Yukio Nishimura (Japan)

Authenticity of Wooden Architecture and Enhancement of Its Craftsmanship

Wooden structures and their features

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

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

Second, wooden structures, especially in difficult conditions, consequently require constant maintenance by traditional craftsmen such as carpenters and plasterers. The existence of these conventional skills is essential to preserve wooden heritage.

Dealing with wood is quite a delicate task. For example, wood members are different from each other in strength and special features such as tendency to warp towards a certain side, because each tree had different climatic conditions in terms of factors like wind, daylight and precipitation, and physical conditions such as slopes, altitude and latitude. Each one had to cope with different proportions of the various natural phenomena, even if they were at the same location and of the same species. Therefore, the master carpenter should have ample knowledge about the performance and behaviour of the wood. Joichi Nishioka, the master builder of the Horyuji and Yakushiji Temples, World Heritage Sites in the Nara region, Japan, uses as many as 270 different kinds of carpenters' tools such as saws, chisels and planes, while an average carpenter manipulates around 70 tools.

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

reconstruction sites is the West Pagoda, which was lost in 1528 and remained unreplaced ever since, while the original East Pagoda built in 730 remains intact in the original position.

The West Pagoda, reconstructed in 1981, was designed to be exactly the same size as that of the East Pagoda, but the foundation, curve of the eaves, and total height of the building was designed around a foot higher than the original East Pagoda, because it is estimated that the West Pagoda will have subsided and shrunken by one foot in 500 years' time due to its own weight, exceeding 1,000 tons. It will then have reached the level of its eastern counterpart and will remain stable from then on (fig. 1). This is because the wood is a living member of the building; therefore it retains ample flexibility long after logging.

Fig. 1: Yakushiji Temple, Nara, World Heritage Site; East Pagoda (right), built in 730, and West Pagoda (centre), demolished in 1538 and rebuilt in 1981. Source: Asia-Pacific Tourism Exchange Centre, Osaka, Japan.

Authenticity of wooden architecture discussed through actual restoration works

Regular maintenance is a must for the protection of wooden architecture, not only for the sake of performing physical checks on the structures, but also to ensure the perpetuation of traditional carpentry skills and other crafts. Restoration projects for wooden architecture can and should play a major role in enhancing such intangible heritage.

The Congregation Hall of Toshodaiji Temple, yet another World Heritage Site in Nara (fig. 2), used to be a part of the Royal Palace complex of the Heijo Palace in 8th-century Nara. It was relocated to the present site as a congregation hall in ca. 760. This Hall underwent extensive restoration in 1270, 1323, 1693–1694 and 1898–1899, according to the account or script on the roof-top tiles. And again in 1998 another full restoration project started, scheduled for completion in 2009. The current restoration work involves the full dismantling of the whole structure, checks of each wooden member, and reassembly using original materials with minor replacements. This restoration has brought a series of new discoveries (fig. 3). For example, it was found that the roof tiles were partially restored approximately every 100 years besides the extensive re-roofings in 1323, 1488 and 1693. Among the total of 44,000 existing roof tiles, 40% were from or before the 16th century, 40% were from the period from the 17th century to the early 19th century, and 10% were from the late 19th century. Each

Fig. 2: Congregation Hall of Toshodaiji Temple, Nara, World Heritage Site; relocated in ca. 760 and restored in 1270, 1323, 1693–1694, 1898–1899 and 1998–2009. Source: Asia-Pacific Tourism Exchange Centre, Osaka, Japan.

