

How four Types of Japanese Carpenters make Use of the Wealth of their Country's Wood Species

Exploitation de la richesse en bois du Japon par quatre types de charpentiers

Mechtild Mertz¹

¹ UMR 8155 CRCAO-CNRS, Collège de France, Paris, France – mechtild.mertz@free.fr

ABSTRACT. We introduce and describe four different kinds of carpenters (*daiku*), especially through the wood species they use. The temple and shrine carpenter (*miya-daiku*) has to search his wood far away, the carpenter for refined teahouses and residences (*sukiya-daiku*) uses local wood, the joiner of doors, windows and screens (*tateguya*) also uses Japanese wood species for interior finishings, and the general carpenter's choice of wood (*daiku*) is shown through three examples.

RÉSUMÉ. Quatre différents types de charpentiers (*daiku*) sont décrits, notamment par les essences de bois qu'ils utilisent. Le charpentier des temples et des sanctuaires (*miya-daiku*) doit chercher son bois très loin, le charpentier des maisons de thé et des résidences raffinées (*sukiya-daiku*) utilise du bois local, le menuisier des portes, des fenêtres et des écrans (*tateguya*) utilise également du bois japonais pour les finitions intérieures, et le choix du charpentier général (*daiku*) est présenté à travers trois exemples.

KEYWORDS. Carpenters, Joiners, Japan, Wood selection, Hinoki cypress.

MOTS-CLÉS. Charpentier, Menuisier, Japon, Sélection du bois, Cyprès Hinoki.

Introduction

The aim of this article is to introduce the Japan's wood wealth and its exploitation from the perspective of four types of carpenters (*daiku*), in some cases also named joiner. In this paper, the carpenters and their various specialties are referred together under the general term of *daiku*, as we are attempting to discuss the exploitation of wood richness in Japan via the examples of four types of woodworkers. There are obviously various carpenters or *daiku*, with different names, like the chief roof tiler (*kawara-daiku*), the carpenter for ships (*funa-daiku*), the carpenters for molds (*katawaku-daiku*) or the carpenters for furniture (*zôsaku-daiku* or *kagu-daiku*). In the sixteenth and seventeenth centuries, the name of carpenters changed, especially with the dominance of the *tōryō* or chief master carpenter (Coaldrake, 1990: 15). This article does not attempt to provide the historiography of research on woodworking and its craftsmen in Japan but its goal is to introduce the main species of wood used in Japan by carpenters. The choice made by the author to translate the term *daiku* several times as carpenter or sometimes as joiner is not a bias. It is simply the result of a solution of ease of expression, our goal being to restore the types of wood used and not to discuss the woodworkers who use them.

Based on a recent published book, *Japanese Wood and Carpentry - Rustic and Refined* (Mertz, 2020), four different types of carpenters were selected for having different specialties when it comes to their use of wood species: *Miya-daiku*, or carpenter for temples and shrine construction, also sometimes considered as *tōryō*, *sukiya-daiku*, or carpenter for refined teahouses and residences, *tateguya*, also called joiner of doors, windows and screens, and *daiku*, a general carpenter. Here we present the choices of wood of all four, but others exist. These woodworkers were selected for this paper because they are exploiting wood for what can be grouped under the occidental term of "carpentry". In this paper, we present the scientific or botanical names of the wood species and,

in few cases, the trade name is derived from it (Corkhill, 1979: 356)¹. Indeed, there is usually a considerable confusion of wood name, because of several names given to the same species. This is especially true in Asia where there is a modification of the Asiatic name, or the name most familiar to the reader.

