing, but the house was small and, during the age of civil wars, fabric dyeing was the most widespread trade, and that looked like a set, so it was felt that there was a strong possibility that it was the home of a dyer. That supposition was thus put forth. Moreover, since the area with the buried pot and well could be considered an earth floor room and a pillar stood from a single foundation stone positioned in an independent location inside, which made it strongly seem like an internal partition, the building's floor plan was imagined. The size of the building's pillars could not be directly known from the structure found there. However, from the evidence of the foundation stones and unearthed pillar fragments, and the fact that the 4 *sun* square was conceivably common, this size was adopted. For the structural style, the aforementioned vernacular style with gable ends and ridge posts in the front and rear plane was chosen. Home structures of the Muromachi Period were researched and, on this pretext, this was presumed to be the basic style. Paintings and shingles were commonly used with townhouses and gutters, and were logically used as boundaries between adjacent lots, but if a thatched roof was used, there would only be about 3 *shaku* (0.91m) between adjacent buildings, and that was hard to accept, therefore the same split panel shingles used for the gate were selected. Also, after referring to paintings, logs, planks and, where necessary, stones were used as retainers.

Besides the roofing materials, pillars and fittings mentioned before, some other primary materials that specifically told us how the building looked were uncovered such as doorsills, *tatami* mats and wall mortar. From the pillar fragments, not only were the dimensions learned but also that

1/10 chamfering, planes and hatchets were used to finish the pillars. Also, the pillars finished with a plane were cypress while those finished with a hatchet were either pine or chestnut. Furthermore, from the depth, width and arrangement of the doorsill gutter, it was discovered that sliding wooden or shoji paper doors were used as well as how to bolt them. From the thickness of the wall materials and pillars, it was learned that there are half-timbered walls, straw lath framework was used and a diversity of plastered walls were finished with a first layer of mud, a middle layer of plaster and a sand and paste topcoat, as were cases of techniques with cloth dressing. Other than that, there was a wide range of hinges, locks, handles and worked metal decorations. Moreover, *tatami* mat fragments were found and it was learned that they were common at that time. However, what was found to be more important than anything else after years of studying these houses was that the reference distance between pillars was almost a standard 1 *ken* 6.2 *shaku*, suggesting that they were constructed by a team of engineers. As an overall assessment, it was evident that the level of building technology of this city was very high. Add to that the fact that many, many daily utensils, tea utensils, writing implements and tools were unearthed, and it tells us that a high level of culture existed in the city and suggests the spread of *Chano Yu*. It was not possible to put the individual structural members into a complete structure without taking into consideration the entire social environment that surrounded the structure.

Needless to say, existing structures served as verification of the uncovered archaeological materials. Through this kind of approach, specific dimensions are determined, designs drawn, construction techniques chosen and the building ultimately reconstructed.

#### **4. Summary: What Is Required of Future Building Reconstruction**

Lastly, I would like to raise a few topics concerning the future of cultural property reconstruction.

First of all, what must be pointed out is the participation of someone knowledgeable of architectural history in site investigations. This paper has laid out the thinking behind the Ichijodani Asakura Family Site, but to arrive at actual reconstruction, I was engaged in digging right from the very beginning and I was constantly thinking about the superstructure throughout the whole process. This was an extremely important point. In general, an archaeologist does the site investigation; there are very few cases in which an architectural historian is involved. After a structure has been found, the architectural historian is usually asked for his/her comment. However, if you consider the fact that many sites consist of structural members, it seems obvious that an architectural expert would be needed during the dig and even more so in site development if reconstructive development is being studied. In many reconstruction projects, the architectural expert does not come onboard until the digging is complete. For this reason, all determinations regarding reconstruction must unavoidably be made from excavation results alone. The following example is given of this situation: it could be determined that there is no evidence of pillars in a particular ruin. Depending on whether this is interpreted to mean that pillars never existed or that they were simply undetected for some reason or another (overlooked in scraping or studies), the reconstruction concepts can differ greatly. Completely opposite results will be produced depending on whether it is decided to do a “structure without pillars” or “accept the possibility that pillars existed”. If this is kept well enough in mind during the study process, the issue can be resolved.

Secondly, there are a vast number of foundations for building reconstruction because of the astonishing increase in archaeological excavations, but preliminary work is necessary in order to utilize these materials for research on the architectural history of a building. For example, the materials need to be catalogued and corroborated. In terms of ruins, structural members mainly serve to interpret the floor plan of the structure as mentioned, therefore it is necessary to understand the peculiarities such as the use of the structure. The standard for collecting and studying accumulated materials should be that case studies have a wide scope, and at the core should be studies that enable determinations and corroborations of spatial characteristics and other variables. Moreover, setting apart the high-end structures such as palaces and governmental buildings, there is a big difference between dug-in pillars and base stone pillars. It is necessary to decide how to examine this aspect of a structure. The situation today is such that architectural historians do not sufficiently realize how many materials have been unearthed from archaeological excavations. Of these, those structural members that are directly related to the structure are important. A single artefact reveals a tremendous amount of information about materials and techniques, and is essential for learning about the social environment such as the technology behind the structure. At the same time, the tools used to wield this technology and the marks of their usage are, like the artefacts themselves, valuable materials that show the degree of technological attainment, regional discrepancies and more. It can also be pointed out that this work has

the potential for changing common sense ideas in architectural history.

Third, it should be pointed out that secondary materials are also important. They are essential towards understanding the spatial features of a structure. Someone may point to a particular structure and ask what kind of structure it was, but they may be at a loss for an answer. Without studying the basic position that the structure played within the whole, it is not possible to think about the character of the structure or provide a proposal for reconstruction. Unless the entire makeup of the home (grounds) is understood, its function cannot be pinpointed from plans of the structure only. Accordingly, reconstruction is also a difficult subject. To understand the spatial characteristics, it is absolutely essential to understand the makeup of the whole home. As pointed out with the reconstruction of the Ichijodani Asakura Family Site, secondary materials were important towards understanding space, studying the floor plan, and starting the reconstruction of the superstructure. The bottom line is that a structure is a reflection of the social environment that surrounds it. The differences in technology and materials must be presumed from the class, area, and other variables. This need is predominant with structures from periods prior to the Middle Ages, therefore attention should be given to the regional differences in technology. Moreover, it must be recognized that there are significant differences between capital and other cities, urban areas and rural areas. At Ichijodani, buildings basically employ a foundation stone construction because of the city's role as the seat of government of a warlord during Japan's age of civil wars. However, it is well known that the use of dug-in pillars was common in rural villages from the same period. Furthermore, both the environment and culture of the site targeted for reconstruction are very important.

On a final note, it should be known that the publication of reports is a necessary element of reconstruction projects. There are cases in which a brief overview has not even been published, however, in order for the reconstruction of a building to have any sort of significance from the perspective of architectural history, those studies must be publicized and widely corroborated.

Historical sites are valuable cultural assets for the public, thus without their understanding, preservation will be more difficult to undertake. It cannot be denied that before the emphasis of historical sites was placed on preservation, findings from studies remained only within research circles.

Today, thousands of residents crowd archaeological sites under excavation in order to hear explanations about historical properties. There is increasing recognition of the value of the site as a direct record of how people lived long ago.

The development and restoration of historical sites can deepen an understanding of its associated structures and draw out their value and charm. Cultural properties can be truly protected by preserving and utilizing them in keeping with the Law for Protection of Cultural Properties. This is perhaps the reason for the growing importance of conserving and restoring historical sites.

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