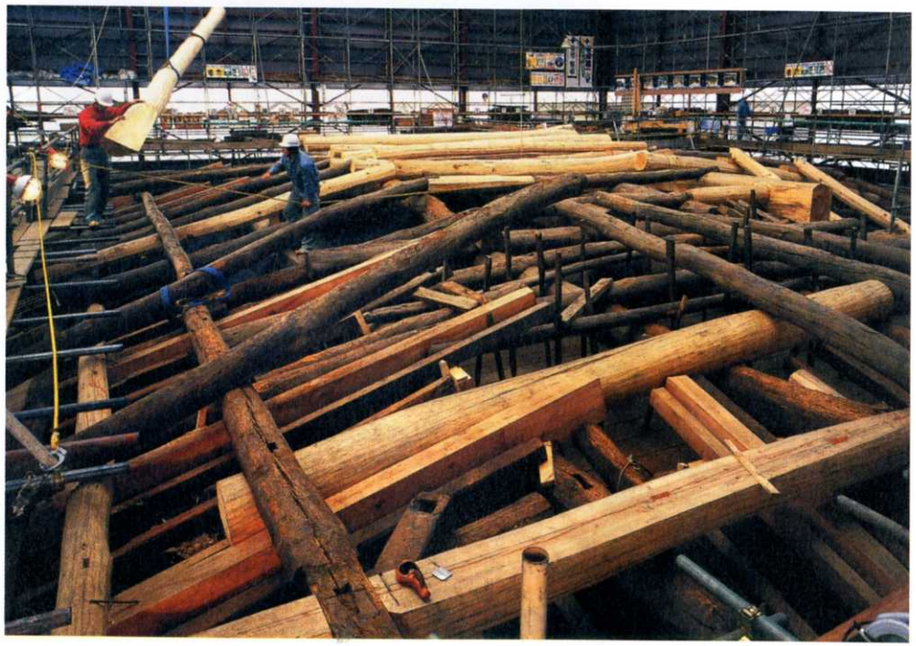
roof tile from the different times is a different size, and it was found that only eleven tiles were original.

How then should we approach the issue of the authenticity of the roof tiles? We should accept the gradual evolution of the manufacturing of the roof tiles which resulted in the slight change in their shape, and at the same time we should take care to maintain the craftsmanship of the roofing technology, because it is quite a technique to make roofing on such difficult shaped roofs.

Another example: there are 36 major wooden columns in the Congregation Hall, all of which were treated for reinforcement purposes in 1898-99. Ten columns were replaced with new ones, and the removed old columns were reused as columns in minor buildings in

Fig. 3: Restoration works at Toshodaiji Temple.
Source: T. Tamaki, *Toshodaiji Kakumiga idomu* (Masters challenge Toshodaiji, in Japanese), Shogakkan, Tokyo 2005, p. 5.

Fig. 4: Restoration works at Kokuzenji Temple, Hiroshima, built in 1671, restored in 1823, 1945-53, 1967, 1999, and 2001–2006.
Source: Nobuharu Oka, "Main Hall of Okuzenji Temple," in: *Shufuku no Techo* (Restoration Notebook, in Japanese), 2004, vol. 2, Japanese Association for Conservation of Architectural Monuments, Tokyo, p. 29.



different places. The other 25 columns remain in their original positions; however, the bottoms of all 25 columns were damaged by decay and therefore partially replaced with new wooden materials, which were jointed firmly to the original columns. The size of the replaced pieces differs from 12 cm to 180 cm.

Replacement and reuse of major wooden members are common features in their maintenance. The key issue is to maintain the original craftsmanship when restoring them. One of the biggest discoveries of this restoration was that experts were able to pinpoint the specific year that the original wooden members were cut down. Using dendrochronology, it was found that the logs were sawn up in 781. Therefore the year of construction of the Congregation Hall of the Toshodaiji Temple is believed to be a few years after 781.

Restoration works, therefore, provide a rare occasion for scientific study, and new discoveries may usher in a new phase and idea of authenticity. Full restoration by dismantling all the wooden members incorporates two different sides to the same coin, one being the destruction of and eventual loss of information on minor parts of the structure such as earthen walls, small posts and piers, the other being new discoveries regarding original and subsequent structural technologies, which may bring new material to the authenticity discussion.

The roof frame of the Congregation Hall is the most typical in terms of the authenticity problem. The original structure of the roof frame is believed to have been simpler and the height of the roof was probably a little lower than the present one (fig. 5a). The original roof frame was replaced by the new structure possibly in the 1693 restoration (fig. 5b). And then the 1898–1899 restoration work introduced a Western roof truss, which again entirely changed the structural features of the roof frame (fig. 5c). In the late 19th century, they believed that making use of the newly introduced Western truss was the best solution.

The question we face now is whether we should restore the roof frame of before the 1898–1899 restoration, which we can trace better, or whether we should go back to the original roof structure of the 8th century. In Japanese conservation practice it is commonly accepted that restoring the original structure and shape is better in cases where this can be done theoretically. If the concrete evidence to recreate the original design is lacking, it is recommended that its current shape be retained for fear of losing the authenticity.

Tangible and intangible heritage and its enhancement

It is, therefore, quite crucial to sustain an d enhance the traditional skills and craftsmanship for the conservation of wooden structures. However, there are several difficulties involved in safeguarding extensive knowledge of traditional craftsmanship (fig. 6).