Miya-daiku(宮大工): carpenter for temple and shrine constructions

The *miya-daiku* or carpenter for temple and shrine constructions tries to make use of *hinoki* or hinoki cypress (*Chamaecyparis obtusa*). This becomes particularly interesting in restauration projects of temples and shrines with their large pillars, as such large trees for pillars hardly exist anymore. During the recent ages, different solutions were found as for the reconstruction of the Lecture Hall (Kōdō) of the Yakushi-ji temple originally constructed in AD 698. For the restoration, the wood was selected in Taiwan by the renowned master carpenter, or *tōryō* Nishioka Tsunekazu (1908-1995; Nishioka & Kohara, 1978). He instructed the temple to purchase *Taiwan-hinoki* and *beni-hinoki* (*Chamaecyparis obtusa* var. *formosana* and *Chamaecyparis formosensis*) from Taiwan (**figure 1**). The restauration of the Lecture Hall was completed in 2003 (Nishioka & Kohara, 1978: 7, 25 and 210-216; Brown, 1989: 25-44). The wooden structures of the Old Capital of Kyoto (794-1869) were basically made from *hinoki*, and conversion of timber was practically done by longitudinal splitting (Mertz, 2020: 13). But then in the fifteenth century, all Kyoto burnt down during the civil war, the Ōnin no Ran (1467-1477). For the reconstruction of Kyoto, new wood species had to be used, notably *keyaki*, or Japanese zelkova (*Zelkova serrata*). Conversion by splitting was impossible, with that wood, therefore in the fifteenth century the two-man frame saw or ripsaw, *oga*, used for longitudinal sawing was introduced to Japan from China (**figure 2**), as can be seen in the Takenaka Carpentry Tools Museum in Kobe². In the sixteenth century, the wide-blade ripsaw (*maebiki-oga*), that was operated by just one person was invented in Japan (**figure 3**), another tool enabling conversion of non-cleavable timber (Mertz, 2020: 14)³. The next interesting project was the complete reconstruction of Nara's Heijō-kyū palace (2001-2010), the Great Hall of State (Daigokuden; Coaldrake, 1990: 110 and 112). In order to obtain pillars of sufficient size and girth, locally grown hinoki trees that proved to



Figure 1. Taiwan-hinoki or beni-hinoki from Taiwan, selected by chief-carpenter Nishioka Tsunekazu (1908-1995). © M. Mertz.

¹ Making best use on Japanese names, see Mertz, 2016: 22-29 and 75.

² Takenaka Capentry Tools Museum: <https://www.dougukan.jp/?lang=en>.

³ See Hokusai, K. (北斎葛飾), ca. 1830. Tōtōmi sanchū (遠江山中). In the mountains of Tōtōmi Province. From Fugaku sanjū-rokkei (富嶽三十六景). (Thirty-Six Views of Mount Fuji). In the collection of the Tokyo National Museum. <https://webarchives.tnm.jp/imgsearch/show/C0015281>.



Figure 2. Two-man frame saw, or ripsaw, for longitudinal sawing introduced from China in the 15th century. Takenaka Carpentry Tools Museum, Kobe, 2018. © M. Mertz.



Figure 3. The wide-blade ripsaw, or maebiki oga, for longitudinal sawing introduced into Japan in the 16th century was operated by just one sawyer. Well presented here in the famous woodblock print Thirty-Six Views of Mount Fuji by Hokusai Katsuhika (1760-1849). © TNM Image Archives.

be too small in diameter were bundled and glued together (**figure 4**). In a further step, the Japanese government searched large timbers worldwide, as already foreseen by Nishioka long ago in view of the disappearance of large *hinoki* timber (Nishioka & Kohara, 1978: 8). For the reconstruction of the Central Golden Hall (Chū-kondō) of Nara's Kōfukuji Temple⁴, a temple founded in 669, the carpenters in charge went as far as the Republic of Cameroon in order to obtain a wood named *afzelia* or doussie, in Japanese *Afurika-keyaki* or *apa* (*Afzelia* spp.).



Figure 4. Pillars of the Heijō-kyū palace in Nara with smaller *hinoki* cypress stems bundled together. © Kizawa N.

⁴ To learn more on Kōfuku-ji Temple and the Central Golden Hall (Chū-Kondō): <https://www.kohfukuji.com/english/>

Sukiya-daiku (数寄屋大工): carpenter for refined teahouses

The carpenter for refined teahouses makes use of various materials (Mertz, 2020: 26-30 and 33-34), such as Chinese silver grass (*susuki* or *kaya* – *Miscanthus sinensis*), bark or *juhi*, bamboo or *take*, and of course decorative or symbolical wood species that are employed, for example, in the alcove or *tokonoma* or for the so-called secondary construction, often found outside. This can be best illustrated by two teahouses or tearooms in Kyoto (figure 5), that were reconstructed in 2012, after they burnt down in 2009. These two teahouses are an expressive example. They are on the grounds of Hakusasonsō in Kyoto (Mertz, 2016: 128), inside the complex of the Memorial Garden and Museum created by the painter Hashimoto Kansetsu (1883-1945). The two excellent teahouses are made in two different sizes (Mertz, 2016: 24). The smaller one on the left, called Keijaku-an, is a so-called small tea room, or *koma*, of four and a half *tatami* mats (or less). The bigger one on the right, is a large tearoom of four and a half to up to eighteen *tatami* mats, a *hiroma* called *Isui-tei*. A closer look at the *koma*'s materials shows the *tokonoma* or alcove consists of a pillar made from an old zelkova pillar that originally belonged to Nara's Tōdai-ji Temple (founded in 738). The *toko-bashira* or the alcove's main pillar still shows burning traces from the 2009 fire of the Hakusasonsō tea houses (Mertz, 2016: 30). The *tokonoma*'s bottom frame, or *toko-gamachi* and lintel, or *otoshi-gake* are also made from that old wood, Japanese zelkova or *keyaki* (*Zelkova serrata*). This very old Japanese zelkova has a reddish-brown color. Such old wood (*kozai*) from ancient buildings like here the Tōdai-ji temple in Nara is highly appreciated in tea-rooms (figure 6).



