

Authenticity of Wooden Architecture and Enhancement of its Craftsmanship

-Cultural Heritage in the 21st Century: Opportunities and Challenges-

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Wooden Structures and their Features

Compared with masonry structures, there are several important unique features of the wooden frame structures that lead their authenticity test more complicated and challenging.

First, as the natural feature of the organic material, it is unavoidable for the wood members to get rotten or decay if they are situated in difficult climatic conditions such as frequent exposure of the wet weather. Even in a favorable condition, wooden beams and columns often deformed by the heavy weight loaded upon them. We have to consider the authenticity under these conditions. However, in case it is situated in a good condition, some sort of wood can last more than a thousand years.

Second, above mentioned conditions consequently require the constant maintenance by the traditional craftsmen like carpenters and plasters. The existence of these conventional skills is quite essential to preserve the wooden heritage.

It is quite delicate to deal with wood. For example, wood members are different from each other in strength and special features such as tendency to lean against a certain side, because each tree had been placed in a different climate situation and one had to cope with the natural phenomena, even though they are the same location and the same species.

Therefore, master carpenter should have ample knowledge about the performance and behavior of the wood. According to Joichi Nishioka, the master builder of Horyuji and Yakushiji Temples, World Heritage Sites in Nara region, Japan, he uses as many as 270 different kind of carpenters' tools such as saws, chisels and planes, while average carpenters manipulate around 70 tools.

For example, the Yakushiji Temple compound, another World Heritage Site, is now undergoing an extensive rebuilding project to restore the original layout which had been lost for centuries. One of the major reconstructions is the West Pagoda, which was lost in 1528 and remained vacant since then, while the original East Pagoda built in 730 remains intact in the original position.

The reconstructed West Pagoda in 1981 was designed exactly the same as that of the East Pagoda, however, the foundation, curve of the eaves, and total height of the building was designed around one foot higher than the original East Pagoda, because it is estimated that the West Pagoda will have subsided and shrunk by one foot after 500 years due to its own weight exceeding 1,000 tons and will have reached to the level of its eastern counterpart and will remain stable since then.

This is because the wood is a living member of the building.

Authenticity of Wooden Architecture Discussed Through the Actual Restoration Works

Therefore, regular maintenance is a must for the protection of wooden architecture not only for their physical check ups but for the up-keeping of the traditional skills of the carpentry and other fields. Restoration projects for the wooden architecture can and should play a major role to enhance such an intangible heritage.

Congregation Hall of Toshodaiji Temple, yet another World Heritage Site in Nara, used to be a part of Royal Palace buildings of the Heijo Palace in 8th century Nara, was relocated to the present site as a congregation hall in circa 760. This Hall had been undergone an extensive restoration in 1270, 1323, 1693-94 and 1898-99 according to the account or script on the roof-top tile.

And again in 1998 another full restoration project started to be scheduled to complete in 2009. Current restoration work covers the full dismantling of the whole structure, check-ups of each wooden members and reassembling by using original materials with minor replacement. This restoration has just revealed a series of new discoveries.

For example, they found that roof tiles were partially restored in approximately every 100 years beside from the extensive re-roofing in 1323, 1488, and 1693. Among the total of 44,00 existing roof tiles, 40 % were the ones in or before 16th century, 40% among 17th century to early 19th century, and 10 % late 19th century. Each roof tiles of the different times look different size and it was found that only eleven tiles were original.

How should we consider the authenticity of the roof tile? We should accept the gradual evolution of the manufacturing of the roof tiles which had resulted in the slight change of their shape, and at the same time, we should consider to maintain the craftsmanship of the roofing technology, because it is quite a techniques to make roofing such a difficult shaped roofs.

Another example, there are 36 major wooden columns of the Congregation Hall, all of which were treated for the reinforcement purposes in 1898-99. Ten columns were replaced by new ones, and the removed old columns were reused as columns of minor buildings of different places. Rest of 25 columns remains at the original position, however, the bottom of the all 25 columns were damaged by the decay and therefore partially replaced by new wooden materials and jointed firmly to the original columns. The size of the replaced piece differs from 12 cm to 180 cm.

