

Cultural Heritage Preservation and Restoration

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1. Routine Conservation

The importance of an architectural cultural property is not only its beauty, but also its transmission to future generations with as much as possible of the structure intact. Each structural member transmits the building technology of its time, as well as the spirit of the builder. The proper transmission of cultural properties requires that consideration be given to even the small details of its construction. The most important steps for doing so are to conduct regular inspections to prevent damage from occurring, and to keep up with routine repairs that prevent damage from spreading.

It is vital to follow procedures that would be considered common sense for an ordinary house, such as not storing highly flammable objects or objects vulnerable to rotting beneath the floor, keeping the interior and exterior clean, and opening and closing the windows every day. But of course the substance of the maintenance work for a cultural property extends to situations beyond those involved for an ordinary house.

Various circumstances might arise: a new owner may not have a sense of devotion to the structure, or a change of use may result in the structure being treated as little more than a shed, or the ageing of the residents may mean that maintenance and repairs are neglected. In consideration of such possibilities, routine maintenance work should be intensified.

The altered lifestyles that come with modernization can mean that less time is available for routine maintenance work, or that there is less motivation to perform the work. In Japan, for example, it used to be an annual custom to thoroughly clean the house, including carrying the tatami floor mats outside for airing and replacing the paper on the latticed sliding doors, but nowadays few people continue that custom. The traditional skills required for routine maintenance and repairs tend not to be passed on, so that even those who recognize the need are likely to hire someone else to do the work, and it comes to be regarded as something that is not a personal matter.

Under the Cultural Properties Law of Japan, while the repair and maintenance of a cultural property is the responsibility of the owner just as it is for an ordinary property, the government is to exercise supervision and in some cases provide financial or technical assistance. Thus the officials concerned with the preservation of a cultural property are obligated to provide the owner with the know-how for routine maintenance and repairs, and to instill in the owner a readiness to undertake that work.

The staff of local government offices in charge of cultural properties regularly inspect the properties under their jurisdiction, and also commission independent craftsmen to make patrols so that each property is observed several times each year. But since most of the craftsmen are lacking in specialized knowledge of history and culture, and in experience with the maintenance of cultural properties, government agencies hold trainings to develop their capabilities.

When the technicians who work on a building hand over the repaired structure or newly installed disaster prevention devices to the owner, they are also returning to the owner the responsibility for building management, and hence they should have a duty also to transmit the know-how needed for maintenance and repairs. When equipment is installed, this step is naturally taken, but with respect to the building itself there is a tendency to assume that the owner already knows what to do, and hence actual instruction on maintenance methods is only rarely provided. This is an area where improvement is needed.

To further the education of the owners of cultural properties, there are private organizations that owners may voluntarily join. The offices of these organizations plan trainings and observation tours relating to the preservation of cultural properties, and contribute in other ways to upgrading the management capabilities of owners. As one example of the heightened awareness of a property owner, the tenant operating a coffee shop in building 15 of the historic foreign residential district in Kobe was asked by the owner to accept detailed contract conditions, covering even the cleaning methods, relating to the building's status as a cultural property.

2. Prompt Damage Control through Maintenance and Repair

When damage to a cultural property occurs, the most important thing is to take prompt measures to prevent the damage from enlarging or spreading. For this purpose, in Japan the owner of a building that is designated as a cultural asset by the national government is obligated to file a damage report, within ten days of the occurrence, to the Agency for Cultural Affairs via the responsible local government agency. For small-scale damage, after local officials make an inspection and offer any necessary advice, it is the owner's responsibility to perform emergency measures or restoration work. Prompt damage control is a means not only of preserving the value of the cultural property, but also of maintaining the building in an economical manner. If large-scale repairs are necessary, a construction plan is prepared in consultation with the national or local authorities, and the repair work is usually performed as a government-subsidized project.