Figure 5. The two teahouses Keijaku-an and Isui-tei on the grounds of Hakusasonsō Garden and Museum in Kyoto.
© A. Joly.



Figure 6. Alcove, in Japanese tokonoma of the smaller teahouse Keijaku-an made from ancient wood (*kozai*) of Japanese zelkova, or *keyaki* (*Zelkova serrata*). © A. Joly.

Tateguya(建具屋): joiner of doors, windows and screens

The *tateguya* also belongs to the guild of carpenters. He is the joiner of doors, windows and screens, like sliding doors or *fusuma*, and folding screens or *byōbu*. He also manufactures freestanding partition screens, or *tsuitate*, wooden doors, or *itado*, and shelves, or *tana*. As for the sliding doors and folding screens, the joiner prefers to use the outer sapwood of *sugi* or cedar/cryptomeria (*Cryptomeria japonica*), as they are considered art objects that are shown or stored away. They are thus handled with the utmost care when exhibited or taken in and out of storage. Their inner structure, or lattice is made

from the outer sapwood, that has surprisingly little or no resin (**figures 7 and 8**). The inner heartwood of *sugi*, or *akami* contains resin and is much stronger. Therefore, it is used for wooden doors (*itado*) or paper-covered sliding doors (*shōji*). To illustrate the rare use of sapwood the inner structure or lattice, called *shitaji-bone* in Japanese, is shown here (**figure 8**). It is used to make sliding doors, or *fusuma*. A beautiful example of a sliding door is *Crested Myrya Birds in a Bamboo Forest* (1922) by Hashimoto Kansetsu (1883-1945; **figure 9**).



Figure 7. Wood disk with the white outer sapwood, or shirata, and the inner heartwood, or akami, of Japanese cedar, or sugi (*Cryptomeria japonica*). © Usui H.



Figure 8. Inner structure, or shitajibone of sliding doors made by Usui Hiroaki. © Usui H. →



Figure 9. Sliding doors with Crested Myra Birds in a Bamboo Forest painted by Hashimoto Kansetsu. © Hashimoto S.

Daiku (大工): general carpenter

The general carpenter or *daiku*, is in charge of various folk dwellings (*minka*) notably of houses of mountains (*sanka*), farmhouses (*noka*), or townhouses (*machiya*). A good example is the *minka* or folk dwelling, a weaver's house from the Kiso District in Nagano Prefecture. That *minka* was given as a present to the late Jane Cobbi, who lived there during her PhD in ethnological studies, when she was a student (Cobbi, 1978). She brought the house to France, where it was first constructed and preserved in the *Musée de l'Homme* in Paris (**figure 10**), and later in the *Jardin d'Acclimatation* in the same town, where it is now. The house was transported in a container, and the de- and reconstruction was made by carpenters. They could be interviewed about the wood species that were used. For pegs, for example, used for joining pillars and beams hard evergreen oak wood (*kashi* – *Quercus* sp.) was used. For the roof, shingles made of split sawara cypress (*Chamaecyparis pisifera*) or *sawara* was used. The shingles were weighted down with stones, what contributed to the typical sight of such mountain villages. Finally, traditional townhouses, or *machiya*, also belong to the group of folk dwellings. The carpenter of townhouses, for example of Kyoto, is called a *machiya-daiku*. Such urban houses were inhabited by merchants (*shōnin*) and craftsmens (*shokunin*), and such townhouses especially from Kyoto are named *Kyo-machiya*. *Machiya* are dark brown or black as they are mainly painted with a mixture of persimmon extract (*kaki-shibu*), oil (*abura*), iron-oxide (*bengara*) and soot (*susu*) in order to protect them from humidity and insects. Depending on the ratio of *bengara* and soot, various shades of brown, from reddish to deep black, can be obtained. **Figure 11** illustrates the outer brownish structure of such a *machiya*. Unfortunately, the number of *machiya* in Kyoto decreases rapidly; they are considered unpractical to live in, and more and more are destroyed by Kyoto city to make place for mansions (Fiévé, 2008). **Figure 12** shows the inner structure of a *machiya*. The very high ceiling of the kitchen part where the smoke can disappear is



Figure 10. The Kiso House preserved in the musée de l'Homme, Paris. © M. Mertz.



