



Final Report for Cultural Asset Preservation and Restoration Technology

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Introduction

At present, a whole range of Japanese products from transistor radios, computer microchips to cars is reaching every corner of the world and therefore no one is able to ignore the fact that there is one of the most powerful country called Japan somewhere on this planet. Generally, Japan is always known for everyone as the holder of some impressive world titles: the fastest growing investor, the premier banker, the largest donor of aid, and in terms of national net worth, the richest country. According to those facts, most people outside of Japan including me are interested in how Japan's "economic miracle" was achieved. Besides, as being a lecturer and a conservation architect in Thailand, Japan has always been known to me as one of the most advanced relating to preservation and restoration technology of wooden structures. I was always curious about how Japanese do for their conservation works. Consequently, when I had a chance to have training in Japan, I was looking forward to seeing abundance of the most recent and advantage techniques and methods, using in the field of preservation and restoration of cultural assets.

However, my ideas about Japanese architectural conservation were not exactly accurate, just only fifty percent is correct. During five months of training, I have been visiting and studying more than 100 places, including the historic buildings, the historical sites, archaeological sites, and national and local museums. As a result of the study and observation, I got an impression and started to recognise through all of the lectures on the Japanese architectural history and on the protection of Japanese architectural monuments. I realised that Japanese methods of dealing with preservation of wooden structure are rooted in the country's cultures

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and its natural conditions. While, their methods are “modern” in the sense that preservation work in Japan, is also based upon continuing to develop of scientific and humanistic research. Because of the fact that I realised the individuality of the Japanese approach, I was able to deliberate that Thailand would benefit from studying the Japanese as an example.

Materials and Techniques in Preservation

Wood has been widely used in building all over the world, especially in Japan. It has been recognised as the most significant material for buildings throughout history. It has various levels of importance in a building as structural, protective and decorative materials. It is naturally sustainable and aesthetically pleasing. Nevertheless, it has enormous defects. It is an organic material, and it degrades rapidly due to the attacks from fungi and insects. Furthermore, wood burns readily. The resistance to decay in different types of wood varies widely. From the previous fact, we might say that the preservation of historical buildings made partially or completely from wood may require specific approaches in relation to the preservation of building of more permanent materials, such as stone or brick. Although, Japan and Thailand have the similarity of the dominance of wood as building material, the method to deal with preservation of the wooden cultural assets by experts of both country today are different from each other.

Japanese experts claim that when buildings are regularly maintained, the period between more drastic interventions can be greatly prolonged. Due to Japanese climate, wood decays rapidly and the buildings must frequently be repaired. Consequently, a great deal of historical buildings, which were designated as “National Treasures”, “Important Cultural Properties”, and “Important Preservation Districts for Groups of Historic Buildings” have been checked by the owner, the agency for cultural affairs (ACA) -bunka-cho, or/and local government every twenty to thirty years in order to preserve and maintain the original condition, as well as to avoid vertical and horizontal distortions. At the time of investigation, the method of reinforcement or repairing the buildings

have been applied as necessary. In order to repair a historical building, carpenters usually dismantle the building completely or partially at regular intervals. When buildings were dismantled, it was convenient to introduce new members during the reassembling of the parts.

The Japanese preservation methods seemed to me and many of experts outside Japan that historical buildings in Japan are reconstructed regularly. In my point of view, the method was unfamiliar. Even though Thailand has many historical wooden buildings, there were few evidences that dismantling and repairing have been used in the past centuries. One example of the method of dismantling repairing building in Thailand was Vimanmake Palace. The reason to use these method was to relocate the building. As a result, the method of regularly dismantling repairing building in Japan was far beyond my imagination. However, after several meetings with Japanese conservation architects, I started to understand the repair process and method. It is important to bear in mind that this is not reconstruction of a historic form in new materials, but preservation even though the repair process which involve dismantling. Although structural members and decorations have been replaced or added to the original structure, much of the original materiel is still kept intact to the present day. The fundamental characteristic of Japanese historic buildings is that most of them have existed for many centuries and have been preserved by various methods in each era, yet the preservation has been occurred in a high standard skilful way.

We might be able to classify the current idea and method to preservation of historical wooden structures in Japan as followings:

1. Structural repair by dismantling.

Repair of individual members by:

- 1.1 replacing decayed timbers or decayed parts of timbers by new timer using
 - i. traditional jointing techniques.
 - ii. jointing by animal glue or epoxy resin, steel plates, straps, or any acceptable contemporary method.