Any building is constructed from a variety of materials, and the lifespans of the materials define the needs for maintenance and repair. In the case of a roof that is thatched or shingled with vegetable material, if a decayed section is ignored it will quickly lead to rain leakage that can cause corrosion of the entire structure. Normally a thatched roof must be replaced every 20 years and a roof of cypress bark shingles every 30 years. However, according to such circumstances as exposure to sunlight, accumulation of fallen leaves, or growth of grass or moss, the timely replacement of certain sections or regular cleaning of the roof can make a large difference in the service life. The roof of vegetable material was originally applied on the premise that it would be replaced at regular intervals, hence it is difficult to preserve the material, but it is essential to follow the traditional patterns and procedures in replacing it. In special cases such as a densely built-up neighborhood with high risk of fire, or the lack of an inheritor who is capable of handling maintenance and repair work (more common in today's aging society), a thatched or bark-shingled roof may be covered with iron plate. Such an alteration requires a permit based on an investigation by a commission of the Agency for Cultural Affairs.

In Japan the larger temples and shrines containing many old buildings were traditionally maintained by hereditarily contracted carpenters who constantly inspected the grounds and made repairs as necessary. For example, at the massive temple complex of Horyuji (in Nara Prefecture) groups of carpenters resided in the western and eastern precincts adjoining the temple, and at the huge mountain temple of Enkyoji (in Hyogo) carpenters lived in a village at the foot of the mountain. Today's commercial society has so weakened the tradition of handing down skills through families and local communities that hereditarily contracted carpenters are not likely to survive. Thus everyday safekeeping by the owners themselves takes on greater importance in our time.

In addition to the wood materials, traditional wooden structures in Japan are often coated in whole or in part with colorings, lacquer or other materials, and modern buildings may be coated with paint. The coating is of course an important design element and also has a protective function, hence periodic reapplication is required. Where several coats have been applied, the undercoat may be quite old, and careful inspection is necessary. For example, in the

historic foreign residential district in Kobe, the Kobayashi residence formerly called the White House has been known as Moegi (light green) House since its restoration.

The decorative coatings of traditional wooden buildings are often extensively peeled, so analysis of pigment samples is necessary and special care must be taken to preserve any sections where valuable ancient pigment remains. This may require expert advice on the coatings and on the nature of the maintenance and repair work. On the other hand, the exteriors of the oldest wooden buildings in Japan (from about the 13th century or earlier) tend to be peeled clean, making it impossible to determine the authentic coating, while the wood is so rough from weathering that it would anyway be difficult to recoat, and moreover the plain condition has come to be the familiar historical appearance, with the result that coatings are not applied even when other restoration work is performed.

Recently a growing number of bridges and other steel structures have been designated as cultural assets. To preserve these structures without the need for drastic repair, it is vital that they be repainted at regular intervals.

The nature of maintenance and repair work is that it is to be carried out from time to time, in accord with the building management program, in order to prevent the spread of damage. But if repairs are done without consulting an expert because they seem simple and straightforward, then even work done with the best of intentions could cause the value of the cultural asset to be irreparably damaged. In Japan, the owner of a nationally designated structure is obligated to file a repair report with the Agency for Cultural Affairs at least 30 days prior to the performance of any repair. This requirement allows the government to issue any necessary instructions regarding the repair work, and ensures that the condition of the cultural property is not altered without permission.

3. Precautions for Natural Disasters

We owe the existence of many cultural properties to the good fortune that their location was spared from calamity over the years. Due to reverence for mountains or to scenic considerations, the sites of important buildings are often in difficult terrain or on mountainsides where the forest was cleared for the purpose. Consequently they are especially vulnerable to rot induced by humidity, and to damage by flooding, landslide or treefall resulting from typhoons or downpours. Thus the need arose for the installation of retaining walls, guardrails and drainage works, and the support or removal of menacing trees. In many cases the likelihood of a calamity was foreseen and the most urgent disaster prevention works were constructed first. In addition to the need to harmonize with the historical environment including the cultural property itself and with the surrounding natural environment, the construction work often involved difficult choices, especially when a retaining wall was needed along a cliff behind the structure.