First, wooden materials are becoming scarcer to obtain every year, which has resulted in such high costs of traditional building materials that we often cannot afford to conduct authentic restoration.

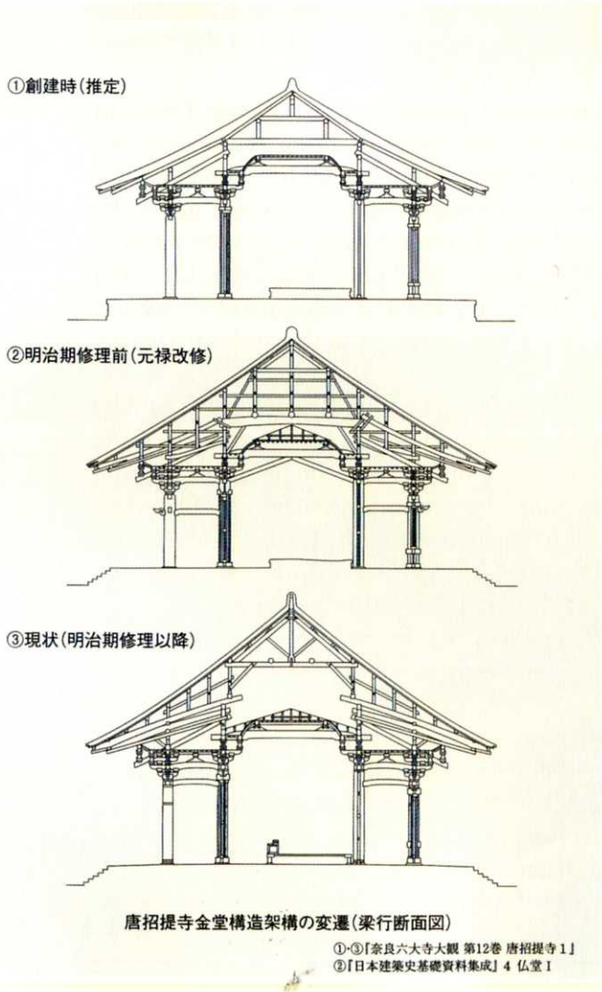


Fig. 5: Section Plan of Main Hall of Toshodaiji Temple. Source: T. Tamaki, *Toshodaiji Kakumiga idomu* (Masters challenge Toshodaiji, in Japanese), Shogakkan, Tokyo 2005, p. 133.

Fig. 6: Variety of contemporary carpentry tools. Source: Kunio Karai (script) and Sachikazu Kabayama (pictures), *Bokuno ikega dekiru* (My House is Being Built, in Japanese), Fukuinkan, Tokyo 1988, pp. 7–23.

This is also true of the cost of the traditional skills themselves. Secondly, jobs in traditional craftsmanship are not popular among the younger generations, which has led to a sharp decrease in the population of traditional construction workers, in particular traditional workers other than carpenters, such as plasterers, roofers, and roof tile makers. Thirdly, educational institutions are having difficulty surviving due to the decline of the traditional living style. Fourthly, relatively new variations on conventional tools, such as electric planes and electric drills, may lead to fundamental changes in traditional craftsmanship and the eventual extinction of these skills.

However, in the last ten years or so, we have also begun to witness a change in people's perception in Japan in this regard. Traditional wooden buildings are gradually regaining their popularity and it is becoming fashionable to remodel traditional wooden houses for modern living. These phenomena are good news for the survival of traditional workmanship and for the revaluation of traditional intangible heritage in general. However, when we look at the authenticity of traditional Japanese wooden architecture, these trends seem somewhat questionable, because authentic technology is becoming more scarce and expensive, increasingly a very special skill remote from daily life.

At the same time, we have to consider that what is considered authentic may change as technology and the tastes of the times change. It is also true that decreasing numbers of large logs and changes in the logging industry may affect the technology and authenticity of wooden architecture. We have to remember that intangible heritage in wooden architecture is not a dead technology but a living one, just as the wooden members are living building materials (fig. 6).

Authenticity in wooden architecture and the international discussion on authenticity

In dealing with wooden architecture, the authenticity rests in the craftsmanship, because the wooden material needs constant maintenance and repair. Therefore, enhancement of crafts such as traditional carpentry, plaster work, and roofing work is crucial to transmitting the authenticity of the wooden monument to the next generation. This is particularly true in East and Southeast Asian countries, where the weather is relatively warm and wet and there is damage caused by termites and other insects, as well as moulds such as mildew, not

to mention strong economic and political pressure for development.[1] Wooden structures therefore need regular treatment. Both craftsmanship and material are regarded as transmitters of the authenticity of the wooden architecture, and therefore it is impossible to separate the intangible heritage from the tangible heritage in the case of wooden architecture.