Figure 11. Machiya, or Kyoto traditional townhouse, outer view. © M. Mertz.

very characteristic but at the same time, it contributes to the chilliness of the kitchen area. Traditionally, hinoki cypress (*Chamaecyparis obtusa*) was used for *machiya* pillars (*hashira*) and cryptomeria (*Cryptomeria japonica*) for beams (*hari*) in ancient times. For curved beams, pine or *matsu* (*Pinus* sp.) was used, but since the 1920s, the use of imported timber increased, like, for example, Oregon pine or *beimatsu* (see *Amerikato-gasawara*), as well as Douglas fir or *Amerikato-gasawara* (*Pseudotsuga menziesii*).



Figure 12. Machiya inner view. © M. Mertz.

Conclusion

We learned from the four types of Japanese carpenters how they select their wood species using different approaches. The *miyadaiku* has to search outside Japan to obtain timber of sufficient size for round pillars, as we can see with the example of the chief carpenter travelling to Taiwan (for further examples see Mertz, 2020). Another possibility is to bundle or glue together smaller *hinoki* or cypress trees to obtain pillars of sufficient size. Finally, some have to travel as far as Cameroon to obtain trees of a sufficient size for pillars. What will they use next? The carpenter for traditional tea houses, or *sukiyadaiku*, and the joiner for doors, windows and sliding screens, the *tateguya*, do not fear their wood supply might disappear, but they both rely on imported timber as seen in the case of *machiya*. The normal carpenters, or *daiku*, use the tree species as they grow in the corresponding area. Of course, nowadays imported timber is used more and more. For further readings on related topics, I refer to Mertz 2016 and 2020.

Conflict of interest

No conflict of interest to declare.

Websites

Kōfuku-ji Temple: <https://www.kohfukuji.com/english/>.

Takenaka Carpentry Tools Museum in Kobe: <https://www.dougukan.jp/?lang=en>.

Tokyo National Museum: <https://webarchives.tnm.jp/imgsearch/show/C0015281>.

Yakushi-ji, (Dai-)kōdō, its Structure and History: <https://yakushiji.or.jp/en/temples/007.html>.

References

- Brown, S. A., 1989. *The Genius of Japanese Carpentry – The Secrets of a Craft*, Kodansha International, Tokyo, 140 p.
- Coaldrake, W. H., 1990. *The Way of the Carpenter: tools and Japanese architecture*, Weatherhill, New York, Tokyo, 224 p.
- Cobbi, J., 1978. *Le végétal dans la vie japonaise : L'utilisation alimentaire de plantes sauvages dans un village de la montagne – Kaida-mura*, Publications Orientalistes en France, Bibliothèque Japonaise, Paris, 153 p.
- Corkhill, T., 1979. *A Glossary of Wood: 10 000 terms relating to timber & its use, explained & clarified, with 1000 illustrations*, Stobart & Son LTD, Londres, 655 p.
- Fiévé, N., 2008. *Atlas historique de Kyoto : Analyse spatiale des systèmes de mémoire d'une ville, de son architecture et de son paysage urbain*, UNESCO Editions/Amateur Editions, Paris, 528 p.
- Mertz, M., 2016. *Wood and Traditional Woodworking in Japan*, Kaiseisha Press, Otsu, 253 p.
- Mertz, M., 2020. *Japanese Wood and Carpentry – Rustic and Refined*, Kaiseisha Press, Otsu, 130 p.
- Nishioka T., Kohara, J., 1978. *The Building of Hōryū-ji. The technique and wood that made it possible*, Translated by Michael Brase, Japan Library, Tokyo, 222 p.

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Journées Bois

Échanges interdisciplinaires sur le bois et les sociétés

Interdisciplinary meeting on wood and societies



sous la direction de • edited by

Paul Bacoup et Juliette Taïeb

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