When a small-scale building such as a shrine sanctuary is built, a temporary roof structure may be erected at the start of the construction work to protect it from the elements. Often the covering roof has been reused several times for other old buildings on the grounds. The covering roof can be regarded as a structure that is built to be renovated. Aside from traditional covering roofs, concrete covering roofs have recently been built to protect cultural properties in areas with heavy snowfall.

For most cultural properties, regardless of their current use, guaranteeing safety during an earthquake is a major problem. In a country where earthquakes are as common as they are in Japan, the very fact that a historical structure has survived up to now implies that it has strong earthquake resistance. Accordingly, damage from earthquakes was not expected to occur in historical structures, especially large ones, except in special situations. The fact that many architectural cultural assets were damaged in the Kobe Earthquake of 1995 served as the stimulus for scientific investigation of the anti-seismic capacities of cultural properties. In contrast to buildings of concrete or steel-reinforced concrete, there were no established methods for assessing the earthquake resistance of wooden structures, and studies using actual buildings as specimens were carried out to gather scientific data. This allowed the preparation of a checklist-type manual that allows owners to easily diagnose the earthquake resistance of their structures, without the high cost of a formal earthquake resistance analysis, which has brought about heightened awareness of disaster prevention.

Buildings that have received national designation as cultural assets are exempt from certain provisions of the Building Standards Law including those concerning the potentially life-threatening disasters of earthquakes, strong winds and heavy snowfall. In some cases, structural reinforcement is the only possible way to ensure safety levels comparable to those of conventional buildings. Yet this idea has met strong resistance from many persons involved with cultural assets who believe that the structures are more important than human lives. Rather than a uniform standard for reinforcement of all buildings, efforts are under way to establish targets corresponding to the cultural value and current use of a structure, and accordingly to devise special methods that will not harm the cultural values of the structures. At the same time, for buildings

whose value as cultural assets would be significantly harmed by structural reinforcement, steps are being studied to post danger warnings, limit access, and improve escape routes.

In sum, work is continuing on various preventive measures to deter the occurrence of various foreseeable disasters in Japan. While complete prevention is impossible, it is vital to keep in mind the potential disasters that are apt to be forgotten in normal times, and necessary to comprehend on a regular basis the disaster prevention context of cultural properties and their surroundings, and place urgent priority on developing appropriate countermeasures.

4. Fire Prevention and Initial Firefighting

As about 90 percent of the architectural cultural assets in Japan are built of wood, fire preparedness is indispensable. Measures are required for each stage of preparedness including prevention (fire control), early detection, initial firefighting and full-scale firefighting. Most important is control of the use of fire. In Japan, fires caused by fireworks igniting roofs made of natural materials have become a problem in recent years.

For early detection, the Japan Fire Service Law requires cultural asset structures to be equipped with automatic fire detectors, and it is important that the devices are selected and placed in ways that will not damage the interior space. For initial firefighting, the Agency for Cultural Affairs promotes the installation of firefighting equipment. Aboveground fire-flow devices for water discharge are frequently deployed, as it is essential that the equipment be easily operable by elderly owners and neighbors. For full-scale firefighting, automatic alarms that promptly alert fire departments are being installed, and routes for firefighting access are being cleared on large tracts of land where cultural properties are set far back from the road.

In addition, lightning arrestors are installed in areas where lightning strikes are common and in districts without high buildings, and fire breaks are created around cultural properties in densely populated areas. At one building which is at risk of damage from a forest fire, the main hall of the Daizenji temple (in Yamanashi), the firefighting equipment on the premises has been augmented and a fire prevention zone has been established on the hillside behind the building. Careful consideration of the firefighting equipment and fire prevention measures appropriate to the circumstances is required for each cultural property.

Japan has designated January 26, the date of a fire in the main hall at Horyuji in 1950, as Cultural Asset Fire Prevention Day. Firefighting drills are held annually throughout the country on this date, with the cooperation of local fire departments and area residents.