Replacement and reuse of the major wooden members are common features of their maintenance. The key issue is to maintain its original craftsmanship when restored.

One of the biggest discoveries of this restoration was that they were able to earmark the specific year that the original wooden members were sawed down. According to the dendrochronology, it was found that the logs were sawed up in 781. Therefore the founding year of the Congregation Hall of the Toshodaiji Temple is believed to be a few year after 781.

Restoration works, therefore, is the rare occasion for the scientific study and new discoveries may lead a new phase and idea of authenticity. Full restoration by dismembering all the wooden members has two different sides of the same coin, one being the destruction and eventual loss of the information of the minor part of the structure such as earthen walls, small posts and piers, the other being new discovery of the original and subsequent structural technology, which may lead a new phase of the authenticity discussion.

Roof frame of the Congregation Hall is the most typical when we discuss the authenticity problem. Original structure of the roof frame is believed to be more simple and height of the roof seemed to be a little lower than the present one. The original roof frame was replaced by the new structure in possibly 1693 restoration. And then 1898-99 restoration work introduced Western roof truss, which again had entirely changed the structural features of the roof frame. In the late 19th century, they believed it was the better solution to make use of the newly introduced Western truss.

The question we face now is whether we should restore the roof frame before 1898-99 restoration that we can trace better or we should go back to the original roof structure in 8th century. In Japanese conservation exercise, it is commonly accepted that restoring to the original structure and shape is better in case this can be done theoretically. If the concrete evidence to trace back the original design, it is recommended to retain its current shape for fear to risk losing the authenticity.

Tangible and Intangible Heritage and their Enhancement

It is, therefore, quite crucial to sustain and enhance the traditional skills and craftsmanship for the conservation of wooden structures. However, there are several difficulties to safeguard the extensive knowledge of traditional craftsmanship.

First, wooden materials are getting scarce to obtain year after year, which has resulted in so high cost of the traditional building materials that we cannot afford to conduct authentic restoration. This is also true to the cost of the traditional skills themselves.

Secondly, the work of traditional craftsmanship is being unpopular to the younger generations, which led to the sharp decrease of the population of the traditional construction workers. In particular, traditional workers other than carpenters, such as plasterers, roofers, roof tile makers are getting alarmingly smaller in population.

Thirdly, educational institutions are difficult to survive due to the decline of the traditional living style.

Fourthly, relatively new innovation for the conventional tools such as electric planes and electric drillers may lead to the fundamental change of the traditional craftsmanship.

However, in these ten years or so, we are now witnessing the change of the people's perception in this regard. Traditional wooden buildings are gradually regaining their popularity and remodeling of traditional wooden houses for modern living is getting fashionable these days.

These phenomena are good for the survival of the traditional workmanship and for the reevaluation of traditional intangible heritage in general. However, when we look at the authenticity of traditional Japanese wooden architecture, these trends seem to be a bit questionable, because authentic technology is getting more scarce and expensive and is becoming a very special skills remote from the daily life.

At the same time, we have to consider that authenticity may change due to the change of technology and taste of the times. It is also true that decreasing number of large logs and change of the logging industry may affect the technology and authenticity of the wooden architecture.

We have to remember that intangible heritage in wooden architecture is not dead technology but living one, just as the wooden members are living materials for building.

Authenticity in Wooden Architecture

In conclusion, in dealing with wooden architecture, it is the craftsmanship that the authenticity rests in, because the wooden material needs a constant maintenance and repair. Therefore, enhancement of the craftsmanship such as traditional carpentry, plaster work, and roofing work is crucial to transmit the authenticity of the wooden monument to the next generation.

Both craftsmanship and material are regarded as transmitters of the authenticity of the wooden architecture, therefore, it is impossible to separate the intangible heritage from the tangible heritage when one deal with wooden architecture.