This is the fundamental reason why the Japanese government, together with UNESCO, ICOMOS and ICCROM, hosted a professional conference and invited 45 international participants to Nara in November 1994, which resulted in the famous Nara Document on Authenticity as an expression of reconsideration of the concept of authenticity affirmed by the Venice Charter in 1964.

In the Venice Charter, material authenticity is considered to be the basis of the whole work of conservation. This is understandable when one thinks of structures made of either stones or bricks. However, when the historic monuments in question are made of wood, and especially when these wooden monuments are situated in a warm, wet climate, some articles of the Venice Charter should be reviewed carefully.

For example, Article 12 of the Charter reads "Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence"; this is followed by Article 13: "Additions cannot be allowed except in so far as they do not detract from the interesting parts of the building, its traditional setting, the balance of its composition and its relation with its surroundings."

These principles are difficult to follow when dealing with wooden architecture, which needs constant maintenance and regular replacement even though the interval may be more than one hundred years.

In the Operational Guidelines for the Implementation of the World Heritage Convention prepared by the UNESCO World Heritage Centre, the test of authenticity used to be defined by four elements: authenticity of design, material, workmanship and setting (former Operational Guidelines section 24(b)).[2] The Nara Document

[1] Cf. Y. Nishimura, "Changing Concept of Authenticity in the Context of Japanese Conservation History", in: K.E. Larsen (ed.), *Nara Conference on Authenticity Proceedings*, UNESCO World Heritage Centre/Agency for Cultural Affairs (Japan), UNESCO/ICCROM/ICOMOS, 1995, pp. 175–193; Y. Nishimura, "Conserving and manging cultural heritage settings in changing landscapes," in: *World Heritage*, 2006, no. 42, UNESCO, pp. 30–31.

[2] Cf. UNESCO, Operational Guidelines for the Implementation of the World Heritage Convention, WHC05/2, 2 Febraury 2005, http://whc.unesco.org/archive/opguide05-en.pdf, uploaded on April 15, 2007.

on Authenticity expands the coverage of the authenticity concept in the Operational Guidelines. Paragraph 11 of the Nara Document reads: "All judgments about values attributed to cultural properties as well as the credibility of related information sources may differ from culture to culture, and even within the same culture. It is thus not possible to base judgements of values and authenticity within fixed criteria. On the contrary, the respect due to all cultures requires that heritage properties must be considered and judged within the cultural contexts to which they belong." This stressed that cultural heritage should be recognised and understood in its own cultural context and therefore there are no universal criteria for authenticity.

Furthermore, the Nara Document proposed additional criteria for judgments on values and authenticity: "form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors" (Nara Document, par. 13). It also introduced the idea of "information sources" containing the values and authenticity within the cultural monuments. Information sources were defined as "all material, written, oral and figurative sources which make it possible to know the nature, specifications, meaning and history of the cultural heritage" (Appendix II to the Document); this clearly included intangible heritage.

Consequently, UNESCO's Operational Guidelines were revised in February 2005 to accommodate the points of the Nara Document on Authenticity. Under the title of Integrity and/or authenticity (II.E), section 80 stipulates, in line with the Nara Document on Authenticity, that "The ability to understand the value attributed to the heritage depends on the degree to which information sources about this value may be understood as credible or truthful. Knowledge and understanding of these sources of information, in relation to original and subsequent characteristics of the cultural heritage, and their meaning, are the requisite bases for assessing all aspects of authenticity."

Then section 81 follows: "Judgements about value attributed to cultural heritage, as well as the credibility of related information sources, may differ from culture to culture, and even within the same culture. The respect due to all cultures requires that cultural heritage must be considered and judged primarily within the cultural contexts to which it belongs." It is quite clear that not only the idea but also the actual wording of this section was taken from paragraph 11 of the Nara Document.

Section 82 illustrates a variety of attributes through which the cultural value of heritage is expressed. These are: form and design; material and substance; use and function; traditions, techniques and

management systems; location and setting; language, and other forms of intangible heritage; spirit and feeling; and other internal and external factors. This is a slight modification of paragraph 13 of the Nara Document on Authenticity, cited above.