5. Responses to Natural Disaster

When natural disaster strikes, naturally lifesaving takes first priority. It is also vital to prepare and maintain communication systems for prompt awareness of damage to cultural properties. In the confusion at the time of a disaster, even an important building could be destroyed without full awareness in order to clear a blocked road. Hence the authorities and the local residents must be fully notified of the status of a cultural property. Emergency measures are needed to protect damaged building sections, such as the placing of structural props or of sheets to keep out the rain. It is also important to organize a relief system to help save the building in case there are insufficient resources on hand.

Following the Kobe Earthquake, inspection teams from the Agency for Cultural Affairs were able to enter the affected areas after about one week to assess the damage to cultural properties, prepare preliminary restoration plans, and estimate the restoration costs. Local branches of architectural associations took charge of assessing significant buildings that were not designated as cultural assets. Specialists attached to local government agencies were dispatched to set up long-term procedures for coordinating the restoration of each cultural asset structure. And as mentioned above, measures for earthquake proofing were reviewed.

Damage to cultural assets in Japan is also caused by typhoons. In areas that regularly experience typhoons, there has already been a natural selection process, and communities are prepared to cope with the storms. But in areas that are not accustomed to typhoons, a major storm may cause heavy damage. Typhoon no. 7 in 1998 is remembered for especially extensive damage from trees felled by wind. At the Muroji temple (in Nara Prefecture), along with repairs to the five-storied pagoda, preventive measures such as the wiring of potentially dangerous trees were carried out. Nationwide, countermeasures against potentially dangerous trees were added to the menu of cultural asset protection, and the trees around all cultural asset structures were surveyed to identify risks. This is an example of learning from a disaster.

6. Opening to the Public and Regulating Use

Along with programs to preserve cultural properties, it is desirable that people be able to familiarize themselves with and learn from the structures. Buildings that have fallen into disuse and become public property are frequently converted to museums. Some of them are managed simply as spaces for exhibits that highlight the value and attraction of the building as a cultural asset. In some cases the exhibits inhibit the enjoyment of an attractive interior, and a review is needed to develop ways of balancing the values of the structure and the exhibits. Reevaluation is especially called for in those cases where the exhibits are unrelated to the history of the cultural property itself. At least one section of the exhibits should be connected to the structure.

Public buildings are subject to societal demands for comfort and convenience, including such aspects as barrier-free access. This may result in numerous requests for all sorts of renovation or equipment installation in a cultural property, and these need to be carefully evaluated in terms of institutional goals and methods. For example, at the Yokohama Port Opening Memorial Hall a permit was obtained to install an outdoor elevator facing the courtyard.

In the case of a private home, continual utilization as a residence is best for preservation and management, and flexibility is required toward renovations for livability of the kitchen, bathing, toilet and other facilities. Culturally significant dwellings often come under public ownership due to lack of an heir, and there is wide variation in the ways they are used, and in the merits and extent of opening them to the public, according to the site conditions and the policies of the responsible authorities.

The policy for preserving residential cultural properties in Japan is to promote their living utilization as homes, and to take public ownership only as a last resort. With public monuments the opposite is true, as public ownership is the norm and site utilization is guided by local authorities.

Continual public use of a cultural property tends to maintain the inherent significance of the structure and reinforce the owner's will to preserve it. Through use, the attractiveness of the building is brought forward and good management is promoted. While an exclusive focus on use may raise issues due to conflicting demands of use and preservation, in general the two goals are complementary.

Compared to brick or stone buildings, which retain some definite value even when they have been allowed to fall into ruin, wooden buildings are far more difficult to preserve. It is essential to manage them in the context of continued use.

7. Conclusion

The management of cultural properties entails a broad range of issues, from heritage preservation and the conservation of the surrounding historical and natural environments, to topics not mentioned in this paper such as crime prevention and the regulation of institutional and individual users. Accordingly, the ideal manager of a cultural property will have broad perspective and comprehensive judgment. In Japan, training to develop managers with these qualities has been initiated by some local governments, such as the start of a training course for heritage managers in Hyogo Prefecture, but is still lacking at the national level. This is a key issue for the future.