1.2 consolidating decayed members by filling cavities with epoxy resin.

1.3 Reinforcing decayed structural member by epoxy resin with metal plates or fibreglass rods inserted.

2. Structural repair (without dismantling)

Repair decayed parts of the building by using the same methods as no. 1.1-1.3

According to Japanese conservation architects I met during the training, selection of the appropriate preservation method will depend on whether it is necessary to repair the historical building, or part of it, for structural or for aesthetic appearance reasons. Also, it has been recognised that for the Japanese using traditional preservation methods are more preferable and prioritised. In their point of views for repairing the historical buildings, they consider that using historic materials and techniques is the best method. They believe that the same materials and similar techniques, which were used during the previous construction work on the building, should also be used in the preservation work. According to their ideas, it is important for them to preserve the knowledge and techniques.

Most of the idea I would agree with; however, I would like to address in some points. According to the fact that the doubt towards current materials was based on the awareness that these could solve a given technical problem, nevertheless could at the same time have unexpected side effects that could cause serious problems in the future.

On the other hand in some cases where traditional materials and techniques had proved to be ineffective, one should not be committed to repeat the same mistakes of the past.

Preservation in Japan and International Perspectives

One has to accept the fact that the major key leading to the success of Japanese is coming from borrowing. We often heard people said about Japan as *"throughout Japanese long history, they have sought to improve the old and discover the new"*. To

put it another way, *"they have adapted many foreign ideas and techniques to fit in with their own traditions. Today, Japan is a meeting ground of the new and the old, the East and the West, fused into a unique harmony"*. From those attitudes, it is able to apply into any category including preservation field. At the end of the nineteenth century, after the Meiji restoration, the European concepts of protection and preservation theories related to cultural properties were introduced to Japan. After that, the ideas were not only imported and imitated, but also the Japanese have successively transformed them in such a way as to accommodate Japan's natural and cultural conditions. Overall the transformation is successfully suitable into the context of Japanese transformation of foreign cultural ideas. The present state of architectural preservation work in Japan would be considered as a combination of two cultural phenomena.

1. A continuation of the traditions of craftsmanship and technical knowledge.
2. An application of contemporary scientific conservation methods. For instance: synthetic resins are used carefully, and only in particular cases, to prolong the life of original wooden members; timber structures and reinforced with metal, such as turnbuckles, in order to conserve the original design.

Therefore, a comprehension of the constitution of Japanese architectural preservation efforts gives a vision of a general trend in the development of its culture, the import and refining of international ideas by combine them with the best elements of the traditional culture.

The key to the successful preservation in Japan

At present the relationship between Japan's preservation philosophies and practices and the international recommendations are appeared outstanding harmony. One would admits that the fundamental characteristics that hold the key to the successful preservation of the architectural heritage in Japan comprise:

1. The efficient administration and management of preservation projects. The remarkable reputation of Japanese on administration and management to utilise limited resources in the best possible way through extremely careful planning and organisation are recognised in every part of the world.
2. The publication of comprehensive and systematic reports of repair work. The Japanese have done a marvellous task in this field. They started making reports elaborately from the beginning of their investigation until the end of the projects.
3. The efforts in preserving and using historic materials and techniques in preservation work. From the provision of the recognition of Living National Treasure, Japanese is the leader in taking legal measures to protect traditional techniques, and officially to recognise the persons who possess knowledge of these techniques. As long as the Japanese are concerned, it is not only objects as such that are worth preserved, but also the knowledge and methods which were used to produce them and are crucial for their preservation.

Conclusion

From lectures and conservation architects I learned to treasure essential elements of Japanese historic buildings and gained knowledge of preservation principles and practices in Japan. Through my meeting with the conservation architects at their work-sites, I was able to understand the significance of the Japanese work ethic and also enjoyed Japanese

hospitality. I awfully admired their commitment to the work and their conscientious approach to the treatment of the historic building that they had been given the responsibility to preserve. Moreover, the most important part of the training is I had learned to accept diverse cultural expressions in architectural preservation; nevertheless, some of the Japanese aspects that approach to historical preservation seemed alien to my idea of preservation. From lessons, Japanese experiences that I have learned, I am able to not only improve the protection and the preservation of the architectural heritage in Thailand, but also pass most of the important information to my students at Silpakorn University.

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