Conclusion

In conclusion, the discussion on the authenticity of wooden architecture eventually led to an international debate on authenticity in relation to the World Heritage Convention and concluded in as liberal a concept of information sources as possible, enshrined in the Nara Document of Authenticity in 1994. In turn, the Nara Document partly triggered the revision of the Operational Guidelines for Implementation of the World Heritage Convention in 2005 to expand the concept of authenticity to accommodate wooden architectural heritage. Today, it has thus finally became possible for us to view the authenticity of wooden architecture in the global context.

APPENDIX
THE NARA DOCUMENT ON AUTHENTICITY (1994)[3]

Preamble

1. We, the experts assembled in Nara (Japan), wish to acknowledge the generous spirit and intellectual courage of the Japanese authorities in providing a timely forum in which we could challenge conventional thinking in the conservation field, and debate ways and means of broadening our horizons to bring greater respect for cultural and heritage diversity to conservation practice.
2. We also wish to acknowledge the value of the framework for discussion provided by the World Heritage Committee's desire to apply the test of authenticity in ways which accord full respect to the social and cultural values of all societies, in examining the outstanding universal value of cultural properties proposed for the World Heritage List.

[3] The text of the NARA Document cited after K.E. Larsen (ed.), *Nara Conference on Authenticity in relation to the World Heritage Convention, Nara, Japan 1–6 November 1994, Conference Proceedings*, UNESCO World Heritage Centre/Agency for Cultural Affairs (Japan)/ICCROM/ICOMOS, Nara 1995.

3. The Nara Document on Authenticity is conceived in the spirit of the Charter of Venice, 1964, and builds on it and extends it in response to the expanding scope of cultural heritage concerns and interests in our contemporary world.
4. In a world that is increasingly subject to the forces of globalization and homogenization, and in a world in which the search for cultural identity is sometimes pursued through aggressive nationalism and the suppression of the cultures of minorities, the essential contribution made by the consideration of authenticity in conservation practice is to clarify and illuminate the collective memory of humanity.

Cultural Diversity and Heritage Diversity

5. The diversity of cultures and heritage in our world is an irreplaceable source of spiritual and intellectual richness for all humankind. The protection and enhancement of cultural and heritage diversity in our world should be actively promoted as an essential aspect of human development.
6. Cultural heritage diversity exists in time and space, and demands respect for other cultures and all aspects of their belief systems. In cases where cultural values appear to be in conflict, respect for cultural diversity demands acknowledgment of the legitimacy of the cultural values of all parties.
7. All cultures and societies are rooted in the particular forms and means of tangible and intangible expression which constitute their heritage, and these should be respected.
8. It is important to underline a fundamental principle of UNESCO, to the effect that the cultural heritage of each is the cultural heritage of all. Responsibility for cultural heritage and the management of it belongs, in the first place, to the cultural community that has generated it, and subsequently to that which cares for it. However, in addition to these responsibilities, adherence to the international charters and conventions developed for conservation of cultural heritage also obliges consideration of the principles and responsibilities flowing from them. Balancing their own requirements with those of other cultural communities is, for each community, highly desirable, provided achieving this balance does not undermine their fundamental cultural values.

Values and authenticity

9. Conservation of cultural heritage in all its forms and historical periods is rooted in the values attributed to the heritage. Our ability to understand these values depends, in part, on the degree to which information sources about these values may be understood as credible or truthful. Knowledge and understanding of these sources of information, in relation to original and subsequent characteristics of the cultural heritage, and their meaning, is a requisite basis for assessing all aspects of authenticity.
10. Authenticity, considered in this way and affirmed in the Charter of Venice, appears as the essential qualifying factor concerning values. The understanding of authenticity plays a fundamental role in all scientific studies of the cultural heritage, in conservation and restoration planning, as well as within the inscription procedures used for the World Heritage Convention and other cultural heritage inventories.
11. All judgements about values attributed to cultural properties as well as the credibility of related information sources may differ from culture to culture, and even within the same culture. It is thus not possible to base judgements of values and authenticity within fixed criteria. On the contrary, the respect due to all cultures requires that heritage properties must be considered and judged within the cultural contexts to which they belong.
12. Therefore, it is of the highest importance and urgency that, within each culture, recognition be accorded to the specific nature of its heritage values and the credibility and truthfulness of related information sources.
13. Depending on the nature of the cultural heritage, its cultural context, and its evolution through time, authenticity judgements may be linked to the worth of a great variety of sources of information. Aspects of the sources may include form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors. The use of these sources permits elaboration of the specific artistic, historic, social, and scientific dimensions of the cultural heritage being examined.